Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy											Date: February 2018	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0204571N *I Consolidated Trng Sys Dev*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	405.618	44.435	66.518	104.903	-	104.903	101.388	49.738	32.940	26.758	Continuing	Continuing
0604: *Training Range & Instr Dev*	148.520	3.247	0.003	4.238	-	4.238	5.573	3.577	3.646	3.727	Continuing	Continuing
1427: *Surface Tactical Team Trainer (STTT)*	106.880	12.145	15.274	42.046	-	42.046	56.831	36.284	23.820	17.433	Continuing	Continuing
2124: *Air Warfare Training*	48.078	1.438	1.585	1.709	-	1.709	1.710	1.634	1.665	1.699	Continuing	Continuing
3093: *TACTS/LATR Replacement*	81.126	12.444	48.473	56.154	-	56.154	35.307	6.773	3.809	3.899	Continuing	Continuing
3356: *High Fidelity Surface Trainers*	21.014	6.457	1.183	0.756	-	0.756	1.967	1.470	0.000	0.000	0.000	32.847
9999: *Congressional Adds*	0.000	8.704	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	8.704

A. Mission Description and Budget Item Justification

0604 - Training Range and Instrumentation Development project develops specialized instrumentations for fleet readiness training while minimizing life cycle costs. Tasks include development of the following: Large Area Tracking Range (LATR) improvements, technology improvements for fixed and portable Anti-Submarine Warfare training ranges, and Tactical Training Range (TTR) infrastructure improvements to include: Joint Display Subsystem, Radar Acquisition Display Subsystem, Electronic Warfare server, Link 16 interface, TTR Rotary Wing Tracking System technology improvements, Radiant Mercury Cross Domain Solution and Smart Antenna technology for automated frequency deconfliction. FY18 to FY19 funding increase represents support to planned LATR, TTR and Ocean System development programs. It also includes increased funding of $.565M for Smart Antenna development.

1427 - Surface Tactical Team Trainer (STTT) develops modifications during sustainment of Battle Force Tactical Training (BFTT) system and modernization into the Advanced Training Domain (ATD). Both BFTT and ATD are the core system that is used to integrate the weapon system elements, and combat system components to create the Total Ship Training Capability (TSTC). BFTT and ATD continue to integrate and update, as new tactical capabilities are being introduced, to enable crew operator proficiency training for basic and sustainment level training events, through distributed strike group certification fleet synthetic training (FST) events and including COMPTUEX FST at Sea integration into Live, Virtual and Constructive (LVC) environment. Continued Development is required to integrate new capabilities and interfaces to provide training for AEGIS and SSDS combat system capability upgrades, and to address the Fleet's Live, Virtual and Constructive (LVC) Fleet Training Wholeness initiative. Additionally, modernization is needed to support the DoD Training Transformation Plan, the Chief of Naval Operations Fleet Response Plan.

2124 - Air Warfare Training Development (AWTD) provides for risk mitigation and next generation platform, Unmanned Aerial Systems (UAS), Live Virtual Constructive (LVC) and associated visualization component development for distributed mission training, and for stand-alone and small footprint deployable devices. Support the

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy	Date: February 2018
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Navy Aviation Simulation Master Plan (NASMP) upgrade efforts and Type/Model/Series programs with advanced visual system display configurations requirements. Provide for Open Architecture (OA), and common systems interface applications. Assess trainee cognitive requirements and the development and incorporation of next generation LVC, UAS constructive and associated visualization component technologies. Additionally, AWTD provides for advanced virtual component fidelity improvements for LVC capability which includes the "Mobility" Part-Task Trainers and the Multiplex Data Bus Controller Translator Transmitter enabling technologies. LVC technologies will facilitate advanced, cost effective weapons and tactics training and emerging capability requirements in the Air-Sea Battle Space and Naval Integrated Fire Control-Counter Air capabilities development.

3093 - The Tactical Combat Training System (TCTS) Increment II will provide an improved environment for air combat training utilizing a secure air-to-air and air-to-ground data link, and will provide rangeless operation capability to Forward Deployed Naval Forces (FDNF). TCTS Increment II will provide encryption and an enhanced threat environment, as well as airborne participant instrumentation for multiple fixed and rotary wing platforms. Engineering Development Models (EDM) units procured in FY18 (41) and FY19 (16) will support Engineering and Developmental Testing events thru FY20. The EDMs will be specifically utilized for testing in the following areas: Environmental Qualification, Software, High Accelerated Lifecycle, Ground System Integration, Airborne Subsystem Air Worthiness and Performance, Shipboard Ground Station, Internal Mount and Rack Mounted Subsystem (Internal Mount) Airworthiness and Performance and JSF Airworthiness and Performance. FY19 funding supports both multiple government and contractor development efforts, as well as, procurement of the EDMs. These efforts support a Milestone C of 1Q FY20 and a Fleet IOC need date of 2Q FY21 in order to address critical OPSEC concerns.

3356- Funds high fidelity Aegis Integrated Air and Missile Defense (IAMD) individual, instructor, strike group and team trainers for all Advanced Capability Build (ACB) and below Aegis baselines. This line also provides funds for the research and development of advanced technologies to support Aegis Ballistic Missile Defense (BMD) builds and Command, Control, Communication, Computer, and Intelligence (C4I) advanced technology upgrades to Aegis BMD Ashore Team Trainer at [the Center for Surface Combat Systems (CSCS)] Unit Dam Neck. This line supports Surface Training Advanced Virtual Environment (STAVE) methodology by researching and developing trainers that will create an immersive and interactive learning environment and support both CNO High Velocity Learning and Ready Relevant Learning intent. NOTE: In FY18, Mine Warfare Synthetic Training requirements previously captured within PE 0204571N / Project 3356 [(High Fidelity Surface Trainer)] were realigned to PE 0603502N / Project 1235 [(Mine Warfare Planning and Analysis)].

9999/C301 - The Barking Sands Tactical Underwater Range (BARSTUR) is a critical Pacific Missile Range Facility (PMRF) undersea training range that was installed in FY94 and is well beyond its service life. Funding is provided to accelerate the initial analysis and environmental impact studies related to replacing and modernizing BARSTUR.

JUSTIFICATON FOR BUDGET ACTIVITY:
This program is funded under Operational Systems Development because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy	Date: February 2018
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0204571N *I Consolidated Trng Sys Dev*

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	38.593	66.518	78.419	-	78.419
Current President's Budget	44.435	66.518	104.903	-	104.903
Total Adjustments	5.842	0.000	26.484	-	26.484
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.895	0.000			
• Program Adjustments	0.000	0.000	27.358	-	27.358
• Rate/Misc Adjustments	-0.001	0.000	-0.874	-	-0.874
• Congressional General Reductions Adjustments	-0.012	-	-	-	-
• Congressional Directed Reductions Adjustments	-2.250	-	-	-	-
• Congressional Add Adjustments	9.000	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2017	FY 2018
Project: 9999: *Congressional Adds*		
Congressional Add: *Training Range Enhancements*	8.704	0.000
Congressional Add Subtotals for Project: 9999	8.704	0.000
Congressional Add Totals for all Projects	8.704	0.000

Change Summary Explanation

The FY 2019 funding request was reduced by ($0.631) million to reflect the Department of Navy's effort to support the Office of Management and Budget directed reforms for Efficiency and Effectiveness that include a lean, accountable, more efficient government.

The FY 2019 funding request was reduced by $2.654 million to account for the availability of prior year execution balances.

Transfer from OPN to RDTEN in the amount of $4.942 million.

0604:

Large Area Training Range (LATR): Due to a change in planned software releases to incorporate Live, Virtual and Constructive (LVC) Technology into LATR, release 6.1 was deleted. Release 6.3 will be completed in FY17 and the scheduled software releases updated for the FYDP. Updated R-4/4a.

Tactical Training Range (TTR): Funding increased from PB18 in FY19 by $.565M and FY20 by $1.135M for Smart Antenna development.

2124:
Human/Instructional Systems Integration: Common Instruction Systems/Semi-Automated Forces (SAF) and Unmanned-Aerial Systems Interface Selection and Training Technology (U-ASISTT) Development changed from FY17-22 to FY17-19 in order to prioritize Fleet requirements for Augmented Reality Operational Flight Trainer (OFT) Demo FY19, Next Generation Threat System (NGTS) Analysis and Reporting FY19-22 and Crew Enabled Role Player FY19-23. T-45 Augmented Reality Visual System (ARVS) Part Task Trainer (PTT) added in FY18 as a priority Fleet requirement. Updated R-4/4a.

Sensors and Environment: Common Platform/Sensors and Environment (Models/Tools) changed from FY17-FY22 to FY17-19 in order to prioritize Fleet requirements for Near Eye Display Metrology System FY19, Virtual Reality (VR) and Haptic for Flight Deck Crew Demo FY20 and Collaborative Database Rapid Terrain Generation FY19-23. Updated R-4/4a.

Live, Virtual, Constructive (LVC) and Visuals: U-ASISTT Development Integration to LVC schedule changed from FY17-22 to FY17-18 in order to prioritize Fleet requirements for Flight Deck Trainer Expansion Pack FY19-23. Updated R-4/4a.

3093:
TACTS/LATR Replacement: Milestone C moved from 1QTR 2021 to 1QTR 2020 to accommodate Fleet requirements for an accelerated encryption capability. LRIP for Airborne Subsystem (POD), Ground Subsystem, Remote Range Unit, Portable Support Equipment Subsystem will now run from 1QTR 2020 through 4QTR 2022. Added a Production Decision for the Internal Mounts in 1QTR 2021 with the LRIP for the Internal Mounts beginning in 1QTR 2021 and running through 4QTR 2022. Full Rate Production will begin 1QTR 2023. Developmental Test C was moved from 4QTR 2020 back to 1QTR 2020. The Next Generation Technology Upgrades were pushed out to 1QTR 2023, with delivery in 4QTR 2023. Updated R-4/4a.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 0604 / *Training Range & Instr Dev*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
0604: *Training Range & Instr Dev*	148.520	3.247	0.003	4.238	-	4.238	5.573	3.577	3.646	3.727	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Training Range and Instrumentation Development project develops specialized instrumentations for fleet readiness training while minimizing life cycle costs. Tasks include development of the following: Large Area Tracking Range (LATR) improvements, technology improvements for fixed and portable Anti-Submarine Warfare training ranges, and Tactical Training Range (TTR) infrastructure improvements to include: Joint Display Subsystem, Radar Acquisition Display Subsystem, Electronic Warfare server, Link 16 interface, TTR Rotary Wing Tracking System technology improvements, Radiant Mercury Cross Domain Solution and Smart Antenna technology for automated frequency deconfliction. FY18 to FY19 funding increase represents support to planned LATR, TTR and Ocean System development programs. It also includes increased funding of $.565M for Smart Antenna development.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: LATR	2.452	0.003	2.416	0.000	2.416
Articles:	-	-	-	-	-
Description: Design, integrate and test modules to eliminate obsolete components in the Large Area Tracking Range (LATR) Pod. Design, integrate and test LATR software baseline upgrades. Design, integrate and test Participant Instrumentation Packages (PIP) modules to address obsolescence, high failure components and to improve operability and performance. Conduct and complete installation of the Ground System Rehosts. Conduct and complete security testing and assessment for LATR system certification and accreditation for Ground System Rehosts. Develop, test and integrate software and hardware modifications to system test sets. Develop, test and integrate LATR data translators. Conduct studies to identify sub-projects required through FY23. Complete ground system and PIP refresh sub-projects, in conjuction with, semi-annual system block upgrades. Conduct LATR Operational Security (OPSEC) Posture Improvements Sub-Project, Shipboard and Rotary Wing Technology Wing Upgrade (LSRTU) and LATR Navigation Technology Refresh (LNTR).					
FY 2018 Plans: Continue to develop operational system improvements and solutions to eliminate LATR Obsolescence issues.					
FY 2019 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 0604 / *Training Range & Instr Dev*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Develop and test Large Area Tracking Range (LATR) ground software 6.4 changes to incorporate Live Virtual Constructive (LVC) Technology. Continue to develop operational system improvements and solutions to eliminate LATR obsolescence issues. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase of $2.413M from FY 2018 to FY 2019 due to FY 2018 being reduced to $.003 to redirect effort toward 3093 TACTS/LATR Replacement. The funding increase represents support to planned Large Area Tracking Range (LATR) development programs.					
Title: TTR	0.554	0.000	1.232	0.000	1.232
Articles:	-	-	-	-	-
Description: Develop and test upgrades to the Joint Display Subsystem (JDS), Radar Acquisition Display Subsystem (RADS), and Electronic Warfare (EW) server. Develop and test upgrades to the Link-16 Interface, JDS, RADS, and EW server. Develop and test Smart Antenna technology for automated frequency deconfliction. Disruptions and limitations in the Live-to-Virtual (LV) tactical radio communication segment of the Navy Continuous Training Environment (NCTE) network have interfered with the goals and objectives of Fleet Synthetic Training (FST) events. The Smart Antenna improves utilization of the frequency spectrum in the relay tower by performing calculations to predict RF interference and then avoid RF interference by assigning interfering frequency pairs to antenna pairs with greater isolation, thereby deconflicting frequencies. ***FY 2018 Plans:*** Funds for FY18 have been eliminated. ***FY 2019 Base Plans:*** Develop and test 2019.1 upgrades to the Joint Display Subsystem (JDS), Radar Acquisition Display Subsystem (RADS), and Electronic Warfare (EW) server to remain in concert with evolving threat and tactical training requirements. Develop operational systems improvements to the Rotary Wing Tracking System. Develop and test Tactical Training Ranges (TTR) ground software changes to incorporate Live, Virtual and Constructive (LVC) technology. Develop and test Smart Antenna technology for automated frequency deconfliction. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:***					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 0604 / *Training Range & Instr Dev*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Increase of $1.232M from FY 2018 to FY 2019 due to FY 2018 funds being completely eliminated to redirect effort toward 3093 TACTS/LATR Replacement. The funding increase represents support to planned Tactical Training Ranges (TTR) development programs. FY 2019 was increased by an additional $.565 to develop and test Smart Antenna technology for automated frequency deconfliction.					
Title: Ocean Systems ***Articles:*** ***Description:*** Research, develop, and test technology improvements for fixed and portable Anti-Submarine Warfare (ASW) training ranges. ***FY 2018 Plans:*** Funds for FY18 have been eliminated. ***FY 2019 Base Plans:*** Complete a gap analysis between Sea Raven Display and Control Subsystem (DCS) and other DCS systems. Document the requirements identified by the gaps and develop a Product Line approach for Sea Raven. Develop a plan for sun-setting Naval Gunfire Scoring System (NGSS) and Navy Tracking and Display Software (NTADs). ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase of $0.590M from FY 2018 to FY 2019 due to FY 2018 funds being completely eliminated to redirect effort toward 3093 TACTS/LATR Replacement. The funding increase represents support to planned Ocean System development programs.	0.241 -	0.000 -	0.590 -	0.000 -	0.590 -
Accomplishments/Planned Programs Subtotals	3.247	0.003	4.238	0.000	4.238

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPN/4204: *Weapons Range Support Equipment (WRSE)/ LSRTU/Ocean Systems*	58.116	72.110	93.864	-	93.864	85.269	73.794	99.618	103.549	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 0604 / *Training Range & Instr Dev*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost

Remarks

FY19 increase in OPN 4204 for replacement of Barking Sands Tactical Undersea Range (BARSTUR) fixed anti-submarine warfare (ASW) range instrumentation.

