Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy											Date: March 2019	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603216N *I Aviation Survivability*							
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
Total Program Element	188.346	5.450	7.050	11.919	-	11.919	11.502	11.414	11.488	11.338	Continuing	Continuing
0584: *Acft Protective Clothing*	101.721	2.469	3.918	4.117	-	4.117	4.177	4.213	4.121	4.203	Continuing	Continuing
0591: *Acft Survivability, Vulnerability & Safety*	46.604	1.340	1.502	1.458	-	1.458	1.463	1.502	1.535	1.568	Continuing	Continuing
0592: *Acft & Ordnance Safety*	36.384	1.060	1.047	5.746	-	5.746	5.261	5.084	5.205	4.927	Continuing	Continuing
1819: *CV Acft Fire Suppress System*	3.637	0.581	0.583	0.598	-	0.598	0.601	0.615	0.627	0.640	Continuing	Continuing

A. Mission Description and Budget Item Justification

Aviation Survivability addresses the issues of aircrew and platform survivability, focusing on enhancing overall opportunity for aircrew and platform protection and enhanced performance. The capabilities addressed under this program element counter emerging threats of next generation operational weapons systems and enhance combat effectiveness in future operational mission scenarios.

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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	5.566	7.050	7.271	-	7.271
Current President's Budget	5.450	7.050	11.919	-	11.919
Total Adjustments	-0.116	0.000	4.648	-	4.648
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.027	0.000			
• SBIR/STTR Transfer	-0.089	0.000			
• Program Adjustments	0.000	0.000	4.700	-	4.700
• Rate/Misc Adjustments	0.000	0.000	-0.052	-	-0.052

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy	Date: March 2019
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603216N *I Aviation Survivability*

Change Summary Explanation

0584 - All efforts have been combined under the area of Advanced Technology Crew Station. All the current research and resultant protective devices within this project unit are designed to improve Human Performance, Protection and Sustainment in the cockpit, and therefore are combined into one overarching area.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603216N / *Aviation Survivability*	Project (Number/Name) 0584 / *Acft Protective Clothing*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
0584: *Acft Protective Clothing*	101.721	2.469	3.918	4.117	-	4.117	4.177	4.213	4.121	4.203	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 0584 develops, demonstrates, and validates technologies designed to enhance warfighter performance, protection, injury prevention, mission effectiveness, and survivability. The project addresses aircrew readiness; life support equipment; physiological episodes; hearing protection and communication intelligibility; advanced helmet vision systems; laser eye protection and supporting technologies; escape and crashworthy systems; active/passive restraint systems; survival and evasion; aircrew/injury modeling; crew centered cockpit design control stations and aircraft maintainer protection. Fully protected and mission ready Aircrew are a critical component of Ready Basic Aircraft. The goal is to ensure they are able to perform their mission effectively on time, safely, every time. Project 0584 responds to a number of operational requirements documents, including OR# 210-05-88 for Chemical and Biological protection, OR# 099-05-087 for Laser Eye Protection, Aircrew Laser Eye Protection (ALEP) joint operation requirements document JORD #513-88-99, and Capabilities Program Document (CPD) Night Vision Cueing and Display (NVCD).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Advanced Technology Crew Station	1.158	1.491	4.117	0.000	4.117
Articles:	-	-	-	-	-
FY 2019 Plans: The government will be investigating the military utility of Magnetorheological (MR)-based damping systems. The goal is to investigate the capability of MR based damping systems to withstand harsh environments found onboard military vessels while continuing to perform as designed. Prototypes delivered under this agreement will be subjected to extremely harsh conditions that are more representative of the expected. These tasks are intended to begin the process of determining the robustness of the system under long periods of exposure to severe environments that exists onboard US Navy helicopters. Prototype goggles using new technology will begin field testing.					
FY 2020 Base Plans: Continue the development and testing of the military utility of Magnetorheological (MR) based vibration damping systems. Testing will investigate the capability of MR based damping systems to withstand harsh environments found onboard air and ground military vehicles where excessive impacts and vibration is causing debilitating injuries. Prototype seating systems will be subjected to longer periods of exposure to extremely harsh conditions that are more representative of the expected field conditions.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0584 / *Acft Protective Clothing*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Development of High Resolution Digital Night Vision Goggle will continue as a joint effort with the Army. Begin integration of digital night sensors into both goggle and helmet mounted displays formats. Begin human laboratory and field testing. Assess feasibility of increasing the field of view. Advanced component development of a Physiological Monitor Warning System will continue. The objective is to mature the development of the system so it will automatically resolve physiological issues. Testing will be conducted to prove component and subsystem maturity. Continue to development of a biofidelic model of the entire spinal column based on actual human data and responses to stressors ranging from fatigue to blunt force trauma to better predict and prevent incidents that increase the level of back pain and long term disabilities. Redesign head borne prototype systems to increase functionality while reducing/optimizing loading on the head and spine to reduce strain and possible injury. Continue anthropometric assessments of the head, neck, spine, and whole body to mature a digital human modeling capability for aircrew and cockpit integration. Research is ongoing to develop a simple monitor (a small dot) which is placed on the front surface of eyewear to indicate when the device has reached its maximum amount of solar radiation before eyewear protective coating degradation begins and eyes are exposed to damaging solar rays. The effort will now address whether there's an associated degradation in the impact protection of the polycarbonate protective eye wear as the solar exposure increases. Conduct environmental testing and stability over time of the dielectric protective coating. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase from FY 2019 to FY 2020 due to development and testing to advanced Physiological Monitor Warning System component and subsystem maturity.					
Title: Advanced Integrated Life Support System	1.311	2.427	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2019 Plans: The main emphasis will be on designing and constructing a working high resolution fully digital night vision goggle to be followed fully characterizing the subcomponents. ***FY 2020 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0584 / *Acft Protective Clothing*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease from FY 2019 to FY 2020 due to moving all efforts to the Advanced Technology Crew Station accomplishment section. All efforts have been combined under the area of Advanced Technology Crew Station. All the current research and resultant protective devices within this project unit are designed to improve Human Performance, Protection and Sustainment in the cockpit, and therefore are combined into one overarching area.					
Accomplishments/Planned Programs Subtotals	2.469	3.918	4.117	0.000	4.117

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• OPN 4268: *Aviation Support Equipment*	63.995	37.874	55.415	0.500	55.915	58.072	61.614	73.629	74.812	Continuing	Continuing

Remarks

D. Acquisition Strategy

Primary Hardware Development for the Navy Advanced Technology Crew Station efforts will be performed under a Cost Plus Fixed Fee Indefinite Delivery Indefinite Quantity contract.

