Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy											Date: February 2020	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0603208N *I Training System Aircraft*							
COST ($ in Millions)	**Prior Years**	**FY 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**Cost To Complete**	**Total Cost**
Total Program Element	61.841	14.345	15.514	4.332	-	4.332	5.974	6.156	3.594	3.667	Continuing	Continuing
3367: *Training Aircraft Updates*	61.841	14.345	15.514	2.503	-	2.503	5.160	5.342	2.762	2.818	0.000	110.285
9099: *Physiological Episodes*	0.000	0.000	0.000	1.829	-	1.829	0.814	0.814	0.832	0.849	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element provides for design, development, integration and test of various pre-production platform improvements for Naval Undergraduate Flight Training Systems which include T-45, T-6, TH-57, T-44, TH-57 Follow-On Training System (Advanced Helicopter Training System), and T-44 Multi-Engine Follow-On Training System (Multi-Engine Advanced Trainer aircraft). Continued development engineering for improvements in reliability, maintainability, safety and meeting Federal Aviation Administration (FAA) Next Generation Air Transportation System (NextGen) flight safety requirements are required to ensure maximum benefit is achieved to provide effective cost of ownership and availability of aircraft to meet Chief of Naval Air Training (CNATRA) student training requirements. Specific efforts include: TH-57 Follow-On Training System; T-45, T-6, TH-57 and T-44 Training System Improvements, T-45 and T-6 Physiological Episode (PE) mitigation analysis and T-44 Multi-Engine Follow-On Training System.

This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production decision.

B. Program Change Summary ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	12.798	15.514	4.287	-	4.287
Current President's Budget	14.345	15.514	4.332	-	4.332
Total Adjustments	1.547	0.000	0.045	-	0.045
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.800	0.000			
• SBIR/STTR Transfer	-0.253	0.000			
• Program Adjustments	0.000	0.000	0.001	-	0.001
• Rate/Misc Adjustments	0.000	0.000	0.044	-	0.044

Change Summary Explanation

Technical:

Naval Aviation Physiological Episode funding moved from project unit (PU) 3367 Training Aircraft Updates to PU 9099 Physiological Episodes starting in FY21.

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy	Date: February 2020
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0603208N *I Training System Aircraft*

Schedule:
T6 A/B Communication and Navigation System/Air Traffic Management (CNS/ATM): Removed Acquisition Milestones: Initial Operational Capability and Full Operation Capability due to program no longer being in budget.

T-6 Joint Study Efforts extended from 4Q21 to 4Q25 in support of continued studies with the Joint Primary Aircraft Training System (JPATS) program office.

Naval Aviation Physiological Episodes schedule was changed to reflect program execution based on dynamic requirements. Changes include extending T-45/ T-6B Test & Evaluation and PE Support through FY2025 in PU 9099.

Training System Improvements: T-44 Fatigue Life Extension Study removed due to Multi-Engine Advanced Trainer being funded (FY2023).

T-44 Multi-Engine Follow-On Training System added to schedule.

Program schedule updated to provide detailed schematic display of major program milestones, to include: contracting activities, engineering milestones, acquisition approvals, test and evaluation events, and other applicable program milestones.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0603208N / *Training System Aircraft*	Project (Number/Name) 3367 / *Training Aircraft Updates*	

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
3367: *Training Aircraft Updates*	61.841	14.345	15.514	2.503	-	2.503	5.160	5.342	2.762	2.818	0.000	110.285
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The TH-57 Follow-On Training System:

The TH-57 Training System consists of TH-57B aircraft, TH-57C aircraft, and associated family of ground based training devices. The TH-57 Training System is experiencing obsolescence, diminishing manufacturing sources and material shortages, training capability gaps (as identified in the Capabilities based assessment Naval Aviation Undergraduate Flight Training), and increasingly expensive operating costs related to aging aircraft issues. This research and development effort will investigate alternatives for replacing the TH-57 training system and develop and validate the acquisition strategy for future procurement of the capability to continue to provide the fleet replacement squadrons with qualified and capable rotary-wing naval aviators. This effort includes, but is not limited to, market research, requirements development, evaluation of acquisition strategies, evaluation of proposals, and testing of prototypes.

Training System Improvements:

Efforts will provide for studies and analysis, design, development, integration and test of pre-production platform improvements for Naval Undergraduate Flight Training Systems, which will conduct engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production decisions.

T-45 and T-6 Physiological Episode (PE) Mitigation:

Efforts will provide for studies and development efforts to address mitigation of the T-45 and T-6 physiological episodes.

