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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy **Date:** May 2021

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 0604272N / <i>Tact Air Dir Infrared CM (TADIRCM)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	94.861	54.175	49.450	33.246	-	33.246	-	-	-	-	-	-
3348: <i>DAIRCM Development</i>	94.861	54.175	49.450	33.246	-	33.246	-	-	-	-	-	-

Note

\$33.246M within this program element (PE) supports JUON SO-0010 Counter Man Portable Air Defense (C-MANPAD) System Capability in FY22.

A. Mission Description and Budget Item Justification

This element includes development of electronic warfare systems for the United States Navy (USN) and United States Marine Corps (USMC) assault aircraft for worldwide deployment. This includes the development and testing of advanced infrared countermeasures systems for emerging threats and emergency contingencies for Aircraft Survivability Equipment (ASE) suite integration. This program develops integrated hardware/software solutions that link on-board integrated Aircraft Survivability Equipment (iASE) with platform mission planning/information systems. iASE includes Infrared (IR), Hostile Fire Indication, and Laser Warning Sensors as well as Countermeasures Dispensing Systems (CMDS) and expendables. This program also adopts future multi-band, networking capabilities to facilitate real-time transfer of threat information, and off-board queuing and control of onboard sensors. DAIRCM studies and evaluates current and future aircraft threats, makes modeling and simulation for improved countermeasure capabilities, develops, tests and provides test equipment to address new and emerging threats. DAIRCM develops improved aircraft survivability of Department of Navy (DoN) assault aircraft in complex terrain for worldwide deployment.

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.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	58.449	59.776	49.056	-	49.056
Current President's Budget	54.175	49.450	33.246	-	33.246
Total Adjustments	-4.274	-10.326	-15.810	-	-15.810
• Congressional General Reductions	-	-0.831			
• Congressional Directed Reductions	-	-9.495			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.274	0.000			
• Program Adjustments	0.000	0.000	-15.109	-	-15.109
• Rate/Misc Adjustments	0.000	0.000	-0.701	-	-0.701

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Appropriation/Budget Activity
1319: *Research, Development, Test & Evaluation, Navy / BA 4: Advanced Component Development & Prototypes (ACD&P)*

R-1 Program Element (Number/Name)
PE 0604272N / *Tact Air Dir Infrared CM (TADIRCM)*

Change Summary Explanation

DoN realigned (\$15.810M) FY22 to provide funding for higher priority Aircraft Survivability requirements. This funding reduction adjusted the DAIRCM ACAT II program schedule and acquisition strategy prioritizing integration on aircraft, developing a scalable system that meets statutory requirements and testing. Funding also supports adjustments to fielded JUONS solution.

Summary of changes:
DAIRCM Critical Design Review (CDR) changed from 2Q2022-2Q2022 to 1Q2022-1Q2022
Added JUONS Technical Insertions 4Q2020 and continuing through FY2022.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy **Date:** May 2021

Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0604272N / <i>Tact Air Dir Infrared CM (TA DIRCM)</i>				Project (Number/Name) 3348 / <i>DAIRCM Development</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
3348: <i>DAIRCM Development</i>	94.861	54.175	49.450	33.246	-	33.246	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The projects in this element advances the processor, laser and sensor development over the DAIRCM JUONS system in order to outpace current / future threats in addition to adding growth for future capabilities. These modifications significantly increase aircraft survivability of Department of Navy (DoN) assault aircraft in complex terrain for worldwide deployment. The AN/AAQ-45 Distributed Aperture Infrared Countermeasures (DAIRCM) system consists of three major components: missile warning sensors, processor, and inexhaustible laser countermeasures. DAIRCM interfaces with the platform aircraft and provides signals to onboard Aircraft Survival Equipment (ASE). Within the Department of Navy, UH-1Y is the lead platform for DAIRCM Program. DAIRCM program advances lessons learned from the JUONS to incorporate the system under glass in the H-1. Improves laser power, increases processor to allow for additional sensors to meet platform/mission needs, improves sensor countermeasure features, improves effectiveness for flare deployment, and further develops cyber security. DAIRCM design is scalable to expedite expansion to other platforms and improve crew threat situational awareness. The program also advances modeling and simulation for new countermeasures, and develops necessary test equipment for program success.

