Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Navy											Date: March 2024	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604512N *I Shipboard Aviation Systems*							
COST ($ in Millions)	**Prior Years**	**FY 2023**	**FY 2024**	**FY 2025 Base**	**FY 2025 OCO**	**FY 2025 Total**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**Cost To Complete**	**Total Cost**
Total Program Element	1,109.505	7.344	10.442	10.742	-	10.742	13.802	16.299	16.552	16.893	Continuing	Continuing
2232: *CV/CVN Launch and Recover*	1,109.505	7.344	10.442	10.742	-	10.742	13.802	16.299	16.552	16.893	Continuing	Continuing

A. Mission Description and Budget Item Justification

CV Launch & Recover System - This Navy unique project addresses the System Development and Demonstration (SDD) of systems required to recover and launch Navy/Marine Corps Aircraft (Fixed/Rotary Wing and Vertical/Short Take Off and Landing) operating aboard aircraft carriers, amphibious assault ships, and air capable ships. This program element includes the following:

(1) Aircraft Launch & Recovery Equipment Modernization
(2) Aircraft Launch and Recovery Equipment Service Life Management program

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.

B. Program Change Summary ($ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	11.759	10.442	14.577	-	14.577
Current President's Budget	7.344	10.442	10.742	-	10.742
Total Adjustments	-4.415	0.000	-3.835	-	-3.835
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-3.970	0.000			
• SBIR/STTR Transfer	-0.445	0.000			
• Program Adjustments	0.000	0.000	-3.840	-	-3.840
• Rate/Misc Adjustments	0.000	0.000	0.005	-	0.005

Change Summary Explanation

Funding:
FY 2023 Reprogramming and FY 2025 Program decreases are due to current execution of the Advanced Recovery Control (ARC) Block Upgrade program.

Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Navy	Date: March 2024
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604512N *I Shipboard Aviation Systems*

Schedule:

ARC Systems Development: Milestone Decision B start and end date moved from Q2 2023 to Q4 2023.
Milestone Decision C start and end date moved from Q4 2026 to Q2 2027.
ARC Development end date moved from Q4 2026 to Q2 2027.
Test & Evaluation for ARC Block Upgrade Testing start date moved from Q3 2025 to Q2 2026 and end date moved from Q4 2028 to Q4 2029.

Technical: N/A

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy											Date: March 2024	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604512N / *Shipboard Aviation Systems*				Project (Number/Name) 2232 / *CV/CVN Launch and Recover*			
COST ($ in Millions)	**Prior Years**	**FY 2023**	**FY 2024**	**FY 2025 Base**	**FY 2025 OCO**	**FY 2025 Total**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**Cost To Complete**	**Total Cost**
2232: *CV/CVN Launch and Recover*	1,109.505	7.344	10.442	10.742	-	10.742	13.802	16.299	16.552	16.893	Continuing	Continuing
Quantity of RDT&E Articles		1	1	1	-	1	-	-	-	-		

Note

AAG funding included under 0604512N in FY 2018 and prior. All AAG costs FY 2019 and later are captured under PE: 0604530N, PU: 2367. PY article includes Advanced Arresting Gear (AAG) Jet Car Track Site and two Improved Manually Operated Visual Landing Aid System (IMOVLAS) production representative models. Service Life Management Program (SLMP) test articles refer to actual units (two units per ship set).

A. Mission Description and Budget Item Justification

This Navy unique project addresses the System Development and Demonstration (SDD) of systems required to recover and launch Navy/Marine Corps Aircraft (Fixed/ Rotary Wing and Vertical/Short Take-Off and Landing) operating aboard aircraft carriers (CVN), amphibious assault ships and air capable ships. This program includes the following systems under Project 2232, including the funding of production representative models for:

(1) Aircraft Launch & Recovery Equipment (ALRE) Modernization: ALRE Modernization encompasses efforts required to ensure continued functional performance, operational relevance, and cybersecurity accreditation for all product lines across the ALRE program. This includes efforts required to resolve emerging obsolescence issues (both hardware and software), implement fleet driven operational capability upgrades, and comply with cybersecurity requirements and computer task order requirements for security threat mitigation. Major categories include Visual Landing Aids (VLA), Information Systems, Launcher, Recovery and Aviation Data Management and Control System (ADMACS). There are 48 fielded subsystems that are included in the major categories. The ALRE Gold Disk program provides diagnostic test routines for fleet technician troubleshooting capability on faulty circuit cards to identify the problem and perform the repair.

