Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy											Date: February 2015	
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 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
Total Program Element	166.963	6.637	4.325	5.404	-	5.404	6.113	6.106	6.118	6.213	Continuing	Continuing
0584: *Acft Protective Clothing*	92.164	3.529	1.388	2.306	-	2.306	2.838	2.814	2.758	2.799	Continuing	Continuing
0591: *Acft Survivability, Vulnerability & Safety*	41.047	1.434	1.359	1.476	-	1.476	1.538	1.549	1.582	1.601	Continuing	Continuing
0592: *Acft & Ordnance Safety*	32.321	1.068	1.045	1.043	-	1.043	1.129	1.131	1.154	1.177	Continuing	Continuing
1819: *CV Acft Fire Suppress System*	1.431	0.606	0.533	0.579	-	0.579	0.608	0.612	0.624	0.636	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.

The FY 2016 funding request was reduced by $279 thousand to account for the availability of prior year execution balances.

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	5.591	4.325	5.728	-	5.728
Current President's Budget	6.637	4.325	5.404	-	5.404
Total Adjustments	1.046	-	-0.324	-	-0.324
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.100	-			
• SBIR/STTR Transfer	-0.054	-			
• Rate/Misc Adjustments	-	-	-0.324	-	-0.324

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy	Date: February 2015
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

Technical: Not applicable.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy											Date: February 2015	
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 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
0584: *Acft Protective Clothing*	92.164	3.529	1.388	2.306	-	2.306	2.838	2.814	2.758	2.799	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, mission effectiveness, and survivability. The project addresses life support equipment, advanced helmet vision systems, escape systems technology, crew centered cockpit design, and control stations. Integrate and use alternative and new technologies for the Pilot Vehicle Integration, optimization of Intelligence Surveillance and Reconnaissance (ISR), and Forward Air Control-Air mission areas. Demonstrate innovative tools / approaches to improve situational awareness, new ISR technologies, and Graphical User Interfaces (new symbology and optimized logic for system employment). It 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, and the joint Air Force/Navy (CAF-208-93) for an Aerospace Control Helmet Mounted Cueing System.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Advanced Technology Crew Station	2.643	0.831	1.272	-	1.272
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Continue high resolution and micro display development. Explore development of integrated short wave infrared and near infrared cameras.					
FY 2015 Plans: Continue development and testing of 4+ megapixel cameras and displays. Begin integration into fully digital night vision goggle. Integrate head/neck injury model into protection flight equipment testing.					
FY 2016 Base Plans: Complete integration and development of 4 megapixel sensor, display, and electronics into a new variant of a night vision goggle. Integrated units will be used for environmental and other required testing to ready the capability for transition into safety of flight testing. Begin work on ultra-high resolution displays (20/15 acuity at overcast starlight) and solid state low light sensors. Begin verification and validation of head, neck and spine model for helmet mounted displays and the model's predictive validity of head mounted systems during crash events.					
FY 2016 OCO Plans: N/A					
Title: Advanced Integrated Life Support System	0.886	0.557	1.034	-	1.034
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
FY 2014 Accomplishments: Develop test methodology to assess optical performance of multiple stacked optical elements (e.g., spectacle behind visor on Helmet Mounted Display). Begin integrating anthropometric software and models into modeling for design of optimized protective equipment. Continue working with the Army to document and define methodologies to mitigate head/neck injury. ***FY 2015 Plans:*** Continue integrating anthropometric software and models into modeling for design of optimized protective equipment. Continue working with the Army to document and define methodologies to mitigate head/neck injury. ***FY 2016 Base Plans:*** Integrate recently patented stacked optical filter test methodology/device and determine true optical power and limits for helmet mounted systems. Complete and validate indicator of solar degradation on protective eyewear and equipment. Continue development of in-house expertise in digital human modeling and 3D scanning capabilities. ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	3.529	1.388	2.306	-	2.306

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• OPN 4268: *Aviation Support Equipment*	-	45.705	49.773	-	49.773	48.277	48.795	49.889	64.217	-	306.656

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

Complete development of 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 2016 Navy			Date: February 2015
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 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCAD : Pax River MD	32.149	0.501	Dec 2013	0.298	Dec 2014	0.539	Dec 2015	-		0.539	Continuing	Continuing	Continuing
Licenses	WR	NAWCAD : Pax River MD	1.507	0.100	Dec 2013	-		-		-		-	Continuing	Continuing	Continuing
Primary Hardware Development	C/CPFF	Intevac : San Jose CA	2.990	1.628	Jun 2014	0.590	Jun 2015	0.729	Jun 2016	-		0.729	-	5.937	5.937
Primary Hardware Development	MIPR	US Army CERDEC : Ft. Belvoir VA	3.025	0.470	Mar 2014	0.140	Jun 2015	0.221	Jun 2016	-		0.221	-	3.856	3.856
Prior Year Prod Dev no Longer Funded in Budget Year or Outyears	Various	Various : Various	21.733	-		-		-		-		-	-	21.733	-
		Subtotal	61.404	2.699		1.028		1.489		-		1.489	-	-	-

