Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Operational Test and Evaluation, Defense	Date: February 2016
Appropriation/Budget Activity 0460: *Operational Test and Evaluation, Defense* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605131OTE / *Live Fire Test and Evaluation (LFT&E)*

COST ($ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	48.423	45.142	46.882	48.316	-	48.316	48.966	49.947	50.946	51.961	Continuing	Continuing
0605131OTE: *LFT&E*	48.423	45.142	46.882	48.316	-	48.316	48.966	49.947	50.946	51.961	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element consists of three programs: Live Fire Test and Evaluation, Joint Aircraft Survivability Program (JASP), and Joint Technical Coordinating Group for Munitions Effectiveness (JTCG/ME).

This Program Element directly supports the Congressional statutory requirements for oversight of Live Fire Test and Evaluation (LFT&E). The primary objective of LFT&E is to assure that the vulnerability and survivability of Department of Defense (DoD) crew-carrying platforms and the lethality of our conventional munitions are known and acceptable before entering full-rate production. LFT&E encompasses realistic tests involving actual United States (U.S.) and foreign threat hardware or, if not available, acceptable surrogate threat hardware. The objective is to identify and correct design deficiencies early in the development process. A completed LFT&E program and test report is required before programs proceed beyond low-rate initial production (BLRIP). LFT&E also includes realistic modeling and simulation (M&S) to examine survivability and lethality attributes not assessed during testing.

This Program Element also supports DoD's Joint Live Fire (JLF) Program and other LFT&E related initiatives. JLF was begun in 1984 under an Office of the Secretary of Defense charter to test fielded front-line combat aircraft and armor systems for their vulnerabilities as well as fielded weapons, both U.S. and foreign, for their lethality against their respective targets. Funds are also used to support other initiatives related to quick reaction requests from theater and other areas of personnel survivability.

The Joint Aircraft Survivability Program is the DoD's focal point for joint service enhancement of military aircraft non-nuclear survivability. The JASP is chartered by the commanders of the USN Naval Air Systems Command, USA Aviation and Missile Command and USAF Life Cycle Management Center to coordinate and conduct RDT&E to improve military aircraft survivability, develop and standardize aircraft survivability modeling and simulation (M&S), facilitate information exchange on aircraft survivability and support aircraft survivability education for the DoD and U.S. aircraft community. Each chartering command provides a senior aircraft survivability expert for the JASP Principal Members Steering Group (PMSG), which guides the program and approves projects for funding. The JASP assesses and reports on combat damage incidents through the Joint Combat Assessment Team (JCAT), is the Executive Agent for the Joint Live Fire Aircraft Systems Program managed by the Live Fire Test office of DOT&E.

The Joint Logistics Commanders Joint Technical Coordinating Group for Munitions Effectiveness (JTCG/ME) was chartered more than 40 years ago to serve as DoD's focal point for munitions effectiveness information. This has taken the form of widely used Joint Munitions Effectiveness Manuals (JMEMs) which address all major non-nuclear U.S. weapons. JTCG/ME authenticates weapons effectiveness data for use in training, systems acquisition, weapon procurement, and combat modeling and simulation. JMEMs are used by the Armed Forces of the U.S., NATO, and other allies to plan operational missions, support training and tactics development, and support force-level analyses. JTCG/ME also develops and standardizes methodologies for evaluation of munitions effectiveness and maintains databases for target vulnerability, munitions lethality, and weapon system accuracy. The JMEM requirements and development processes continues to be driven by operational lessons

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Operational Test and Evaluation, Defense	Date: February 2016
Appropriation/Budget Activity 0460: *Operational Test and Evaluation, Defense I* BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605131OTE *I Live Fire Test and Evaluation (LFT&E)*

learned (Enduring Freedom, Iraqi Freedom, Odyssey Dawn and Inherent Resolve) and the needs of Combatant Commands, Services, Military Targeting Committee, and Operational Users Working Groups input for specific weapon-target pairings and methodologies.

This program element also includes funds to obtain Federally Funded Research and Development Center (FFRDC) expertise in performing analyses in support of described Live Fire Test and Evaluation tasks, as well as travel funds to carry out the LFT&E, JASP and JTCG/ME programs.