E. Performance Metrics

Develop advanced crashworthy system level models, investigate improved visual search methodologies, and improve the ability to assess cockpit compatibility through new analytic approaches to anthropometry.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603216N / *Aviation Survivability*	Project (Number/Name) 0584 / *Acft Protective Clothing*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCAD : Pax River MD	34.982	0.485	Dec 2017	0.637	Dec 2018	0.663	Dec 2019	-		0.663	Continuing	Continuing	Continuing
Primary Hardware Development	C/CPFF	Intevac : San Jose CA	5.118	0.489	Jun 2018	1.500	Jun 2019	1.006	Jun 2020	-		1.006	0.000	8.113	8.113
Primary Hardware Development	MIPR	US Army CERDEC : Ft. Belvoir VA	3.515	0.000		0.000		0.050	Jun 2020	-		0.050	0.000	3.565	3.565
Primary Hardware Development	C/CPFF	Innovital : Calverton MD	0.145	0.488	Dec 2017	0.450	Dec 2018	0.150	Dec 2019	-		0.150	0.000	1.233	1.233
Prior Year Prod Dev no Longer Funded in Budget Year or Outyears	Various	Various : Various	23.340	0.000		0.000		0.000		-		0.000	0.000	23.340	23.340
Systems Engineering	WR	NAWCWD : China Lake CA	0.040	0.000		0.000		0.000		-		0.000	0.000	0.040	0.040
Physiological Monitoring	C/CPFF	TBD : TBD	0.000	0.000		0.000		1.000	Mar 2020	-		1.000	0.000	1.000	1.000
		Subtotal	67.140	1.462		2.587		2.869		-		2.869	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Configuration Management	WR	NAWCAD : Pax River MD	3.007	0.330	Dec 2017	0.490	Dec 2018	0.400	Dec 2019	-		0.400	Continuing	Continuing	Continuing
Prior Year Support no Longer Funded in Budget Year or Outyears	Various	Various : Various	3.232	0.000		0.000		0.000		-		0.000	0.000	3.232	3.232
		Subtotal	6.239	0.330		0.490		0.400		-		0.400	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603216N / *Aviation Survivability*	Project (Number/Name) 0584 / *Acft Protective Clothing*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWCAD : Pax River MD	5.516	0.320	Dec 2017	0.551	Dec 2018	0.558	Dec 2019	-		0.558	Continuing	Continuing	Continuing
Prior Year T&E no Longer Funded in Budget Year or Outyears	Various	Various : Various	18.240	0.000		0.000		0.000		-		0.000	0.000	18.240	18.240
		Subtotal	23.756	0.320		0.551		0.558		-		0.558	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	NAWCAD : Pax River MD	4.095	0.342	Dec 2017	0.275	Dec 2018	0.275	Dec 2019	-		0.275	Continuing	Continuing	Continuing
Travel	PO	NAVAIR : Pax River MD	0.481	0.015	Oct 2017	0.015	Oct 2018	0.015	Oct 2019	-		0.015	Continuing	Continuing	Continuing
Prior Year Mgmt Svcs no Longer Funded in Budget Year or Outyears	Various	Various : Various	0.010	0.000		0.000		0.000		-		0.000	0.000	0.010	0.010
		Subtotal	4.586	0.357		0.290		0.290		-		0.290	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	101.721	2.469		3.918		4.117		-		4.117	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0584 / *Acft Protective Clothing*

