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**Department of Defense  
Fiscal Year (FY) 2019 Budget Estimates**

February 2018



**Operational Test and Evaluation, Defense**

*Defense-Wide Justification Book Volume 5 of 5*

***Operational Test and Evaluation, Defense***

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Operational Test and Evaluation, Defense • Budget Estimates FY 2019 • RDT&E Program

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## UNCLASSIFIED

Department of Defense  
 FY 2019 President's Budget  
 Exhibit R-1 FY 2019 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

26 Jan 2018

Appropriation	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO
Operational Test & Eval, Defense	188,654	184,666	184,666	2,725	2,725
Total Research, Development, Test & Evaluation	188,654	184,666	184,666	2,725	2,725

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Department of Defense  
 FY 2019 President's Budget  
 Exhibit R-1 FY 2019 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

26 Jan 2018

	FY 2018 Less Enacted Div B	FY 2018 P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency
Appropriation						
-----						
Operational Test & Eval, Defense				187,391		187,391
Total Research, Development, Test & Evaluation				187,391		187,391



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Department of Defense  
FY 2019 President's Budget  
Exhibit R-1 FY 2019 President's Budget  
Total Obligational Authority  
(Dollars in Thousands)

26 Jan 2018

Appropriation -----	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Operational Test & Eval, Defense	221,009		221,009
Total Research, Development, Test & Evaluation	221,009		221,009

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Department of Defense  
 FY 2019 President's Budget  
 Exhibit R-1 FY 2019 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

26 Jan 2018

	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO
Summary Recap of Budget Activities					
Management Support	188,654	210,900	210,900		
Undistributed		-26,234	-26,234	2,725	2,725
Total Research, Development, Test & Evaluation	188,654	184,666	184,666	2,725	2,725
Summary Recap of FYDP Programs					
Research and Development	188,654	210,900	210,900		
Administration and Associated Activities		-26,234	-26,234	2,725	2,725
Total Research, Development, Test & Evaluation	188,654	184,666	184,666	2,725	2,725

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Department of Defense  
FY 2019 President's Budget  
Exhibit R-1 FY 2019 President's Budget  
Total Obligational Authority  
(Dollars in Thousands)

26 Jan 2018

	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency
Summary Recap of Budget Activities					
-----					
Management Support			210,900		210,900
Undistributed			-23,509		-23,509
Total Research, Development, Test & Evaluation			187,391		187,391
Summary Recap of FYDP Programs					
-----					
Research and Development			210,900		210,900
Administration and Associated Activities			-23,509		-23,509
Total Research, Development, Test & Evaluation			187,391		187,391

## UNCLASSIFIED

Department of Defense  
 FY 2019 President's Budget  
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 Total Obligational Authority  
 (Dollars in Thousands)

26 Jan 2018

	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Summary Recap of Budget Activities			
-----			
Management Support	221,009		221,009
Undistributed			
Total Research, Development, Test & Evaluation	221,009		221,009
Summary Recap of FYDP Programs			
-----			
Research and Development	221,009		221,009
Administration and Associated Activities			
Total Research, Development, Test & Evaluation	221,009		221,009

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Defense-Wide  
FY 2019 President's Budget  
Exhibit R-1 FY 2019 President's Budget  
Total Obligational Authority  
(Dollars in Thousands)

26 Jan 2018

	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO
Summary Recap of Budget Activities					
-----					
Management Support	188,654	210,900	210,900		
Undistributed		-26,234	-26,234	2,725	2,725
Total Research, Development, Test & Evaluation	188,654	184,666	184,666	2,725	2,725
Summary Recap of FYDP Programs					
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Research and Development	188,654	210,900	210,900		
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FY 2019 President's Budget  
Exhibit R-1 FY 2019 President's Budget  
Total Obligational Authority  
(Dollars in Thousands)

26 Jan 2018

	FY 2018 Emergency Requests**	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency
Summary Recap of Budget Activities						
-----						
Management Support				210,900		210,900
Undistributed				-23,509		-23,509
Total Research, Development, Test & Evaluation				187,391		187,391
Summary Recap of FYDP Programs						
-----						
Research and Development				210,900		210,900
Administration and Associated Activities				-23,509		-23,509
Total Research, Development, Test & Evaluation				187,391		187,391

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 Defense-Wide  
 FY 2019 President's Budget  
 Exhibit R-1 FY 2019 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

26 Jan 2018

	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Summary Recap of Budget Activities			
-----			
Management Support	221,009		221,009
Undistributed			
Total Research, Development, Test & Evaluation	221,009		221,009
Summary Recap of FYDP Programs			
-----			
Research and Development	221,009		221,009
Administration and Associated Activities			
Total Research, Development, Test & Evaluation	221,009		221,009



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Defense-Wide  
FY 2019 President's Budget  
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Total Obligational Authority  
(Dollars in Thousands)

26 Jan 2018

Appropriation: 0460D Operational Test &amp; Eval, Defense

Line No	Program Element Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO	S e c
1	06051180	OTE Operational Test and Evaluation	06	80,772	83,503	83,503			U
2	06051310	OTE Live Fire Test and Evaluation	06	48,316	59,500	59,500			U
3	06058140	OTE Operational Test Activities and Analyses	06	59,566	67,897	67,897			U
		Management Support		188,654	210,900	210,900			
4	09015600	OTE Continuing Resolution Programs	20		-26,234	-26,234	2,725	2,725	U
		Undistributed			-26,234	-26,234	2,725	2,725	
Total Operational Test & Eval, Defense				188,654	184,666	184,666	2,725	2,725	



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Defense-Wide  
FY 2019 President's Budget  
Exhibit R-1 FY 2019 President's Budget  
Total Obligational Authority  
(Dollars in Thousands)

26 Jan 2018

Appropriation: 0460D Operational Test &amp; Eval, Defense

Line	Program									
No	Element	Item	Act	FY 2018 Emergency Requests**	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency	S
--	-----	----	---	-----	-----	-----	-----	-----	-----	-
1	0605118	OTE Operational Test and Evaluation	06				83,503		83,503	U
2	0605131	OTE Live Fire Test and Evaluation	06				59,500		59,500	U
3	0605814	OTE Operational Test Activities and Analyses	06				67,897		67,897	U
		Management Support		-----	-----	-----	210,900	-----	210,900	
4	0901560	OTE Continuing Resolution Programs	20				-23,509		-23,509	U
		Undistributed		-----	-----	-----	-23,509	-----	-23,509	
		Total Operational Test & Eval, Defense		-----	-----	-----	187,391	-----	187,391	

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FY 2019 President's Budget  
Exhibit R-1 FY 2019 President's Budget  
Total Obligational Authority  
(Dollars in Thousands)

26 Jan 2018

Appropriation: 0460D Operational Test &amp; Eval, Defense

Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Se c
--	-----	----	---	-----	-----	-----	-
1	0605118	OTE Operational Test and Evaluation	06	85,685		85,685	U
2	0605131	OTE Live Fire Test and Evaluation	06	64,332		64,332	U
3	0605814	OTE Operational Test Activities and Analyses	06	70,992		70,992	U
		Management Support		221,009		221,009	
4	0901560	OTE Continuing Resolution Programs	20				U
		Undistributed					
Total Operational Test & Eval, Defense				221,009		221,009	

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Operational Test and Evaluation, Defense • Budget Estimates FY 2019 • RDT&E Program

**Program Element Table of Contents (by Budget Activity then Line Item Number)**

***Appropriation 0460: Operational Test and Evaluation, Defense***

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<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
1	06	0605118OTE	Operational Test and Evaluation (OT&E).....	Volume 5 - 1
2	06	0605131OTE	Live Fire Test and Evaluation (LFT&E).....	Volume 5 - 7
3	06	0605814OTE	Operational Test Activities and Analyses.....	Volume 5 - 19

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<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Live Fire Test and Evaluation (LFT&E)	0605131OTE	2	06.....	Volume 5 - 7
Operational Test Activities and Analyses	0605814OTE	3	06.....	Volume 5 - 19
Operational Test and Evaluation (OT&E)	0605118OTE	1	06.....	Volume 5 - 1

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2019 Operational Test and Evaluation, Defense **Date:** February 2018