Remarks

Increase to Primary Hardware Development Intevac contract in FY14 due to BTR in the amount of $1,100 to fund high resolution effort.
Prior year increase to Primary Hardware Development due to FY13 BTR received May 2014 to fund Intevac contract high resolution effort.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Configuration Management	WR	NAWCAD : Pax River MD	1.934	0.110	Dec 2013	0.050	Dec 2014	0.130	Dec 2015	-		0.130	Continuing	Continuing	Continuing
Prior Year Support no Longer Funded in Budget Year or Outyears	Various	Various : Various	3.232	-		-		-		-		-	-	3.232	-
		Subtotal	5.166	0.110		0.050		0.130		-		0.130	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
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 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWCAD : Pax River MD	3.830	0.387	Dec 2013	0.170	Dec 2014	0.400	Dec 2015	-		0.400	Continuing	Continuing	Continuing
Prior Year T&E no Longer Funded in Budget Year or Outyears	Various	Various : Various	18.240	-		-		-		-		-	-	18.240	-
		Subtotal	22.070	0.387		0.170		0.400		-		0.400	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	NAWCAD : Pax River MD	3.108	0.303	Dec 2013	0.135	Dec 2014	0.272	Dec 2015	-		0.272	Continuing	Continuing	Continuing
Travel	PO	NAVAIR : Pax River MD	0.406	0.030	Oct 2013	0.005	Oct 2014	0.015	Oct 2015	-		0.015	Continuing	Continuing	Continuing
Prior Year Mgmt Svcs no Longer Funded in Budget Year or Outyears	Various	Various : Various	0.010	-		-		-		-		-	-	0.010	-
		Subtotal	3.524	0.333		0.140		0.287		-		0.287	-	-	-

	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	92.164	3.529		1.388		2.306		-		2.306	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0584 / *Acft Protective Clothing*