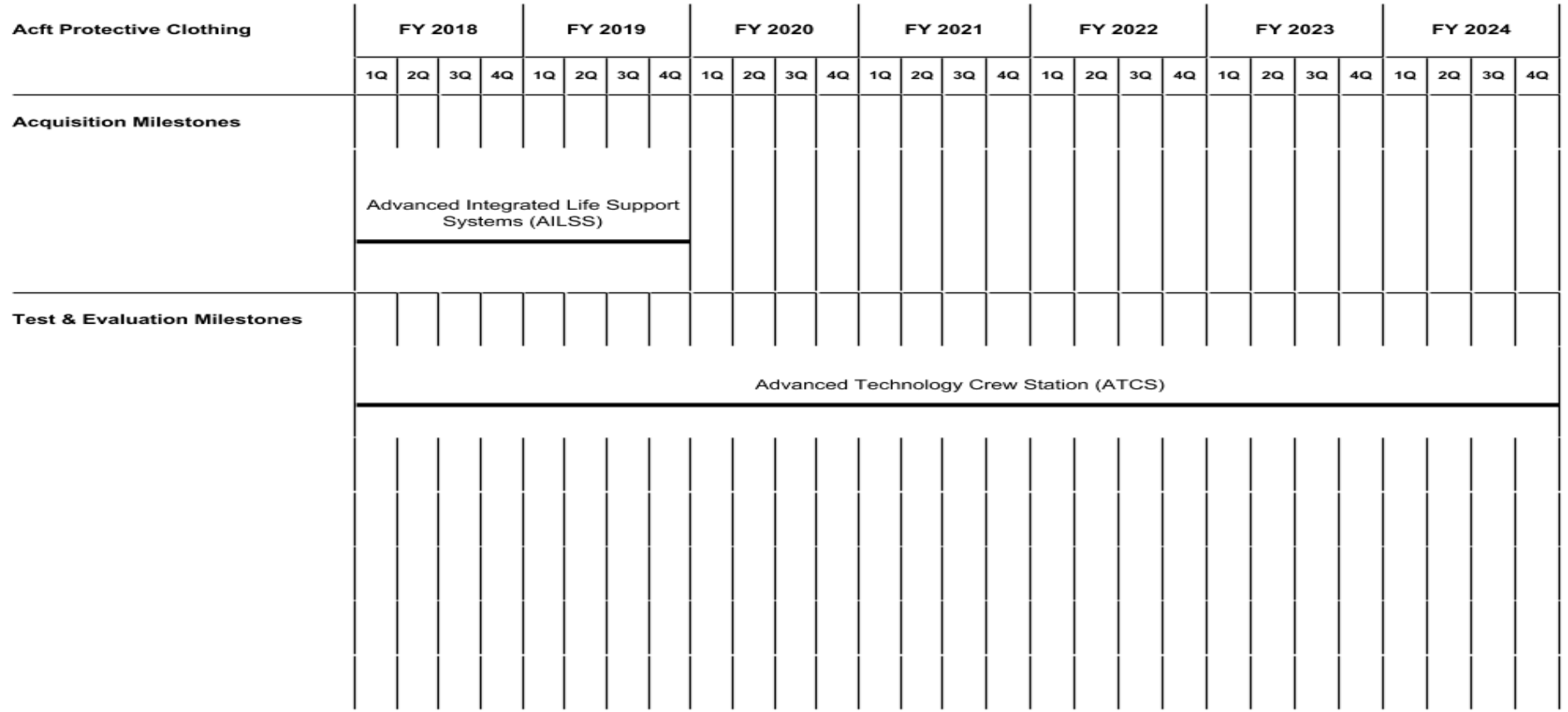

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0584 / *Acft Protective Clothing*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Acft Protective Clothing				
Acquisition Milestones: Advanced Integrated Life Support Systems (AILSS)	1	2018	4	2019
Test & Evaluation Milestones: Advanced Technology Crew Station	1	2018	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603216N / *Aviation Survivability*	Project (Number/Name) 0591 / *Acft Survivability, Vulnerability & Safety*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
0591: *Acft Survivability, Vulnerability & Safety*	46.604	1.340	1.502	1.458	-	1.458	1.463	1.502	1.535	1.568	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Aircraft Survivability, Vulnerability and Safety. This project develops prototype hardware to improve the survivability of Navy and Marine Corps aircraft. This project addresses the likelihood of an aircraft being hit (susceptibility) and the probability of a kill if the aircraft is hit (vulnerability). Types of programs funded under this project include signature reduction efforts, subsystem and component hardening and development of fire and explosion suppression techniques for fuel systems.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Technology Requirements	0.028	0.045	0.040	0.000	0.040
Articles:	-	-	-	-	-
FY 2019 Plans: Planned trade studies include threats assessments, vulnerability assessments of both rotary wing and fixed wing aircraft, and updates to the Survivability Master Plan.					
FY 2020 Base Plans: Planned trade studies include: threats assessments; vulnerability assessments of both rotary wing and fixed wing aircraft; efficacy of USN/USMC simulation training systems within the updated threat system and EW environment.					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement: Technology Requirements decreased from FY 2019 to FY 2020 because the master plan won't be updated in FY 2020					
Title: Technology Design & Development	1.260	1.437	1.218	0.000	1.218
Articles:	-	-	-	-	-
FY 2019 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0591 / *Acft Survivability, Vulnerability & Safety*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Integrate results from technology evaluation efforts to address program office survivability shortfalls with specific emphasis on iASE capability. ***FY 2020 Base Plans:*** Conduct asymmetric threats modeling and analyses based on OASIS simulation study. Integrate iASE architecture within the USN/USMC simulation and training system environment. Advance model development relating to Advanced Electronic Attack, Electro-Magnetic Maneuver Warfare, and spectrum dominance in support of air combat training and Live Virtual Constructive capabilities to improve aircraft survivability and lethality. Conduct combat situational awareness analyses to integrate existing federated capabilities. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Technology Design and Development decreased from FY 2019 to FY 2020 because it is anticipated that design and development efforts with countermeasures simulation hardware will have progressed to the point that prototype testing will begin in FY 2020.					
Title: Technology Test & Evaluation	0.052	0.020	0.200	0.000	0.200
Articles:	-	-	-	-	-
FY 2019 Plans: Implement test planning simulation solutions in a laboratory environment. ***FY 2020 Base Plans:*** Integration, laboratory, and flight testing of prototype hardware in support of the Integrated Aircraft Survivability Equipment architecture development and in support of countermeasures simulation hardware. Integrate and chamber test Live Virtual Constructive solutions. Begin testing combat situational awareness capability in a simulated environment. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Technology Test and Evaluation increased from FY 2019 to FY 2020 because it is anticipated that prototype testing of countermeasures simulation hardware will begin in FY 2020					
Accomplishments/Planned Programs Subtotals	1.340	1.502	1.458	0.000	1.458

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0591 / *Acft Survivability, Vulnerability & Safety*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Primary Hardware Development will be performed under either a Cost Plus Fixed Fee or a Firm Fixed Price contract.