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0460: Operational Test and Evaluation, Defense / BA 6: RDT&E Management Support					PE 0605118OTE / Operational Test and Evaluation (OT&E)							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	76.838	80.772	83.503	85.685	-	85.685	86.498	88.327	90.191	89.517	Continuing	Continuing
000310: OT&E	76.838	80.772	83.503	85.685	-	85.685	86.498	88.327	90.191	89.517	Continuing	Continuing

## A. Mission Description and Budget Item Justification

The Director of Operational Test and Evaluation (DOT&E) was created by Congress in 1983. The Director is responsible under Title 10 for policy and procedures for all aspects of Operational Test and Evaluation (OT&E) within the Department of Defense (DoD). Particular focus is given to OT&E that supports major weapon system production decisions for acquisition programs included on the Office of Secretary of Defense Test and Evaluation Oversight List that is prepared and approved annually. Generally, there are about 300 programs on the oversight list including all Major Defense Acquisition Programs (MDAP) and Major Automated Information Systems (MAIS). MDAPs may not proceed beyond low-rate initial production (BLRIP) until OT&E of the program is complete. DOT&E is involved early in the planning phase of each program to ensure adequate testing is planned and executed. Key elements of DOT&E's oversight authority include:

- Approve component Test and Evaluation Master Plans (TEMPS).
- Approve component OT&E Test Plans (TPs).
- Oversee Military Department preparation and conduct of field operational tests; analysis and evaluation of the resultant test data; the assessment of the adequacy of the executed test and evaluation programs; and assessment of the operational effectiveness and suitability of the weapon systems.
- Report results of OT&E that supports BLRIP decisions to the Secretary of Defense and Congress, as well as providing an annual report summarizing all OT&E activities and the adequacy of test resources within DoD during the previous fiscal year.
- Review and make recommendations to the Secretary of Defense on all budgetary and financial matters related to OT&E, including operational test facilities, resources and ranges.

DOT&E also oversees and resources OT&E community efforts to plan and execute joint operational evaluations of information assurance and interoperability (IA and IOP) of fielded systems and networks during major Combatant Command (CCMD) and Service exercises, and reports the trends and findings in the annual report.

DOT&E is also involved in increasing the capacity to access realistically advanced cyber warfare capabilities to keep pace with heightened demand for their capabilities, advancing technologies and the growing cyber threat.

This Program Element includes funds to obtain Federally Funded Research and Development Center (FFRDC) support in performing the described tasks, travel funds to carry out oversight of the OT&E and IA and IOP programs, funds for Service teams performing information assurance and interoperability assessments during exercises, administrative support services, DFAS support, and engineering and technical support services related to the conduct of operational test and evaluation and exercise assessments.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2019 Operational Test and Evaluation, Defense					<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 0460: <i>Operational Test and Evaluation, Defense I BA 6: RDT&amp;E Management Support</i>			<b>R-1 Program Element (Number/Name)</b> PE 0605118OTE <i>I Operational Test and Evaluation (OT&amp;E)</i>		
<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
Previous President's Budget	80.772	83.503	85.397	-	85.397
Current President's Budget	80.772	83.503	85.685	-	85.685
Total Adjustments	0.000	0.000	0.288	-	0.288
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Pricing adjustment due to inflation	-	-	0.288	-	0.288
 <b><u>Change Summary Explanation</u></b>					
Pricing adjustment due to inflation					



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Exhibit R-2A, RDT&E Project Justification: PB 2019 Operational Test and Evaluation, Defense										Date: February 2018		
Appropriation/Budget Activity 0460 / 6					R-1 Program Element (Number/Name) PE 0605118OTE / <i>Operational Test and Evaluation (OT&amp;E)</i>				Project (Number/Name) 000310 / <i>OT&amp;E</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
000310: <i>OT&amp;E</i>	76.838	80.772	83.503	85.685	-	85.685	86.498	88.327	90.191	89.517	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

## A. Mission Description and Budget Item Justification

The Director of Operational Test and Evaluation (DOT&E) was created by Congress in 1983. The Director is responsible under Title 10 for policy and procedures for all aspects of Operational Test and Evaluation (OT&E) within the Department of Defense (DoD). Particular focus is given to OT&E that supports major weapon system production decisions for acquisition programs included on the Office of Secretary of Defense Test and Evaluation Oversight List that is prepared and approved annually. Generally, there are about 300 programs on the oversight list including all Major Defense Acquisition Programs (MDAP) and Major Automated Information Systems (MAIS). MDAPs may not proceed beyond low-rate initial production (BLRIP) until OT&E of the program is complete. DOT&E is involved early in the planning phase of each program to ensure adequate testing is planned and executed. Key elements of DOT&E's oversight authority include:

- The approval of component Test and Evaluation Master Plans (TEMPS).
- The approval of component OT&E Test Plans (TPs).
- Oversight of Military Department preparation and conduct of field operational tests; analysis and evaluation of the resultant test data; the assessment of the adequacy of the executed test and evaluation programs; and assessment of the operational effectiveness and suitability of the weapon systems.
- Reporting results of OT&E that support BLRIP decisions to the Secretary of Defense and Congress, as well as providing an annual report summarizing all OT&E activities and the adequacy of test resources within DoD during the previous fiscal year.
- The review and make recommendations to the Secretary of Defense on all budgetary and financial matters related to OT&E, including operational test facilities, resources and ranges.

DOT&E also oversees and resources OT&E community efforts to plan and execute joint operational evaluations of information assurance and interoperability (IA and IOP) of fielded systems and networks during major Combatant Command (CCMD) and Service exercises, and reports the trends and findings in the annual report.

DOT&E is also involved in increasing the capacity to access realistically advanced cyber warfighting capabilities to keep pace with heightened demand for those capabilities, advancing technologies and the growing cyber threat.