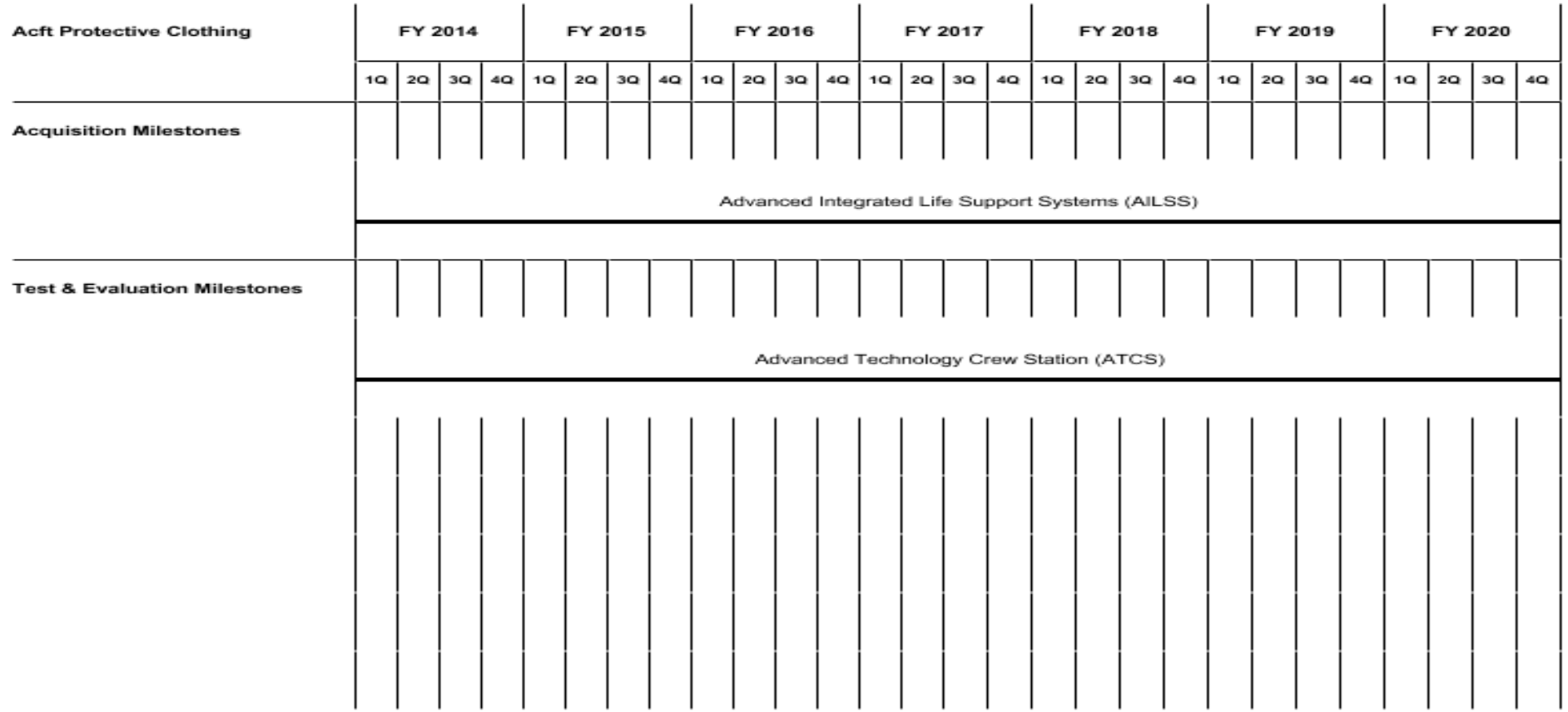

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0584 / *Acft Protective Clothing*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Acft Protective Clothing				
Acquisition Milestones: Advanced Integrated Life Support Systems (AILSS)	1	2014	4	2020
Test & Evaluation Milestones: Advanced Technology Crew Station	1	2014	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy			Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
0591: *Acft Survivability, Vulnerability & Safety*	41.047	1.434	1.359	1.476	-	1.476	1.538	1.549	1.582	1.601	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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Technology Requirements	0.111	0.194	0.090	-	0.090
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Planned trade studies include acoustic and infrared signature reduction, rotary wing survivability requirements, threat systems analysis, and biofuels impacts to survivability systems. ***FY 2015 Plans:*** Planned trade studies include acoustic and infrared signature reduction, rotary wing survivability requirements, threat systems analysis, and updates to the Survivability Master Plan. ***FY 2016 Base Plans:*** Planned trade studies include threats assessments, rotary wing survivability requirements, and vulnerability assessment of both fixed wing and rotary wing aircraft platforms. ***FY 2016 OCO Plans:*** N/A					
Title: Technology Design & Development	1.323	1.165	0.990	-	0.990
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Assess technologies to address acoustic and infrared signature reduction of operational platforms. Assess low gloss paint scheme impacts to signature reduction of aircraft. Assess nuclear, biological, and chemical decontamination materials to enhance crew survivability. Develop polymer applications for self-sealing fuel					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
systems applications that are biofuels-compatible. Assess advancements in lightweight armor technologies for integration onto operational platforms. ***FY 2015 Plans:*** Assess technologies to address shortfalls identified as part of the OPNAV Aircraft Survivability Investment Strategy project, with emphasis on acoustic and infrared signature reduction of operational platforms. Develop polymer applications for self-sealing fuel and lubricant systems to meet stated operational requirements. Conduct asymmetric threats modeling and analyses based on accumulated combat field assessments. ***FY 2016 Base Plans:*** Assess technologies to address shortfalls identified as part of the OPNAV Aircraft Survivability Investment Strategy project. Establish an architecture to integrate Aviation Survivability Equipment (ASE) between USN/ USMC aircraft platforms. ***FY 2016 OCO Plans:*** N/A					
Title: Technology Test & Evaluation	-	-	0.396	-	0.396
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Perform live fire testing on polymer-coated hardware. Perform live fire testing on lightweight armor coupon samples. Perform biofuels compatibility testing of polymer samples. Perform testing on signature reduction technologies. ***FY 2015 Plans:*** Perform testing on candidate signature reduction materials/hardware. Perform testing to validate asymmetric threats modeling results. ***FY 2016 Base Plans:*** Integration, laboratory and flight testing of prototype hardware in support of the iASE architecture development. Ballistic testing representative sample material against identified threats for incorporation into OASIS models. ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	1.434	1.359	1.476	-	1.476

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
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 2016 Navy		Date: February 2015
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 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCAD : Pax River, MD	12.198	0.360	Oct 2013	0.236	Oct 2014	0.045	Oct 2015	-		0.045	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCWD : China Lake, CA	0.146	0.050	Oct 2013	0.050	Oct 2014	0.045	Oct 2015	-		0.045	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	John Hopkins University : Laurel, MD	0.000	0.225	Apr 2014	0.225	Apr 2015	0.225	Apr 2016	-		0.225	-	0.675	0.675
Systems Engineering	MIPR	DTIC : Ft. Belvoir, VA	0.000	0.151	Jan 2014	-		-		-		-	-	0.151	-
Systems Engineering	C/CPFF	ManTech Systems : Fairfax, VA	0.000	0.537	Mar 2014	0.654	Mar 2015	0.675	Mar 2016	-		0.675	-	1.866	1.866
Prior Year Prod Dev cost no longer funded in FYDP	Various	Various : Various	16.705	-		-		-		-		-	-	16.705	-
		Subtotal	29.049	1.323		1.165		0.990		-		0.990	-	-	-

Remarks

Planned FY14 Technology Design for $100K will not occur/line deleted.