T-44 Multi-Engine Follow-On Training System:

The T-44 Training Systems consists of the (Qty 54) T-44C aircraft, and associated family of ground based training devices. The T-44 was fielded in 1978 as the only Navy/Marine Corps Multi-Engine trainer, as the only transitional platform from single engine to multi-engine Transport and Maritime fleet aircraft. The aging platform has become less cost effective to maintain annually, than the aircraft is worth, as it has surpassed its fatigue life by 300%, as well as experiencing obsolescence, diminishing manufacturing resources and material shortages, and training capability gaps (as identified in the Capabilities based assessment Naval Undergraduate Flight Training). This effort supports development of alternatives/efforts for replacing the T-44 Multi-Engine replacement training system and development and validation of the acquisition strategy for future procurement of the capability to continue to provide the fleet replacement squadrons with qualified and capable Naval Aviators. This effort includes, but is not limited to, market research, requirements development, evaluation of acquisition strategies, evaluation of proposals, and testing of prototypes.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Training System Improvements	0.069	6.896	1.985	0.000	1.985
Articles:	-	-	-	-	-
Description: Funding provides for design, development, integration and test of platform improvements for Naval Undergraduate Flight Training Systems, which include T-45 Training System (TS), Joint Primary Aircraft Training System (T-6), TH-57 and T-44 aircraft. ***FY 2020 Plans:*** Continue studies & development efforts for platform improvements for Naval Undergraduate Flight Training Systems, including the system safety improvements to the T-6 for Crash Survivable Cockpit Voice Recorder (CSCVR) and Controlled Flight Into Terrain (CFIT) Avoidance, T-45 Digital Inline Timer development, T-45 Next Generation Strike Training Aircraft Analysis of Alternatives (AoA) and T-44 Fatigue Life Extension Study. ***FY 2021 Base Plans:*** Continue studies & development efforts for platform improvements for Naval Undergraduate Flight Training Systems, including T-6 Joint Study Efforts and T-45 test wing maintenance. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The FY2021 funding request was reduced by $4.911M due to completion of product development efforts funded in FY20.					
Title: Naval Aviation Physiological Episode	5.951	6.155	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Funding provides for design, development, integration and test of platform improvements for Naval Undergraduate Flight Training Systems to include Naval Aviation Physiological Episode (PE) Mitigation in the Training Aircrafts (T-45 and T-6). ***FY 2020 Plans:*** Continue studies & development efforts as well as utilize associative learning 'artificial intelligence' platform to evaluate aircraft and maintenance data in support of PE root cause investigations for platform improvements for Naval Undergraduate Flight Training Systems, including T-45 Physiological Episode mitigation, and joint efforts with Air Force for Joint Primary Aircraft Training System (T-6). ***FY 2021 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
N/A ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The FY2021 funding request was decreased by $6.155M due to accelerated Root Cause Corrective Action (RCCA) flight test and RCCA close-out progress and the establishment of Physiological Episodes project unit (PU) 9099.					
Title: T-44 Multi-Engine Follow-On Training System	0.239	0.163	0.518	0.000	0.518
Articles:	-	-	-	-	-
Description: Funding supports development of alternatives of the T-44 Multi-Engine follow-on training system, development and validation of the acquisition strategy for future procurement of the capability to continue to provide the fleet replacement squadrons with qualified and capable Naval Aviators. This effort includes, but is not limited to, market research, requirements development, evaluation of acquisition strategies, evaluation of proposals, and testing of prototypes. ***FY 2020 Plans:*** Conduct Decision Support Analysis (DAS) studies & development efforts to identify potential solutions for a follow-on Multi-Engine training system. Complete the requirements generation process, develop the acquisition strategy and budgetary submission for three component capabilities: (1) A Multi-Engine Training Aircraft, (2) An Unit Training Device (UTD) and (3) an Operational Flight Training (OFT) Device. ***FY 2021 Base Plans:*** Finalize all technical documentation, to include but not limited to Requirements Documents, Systems Engineering Plan (SEP), Test and Evaluation Master Plan (TEMP), Acquisition Plan/Strategy, Funding Profile, Source Selection Plan, Risk Management Plan, Life Cycle Cost, Initial Capabilities Document (ICD), Market Survey, and relative documents required during the pre-solicitation process. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The FY2021 funding request was increase by $0.355M to support pre-solicitation phase of the T-44 Multi-Engine follow-on training system.					
Title: TH-57 Follow-On Training System	4.376	2.300	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Articles:	-	-	-	-	-
Description: Funding supports development of alternatives for replacing the TH-57 training system and development and validation of the acquisition strategy for future procurement of the capability to continue to provide the fleet replacement squadrons with qualified and capable rotary-wing Naval Aviators. This effort includes, but is not limited to, market research, requirements development, evaluation of acquisition strategies, evaluation of proposals, and testing of prototypes. ***FY 2020 Plans:*** Complete evaluation of proposals, continue curriculum development, receive Milestone C/Full Rate Production decision and award TH-XX contract. ***FY 2021 Base Plans:*** N/A ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The FY2021 funding request was decreased by $2.3M due to award of TH-XX contract and transitioning efforts to production.					
Title: T45 Required Avionics Sustainment Program (RASP)	3.710	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: Funding supports development, integration, test, and certification of the Automatic Dependent Surveillance-Broadcast (ADS-B) Out capability in the T-45 Training System to comply with the January 1, 2020 Federal Aviation Administration ADS-B Out mandate. ***FY 2020 Plans:*** N/A ***FY 2021 Base Plans:*** N/A ***FY 2021 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	14.345	15.514	2.503	0.000	2.503