(2) Aircraft Launch & Recovery Equipment (ALRE) Service Life Management Program (SLMP): The ALRE SLMP for Launcher and Recovery is required to sustain carrier aviation operations of higher energy aircraft launch and recoveries that are increasing loads on the ALRE systems, and that are affecting availability, maintainability and cost. This program will consist of service life assessment and extension initiatives and will establish the design foundation (structural, reliability, and maintainability analyses), permit appropriate assessment, track and focus design changes where most needed. Two SLMP prototypes were procured in FY 2018. The Nimitz class aircraft carriers operate Mark 7 arresting gear systems to capture and arrest Navy aircraft. The Mark 7 systems use a classic linear-piston cylinder setup to convert the kinetic energy of the aircraft into storage energy. Specifically a control system is used to apply correct logic to piston-cylinder closing parameters depending upon the aircraft type that is being arrested. This is called Advanced Recovery Control (ARC). The current ARC system was designed with early 2000's technology and components that have reached their end-of-life and are not compliant with current cybersecurity protocols. To support continued operations through 2060, a series of developmental engineering changes are required for modernized control components, technology and cybersecurity. This is the ARC Block Upgrade.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Title: Aircraft Launch & Recovery Equipment Modernization	0.143	0.350	0.360	0.000	0.360

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604512N / *Shipboard Aviation Systems*	**Project (Number/Name)** 2232 / *CV/CVN Launch and Recover*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Articles:	-	-	-	-	-
Description: ALRE Modernization encompasses efforts required to ensure continued functional performance, operational relevance, and cybersecurity accreditation for all product lines across the ALRE program. This includes efforts required to resolve emerging obsolescence issues (both hardware and software), implement fleet driven operational capability upgrades, and comply with cybersecurity requirements and computer task order requirements for security threat mitigation. Major categories include Visual Landing Aids (VLA), Information Systems, Launcher, Recovery and Aviation Data Management and Control System (ADMACS). There are 48 fielded subsystems that are included in the major categories. ***FY 2024 Plans:*** Continues the developmental enhancements to resolve known and emerging capability shortfalls within the major categories of ALRE to include: VLA, Information Systems, Launcher, Recovery and ADMACS. These major subsystems include 48 fielded Aircraft Launch and Recovery Systems. These efforts support various Air Capable Ships, Amphibious Assault Ships, and Aircraft Carrier Fleet. Begin development of Gold Disk circuit card test routine software. ***FY 2025 Base Plans:*** Continues the developmental enhancements to resolve known and emerging capability shortfalls within the major categories of ALRE to include: VLA, Information Systems, Launcher, Recovery and ADMACS. These major subsystems include 48 fielded Aircraft Launch and Recovery Systems. These efforts support various Air Capable Ships, Amphibious Assault Ships, and Aircraft Carrier Fleet. Continued development of Gold Disk circuit card test routine software. ***FY 2025 OCO Plans:*** N/A ***FY 2024 to FY 2025 Increase/Decrease Statement:*** Increase from FY 2024 to FY 2025 is due to the Program increase in support of the ALRE Gold Disk effort.					
Title: Aircraft Launch & Recovery Equipment (ALRE) Service Life Management Program (SLMP)	7.201	10.092	10.382	0.000	10.382
Articles:	1	1	1	-	1
FY 2024 Plans: ARC Block Upgrade prototype material will be procured in this fiscal year. This includes systems engineering for global supply chain efforts, mission assurance, and supplier performance management. Test procedures will be					

Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604512N / *Shipboard Aviation Systems*	**Project (Number/Name)** 2232 / *CV/CVN Launch and Recover*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
developed for the developmental and environmental qualification tests. Software development will begin in this fiscal year. ***FY 2025 Base Plans:*** Continue procurement of ARC Block upgrade prototypes and hardware development, which includes systems engineering for manufacturing support and continue ARC Block upgrade Software Development. ***FY 2025 OCO Plans:*** N/A ***FY 2024 to FY 2025 Increase/Decrease Statement:*** Increase from FY 2024 to FY 2025 is due to ramp up in systems engineering and Software Development in support of the ARC Block Upgrade Program.					
Accomplishments/Planned Programs Subtotals	7.344	10.442	10.742	0.000	10.742

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
• OPN/4213: *Aircraft Launch & Recovery Equipment-Aircraft Launch & Recovery Equipment*	270.037	162.273	121.108	-	121.108	99.558	101.374	101.115	103.809	Continuing	Continuing

Remarks

OPN 4213 includes a portion of line item funding for ALRE.