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 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	-		-		-		-		-	-	4.569	-
		Subtotal	4.569	-		-		-		-		-	-	4.569	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWCAD : Patuxent River, MD	2.414	-		-		0.400	Oct 2015	-		0.400	-	2.814	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
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 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 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	-		-		-		-		-	-	2.995	-
		Subtotal	5.409	-		-		0.400		-		0.400	-	5.809	-

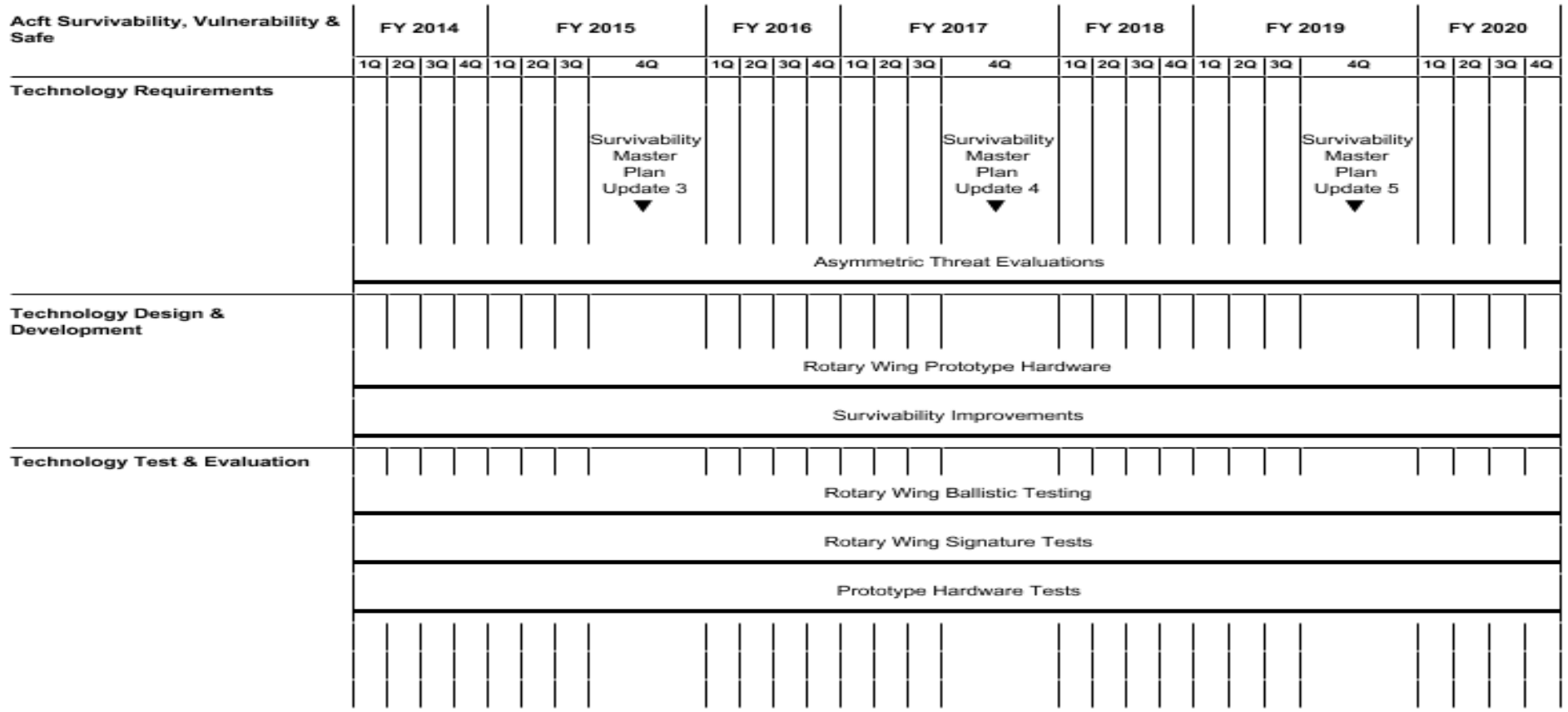
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	NAWCAD : Pax River, MD	1.320	0.106	Oct 2013	0.189	Oct 2014	0.081	Oct 2015	-		0.081	Continuing	Continuing	Continuing
Travel	PO	NAVAIR : Patuxent River, MD	0.360	0.005	Oct 2013	0.005	Oct 2014	0.005	Oct 2015	-		0.005	Continuing	Continuing	Continuing
Prior Year Mgmt cost no longer funded in FYDP	Various	Various : Various	0.340	-		-		-		-		-	-	0.340	-
		Subtotal	2.020	0.111		0.194		0.086		-		0.086	-	-	-

	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	41.047	1.434		1.359		1.476		-		1.476	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0591 / *Acft Survivability, Vulnerability & Safety*