D. Acquisition Strategy

The Training Range and Instrumentation Development (TRID) program is a non-ACAT program. The integrated program teams that develop new TRID capabilities include government and contractor engineering personnel.

E. Performance Metrics

Metric/Description:
Naval Air Warfare Center-Aircraft Division (NAWC-AD): Completion of one Large Area Tracking Range (LATR) upgrade per year. Successful application of system engineering processes. Site acceptance of product improvements.

Jacobs Eng: Site acceptance of LATR product improvements. Successful design, development and testing of product improvements and new capabilities.

Naval Air Warfare Center Weapons Division(NAWC-WD): Completion of one Tactical Training Range (TTR) upgrade per year. Successful application of system engineering processes. Site acceptance of product improvements.

Jacobs Eng: Site acceptance of TTR product improvements. Successful design, development, and testing of product improvements and new capabilities.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 0604 / *Training Range & Instr Dev*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware Development	C/CPFF	JACOBS ENG : RIDGECREST, CA	12.409	0.750	Jan 2017	0.000		1.070	Jan 2019	-		1.070	0.000	14.229	14.229
Hardware Development	WR	NUWC : NEWPORT, RI	0.205	0.250	Jan 2017	0.000		0.525	Nov 2018	-		0.525	Continuing	Continuing	Continuing
Hardware Development	WR	NAWCTSD : ORLANDO, FL	0.000	0.000		0.000		0.565	Nov 2018	-		0.565	Continuing	Continuing	Continuing
Software Development	C/CPFF	JACOBS ENG : RIDGECREST, CA	5.075	0.364	Jan 2017	0.000		0.350	Jan 2019	-		0.350	0.000	5.789	5.789
Software Development	WR	NAWC-AD : PAX RIVER, MD	8.429	0.606	Dec 2016	0.000		0.578	Nov 2018	-		0.578	Continuing	Continuing	Continuing
Software Development	WR	NRL : WASHINGTON, DC	0.475	0.150	Dec 2016	0.000		0.143	Nov 2018	-		0.143	Continuing	Continuing	Continuing
Prior Year Prod Dev No Longer Funded in the FYDP	Various	Various : Various	100.040	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	126.633	2.120		0.000		3.231		-		3.231	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWC-AD : PAX RIVER, MD	0.991	0.748	Dec 2016	0.003	Nov 2017	0.704	Nov 2018	-		0.704	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWC-WD : CHINA LAKE, CA	0.474	0.152	Nov 2016	0.000		0.089	Nov 2018	-		0.089	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : CORONA, CA	0.860	0.125	Nov 2016	0.000		0.119	Nov 2018	-		0.119	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWC-WD : POINT MUGU, CA	0.025	0.025	Nov 2016	0.000		0.024	Nov 2018	-		0.024	Continuing	Continuing	Continuing
Prior Year Support No Longer Funded in the FYDP	Various	Various : Various	10.576	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	12.926	1.050		0.003		0.936		-		0.936	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 0604 / *Training Range & Instr Dev*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year T&E No Longer Funded in the FYDP	Various	Various : Various	5.299	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	5.299	0.000		0.000		0.000		-		0.000	Continuing	Continuing	N/A

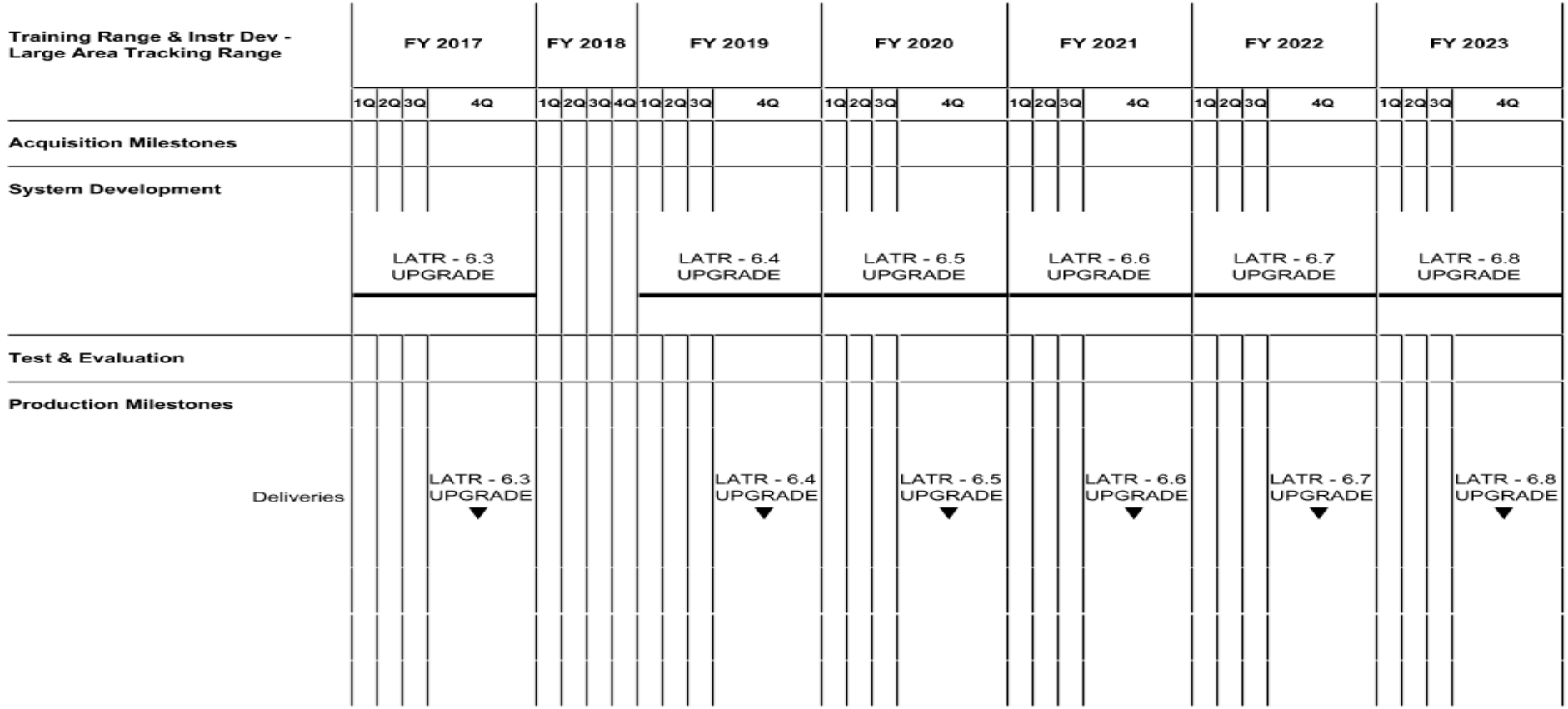
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prog Mngt Sup	WR	NAWC-AD : PAX RIVER, MD	0.000	0.077	Dec 2016	0.000		0.071	Nov 2018	-		0.071	Continuing	Continuing	Continuing
Prior Year Support No Longer Funded in the FYDP	Various	Various : Various	3.662	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	3.662	0.077		0.000		0.071		-		0.071	Continuing	Continuing	N/A

	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	148.520	3.247		0.003		4.238		-		4.238	Continuing	Continuing	N/A

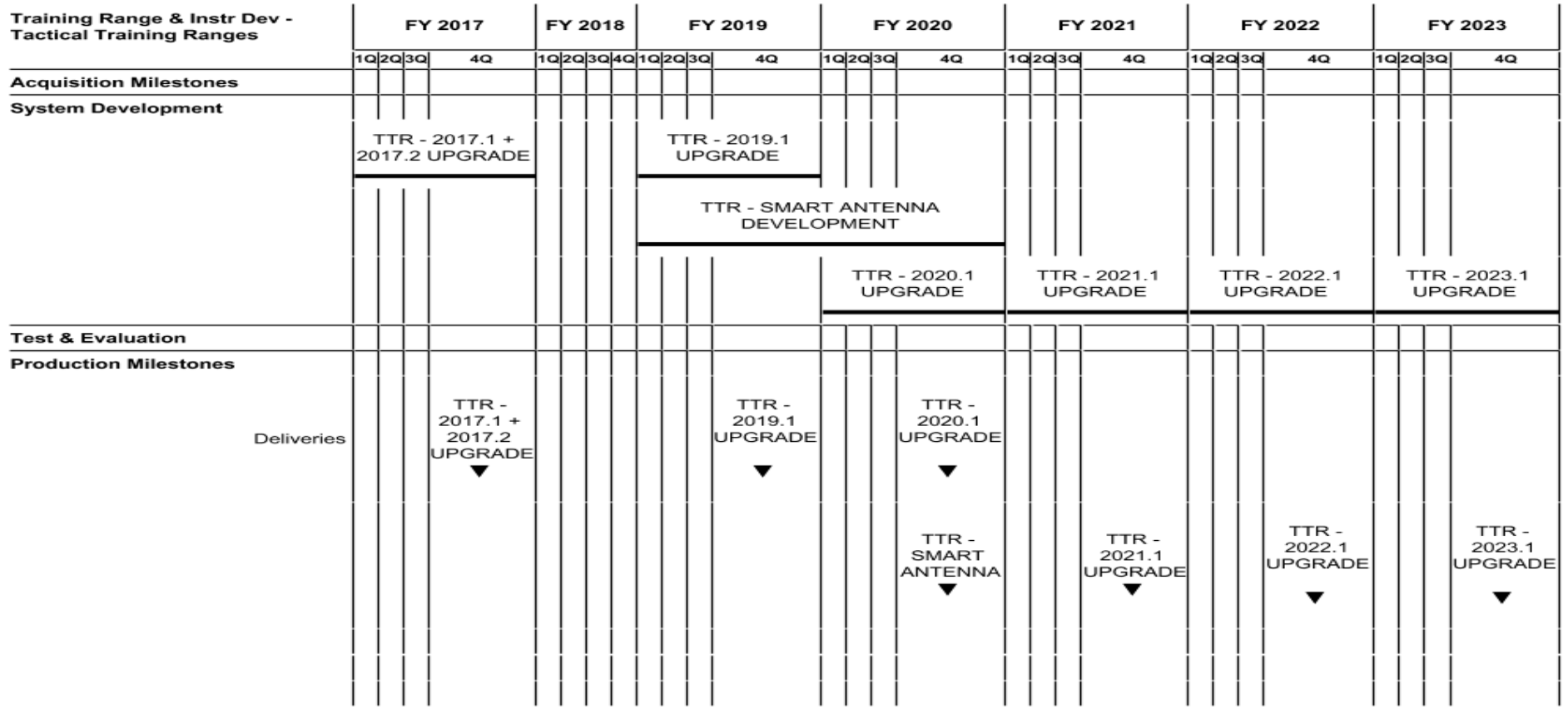
Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 0604 / *Training Range & Instr Dev*



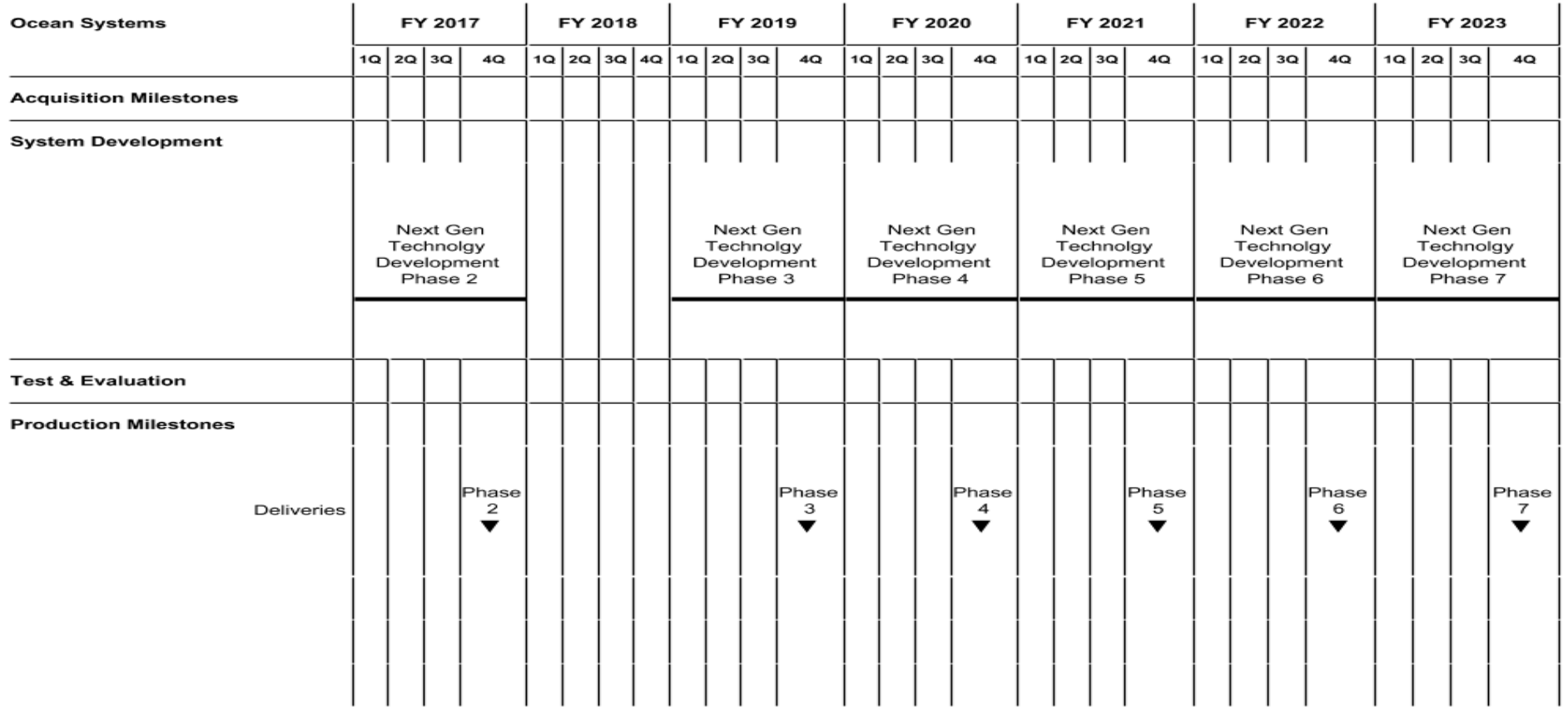
2019DON - 0204571N - 0604

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 0604 / *Training Range & Instr Dev*