D. Acquisition Strategy

Aircraft Launch & Recovery Equipment Modernization: This program ensure continued functional performance, operational relevance, and cybersecurity accreditation for all product lines across the ALRE program. Programs include Visual Landing Aids (VLA), Information Systems, Launcher, Recovery and Aviation Data Management and Control System (ADMACS). There are 48 fielded subsystems that are included in the major categories.

Aircraft Launch & Recovery Equipment Service Life Management Program (SLMP): This program will consist of Service Life Assessment and Extension initiatives and will establish the design foundation (structural, reliability and maintainability analyses), permit appropriate assessment, track and focus design changes where most needed.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy			Date: March 2024
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604512N / *Shipboard Aviation Systems*	Project (Number/Name) 2232 / *CV/CVN Launch and Recover*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary SW Dev - ALRE Mod	WR	NAWCAD : Lakehurst, NJ	0.000	0.143	Nov 2022	0.350	Nov 2023	0.360	Nov 2024	-		0.360	Continuing	Continuing	Continuing
Primary HW Dev-SLMP	C/CPFF	NGC : Sykesville, MD	8.792	6.620	Jun 2023	5.258	Nov 2023	7.382	Nov 2024	-		7.382	0.414	28.466	-
Prior Year Cost No Longer Funded in FYDP	Various	Various : Various	929.811	0.000		0.000		0.000		-		0.000	0.000	929.811	-
		Subtotal	938.603	6.763		5.608		7.742		-		7.742	Continuing	Continuing	N/A

Remarks

Increase in FY 2025 is due to the ramp up required for systems engineering and software development to support the ARC Block upgrade.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Support	WR	NAWCAD : Lakehurst, NJ	0.097	0.099	Nov 2022	0.133	Nov 2023	0.175	Nov 2024	-		0.175	Continuing	Continuing	Continuing
Prior Year Cost No Longer Funded in FYDP	Various	Various : Various	54.675	0.000		0.000		0.000		-		0.000	0.000	54.675	-
		Subtotal	54.772	0.099		0.133		0.175		-		0.175	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (DT&E)	WR	NAWCAD : Lakehurst, NJ	23.901	0.000		0.000		0.283	Nov 2024	-		0.283	4.742	28.926	-
Developmental Test & Evaluation (DT&E)	C/FFP	NGC : Sykesville, MD	0.000	0.000		4.251	Nov 2023	2.116	Nov 2024	-		2.116	7.396	13.763	-
Prior Year Developmental Test & Evaluation Not Funded FYDP (PYDT&E)	Various	Various : Various	88.996	0.000		0.000		0.000		-		0.000	0.000	88.996	-
		Subtotal	112.897	0.000		4.251		2.399		-		2.399	12.138	131.685	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy			Date: March 2024
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604512N / *Shipboard Aviation Systems*	Project (Number/Name) 2232 / *CV/CVN Launch and Recover*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Developmental Test & Evaluation (NAWCAD) increase in FY 2025 to support Jet Car Track Site (JCTS) & Runway Arrested Landing Site (RALS) activation.
Developmental Test & Evaluation (NGC) decreases in FY 2023 and FY 2025 due to current execution of the Advanced Recovery Control (ARC) Block Upgrade program.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2023 Cost	FY 2023 Award Date	FY 2024 Cost	FY 2024 Award Date	FY 2025 Base Cost	FY 2025 Base Award Date	FY 2025 OCO Cost	FY 2025 OCO Award Date	FY 2025 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Support	Various	Various : Various	3.233	0.482	Nov 2022	0.450	Nov 2023	0.426	Nov 2024	-		0.426	Continuing	Continuing	Continuing
		Subtotal	3.233	0.482		0.450		0.426		-		0.426	Continuing	Continuing	N/A

Remarks

Updated FY 2023 through FY 2025 to reflect Management Services costs, which were previously rolled up in the Test & Evaluation line, for further clarity based off FY 2023 actuals.

	Prior Years	FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,109.505	7.344		10.442		10.742		-		10.742	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604512N / *Shipboard Aviation Systems*	**Project (Number/Name)** 2232 / *CV/CVN Launch and Recover*