This Program Element includes funds to obtain Federally Funded Research and Development Center (FFRDC) support in performing the described tasks, travel funds to carry out oversight of the OT&E and IA and IOP programs, funds for Service teams performing information assurance and interoperability assessments during exercises, administrative support services, DFAS support, and engineering and technical support services related to the conduct of operational test and evaluation and exercise assessments.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Operational Test and Evaluation, Defense		<b>Date:</b> February 2018	
<b>Appropriation/Budget Activity</b> 0460 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0605118OTE / <i>Operational Test and Evaluation (OT&amp;E)</i>	<b>Project (Number/Name)</b> 000310 / <i>OT&amp;E</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
<b>Title:</b> Operational Test and Evaluation		80.772	83.503
<b>FY 2018 Plans:</b> Operational Test and Evaluation Oversight			85.685
<p>This effort is in direct support of the Director's Title 10 responsibilities and is a continuing effort. Funding for FY 2018 provides Operational Test and Evaluation inputs for Test and Evaluation Master Plans, Test Plans, System Acquisition Reports, Defense Acquisition Executive Summary Reports for those programs designated for oversight by DOT&amp;E and OUSD(AT&amp;L). Key elements of DOT&amp;E oversight authority are identified in Calendar Year 2018 Office of the Secretary of Defense Test and Evaluation Oversight List.</p> <p>Cybersecurity Evaluations</p> <p>DOT&amp;E plans to sponsor approximately 25 Combatant Command (CCMD) and Service cybersecurity assessments and Cyber readiness Campaigns (CRCs) in FY 2018, each including "Find-Fix-Verify" efforts as described above. DOT&amp;E plans to continue working with the CCMDs and Services to develop multiyear plans for exercise cyber assessments and CRC events. These plans will focus on assessing the CCMD's or Service's ability to complete missions in a contested cyber environment. To support threat-representative assessments, and to facilitate improvement of DoD's cybersecurity posture, DOT&amp;E will continue efforts with U.S. Cyber Command to establish a Global Persistent Cyber Opposition Force (PCO) capability with authorities to perform year-round and long-duration assessments of all CCMDs and Services. Primary objectives for DOT&amp;E's assessments in FY 2018 include the portrayal of advanced nation-state cyber threats and the assessment of operational missions during realistic cyber attacks. DOT&amp;E will assess Cyber Protection Teams when they participate during PCO, CRC, or exercise events. DOT&amp;E will continue to develop techniques to efficiently and effectively assess offensive cyber capabilities, conduct timely evaluations of these capabilities, and fund joint assessments of Mode 5 Identification of Friend or Foe capabilities in support of acquisition programs. DOT&amp;E will transmit critical findings to DoD leadership along with recommended actions to improve DoD's cybersecurity posture. FY 2018 evaluations will include trend analyses across prior year results, both within and across CCMDs.</p> <p><b>FY 2019 Plans:</b> Operational Test and Evaluation Oversight</p> <p>This effort is in direct support of the Director's Title 10 responsibilities and is a continuing effort. Funding for FY 2019 provides Operational Test and Evaluation inputs for Test and Evaluation Master Plans, Test Plans, System Acquisition Reports, Defense Acquisition Executive Summary Reports for those programs designated for oversight by DOT&amp;E and OUSD(AT&amp;L). Key elements of DOT&amp;E oversight authority are identified in Calendar Year 2019 Office of the Secretary of Defense Test and Evaluation Oversight List.</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Operational Test and Evaluation, Defense		<b>Date:</b> February 2018	
<b>Appropriation/Budget Activity</b> 0460 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0605118OTE / <i>Operational Test and Evaluation (OT&amp;E)</i>	<b>Project (Number/Name)</b> 000310 / <i>OT&amp;E</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
<p>Cyber Evaluations</p> <p>OSD-mandated staff reductions planned for FY2019 will require DOT&amp;E to reduce the number of planned assessments in FY2019 and beyond. Each assessment will continue to include "Find-Fix-Verify" efforts as described above. DOT&amp;E plans to continue working with the CCMDs and Services to develop multiyear plans for exercise cyber assessments and CRC events. These plans will focus on assessing the CCMD's or Service's ability to complete missions and be resilient in a contested cyber environment. DOT&amp;E will perform year-round and long-duration assessments of all CCMDs and Services with Global PCO authorities. Objectives for DOT&amp;E assessments in FY 2019 will include the portrayal of advanced nation-state cyber threats and the assessment of operational missions during realistic cyber attacks, with supporting offensive fires and cyber-range events included in the evaluation. DOT&amp;E will assess Cyber Protection Teams when they participate during PCO, CRC, or exercise events. DOT&amp;E will continue assessments of offensive cyber capabilities, consider the development of a potential cyber variant of the Joint Munition Effectiveness Manual, and continue to fund joint assessments of Mode 5 Identification of Friend or Foe capabilities in support of acquisition programs. DOT&amp;E will transmit critical findings to DoD leadership along with recommended actions to improve DoD's cybersecurity posture. FY 2019 evaluations will include trend analyses across prior year results, both within and across CCMDs.</p> <p><b><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i></b> The increase from FY 2018 to FY 2019 of \$2.182 Million is consistent with yearly inflation increases of program cost.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>		80.772	83.503
<b>C. Other Program Funding Summary (\$ in Millions)</b>			
N/A			
<b>Remarks</b>			
<b>D. Acquisition Strategy</b>			
N/A			
<b>E. Performance Metrics</b>			
<p>Performance Measure: Percentage of required operational 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.</p> <p>The on-time completion rate was computed on the basis of the number of required products that were submitted within established time standards relative to the total number of such products that fell due during the fiscal year. Products included in the measure include beyond low-rate initial production reports, Test Plans, and Test and Evaluation Master Plans for operational test and evaluation oversight as well as assessment plans, "quick look" reports, and final reports for the information assurance and interoperability testing associated with scheduled test events.</p>			

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2019 Operational Test and Evaluation, Defense **Date:** February 2018

<b>Appropriation/Budget Activity</b> 0460: <i>Operational Test and Evaluation, Defense I BA 6: RDT&amp;E Management Support</i>					<b>R-1 Program Element (Number/Name)</b> PE 0605131OTE / <i>Live Fire Test and Evaluation (LFT&amp;E)</i>							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	46.882	48.316	59.500	64.332	-	64.332	58.781	61.646	59.806	57.998	Continuing	Continuing
000311: <i>LFT&amp;E</i>	46.882	48.316	59.500	64.332	-	64.332	58.781	61.646	59.806	57.998	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 (JTCEG/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 (JTCEG/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. JTCEG/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. JTCEG/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

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2019 Operational Test and Evaluation, Defense	<b>Date:</b> February 2018
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<b>Appropriation/Budget Activity</b> 0460: <i>Operational Test and Evaluation, Defense I BA 6: RDT&amp;E Management Support</i>	<b>R-1 Program Element (Number/Name)</b> PE 0605131OTE / <i>Live Fire Test and Evaluation (LFT&amp;E)</i>
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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>B. Program Change Summary (\$ in Millions)</b>	<b><u>FY 2017</u></b>	<b><u>FY 2018</u></b>	<b><u>FY 2019 Base</u></b>	<b><u>FY 2019 OCO</u></b>	<b><u>FY 2019 Total</u></b>
Previous President's Budget	48.316	59.500	62.962	-	62.962
Current President's Budget	48.316	59.500	64.332	-	64.332
Total Adjustments	0.000	0.000	1.370	-	1.370
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Battle Damage Assessment (BDA)	-	-	1.370	-	1.370

**Change Summary Explanation**

Battle Damage Assessment (BDA) enhancement offers updates to warfighter's Joint Munitions Effectiveness Manual (JMEM) Weapon Engineering System (JWS) intended to ensure effective and efficient munition expenditure rates and mitigate the stockpile stress while improving Combatant Commands' force effects. The enhancement will improve the warfighter's ability to get the right weapon on the right target, achieve the desired effect, and minimize collateral damage while optimizing scarce resources.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Operational Test and Evaluation, Defense										Date: February 2018		
Appropriation/Budget Activity 0460 / 6					R-1 Program Element (Number/Name) PE 0605131OTE / <i>Live Fire Test and Evaluation (LFT&amp;E)</i>				Project (Number/Name) 000311 / <i>LFT&amp;E</i>			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
000311: <i>LFT&amp;E</i>	46.882	48.316	59.500	64.332	-	64.332	58.781	61.646	59.806	57.998	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

## A. Mission Description and Budget Item Justification

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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 (JTCEG/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. JTCEG/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. JTCEG/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

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Operational Test and Evaluation, Defense		Date: February 2018		
Appropriation/Budget Activity 0460 / 6	R-1 Program Element (Number/Name) PE 0605131OTE / <i>Live Fire Test and Evaluation (LFT&amp;E)</i>	Project (Number/Name) 000311 / <i>LFT&amp;E</i>		
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 2017	FY 2018	FY 2019
Title: Live Fire Test and Evaluation		48.316	59.500	64.332
FY 2018 Plans: Live Fire Test and Evaluation (LFT&E) of Major Department of Defense (DOD) Acquisition Programs The FY 2018 budget will enable the LFT&E Deputate to: (1) assess the adequacy of programs' test and evaluation plans and reports and generate new test and evaluation policies, as needed; (2) review and analyze the test data to support an independent evaluation of the survivability/lethality of the systems in support of the development of OSD Live Fire Test and Evaluation reports to Congress; and (3) review major acquisition plans, reports, and requirement documents to inform system design and capability development.				
JLF Programs and LFT&E Initiatives The FY 2018 JLF budget will support at least 23 projects (tentatively 13 new starts and 10 projects continuing from previous FYs). Focus areas for JLF include projects that either: (1) characterize new survivability issues; (2) characterize new lethality issues; (3) improve accuracy and fidelity of weapon data; (4) improve test methods; (5) improve modeling and simulation methods; or (6) develop vulnerability data libraries for emerging non-kinetic threats.				
JLF Air projects will continue to evaluate technologies and techniques to decrease vulnerabilities of aircraft against operationally relevant threats. Previously initiated projects that will be continued include developing a model for the OG-7V fragmentation grenade, quantifying the penetration of armor piercing incendiary munitions as a function of yaw, evaluating the effectiveness of CV-22 Wing Fire Protection Systems, determining the root cause of CH-53 and CH-47 self-sealing bladder performance issues, measuring flammability traits of AH-64E Fire Detection Expansion Systems, and developing a 12.7 x 108 mm Heat (High) Explosive Incendiary threat model prediction. Several new efforts will be initiated to (1) assess the vulnerability of H-60 rotor craft accumulators; (2) determine methodology to properly model multi-fragment vulnerability; and (3) determine how to better assess the performance/vulnerability of rotor craft shafts.				
JLF Ground projects will continue to measure the effects of munition fragments on concrete masonry units, as well as continue to develop the instrumented inert threat system for Active Protection System evaluation. Two new efforts will be initiated to develop better test methodologies: (1) determine the most appropriate surrogate for the TM-62 mine for U.S. system vulnerability studies; and (2) develop improved methods of measuring blast effects within confined spaces. One effort will evaluate the lethality of U.S.				



