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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2013 Operational Test and Evaluation, Defense **DATE:** February 2012

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0460: <i>Operational Test and Evaluation, Defense</i> BA 6: <i>RDT&amp;E Management Support</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0605131OTE: <i>Live Fire Test and Evaluation</i>
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COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	12.834	12.126	49.201	-	49.201	48.423	49.587	50.255	51.306	Continuing	Continuing
0605131OTE: <i>Live Fire Test and Evaluation</i>	12.834	12.126	49.201	-	49.201	48.423	49.587	50.255	51.306	Continuing	Continuing

**Note**

Starting in FY 2013 the increase in funding is the result of the realignment of the JASP and JTCG/ME programs from the Operational Test Activities and Analyses program (0605814OTE) to the Live Fire Test and Evaluation program (0605131OTE).

**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). Starting in FY 2013 the JASP and JTCG/ME programs are realigned from the Operational Test Activities and Analyses program (0605814OTE) to the Live Fire Test and Evaluation program element (0605131OTE). The JASP and JTCG/ME programs focus on the survivability of currently fielded systems; therefore, the two programs are more appropriately funded within the Live Fire Test and Evaluation program element.

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 Aeronautical Systems 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

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the Live Fire Test office of DOT&E and is also an Executive Agent for the Survivability Vulnerability Information Analysis Center (SURVIAC), the repository for aircraft survivability information.

The Joint Logistics Commanders Joint Technical Coordinating Group for Munitions Effectiveness (JTTCG/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. JTTCG/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. JTTCG/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 learned (Enduring Freedom, Iraqi Freedom, and Odyssey Dawn) 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 programs.

This program element is budgeted in Budget Activity 6, RDT&E Management Support, to support LFT&E management activities for the oversight of RDT&E of new systems, as well as RDT&E of fielded systems.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013 Base</b>	<b>FY 2013 OCO</b>	<b>FY 2013 Total</b>
Previous President's Budget	12.899	12.126	11.982	-	11.982
Current President's Budget	12.834	12.126	49.201	-	49.201
Total Adjustments	-0.065	-	37.219	-	37.219
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Congressional General Reductions	-0.065	-	-	-	-
• Program Realignment	-	-	36.925	-	36.925
• Revised Economic Assumptions	-	-	0.294	-	0.294

**Change Summary Explanation**

Starting in FY 2013 the increase in funding is the result of the realignment of the JASP and JTTCG/ME programs from the Operational Test Activities and Analyses program (0605814OTE) to the Live Fire Test and Evaluation program (0605131OTE).