B. Program Change Summary ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	45.142	46.882	49.043	-	49.043
Current President's Budget	45.142	46.882	48.316	-	48.316
Total Adjustments	0.000	0.000	-0.727	-	-0.727
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Inflation/Economic Adjustment	-	-	-0.727	-	-0.727

Change Summary Explanation

Inflation/Economic Adjustment of -$0.727 in FY 2017

Exhibit R-2A, RDT&E Project Justification: PB 2017 Operational Test and Evaluation, Defense			Date: February 2016
Appropriation/Budget Activity 0460 / 6	R-1 Program Element (Number/Name) PE 0605131OTE / *Live Fire Test and Evaluation (LFT&E)*	Project (Number/Name) 0605131OTE / *LFT&E*	

COST ($ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
0605131OTE: *LFT&E*	48.423	45.142	46.882	48.316	-	48.316	48.966	49.947	50.946	51.961	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Program Element consists of three programs: Live Fire Test and Evaluation, Joint Aircraft Survivability Program (JASP) and Joint Technical Coordinating Group for Munitions Effectiveness (JTCG/ME).

This Program Element directly supports the Congressional statutory requirements for oversight of Live Fire Test and Evaluation (LFT&E). The primary objective of LFT&E is to assure that the vulnerability and survivability of Department of Defense (DoD) crew-carrying platforms and the lethality of our conventional munitions are known and acceptable before entering full-rate production. LFT&E encompasses realistic tests involving actual United States (U.S.) and foreign threat hardware or, if not available, acceptable surrogate threat hardware. The objective is to identify and correct design deficiencies early in the development process. A completed LFT&E program and test report is required before programs proceed beyond low-rate initial production (BLRIP). LFT&E also includes realistic modeling and simulation (M&S) to examine survivability and lethality attributes not assessed during testing.

This Program Element also supports DoD's Joint Live Fire (JLF) Program and other LFT&E related initiatives. JLF was begun in 1984 under an Office of the Secretary of Defense (OSD) charter to test fielded front-line combat aircraft and armor systems for their vulnerabilities as well as fielded weapons, both U.S. and foreign, for their lethality against their respective targets. Funds are also used to support other initiatives related to quick reaction requests from theater and other areas of personnel survivability.

The Joint Aircraft Survivability Program is the DoD's focal point for joint service enhancement of military aircraft non-nuclear survivability. The JASP is chartered by the commanders of the USN Naval Air Systems Command, USA Aviation and Missile Command and USAF Life Cycle Management Center to coordinate and conduct RDT&E to improve military aircraft survivability, develop and standardize aircraft survivability modeling and simulation (M&S), facilitate information exchange on aircraft survivability and support aircraft survivability education for the DoD and U.S. aircraft community. Each chartering command provides a senior aircraft survivability expert for the JASP Principal Members Steering Group (PMSG), which guides the program and approves projects for funding. The JASP assesses and reports on combat damage incidents through the Joint Combat Assessment Team (JCAT), is the Executive Agent for the Joint Live Fire Aircraft Systems Program managed by the Live Fire Test office of DOT&E.

The Joint Logistics Commanders' Joint Technical Coordinating Group for Munitions Effectiveness (JTCG/ME) was chartered more than 40 years ago to serve as DoD's focal point for munitions effectiveness information. This has taken the form of widely used Joint Munitions Effectiveness Manuals (JMEMs) which address all major non-nuclear U.S. weapons. JTCG/ME authenticates weapons effectiveness data for use in training, systems acquisition, weapon procurement, and combat modeling and simulation. JMEMs are used by the Armed Forces of the U.S., NATO, and other allies to plan operational missions, support training and tactics development, and support force-level analyses. JTCG/ME also develops and standardizes methodologies for evaluation of munitions effectiveness and maintains databases for target vulnerability, munitions lethality, and weapon system accuracy. The JMEM requirements and development processes continues to be driven by operational lessons

Exhibit R-2A, RDT&E Project Justification: PB 2017 Operational Test and Evaluation, Defense		Date: February 2016
Appropriation/Budget Activity 0460 / 6	**R-1 Program Element (Number/Name)** PE 0605131OTE / *Live Fire Test and Evaluation (LFT&E)*	**Project (Number/Name)** 0605131OTE / *LFT&E*

learned (Enduring Freedom, Iraqi Freedom, Odyssey Dawn and Inherent Resolve) and the needs of Combatant Commands (CCMDs), Services, Military Targeting Committee, and Operational Users Working Groups (OUWG) input for specific weapon-target pairings and methodologies.