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<b>Appropriation/Budget Activity</b> 0460 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0605131OTE / <i>Live Fire Test and Evaluation (LFT&amp;E)</i>	<b>Project (Number/Name)</b> 000311 / <i>LFT&amp;E</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
munitions against emerging foreign body armors. Finally, three efforts will kick-off to improve M&S capability: (1) one effort will concentrate on improving (reducing) the uncertainty in predictions yielded by AJEM/MUVES; (2) one effort will validate/collect data to more precisely represent fragment penetration; and (3) one effort will improve the modeling of behind armor debris that occurs when a munition penetrates thick armor.			
JLF Sea projects will continue FY17 work initiated to properly characterize bubble jetting as well as multi-cycle underwater explosion effects. New projects will initiate in FY18 to (1) develop a penetration model for an emerging foreign shaped charge warhead threat; (2) evaluate the effectiveness of fire insulation after it has been exposed to various degrees of physical damage; and (3) develop M&S tools for naval system fragility as a function of both fire and blast.			
JASP			
In FY 2018 the JASP will continue work on at least 29 multi-year RDT&E projects and initiate 4 new projects approved by the JASP Principal Members Steering Group and OSD/DOT&E. The JASP will develop measures to defeat Near-Peer Adversary Threat (N-PAT) radio-frequency and infrared guided threats coupled with quantifiable improvements in digital and hardware in the loop modeling and simulation capability and credibility. Improve aircraft force protection by increasing threat and flight environmental situational awareness, hostile fire identification, and degraded visual environment flight capabilities; advancing system hardening against ballistic and high energy laser threats; and improving aircraft crashworthiness. Improve aircraft survivability to fire by increasing the speed and efficiency of fire detection and suppression systems and the accuracy and confidence in prediction of threat initiated fires onboard aircraft. 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 FY18, JTCG/ME will continue to develop and standardize methodologies for evaluating munitions effectiveness. This includes target vulnerability characterization, munitions lethality, weapon system accuracy, and specific weapon-target pairings driven primarily from current operational lessons learned, Joint Staff Data Calls, and CCMDs' needs.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Operational Test and Evaluation, Defense		<b>Date:</b> February 2018	
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
<p>JTCG/ME will deploy and continue to enhance future versions of its major JTCG/ME Joint Munitions Effectiveness Manual (JMEM) products, the JMEM Weaponneering System (JWS), Joint Antiair Combat Effectiveness (J-ACE), Digital Precision Strike Suite (DPSS) Collateral Damage Estimation (DCiDE) tool, and the Digital Imagery Exploitation Engine (DIEE). JTCG/ME will continue to progress and develop non-kinetic JMEM capability, as well as support specialized solutions to address operational needs to include direct analytical support to operations, Probability of kill (Pk) Lookup Tools, Collateral Damage Estimation (CDE) analysis and tables, and munitions weaponneering guides. The objective is to provide efficient and effective support to meet CCMD current and future needs for agility in a dynamic operational environment.</p> <p>Since JTCG/ME products are User focused and requirements driven, JTCG/ME will continue to maintain and strengthen relationships with the Warfighter, operational users, and coalition partners to establish requirements for current and future products. Efforts will include forums, training, foreign military sales, and day-to-day operational support.</p> <p>In FY 2018, JTCG plans to:</p> <ul style="list-style-type: none"> <li>- Field JWS v2.3 that will include enhanced data sets and capabilities with a focus on connectivity to other targeting and mission planning capabilities for improved estimates and seamless planning. Specifically, JWS v2.3 will include connectivity to MIDB, JTT, and DIEE; updates to Fast Integrated Structural Tool (FIST) and Ship Weaponneering Estimation Tool (SWET), updated weapons characteristics and delivery accuracy, more target vulnerability data sets.</li> <li>- Finalize development of JWS v2.4, which will provide enhanced data and connectivity capabilities, while maximizing the final JWS v2.x product line and allowing development of JWS v3.x. JWS v2.4 will be a database driven product with enhanced business logic and user interfaces, allowing for accelerated weapons and target data updates, tailored product versions for releasability, and more effective, focused testing. Capabilities will include updated weapons and targets and FIST v2.1 with inclusion and updates to WinBlast, Bridge Analysis System, Linear Target Module, and surface response and penetration functions in burst point editor. These capabilities will enable more options to the Weaponneer and improve the underlying phenomenology representation in JWS.</li> <li>- Continue development on the next JWS series (JWS v3.x). JTCG/ME will leverage the JWS v3.x Capability Needs Statement (CNS) completed in FY17 to progress towards initial capability. Specific efforts will include requirements analysis/decomposition, functionality/methodology review and gap analysis, development plan finalization, and endgame framework road mapping.</li> <li>- Support current use and future development requirements, by hosting and supporting JWS training sessions, Operational Users Working Groups (OUWG), and User help via the JMEM Product Information Access System (JPIAS) and JWS newsletter. The training sessions allow users to optimize use of JWS capabilities, while providing JTCG/ME with critical input on Warfighter use for future development. OUWGs are critical venues for receiving direct User feedback and development of future requirements from the operational community in regards to needed software enhancements and capabilities to support Air to Surface (AS) and Surface to Surface (SS).</li> </ul>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
<ul style="list-style-type: none"> <li>- Continue to facilitate coalition interoperability and information exchange forums, by delivering JWS version releases and standalone Pk Lookup tools to key coalition partners in support of current operations under Foreign Military Sales agreements. This capability improves the effectiveness of U.S. fires and targeting personnel working in combined environments.</li> <li>- Continue to maintain and enhance the Collateral Effects Library (CEL) tool in support of advanced CDE mitigation techniques. JTCG/ME will leverage CEL, along with other high fidelity techniques to deliver collateral damage mitigation analysis and tables to operational Users for high value targets and current operational planning. These efforts directly assist Combatant Commands to meet commander's intent and minimize collateral damage.</li> <li>- Initiate multiyear plan, developed in FY17, to enhance and validate collateral damage. The enhancement will support improvements in weaponeering methodology to minimize risk to mission and risk to forces, while not increasing risk of collateral damage by providing foundational data for the development of higher fidelity predictive tools. Specific efforts will generate buried ordnance characterization data based upon usage statistics from CCMD Expenditure reports, and AOR specific building debris data to enhance and validate current weaponeering/collateral damage estimation methodologies required by Strike Approval Authorities to make their strike decision calls. The FY18 efforts build off three FY17 JLF testing events and multiple collaboration forums.</li> <li>- Field DIEEE v2.1 that will include user requested enhancements, JWS interface, updated CGS for PPM capability, JTT read/write capability, CEL interface development, as well as additional supported image and layer management formatting.</li> <li>- Continue to develop future DIEEE versions (v2.2), which will include 3-D viewer capability and updates to connectivity interfaces.</li> <li>- Continue to support the CJCSI 3160.01, by updating and accrediting CER Reference Tables for Air-to-Surface (AS) and surface-to-surface (SS) weapons, which are the basic data that support the CDE methodology. The CER tables and CDE methodology are used in every planned kinetic strike in all Areas of Responsibility (AORs) to meet Commanders' intent and to minimize civilian casualties. As such, it is critical to the Warfighters ability to meet urgent operational needs. DCiDE tool implements the latest CER and CDE methodology. DCiDE is an accredited and automated CDE tool that expedites and simplifies the CDE process and is interconnected with DIEEE.</li> <li>- Continue to provide direct forward presence support to CCMDs, which enabled target materiel development, weaponeering and CDE solution development.</li> <li>- Sustain DCiDE and DIEEE training sessions for the Warfighter.</li> <li>- Sustain/support fielded J-ACE v5.3. Efforts will include multiple training and user forums for the fielded product. These forums are pivotal for J-ACE developers to understand requirements and align development with other external debrief and analytical capabilities that use J-ACE as the underlying analytical engine to underpin results. Many users leverage J-ACE's API to link debrief and analysis tools at training and test ranges across the Joint community. The forums allows J-ACE external application developers to receive an updates and interact with J-ACE developer to refine requirements and plans.</li> <li>- Continue development and finalization of J-ACE v5.4, with expected fielding in FY19. J-ACE v5.4 fielding will include an enhanced BROWSE module for descriptive material to support new weapons in the JAAM and Endgame Manager. In addition, it will facilitate greater connectivity for debrief capabilities, include initial capability to evaluate two sided SEAD/DEAD, target</li> </ul>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
<p>detection estimation by leveraging NASIC RF models, and increased counter air defense prediction with greater Enhanced Surface-to-Air Missile Simulation (ESAMS) capability. An enhanced architecture will maximize re-use, interoperability, support future hardware/software compatibility, and optimize integration and validation testing.</p> <ul style="list-style-type: none"> <li>- Develop next J-ACE version series by finalizing requirements and implementing initial capabilities for rotary wing aircraft, as well increasing capability for SEAD/DEAD, electronic warfare, and counter-measures.</li> <li>- Continue to develop J-NKE as the single source for operational Warfighters, analysts, targeteers, and planners to analyze offensive cyber capabilities and directed energy effectiveness. Specifically: <ul style="list-style-type: none"> <li>-- Execute a multiyear plan to build a Cyber JMEM capability to include standardization of data to address weapon characterization, target vulnerability, Operational Environment, and Uncertainty Metrics for the Cyber Operation Lethality and Effectiveness (COLE) tool. Efforts will include solidifying relationships with key stakeholders, framework development, initial network modeling, standardize weapons and target characterization, codify/develop operational environment model, and determine uncertainty metrics and data standards.</li> <li>-- Continue multiyear plan to build develop directed energy effectiveness estimate capability. JTCG/ME will leverage the FY18/19 Joint Test Project, JLaSE, to provide lessons learned, data, and build initial capabilities. Results of the JLaSE program will provide Joint Fire Support Planners and Targeteers the tactics, techniques, and procedures for Joint Targeting Cycle, Capabilities Analysis – Weaponneering and Collateral Damage Estimation, to adequately plan for and execute Directed Energy Laser Weapons in the joint battlespace. In this way, the JTCG/ME and JLaSE partnership will help facilitate data standards, methodology standards, and working relations imperative in the fruition of a DE effectiveness, weaponneering, and CDE solution for the Warfighter. FY18 outcomes will include standards and requirements to facilitate building of initial methodologies in FY19.</li> </ul> </li> </ul> <p><b>FY 2019 Plans:</b></p> <p>Live Fire Test and Evaluation (LFT&amp;E) of Major Department of Defense (DOD) Acquisition Programs</p> <p>The FY 2018 budget will enable the LFT&amp;E Deputate to: (1) assess the adequacy of programs' test and evaluation plans and reports and generate new test and evaluation policies, as needed; (2) review and analyze the test data to support an independent evaluation of the survivability/lethality of the systems in support of the development of OSD Live Fire Test and Evaluation reports to Congress; and (3) review major acquisition plans, reports, and requirement documents to inform system design and capability development.</p> <p>JLF Programs and LFT&amp;E Initiatives</p> <p>The FY 2019 budget will support the planning and execution of tests of fielded systems not previously tested under the Live Fire Programs to support DOT&amp;E and operator needs. New threats, missions, TTPs, and combat environments will create the need for 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; improve modeling and simulation tools; develop vulnerability data libraries for emerging threats; and initiate responses to quick reaction requests from theater.</p>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
<p>JASP</p> <p>In FY 2019 the JASP will continue work on at least 20 multi-year RDT&amp;E projects and initiate about 8 new projects approved by the JASP Principal Members Steering Group and OSD/DOT&amp;E. The JASP will develop measures to defeat Near-Peer Adversary Threat (N-PAT) radio-frequency and infrared guided threats coupled with quantifiable improvements in digital and hardware in the loop modeling and simulation capability and credibility. Improve aircraft force protection by increasing threat and flight environmental situational awareness, hostile fire identification, and degraded visual environment flight capabilities; advancing system hardening against ballistic and high energy laser threats; and improving aircraft crashworthiness. Improve aircraft survivability to fire by increasing the speed and efficiency of fire detection and suppression systems and the accuracy and confidence in prediction of threat initiated fires onboard aircraft.</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, 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</p> <p>In FY19, JTCG/ME will continue to develop and standardize methodologies for evaluating munitions effectiveness, including target vulnerability characterization, munitions lethality, weapon system accuracy, and specific weapon-target pairings driven primarily from current operational lessons learned, Joint Staff Data Calls, and CCMD needs.</p> <p>JTCG/ME will deploy and continue to enhance future versions of its major JMEM products, JWS, J-ACE, DCiDE, and DIEE. This will continue initial capabilities for its future product line architectures that will allow optimal leveraging and flexibility for agile enhancements, imperative in a complex strategic and operational environment. It will progress to greater maturity of Cyber and DE standards and J-NKE capability realization. In addition, it will continue to make the Warfighter the focal point, by providing specialized solutions and direct analytical support to provide efficient and effective support to meet CCMD current and future needs for agility in a dynamic operational environment.</p> <p>In FY2019, JTCG plans to:</p>			