2016PB - 0603216N - 0591

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
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 3	4	2015	4	2015
Technology Requirements: Survivability Master Plan Update 4	4	2017	4	2017
Technology Requirements: Survivability Master Plan Update 5	4	2019	4	2019
Technology Requirements: Asymmetric Threat Evaluations	1	2014	4	2020
Technology Design & Development: Rotary Wing Prototype Hardware	1	2014	4	2020
Technology Design & Development: Survivability Improvements	1	2014	4	2020
Technology Test & Evaluation: Rotary Wing Ballistic Testing	1	2014	4	2020
Technology Test & Evaluation: Rotary Wing Signature Tests	1	2014	4	2020
Technology Test & Evaluation: Prototype Hardware Tests	1	2014	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy			Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
0592: *Acft & Ordnance Safety*	32.321	1.068	1.045	1.043	-	1.043	1.129	1.131	1.154	1.177	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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Insensitive Munitions (IM)	1.068	1.045	1.043	-	1.043
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Improve Air-to-Air Demonstration: Continue Sidewinder warhead/rocket motor evaluation in support of PMA 259 FY16 planned transition. Continue IM technology demonstration for metal matrix composite rocket motor IM demonstration. Improve Air-Launched Weapons: Continue IM technical evaluation/demonstration for Bomb Live Unit (BLU) 110 reactive liner technology with performance enhancement (i.e., cast ductile iron, net explosive transitions from Joint Service IM Technology Program (JIMTP)) in support of current PMA 201 plan of action and milestones in the FY13/14 IM Strategic Plan. Continue minimum smoke propellant demonstration for rockets (transition out of JIMTP). Advanced Containment/Case/Warhead Materials: Continue Tomahawk Mk 135 hybrid case design/ demonstration with evaluation of baseline propellant and evaluation of new propellant (JIMTP transition) designed to improve slow cook-off and operational performance. Shock/Blast Barrier Protection Modeling, Demonstration, and Testing: Finalize evaluation of Advanced Anti-Radiation Guided Missiles container and warhead in tactical configuration to establish IM signature, based on current IM test standards, for PMA 242. Initiate evaluation of material structure and design for shape charge jet mitigation.					
FY 2015 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Improve Air-to-Air Demonstration: Continue Sidewinder warhead/rocket motor technology risk reduction evaluation in support of PMA 259 FY16 planned block II+/III transition. Continue IM technology evaluation for metal matrix composite rocket motor IM demonstration in support of future Navy rocket transitions. Improve Air-Launched Weapons: Continue minimum smoke (MS) propellant demonstration of a cast/cure MS composite propellant that will meet -65 degree requirement for fixed-wing platforms in the current Hellfire configuration. Conduct booster/explosive transition testing and system demonstrations for Joint Service Insensitive Munitions (IM) Technology Program transition explosive for the PMA-201 planned Bomb Live Unit (BLU) 110 upgrade. Advanced Containment/Case/Warhead Materials: Initiate a Mk 135 rocket motor nozzle design/demonstration to improve operational performance in the hybrid Mk 135, enabling both improved Insensitive Munitions (IM) and operational performance of the Tomahawk missile. Shock/Blast Barrier Protection Modeling, Demonstration, and Testing: Continue shape charge jet (SCJ) barrier evaluation/demonstration for SCJ mitigation in air-launched systems. Advanced Energetic Materials: Finalize evaluation of coated explosive material premix for safe production scale manufacture of C-139 explosive (affordable, high-performance IM explosive) and testing for new production research department explosive (elimination of browning effect).					
FY 2016 Base Plans: Improve Air-to-Air Demonstration: Continue Sidewinder warhead/rocket motor technology risk reduction evaluation in support of PMA-259 planned block II+/III transition with high-level group high-performance motor, digital detection initiator, improved multi-layered case warhead design, and radio frequency cook-off sensor. Continue IM technology evaluation for metal matrix composite rocket motor IM demonstration in support of future Navy rocket transitions. Improve Air-Launched Weapons: Continue final IM testing/static fire of MS propellant demonstration of a cast/cure MS composite propellant that will meet -65 degree requirement for fixed-wing platforms in the current Hellfire configuration. Conduct IM evaluation of the BLU 110 vented base plug redesign that failed during previous qualification testing.					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Advanced Containment/Case/Warhead Materials: Demonstrate IM performance of the Joint Multiple Effects Warhead System warhead with the redesigned fuze well on the follow-through bomb to enhance survivability during penetration. Initiate an IM evaluation of Mk 135 rocket motor with venting on Mk 14 container used in both shipping and storage of Tomahawk. Shock/Blast Barrier Protection Modeling, Demonstration, and Testing: Continue SCJ barrier evaluation/ demonstration for SCJ mitigation in air-launched systems. Advanced Energetic Materials: Evaluate a Joint Service Insensitive Munitions (IM) 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 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	1.068	1.045	1.043	-	1.043