2019DON - 0204571N - 0604

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 0604 / *Training Range & Instr Dev*



2019DON - 0204571N - 0604

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 0604 / *Training Range & Instr Dev*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Training Range & Instr Dev - Large Area Tracking Range				
System Development: LATR - 6.3 UPGRADE	1	2017	4	2017
System Development: LATR - 6.4 UPGRADE	1	2019	4	2019
System Development: LATR - 6.5 UPGRADE	1	2020	4	2020
System Development: LATR - 6.6 UPGRADE	1	2021	4	2021
System Development: LATR - 6.7 UPGRADE	1	2022	4	2022
System Development: LATR - 6.8 UPGRADE	1	2023	4	2023
Production Milestones: Deliveries: LATR - 6.3 UPGRADE	4	2017	4	2017
Production Milestones: Deliveries: LATR - 6.4 UPGRADE	4	2019	4	2019
Production Milestones: Deliveries: LATR - 6.5 UPGRADE	4	2020	4	2020
Production Milestones: Deliveries: LATR - 6.6 UPGRADE	4	2021	4	2021
Production Milestones: Deliveries: LATR - 6.7 UPGRADE	4	2022	4	2022
Production Milestones: Deliveries: LATR - 6.8 UPGRADE	4	2023	4	2023
Training Range & Instr Dev - Tactical Training Ranges				
System Development: TTR - 2017.1 + 2017.2 UPGRADE	1	2017	4	2017
System Development: TTR - 2019.1 UPGRADE	1	2019	4	2019
System Development: TTR - SMART ANTENNA DEVELOPMENT	1	2019	4	2020
System Development: TTR - 2020.1 UPGRADE	1	2020	4	2020
System Development: TTR - 2021.1 UPGRADE	1	2021	4	2021
System Development: TTR - 2022.1 UPGRADE	1	2022	4	2022
System Development: TTR - 2023.1 UPGRADE	1	2023	4	2023
Production Milestones: Deliveries: TTR - 2017.1 + 2017.2 UPGRADE	4	2017	4	2017
Production Milestones: Deliveries: TTR - 2019.1 UPGRADE	4	2019	4	2019

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 0604 / *Training Range & Instr Dev*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Production Milestones: Deliveries: TTR - 2020.1 UPGRADE	4	2020	4	2020
Production Milestones: Deliveries: TTR - SMART ANTENNA	4	2020	4	2020
Production Milestones: Deliveries: TTR - 2021.1 UPGRADE	4	2021	4	2021
Production Milestones: Deliveries: TTR - 2022.1 UPGRADE	4	2022	4	2022
Production Milestones: Deliveries: TTR - 2023.1 UPGRADE	4	2023	4	2023
Ocean Systems				
System Development: Next Gen Technolgy Development Phase 2	1	2017	4	2017
System Development: Next Gen Technolgy Development Phase 3	1	2019	4	2019
System Development: Next Gen Technolgy Development Phase 4	1	2020	4	2020
System Development: Next Gen Technolgy Development Phase 5	1	2021	4	2021
System Development: Next Gen Technolgy Development Phase 6	1	2022	4	2022
System Development: Next Gen Technolgy Development Phase 7	1	2023	4	2023
Production Milestones: Deliveries: Phase 2	4	2017	4	2017
Production Milestones: Deliveries: Phase 3	4	2019	4	2019
Production Milestones: Deliveries: Phase 4	4	2020	4	2020
Production Milestones: Deliveries: Phase 5	4	2021	4	2021
Production Milestones: Deliveries: Phase 6	4	2022	4	2022
Production Milestones: Deliveries: Phase 7	4	2023	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy											Date: February 2018	
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*				Project (Number/Name) 1427 / *Surface Tactical Team Trainer (STTT)*			
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
1427: *Surface Tactical Team Trainer (STTT)*	106.880	12.145	15.274	42.046	-	42.046	56.831	36.284	23.820	17.433	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Department's submission reflects the results of a deep dive into Fleet Training Wholeness (FTW) and how to provide a means for Strike Group Training in a contested environment, in accordance with Chief of Naval Operations guidance and Fleet Training Wholeness 2025 objectives. The analysis determined the most cost effective means to provide this training is via a combination of Live Virtual Constructive (LVC) capabilities. The department of the Navy has identified 21 LVC Capabilities that can be begin in FY19 leveraging combat system product line architecture components, contract vehicles, warfare center subject matter experts, and engineering practices for iterative development. The deep dive identified that there is no other cost effective way train in a contested environment. The foundation for LVC has already been established. FY19 continues the iterative investment strategy to provide initial at sea LVC capability to train a Strike Groups in the environment they expected to fight in. The development, integration and testing of LVC's, along with ensuring interoperability with surface and air communities, will be accomplished across Integrated Warfare Systems (IWS), Navy Continuous Training Environment (NCTE), and the Navy's Tactical Training Network.

Surface Tactical Team Trainer (STTT) develops modifications during sustainment of Battle Force Tactical Training (BFTT) system and modernization into the Advanced Training Domain (ATD). Both BFTT and ATD are the core system that is used to integrate the weapon system elements, and combat system components to create the Total Ship Training Capability (TSTC). BFTT and ATD continue to integrate and update, as new tactical capabilities are being introduced, to enable crew operator proficiency training for basic and sustainment level training events, through distributed strike group certification fleet synthetic training (FST) events and including Composite Training Unit Exercise (COMPTUEX) FST
at Sea integration into LVC environment. Continued Development is required to integrate new capabilities and interfaces to provide training for AEGIS and Ships Self Defense System (SSDS) combat system capability upgrades, and to address the Fleet's LVC FTW initiative. Additionally, modernization is needed to support the Department of Defense (DoD) Training Transformation Plan, the Chief of Naval Operations Fleet Response Plan and Commander United States Fleet Forces Command Fleet Readiness Training Plan.

The Advanced Training Domain (ATD) is being developed to combine BFTT and the AEGIS Combat Training System (ACTS) into a common system that integrates with AEGIS Base Line (BL) 9.2.2 And Follow, and Ships Self Defense System (SSDS) BL 11.xAF. ATD is being hosted along with the AEGIS and SSDS combat system on Technical Insertion (TI)-16 common processing and display hardware. ATD is being designed to be the core of the Total Ship Training Capability, and is projected to be more reliable, simpler to use, and architected to be extensible to meet interoperability and capability enhancement challenges in the future.

The BFTT is being updated to maintain integration and capability enhancements developed for the Cooperative Engagement Capability (CEC), Surface Electronic Warfare Improvement Program (SEWIP), and the Carrier Tactical Support Center (CV-TSC), and SSDS Fire Control Loop Improvement Program.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 1427 / *Surface Tactical Team Trainer (STTT)*

TSTC provides realistic joint warfare training across the spectrum of armed conflict, realistic unit level team training in all warfare areas (e.g. NIFC-CA and BMD missions to support IAMD). TSTC provides ships' Commanding Officers and Battle Group/Battle Force Commanders with the ability to conduct coordinated realistic, high stress, combat system level team training as an integral part of the Afloat Training Organization, the Tactical Training Groups and C2F/C3F FST/LVC events.

Develop and integrate MH-60R simulator to enable single ship basic and sustainment training, and distributed multi-ship pier-side Fleet Synthetic Training (FST) events.

Develop and Integrate Cooperative Engagement Capability (CEC) Enhanced Training (CET) to enable single ship basic and sustainment training, and distributed multi-ship pier-side FST events. CET also provide enable proficiency training of Naval Integrated Fire Control - Counter Air (NIFC-CA) capability.

Develop CEC Interim Training (CIT) capability to enable multi-ship pier-side FST events.

Develop and integrate upgrades to Battleforce Electronic Warfare Trainer (BEWT) to support soft kill training with NULKA Decoys.

Develop Identification Friend or Foe (IFF) simulator to enable training of Modes 1, 2, 3A, 4, C, 5 and S on both AEGIS and SSDS ships. Capability will support AEGIS and SSDS IFF MODE 4/5 Integration program will address training Mode 4 Inoculation, and allow training of Modes 5 and S IFF.

Develop and integrate commensurate training improvements to Ships Self Defense System in support of Enhanced Sea Sparrow Missile (ESSM) and Electronic Warfare (EW) tactical improvements.

Integrate Navy Continuous Training Environment (NCTE) networking and cyber security upgrades.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Surface Tactical Team Trainer (STTT)	12.145	15.274	14.598	0.000	14.598
Articles:	-	-	-	-	-
FY 2018 Plans: BFTT 5.1.1: Complete and certify for delivery and integration on BL 9.2.1. Conduct combat systems integration and certification testing for Simulated NULKA Soft-Kill training capability, for within AN/SLQ-32(V)6 Surface Electronic Warfare Team Trainer (SEWTT), and Battle-Force Electronic warfare Trainer (BEWT) in support of legacy AN/SLQ-32A/B systems. Conduct ATD 1.0 Test and Evaluation in support of AEGIS ACB 16 phase 2 and SSDS ACB 12+ TI-16 based combat systems.					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 1427 / *Surface Tactical Team Trainer (STTT)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Deliver Cooperative Engagement Capability (CEC) Embedded Training capability, Identification Friend or Foe (IFF) Simulator, NULKA Simulator, and MH-60R Simulator for integration and testing. Develop tactical representative training improvements to Ships Self Defense System (SSDS) ACB 20 by developing Own-Ship Weapon Simulation based on ESSM BLK 2 models, and implement Electronic Warfare Training improvements for Electronic Attack and Advanced Off-board Electronic Warfare (AOEW). ***FY 2019 Base Plans:*** ATD 1.0: Deliver Advanced Training Domain (ATD) 1.0 system and software to support training on Aegis Baseline (BL) 9.2.2 and SSDS BL 11.x ATD 1.1: Conduct integration testing of ATD 1.1 with Aegis Baseline (BL) 10.x BFTT 5.1.2: Deliver Battle Force Tactical Training (BFTT) Software updates to support Fire Control Loop Improvement Program (FCLIP) on Ships Self Defense System (SSDS) ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to Issue 68032 Under execution Mark in the amount of $.676.					
Title: Fleet Training Wholeness	0.000	0.000	17.835	0.000	17.835
Articles:	-	-	-	-	-
Description: Increase in PB19 required to provide a means for Strike Group Training in a contested environment. ***FY 2018 Plans:*** N/A ***FY 2019 Base Plans:*** Develop, test and integrate Engineering Change Proposals (ECP) to implement ability to inject and tag simulated contacts into live shipboard air-search radars, for augmenting live exercises with simulation, thereby reducing the need for live training assets. This is key to providing the ability to train using live, virtual and constructive capabilities needed for fleet synthetic training underway. Failure to update the radar systems, will prevent ability to augment live underway exercises with synthetic contacts.					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 1427 / *Surface Tactical Team Trainer (STTT)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Develop, test and integrate changes to allow simulated contacts to be overlaid with tactical contacts, on AEGIS and Ships Self Defense System (SSDS) combat systems, which is a critical enabler for implementing live, virtual, constructive capabilities in support of fleet synthetic training underway. Failure to update combat systems will prevent the ability to safely participate in live exercises that are augmented with simulation. Develop, test and Integrate a Gun Weapon System (GWS) simulations and Electronic Optical Sensor System (EOSS) simulations to provide a means of conducting surface warfare training capability on AEGIS, and reduce dependence on live fire training. Failure to implement GWS/EOSS training capability will result in the inability to conduct effective surface warfare training. Develop changes to Cooperative Engagement Capability (CEC) to enable distribution of training data over the live CEC data links to support training of advanced tactical capabilities during fleet synthetic training exercises. Failure to update CEC will prevent fleet from training to AEGIS and SSDS Combat Systems capability advancements. Assess safety issues related to navigation distribution and develop Courses Of Action (COA) to mitigate concerns and potential hazards with conducting shipboard synthetic training underway. Failure to conduct the assessment could adversely impact the ability to safely conduct underway training in a live, virtual and constructive environment. Develop, test and Integrate combat system data collection and after-action review capability that will provide an effective means for instructors to assess operator, and crew performance during training events. Failure to develop assessment tools will impact ability to quantitatively assess operator and crew performance during training exercises. Develop, Test, and Integrate shipboard synthetic tactical radios that communicate over NCTE to enable exercise coordination between ships and shore sites for fleet synthetic events. Failure to develop synthetic tactical radios will impact ability to coordinate training exercises without the need of temporarily installed communication devices. Modify weapon systems modifications to integrate Live, Virtual, and Constructive (LVC) functionality and safety. Initiate Battle Force Tactical Training (BFTT) and Advanced Training Domain (ATD) development efforts to integrate					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 1427 / *Surface Tactical Team Trainer (STTT)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
LVC capabilities. Failure of not modifying weapons systems will impact the ability for AEGIS and SSDS ships from participating in underway training events in an live, virtual and constructive environment, ultimately impacting ability to adequately conduct strike group certification training events. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase caused by Issue 19038 for Fleet Training Wholeness which starts in FY19 in the amount of $17.835. Funds will be used to execute the FY19 base plans, identified above, in support of developing the required shipboard capabilities to enable Strike Group Training in a contested environment.					
Title: DDG 1000 Wholeness/Surface Strike	0.000	0.000	9.613	0.000	9.613
Articles:	-	-	-	-	-
FY 2018 Plans: N/A ***FY 2019 Base Plans:*** Develop, test and install embedded shipboard training capability to support organic within the lifelines and multi-ship distributed combat systems training requirements as outlined in the DDG 1000 Navy Training Support Plan (NTSP). Capability will allow DDG 1000 class ships to participate in distributed Fleet Synthetic Training (FST) events. FST events are used for advance warfare training, and work ups to strike group deployment certification. Failure to execute plans, will prevent DDG 1000 to participate, with the other ships, other services and coalition partners in FST events. DDG 1000 On-Board Trainer development will begin FY19, Shore Training facility will be upgraded to represent shipboard configuration, testing will be conducted to ensure requirement as outlined in DDG 1000 Navy training Support Plan (NTSP), and to ensure interoperability with Navy Continuous Training Environment (NCTE). Copies of the system will then be developed and installed on board DDG 1000 Class Ships. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to Issue 50422 for DDG 1000 Wholeness/Surface Strike implementation in the amount of $9.613.					
Accomplishments/Planned Programs Subtotals	12.145	15.274	42.046	0.000	42.046