FY20: DAIRCM ACAT II program Acquisition Program Baseline was approved and EMD contract was awarded. Continued development of Government tracking software (SW), initiated UH-1Y platform integrated hardware/software (including under glass) solutions. Completed JUONS Quick Reaction Assessment (QRA) and fielding decisions on all

T/M/S. Completed analysis of JUONS software (SW) deficiencies for JUONS SW product improvements to resolve QRA deficiencies. Awarded Risk Reduction activities to maintain overall ACAT II program schedule ahead of EMD contract award. Activities inform work under the DAIRCM EMD contract: specification clarification, platform integration between contractors, and technical studies to support preliminary designs. Completion of the risk reduction lowers technical program risks and advances EMD program schedule.

FY21: RDT&E funding required to complete System Requirements Review 2 (SRR 2) and System Functional Review (SFR), and Preliminary Design Review (PDR). Initiate modeling and simulations to support PDR. Initiate platform (UH-1Y) DAIRCM Integration for A-Kit and develop B-Kit platform integration plan. Continue studies and evaluations of current and future aircraft threats, modeling and simulation for improved countermeasure capabilities, development, testing, and test equipment to address new and emerging threats. Complete development and deliver JUONS SW product improvements.

FY22: RDT&E funding required for Critical Design Review (CDR) in 1Q2022 . Procure and build four (4) Engineering Development Models (EDMs). Continue development of Government tracking SW and test under glass solutions. Complete platform (UH-1Y) DAIRCM Integration for A-Kit. Continue SW product improvements for JUONS and EMD program.

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: DAIRCM Development Articles: FY 2021 Plans: Conduct H-1 size, weight, power cooling analysis to support integrated DAIRCM system. Demonstrate prototype DAIRCM under glass solution. Complete PDR. Update Government software algorithm to support development and test. Evaluate DAIRCM supply chain and other logistics requirements. FY 2022 Base Plans: Complete H-1 size, weight, power cooling analysis to support integrated DAIRCM system. Complete demonstration of prototype DAIRCM under glass solution. Complete CDR. Update government software algorithm to support development and test. Affirm DAIRCM supply chain and other logistics requirements. FY 2022 OCO Plans: N/A FY 2021 to FY 2022 Increase/Decrease Statement: FY 2021 to FY 2022 reduction to provide offset for higher N98 program requirements; rescope program transition from design to receipt of test articles.	54.175	49.450	33.246	0.000	33.246
Accomplishments/Planned Programs Subtotals	54.175	49.450	33.246	0.000	33.246

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APN/0576: <i>Distributed Aperture Infrared Countermeasures (DAIRCM)</i>	0.000	0.000	2.007	-	2.007	-	-	-	-	-	-

Remarks
This line represents one (1) OSIP from 0576 (OSIP 018-17 Distributed Aperture Infrared Countermeasures (DAIRCM)).

D. Acquisition Strategy
TADIRCM - Distributed Aperture Infrared Countermeasures (DAIRCM) Program: ACAT II, entered post MS B: Develop base capability with pathway for Pre-Planned Product Improvements (P3I) and extending capability to other small aircraft in DoD.

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DAIRCM is scalable acquisition approach that provides the architecture for an integrated aircraft survivability system with preplanned product improvements (P3I) to outpace threats. It replaces the existing AN/AAR-47 UV Threat Warning System - providing an inexhaustible countermeasure with improved 2-color IR Threat Warning system and growth capability to meet future design improvements and combat advanced threats. It leverages JUONs capability, cooperation between Government laboratories and industry partners to grow into an integrated capability that meets the key performance parameters. DAIRCM contract strategy awarded a development cost contract in FY20.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy **Date:** May 2021

