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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2019 Air Force											<b>Date:</b> February 2018	
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>					<b>R-1 Program Element (Number/Name)</b> PE 0101125F / <i>Nuclear Weapons Modernization</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	489.629	131.063	91.237	91.907	0.000	91.907	36.164	0.000	0.000	0.000	0.000	840.000
657007: <i>B61 LIFE EXTENSION PROGRAM</i>	489.629	131.063	91.237	91.907	0.000	91.907	36.164	0.000	0.000	0.000	0.000	840.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
<b>Program MDAP/MAIS Code:</b> 468												
<p><b><u>A. Mission Description and Budget Item Justification</u></b></p> <p>The purpose of this program element is to conduct and support United States Air Force (USAF) and Joint Department of Defense (DoD) / Department of Energy (DOE) acquisition activities for the modernization of nuclear weapons.</p> <p>B61-12 Life Extension Program (LEP): The B61-12 LEP will integrate DOE efforts to extend the service life of the warhead with DoD efforts to develop a guided Tail Kit Assembly (TKA) required to maintain current B61 mission characteristics. Programmatic integration of the Air Force-led, joint DoD-DOE program is accomplished through the B61 LEP Project Officers Group (POG) and its subgroups. In accordance with Air Force Materiel Command mission assignment memo (dated 17 Feb 11) and National Nuclear Security Administration (NNSA)-Air Force Nuclear Weapons Center (AFNWC) Memorandum of Understanding (MOU dated 28 Jun 12), the USAF is responsible for development, acquisition and delivery of a guided TKA and All Up Round (AUR) technical integration, system qualification and fielding of the B61-12 variant on multiple platforms.</p> <p>Funds may be used to address emerging and short-notice Diminishing Manufacturing Sources and Material Shortage (DMSMS) issues.</p> <p>This program element may include necessary civilian pay expenses required to manage, execute, and deliver B-61 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.</p> <p>This program is in Budget Activity 5, System Development and Demonstration (SDD), because it is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.</p>												

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B. Program Change Summary (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget		137.909	91.237	120.598	0.000	120.598
Current President's Budget		131.063	91.237	91.907	0.000	91.907
Total Adjustments		-6.846	0.000	-28.691	0.000	-28.691
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		0.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		-2.000	0.000			
• SBIR/STTR Transfer		-4.846	0.000			
• Other Adjustments		0.000	0.000	-28.691	0.000	-28.691
Change Summary Explanation						
FY17 adjustment for -\$2M reprogramming for higher AF priorities and Small Business Innovative Research (SBIR)						
FY19 \$15M for additional test requirements to meet STRATCOM needs; -\$39.74M to fund B-2 Radar Aided Targeting System required for B61 integration on the B2; -\$3.26M transfer to O&M sustainment; -\$0.691M for inflation adjustment.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2017	FY 2018	FY 2019
Title: Engineering & Manufacturing Development Contract (B61)				63.437	15.517	34.104
Description: Prime contract to develop, test, integrate and nuclear certify a guided TKA in support of the B61-12 LEP.						
FY 2018 Plans:						
Continues B61-12 TKA development, design, test, integration, qualification and nuclear certification activities in support of the B61-12 LEP. Continues design, integration and testing of the B61-12 system and verification of requirements and validation of TKA performance. Continues flight testing to verify aircraft flight environments in support of weapon development. Continues B61-12 TKA program practices that ensure the following are met: requirements flow down, requirement allocation to hardware and software, requirements compliance matrix, system performance, reliability, maintainability, product assurance, testability, producibility and supportability. Provides support to aircraft Operational Flight Plan (OFP) development and integration to deliver the OFP test tapes in support of flight testing. Continues TKA Developmental Test (DT) drops, and provides support to the FY18 System Qualification drops.						
FY 2019 Plans:						
Continues B61-12 TKA development, design, test, integration, qualification and nuclear certification activities in support of the B61-12 LEP. Continues design, integration and testing of the B61-12 system and verification of requirements and validation of TKA performance. Continues flight testing to verify aircraft flight environments in support of weapon development. Continues						