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<b>Appropriation/Budget Activity</b> 0460 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0605131OTE / <i>Live Fire Test and Evaluation (LFT&amp;E)</i>	<b>Project (Number/Name)</b> 000311 / <i>LFT&amp;E</i>						
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>								
<ul style="list-style-type: none"> <li>- Field JWS v2.4, which will provide enhanced data and connectivity capabilities, while maximizing the final JWS v2.x product line as JWS v3.x capabilities mature. It will be a database driven product, enhancing business logic and user interfaces. This will allow for accelerated weapons and target data updates, tailored product versions for releasability, and more effective, focused testing. Specific capabilities will include updated weapon and target data sets and enhanced FIST v2.1, to include WinBlast, Bridge Analysis System, Linear Target Module, and surface response and penetration functions in burst point editor. These capabilities will enable more options to the Weaponeer and improve the underlying phenomenology representation in JWS.</li> <li>- Mature the JWS v3.x product line, building upon FY18 efforts to solidify detailed requirements, functionality, methodology, gaps, and acquisition plans. FY19 efforts will include implementation of FY18 efforts and findings to progress towards initial prototypes and engineering builds in endgame framework, with planned fielding of initial capabilities in 2020.</li> <li>- Support current use and future development requirements, by hosting and supporting JWS training sessions, OUWG, and User help desk support via the JPIAS and JWS newsletter. The training sessions allows users to optimize use of JWS capabilities, while providing JTCG/ME with critical input on Warfighter use for future development. OUWGs are critical venues for receiving direct User feedback and development of future requirements from the operational community in regards to needed software enhancements and capabilities to support AS and SS.</li> <li>- Continue to facilitate coalition interoperability and information exchange forums, by delivering JWS version releases and standalone Pk Lookup tools to key coalition partners in support of current operations under Foreign Military Sales agreements. This capability improves the effectiveness of U.S. fires and targeting personnel working in combined environments.</li> <li>- Continue to support the CJCSI 3160.01, by updating and accrediting CER Reference Tables for AS and SS weapons, which are the basic data that support the CDE methodology. The CER tables and CDE methodology are used in every planned kinetic strike in all AORs to meet Commanders' intent and to minimize civilian casualties. As such, it is critical to the Warfighters ability to meet urgent operational needs. DCiDE tool implements the latest CER and CDE methodology. DCiDE is an accredited and automated CDE tool that expedites and simplifies the CDE process and is interconnected with DIEE.</li> <li>- Field DIEE v2.2, which will include 3-D viewer capability, updates to connectivity interfaces, and greater format flexibility, while maintaining Warfighter support and future requirements through training and User forums.</li> <li>- Continue to execute multiyear plan to enhance and validate collateral damage. The enhancement will support improvements in weaponeering methodology to minimize risk to mission and risk to forces while not increasing risk of collateral damage by providing foundational data for the development of higher fidelity predictive tools. Specific efforts will generate buried ordnance characterization data based upon usage statistics from CCMD Expenditure reports, and AOR specific building debris data to enhance and validate current weaponeering/collateral damage estimation methodologies required by Strike Approval Authorities to make their strike decision calls.</li> <li>- Field J-ACE v5.4 that will include an enhanced BROWSE module for descriptive material to support new weapons in the JAAM and Endgame Manager. In addition, it will facilitate greater connectivity for debrief capabilities, target detection estimation with NASIC RF modeling, counter air defense prediction with greater ESAMS capability, and enhanced architecture to maximize re-use, interoperability, support future hardware/software compatibility, and optimize integration and validation testing.</li> </ul>		<table> <tr> <th>FY 2017</th><th>FY 2018</th><th>FY 2019</th></tr> <tr> <td></td><td></td><td></td></tr> </table>	FY 2017	FY 2018	FY 2019			
FY 2017	FY 2018	FY 2019						