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 1427 / *Surface Tactical Team Trainer (STTT)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• RDTE/0604307N/3357: *Aegis Training Improvement Program*	10.357	7.856	8.109	-	8.109	7.330	7.449	6.505	5.562	Continuing	Continuing
• RDTE/0604755N/3358: *SSDS Training Improvement Program*	2.808	7.554	7.973	-	7.973	8.698	10.067	9.795	9.226	Continuing	Continuing
• OPN/5664/TBD: *Other Training Equipment (Surface BFTT/TSTC portion only) New BLI FY17*	20.010	32.020	29.503	-	29.503	29.608	29.550	29.871	30.468	Continuing	Continuing

Remarks

D. Acquisition Strategy

The BFTT acquisition strategy for system development utilizes the Advanced Capability Build (ACB) development model, as mandated by OPNAV. Incremental acquisition and fielding, utilizing commercial off-the-shelf technology to the extent possible, is in accordance with OPNAV LTR Ser N86/9U179029 dtd 31 Jul 09.

E. Performance Metrics

TSTC BFTT Core component will be developed to meet the following developmental milestones. These milestones are in close alignment with AEGIS BL9.C2 and SSDS MK 2 development milestones and integration events. (see R-4)

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 1427 / *Surface Tactical Team Trainer (STTT)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware Development	C/FFP	GTS : Virginia Beach, VA	14.960	0.497	Dec 2016	0.571	Dec 2017	0.580	Dec 2018	-		0.580	Continuing	Continuing	Continuing
Systems Engineering	WR	SEA02/NSWC Dam Neck/NSWC Dahlgren : NAVSEA/ Dam Neck/NSWC Dahlgren	26.172	3.729	Dec 2016	5.824	Dec 2017	15.849	Dec 2018	-		15.849	0.000	51.574	-
		Subtotal	41.132	4.226		6.395		16.429		-		16.429	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	WR	NSWC Dam Neck/ SEA 02 : WR/REQN	42.045	4.747	Dec 2016	5.671	Dec 2017	17.977	Dec 2018	-		17.977	Continuing	Continuing	Continuing
		Subtotal	42.045	4.747		5.671		17.977		-		17.977	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC Dam Neck/ SEA 02 : WR/REQN	13.660	1.950	Dec 2016	1.767	Dec 2017	6.125	Dec 2018	-		6.125	Continuing	Continuing	Continuing
		Subtotal	13.660	1.950		1.767		6.125		-		6.125	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Support	WR	NSWC Dam Neck/ SEA02 : WR/REQN	10.043	1.222	Dec 2016	1.441	Dec 2017	1.515	Dec 2018	-		1.515	Continuing	Continuing	Continuing
		Subtotal	10.043	1.222		1.441		1.515		-		1.515	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
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	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	106.880	12.145		15.274		42.046		-		42.046	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 1427 / *Surface Tactical Team Trainer (STTT)*

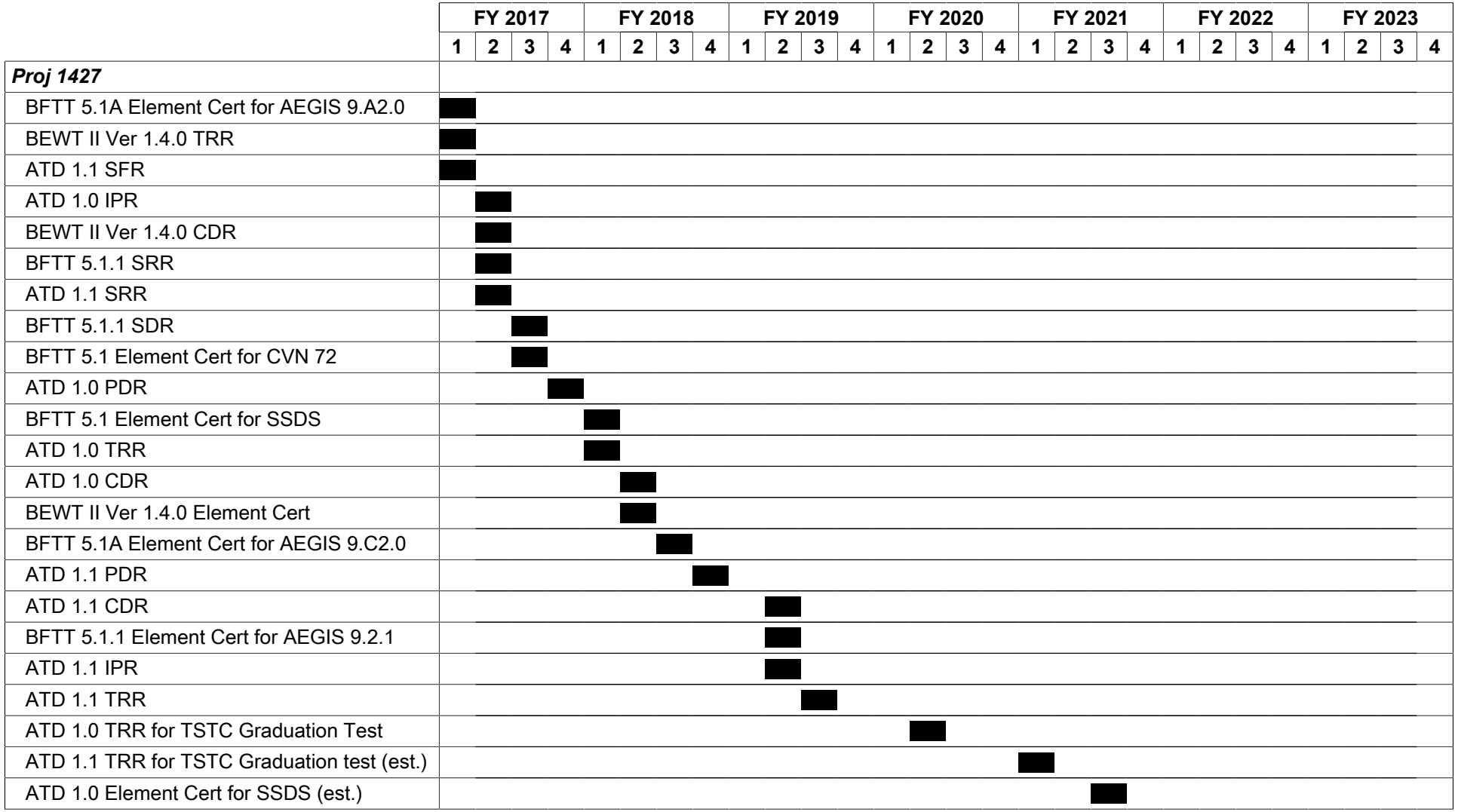

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 1427 / *Surface Tactical Team Trainer (STTT)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 1427				
BFTT 5.1A Element Cert for AEGIS 9.A2.0	1	2017	1	2017
BEWT II Ver 1.4.0 TRR	1	2017	1	2017
ATD 1.1 SFR	1	2017	1	2017
ATD 1.0 IPR	2	2017	2	2017
BEWT II Ver 1.4.0 CDR	2	2017	2	2017
BFTT 5.1.1 SRR	2	2017	2	2017
ATD 1.1 SRR	2	2017	2	2017
BFTT 5.1.1 SDR	3	2017	3	2017
BFTT 5.1 Element Cert for CVN 72	3	2017	3	2017
ATD 1.0 PDR	4	2017	4	2017
BFTT 5.1 Element Cert for SSDS	1	2018	1	2018
ATD 1.0 TRR	1	2018	1	2018
ATD 1.0 CDR	2	2018	2	2018
BEWT II Ver 1.4.0 Element Cert	2	2018	2	2018
BFTT 5.1A Element Cert for AEGIS 9.C2.0	3	2018	3	2018
ATD 1.1 PDR	4	2018	4	2018
ATD 1.1 CDR	2	2019	2	2019
BFTT 5.1.1 Element Cert for AEGIS 9.2.1	2	2019	2	2019
ATD 1.1 IPR	2	2019	2	2019
ATD 1.1 TRR	3	2019	3	2019
ATD 1.0 TRR for TSTC Graduation Test	2	2020	2	2020
ATD 1.1 TRR for TSTC Graduation test (est.)	1	2021	1	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 1427 / *Surface Tactical Team Trainer (STTT)*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
ATD 1.0 Element Cert for SSDS (est.)	3	2021	3	2021

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 2124 / *Air Warfare Training*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
2124: *Air Warfare Training*	48.078	1.438	1.585	1.709	-	1.709	1.710	1.634	1.665	1.699	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project transitions new training and range system technologies for use in Naval Aviation training. Products from this effort are directly tied to the Navy Aviation Simulation Master Plan (NASMP), MH-60R/S master plan, Unmanned Aerial Systems (UAS) master plan, the Live Virtual Constructive (LVC) program, component technologies, including the Multiplex Data Bus Controller Translator Transmitter, F/A-18C-F Requirements Procurement Plan (RPP), open architecture implementation, multiple technology refresh efforts and the Multi-Mission Maritime Aircraft/P-8 programs. These efforts will support training optimization of future naval aviation training/preview/mission rehearsal systems (fixed, deployed, and unmanned). Tasks include: specification development to provide for common, modular, High Level Architecture compliant, high fidelity Distributed Mission Training and mission rehearsal capabilites ashore and afloat. Technologies to be developed and integrated include: intelligent semi-automated forces (SAF) technologies, automated performance measurement technology, advanced net-ready weapons simulation, Air to Air/ Air to Ground, visual/sensor enhancement, sensor/weather server, common post mission assessment technologies, tablet mission preview technology, advanced visual-sensor technology, high resolution helmet mounted, and/or flat panel displays, 20-20 visual acuity image generation, NAVAIR Portable Source Initiative improvements, common correlated data set technologies, common link, common software/database reuse technologies, advanced environmental effects modeling, fused radar/infra-red/electro-optic and acoustic sensor simulations, aerodynamic modeling, physics-based infra-red simulations, spatial disorientation research, comms degradation modeling, and final Test and Evaluation (T&E) within the Aviation Training Technology Integration Facility (ATTIF), Naval Air Warfare Center-Aircraft Division. This Manned-Flight Simulator (MFS) ATTIF capability provides a window to fleet aviators for critical comment, evaluation and fine tuning of new, interoperable, and innovative technologies such as LVC before final transition to the fleet. Naval Aviation Distributed Training Center, debrief/After Action Review (AAR), and intelligent training tools for the virtual environment are focused on human performance and trend analysis enhancements for fleet readiness and distributed mission training at all levels.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: HUMAN/INSTRUCTIONAL SYSTEMS INTEGRATION	0.646	0.732	0.959	0.000	0.959
Articles:	-	-	-	-	-
Description: Develop common After Action Review (AAR) and platform-unique post mission assessment, Intelligent Tactical SAF, and high fidelity simulator component technologies. After Action Review (AAR), and high fidelity components such as Intelligent SAF designs lower Navy Aviation Simulation Master Plan (NASMP) upgrade and simulator life-cycle costs. Integrate Voice-Capable semi-automated forces (SAF) component technologies, improve open common instructor interface effectiveness and provide for multi-SAF exercise utilization. Analyze, develop, and integrate common architecture components for F/A-18C-F, EA-18G, MH-60R/S, Unmanned Aerial Systems (UAS) platforms, E-2C/D & United States Marine Corps mission areas, intelligent instructor operator components, automated performance measurement technologies, Tactical Aircraft/ Multi-Mission Maritime Aircraft/ Reduced Oxygen Breathing Device-Spatial Disorientation technologies/devices					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 2124 / *Air Warfare Training*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
common graphic user interface initiatives, common threat system formats, Next Generation Threat System (NGTS) technology transitions, Joint Semi-Automated Forced (JSAF) compatibility, cross platform post mission performance measurement, Multi-purpose Reconfigurable Maintenance Training Systems, (MRTS) and after action review/debrief innovations, thereby maximizing return on investment for instructional systems technology investments. ***FY 2018 Plans:*** Continue fidelity improvements for synthetic entity systems (e.g. NGTS, JSAF), including realistic blue force collaborative behavior and improved support for debrief in distributed training environments. Support test and evaluation of alternate solutions for mask-on hypoxia training. Continue Post Mission Assessment for Tactical Training (PMATT) with emphasis on automated scoring of live training events in fixed and rotary wing aircraft. Investigate strategies for efficient cross-platform after action review and debrief in distributed training settings. Perform Advanced Development Simulations (ADS) component enhancements and Technology Readiness Assessments in relevant environments. ***FY 2019 Base Plans:*** Continue improvements for synthetic entity systems (e.g. NGTS, JSAF), including virtual crewman and wingman capability and speech recognition control. Continue test and evaluation of alternate mask-on hypoxia training device. Develop automated scoring and debrief technology for use in multi-team, distributed, and Live, Virtual and Constructive (LVC) training environments. Continue development of the Post Mission Assessment for Tactical Training (PMATT) for rotary wing and multiplatform environments. Perform training effectiveness experiments on low footprint, virtual reality based simulators. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** The increase in funding from FY18 to FY19 is required to support the following projects: Develop F-18 Virtual Wingman for integration into Next Generation Threat System (NGTS); Conduct test and evaluation of On-Demand Hypoxia Training (ODHT) device in order to (1) assess impact of variable oxygen concentration on recovery rates, (2) assess variable flow rates on efficacy of system to induce hypoxia for training purposes, and (3) validate that device improves training outcomes as compared to current Reduced Oxygen Breathing Device (ROBD) trainer; Develop Post Mission Assessment for Tactical Training (PMATT) capability for H-60 and F/A-18.					
Title: SENSORS AND ENVIRONMENT	0.487	0.525	0.250	0.000	0.250