E. Performance Metrics

Evaluate 100% of deployed/developmental United States Navy/United States Marine Corp aircraft platforms for survivability deficiencies using Navy gap analysis as baseline. Identify prototype hardware solutions to address 25% to 50% of deficiencies, and initiate a minimum of two new demonstration projects per year.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603216N / *Aviation Survivability*	Project (Number/Name) 0591 / *Acft Survivability, Vulnerability & Safety*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCAD : Pax River, MD	13.000	0.130	Oct 2017	0.207	Oct 2018	0.276	Oct 2019	-		0.276	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCWD : China Lake, CA	0.353	0.000		0.030	Oct 2018	0.150	Oct 2019	-		0.150	Continuing	Continuing	Continuing
Systems Engineering	MIPR	DTIC : Ft. Belvoir, VA	0.520	0.193	Jan 2018	0.600	Jan 2019	0.692	Jan 2020	-		0.692	0.000	2.005	2.005
System Engineering	C/CPFF	Engility : Chantilly, VA	2.608	0.968	Oct 2017	0.600	Oct 2018	0.000		-		0.000	0.000	4.176	4.176
Prior Year Prod Dev cost no longer funded in FYDP	Various	Various : Various	17.692	0.000		0.000		0.000		-		0.000	0.000	17.692	17.692
System Engineering	C/CPFF	TEKLA : Dumfries, VA	0.000	0.000		0.000		0.100	Dec 2019	-		0.100	0.000	0.100	0.100
		Subtotal	34.173	1.291		1.437		1.218		-		1.218	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Support cost no longer funded in FYDP	Various	Various : Various	4.569	0.000		0.000		0.000		-		0.000	0.000	4.569	4.569
		Subtotal	4.569	0.000		0.000		0.000		-		0.000	0.000	4.569	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWCAD : Patuxent River, MD	2.434	0.019	Oct 2017	0.000		0.100	Oct 2019	-		0.100	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NAWCWD : China Lake, CA	0.000	0.000		0.020	Feb 2019	0.000		-		0.000	0.000	0.020	0.020

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0591 / *Acft Survivability, Vulnerability & Safety*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year T&E cost no longer funded in FYDP	Various	Various : Various	2.995	0.000		0.000		0.000		-		0.000	0.000	2.995	2.995
Developmental Test & Evaluation	C/CPFF	GTRI : Atlanta, GA	0.000	0.000		0.000		0.100	Jan 2020	-		0.100	0.000	0.100	0.100
		Subtotal	5.429	0.019		0.020		0.200		-		0.200	Continuing	Continuing	N/A

Remarks

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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	NAWCAD : Pax River, MD	1.713	0.025	Oct 2017	0.045	Oct 2018	0.040	Oct 2019	-		0.040	Continuing	Continuing	Continuing
Travel	PO	NAVAIR : Patuxent River, MD	0.380	0.005	Oct 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Prior Year Mgmt cost no longer funded in FYDP	Various	Various : Various	0.340	0.000		0.000		0.000		-		0.000	0.000	0.340	0.340
		Subtotal	2.433	0.030		0.045		0.040		-		0.040	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	46.604	1.340		1.502		1.458		-		1.458	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0591 / *Acft Survivability, Vulnerability & Safety*