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Operational Test and Evaluation, Defense		<b>Date:</b> February 2018	
<b>Appropriation/Budget Activity</b> 0460 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0605131OTE / <i>Live Fire Test and Evaluation (LFT&amp;E)</i>	<b>Project (Number/Name)</b> 000311 / <i>LFT&amp;E</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
<p>- Develop the next J-ACE version that will include rotary wing aircraft, as well increasing capability for SEAD/DEAD electronic warfare, and counter-measures.</p> <p>- Continue to support and interact with the User base thru training and User/External Interface working group forums. These forums are pivotal for J-ACE developers to understand requirements and align development with other external debrief and analytical capabilities that use J-ACE as the underlying analytical engine to underpin results. Many users leverage J-ACE API to link debrief and analysis tools at training and test ranges across the joint community. The EIWG meeting allows J-ACE external application developers to receive an updates and interact with J-ACE developer to refine requirements and plans.</p> <p>- Continue to develop J-NKE as the single source for operational Warfighters, analysts, targeteers, and planners to analyze offensive cyber capabilities and directed energy effectiveness. Specifically:</p> <p>-- Mature Cyber JMEM capabilities with continued execution of multiyear plan. FY19 efforts will build upon FY18 efforts. Specific planned efforts include maintaining User community interaction and stakeholder partnerships, refining weapon/target standards, initial COLE capabilities, initial User beta testing, and integration of uncertainty analytics.</p> <p>-- Mature DE effectiveness capabilities with continued execution of multiyear plan. FY19 efforts will build upon FY18 outcomes, while continuing the work and leveraging of the FY18/19 Joint Test Project, JLaSE. Leveraging and cooperation between JTCG/ ME and JLaSE will facilitate lessons learned, data standards, methodology standards, and working relations imperative in the fruition of a DE effectiveness, weaponneering, and CDE solution for the Warfighter. FY19 outcomes will include initial prototype and methodologies for DE effectiveness estimation.</p> <p><b><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i></b></p> <p>The increase from FY 2018 to FY 2019 of \$4.832 Million is consistent with inflation, planned program increases in collateral damage methodology improvements for buried ordinance characterization, and planned program increases for Battle Damage Assessment (BDA) an enhancement that offers updates to warfighter's Joint Munitions Effectiveness Manual (JMEM) Weaponneering System (JWS) intended to ensure effective and efficient munition expenditure rates and mitigate the stockpile stress while improving Combatant Commands' force effects.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>		48.316	59.500
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A			
<b>Remarks</b>			
<b>D. Acquisition Strategy</b> N/A			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Operational Test and Evaluation, Defense		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 0460 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0605131OTE / <i>Live Fire Test and Evaluation (LFT&amp;E)</i>	<b>Project (Number/Name)</b> 000311 / <i>LFT&amp;E</i>
<p><b><u>E. Performance Metrics</u></b></p> <p>(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.</p>		



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2019 Operational Test and Evaluation, Defense **Date:** February 2018

<b>Appropriation/Budget Activity</b> 0460: <i>Operational Test and Evaluation, Defense / BA 6: RDT&amp;E Management Support</i>	<b>R-1 Program Element (Number/Name)</b> PE 0605814OTE / <i>Operational Test Activities and Analyses</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	63.763	59.566	67.897	70.992	-	70.992	59.650	59.748	61.443	54.121	Continuing	Continuing
000920: OTA&A	63.763	59.566	67.897	70.992	-	70.992	59.650	59.748	61.443	54.121	Continuing	Continuing

## A. Mission Description and Budget Item Justification

The Operational Test Activities and Analyses (OTA&A) programs are continuing efforts that provide management and oversight of test and evaluation functions and expertise to the Department of Defense (DoD). The OTA&A programs consist of three activities: Joint Test and Evaluation (JT&E); Threat Systems (TS); and Center for Countermeasures (CCM).

Joint Test and Evaluation projects are test and evaluation activities conducted in a joint military environment that develop process improvements. These multi-Service projects, chartered by the Office of the Secretary of Defense and coordinated with the Joint Staff, appropriate combatant commanders, and the Services, provide non-material solutions that improve: joint interoperability of Service systems, technical and operational concepts, joint operational issues, development and validation of joint test methodologies, and test data for validating models, simulations, and test beds. The JT&E projects address relevant joint war fighting issues in a joint test and evaluation environment by developing and providing new tactics, techniques, and procedures to improve joint capabilities and methodologies.

Threat Systems, based on a memorandum of agreement between the Director, Operational Test and Evaluation (DOT&E) and the Defense Intelligence Agency, provides DOT&E support in the areas of threat resource analysis, intelligence support and threat systems investments. Threat Systems provides threat resource analyses on the availability, capabilities and limitations of threat representations (threat simulators, targets, models, U.S. surrogates and foreign materiel) and analysis of test resources used for operational testing to support DOT&E's assessment of the adequacy of testing for those programs designated for oversight by DOT&E and the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics. Threat Systems provides DOT&E assessment officers and other DOT&E activities with program specific threat intelligence support. Threat Systems also funds management, oversight, and development of common-use threat specifications for threat simulators, threat representative targets, and digital threat models used for test and evaluation.

The Center, a Joint Service Countermeasure (CM) T&E Activity, directs, coordinates, supports, and conducts independent countermeasure/counter-countermeasure (CCM) T&E activities of U.S. and foreign weapon systems, subsystems, sensors, and related components. The Center accomplishes this work in support of DOT&E, Deputy Assistant Secretary of Defense (DASD) for Developmental Test and Evaluation (DT&E), weapon system developers, and the Services. The Center's testing and analyses directly supports operational effectiveness and suitability evaluations of CM/CCM systems, such as missile warning and aircraft survivability equipment (ASE), used on rotary-wing and fixed-wing aircraft. The Center develops unique CM/CCM test equipment to support testing in operationally realistic environments. The Center determines effectiveness of precision guided weapon (PGW) systems and subsystems when operating in an environment degraded by CMs. Analysis and recommendations on CM/CCM effectiveness are provided to Service Program Offices, DOT&E, DASD (DT&E), and the Services. The Center also supports Service member exercises, training, and pre-deployment activities with expertise on CM/CCM technology and capabilities.

This Program Element includes funds to obtain Federally Funded Research and Development support and travel funds.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2019 Operational Test and Evaluation, Defense	<b>Date:</b> February 2018
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<b>Appropriation/Budget Activity</b> 0460: <i>Operational Test and Evaluation, Defense I BA 6: RDT&amp;E Management Support</i>	<b>R-1 Program Element (Number/Name)</b> PE 0605814OTE / <i>Operational Test Activities and Analyses</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
Previous President's Budget	52.631	67.897	63.641	-	63.641
Current President's Budget	59.566	67.897	70.992	-	70.992
Total Adjustments	6.935	0.000	7.351	-	7.351
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-1.065	-			
• Congressional Rescissions	-	-			
• Congressional Adds	8.000	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Joint Standard Instrumentation Suite (JSIS)	-	-	7.351	-	7.351
Full Operational Capability					

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 000920: *OTA&A*

Congressional Add: *Threat Resource Analysis*

Congressional Add Subtotals for Project: 000920

Congressional Add Totals for all Projects

<b>FY 2017</b>	<b>FY 2018</b>
8.000	-
8.000	-
8.000	-

**Change Summary Explanation**

FY 2017 reduction of \$1.065 was congressional directed FFRDC reduction.