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604272N / Tact Air Dir Infrared CM (TA DIRCM)	Project (Number/Name) 3348 / DAIRCM Development
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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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 HW Dev JUONS	C/CPFF	DRS : Dallas, TX	47.336	0.000		0.000		0.000		-		0.000	-	-	-
Primary HW Dev JUONS	C/CPFF	Daylight Solutions : San Diego, CA	7.417	0.000		0.000		0.000		-		0.000	-	-	-
H-60 Operational Flight Program Dev	C/CPFF	Lockheed Martin : Owego, NY	5.000	5.000	Mar 2020	0.000		0.000		-		0.000	-	-	-
H-1 Operational Flight Program Dev	C/CPFF	Northrop Grumman : Woodland Hills, CA	0.000	2.840	Jun 2020	1.834	Jun 2021	1.000	Jun 2022	-		1.000	-	-	-
Govt Eng Support	WR	NAWCAD : Patuxent River, MD	3.338	0.150	Oct 2019	1.168	Oct 2020	2.100	Oct 2021	-		2.100	-	-	-
Govt Eng Support	WR	FRC : Jacksonville, FL	0.549	0.000		0.026	Nov 2020	0.080	Nov 2021	-		0.080	-	-	-
Govt Software Eng Support	WR	NAWCWD : PT Mugu	2.000	1.875	Nov 2019	1.715	Nov 2020	0.985	Nov 2021	-		0.985	-	-	-
Aircraft Integration	WR	FRC East : Cherry Point, NC	0.400	0.000		0.000		0.000		-		0.000	-	-	-
Govt Software Eng Support	WR	NRL : Washington, DC	5.973	3.578	Nov 2019	4.389	Nov 2020	3.235	Nov 2021	-		3.235	-	-	-
Primary HW Dev DAIRCM	C/CPFF	DRS Sysco : Melbourne, FL	2.943	32.197	Jun 2020	33.757	May 2021	13.152	May 2022	-		13.152	-	-	-
H-1 Operational Flight Program Dev	C/CPFF	Bell Tech : Fort Worth, TX	0.000	0.000		1.156	May 2021	6.900	May 2022	-		6.900	-	-	-
Subtotal			74.956	45.640		44.045		27.452		-		27.452	-	-	N/A

Remarks

(1) FY20 Primary HW Dev JUONS (DRS: Dallas, TX and Daylight Solutions: San Diego, CA) form a single business entity under DRS Sysco, Melbourne, FL for DAIRCM Primary HW

(2) FY22 decrease (\$0.834M) for H-1 Operational Flight Program Dev at Northrop Grumman to support UH-1Y DAIRCM platform integration of A-Kits and develop B-Kit platform integration plan.

(3) FY22 increase (\$0.986M) for Govt Eng Support at NAWCAD: Patuxent River, MD and FRC: Jacksonville, FL to prepare for Integrated Logistic Assessment in FY23.

(4) FY22 decrease (\$1.884M) for Govt Software Engineering Support at NAWCWD: PT Mugu and NRL, Washington, DC. due to reduced baseline scope captured as future P31 efforts.

(5) FY22 decrease (\$20.605M) for Primary HW Dev due to reduced baseline scope. Reduced EDMs from six (6) to four (4) and software builds from 36 months to 30 months.

(6) FY22 increase (\$5.744M) for H-1 Operational Flight Program Dev at Bell Tech to support UH-1Y DAIRCM platform integration of A-Kits and develop B-Kit platform integration plan.

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Support (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Govt Integrated Logistic Support	WR	Fleet Readiness Depot : Jacksonville, FL	0.000	0.000		0.144	Oct 2020	0.071	Oct 2021	-		0.071	-	-	-
Logistic Deliverables	SS/CPFF	RIAC : Ft. Belvoir, VA	0.322	0.166	Aug 2020	0.349	Jun 2021	0.152	Nov 2021	-		0.152	-	-	-
ESOH support	WR	NAWC WD : China Lake	0.123	0.008	May 2020	0.008	Nov 2020	0.008	Nov 2021	-		0.008	-	-	-
Integrated Logistic Support	C/CPAF	Wyle Laboratories : Lexington Park, MD	0.300	0.000		0.141	Apr 2021	0.000		-		0.000	-	-	-
Comercial Shipping TAC code	TBD	Various : Various	0.017	0.008	Nov 2019	0.030	Nov 2020	0.030	Nov 2021	-		0.030	-	-	-
ESOH Support	SS/CPFF	RIAC : Ft. Belvoir, VA	0.000	0.000		0.048	Nov 2020	0.070	Nov 2021	-		0.070	-	-	-
Govt Integrated Logistics Support	WR	NAWCAD : Patuxent River, MD	0.000	0.231	Apr 2020	0.220	Oct 2020	0.220	Oct 2021	-		0.220	-	-	-
Subtotal			0.762	0.413		0.940		0.551		-		0.551	-	-	N/A

Remarks
 (1)FY22 support decreased at Fleet Readiness Depot: Jacksonville, FL (\$0.073M), RIAC: Ft. Belvoir, VA (\$0.197M), and Wyle Labs: Lexington Park, MD (\$0.141) as a result of rescoping the program due to Navy Survivability re-prioritization.
 (2)FY22 ESOH support increased at RIAC: Ft. Belvoir, VA (\$0.022M) to support FY22 Critical Design Review (CDR).

Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Govt T&E Support	WR	NAWCAD : Patuxent River, MD	8.423	0.150	Feb 2020	1.946	Oct 2020	1.810	Oct 2021	-		1.810	-	-	-
Govt T&E Support	WR	NAWCWD : China Lake, CA	0.019	6.371	May 2020	0.052	Nov 2020	0.053	Nov 2021	-		0.053	-	-	-
Flight Test/Live Fire	WR	USA DPG : Various	0.798	0.000		0.946	Mar 2021	0.000		-		0.000	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy **Date:** May 2021

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604272N / Tact Air Dir Infrared CM (TA DIRCM)	Project (Number/Name) 3348 / DAIRCM Development
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Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
T& E Support	C/CPFF	GWEF : Eglin AFB, FL	1.185	0.500	Mar 2020	0.270	Dec 2020	0.000		-		0.000	-	-	-
Govt T&E Support	WR	COTF : Various	0.993	0.448	Nov 2019	0.368	Nov 2020	0.335	Jan 2022	-		0.335	-	-	-
Govt T&E Support	WR	CRANE : CRANE	0.700	0.350	Jan 2020	0.000		0.370	Jan 2022	-		0.370	-	-	-
OCO Flight & Live Fire Test	WR	Various : Various	2.877	0.000		0.000		0.000		-		0.000	-	-	-
OCO Govt T&E Support	WR	Various : Various	2.370	0.000		0.000		0.000		-		0.000	-	-	-
Subtotal			17.365	7.819		3.582		2.568		-		2.568	-	-	N/A

Remarks
 (1) FY22 Gov T&E Support at NAWCAD: Patuxent River, MD (\$0.136M), Flight Test/Liver Fire at USA DPG: various (\$0.946), Gov T&E Support at COTF: various (\$0.033M) and T&E Support at GWEF: Eglin AFB, FL (\$0.270M) decreased in FY22 as EMD and JUONS hardware testing is not scheduled.
 (2) FY22 Gov T&E support, Crane increased (\$0.370M) for model development and test flight performance predictions.

Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Contractor Mgmt Support	C/CPFF	Amelex : California, MD	0.000	0.000		0.161	Jun 2021	0.170	Jan 2022	-		0.170	-	-	-
Contractor Eng Support	C/CPFF	Engility : Lexington Park, MD	0.864	0.164	Oct 2019	0.128	Jan 2021	0.800	Jan 2022	-		0.800	-	-	-
Travel	WR	NAVAIR Various : Patuxent River, MD	0.213	0.100	Oct 2019	0.030	Jun 2021	0.360	Feb 2022	-		0.360	-	-	-
Govt PM Support	WR	NAWCAD : Patuxent River, MD	0.499	0.000		0.526	Oct 2020	1.300	Oct 2021	-		1.300	-	-	-
Govt Eng Support	WR	NSWC : Dahlgren, VA	0.014	0.019	Nov 2019	0.018	Jun 2021	0.025	Nov 2021	-		0.025	-	-	-
Eng Support	C/CPFF	DCS : Bethesda, MD	0.188	0.000		0.000		0.000		-		0.000	-	-	-
DISA	C/BA	NAVIDFOR : Suffolk, VA	0.000	0.020	Jun 2020	0.020	Jun 2021	0.020	Jun 2022	-		0.020	-	-	-
Subtotal			1.778	0.303		0.883		2.675		-		2.675	-	-	N/A

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Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			

Remarks
 (1) FY22 increase (\$0.681M) for management services support/travel for FY22 CDR and integration with platform software.
 (2) FY22 increase (\$1.111M) for Government support/travel for FY22 CDR and integration with platform software.

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	94.861	54.175	49.450	33.246	-	33.246	-	-	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy