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 2124 / *Air Warfare Training*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Articles:	-	-	-	-	-

Description: Develop common and platform unique sensor, visual, and environmental simulation (atmospherics or acoustics) into fidelity upgrades with Commercial Off The Shelf and/or Government Off the Shelf (GOTS) Software. Perform risk reduction, advanced displays innovation, test and evaluation, integration, and production of Common Sensor Model, High Fidelity Active-Acoustics Sensor Operator Training, 3D Ocean effects, Anti-Submarine Warfare (ASW) acoustic fidelity assessments, 3D weather effects, 3D Ocean acoustic modeling, new Reduced Oxygen Breathing Device (ROBD)& Spatial Disorientation (SD), and legacy device technologies. Demonstrate GOTS capability for cost-effective database materialization, Material Properties Reference Dataset library, associated NAVAIR Portable Source Initiative specifications and processes for implementation on Distributed Mission Training, deployed trainers, legacy, and new visual system upgrade programs. In support of Navy Aviation Simulation Master Plan (NASMP) upgrade efforts, develop texture storage, sensor-environmental effects, NAVAIR Portable Source Initiative material reference processes/standards, automated technology applications for real time publishing, shadows, cultural lighting, combat, and weather effects and very high resolution visualization technologies, to include tablet-based mission preview for tactical aircrew.

FY 2018 Plans:
Develop and test prototype augmented reality based alternate to F/A-18 Tactical Operational Flight Trainer (TOFT) visual system. Continue research on use of consumer-grade image generation engines to deliver Navy Aviation Simulator Master Plan quality visuals. Conduct experiments to test limits of collaborative environmental databases to provide time-critical terrain updates for deployable mission rehearsal trainers. Support development of enhanced environmental effects for Naval Aviation Survival Training Program's Virtual Reality Parachute Descent Trainer.

FY 2019 Base Plans:
Continue investigation of collaborative environmental database for time-critical terrain updates for deployable mission rehearsal trainers. Develop Near Eye Display (NED) Metrology system for verifying the performance of Virtual and Augmented Reality goggle displays. Develop and test metrics and procedures for equating the performance of virtual and augmented reality display systems to legacy Navy Aviation Simulation Master Plan (NASMP) display systems.

FY 2019 OCO Plans:
N/A

FY 2018 to FY 2019 Increase/Decrease Statement:

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 2124 / *Air Warfare Training*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Reduction between FY 2018 and FY 2019 to allow support of activities planned for Human / Instructional Systems Integration and Live, Virtual, and Constructive (LVC), and Visuals.					
Title: LIVE VIRTUAL CONSTRUCTIVE (LVC), AND VISUALS	0.305	0.328	0.500	0.000	0.500
Articles:	-	-	-	-	-
Description: Air Warfare Training Development provides for risk mitigation and next generation platform, Unmanned Aerial Systems, Live Virtual Constructive (LVC) and associated visualization component development for Navy aviation distributed mission training, and distributed training centers (NADTC), as well as for stand-alone and small footprint deployable devices. Provided integrated capability assessment for Ranges, Experimentation products, and Training. Support the NASMP upgrade efforts and Type/Model/Series programs with advanced visual system display configurations requirements. Assess trainee cognitive requirements and the development and incorporation of next generation Live Virtual Constructive (LVC), Unmanned Aerial Systems (UAS) constructive and associated debrief/After Action Review (AAR) visualization component technologies. Additionally, Air Warfare Training Development (AWTD) provides for advanced virtual component fidelity improvements for Live Virtual Constructive capability (such as "Mobility" Part-Task Trainers and the Multiplex Data Bus Controller Translator Transmitter (MDBCTT)). LVC technologies will facilitate advanced, cost effective weapons and tactics training and emerging capability requirements in the Air-Sea battlespace and Naval Integrated Fire Control-Counter Air (NIFC-CA) capabilities development.					
FY 2018 Plans: Provide analytical and developmental support for emergent programs of record in LVC, acoustic simulation environments, Warfighter performance assessment, threat system enhancements, Virtual Reality (VR), and sensor/visualization modeling. Provide man-in-the-loop /Technology Readiness Level (TRL) assessments at Manned Flight Simulator (MFS), and assess Distributed Mission Readiness Trainer (DMRT) family of systems, and other mobility-focused training devices for improved fleet training, Training and Readiness (T&R) metrics, and life-cycle cost reductions.					
FY 2019 Base Plans: Continue analytical and developmental support for emergent programs of record in Live, Virtual and Constructive (LVC), acoustic simulation environments, warfighter performance assessment, threat system enhancements, and sensor/visualization modeling. Develop integrated expandable flight deck crew trainer based on Commercial Off the Shelf (COTS) virtual and augmented reality technology. Deliver a prototype virtual reality					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 2124 / *Air Warfare Training*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Landing Signal Officer (LSO) Station for the expandable flight deck crew trainer. Investigate use of virtual reality to provide low cost simulation training for undergraduate rotary wing aviators. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** The increase in funding from FY18 to FY19 is required to support the following projects: Training evaluation of TH-57 Virtual Reality (VR) Part Task Trainer (PTT) intended to support low level flight familiarization and course rules training; Training evaluation of T-45 Augmented Reality / Virtual Reality (AR / VR) Operational Flight Trainer (OFT) to inform decision about training download from aircraft and / or T-45 dome-based Tactical Operational Flight Trainer (TOFT); Develop warfighter performance assessment capability for transition to Fallon Integrated Training Facility (ITF); Develop and evaluate Virtual Reality trainer for flight deck crew positions (e.g., Landing Signal Officer).					
Accomplishments/Planned Programs Subtotals	1.438	1.585	1.709	0.000	1.709

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• APN/0705:: *COMMON GROUND EQUIPMENT - TRAINING*	167.716	192.149	191.786	-	191.786	210.719	181.965	178.077	190.284	Continuing	Continuing

Remarks

D. Acquisition Strategy

Air Warfare Training Development (AWTD) is a BA 07 RDT&E joint technology transition program tied to Navy Aviation Simulation Master Plan (NASMP), United States Marine Corps upgrades and the various platform simulation master plans with the purpose of transitioning advanced training and mission preview/rehearsal technologies. AWTD provides risk mitigation, test and evaluation, and prototype development for stand-alone, manned, un-manned, distributed, open systems and deployed training systems for the warfighter utilizing an Integrated Product Team approach and a combination of reimbursable and direct cite/cost-plus time and material (T&M) contracts.

E. Performance Metrics

Naval Air Warfare Center-Training Systems Division (NAWC-TSD): # of transitions to Fleet Platforms. For each transition, successful Technical Readiness Level (TRL) testing and device Ready for Training (RFT) to Fleet platforms. Seminal transition events are either RFT or tech-refresh Authority to Operate.

NAWC-Aircraft Division (AD): Complete TRL & compliance testing for Navy Aviation Simulation Master Plan (NASMP) and Information Assurance directives.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 2124 / *Air Warfare Training*

Aptima, Inc.: Government acceptance of evaluation of Small Business Innovation Research (SBIR) device testing.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 2124 / *Air Warfare Training*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	C/CPFF	Bohemia Interactive : ORLANDO, FL	0.324	0.000		0.450	Jan 2018	0.277	Mar 2019	-		0.277	0.000	1.051	1.051
Software Development	C/CPFF	Aptima : WOBURN, MA	0.424	0.000		0.000		0.232	Mar 2019	-		0.232	0.000	0.656	0.656
Software Development	WR	NAWCTSD : ORLANDO, FL	23.141	1.038	Dec 2016	0.414	Nov 2017	0.549	Nov 2018	-		0.549	Continuing	Continuing	Continuing
Software Development	WR	NAMRU : SILVER SPRINGS, MD	0.085	0.005	Jun 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Prior Year Prod Dev No Longer Funded in the Budget or Out Years	Various	Various : Various	10.532	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	34.506	1.043		0.864		1.058		-		1.058	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Logistics	WR	NAWCAD : PATUXENT RIVER, MD	0.000	0.051	Dec 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Logistics	WR	NAWCTSD : ORLANDO, FL	0.000	0.000		0.052	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCAD : PATUXENT RIVER, MD	0.000	0.033	Dec 2016	0.139	Nov 2017	0.120	Nov 2018	-		0.120	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCTSD : ORLANDO, FL	0.000	0.000		0.127	Nov 2017	0.150	Nov 2018	-		0.150	Continuing	Continuing	Continuing
Prior Year Support No Longer Funded in the Budget or Out Years	Various	Various : Various	3.803	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	3.803	0.084		0.318		0.270		-		0.270	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 2124 / *Air Warfare Training*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWC AD : PAX RIVER, MD	7.525	0.063	Dec 2016	0.000		0.060	Nov 2018	-		0.060	Continuing	Continuing	Continuing
		Subtotal	7.525	0.063		0.000		0.060		-		0.060	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPFF	Precise : LEXINGTON PARK, MD	0.248	0.150	Feb 2017	0.149	Feb 2018	0.134	Feb 2019	-		0.134	0.000	0.681	0.681
Program Management Support	WR	NAWC AD : PAX RIVER, MD	0.000	0.000		0.234	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Travel	Allot	NAVAIR : PAX RIVER, MD	0.534	0.009	Nov 2016	0.020	Nov 2017	0.010	Nov 2018	-		0.010	Continuing	Continuing	Continuing
Program Management Support	WR	NAWCTSD : ORLANDO, FL	0.000	0.089	Nov 2016	0.000		0.177	Nov 2018	-		0.177	Continuing	Continuing	Continuing
Prior year Mgmt Sup no longer funded in the FYDP	Various	Various : Various	1.462	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	2.244	0.248		0.403		0.321		-		0.321	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	48.078	1.438		1.585		1.709		-		1.709	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 2124 / *Air Warfare Training*

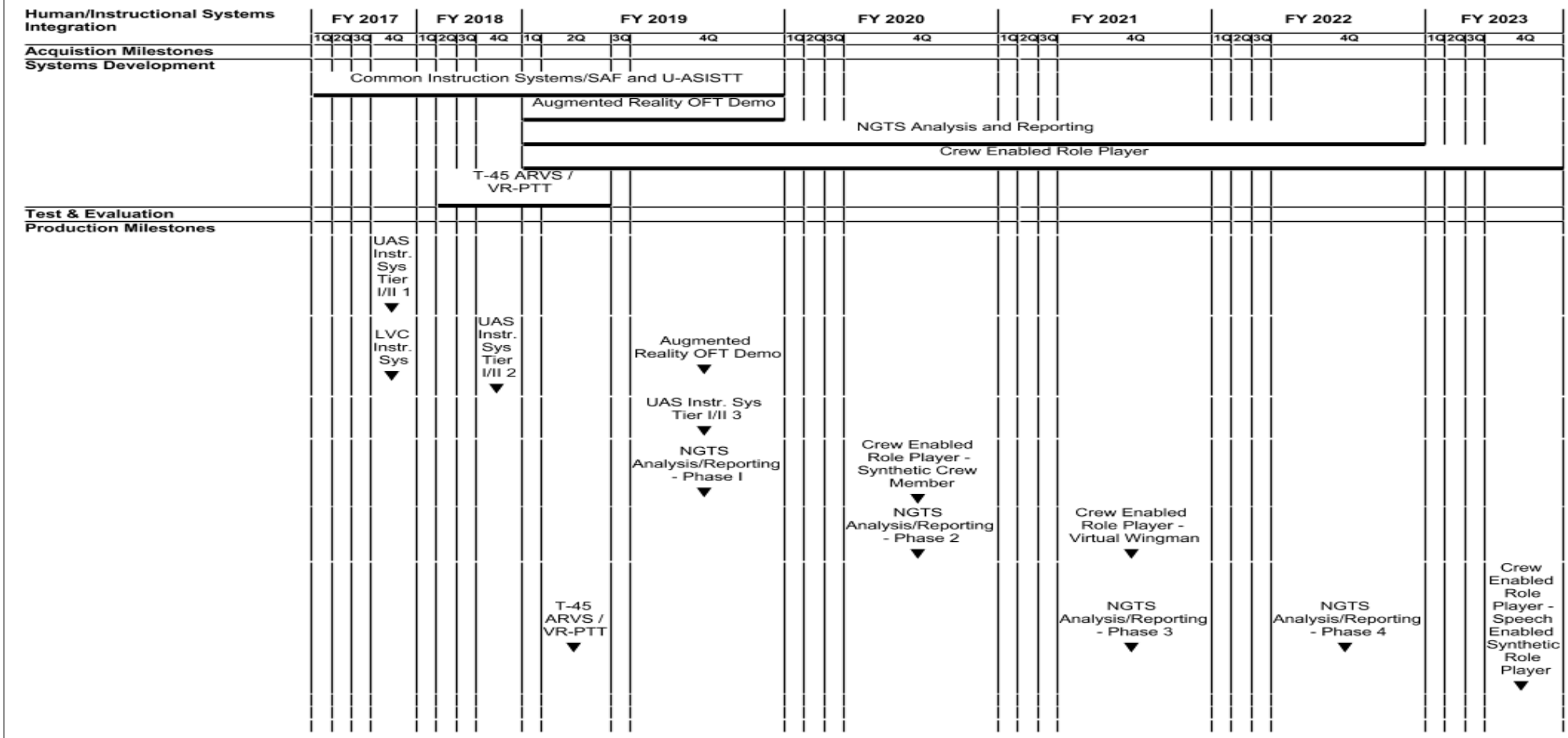

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 2124 / *Air Warfare Training*