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COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
0605131OTE: <i>Live Fire Test and Evaluation</i>	12.834	12.126	49.201	-	49.201	48.423	49.587	50.255	51.306	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). Starting in FY 2013 the JASP and JTCG/ME programs are realigned from the Operational Test Activities and Analyses program (0605814OTE) to the Live Fire Test and Evaluation program element (0605131OTE). The JASP and JTCG/ME programs focus on the survivability of currently fielded systems; therefore, the two programs are more appropriately funded within the Live Fire Test and Evaluation program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2011	FY 2012	FY 2013
<b>Title:</b> Live Fire Test and Evaluation	12.834	12.126	49.201
<b>FY 2011 Accomplishments:</b> Live Fire Test and Evaluation Major Test and Evaluation Programs			
The FY 2011 budget provided Live Fire Test and Evaluation input for Test and Evaluation Master Plans, Test Plans, System Acquisition Reports, Defense Acquisition Executive Summary reports, and Beyond Low Rate Initial Production (BLRIP) reports for those programs designated for oversight by DOT&E and OUSD(AT&L). The oversight list is developed and published annually.			
JLF Programs and LFT&E Initiatives			
Conducted tests of fielded systems not previously tested under Air, Land, or Sea Joint Live Fire programs to support DOT&E and warfighter needs. The need for these tests results from systems being exposed to new threats, used in new unanticipated tactics, or being operated in new combat environments, and the subsequent need for an assessment of their performance. Provided support and continued to partner with the Joint Improvised Explosive Device Defeat Organization. Urgent requests directly supporting deployed operators and issues of importance to the Congress in the areas of personnel body armor and combat helmets were addressed. Supported helicopter survivability efforts of the Department to recommend quickly fielded survivability improvements to the combat theater. An initiative to investigate aortic injuries was completed. This initiative was in partnership with OUSD (Personnel and Readiness) and NASA as part of Occupant Casualty initiatives.			
JLF projects continued to be performed to provide survivability data on currently fielded U.S. systems. JLF Air projects investigated vulnerabilities of aircraft to man-portable air defense systems (MANPADS). Projects are updating models and			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>
<p>simulation to more accurately take into account vulnerabilities to MANPADS fragments and debris as well as blast. JLF Air continued work on large engine vulnerability to MANPADS, including hit point analyses and miss distance measurements. JLF Land projects continued investigating the vulnerability of vehicles to new threats from theater and the lethality of U.S. weapons against typical in-theater targets, as well as improving modeling and simulation tools by providing validation data. JLF Sea projects continued developing key components of alternatives to traditional shock trials of ships and submarines and began investigating ship vulnerabilities in the areas of commercial standards and specific designs, equipment and component damage, and compartment fires.</p> <p><b>FY 2012 Plans:</b> Live Fire Test and Evaluation Major Test and Evaluation Programs</p> <p>This is a continuing effort. The FY 2012 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&amp;E and OUSD(AT&amp;L). The oversight list is developed and published annually.</p> <p>JLF Programs and LFT&amp;E Initiatives</p> <p>Conduct tests of fielded systems not previously tested under Air, Land, or Sea Joint Live Fire programs to support DOT&amp;E and operator needs. The need for these tests results from systems being exposed to new threats, used in new unanticipated tactics, or being operated in new combat environments, and the subsequent need for an assessment of their performance. As necessary, continue to support and partner with the Joint Trauma Analysis and Prevention of Injury in Combat (JTAPIC) program. Continue efforts in support of Personnel Protection Equipment, including combat helmets and body armor. Continue to address urgent requests that directly support deployed operators and issues of importance to the Congress as they arise.</p> <p>Continue to perform JLF projects to provide survivability data on currently fielded U.S. systems. JLF Air projects will continue the investigation of an emerging threat first seen in a CH 47 combat incident, test the vulnerability of sponsons to RPGs, evaluate engine nacelle vulnerability reduction techniques, as well as generic vulnerabilities to all aircraft, such as to MANPADS, small arms, and the performance of self sealing fuel tanks using bio-fuels. New projects will investigate the effect of yawed projectiles and missile debris on aircraft vulnerability, the vulnerability of turboprop engines, and a comparison of commonly used test threats. 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, as well as improving modeling and simulation tools by providing validation data. New projects will study the use and validity of manikins, helmets, and improvements to material characteristics used in modeling and simulation. JLF Sea projects will continue to develop key components of alternatives to traditional shock trials of ships and</p>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>
<p>submarines, 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.</p> <p><b>FY 2013 Plans:</b> Live Fire Test and Evaluation Major Test and Evaluation Programs</p> <p>This is a continuing effort. The FY 2013 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&amp;E and OUSD(AT&amp;L). The oversight list is developed and published annually.</p> <p>JLF Programs</p> <p>Conduct tests of fielded systems not previously tested under Air, Land, or Sea Joint Live Fire programs to support DOT&amp;E and warfighter needs. The need for these tests result from systems being exposed to new threats, used in new unanticipated tactics, or being operated in new combat environments, and the subsequent need for an assessment of their performance. As necessary, continue to support and partner with the JTAPIC. Continue initiatives with crew survivability. Address urgent requests that directly support deployed warfighters and issues of importance to the Congress.</p> <p>Joint Aircraft Survivability Program (JASP)</p> <p>In FY 2013 the JASP will continue work on at least 29 multi-year RDT&amp;E projects and initiate new projects approved by the JASP Principal Members Steering Group and OSD/DOT&amp;E. The JASP will apply resources to address aircraft occupant casualties and rotorcraft combat survivability. In the area of susceptibility reduction, the JASP will address improving 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&amp;S, the JASP will continue to improve survivability M&amp;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&amp;S requirements identified by the joint aircraft survivability community.</p> <p>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,</p>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>
<p>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&amp;E.</p> <p>Joint Technical Coordinating Group for Munitions Effectiveness (JTTCG/ME)</p> <p>In support of operational commanders, DoD targeteers, weaponeers, and planners, the JTTCG/ME will develop and release JMEM Weaponeering System (JWS) v2.x in September 2013 and Joint-Anti-air Combat Effectiveness System (J-ACE) Air Superiority (AS) v5.2 in September 2013.</p> <p>JWS v2.x will provide new COCOM high priority targets and weapons data; updates to Boat Estimation Tool (BET), Fast Integrated Structural Tool (FIST), and Passive Vehicle Target Model (PVTM); and a capability to drop-in critical data and modules. J-ACE v5.2 will add Browse descriptive material to support new weapons in Joint Anti-air Model (JAAM); expand Suite of Anti-air Kill-chain Models and Data (SAK-MD) capability; and update existing weapons and aircraft in JAAM.</p> <p>JTTCG/ME will continue to; (i) develop a predictive capability to assess blast effects, body-on-body penetration, and blast-fragment synergism and incorporate these mechanisms in the JTTCG/ME estimation process for small, precision weapons; and (ii) 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;</p> <p>JMEMs will continue to be evolved. Fast running operational tools will be created from the existing detailed analytical models typically used to support system acquisition decisions. Necessary investment will be made in those models for the development, configuration management and validation required to insure their applicability in support of warfighting operations. This investment will allow more effective and efficient use of DoD resources; build on a record of success in supporting Warfighter application of conventional weapons; and will increase operational capability in areas such as: (i) precision application of firepower in an environment where zero collateral casualties is the expectation; (ii) optimal use of scarce and/or high value resources, preferred and prepositioned munitions; (iii) reduced uncertainties and delays in strike planning and Battle Damage Assessment (BDA); (iv) weapon effects in a CM environment; and (v) reduced risk to personnel, materiel and mission accomplishment.</p>				
<b>Accomplishments/Planned Programs Subtotals</b>		12.834	12.126	49.201
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				

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**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Performance Measure: Percentage of required live fire test planning documents, assessments, 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.

Actual Performance and Goals:

Live Fire Test and Evaluation	FY 2011 Actual	FY 2012 Goal	FY 2013 Goal
On-Time Completion Rate	90%	93%	95%

The on-time completion rate was computed on the basis of the number required reports that were submitted within established time standards relative to the total number of such products that fell due during the fiscal year. DOT&E plans to achieve its goals for FY 2012 and FY 2013 through continued management emphasis on timely delivery of required reports to customer activities.

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