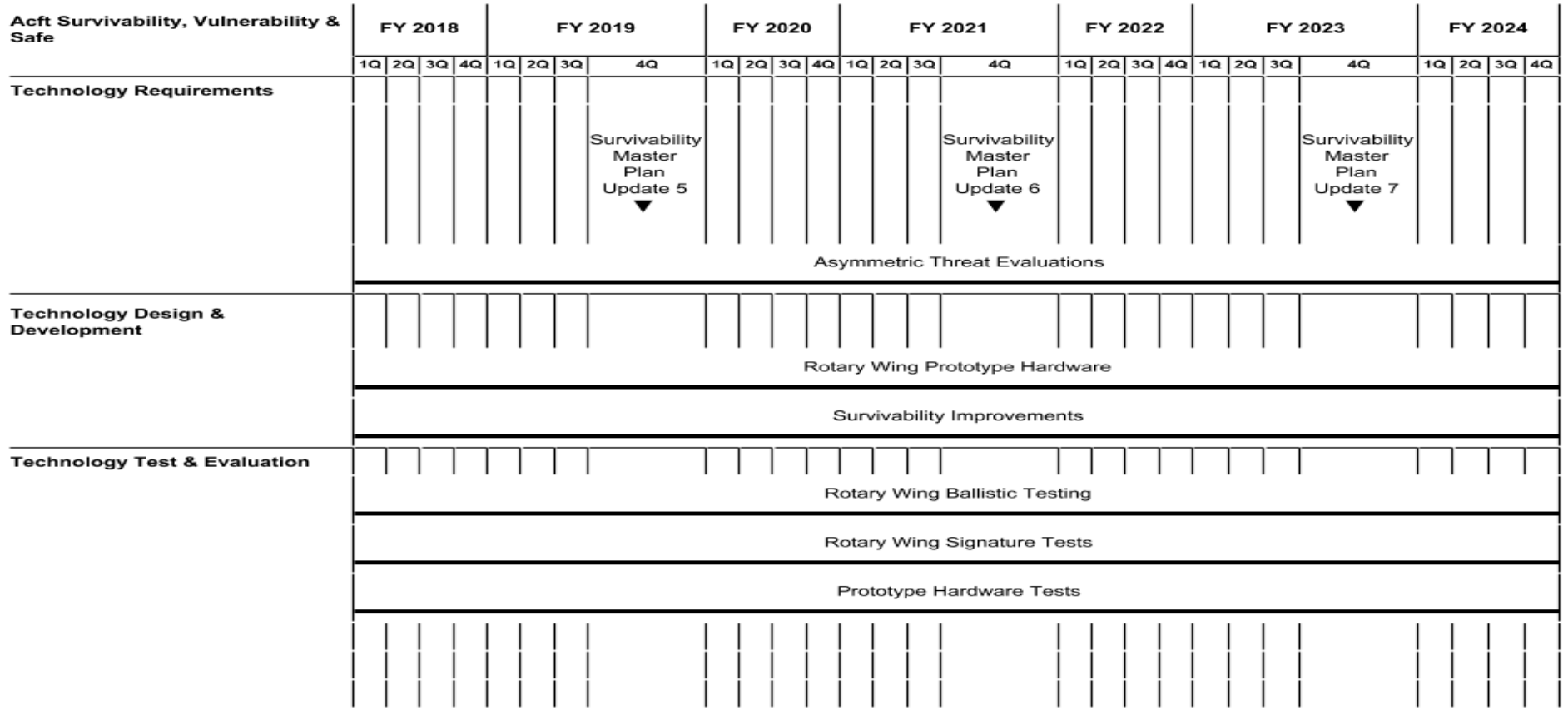

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0591 / *Acft Survivability, Vulnerability & Safety*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Acft Survivability, Vulnerability & Safe				
Technology Requirements: Survivability Master Plan Update 5	4	2019	4	2019
Technology Requirements: Survivability Master Plan Update 6	4	2021	4	2021
Technology Requirements: Survivability Master Plan Update 7	4	2023	4	2023
Technology Requirements: Asymmetric Threat Evaluations	1	2018	4	2024
Technology Design & Development: Rotary Wing Prototype Hardware	1	2018	4	2024
Technology Design & Development: Survivability Improvements	1	2018	4	2024
Technology Test & Evaluation: Rotary Wing Ballistic Testing	1	2018	4	2024
Technology Test & Evaluation: Rotary Wing Signature Tests	1	2018	4	2024
Technology Test & Evaluation: Prototype Hardware Tests	1	2018	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603216N / *Aviation Survivability*	Project (Number/Name) 0592 / *Acft & Ordnance Safety*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
0592: *Acft & Ordnance Safety*	36.384	1.060	1.047	5.746	-	5.746	5.261	5.084	5.205	4.927	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Aircraft and Ordnance Safety Program transitions innovative munitions safety technology to Navy and Marine Corps air weapons, to comply with the Chief of Naval Operations direction that all munitions carried aboard Navy ships be insensitive to unplanned stimuli (thermal, impact, and shock events). The Aircraft and Ordnance Safety Program also ensures the safety and protection of personnel, aircraft, ships, and operational facilities, through improved precision targeting, fail-safe ordnance, selective effects munitions and shock/blast force protection technologies.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Insensitive Munitions (IM)	1.060	1.047	5.746	0.000	5.746
Articles:	-	-	-	-	-
FY 2019 Plans: Air-to-Air Demonstration: Continue Sidewinder warhead technology risk reduction evaluation in support of PMA-259 planned block II+ or III transition with digital detonation initiator, improved multi-layered case warhead design. Continue Sidewinder rocket motor technology risk reduction evaluation in support of PMA-259 planned block III transition with highly-loaded-grain, high-performance motor, and radio frequency cook-off sensor. Evaluation of Metal Matrix Composite structures for use with Min-Smoke propellants for use in HELLFIRE. Improve Air-Launched Weapons: Continue Insensitive Munitions (IM) and performance evaluation of a cast/cure minimum smoke composite propellant that will meet -65 degree requirement for fixed-wing platforms. Testing will be done in a Hellfire configuration to demonstrate transition ability to a system with equivalent requirements in support of PMA 242 tier III requirements. Continue evaluation of Highly-loaded-grain high performance rocket motor and application of Slow-cook-off-sensor technology in Advanced Anti-Radiation Guided Missile (AARGM) configuration for transition to PMA 242 AARGM BLK II upgrade. Advanced Containment/Case/Warhead Materials: Demonstrate IM performance of the Joint Multiple Effects Warhead System in the new revised configuration for transition to PMA 280 FY 19 planned warhead upgrade. Initiate IM and Operational performance evaluation of Eutectic Metal Composite (EMC) for Rocket Motor and Warhead components. EMC technology provides improved material strength properties and the ability to produce structures with advanced configurations that would potentially enhance both IM and operational performance.					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0592 / *Acft & Ordnance Safety*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Shock/Blast Barrier Protection Modeling, Demonstration, and Testing: Continue tech-watch investigation for effective, affordable blast barrier and impact mitigation for application to Tomahawk weapon. Advanced Energetic Materials: Continue evaluation of a Joint Service Insensitive Munitions Technology Program (JIMTP) transition new explosive fill for Bomb Live Unit 111 to address Navy unique issues (i.e., irreversible growth, explosive train reliability for a very insensitive main fill, and thermal environments and ullage requirements for the fill to ensure improved IM demonstrated in JIMTP). ***FY 2020 Base Plans:*** Air-to-Air Demonstration: IM improvement through the integration of solid fuel ramjet technology with traditional solid rocket motor. Continue Sidewinder rocket motor technology risk reduction evaluation in support of PMA-259 planned block III transition with highly-loaded-grain, high-performance motor, and radio frequency cook-off sensor. Improved Air-Launched Weapons: An insensitive solid propellant tailored to Highly Loaded Grain (HLG) technology. Develop propellants that possess a high burning rate at 1500-2000PSI and high mechanical strain at cold temperatures (-650 C). Continued work with HLG in a 21" diameter motor. Continue Insensitive Munitions (IM) and performance evaluation of a cast/cure minimum smoke composite propellant that will meet -650 C requirement for fixed-wing platforms. Testing will be done in a Hellfire configuration to demonstrate transition ability to a system with equivalent requirements in support of PMA 242 tier III requirements. Continue evaluation of Highly-loaded-grain high performance rocket motor and application of Slow cook- off-sensor technology in Advanced Anti-Radiation Guided Missile (AARGM) configuration for transition to PMA-242 AARGM BLK II upgrade. Advanced Containment/Case Warhead Materials: Continue working the Metal Matrix Composite case for continued improved IM responses. Distributed Fiber Optic sensing for In-Situ Propellant Health Monitoring (DFOS). DFOS to monitor the temperature and stress/strain within a solid rocket motor. Applied to full-scale HLG motor testing as a stress-strain field characterization to supplement analytical tools. Develop a 3-D model to compare the FMU 139 D/B with previous fuzes which it is slated to replace. The integration of technology developed in the Joint Service Insensitive Munitions Technology Program program will aid in IM improvement in the fuze family. Demonstrate IM performance of the Joint Multiple Effects Warhead System in the new revised configuration for transition to PMA 280. ***FY 2020 OCO Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0592 / *Acft & Ordnance Safety*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase supports an investment in aviation readiness enabling programs. New projects have caused the need for an increase in funding. New technologies that are finalizing in the JIMTP are transitioning to either Insensitive Munitions Advanced Development (IMAD), Insensitive Munitions Technology Transition Program (IMTTP), or a combination of the two. Ongoing conflicts have resulted in an increase in technologies needed for weapon systems.					
Accomplishments/Planned Programs Subtotals	1.060	1.047	5.746	0.000	5.746