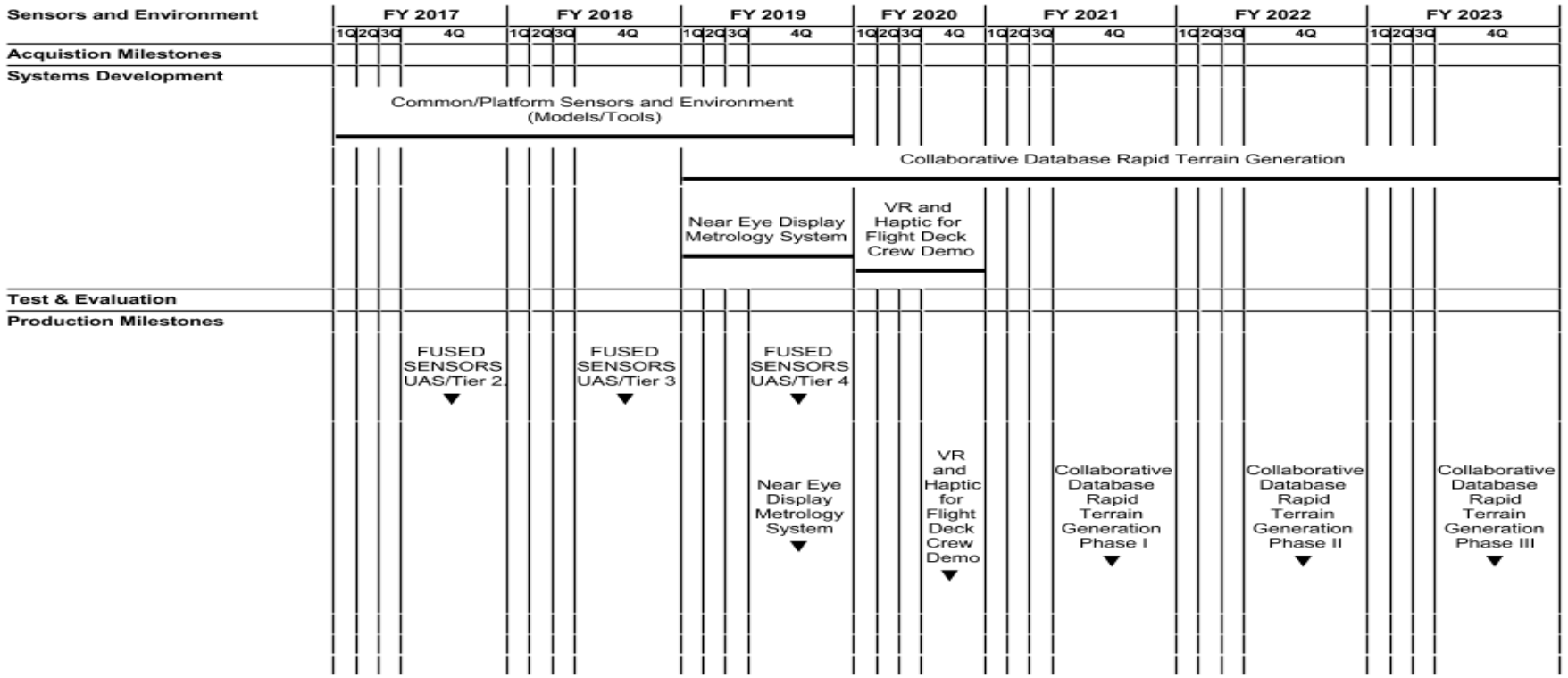

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 2124 / *Air Warfare Training*

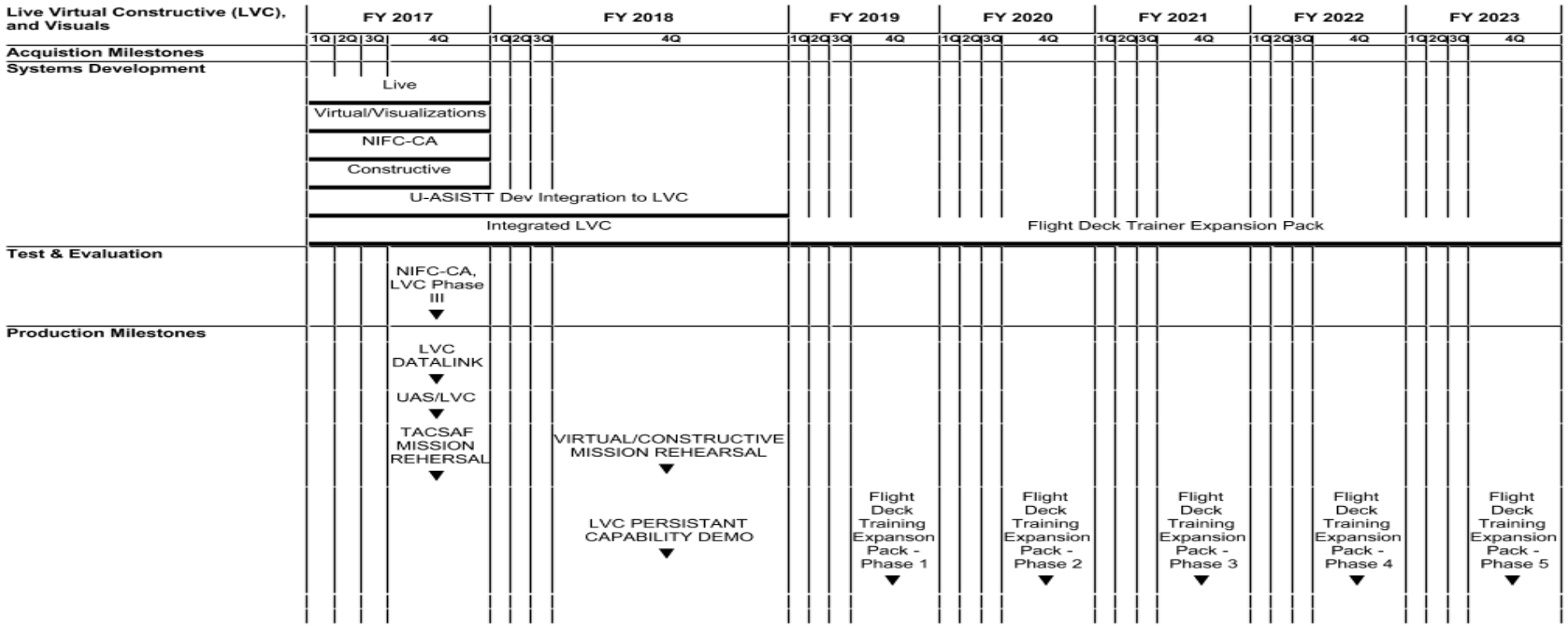

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 2124 / *Air Warfare Training*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Human/Instructional Systems Integration				
Systems Development: Common Instruction Systems/SAF and Unmanned Aerial Systems Interface Selection and Training Tech Dev	1	2017	4	2019
Systems Development: Augmented Reality OFT Demo	1	2019	4	2019
Systems Development: NGTS Analysis and Reporting	1	2019	4	2022
Systems Development: Crew Enabled Role Player	1	2019	4	2023
Systems Development: T-45 Augmented Reality Visual System (ARVS) Part Task Trainer (PTT)	2	2018	2	2019
Production Milestones: UAS INSTR. SYS Tier I/II 1	4	2017	4	2017
Production Milestones: LVC INSTR SYS Component Technologies	4	2017	4	2017
Production Milestones: Augmented Reality OFT Demo	4	2019	4	2019
Production Milestones: UAS INSTR. SYS Tier I/II 2	4	2018	4	2018
Production Milestones: UAS INSTR. SYS. Tier I/II 3	4	2019	4	2019
Production Milestones: NGTS Analysis and Reporting - Phase I	4	2019	4	2019
Production Milestones: Crew Enabled Role Player - Synthetic Crew Member	4	2020	4	2020
Production Milestones: NGTS Analysis and Reporting - Phase 2	4	2020	4	2020
Production Milestones: Crew Enabled Role Player - Virtual Wingman	4	2021	4	2021
Production Milestones: NGTS Analysis and Reporting - Phase 3	4	2021	4	2021
Production Milestones: NGTS Analysis and Reporting - Phase 4	4	2022	4	2022
Production Milestones: Crew Enabled Role Player - Speech Enabled Synthetic Role Player	4	2023	4	2023
Production Milestones: T-45 Augmented Reality Visual System (ARVS) Part Task Trainer (PTT)	2	2019	2	2019
Sensors and Environment				

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 2124 / *Air Warfare Training*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Systems Development: Common/Platform Sensors and Environment (Models/Tools)	1	2017	4	2019
Systems Development: Collaborative Database Rapid Terrain Generation	1	2019	4	2023
Systems Development: Near Eye Display Metrology System	1	2019	4	2019
Systems Development: VR and Haptic for Flight Deck Crew Demo	1	2020	4	2020
Production Milestones: FUSED SENSORS UAS/Tier 2	4	2017	4	2017
Production Milestones: FUSED SENSORS UAS/Tier 3	4	2018	4	2018
Production Milestones: FUSED SENSORS UAS/Tier 4	4	2019	4	2019
Production Milestones: Near Eye Display Metrology System	4	2019	4	2019
Production Milestones: VR and Haptic for Flight Deck Crew Demo	4	2020	4	2020
Production Milestones: Collaborative Database Rapid Terrain Generation Phase I	4	2021	4	2021
Production Milestones: Collaborative Database Rapid Terrain Generation Phase II	4	2022	4	2022
Production Milestones: Collaborative Database Rapid Terrain Generation Phase III	4	2023	4	2023
Live Virtual Constructive (LVC), and Visuals				
Systems Development: Live	1	2017	4	2017
Systems Development: Virtual/SAF Visualizations	1	2017	4	2017
Systems Development: NIFC-CA FEA	1	2017	4	2017
Systems Development: Constructive	1	2017	4	2017
Systems Development: Unmanned Aerial Systems Interface Selection and Training Tech Dev Integration to LVC	1	2017	4	2018
Systems Development: Integrated LVC Components	1	2017	4	2018
Systems Development: Flight Deck Trainer Expansion Pack	1	2019	4	2023
Test & Evaluation: NIFC-CA, LVC, Fallon, Phase III	4	2017	4	2017
Production Milestones: LVC DATALINK	4	2017	4	2017
Production Milestones: UAS/LVC Component Technologies	4	2017	4	2017
Production Milestones: TACSAF MISSION REHERSAL	4	2017	4	2017
Production Milestones: VIRTUAL / CONSTRUCTIVE MISSION REHEARSAL	4	2018	4	2018

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Production Milestones: LVC PERSISTANT CAPABILITY DEMO	4	2018	4	2018
Production Milestones: Flight Deck Training Expanson Pack - Phase 1	4	2019	4	2019
Production Milestones: Flight Deck Training Expansion Pack - Phase 2	4	2020	4	2020
Production Milestones: Flight Deck Training Expansion Pack - Phase 3	4	2021	4	2021
Production Milestones: Flight Deck Training Expansion Pack - Phase 4	4	2022	4	2022
Production Milestones: Flight Deck Training Expansion Pack - Phase 5	4	2023	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 3093 / *TACTS/LATR Replacement*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
3093: *TACTS/LATR Replacement*	81.126	12.444	48.473	56.154	-	56.154	35.307	6.773	3.809	3.899	Continuing	Continuing
Quantity of RDT&E Articles		-	41	16	-	16	-	-	-	-		

A. Mission Description and Budget Item Justification

The Tactical Combat Training System (TCTS) Increment II will provide an improved environment for air combat training utilizing a secure air-to-air and air-to-ground data link, and will provide rangeless operation capability to Forward Deployed Naval Forces (FDNF). TCTS Increment II will provide encryption and an enhanced threat environment, as well as airborne participant instrumentation for multiple fixed and rotary wing platforms. Engineering Development Models (EDM) units procured in FY18 (41) and FY19 (16) will support Engineering and Developmental Testing events thru FY20. The EDMs will be specifically utilized for testing in the following areas: Environmental Qualification, Software, High Accelerated Lifecycle, Ground System Integration, Airborne Subsystem Air Worthiness and Performance, Shipboard Ground Station, Internal Mount and Rack Mounted Subsystem (Internal Mount) Airworthiness and Performance and JSF Airworthiness and Performance. FY19 funding supports both multiple government and contractor development efforts, as well as, procurement of the EDMs. These efforts support a Milestone C of 1Q FY20 and a Fleet IOC need date of 2Q FY21 in order to address critical OPSEC concerns.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: TACTS/LATR REPLACEMENT	12.444	48.473	56.154	0.000	56.154
Articles:	-	41	16	-	16
Description: TCTS: Qualify and complete the Rangeless Pod system fielding for Carrier Air Wing Five (CVW-5) CVN installation, including the complete Integrated Logistics products and training. Define Test & Training Enabling Achitecture (TENA) compliant interface between TCTS and an Advance Display System (ADS). Develop a Rack-Mounted subsystem for use on rotary wing and transport aircraft. Continue development of the encrypted data link. Develop related training range integration.					
FY 2018 Plans: FY18 represents a full year of engineering, manufacturing and development (EMD) for the program that justifies the current control. FY18 funding supports Preliminary Design Review (PDR), Critical Design Review (CDR), Systems Engineering Technical Review (SETR) events and post PDR assessments with the Milestone Decision Authority (MDA). This also includes Engineering Development Model (EDM) fabrication and deliveries of both participant subsystems and ground stations to support Developmental Testing (DT) testing beginning in FY19.					
FY 2019 Base Plans: FY19 will include the completion of Critical Design Review (CDR), Post Critical Design Review (CDR) assessment, and Engineering reviews to include a Test Readiness Review (TRR), Flight Readiness Review					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 3093 / *TACTS/LATR Replacement*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
(FRR) and Functional Configuration Audit (FCA) to assess contractor progress in delivering an encryption system that meets the system operating requirements. These reviews will ensure readiness to start contractor system testing and follow-on government subsystem testing. The Engineering Development Models (EDM) will start delivery to support the initiation of Contractor and Government Test and Evaluation testing. FY19 will include the completion of National Security Agency (NSA) Certification to support test and receive System Authority to Operate (ATO). 16 test articles will be procured to include 6 Rack-Mounted Subsystems and 10 Remote Range Units. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase of $7.681M from FY 2018 to FY 2019 represents funding required to conduct Post Preliminary and Critical Design Review assessments and Engineering reviews to include a Test Readiness Review (TRR), Flight Readiness Review (FRR) and Functional Configuration Audit (FCA) to assess contractor progress in delivering an encryption system that meets the system operating requirements.					
Accomplishments/Planned Programs Subtotals	12.444	48.473	56.154	0.000	56.154

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPN/4204: *Weapons Range Support Equipment (WRSE)*	58.116	72.110	93.864	-	93.864	85.269	73.794	99.618	103.549	Continuing	Continuing
• APN/0725: *Other Production Charges/Tactical Combat Training System (TCTS)*	0.860	1.463	1.444	-	1.444	13.891	21.189	21.611	22.066	Continuing	Continuing

Remarks

D. Acquisition Strategy

Tactical Combat Training System will employ an evolutionary incremental acquisition strategy. This strategy will provide for the development of a system that meets the Operational Requirements Document.