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b> B61-12 TKA program practices that ensure the following are met: requirements flow down, requirement allocation to hardware and software, requirements compliance matrix, system performance, reliability, maintainability, product assurance, testability, producibility and supportability. Provides support to aircraft Operational Flight Plan (OFP) development and integration to deliver the OFP test tapes in support of flight testing.  <b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> Funding increased to align to overall program schedule, including test activities.		<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
<b>Title:</b> All Up Round (AUR) Technical Integration (B61)  <b>Description:</b> Covers all system engineering tasks in support of AUR technical integration, qualification & fielding, including program support to the B61 LEP POG.  <b>FY 2018 Plans:</b> Continues B61-12 system qualification plan, warhead component qualification, TKA qualifications, and B61-12 AUR integration activities. Continues support to maintain technical and programmatic schedules and program documents that support the AUR technical integration. Continues maintenance of warhead-to-TKA interface requirements and design. Continues to provide technical expertise to maintain B61-12 aircraft compatibility with platforms through completion of the test and evaluation program. Continues to develop test assets to support integration efforts at the aircraft system integration laboratories. Includes B61-12 AUR technical and programmatic reviews, including design reviews, systems reviews, technical interchange meetings, and test reviews. Also includes test assessments to validate modeling and simulation results in support of system qualification; configuration management of B61-12 AUR drawings, interface control documents, and system specifications; and support of trainers and other USAF configurations. Provides for management of system security requirements. Provides AUR integration support to the DOE in support of System Qualification drops. Efforts support Final Design Review in 4QFY18.  <b>FY 2019 Plans:</b> Continues B61-12 system qualification plan, warhead component qualification, TKA qualifications, and B61-12 AUR integration activities. Continues support to maintain technical and programmatic schedules and program documents that support the AUR technical integration. Continues maintenance of warhead-to-TKA interface requirements and design. Continues to provide technical expertise to maintain B61-12 aircraft compatibility with platforms through completion of the test and evaluation program. Continues to develop test assets to support integration efforts at the aircraft system integration laboratories. Includes B61-12 AUR technical and programmatic reviews, including design reviews, systems reviews, technical interchange meetings, and test reviews. Also includes test assessments to validate modeling and simulation results in support of system qualification; configuration management of B61-12 AUR drawings, interface control documents, and system specifications; and support of trainers and other USAF configurations. Provides for management of system security requirements. Provides AUR integration		15.986	10.094	7.914

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b> support to the DOE in support of System Qualification drops. Efforts support the AUR Design Review and Acceptance Group (DRAAG).  <b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> Funding decreased to align to overall program schedule, including test activities.		<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
<b>Title:</b> Aircraft Integration (B61)  <b>Description:</b> B61-12 activities associated with integration on threshold aircraft, including mission planning system upgrades to accommodate the new weapon variant. Also includes activities related to weapon design compatibility with both threshold and objective aircraft.  <b>FY 2018 Plans:</b> Continues aircraft integration activities. Continues test tape development and demonstration/validation of the OFP. Continues design compatibility with aircraft. Continues mission planning upgrades. Continues OFP development and integration to deliver the OFP test tapes in support of flight testing. Continues B-2 integration. Continues F-15E integration.  <b>FY 2019 Plans:</b> Continues aircraft integration activities. Completes B-2 integration. Continues F-15E integration.  <b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> Funding decreased to align to overall program schedule, including test activities.		35.054	53.906	21.916
<b>Title:</b> Test Support (B61)  <b>Description:</b> Test activities and support for TKA design validation & verification and nuclear certification, as well as B61-12 AUR system qualification (includes design and operational certification activities).  <b>FY 2018 Plans:</b> Continues test planning and execution activities to support B61-12 weapon development, AUR technical integration and aircraft integration. Continues flight testing to verify aircraft flight environments and TKA and AUR design verification, including initial TKA DT drops and preparation for TKA Operational Test (OT) drops and AUR System Qualification drops. Continues development and delivery of necessary Bomb Assemblies (BA) to accomplish TKA test and trainer activities. Provides support to the DOE flight tests for the bomb assembly. Continues execution of F-15E and F-16 system qualification testing for B61-12 AUR. Starts B-2 planning and execution of B61-12 AUR system qualification testing.  <b>FY 2019 Plans:</b> Continues test planning and execution activities to support B61-12 weapon development, AUR technical integration and aircraft integration. Continues flight testing to verify aircraft flight environments and TKA and AUR design verification, including initial TKA		16.586	11.720	27.973

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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I</i> BA 5: <i>System Development &amp; Demonstration (SDD)</i>		<b>R-1 Program Element (Number/Name)</b> PE 0101125F / <i>Nuclear Weapons Modernization</i>	
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
DT drops and preparation for TKA Operational Test (OT) drops and AUR System Qualification drops. Continues development and delivery of necessary BAs to accomplish TKA test and trainer activities. Continues providing support to the DOE flight tests for the bomb assembly. Continues execution of F-15E and F-16 system qualification testing for B61-12 AUR. Continues B-2 planning and execution of B61-12 AUR system qualification testing.			
<b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> Funding increased to align to overall program schedule, including test activities.			
<b>Accomplishments/Planned Programs Subtotals</b>		131.063	91.237
<b>D. Other Program Funding Summary (\$ in Millions)</b>			
<b>Line Item</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>
• PAAF 01 11125F/354040: B61	-	88.307	162.023
			<b>FY 2019 OCO</b>
			-
			<b>FY 2019 Total</b>
			162.023
			<b>FY 2020</b>
			110.073
			<b>FY 2021</b>
			18.720
			<b>FY 2022</b>
			-
			<b>FY 2023</b>
			-
			<b>Cost To Complete</b>
			0.000
			<b>Total Cost</b>
			379.123
<b>Remarks</b>			
<b>E. Acquisition Strategy</b>			
The Milestone Decision Authority directed a three-fold competitive acquisition strategy at the 30 April 2012 Materiel Development Decision. 1) A single prime contractor was chosen to develop the B61-12 TKA through Engineering Manufacturing and Development (EMD) using full and open competition. EMD consists of two phases; 2) the prime contractor is to maintain competition at the subcomponent level; and 3) a sole source contract will be awarded for production to the EMD contractor. B61-12 AUR integration, qualification and acceptance will be conducted through the joint DoD-DOE/NNSA Phase 6.X process and managed through the B61 LEP POG. Sandia National Laboratory will conduct the TKA/BA technical integration on behalf of the Air Force.			
<b>F. Performance Metrics</b>			
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.			