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

All planned programs are accomplished via civilian labor and use of government testing facilities.

E. Performance Metrics

The Aircraft and Ordnance Safety program will initiate six to nine technology development/maturation efforts to improve IM signature and will work to transition those technologies to weapons programs. The weapons programs will be chosen based on PEO(U&W) weapons portfolio and will focus on the priority weapons as defined in the IM strategic plan.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603216N / *Aviation Survivability*	Project (Number/Name) 0592 / *Acft & Ordnance Safety*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCWD : China Lake, CA	36.376	1.060	Oct 2017	1.047	Oct 2018	5.746	Oct 2019	-		5.746	Continuing	Continuing	Continuing
		Subtotal	36.376	1.060		1.047		5.746		-		5.746	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Mgmt no longer funded in FYDP	Various	Various : Various	0.008	0.000		0.000		0.000		-		0.000	0.000	0.008	0.008
		Subtotal	0.008	0.000		0.000		0.000		-		0.000	0.000	0.008	N/A

	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	36.384	1.060		1.047		5.746		-		5.746	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0592 / *Acft & Ordnance Safety*

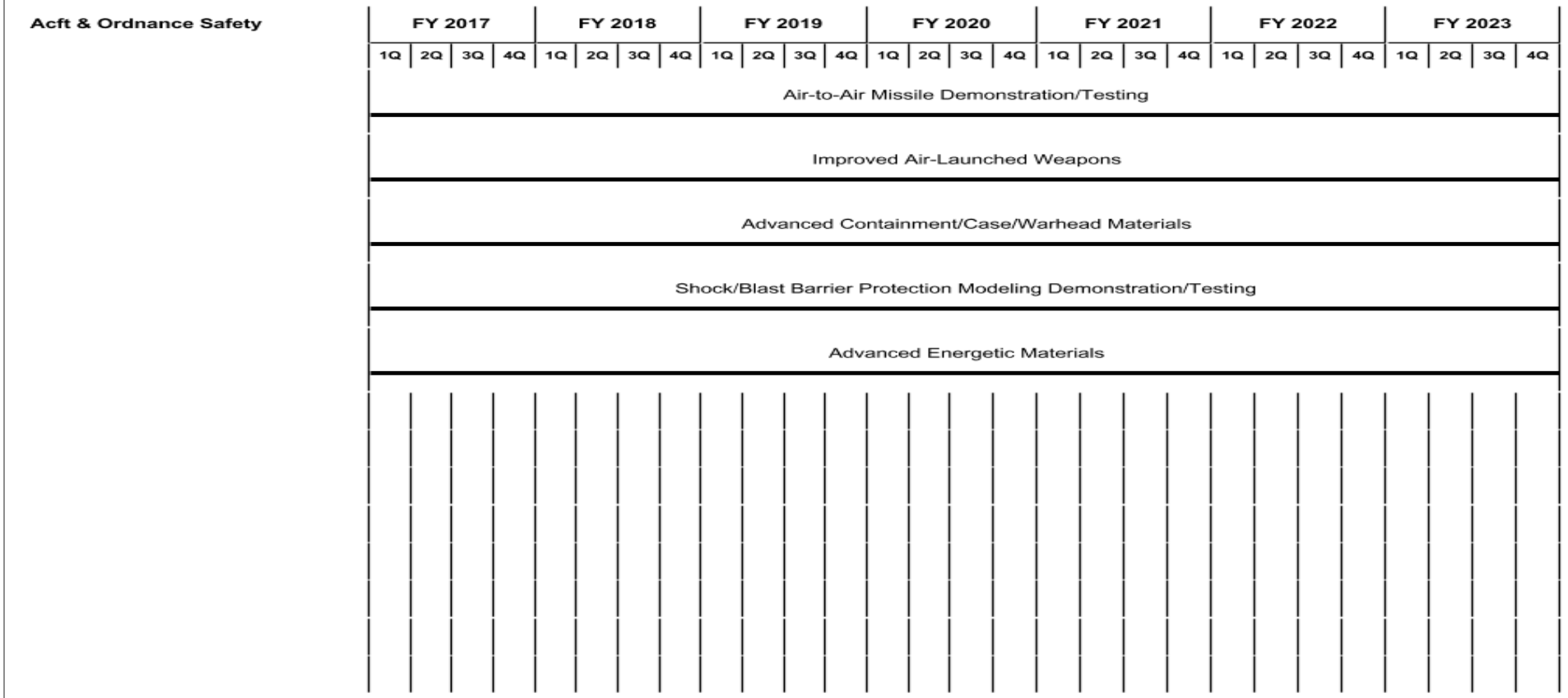

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0592 / *Acft & Ordnance Safety*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Acft & Ordnance Safety				
Air-to-Air Missile Demonstration/Testing	1	2018	4	2024
Improved Air-Launched Weapons	1	2018	4	2024
Advanced Containment/Case/Warhead Materials	1	2018	4	2024
Shock/Blast Barrier Protection Modeling Demonstration/Testing	1	2018	4	2024
Advanced Energetic Materials	1	2018	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603216N / *Aviation Survivability*	Project (Number/Name) 1819 / *CV Acft Fire Suppress System*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
1819: *CV Acft Fire Suppress System*	3.637	0.581	0.583	0.598	-	0.598	0.601	0.615	0.627	0.640	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project develops improved fire-fighting systems and fire protective measures for aircraft-related fires on aircraft carriers, including assessment of fire properties, definition of fire threats, improvements to fire-fighting agents and delivery systems, fire detection and suppression system performance evaluations, and fire-fighter training improvements.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Fire-Fighting	0.581	0.583	0.598	0.000	0.598
Articles:	-	-	-	-	-

FY 2019 Plans:

Continue support for Naval Air Training and Operating Procedures Standardization improvements, and modeling and simulation for fire prediction. Continue monitoring aqueous film forming foam developments and other clean agents. Continue to monitor new equipment improvements for saws, spreaders, and other improvements to reduce or discontinue the use of Motor Gasoline on ships. Finalize evaluations for flash-hood, crash-fire-rescue face shield and firefighter personnel floatation device improvements. Continue to monitor and recommend Electromagnetic Aircraft Launch Systems fire doctrine, Carrier Fixed Wing Aircraft Nuclear hangar bay conflagration management system operations, and unmanned carrier launched airborne surveillance and strike firefighting operations impacts. Finalize project looking at firefighter issues related to composites, weapons and fuels and develop procedures to be used aboard ship to rapidly and safely extinguished deep seated smoldering fires with composite materials. Continue to evaluate training and certification requirements and equipment to bring the ship up to aviation boatswains mate capabilities and readiness for Air Capable Ships, ships that rely on the ships damage control team and limited resources. Continue improved weapons cooling scenario testing. Begin project looking at options for firefighter equipment storage on CVN's and LHA/D ships.

FY 2020 Base Plans:

Continue support for Naval Air Training and Operating Procedures Standardization improvements, and modeling and simulation for fire prediction. Continue monitoring aqueous film forming foam developments and other clean agents. Continue to monitor new equipment improvements for saws, spreaders, and other improvements to reduce or discontinue the use of Motor Gasoline on ships. Continue evaluations for flash-hood, crash-fire-rescue face shield and firefighter personnel floatation device improvements. Continue to monitor and