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• APN/0569: *T45 Series*	193.334	174.526	155.745	-	155.745	204.014	217.374	190.450	195.273	365.115	2,747.343
• APN/0571: *JT Primary Acft Trnr Sys (JPATS)*	26.470	21.824	22.682	-	22.682	27.608	27.525	31.872	32.745	0.000	252.781
• APN/0549: *Trainer Acft Series*	11.597	5.616	7.085	-	7.085	9.228	9.627	9.383	7.972	24.384	329.108
• APN/0344: *Advanced Helicopter Trainer System*	0.000	247.265	269.867	-	269.867	264.145	131.173	0.000	0.000	182.145	1,094.595
• APN/0343: *Multi-Engine Advanced Trainer*	0.000	0.000	0.000	-	0.000	0.000	100.000	204.000	208.080	0.000	512.080

Remarks

D. Acquisition Strategy

T-45 Training System: Required Avionics Sustainment Program (RASP) Phase I is the first phase to equip the T-45 to operate in the Federal Aviation Administration's (FAA) Next Generation Air Transportation System (NextGen) airspace through the expected life of the T-45. The Research Development Test and Evaluation effort consists of a sole source Technology Maturation and Risk Reduction/ Engineering Manufacturing Development contract effort that awarded in FY 2016. Replacement kits for the Weapon Replaceable Assemblies (WRA) associated with the Automatic Dependent Surveillance-Broadcast (ADS-B) Out capability will be contracted through the Lead Systems Integrator for the Engineering Manufacturing Development phase through Test and Validation/Verification.

T6 Communication, Navigation, System/Air Traffic Management (CNS/ATM) and Avionics Upgrades for FAA Compliance are outside of the Joint Primary Aircraft Training System (JPATS) Major Defense Acquisition Program (MDAP) and will be established as a new Joint Acquisition Program with the United States Air Force. For the JPATS Avionics Upgrade for FAA Compliance effort, a competitive award will be the strategy for the T-6A air vehicles due to their federated design. The Navy is the lead for T-6B acquisition efforts and a sole-source strategy will be sought for the T-6B air vehicles due to proprietary hardware and software. Avionics in the T-6B are of an integrated design with proprietary hardware and software controlling input and output of navigation, communications, air data and other avionics information through an Integrated Avionics Computer (IAC). The CNS/ATM mandate requires integration into these systems in order to meet FAA Advisory Circular 20-165A Automatic Dependent Surveillance-Broadcast (ADS-B) Out system requirements and user capability requirements for flying in national airspace by 2020. Specifically, transponder and Global Positioning System (GPS) information that the ADS-B functions rely on are processed through proprietary software written to integrate with proprietary hardware designed by the same avionics manufacturer. A sole-source approach has been selected because the government does not own or have access to proprietary data to support development of hardware or software required to integrate ADS-B into the aircraft. System Safety Improvement research, design and development will allow the T-6 to remain a viable aircraft for training the Fleet.

The TH-57 Follow-On Training System effort will be established to determine and implement the most cost efficient and effective path forward for providing Rotary Wing Naval Aviators to the Fleet Replacement Squadrons. The acquisition strategy includes three separate contract actions: 1) direct procurement of a new commercial off-the-shelf training helicopter and required spare parts, 2) a single Contract Logistics Services contract for AHTS and TH-57 sundown, and 3) contractor owned, contractor operated Ground Based Training Systems housed in Government facilities.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

Training System Improvements: Efforts under this category are expected to be limited to those efforts meeting thresholds under the abbreviated acquisition category.