This program element also includes funds to obtain Federally Funded Research and Development Center (FFRDC) expertise in performing analyses in support of described Live Fire Test and Evaluation tasks, as well as travel funds to carry out the LFT&E, JASP and JTCG/ME programs.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
Title: Live Fire Test and Evaluation	45.142	46.882	48.316
FY 2015 Accomplishments: Live Fire Test and Evaluation Major Test and Evaluation Programs This is a continuing effort. The FY 2015 budget provides for Live Fire Test and Evaluation input for Test and Evaluation Master Plans, Test Plans, System Acquisition Reports, Defense Acquisition Executive Summary reports, and BLRIP reports for those programs designated for oversight by DOT&E and OUSD(AT&L). The oversight list is maintained continuously and published annually. JLF Programs and LFT&E Initiatives In FY15, JLF funded 26 projects and delivered 24 reports. Focus areas for JLF included projects that either 1) characterized new survivability issues; 2) characterized new lethality issues; 3) improved accuracy and fidelity of weapon data; 4) improved test methods; or 5) improved modeling and simulation methods. JLF Air projects evaluated the effects of internal configuration on helicopter crew compartment fires and conducted egress testing, as well as relevant model validation. Projects also investigated technologies/techniques to reduce generic vulnerabilities to all aircraft from threats such as MANPADS and small arms. Other projects included assessment of yawed penetration, missile debris, high energy lasers, the lethality of advanced projectiles, and performed a comparison of commonly used test threats. New projects investigated cabin mounted auxiliary fuel tank vulnerability, ballistically induced hydrodynamic ram effects, and characterized fragmentation grenades. JLF Land projects continued to investigate the vulnerability of vehicles to underbody blast and the lethality of U.S. weapons against typical in-theater targets. Land projects also focused on collecting data for validating modeling and simulation tools. Others included the assessment of the use and validity of manikins and helmet performance. New projects studied aging effects on fielded armor and irregular fragment penetration. JLF Sea projects continued to investigate ship vulnerabilities in the areas of commercial standards, equipment and component damage. The projects also assessed vulnerabilities of designs and components for new ships, fire damage to ship components, including bulkheads, insulation, and reconfigurable spaces. JLF Sea also investigated asymmetric boat threats, and began work on developing small boat vulnerability			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Operational Test and Evaluation, Defense		Date: February 2016
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
models. New projects investigated deep depth underwater explosions, air gun configurations for full ship shock trial alternatives, and explored configurations for augmenting ballistic manikins. Additional Live Fire initiatives included continued efforts in support of Personnel Protection Equipment, including testing for combat helmets and body armor. The initiatives also addressed urgent requests from theater to deploy the Joint Combat Assessment Team to investigate and report to operators, restored the Navy Advanced Mine Simulation System (AMISS), and continued supporting the development of a ground vehicle survivability course. JASP In FY 2015 the JASP continued work on 40 multi-year RDT&E projects and initiated 24 new projects approved by the JASP Principal Members Steering Group and OSD/DOT&E. In the area of susceptibility reduction, the JASP addressed improving the effectiveness and reducing the space, weight and power required for directed energy infrared countermeasures, electronic countermeasures technology and techniques, integrated aircraft survivability equipment, and aircrew situational awareness. In the area of vulnerability reduction, the JASP continued to address requirements for lighter and more effective vulnerability reduction technology (e.g., armor, fuel containment, fire suppression, and aircrew and passenger protection). In aircraft survivability Modeling and Simulation (M&S), the JASP continued to improve survivability M&S credibility, address operator requirements for survivability data, integrate DIA threat missile models into threat engagement codes, improve the assessment of aircrew and passenger injuries, and address M&S requirements identified by the joint aircraft survivability community. The JASP completed 33 reports documenting efforts accomplished in FY 2015. The JCAT continued to support the Air Force, Army, Marine Corps and Navy by assessing combat damage incidents, training operators on threat effects and combat