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 1819 / *CV Acft Fire Suppress System*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
recommend Electromagnetic Aircraft Launch Systems fire doctrine, Carrier Fixed Wing Aircraft Nuclear hangar bay conflagration management system operations, and unmanned carrier launched airborne surveillance and strike firefighting operations impacts. Continue project looking at firefighter issues related to composites, weapons and fuels and develop procedures to be used aboard ship to rapidly and safely extinguished deep seated smoldering fires with composite materials. Continue to evaluate training and certification requirements and equipment to bring the ship up to aviation boatswains mate capabilities and readiness for Air Capable Ships, ships that rely on the ships damage control team and limited resources. Continue improved weapons cooling scenario testing. Continue project looking at options for firefighter equipment storage on CVN's and LHA/D ships. ***FY 2020 OCO Plans:*** N/A ***FY 2019 to FY 2020 Increase/Decrease Statement:*** The increase from FY 2019 to FY 2020 is due to increased test requirements for weapons cooling and aircraft composite firefighting.					
Accomplishments/Planned Programs Subtotals	0.581	0.583	0.598	0.000	0.598

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

This is a non-ACAT program. Procurement strategy is determined by market survey and cooperative opportunities.

E. Performance Metrics

The Carrier Aircraft Fire Suppression (CAFS) program will, at a minimum, fund six to ten projects per year that investigate and evaluate tactical capability gaps and potential capability improvements regarding shipboard aircraft fire suppression doctrine and equipment. CAFS projects will have a greater than 90% success rate of insertion into Department of the Navy shipboard aircraft fire-fighting procedures and documentation.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	C/CPFF	ICI : Virginia Beach, VA	0.020	0.000		0.000		0.000		-		0.000	0.000	0.020	0.020
Systems Engineering	WR	NAWCWD : China Lake, CA	0.114	0.085	Oct 2017	0.042	Oct 2018	0.062	Oct 2019	-		0.062	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	Hughes Associates : Baltimore, MD	0.032	0.025	Nov 2017	0.000		0.000		-		0.000	0.000	0.057	0.057
Systems Engineering	C/CPFF	AVW : Chesapeake, VA	0.013	0.000		0.015	Nov 2018	0.000		-		0.000	0.000	0.028	0.028
Prior Yr Prod Dev no longer funded in the FYDP	Various	Various : Various	0.220	0.000		0.000		0.000		-		0.000	0.000	0.220	0.220
Systems Engineering	WR	NRL : Washington, DC	0.007	0.018	May 2018	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	0.406	0.128		0.057		0.062		-		0.062	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support	C/CPFF	ICI : Virginia Beach, VA	0.105	0.000		0.027	Nov 2018	0.030	Nov 2019	-		0.030	0.000	0.162	0.162
Engineering Support	WR	NAWCWD : China Lake, CA	0.357	0.100	Oct 2017	0.150	Oct 2018	0.176	Oct 2019	-		0.176	Continuing	Continuing	Continuing
Engineering Support	C/CPFF	Hughes Associates : Baltimore, MD	0.047	0.050	Nov 2017	0.035	Nov 2018	0.030	Nov 2019	-		0.030	0.000	0.162	0.162
Engineering Support	C/CPFF	AVW : Chesapeake, VA	0.114	0.035	Nov 2017	0.035	Nov 2018	0.000		-		0.000	0.000	0.184	0.184
Engineering Support	WR	NRL : Washington, DC	0.001	0.018	May 2018	0.005	May 2019	0.010	May 2020	-		0.010	Continuing	Continuing	Continuing
		Subtotal	0.624	0.203		0.252		0.246		-		0.246	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy			Date: March 2019
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603216N / *Aviation Survivability*	Project (Number/Name) 1819 / *CV Acft Fire Suppress System*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technology Test & Evaluation	WR	NAWCWD : China Lake, CA	1.436	0.150	Oct 2017	0.167	Oct 2018	0.180	Oct 2019	-		0.180	Continuing	Continuing	Continuing
Technology Test & Evaluation	C/FFP	Hughes Associates : Baltimore, MD	0.553	0.025	Nov 2017	0.050	Nov 2018	0.050	Nov 2019	-		0.050	0.000	0.678	0.678
Technology Test & Evaluation	C/CPFF	AVW : Chesapeake, VA	0.022	0.015	Nov 2017	0.000		0.000		-		0.000	0.000	0.037	0.037
Prior yr T&E no longer funded in the FYDP	Various	Various : Various	0.292	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	2.303	0.190		0.217		0.230		-		0.230	Continuing	Continuing	N/A