T-44 Multi-Engine Follow-On Training System: A multi-engine training capability is required to provide advanced training for United States Navy (USN) and United States Marine Corps (USMC). The T-44 currently support of Chief of Naval Air Training (CNATRA's) T-44 Multi-Engine Flight Instructor and Transition Curriculum, T-44C Advanced Multi-Engine MPTS, T-44C Multi-Engine Flight Instructor, and T-44C Intermediate E-2/C-2 MPTS syllabi. The T-44 Multi-Engine Follow-On Training System effort will be established to determine and implement the most cost efficient and effective path forward for providing Naval Aviators to the Fleet Replacement Squadrons. The acquisition strategy includes three separate contract actions: 1) direct procurement of a new Multi-Engine Training Aircraft, 2) An Unit Training Device (UTD), and 3) An Operational Flight Training (OFT) device.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0603208N / *Training System Aircraft*	Project (Number/Name) 3367 / *Training Aircraft Updates*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
T45 PE Product Development Cost	C/CPFF	SOAR Technology Inc. : Ann Arbor, MI	0.000	0.946	Jun 2019	0.000		0.000		-		0.000	0.000	0.946	0.946
Training System Improvement T6 CSCVR	TBD	AFMC : Tinker AFB, OK	0.000	0.000		3.000	Feb 2020	0.000		-		0.000	0.000	3.000	3.000
Training System Improvement T6 CFIT	TBD	AFMC : Tinker AFB, OK	0.000	0.000		1.200	Feb 2020	0.000		-		0.000	0.000	1.200	1.200
Training System Improvement T45 Digital Inline Timer	TBD	TBD : TBD	0.000	0.000		1.000	Jan 2020	0.000		-		0.000	0.000	1.000	1.000
Training System Improvement T45 Next Gen Strike Training Aircraft AoA	WR	NAWCAD : Patuxent River, MD	0.000	0.000		1.545	Dec 2019	0.000		-		0.000	2.500	4.045	-
Prior Year Product Development costs no longer in the FYDP	Various	Various : Various	25.017	0.000		0.000		0.000		-		0.000	0.000	25.017	25.017
		Subtotal	25.017	0.946		6.745		0.000		-		0.000	2.500	35.208	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
T45 Systems Engineering Support - EMD	WR	NAWCAD : Patuxent River, MD	6.792	0.700	Nov 2018	0.000		0.000		-		0.000	0.000	7.492	-
T45 Integrated Logistics Support	WR	NAWCAD : Patuxent River, MD	1.905	0.005	Nov 2018	0.000		0.000		-		0.000	0.000	1.910	-
T6 Systems Engineering Support	WR	NAWCAD : Patuxent River, MD	2.031	0.000		0.000		0.000		-		0.000	1.460	3.491	-
TH-57 Follow-On Training System Engineering Support	WR	Various : Various	2.956	4.377	Nov 2018	2.300	Nov 2019	0.000		-		0.000	0.000	9.633	-
T45 PE Systems Engineering Support	WR	NAWCAD : Patuxent River, MD	0.049	0.747	Nov 2018	0.800	Nov 2019	0.000		-		0.000	0.000	1.596	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0603208N / *Training System Aircraft*	Project (Number/Name) 3367 / *Training Aircraft Updates*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
T45 PE Support	WR	Various : Various	2.028	1.903	Aug 2019	1.650	Aug 2020	0.000		-		0.000	0.000	5.581	-
T6 PE Support	WR	NAWCAD : Patuxent River, MD	0.000	1.000	Nov 2018	1.100	Nov 2019	0.000		-		0.000	0.000	2.100	-
Training System Improvement T-6 Joint Study Efforts	MIPR	AFRL : Wright-Patterson AFB	0.104	0.069	Nov 2018	0.086	Nov 2019	0.084	Nov 2020	-		0.084	1.300	1.643	-
Training System Improvement T-45 Real-time Air Quality Sensor (RTAQS) Study	MIPR	AFRL RH : Wright Patterson AFB, OH	0.885	0.500	Jul 2019	0.550	Jul 2020	0.000		-		0.000	0.000	1.935	-
T-44 Follow-On Training System	WR	NAWCAD : Patuxent River, MD	0.000	0.239	Jan 2019	0.163	Nov 2019	0.518	Nov 2020	-		0.518	4.992	5.912	-
Prior Year Support costs no longer funded in FYDP	Various	Various : Various	7.000	0.000		0.000		0.000		-		0.000	0.000	7.000	-
		Subtotal	23.750	9.540		6.649		0.602		-		0.602	7.752	48.293	N/A

Remarks

T-44 Multi-Engine Follow-On Training System: Cost category added for T-44 Multi-Engine Follow-On Training System; effort was previously funded under training system improvement line (T-44 Fatigue Life Extension Study).

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
T45 Test & Certification	WR	NAWCAD : Patuxent River, MD	1.609	0.624	Nov 2018	0.000		0.620	Nov 2020	-		0.620	1.480	4.333	-
T6 Test and Evaluation	WR	NAWCAD : Patuxent River, MD	0.000	0.053	Dec 2018	0.000		0.055	Nov 2020	-		0.055	0.220	0.328	-
Prior Year Test & Evaluation no longer funded in FYDP	Various	Various : Various	0.312	0.000		0.000		0.000		-		0.000	0.000	0.312	-
		Subtotal	1.921	0.677		0.000		0.675		-		0.675	1.700	4.973	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy			Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0603208N / *Training System Aircraft*	Project (Number/Name) 3367 / *Training Aircraft Updates*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

T-45 Test and Certification increase is driven by lot acceptance testing in support of T-45 digital inline timer.
T-6 Test and Evaluation increase is in support of T-6 Training System Improvements and technical reviews.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
T45 Project Management	Various	Various : Various	2.203	0.523	Nov 2018	0.000		0.000		-		0.000	0.000	2.726	-
T-45 Test Wing Maintenance	C/FFP	L-3 : Patuxent River, MD	4.702	2.237	Oct 2018	2.000	Oct 2019	0.839	Oct 2020	-		0.839	3.200	12.978	12.978
T45 PBTH Flight Hours	C/FFP	Rolls Royce : Indianapolis, IN	0.313	0.257	May 2019	0.000		0.260	May 2021	-		0.260	0.640	1.470	1.470
T45 Travel	WR	NAVAIR : Patuxent River, MD	0.184	0.075	Oct 2018	0.055	Oct 2019	0.060	Oct 2020	-		0.060	0.110	0.484	-
T6 Travel	WR	NAVAIR : Patuxent River, MD	0.180	0.045	Oct 2018	0.035	Oct 2019	0.035	Oct 2020	-		0.035	0.090	0.385	-
TH57 Travel	WR	Various : Various	0.067	0.045	Oct 2018	0.030	Oct 2019	0.032	Oct 2020	-		0.032	0.090	0.264	-
Prior Year Mgmt costs no longer funded in FYDP	Various	Various : Various	3.504	0.000		0.000		0.000		-		0.000	0.000	3.504	-
		Subtotal	11.153	3.182		2.120		1.226		-		1.226	4.130	21.811	N/A