damage assessment, and reporting their findings to combatant commanders and the DoD science and technology and acquisition communities. The JASP continued supporting aircraft survivability education and information exchange through internet sites (restricted access and classified), by publishing the Aircraft Survivability Journal, developing educational materials and conducting training for the DoD and their contractors. Joint Technical Coordinating Group for Munitions Effectiveness JTCG/ME continued to field critical JMEM products to enable on-going CCMD operational Weaponeering and collateral damage estimates along with support to the Anti-air effectiveness community (operational, training, testing, and analysis). In support of operational commanders, DoD targeteers, weaponeers, and planners, the JTCG/ME released the Digital Precision Strike Suite (DPSS) Collateral Damage Estimation (DCiDE) Tool v1.2.2, and is finalizing the formal release of JMEM Weaponeering System (JWS) v2.2, and Joint-Anti-air Combat Effectiveness System (J-ACE) Air Superiority v5.3.			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Operational Test and Evaluation, Defense		Date: February 2016
Appropriation/Budget Activity 0460 / 6	**R-1 Program Element (Number/Name)** PE 0605131OTE / *Live Fire Test and Evaluation (LFT&E)*	**Project (Number/Name)** 0605131OTE / *LFT&E*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
JWS v2.3 efforts included development and initial integration of enhanced data sets and capabilities include: new Imagery Interface to implement aimpoint development leveraging the Tasked Target Text Data (T3D) data format implemented by currently fielded mission planning systems. JWS software and T3D imagery interface modifications to support integration of Electronic Light Table (ELT) viewers. Development of Modernized Integrated Database (MIDB) and Joint Targeting Toolbox (JTT) interfaces to support connectivity. These developments will enable the integration of Weaponeering, Precision Point Mensuration (PPM) and Collateral Damage Estimation (CDE) via Digital Imagery Exploitation Engine (DIEE); currently under development. JWS v2.3 will also add the updated Gunship Delivery Accuracy Program (GDAP), Rotary Wing Delivery Accuracy Program (RWDAP), and Fast Integrated Structural Tool (FIST) v1.2. Based on the current guidance and direction from Joint Staff, JWS v2.2 and future versions will be released to several key coalition partners in support of current operations at Combined Air Operations Centers and Other Joint Commands. The JTCG/ME released Digital Precision Strike Suite (DPSS) Collateral Damage Estimation (DCiDE) v1.2.2 with enhancements to support Inherent Resolve Kinetic Strike partners. This tool displays accredited Collateral Damage Estimate Level 1-5 A-C series CER reference tables. In addition, in direct support of the Combatant Commands and the CJCSI 3160.01, JTCG/ME accredited new Collateral Effects Radii (CER) Reference Tables and the corresponding extensible markup language (xml) file for DCiDE. Changes included additions for air burst munitions and nomenclature changes. Additional updates have been provided for newly fielded/ updated systems (e.g., GBU-49/BLU-133; AGM-176A; 155mm M109A M549A1 and M795 with Guided M1156 PGK Fuze). In support of advanced CDE techniques, the Collateral Effects Library (CEL) was developed. J-ACE simulates air-to-air and surface-to-air engagements to support the operational, training, test, and acquisition communities. J-ACE v5.3 includes extended and updated data sets for missile and aircraft target aero-performance, anti-air missile lethality, and air target vulnerability. This includes 17 new or updated BLUE/RED Air-to-Air (AA) or Surface-to-Air (SA) Government furnished missile and weapon fly out models. Additionally, Joint Anti Air Model (JAAM) was updated to include the effect of weapon system reliability on the probability of a successful engagement. J-ACE v5.3 includes the Hybrid Integration and Visualization Engine (HIVE)/Bluemax6 software interface for increased aircraft aero performance modeling with HOTAS (Hands On Throttle and Stick) and display capability. BlueMax6 provides a large library of BLUE and RED aircraft models developed by the acquisition and intelligence communities. J-ACE v5.3 also includes increased Electronic Counter-Measure (ECM) capabilities for an aircraft's ECM system jamming coverage. The new HIVE/ESAMS software interface enables Blue counter measure evaluations against Red Surface to Air Missiles. Initial dynamic visualization of an aircraft's ECM systems zones of coverage will allow pilots, while developing threat engagement or evasive maneuvers, to consider ECM protection with respect to the threat position. The latest updated Endgame Manager (EM) module is also included with new/updated weapons data sets and increased non-spherical blast capability. The product also includes a vast library of separate audit trail reports for each aircraft and weapon.			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Operational Test and Evaluation, Defense		Date: February 2016