E. Performance Metrics

Rockwell Collins, Inc.: National Security Agency (NSA) approved encrypted Data Link Transceiver (DLT). Successful Engineering Development Model testing of encrypted DLT requirements with NSA.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 3093 / *TACTS/LATR Replacement*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware Development	C/CPIF	ROCKWELL COLLINS, INC : CEDAR RAPIDS, IA	9.144	8.318	Mar 2017	42.114	Oct 2017	50.950	Oct 2018	-		50.950	31.474	142.000	142.000
Prior Year Prod Dev No Longer Funded in the Budget or Out Years	Various	Various : Various	10.901	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	20.045	8.318		42.114		50.950		-		50.950	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWC-WD : CHINA LAKE, CA	0.862	0.099	Mar 2017	0.130	Jan 2018	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWC-AD : PAX RIVER, MD	8.543	0.955	Jan 2017	2.693	Jan 2018	3.408	Nov 2018	-		3.408	Continuing	Continuing	Continuing
Logistics	WR	NAWC-AD : PAX RIVER, MD	0.279	0.435	Jan 2017	0.460	Jan 2018	0.000		-		0.000	Continuing	Continuing	Continuing
Logistics Sup	C/CPFF	Synectic Solutions, Inc. : LEXINGTON PARK, MD	0.000	0.164	Aug 2017	0.130	Aug 2018	0.000		-		0.000	0.000	0.294	0.294
Prior Year Support No Longer Funded in the Budget or Out Years	Various	Various : Various	28.115	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	37.799	1.653		3.413		3.408		-		3.408	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWC-AD : PAX RIVER, MD	1.501	0.437	Jan 2017	0.824	Jan 2018	0.588	Nov 2018	-		0.588	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 3093 / *TACTS/LATR Replacement*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year T&E No Longer Funded in the Budget or Out Years	Various	Various : Various	3.425	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	4.926	0.437		0.824		0.588		-		0.588	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prog Mgnt Sup	WR	NAWC-AD : PAX RIVER, MD	2.199	1.952	Jan 2017	2.032	Jan 2018	1.181	Nov 2018	-		1.181	Continuing	Continuing	Continuing
Travel	Allot	NAVAIR : PAX RIVER, MD	0.098	0.005	Jan 2017	0.010	Jan 2018	0.027	Nov 2018	-		0.027	Continuing	Continuing	Continuing
Prog Mgnt Sup	C/CPFF	Precise : LEXINGTON PARK, MD	0.000	0.079	Dec 2016	0.080	Feb 2018	0.000		-		0.000	0.000	0.159	0.159
Prior Year Mgmt No Longer Funded in the Budget or Out Years	Various	Various : Various	16.059	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
		Subtotal	18.356	2.036		2.122		1.208		-		1.208	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	81.126	12.444		48.473		56.154		-		56.154	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 3093 / *TACTS/LATR Replacement*

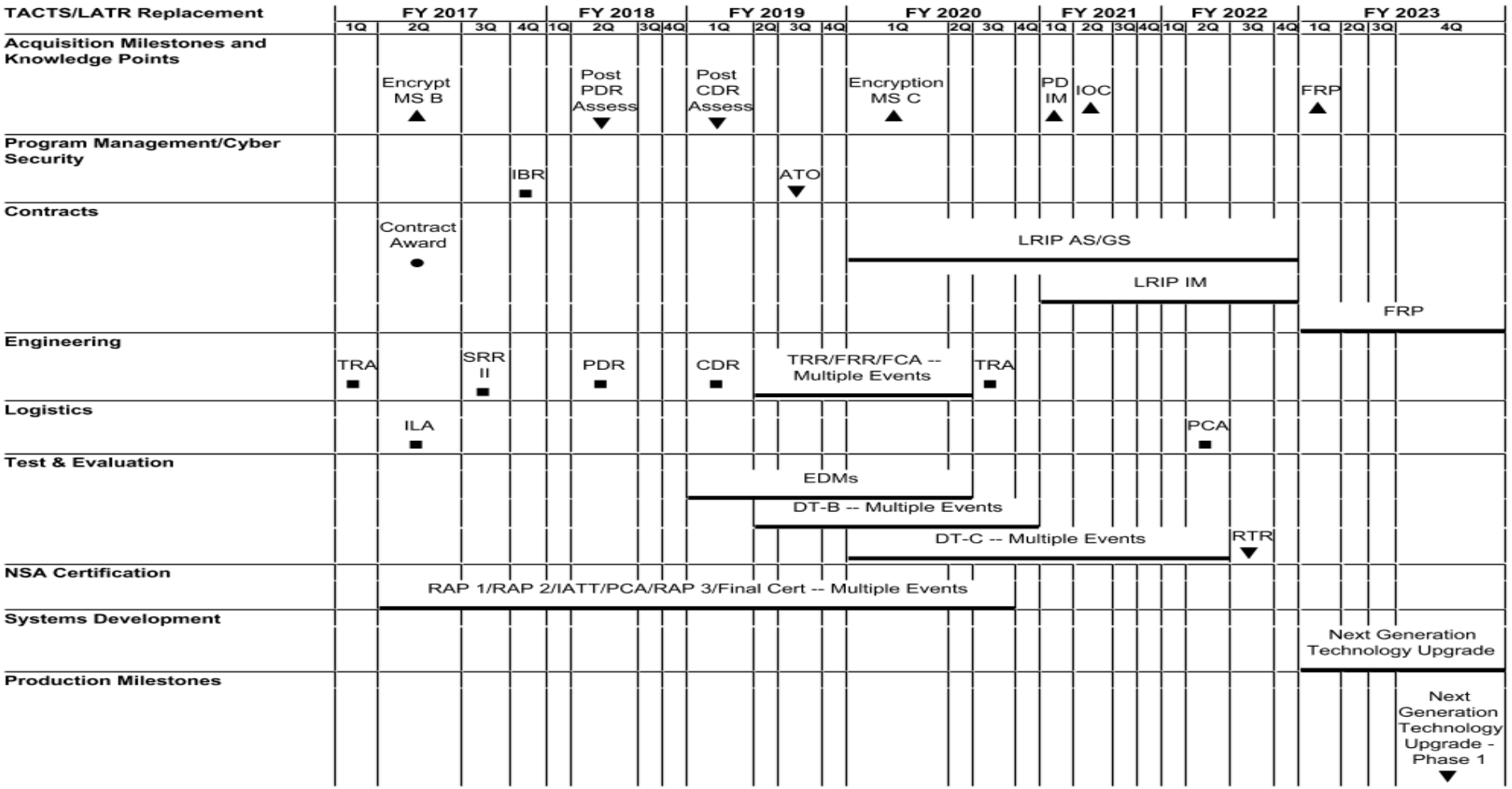

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 3093 / *TACTS/LATR Replacement*

2019PB - 0204571N - 3093

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 3093 / *TACTS/LATR Replacement*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
TACTS/LATR Replacement				
Acquisition Milestones and Knowledge Points: Encryption MS B	2	2017	2	2017
Acquisition Milestones and Knowledge Points: Post PDR Assessment	2	2018	2	2018
Acquisition Milestones and Knowledge Points: Post CDR Assessment	1	2019	1	2019
Acquisition Milestones and Knowledge Points: Encryption MS C	1	2020	1	2020
Acquisition Milestones and Knowledge Points: IOC	2	2021	2	2021
Acquisition Milestones and Knowledge Points: Production Decision Internal Mount	1	2021	1	2021
Acquisition Milestones and Knowledge Points: FRP	1	2023	1	2023
Program Management/Cyber Security: Integrated Baseline Review	4	2017	4	2017
Program Management/Cyber Security: Authority to Operate	3	2019	3	2019
Contracts: Contract Award	2	2017	2	2017
Contracts: LRIP Airborne Subsystem (POD), Ground Subsystem, Remote Range Unit, Portable Support Equipment Subsystem	1	2020	4	2022
Contracts: LRIP Rack-Mounted Internal Mount, JSF Internal Mount	1	2021	4	2022
Contracts: Full Rate Production	1	2023	4	2023
Engineering: Technology Readiness Assessment I	1	2017	1	2017
Engineering: System Requirements Review II	3	2017	3	2017
Engineering: Preliminary Design Review	2	2018	2	2018
Engineering: Critical Design Review	1	2019	1	2019
Engineering: Test Readiness Review / Flight Readiness Review / Functional Configuration Audit	2	2019	2	2020
Engineering: Technology Readiness Assessment II	3	2020	3	2020
Logistics: Integrated Logistics Review	2	2017	2	2017

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 3093 / *TACTS/LATR Replacement*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Logistics: Physical Configuration Audit	2	2022	2	2022
Test & Evaluation: Engineering Development Models	1	2019	2	2020
Test & Evaluation: Developmental Test B - Multiple Events	2	2019	4	2020
Test & Evaluation: Developmental Test C - Multiple Events	1	2020	2	2022
Test & Evaluation: Report of Test Results	3	2022	3	2022
NSA Certification: RAP 1/RAP 2/IATT/PCA/RAP 3/Final Cert	2	2017	3	2020
Systems Development: Next Generation Technology Upgrade	1	2023	4	2023
Production Milestones: Next Generation Technology Upgrade Phase 1	4	2023	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 3356 / *High Fidelity Surface Trainers*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
3356: *High Fidelity Surface Trainers*	21.014	6.457	1.183	0.756	-	0.756	1.967	1.470	0.000	0.000	0.000	32.847
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This line funds high fidelity Aegis Integrated Air and Missile Defense (IAMD) individual, instructor, strike group and team trainers to support all Advanced Capability Build (ACB) and below Aegis baselines. This line provides funds for development of a High Fidelity Aegis Combined Integrated Air and Missile Defense (IAMD) and Anti-Submarine Warfare (ASW) Trainer (CIAT) to enable advanced warfare training (AWT) Phase II objectives to be accomplished ashore and to support Active and Passive Sonar Operations, Target Motion Analysis, Sonobuoy Localization, Command and Control, and execution of ASW Kill chain. Funds are provided for advanced component technology development, prototype evaluation, and technology readiness level assessment. Development of these trainers is in response to CNO Wholeness Review and Department of the Navy requirements. This line also provides funds for the research and development of advanced technologies to support Aegis Ballistic Missile Defense (BMD) builds and Command, Control, Communication, Computer, and Intelligence (C4I) advanced technology upgrades to Aegis BMD Ashore Team Trainer at the Center for Surface Combat Systems (CSCS) Unit Dam Neck. This line supports Surface Training Advanced Virtual Environment (STAVE) methodology by researching and developing trainers that will create an immersive and interactive learning environment and support both CNO High Velocity Learning and Ready Relevant Learning intent.

NOTE: In FY18, Mine Warfare Synthetic Training requirements previously captured within PE 0204571N / Proj 3356 (High Fidelity Surface Trainer) were realigned to PE 0603502N Surface & Shallow Water MCM / Proj 1235 (Mine Warfare Planning and Analysis).