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2019 Air Force</b>												<b>Date: February 2018</b>			
<b>Appropriation/Budget Activity</b> 3600 / 5						<b>R-1 Program Element (Number/Name)</b> PE 0101125F / <i>Nuclear Weapons Modernization</i>						<b>Project (Number/Name)</b> 657007 / <i>B61 LIFE EXTENSION PROGRAM</i>			
<b>Product Development (\$ 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>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
B61 LEP EMD Contracts	C/CPIF	Boeing : St Charles, MO	276.165	53.988	Nov 2016	11.571	Jan 2018	32.898	Nov 2018	-		32.898	13.611	388.233	0.000
<b>Subtotal</b>			276.165	53.988		11.571		32.898		-		32.898	13.611	388.233	N/A
<b>Support (\$ 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>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
AUR Technical Integration	MIPR	Various : various	41.900	15.986	Jan 2017	10.094	Jan 2018	7.914	Jan 2019	-		7.914	0.000	75.894	-
Aircraft Integration	MIPR	Various : various	104.779	35.054	Nov 2016	53.906	Nov 2017	21.916	Nov 2018	-		21.916	20.502	236.157	-
<b>Subtotal</b>			146.679	51.040		64.000		29.830		-		29.830	20.502	312.051	N/A
<b>Test and Evaluation (\$ 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>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Test Support for B61 LEP Development	PO	96 TW : Eglin, FL	43.427	16.586	Nov 2016	11.720	Nov 2017	12.973	Nov 2018	-		12.973	1.960	86.666	-
526.1 Assets	MIPR	Various : Various	-	-		-		15.000	Nov 2018	-		15.000	0.000	15.000	-
<b>Subtotal</b>			43.427	16.586		11.720		27.973		-		27.973	1.960	101.666	N/A
<b>Management Services (\$ 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>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
PMA	Various	various : various	23.358	9.449	Oct 2016	3.946	Oct 2017	1.206	Oct 2018	-		1.206	0.364	38.323	-
<b>Subtotal</b>			23.358	9.449		3.946		1.206		-		1.206	0.364	38.323	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force											Date: February 2018				
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0101125F / Nuclear Weapons Modernization					Project (Number/Name) 657007 / B61 LIFE EXTENSION PROGRAM					
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			489.629	131.063		91.237		91.907		-		91.907	36.437	840.273	N/A

Remarks

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2019 Air Force			<b>Date:</b> February 2018		
<b>Appropriation/Budget Activity</b> 3600 / 5		<b>R-1 Program Element (Number/Name)</b> PE 0101125F / <i>Nuclear Weapons Modernization</i>			<b>Project (Number/Name)</b> 657007 / <i>B61 LIFE EXTENSION PROGRAM</i>

	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b><i>B61 LIFE EXTENSION PROGRAM</i></b>																												
Engineering & Manufacturing Development Phase 1																												
Engineering & Manufacturing Development Phase 2																												
All-Up-Round Developmental/System Qualification Testing																												
Ground Test/WTT/Flight Test																												
Aircraft Integration																												
TKA Milestone C Decision																												
TKA Production																												



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Air Force			<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0101125F / <i>Nuclear Weapons Modernization</i>	<b>Project (Number/Name)</b> 657007 / <i>B61 LIFE EXTENSION PROGRAM</i>	

**Schedule Details**

<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
<b><i>B61 LIFE EXTENSION PROGRAM</i></b>				
Engineering & Manufacturing Development Phase 1	1	2017	1	2018
Engineering & Manufacturing Development Phase 2	1	2017	2	2019
All-Up-Round Developmental/System Qualification Testing	1	2017	3	2020
Ground Test/WTT/Flight Test	1	2017	3	2020
Aircraft Integration	1	2017	3	2020
TKA Milestone C Decision	1	2019	1	2019
TKA Production	1	2018	2	2022

**Note**

USD AT&L directed B61-12 TKA to enter acquisition process at Milestone B based on maturity of the technology required for this program. Therefore, a separate Technology Development phase is not required. (Source: Materiel Development Decision (MDD) Acquisition Decision Memorandum (ADM), signed 30 April 2012)

TKA Production line added for overall program clarity. Appropriation funding for TKA Production is 3011, not 3600 funds.