FY 2017 Congressional Add was for, "Program increase - threat resource analysis".

FY 2019 change for Joint Standard Instrumentation Suite (JSIS) Full Operational Capability provides threat measurement capabilities necessary for test and evaluation modelling and simulation. This enhancement provides an integrated suite of radiometric instruments along with related equipment to measure and record threat munitions signatures, Time Space Position Information (TSPI), and other ground truth data.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Operational Test and Evaluation, Defense										Date: February 2018		
Appropriation/Budget Activity 0460 / 6					R-1 Program Element (Number/Name) PE 0605814OTE / <i>Operational Test Activities and Analyses</i>				Project (Number/Name) 000920 / OTA&A			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
000920: OTA&A	63.763	59.566	67.897	70.992	-	70.992	59.650	59.748	61.443	54.121	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

The Operational Test Activities and Analyses (OTA&A) programs are continuing efforts that provide management and oversight of test and evaluation functions and expertise to the Department of Defense (DoD). The OTA&A programs consist of three activities: Joint Test and Evaluation (JT&E); Threat Systems (TS); and, the Center for Countermeasures (CCM).

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

<b>Title:</b> Operational Test Activities and Analyses	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
<b>FY 2018 Plans:</b> Joint Test and Evaluation (JT&E)	51.566	67.897	70.992
<p>In FY 2018, JT&amp;E plans to close one project that was started in FY 2016. The Digitally Aided Close Air Support Joint Test is anticipated to close in May 2018. It is developing and testing procedures so Joint Terminal Attack Controllers, Joint Fires Observers, and Close Air Support aircrew can realize the advantage of digital communications, including shared situational awareness, increased confidence prior to weapons release, and improved kill chain timeliness. Two projects that started in FY 2017 will continue through FY 2018. Four new feasibility studies are expected to be conducted in FY 2018 of which two will be selected to conduct joint tests.</p> <p>Threat Systems</p> <p>FY 2018, Threat Systems will continue test planning working group participation and perform technical analyses to identify threat shortfalls; conduct special studies and provide current intelligence support tailored to specific U.S. weapon systems acquisitions based on the availability of funding. Threat Systems will:</p> <ul style="list-style-type: none"> <li>- Provide intelligence support to DOT&amp;E staff to address specific questions on threat systems affecting programs on the OSD T&amp;E Oversight list and provide briefings and special intelligence reports when necessary.</li> <li>- Provide DOT&amp;E representative support at the Threat Steering Group (TSG) in the transitioning of the System Threat Assessment Reports (STARS) to the new Validated Online Lifecycle Threat (VOLT) report process.</li> <li>- Continue to represent DOT&amp;E interests on Acquisition/Intelligence/ Requirement Task Force (AIRTF) and Executive Steering Group (AIRESG) and provide access to the Intelligence Mission Data Management Analysis &amp; Reporting System (IMARS).</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Operational Test and Evaluation, Defense		<b>Date:</b> February 2018	
<b>Appropriation/Budget Activity</b> 0460 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0605814OTE / <i>Operational Test Activities and Analyses</i>	<b>Project (Number/Name)</b> 000920 / OTA&A	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
<ul style="list-style-type: none"> <li>- Support the US warfighter by providing threat intelligence to ensure operational and developmental testing occurs against realistic threat representations.</li> <li>- Sustain and manage threat M&amp;S to support test and evaluation by overseeing and coordinating intelligence community developed threat models, performing threat model anomaly resolution resolving differences from live fire testing, integrating threat models into T&amp;E facilities and distributing performance and signature models to T&amp;E users.</li> <li>- Review validation reports to independently ensure that correct threat data and critical parameters are presented in the report to assessment the threat representation's capabilities to replicate a real world threat system.</li> <li>- Continue identifying initiatives to improve cyberspace threat representation and prediction, cyber-economic threats to DoD systems, representative threat offensive and defensive cyber operations capabilities, and scalable cyberspace threat test environments that can interface with cyber test networks.</li> <li>- Manage Integrated Technical Evaluation and Analysis of Multiple Sources (ITEAMS) efforts supporting programs on the OSD T&amp;E Oversight List by conducting intelligence "deep dives" to produce intelligence in sufficient detail to develop new threat test assets.</li> <li>- Initiate new ITEAMS efforts leading to the development of new threat systems for T&amp;E.</li> <li>- Represent DOT&amp;E at foreign material exchanges, inter-agency coordinating groups, and non-proliferation groups to raise awareness of T&amp;E needs for foreign material, coordinate service requirements, and de-conflict and prioritize foreign material requirements for T&amp;E.</li> <li>- Represent DOT&amp;E at the Intelligence Mission Data Oversight Board responsible for development, production and sharing issues affecting the intelligence data supporting weapons systems acquisition.</li> <li>- Oversee legacy DOT&amp;E investments and continue management and oversight of legacy and new Test Resource Management Center-funded threat system investments.</li> </ul> <p>Threat Systems continues its efforts to maintain a standard set of threat performance models. These activities help DOT&amp;E carry out its Title 10 responsibilities to assess test adequacy and determine whether testing is realistic and suitable, and promotes common solutions to Service threat representation needs.</p> <p>The Center</p> <p>The Center has received 46 requests for support during FY18, which exceeds our support capacity. The Center will assess the requests based on priority and schedule. The Center will test, analyze, and report on more than 30 systems/platforms, with emphasis on rotary wing survivability. High priority test events will receive an independent assessment of our data/findings for CM/CCM evaluations. The Center will continue to emphasize support of the DOT&amp;E enterprise, with a clear focus on Title 10 weapons systems, aircraft survivability and hostile fire initiatives.</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Operational Test and Evaluation, Defense		<b>Date:</b> February 2018						
<b>Appropriation/Budget Activity</b> 0460 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0605814OTE / <i>Operational Test Activities and Analyses</i>	<b>Project (Number/Name)</b> 000920 / OTA&A						
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>								
<p>The Center will continue to conduct ongoing investigations towards determining and filling the gaps in EW and multimode system testing. In addition to these test activities, the Center will continue to provide CM expertise in pre-deployment events and training, as well as CM/CCM-focused tactics, techniques and procedures (TTP) development. Our support will be distributed across all the Services, as well as intelligence agencies and research and development activities.</p> <p>The Center will complete the initial development of the RLS turret upgrade, which will be used in support of testing for both Title 10 programs and ASE urgent operational needs. The Center will continue to improve and expand the JSIS to meet program data collection requirements. Also, emitter upgrades are planned for the missile plume simulators to better replicate threat missile launches. The Center will provide expertise to many organizations including program offices and other T&amp;E agencies. The Center will continue to be actively involved in the following panels: JECM Integrated Product Team, Joint Infrared Countermeasures Multi Sensing Symposia Working Group (MSS IRCM WG), JASP, Foreign Material Exploitation Working Group, Foreign Material Program T&amp;E Subcommittee, JCMT&amp;E WG, and JCMT&amp;E WG HFI subgroup lead.</p> <p><b>FY 2019 Plans:</b> Joint Test and Evaluation (JT&amp;E)</p> <p>In FY 2019, JT&amp;E plans to close one project that was started in FY 2016 and two projects that were started in FY 2017. The first is the Joint Counterair Integration Joint Test, which is anticipated to close in November 2018. It is developing and testing TTP for counterair shooter and C2 operators to effectively integrate joint defensive counterair resources in a contested, degraded, and operationally limited environment to protect defended assets from expected threats. The other project expected to close in FY 2019 is the Joint Cyber Insider Threat Joint Test, which is anticipated to close in November 2018. It is developing and testing procedures to proactively detect and respond to cyber insider threats before they have an adverse impact on military operations. Two projects that will start in FY 2018 will continue through FY 2019. Four new feasibility studies are expected to be conducted in FY 2019 of which two will be selected to conduct joint tests.</p> <p>Threat Systems</p> <p>In FY 2019, Threat Systems will continue test planning working group participation and perform technical analyses to identify threat shortfalls; conduct special studies and provide current intelligence support tailored to specific U.S. weapon systems acquisitions based on the availability of funding. Threat Systems will:</p> <ul style="list-style-type: none"> <li>- Continue to provide intelligence support to DOT&amp;E staff to address specific questions on threat systems affecting programs on the OSD T&amp;E Oversight list and provide briefings and special intelligence reports when necessary.</li> <li>- Continue providing DOT&amp;E representative support at the Threat Steering Group (TSG) in the transitioning of the System Threat Assessment Reports (STARS) to the new Validated Online Lifecycle Threat (VOLT) Report process.</li> </ul>		<table border="1"> <thead> <tr> <th>FY 2017</th><th>FY 2018</th><th>FY 2019</th></tr> </thead> <tbody> <tr> <td></td><td></td><td></td></tr> </tbody> </table>	FY 2017	FY 2018	FY 2019			
FY 2017	FY 2018	FY 2019						