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Combined IAMD ASW Trainer (CIAT)	4.500	0.607	0.156	0.000	0.156
Articles:	-	-	-	-	-
FY 2018 Plans: Complete research and development spirals of all simulations and system architecture for the High Fidelity Combined IAMD & ASW Trainer (CIAT). Research and Develop Advanced technologies necessary to stimulate and emulate the AEGIS B/L 9 tactical system. Test and evaluate the developed solution to virtualize AEGIS legacy tactical code to be able to re-host the tactical software on COTS hardware. These solutions will support scenario driven watch team practice of standard operating procedures (SOPs), Tactical Techniques and Procedures (TTPs) and Pre-Planned Response (PPRs) against advanced threats in a realistic environment. Research and Develop technologies and interfaces which will enable ASW and Electronic Warfare (EW) trainers					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 3356 / *High Fidelity Surface Trainers*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
to be integrated with IAMD training system for integrated training events. Test and Integrate developed models to allow for Navy Integrated Fire Control-Counter Air (NIFC-CA) training. ***FY 2019 Base Plans:*** Test and integrate developed models prior to system installation. Research and develop models to integrate into the system which would keep pace with emergent tactical capabilities in the Fleet such as Electronic Warfare and NIFC-CA enhancements. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY18 to FY19 decrease is due to conclusion of Spiral 3 CIAT and conducting System Integration Testing (SIT) and Warfare Acceptance Testing (WAT) testing.					
Title: Aegis BMD Ashore and Aegis BMD Ship Training	1.957	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2018 Plans: N/A ***FY 2019 Base Plans:*** N/A ***FY 2019 OCO Plans:*** N/A					
Title: Air Defense Strike Group Facility	0.000	0.576	0.600	0.000	0.600
Articles:	-	-	-	-	-
FY 2018 Plans: Research and develop two Virtual Aegis Combat System Simulators (VACSSim) to develop the Engineering Development Model for the Air Defense Strike Group Facility (ADSGF) shore-based air and surface simulation device in Fallon, NV. Research and develop advanced technologies to allow VACSSim improvements in support of surface equities incorporated in Aegis B/L upgrades. ***FY 2019 Base Plans:*** Research and develop VACSSim simulators and CEC Engagement Processor (CEP) Simulators to integrate within the Integrated Training Facility (ITF) Engineering Development Model (EDM). Additional functionality to VACSSim will be researched and developed to include additional AEGIS Baselines and submodes. These					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 3356 / *High Fidelity Surface Trainers*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
simulators will integrate with NAVAIR simulators (E2D, F35) to create an overarching simulation environment that will be the only way to train Carrier Strike Groups on high-end threats and capabilities related to Naval Integrated Fire Control Counter Air (NIFC-CA). The ITF capabilities are a requirement of the NIFC-CA Flag Steering Committee and part of the CNO-directed Fleet Training Wholeness effort. ***FY 2019 OCO Plans:*** N/A ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY18 to FY19 increase is due to more specialized engineering staff to complete FY19 deliverables. In FY19, ADSGF will begin development on the Virtual Aegis Combat Systems Simulation (VACSSIM) configuration for the Integrated Training Facility (ITF) and CEC Engagement Processor (CEP) Workstation configuration of the ITF.					
Accomplishments/Planned Programs Subtotals	6.457	1.183	0.756	0.000	0.756

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The software development for High Fidelity Surface Trainers is accounted for in this RDT&E line. The software development and introduction for the Aegis Ballistic Missile Defense (BMD) builds and C4I advanced technology upgrades to Aegis BMD Ashore Team Trainer is accounted for in this RDT&E line. These upgrades will provide an enabling technology to an existing training system.

E. Performance Metrics

Naval Surface Warfare Center Dahlgren: Approved Combined IAMD and ASW Trainer (CIAT). Successful engineering development model (EDM) introducing advanced technologies necessary to simulate/stimulate the AEGIS Combat System elements required for operators stated in AEGIS Ashore Baseline 9 Weapons Specification (WS) 21200 series.

Naval Surface Warfare Center Dahlgren: Incorporation of approved legacy Aegis baselines (7.2, 6.3) into the Virtual Aegis Combat System Simulator (VACSSim). Incorporation of additional sub-modes into the VACSSim. Successful integration of VACSSim and CEP Workstation into the Integrated Training Facility simulation architecture.

Naval Air Warfare Center Training Systems Division: Approved Aegis Ballistic Missile Defense (BMD) builds and C4I advanced technology upgrades to the Aegis BMD Ashore Team Trainer.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 3356 / *High Fidelity Surface Trainers*

Naval Surface Warfare Center Carderock: Approved Combined IAMD & ASW Trainer (CIAT). Successful engineering development model introducing advanced technologies necessary to 1) simulate performance of AN/SQQ-89A(V)15 sonar system in alignment with fielding plan for initial Sonar software versions with capability to receive AN/SQQ-89A(V)15 coordinated routine modernizations and 2) replicate Combat Information Center (CIC) configuration and functionalities representative of AEGIS Baseline 9.

Naval Undersea Warfare Center Newport: Approved Combined IAMD & ASW Trainer (CIAT). Develop ASW components to be integrated in the CIAT system for Technology Requirements Model (TRM) simulation of own ship and threat torpedoes, and emulations of sonar devices.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 3356 / *High Fidelity Surface Trainers*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SYSTEMS ENG	WR	NSWC DAHLGREN : DAHLGREN,VA	14.088	3.151	Nov 2016	0.915	Nov 2017	0.206	Nov 2018	-		0.206	0.286	18.646	Continuing
SYSTEMS ENG	WR	NSWC CARDEROCK : CARDEROCK, MD	5.103	0.949	Nov 2016	0.268	Nov 2017	0.000		-		0.000	0.000	6.320	-
SYSTEMS ENG	WR	NUWC NEWPORT : NEWPORT, RI	1.676	0.400	Nov 2016	0.000		0.000		-		0.000	0.000	2.076	-
SYSTEMS ENG	MIPR	U.S. ARMY SMDC : HUNTSVILLE, AL	0.147	0.000		0.000		0.000		-		0.000	0.000	0.147	-
SYSTEMS ENG	WR	NAWCTSD : ORLANDO, FL	0.000	1.957	Jul 2017	0.000		0.000		-		0.000	0.000	1.957	-
SYSTEMS ENG	TBD	LOCKHEED MARTIN : TBD	0.000	0.000		0.000		0.550	Nov 2018	-		0.550	3.151	3.701	Continuing
		Subtotal	21.014	6.457		1.183		0.756		-		0.756	3.437	32.847	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	21.014	6.457		1.183		0.756		-		0.756	3.437	32.847	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 3356 / *High Fidelity Surface Trainers*

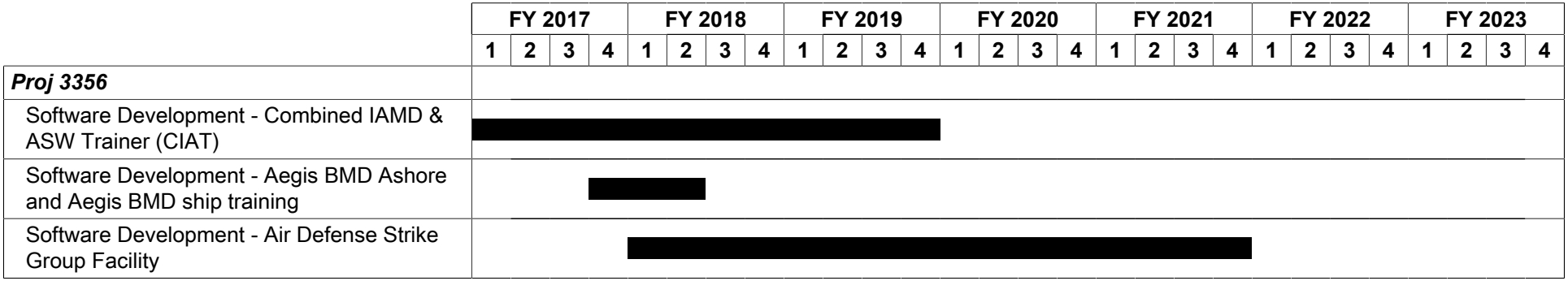

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 3356 / *High Fidelity Surface Trainers*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3356				
Software Development - Combined IAMD & ASW Trainer (CIAT)	1	2017	4	2019
Software Development - Aegis BMD Ashore and Aegis BMD ship training	4	2017	2	2018
Software Development - Air Defense Strike Group Facility	1	2018	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 9999 / *Congressional Adds*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
9999: *Congressional Adds*	0.000	8.704	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	8.704
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

The Barking Sands Tactical Underwater Range (BARSTUR) is a critical Pacific Missile Range Facility (PMRF) undersea training range that was installed in FY94 and is well beyond its service life. Funding is provided to accelerate the initial analysis and environmental impact studies related to replacing and modernizing the Barking Sands Tactical Underwater Range.

A. Mission Description and Budget Item Justification

Congressional Add

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018
Congressional Add: Training Range Enhancements	8.704	0.000
FY 2017 Accomplishments: Conducted Analysis of Alternatives (AOA), developed a program execution plan and implemented an environmental study to support future range upgrades.		
FY 2018 Plans: N/A		
Congressional Adds Subtotals	8.704	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Not required for Congressional Adds

E. Performance Metrics

Not required for Congressional Adds

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 9999 / *Congressional Adds*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware Development	TBD	TBD : TBD	0.000	1.500	Mar 2018	0.000		0.000		-		0.000	0.000	1.500	1.500
Hardware Development	WR	NUWC : NEWPORT, RI	0.000	1.553	Mar 2018	0.000		0.000		-		0.000	0.000	1.553	1.533
		Subtotal	0.000	3.053		0.000		0.000		-		0.000	0.000	3.053	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NUWC : NEWPORT, RI	0.000	4.357	Jul 2017	0.000		0.000		-		0.000	0.000	4.357	4.357
Systems Engineering	WR	NAWC-AD : PATUXENT RIVER, MD	0.000	0.449	Jul 2017	0.000		0.000		-		0.000	0.000	0.449	0.449
		Subtotal	0.000	4.806		0.000		0.000		-		0.000	0.000	4.806	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAWC-AD : PATUXENT RIVER, MD	0.000	0.049	Jan 2018	0.000		0.000		-		0.000	0.000	0.049	0.049
		Subtotal	0.000	0.049		0.000		0.000		-		0.000	0.000	0.049	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prog Mngt Sup	WR	NAWC-AD : PATUXENT RIVER, MD	0.000	0.282	Jan 2018	0.000		0.000		-		0.000	0.000	0.282	0.282

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204571N / *Consolidated Trng Sys Dev*	Project (Number/Name) 9999 / *Congressional Adds*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prog Mngt Sup	C/CPFF	Precise : Lexington Park, MD	0.000	0.220	Feb 2018	0.000		0.000		-		0.000	0.000	0.220	0.220
Travel	Allot	NAVAIR : PATUXENT RIVER, MD	0.000	0.025	Jul 2017	0.000		0.000		-		0.000	0.000	0.025	0.025
Prog Mngt Sup	WR	NAWCTSD : ORLANDO, FL	0.000	0.269	Jan 2018	0.000		0.000		-		0.000	0.000	0.269	0.269
		Subtotal	0.000	0.796		0.000		0.000		-		0.000	0.000	0.796	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	8.704		0.000		0.000		-		0.000	0.000	8.704	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 9999 / *Congressional Adds*

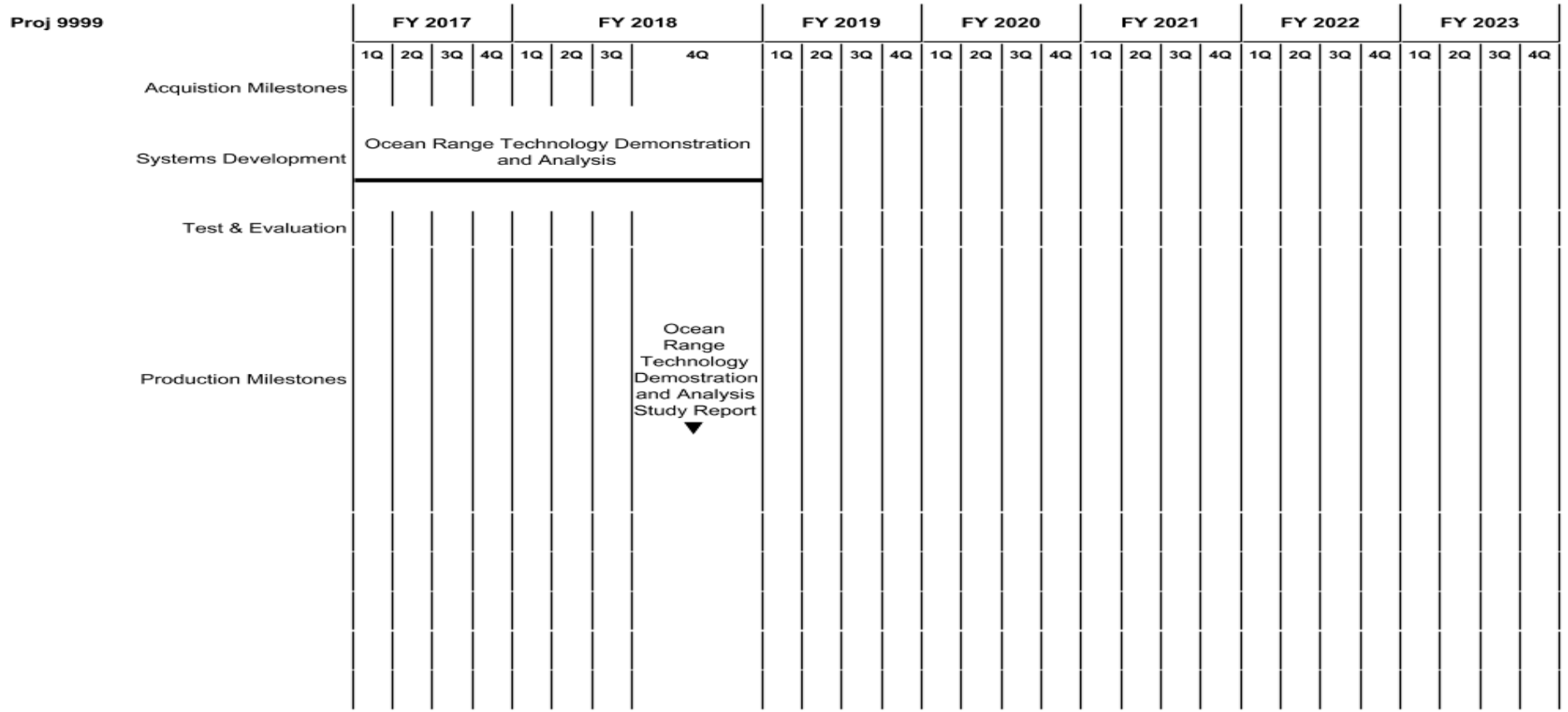

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204571N / *Consolidated Trng Sys Dev*	**Project (Number/Name)** 9999 / *Congressional Adds*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 9999				
Systems Development: Ocean Range Technology Demonstration and Analysis	1	2017	4	2018
Production Milestones: Ocean Range Technology Demonstration and Analysis Study Report	4	2018	4	2018