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 2016 Navy		Date: February 2015
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 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCWD : China Lake, CA	32.313	1.068	Nov 2013	1.045	Nov 2014	1.043	Oct 2015	-		1.043	Continuing	Continuing	Continuing
		Subtotal	32.313	1.068		1.045		1.043		-		1.043	-	-	-

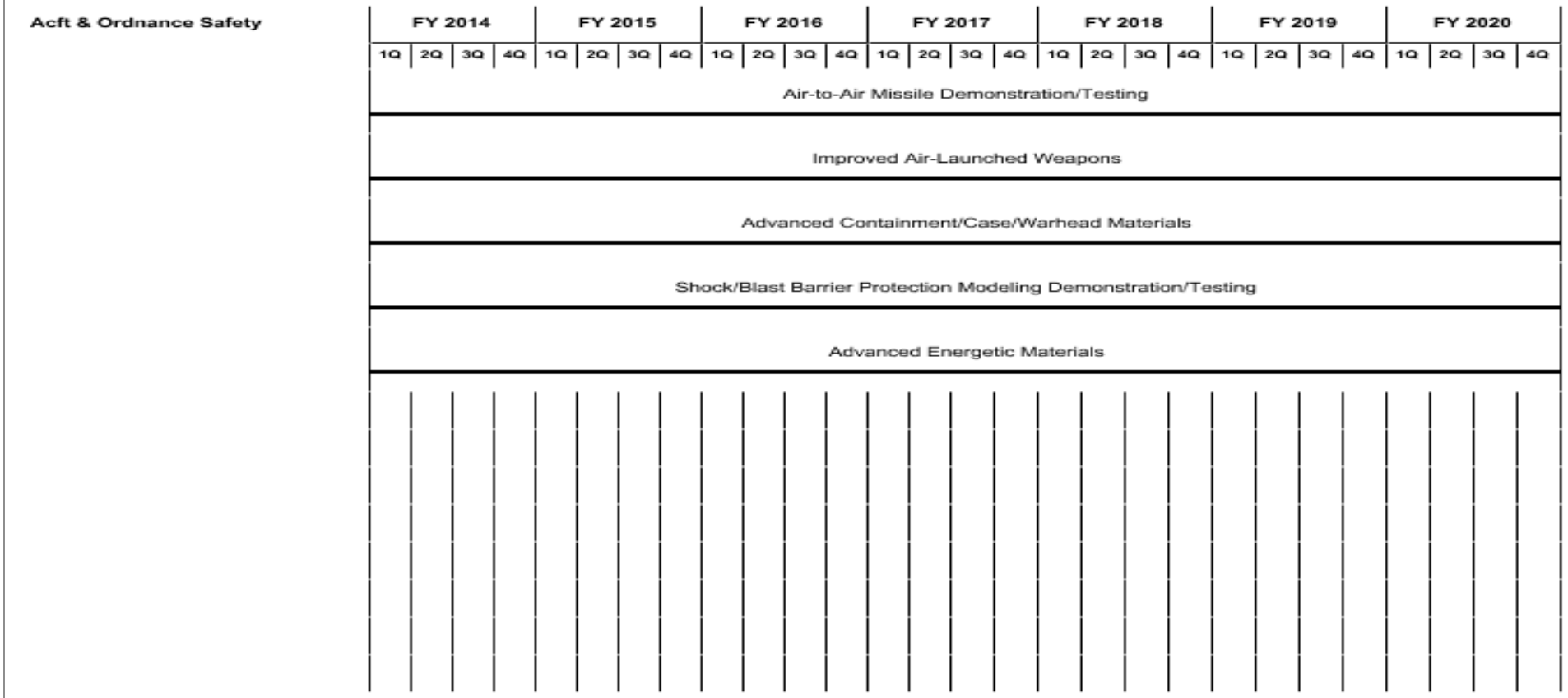
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Mgmt no longer funded in FYDP	Various	Various : Various	0.008	-		-		-		-		-	-	0.008	-
		Subtotal	0.008	-		-		-		-		-	-	0.008	-

	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	32.321	1.068		1.045		1.043		-		1.043	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 0592 / *Acft & Ordnance Safety*



2016PB - 0603216N - 0592

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
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	2014	4	2020
Improved Air-Launched Weapons	1	2014	4	2020
Advanced Containment/Case/Warhead Materials	1	2014	4	2020
Shock/Blast Barrier Protection Modeling Demonstration/Testing	1	2014	4	2020
Advanced Energetic Materials	1	2014	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy			Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
1819: *CV Acft Fire Suppress System*	1.431	0.606	0.533	0.579	-	0.579	0.608	0.612	0.624	0.636	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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Fire-Fighting	0.606	0.533	0.579	-	0.579
Articles:	-	-	-	-	-

FY 2014 Accomplishments:

Conclude research to prevent aircraft loss due to Li-ion battery runaway casualty. Conclude development of guidance for crash and fire on large-frame unmanned air vehicle (Navy Unmanned Combat Air System). Conclude development of composite filtering flash hood. Study hazards and develop guidance for hot refuel of helicopters using zodiac bags. Analyze and quantify risk to flight deck firefighters from weapons in mishap scenarios. Perform risk analysis tools survey and capability gap assessment in support of mishap scenario task.