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
JTCG/ME continued to develop JMEM data for the most critical Combatant Commander identified systems (Targets and Weapons). Accreditation of tri-Service JMEM operational tools continued as well as with expanded databases to incorporate newly fielded weapons (i.e., Air-to-Surface, Surface-to-Surface Direct/Indirect Fire, and Anti-air). JTCG/ME continues to conduct requirement analysis of the current JWS, J-ACE, and DCiDE software suites to enhance long-term software maintainability, connectivity, and flexibility to include structural and architectural changes. ***FY 2016 Plans:*** Live Fire Test and Evaluation Major Test and Evaluation Programs This is a continuing effort. The FY 2016 budget provides Live Fire Test and Evaluation input for Test and Evaluation Master Plans, Test Plans, System Acquisition Reports, Defense Acquisition Executive Summary reports, and BLRIP reports for those programs designated for oversight by DOT&E and OUSD(AT&L). The oversight list is maintained continuously and published annually. JLF Programs The FY 2016 JLF budget will support at least 28 projects. Focus areas for JLF included projects that either 1) characterized new survivability issues; 2) characterized new lethality issues; 3) improved accuracy and fidelity of weapon data; 4) improved test methods; or 5) improved modeling and simulation methods. JLF Air projects will continue to evaluate technologies and techniques to decrease vulnerabilities to all currently tested aircraft, against operationally relevant threats. The projects will focus on completing the assessment of CV-22 armor, ballistic vulnerability testing of fuel system on light aircraft, and percentage testing of oxygen prohibiting fuel tank ullage explosions. New projects will investigate new threat model development, V-22 wing fire protection, crew cabin fire mitigation. JLF Land projects will continue to investigate the vulnerability of vehicles to underbody blast and the lethality of U.S. weapons against typical in-theater targets. JLF Land projects will also provide the necessary data to enable improvement and validation of modeling and simulation tools. New projects will study fielded weapons effects to support warfighter collateral damage estimates and weapon lethality against urban structures. Some will study penetration profiles of ballistic backing materials for body armor testing, evaluate the optimization of 30mm urban combat mixes as well as new arena test data collection methodologies. JLF Sea projects will continue to develop key components of alternatives to traditional shock trials of ships and submarines. They will continue to investigate ship vulnerabilities in the areas of commercial standards, equipment and component damage, and will investigate vulnerabilities of designs and components for new ships.			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Operational Test and Evaluation, Defense		Date: February 2016
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
Live Fire initiatives include continued efforts in support of Personnel Protection Equipment, including testing for combat helmets and body armor. Initiatives also include Missile Defense modeling updates as well as continued support of the development of a ground vehicle survivability course. JASP In FY 2016 the JASP will continue work on at least 28 multi-year RDT&E projects and initiate 19 new projects approved by the JASP Principal Members Steering Group and OSD/DOT&E. In the area of susceptibility reduction, the JASP will address improving the effectiveness and reducing the space, weight and power required for directed energy infrared countermeasures, electronic countermeasures technology and techniques, and aircrew situational awareness. In the area of vulnerability reduction, the JASP will continue to address requirements for lighter and more effective vulnerability reduction technology (e.g., armor, fuel containment, fire suppression, and aircrew and passenger protection). In aircraft survivability M&S, the JASP will continue to improve survivability M&S credibility, address operator requirements for survivability data, integrate DIA threat missile models into threat engagement codes, improve the assessment of aircrew and passenger injuries, and address M&S requirements identified by the joint aircraft survivability community. The JCAT will continue to support the Air Force, Army, Marine Corps and Navy by assessing combat damage incidents, training operators on threat effects and combat damage assessment, and reporting their findings to