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Operational Test and Evaluation, Defense		<b>Date:</b> February 2018	
<b>Appropriation/Budget Activity</b> 0460 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0605814OTE / <i>Operational Test Activities and Analyses</i>	<b>Project (Number/Name)</b> 000920 / OTA&A	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
<ul style="list-style-type: none"> <li>- Continue to represent DOT&amp;E interests on Acquisition/Intelligence/ Requirement Task Force (AIRTF) and Executive Steering Group (AIRESG) and provide access to the Intelligence Mission Data Management Analysis &amp; Reporting System (IMARS).</li> <li>- Continue identifying initiatives to improve cyberspace threat representation and prediction, cyber-economic threats to DoD systems, and scalable cyberspace threat test environments that can interface with cyber test networks.</li> <li>- Continue identifying initiatives to conduct offensive cyber operations (OCO) and defensive cyber operations (DCO) without significantly impacting critical operational capabilities.</li> <li>- Continue initiatives to improve satellite and space threat representations.</li> <li>- Support the US warfighter by providing threat intelligence to ensure operational and developmental testing occurs against realistic threat representations.</li> <li>- Sustain and manage threat M&amp;S to support test and evaluation by overseeing and coordinating intelligence community developed threat models, performing threat model anomaly resolution resolving differences from live fire testing, integrating threat models into T&amp;E facilities and distributing performance and signature models to T&amp;E users.</li> <li>- Manage Integrated Technical Evaluation and Analysis of Multiple Sources (ITEAMS) efforts supporting programs on the OSD Oversight T&amp;E List by conducting intelligence “deep dives” to produce intelligence in sufficient detail to develop new threat test assets.</li> <li>- Represent DOT&amp;E at foreign material exchanges, inter-agency coordinating groups, and non-proliferation groups to raise awareness of T&amp;E needs for foreign material, coordinate service requirements, and de-conflict and prioritize foreign material requirements for T&amp;E.</li> <li>- Review validation reports to independently ensure that correct threat data and critical parameters are presented in the report to assessment the threat representation’s capabilities to replicate a real world threat system.</li> <li>- Represent DOT&amp;E at the Intelligence Mission Data Oversight Board responsible for development, production and sharing issues affecting the intelligence data supporting weapons systems acquisition.</li> <li>- Oversee legacy DOT&amp;E investments and continue management and oversight of legacy and new Test Resource Management Center-funded threat system investments.</li> <li>- Continue ITEAMS efforts leading to the development of new threat systems for T&amp;E.</li> </ul> <p>Threat Systems will continue its efforts to maintain a standard set of threat performance models. These activities help DOT&amp;E carry out its Title 10 responsibilities to assess test adequacy and determine whether testing is realistic and suitable, and promotes common solutions to Service threat representation needs.</p> <p>The Center</p> <p>The Center will test, analyze, and report on more than 30 systems/platforms, with special emphasis on aircraft survivability, CM/CCM employment, warning and targeting systems, and PGWs. High priority programs will receive an independent assessment</p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Operational Test and Evaluation, Defense		<b>Date:</b> February 2018	
<b>Appropriation/Budget Activity</b> 0460 / 6	<b>R-1 Program Element (Number/Name)</b> PE 0605814OTE / <i>Operational Test Activities and Analyses</i>	<b>Project (Number/Name)</b> 000920 / OTA&A	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
<p>of our data/findings for CM/ CCM evaluations. The Center will continue to emphasize support of the DOT&amp;E enterprise, with a clear focus on Title 10 weapons systems, aircraft survivability and hostile fire initiatives. Furthermore, the Center will continue to provide CM expertise in pre-deployment events and training, as well as CM/CCM-focused TTP development. Our support will be distributed across all the Services, as well as intelligence agencies and research and development activities.</p> <p>The Center will continue Improvement and Modernization (I&amp;M) efforts to improve T&amp;E capabilities. The Center plans to continue upgrades to the JSIS system and missile plume simulator emitters.</p> <p>The Center will provide expertise to many organizations including program offices and other T&amp;E agencies. The Center will continue to be actively involved in the following panels: JECM Integrated Product Team, Joint Infrared Countermeasures Multi Sensing Symposia Working Group (MSS IRCM WG), JASP, Foreign Material Exploitation Working Group, Foreign Material Program T&amp;E Subcommittee, JCMT&amp;E WG, and JCMT&amp;E WG HFI subgroup lead.</p> <p><b><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i></b> The increase from FY 2018 to FY 2019 of \$3.095 Million is consistent with planned program increases in Joint Standard Instrumentation Suite (JSIS), Full Operational Capability (FOC), a program that provides threat measurement capabilities necessary for test and evaluation modelling and simulation; as well as planned program decreases in Fifth Generation Aerial Targets.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>		51.566	67.897
		<b>FY 2017</b>	<b>FY 2018</b>
<p><b><i>Congressional Add:</i></b> Threat Resource Analysis</p> <p><b><i>FY 2017 Accomplishments:</i></b> - Developed and demonstrated a prototype system to support threat EW-enabled cyber operations for T&amp;E for lab/anechoic chamber use by collecting classified and open-source data on C/EW threats, analyzed DoD and Service requirements for C/EW testing, and acquired U.S. targeted systems for lab test articles (ARC-231).</p> <ul style="list-style-type: none"> <li>- Developed a Cyber Cloud that addresses many of the pitfalls Intelligence Analysts face today.</li> <li>- Identified the lack of a clearly defined cyber threat folder development processes to address the lack of a standardized folder structure across the Cyber community and the absence of a centralized storage location for threat folders.</li> <li>- Expanded our understanding of “wireless” cyber threats, which includes wireless cyber threats to support US weapon system testing.</li> </ul>		8.000	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Operational Test and Evaluation, Defense		Date: February 2018
Appropriation/Budget Activity 0460 / 6	R-1 Program Element (Number/Name) PE 0605814OTE / Operational Test Activities and Analyses	Project (Number/Name) 000920 / OTA&A
	FY 2017	FY 2018
- Utilized investments on U.S. weapon systems that blend cyber and EW capabilities comparable to threat T&E assets. - Supported DT/OT programs with documented Cyber Electronic Warfare threat shortfalls such as Tactical Communications, Datalinks, Radio Communications, Networking, Data transportation and C4ISR Sensors and Systems. - Initiated actions to embrace the growing and evolving DOT&E Cyber Threat requirements and analyzing the convergence of Cyber and Electronic Warfare effecting the baseline required for Operational Test. - Continued to identify initiatives to improve cyberspace threat representation and prediction, cyber-economic threats to DoD systems, representative threat offensive and defensive cyber operations capabilities, and scalable cyberspace threat test environments that can interface with cyber test networks.  Threat Systems also continued efforts to maintain a standard set of threat performance models. These activities helped DOT&E carry out its Title 10 responsibilities to assess test adequacy and determine whether testing is realistic and suitable, and promotes common solutions to Service threat representation needs.		
Congressional Adds Subtotals	8.000	-
C. Other Program Funding Summary (\$ in Millions)		
N/A		
Remarks		
D. Acquisition Strategy		
N/A		
E. Performance Metrics		
Performance Measure: Percentage of required products, such as test planning documents, tactics, techniques, procedures, threat characteristics, assessments, and reports that are developed and delivered to program managers and customers on time. The on-time completion rate was computed on the basis of the number of required products that were submitted within established time standards relative to the total number of such products that fell due during the fiscal year.		