FY 2015 Plans:

Continue research to prevent aircraft loss and ship storage concerns due to Li-ion battery runaway casualty. Conclude research into thermal imaging camera usage in weapons cooling analysis and provide guidance for flight deck usage and training. Conduct research and testing of lightweight aircraft tiedown chains. Continue work on Electromagnetic Aircraft Launch Systems (EMALS) fire suppression procedures and equipment. Conduct research into commercial product or development to replace the existing flight deck crash-fire-rescue boot. Continue research into finding battery-operated rescue saw. Continue research and testing for development of procedures and training for helicopter rollover rescue aboard air-capable ships.

FY 2016 Base Plans:

Continue support for Naval Air Training and Operating Procedures Standardization improvements, and modeling and simulation for fire prediction. Complete the purple K efficiency based on particle size testing and industry assessment. Continue monitoring aqueous film forming foam developments and other clean agents. Continue to develop improved protocols for helicopter roll-over crashes, and evaluate equipment improvements for saws,

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
spreaders, and other improvements. Evaluate flash-hood and crash-fire-rescue face shield improvements. Determine final requirements and business case for eye protection for metal and ordnance fires. Continue to monitor and recommend EMALS fire doctrine, Carrier Fixed Wing Aircraft Nuclear hangar bay conflagration management system operations, and unmanned carrier-launched airborne surveillance and strike firefighting operations impacts. Evaluate and develop the protocols to mitigate the risks of mixed fuels on-board carriers. Prioritize highest payoff areas on carriers and other vessels that will lead to the development of automation systems to reduce manning. ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.606	0.533	0.579	-	0.579

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 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603216N / *Aviation Survivability*	Project (Number/Name) 1819 / *CV Acft Fire Suppress System*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	C/CPFF	Thomas Associates : Stevensville, MD	0.170	0.050	Nov 2013	-		-		-		-	-	0.220	0.220
Systems Engineering	C/CPFF	ICI : Virginia Beach, VA	0.000	-		0.020	Dec 2014	-		-		-	-	0.020	0.020
Systems Engineering	WR	NAWCWD : China Lake, CA	0.000	-		-		0.083	Oct 2015	-		0.083	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	Hughes Associates : Baltimore, MD	0.000	-		-		0.046	Nov 2015	-		0.046	-	0.046	0.046
Systems Engineering	WR	NSWC : Philadelphia, PA	0.000	-		-		0.025	Oct 2015	-		0.025	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	AVW : Chesapeake, VA	0.000	-		-		0.051	Nov 2015	-		0.051	-	0.051	0.051
		Subtotal	0.170	0.050		0.020		0.205		-		0.205	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support	C/CPFF	ICI : Virginia Beach, VA	0.070	0.035	Feb 2014	-		0.045	Nov 2015	-		0.045	-	0.150	0.150
Engineering Support	C/CPFF	Thomas Associates : Stevensville, MD	0.000	-		0.040	Dec 2014	-		-		-	-	0.040	0.040
Engineering Support	WR	NAWCWD : China Lake, CA	0.000	-		-		0.098	Oct 2015	-		0.098	Continuing	Continuing	Continuing
Engineering Support	C/CPFF	Hughes Associates : Baltimore, MD	0.000	-		-		0.051	Nov 2015	-		0.051	-	0.051	0.051
Engineering Support	WR	NSWC : Philadelphia, PA	0.000	-		-		0.035	Oct 2015	-		0.035	Continuing	Continuing	Continuing
Engineering Support	C/CPFF	AVW : Chesapeake, VA	0.000	-		-		0.020	Nov 2015	-		0.020	-	0.020	0.020
		Subtotal	0.070	0.035		0.040		0.249		-		0.249	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
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 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technology Test & Evaluation	WR	NAWCWD : China Lake, CA	0.618	0.250	Dec 2013	0.253	Oct 2014	0.080	Oct 2015	-		0.080	Continuing	Continuing	Continuing
Technology Test & Evaluation	WR	NSWC : Philadelphia, PA	0.084	0.070	Dec 2013	0.052	Oct 2014	-		-		-	Continuing	Continuing	Continuing
Technology Test & Evaluation	C/CPFF	Thomas Associates : Stevensville, MD	0.088	0.050	Feb 2014	0.035	Dec 2014	-		-		-	-	0.173	0.173
Technology Test & Evaluation	C/FFP	Hughes Associates : Baltimore, MD	0.270	0.145	Nov 2013	0.118	Dec 2014	0.020	Nov 2015	-		0.020	-	0.553	0.553
Technology Test & Evaluation	C/CPFF	AVW : Chesapeake, VA	0.000	-		-		0.020	Nov 2015	-		0.020	-	0.020	0.020
		Subtotal	1.060	0.515		0.458		0.120		-		0.120	-	-	-