combatant commanders and the DoD science and technology and acquisition communities. The JASP will continue supporting aircraft survivability education and information exchange through internet sites (restricted access and classified), by publishing the Aircraft Survivability Journal, developing educational materials and conducting training for the DoD and their contractors. The JASP will initiate, continue and complete other projects as approved by the JASP Principal Members Steering Group and OSD/DOT&E. Joint Technical Coordinating Group for Munitions Effectiveness In support of operational Combatant Commanders, DoD targeteers, weaponeers, and planners, the JTCG/ME will formally release JMEM Weaponeering System (JWS) v2.2 and Joint-Anti-air Combat Effectiveness System (J-ACE) Air Superiority (AS) v5.3 in 1QFY16 and 3QFY16, respectively. JTCG/ME will also finalize and release JWS v2.3 in FY16, while continuing to integrate and develop data, methodology, and major capabilities for future products: JWS v3.0, J-ACE v5.4, Joint Non-Kinetic Effectiveness (J-NKE) tools, Digital Precision Strike Suite (DPSS) Collateral Damage Estimation (DCiDE) tool, and standalone US Only solutions for rapid, high priority requirements. JTCG/ME will also continue to enhance User interface and Training opportunities to optimize support to the Warfighter. Based on the current guidance and direction from Joint Staff, JWS 2.2 and future versions will be released to several key coalition partners in support of current operations at International Security Assistance Force (ISAF), Combined Air Operations Centers,			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
and Other Joint Commands. Given expanded release scope, JTCG/ME will continue to develop, where applicable, weaponeering solutions for high priority requirements (e.g. Probability of Kill (Pk) Look up Table Software, Quick Weaponeering Guides, etc.). JWS v2.3 efforts include final integration, operational testing, and execution of final release procedures of the completed product. The product will include enhanced capabilities: new/updated data sets, new Imagery Interface to implement aimpoint development leveraging the Tasked Target Text Data (T3D) data format implemented by currently fielded mission planning systems. JWS software and T3D imagery interface will support integration of Electronic Light Table (ELT) viewers. There will also be a Modernized Integrated Database (MIDB) and Joint Targeting Toolbox (JTT) interface with additional capabilities to support connectivity. These developments will enable the integration of Weaponeering, Precision Point Mensuration (PPM), and Collateral Damage Estimation (CDE). JWS v2.3 will also include updated Gunship Delivery Accuracy Program (GDAP), Rotary Wing Delivery Accuracy Program (RWDAP), and Fast Integrated Structural Tool (FIST) v1.2. JWS v2.3 is scheduled for 4QFY16 Release. JWS v3.0 efforts will include development and initial delivery/integration of enhanced capabilities to include: Joint Mean Area Effects (JMAE) v2.3, Non-Linear Blast Tool (NBT) v1.0, Moving Target Methodology (MTM), Small Precision Munition (SPM) methodology, bomb burial interim methodology, Average Matrix (AvMat) v2.0, Joint Gun Effectiveness Model (JGEM) v3.1, Fast Integrated Structural Tool (FIST) v2.0, Penetration and Cratering Effects (PCEffects), Bridge Analysis System (BAS), Linear Target Module (LTM), Precision Munitions Planning Tool (PMPT). J-ACE v5.4 efforts will include development, delivery, and initial integration of capabilities in the Joint Anti-air Model (JAAM) and Endgame Manager (EM) v5.4 modules. JAAM v5.4 capabilities include expanded use of Hybrid Integration and Visualization Engine (HIVE) and data/model assemblies for more efficient testing and interface along with enhancements in: weapons/ performance data, graphical user interface (GUI) and displays, lethal radius methodology, aero performance, detection methodology, and training/debrief tool interfaces. EM v5.4 capabilities will include enhancements in: burst point methodology, GUI, batch run/run time, enhanced fuze methodology, new shape charged jet, and near field trajectory. JAAM v5.4 will also include initial capability to evaluate two sided Suppression of Enemy Air Defense (SEAD) and Destruction of Enemy Air Defense (DEAD). DCiDE efforts will include realignment of DCiDE with enhancements to CJCSI 3160.01, develop/update critical requirements for CDE products, support the development of the weapon / warhead data for inclusion in the updated CDE Tables, and review CEL as part of operational tools.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