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	61.841	14.345		15.514		2.503		-		2.503	16.082	110.285	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

T-45 Required Avionics Sustainment Program (RASP)

Fiscal Year	FY19				FY20				FY21				FY22				FY23				FY24				FY25			
RDTE PE 0603208N (PU 3367)	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
RDT&E (3367) Program Milestones & Acquisition Phases																												
Contracting Activities / Milestones																												
Product Development																												
Support	System Engineering																											
Test & Evaluation Activities		ADS-B IT&E																										
Deliveries RDT&E (3367)	Test Assets																											

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

TH-57 Follow-On Training System

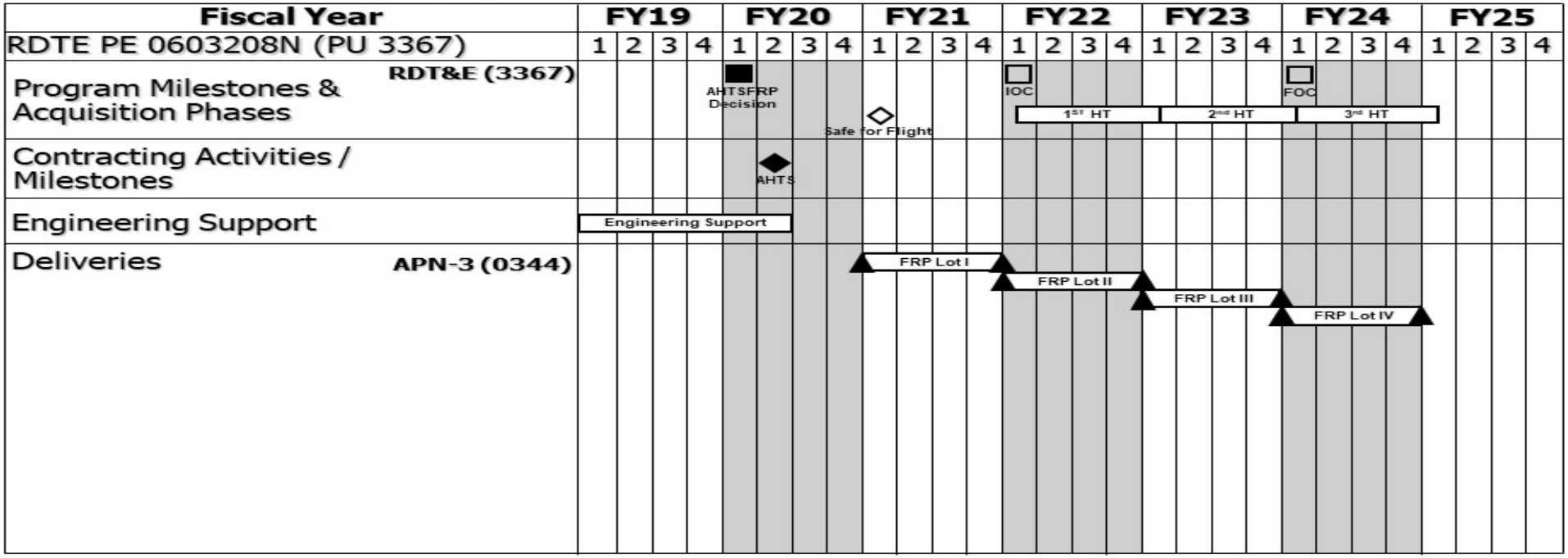

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

Training System Improvements

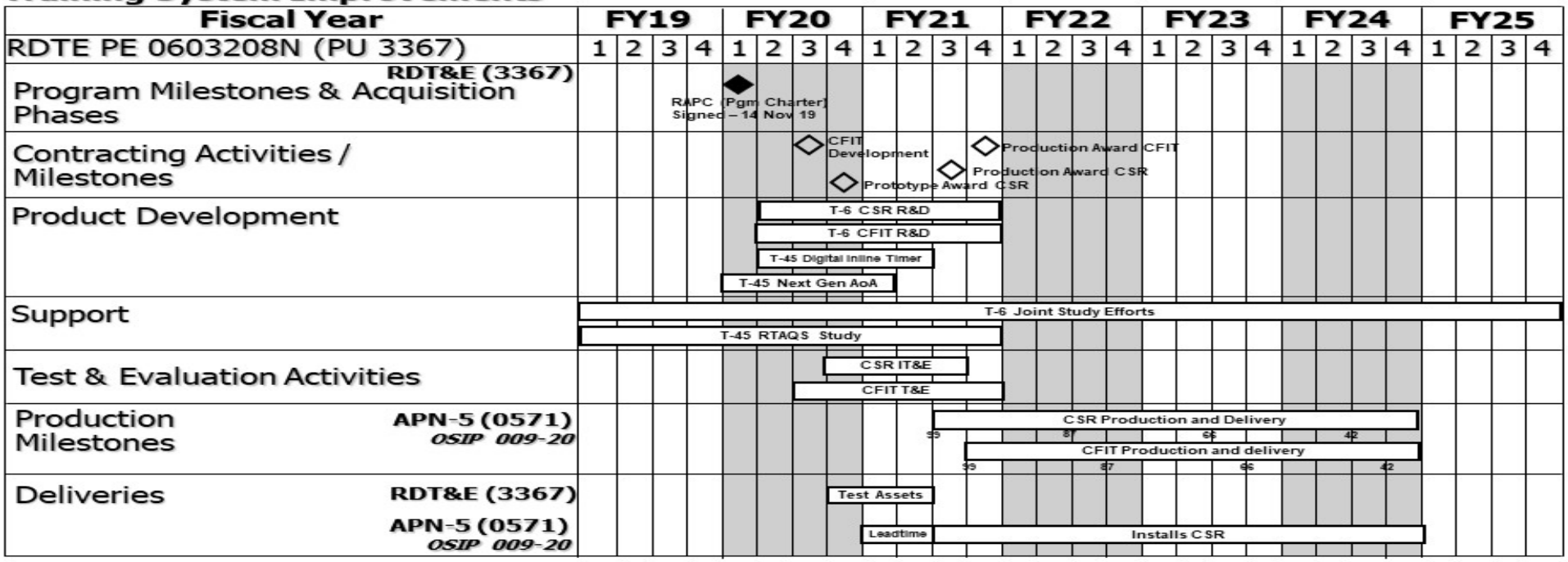

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

Physiological Effects

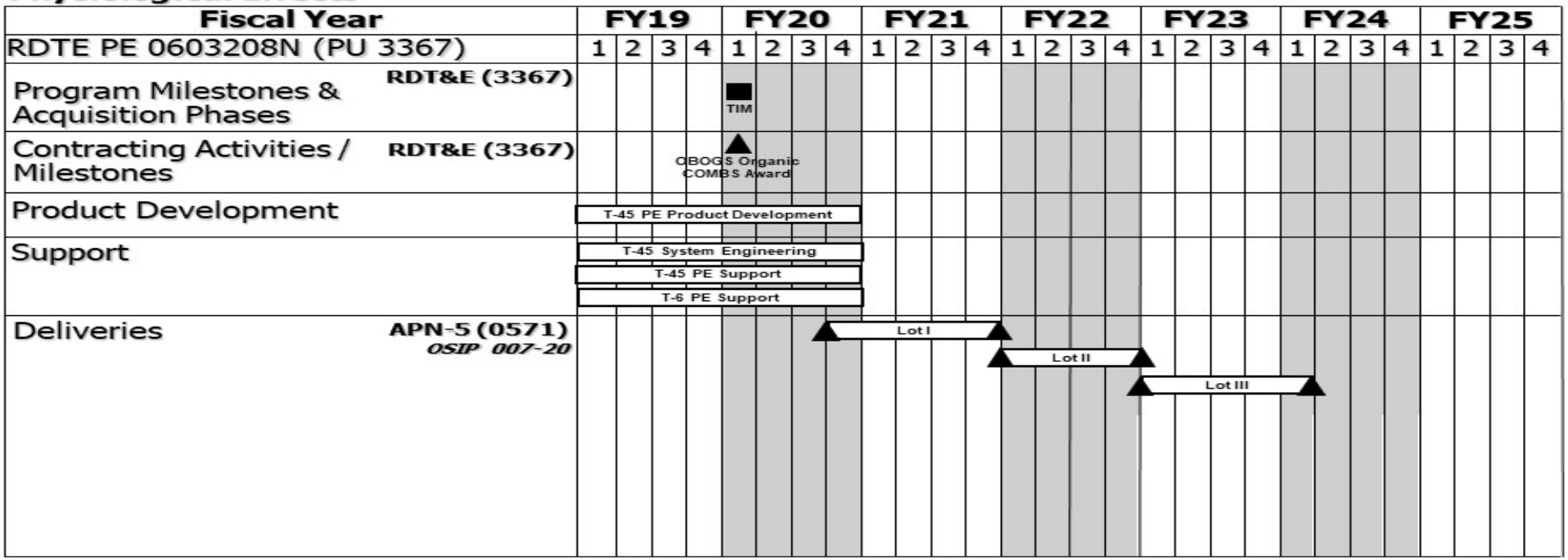

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

T-44 Multi-Engine Follow-On Training System

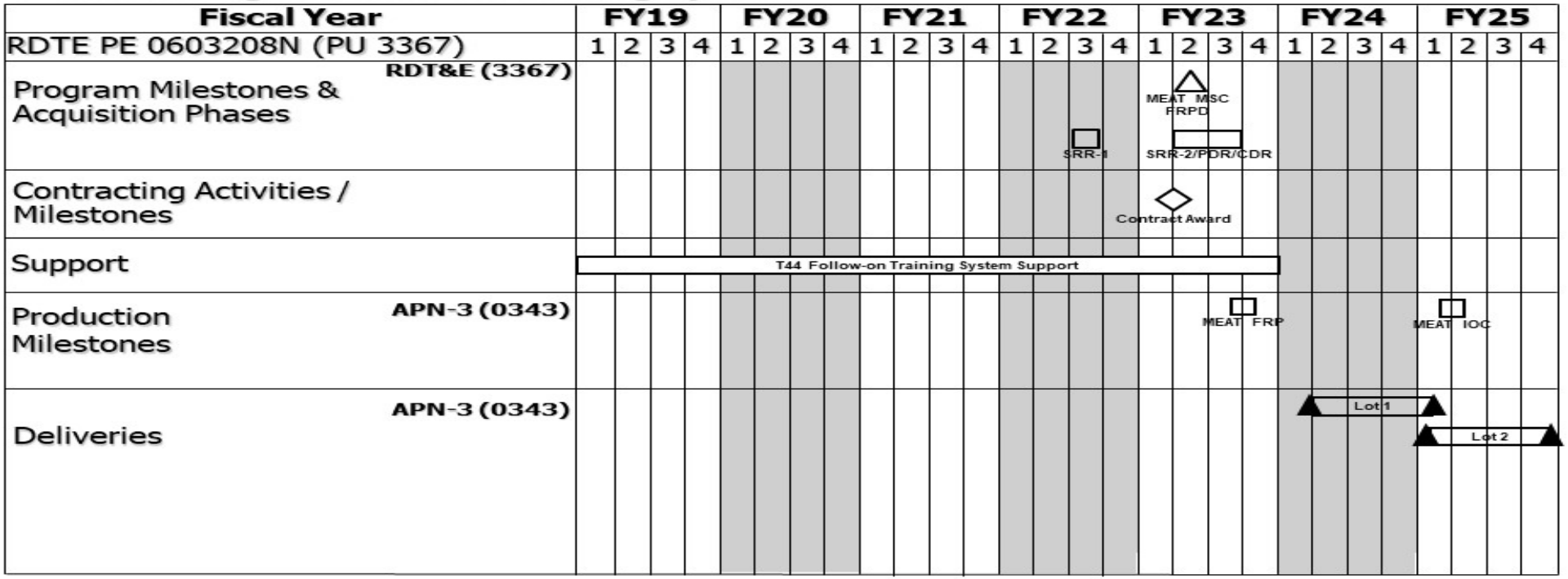

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
T45 RASP				
Support: System Engineering: T45 Hardware Development	1	2019	1	2019
Test & Evaluation: Technical Evaluation: T45 Integrated Test & Evaluation	2	2019	3	2019
Deliveries: Test Assets: T45 Test Assets	1	2019	3	2019
TH-57 Follow-On Training System				
System Engineering: Follow-On Training System Development	1	2019	2	2020
Training System Improvements				
Product Development: T6 Crash Survivable Cockpit Voice Recorder (CSR): T6 Crash Survivable Cockpit Voice Recorder (CSR)	2	2020	4	2021