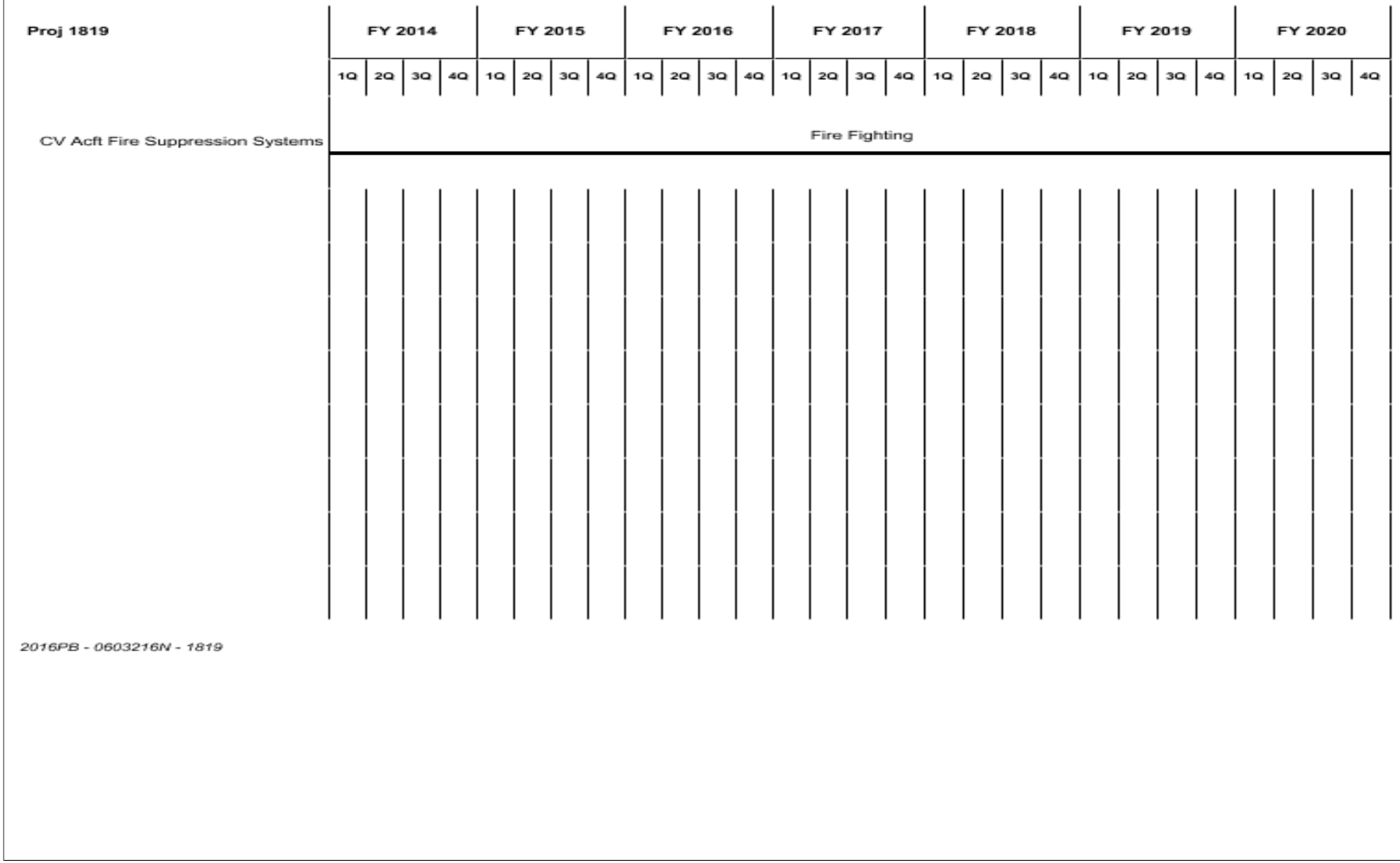
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	WR	NAWCWD : China Lake, CA	0.131	0.006	Dec 2013	0.015	Oct 2014	0.005	Oct 2015	-		0.005	Continuing	Continuing	Continuing
		Subtotal	0.131	0.006		0.015		0.005		-		0.005	-	-	-

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1.431	0.606		0.533		0.579		-		0.579	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603216N / *Aviation Survivability*	**Project (Number/Name)** 1819 / *CV Acft Fire Suppress System*



2016PB - 0603216N - 1819

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
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	2014	4	2020