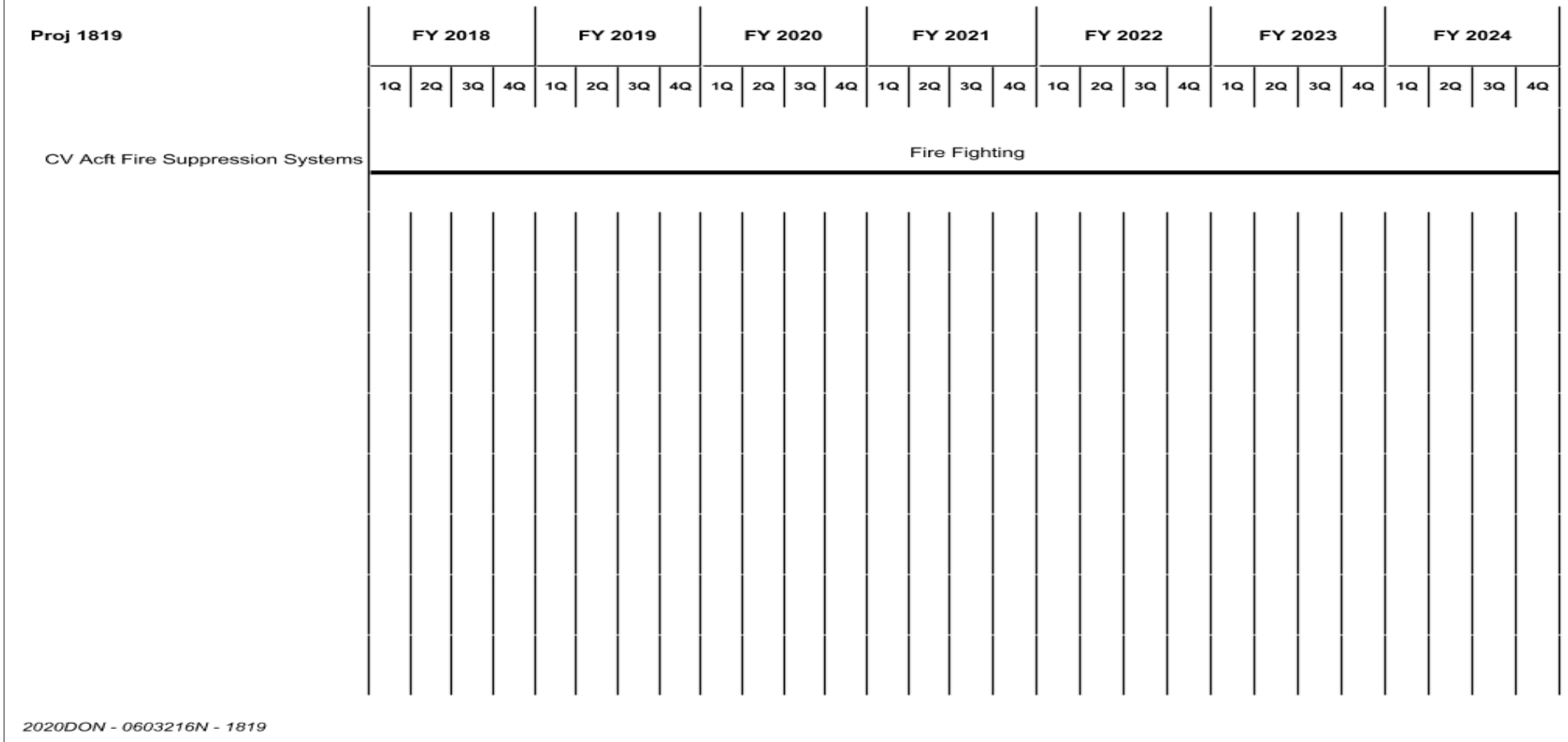
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	WR	NAWCWD : China Lake, CA	0.304	0.060	Oct 2017	0.057	Oct 2018	0.060	Oct 2019	-		0.060	Continuing	Continuing	Continuing
		Subtotal	0.304	0.060		0.057		0.060		-		0.060	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	3.637	0.581		0.583		0.598		-		0.598	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 1819 / *CV Acft Fire Suppress System*



2020DON - 0603216N - 1819

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 1819 / *CV Acft Fire Suppress System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1819				
CV Acft Fire Suppression Systems: Fire Fighting	1	2018	4	2024