Product Development: T6 Controlled Flight Into Terrain (CFIT) Avoidance: T6 Controlled Flight Into Terrain (CFIT) Avoidance	2	2020	4	2021
Product Development: T-45 (TS) Digital Inline Timer Development: T-45 (TS) Digital Inline Timer Development	2	2020	2	2021
Product Development: T-45 Next Gen Strike Training Aircraft AOA: T-45 Next Gen Strike Training Aircraft Analysis of Alternatives	1	2020	1	2021
Study/Analysis/Support: T-6 Joint Study Efforts: T-6 Joint Study Efforts	1	2019	4	2025
Study/Analysis/Support: T-45 Real-time Air Quality Test Sensor Study: T-45 RTAQS Study	1	2019	4	2021
T6 Test & Evaluation: CSR IT&E	4	2020	3	2021
T6 Test & Evaluation: CFIT T&E	3	2020	4	2021
Naval Aviation Physiological Episodes				
Product Development: T-45 PE Product Development: T-45 Product Development	1	2019	4	2020
Product Development: T6 PE Support: T-45 System Engineering	1	2019	4	2020
Product Development: T6 PE Support: T-45 PE Support	1	2019	4	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 3367 / *Training Aircraft Updates*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Product Development: T6 PE Support: T-6 PE Support	1	2019	4	2020
T-44 Multi-Engine Follow-On Training System				
Systems Engineering: Follow-On Training System Development	1	2019	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy											Date: February 2020	
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0603208N / *Training System Aircraft*				Project (Number/Name) 9099 / *Physiological Episodes*			
COST ($ in Millions)	**Prior Years**	**FY 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**Cost To Complete**	**Total Cost**
9099: *Physiological Episodes*	0.000	0.000	0.000	1.829	-	1.829	0.814	0.814	0.832	0.849	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

T-45 and T-6 Physiological Episode (PE) Mitigation:

Efforts will provide for studies and development efforts to address mitigation of the T-45 and T-6 physiological episodes.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: T-45 Physiological Episode Mitigation	0.000	0.000	0.823	0.000	0.823
Articles:	-	-	-	-	-
Description: Funding provides for design, development, integration and test of platform improvements for Naval Aviation Physiological Episode (PE) Mitigation in the T-45 Training Aircraft.					
FY 2020 Plans: N/A					
FY 2021 Base Plans: Continue studies & development efforts, utilize associative learning 'artificial intelligence' platform to evaluate aircraft and maintenance data in support of PE root cause investigations for platform improvements for Naval Undergraduate Flight Training Systems, including T-45 Physiological Episode mitigation.					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement: The FY2021 funding request was increased by $0.823M due to establishment of Physiological Episodes project unit (PU) 9099.					
Title: T-6 Physiological Episode Mitigation	0.000	0.000	1.006	0.000	1.006
Articles:	-	-	-	-	-
Description: Funding provides for design, development, integration and test of platform improvements for Naval Aviation Physiological Episode (PE) Mitigation in the T-6 Training Aircraft.					
FY 2020 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 9099 / *Physiological Episodes*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
N/A ***FY 2021 Base Plans:*** Continue studies & joint development efforts with Air Force for Joint Primary Aircraft Training System (T-6). As well as test and evaluation of new Onboard Oxygen Generating System (OBOGS) concentrator. ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The FY2021 funding request was increased by $1.006M due to establishment of Physiological Episodes project unit (PU) 9099.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	1.829	0.000	1.829