J-NKE efforts will include continued validation of Cyber Capabilities Registry (CCR) data and Cyber JMEM (CJMEM) capability database population, develop process to identify Cyber Critical Elements based on existing kinetic process, identify/develop Cyber target vulnerability (TV) database, populate Jammer Effectiveness Tables (JET), improve existing Cyber Weaponeering modeling. JTCG/ME will continue to strengthen User interaction and training on products. The JWS training program will include multiple training sessions and Operational Users Working Group (OUWG) forums with new product release. The J-ACE formal training program will continue the expansion with more mature program and new product release. Additionally, JTCG/ME with continue to train DCiDE users to support Collateral Damage Estimation decisions. JTCG/ME will continue to develop a predictive capability to assess blast effects, body-on-body penetration, and blast-fragment synergism and incorporate these mechanisms in the JTCG/ME estimation process for small precision weapons. Furthermore, JTCG/ME will expand the use of computational physics to improve test design and data analysis to support both analytical model development and the characterization of weapons addressing blast interactions with structures, weapon fragmentation, and penetration mechanics. JTCG/ME will develop JMEM data for most critical Combatant Commander identified systems (Targets and Weapons), and reduce DVD-ROM update cycles through incremental updates and increased efficiencies. Accreditation of tri-Service JMEM operational tools will continue as well as expanding existing databases to incorporate newly fielded weapons (i.e., Air-to-Surface, Surface-to-Surface Direct/Indirect Fire, J-NKE and Anti-air). JTCG/ME will continue to conduct requirement analysis of the current JWS, J-ACE, DCiDE and DIEE software suites to finalize a road map in enhancing long-term software maintainability, connectivity, and flexibility to include structural and architectural changes.			
FY 2017 Plans: JLF Programs and LFT&E Initiatives The FY 2017 budget will support the Live Fire Test and Evaluation deputate's assessment of Test and Evaluation Master Plans, Test Plans, System Acquisition Reports, Defense Acquisition Executive Summary reports, and the development of Live Fire Test and Evaluation reports for those programs designated for OSD oversight . The DOT&E oversight list is maintained continuously and published annually. The FY 2017 budget will support the planning and execution of tests of fielded systems not previously tested under the Live Fire Programs to support DOT&E and operator needs. New threats, missions, TTPs, and combat environments create the need for			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Operational Test and Evaluation, Defense		Date: February 2016
Appropriation/Budget Activity 0460 / 6	**R-1 Program Element (Number/Name)** PE 0605131OTE / *Live Fire Test and Evaluation (LFT&E)*	**Project (Number/Name)** 0605131OTE / *LFT&E*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
these tests and an assessment of performance. JLF projects will be defined, planned and executed to provide survivability and lethality data on currently fielded U.S. systems. JASP In FY 2017 the JASP will continue work on at least 30 multi-year RDT&E projects and initiate about 10 new projects approved by the JASP Principal Members Steering Group and OSD/DOT&E. In the area of susceptibility reduction, the JASP will address improving the effectiveness and reducing the space, weight and power required for directed energy infrared countermeasures, electronic countermeasures technology and techniques, aircrew situational awareness and urgent operator needs. In the area of vulnerability reduction, the JASP will continue to address requirements for lighter and more effective vulnerability reduction technology (e.g., armor, fuel containment, fire suppression, and aircrew and passenger protection). In aircraft survivability M&S, the JASP will continue to improve survivability M&S credibility, address operator requirements for survivability data, integrate DIA threat missile models into threat engagement codes, improve the assessment of aircrew and passenger injuries, and address M&S requirements identified by the joint aircraft survivability community. The JCAT will continue to support the Air Force, Army, Marine Corps and Navy by assessing combat damage incidents, training operators on threat effects and combat damage assessment, and reporting their findings to combatant commanders and the DoD science and technology and acquisition communities. The JASP will continue supporting aircraft survivability education and information exchange through internet sites (restricted access and classified), by publishing the Aircraft Survivability Journal, developing educational materials and conducting training for the DoD and their contractors. The JASP will initiate, continue and complete other projects as approved by the JASP Principal Members Steering Group and OSD/DOT&E. Joint Technical