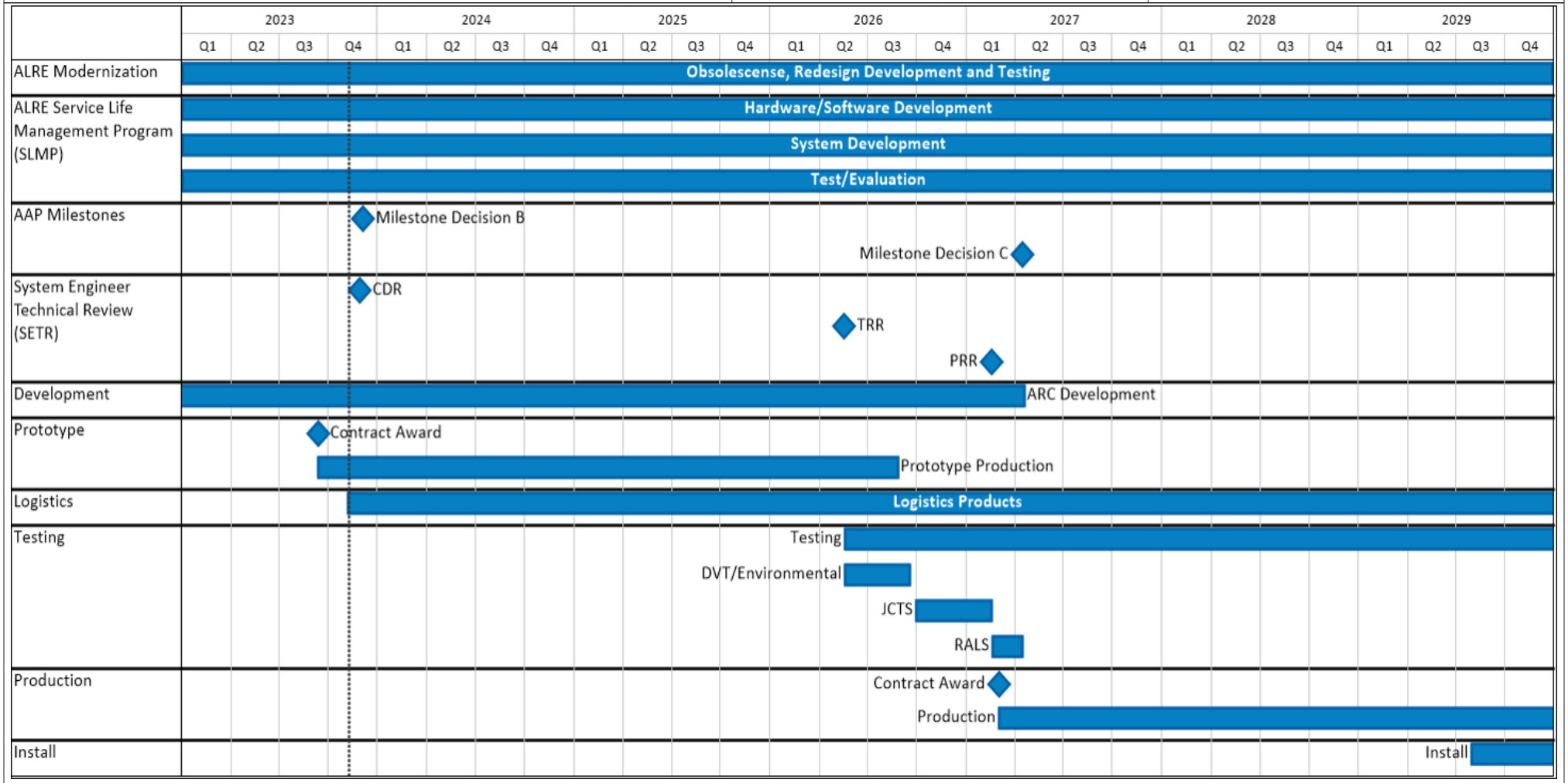

Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy		Date: March 2024
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604512N / *Shipboard Aviation Systems*	**Project (Number/Name)** 2232 / *CV/CVN Launch and Recover*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
ALRE MODERNIZATION				
Obsolescence, Redesign Development and Testing	1	2023	4	2029
ALRE SERVICE LIFE MANAGEMENT PROGRAM (SLMP)				
SLMP Systems Development: HW/SW Development	1	2023	4	2029
SLMP Systems Development: System Development	1	2023	4	2029
SLMP Systems Development: Test & Evaluation	1	2023	4	2029
ARC Systems Development: ARC CDR	4	2023	4	2023
ARC Systems Development: ARC TRR	2	2026	2	2026
ARC Systems Development: ARC PRR	1	2027	1	2027
ARC Systems Development: ARC Milestone B Decision Review	4	2023	4	2023
ARC Systems Development: ARC Milestone C Decision Review	2	2027	2	2027
ARC Systems Development: ARC Block Upgrade Development	1	2023	2	2027
ARC Block Upgrade Prototype: Prototype Contract Award	3	2023	3	2023
ARC Block Upgrade Prototype: Prototype Production	3	2023	3	2026
ARC Test & Evaluation: Technical Evaluation: ARC Block Upgrade Testing	2	2026	4	2029