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• APN/0569: *T-45 Physiological Episode Mitigation OSIP 012-19*	41.234	40.063	12.656	-	12.656	7.561	6.231	4.677	4.772	0.000	117.194
• APN/0571: *JPATS Physiological Episode Mitigation OSIP 007-20*	0.000	11.019	4.275	-	4.275	4.091	4.168	10.913	10.645	0.000	45.111

Remarks

D. Acquisition Strategy

Efforts under this category are expected to be limited to those efforts meeting thresholds under the abbreviated acquisition category.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0603208N / *Training System Aircraft*	Project (Number/Name) 9099 / *Physiological Episodes*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
T45 PE Systems Engineering	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		0.823	Nov 2020	-		0.823	Continuing	Continuing	Continuing
T6 PE Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		0.754	Nov 2020	-		0.754	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		1.577		-		1.577	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
T6 PE Test & Evaluation	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.000		0.252	Nov 2020	-		0.252	0.000	0.252	-
		Subtotal	0.000	0.000		0.000		0.252		-		0.252	0.000	0.252	N/A

Remarks

Cost category added for T-6 PE Test & Evaluation; effort previously funded under Product Development - T6 PE Support line.

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		1.829		-		1.829	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 9099 / *Physiological Episodes*

Physiological Episodes

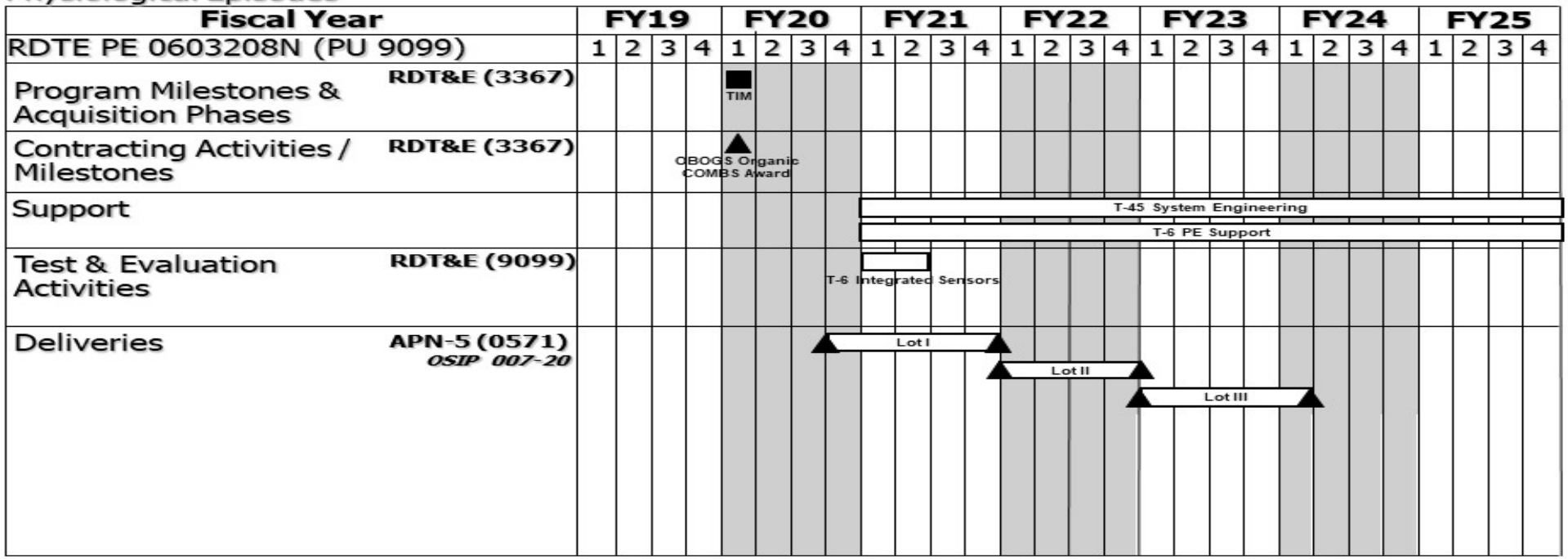

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0603208N / *Training System Aircraft*	**Project (Number/Name)** 9099 / *Physiological Episodes*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Naval Aviation Physiological Episodes				
Support: PE Support: T-45 System Engineering	1	2021	4	2025
Support: PE Support: T-6 PE Support	1	2021	4	2025
Support: PE Test & Evaluation: T-6 Integrated Sensors	1	2021	2	2021