Coordinating Group for Munitions Effectiveness In support of operational Combatant Commanders, DoD targeteers, weaponeers, and planners, the JTCG/ME will formally release JMEM Weaponeering System (JWS) v3.0 Beta and Joint-Anti-air Combat Effectiveness System (J-ACE) Air Superiority (AS) v5.4 in 3QFY17. JTCG/ME will also continue to develop data, methodology, and major capabilities for future products based on requirements. Future products include: JWS v3.0, J-ACE v5.5, Joint Non-Kinetic Effectiveness (J-NKE), and Digital Precision Strike Suite (DPSS) Collateral Damage Estimation (DCiDE) tool. JWS v3.0 efforts will include final integration, operational testing, and execution of final release processes for completed product. The new product capabilities will include: Joint Mean Area Effects (JMAE) v2.3, Non-Linear Blast Tool (NBT) v1.0, Moving Target Methodology (MTM), Small Precision Munition (SPM) methodology, bomb burial interim methodology, Average Matrix (AvMat)			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Operational Test and Evaluation, Defense		Date: February 2016
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
v2.0, Joint Gun Effectiveness Model (JGEM) v3.1, Fast Integrated Structural Tool (FIST) v2.0, Penetration and Cratering Effects (PCEffects), Bridge Analysis System (BAS), Linear Target Module (LTM), Precision Munitions Planning Tool (PMPT). J-ACE v5.4 efforts will include final integration, operational testing, and release of completed product. The new product capabilities will include expanded use of Hybrid Integration and Visualization Engine (HIVE) and data/model assemblies for more efficient testing and interface to Joint Anti-Air Model (JAAM). Enhancements to both JAAM and Endgame Manger will include: weapons/performance data, GUI and displays, lethal radius methodology, aero performance (HOTAS - Hands On Stick and Throttle), detection methodology, and training/debrief tool interfaces, burst point methodology, Graphical User Interface, batch run/run time, enhanced fuze methodology, new shape charged jet, and near field trajectory. J-ACE v5.4 will also include initial capability to evaluate two sided Suppression of Enemy Air Defense (SEAD) and Destruction of Enemy Air Defense (DEAD). J-ACE 5.4 is scheduled for 3QFY17 Release. J-ACE v5.5 efforts will include continued development of enhanced capabilities in the Joint Anti-air Model (JAAM) and Endgame Manager (EM) modules. J-ACE v5.5 capabilities will include expanded evaluation of two sided Suppression of Enemy Air Defense (SEAD) and Destruction of Enemy Air Defense (DEAD) along with enhanced capabilities in the following: weapons/ performance data assemblies, initial rotary wing capability, Infra-Red Counter Measures leveraging existing capabilities (e.g., MOSAIC, etc.), Ground-to-Air Guns leveraging existing capabilities (e.g., RADGUNS, etc.), interfaces to external models, EM Hit-to-Kill methodology, and EM Cloud of Points methodology. JTCG/ME will continue to strengthen User interaction and training on products. The JWS training program will include multiple training sessions and Operational Users Working Group (OUWG) forums with new product release. The J-ACE formal training program will continue to expansion with more matured program and new product release. Additionally, JTCG/ME with continue to train DCiDE users to support Collateral Damage Estimation decisions. JTCG/ME will develop JMEM data for most critical Combatant Commander identified systems (Targets and Weapons), and reduce DVD-ROM update cycles through incremental updates and increased efficiencies. Accreditation of tri-Service JMEM operational tools will continue as well as expanding existing databases to incorporate newly fielded weapons (i.e., Air-to-Surface, Surface-to-Surface Direct/Indirect Fire, non-kinetic and Anti-air). JTCG/ME will continue to conduct requirement analysis and development of future architectures for JWS, DCiDE and DIEE software suites to enable the integration of Weaponeering, Precision Point Mensuration (PPM) and Collateral Damage Estimation (CDE).			
Accomplishments/Planned Programs Subtotals	45.142	46.882	48.316

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C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

(U) Performance Measure: Percentage of required live fire test planning documents, assessments, munition effectiveness manuals, and reports applicable to acquisition programs on the OSD Test and Evaluation Oversight List and other special interest programs/legacy systems that are completed and delivered to the appropriate decision makers on time. Percentage of required products, such as test planning documents, munitions effectiveness manuals, tactic-techniques and reports that are developed and delivered to program managers and customers on time.

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