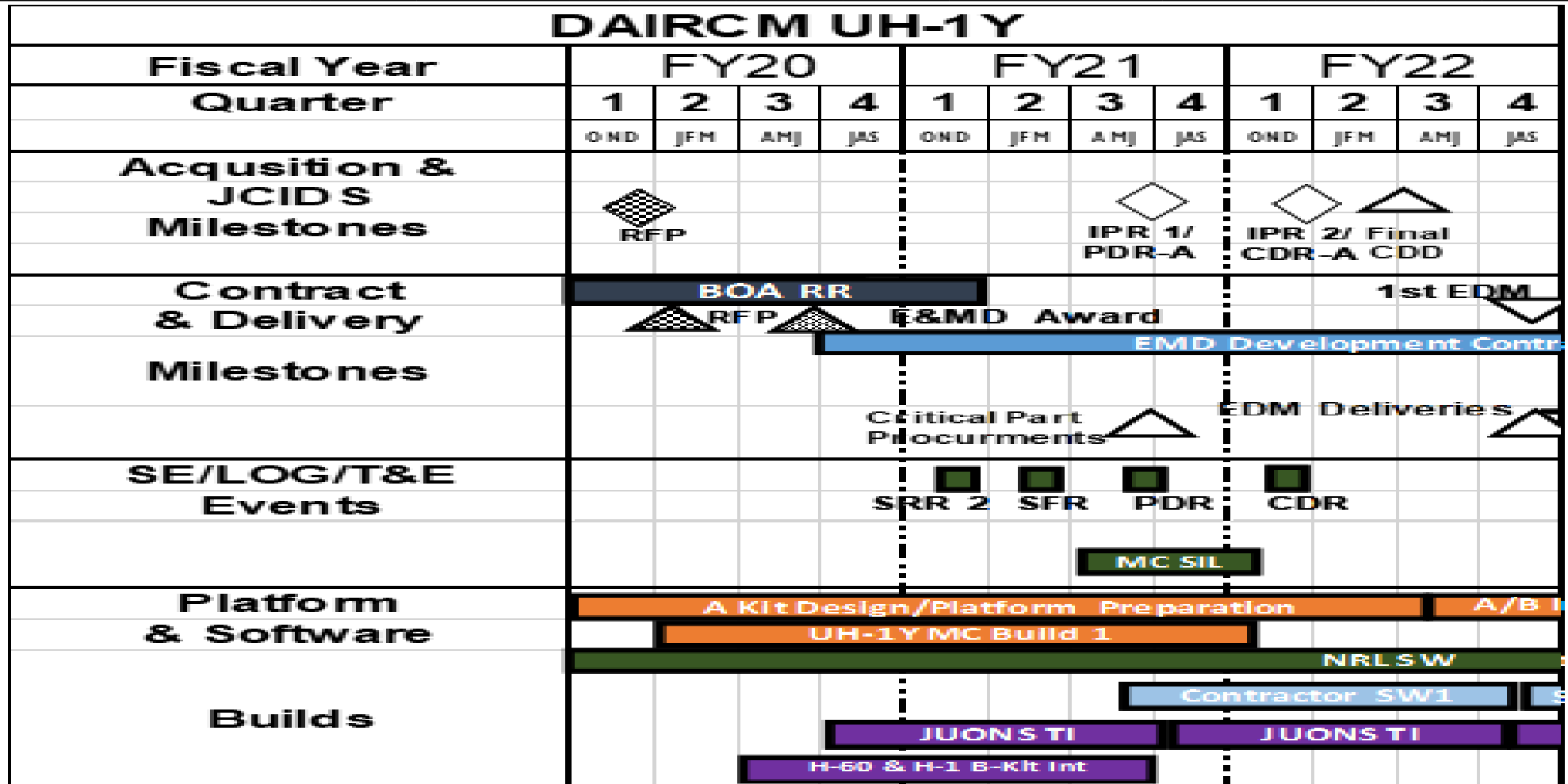
Date: May 2021

Appropriation/Budget Activity
1319 / 4

R-1 Program Element (Number/Name)
PE 0604272N / Tact Air Dir Infrared CM (TA
DIRCM)

Project (Number/Name)
3348 / DAIRCM Development

DAIRCM UH-1Y



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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
DAIRCM				
Acquisition Milestones: DAIRCM Final Capability Development Document (CDD): Schedule Detail	3	2022	3	2022
Systems Development: DAIRCM SRR 2: Schedule Detail	1	2021	1	2021
Systems Development: JUONS Technical Insertion: Schedule Detail	4	2020	4	2022
Systems Development: DAIRCM SFR: Schedule Detail	2	2021	2	2021
Systems Development: DAIRCM PDR: Schedule Detail	3	2021	3	2021
Systems Development: DAIRCM CDR: Schedule Detail	1	2022	1	2022
Systems Development: DAIRCM Risk Reduction BOA: Schedule Detail	1	2020	2	2021
Systems Development: DAIRCM Engineering Manufacturing and Development (EMD) Contract Award: Schedule Detail	3	2020	3	2020
Deliveries: EMD Hardware Deliveries: Schedule Detail	4	2022	4	2022