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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0101125F I Nuclear Weapons Modernization							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	576.652	81.631	81.592	27.564	0.000	27.564	9.700	0.000	0.000	0.000	0.000	777.139
657007: B61 LIFE EXTENSION PROGRAM	576.652	81.631	81.592	27.564	0.000	27.564	9.700	0.000	0.000	0.000	0.000	777.139
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 468												
A. Mission Description and Budget Item Justification												
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.												
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.												
Funds may be used to address emerging and short-notice Diminishing Manufacturing Sources and Material Shortage (DMSMS) issues.												
This program element includes necessary civilian pay expenses required to manage, execute, and deliver B-61 weapon system capability. The use of such program funds is in addition to the civilian pay expenses budgeted in program element 0605833F-Nuclear Systems.												
As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is \$14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.												
This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.												

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B. Program Change Summary (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total		
Previous President's Budget		91.237	91.907	36.164	0.000	36.164		
Current President's Budget		81.631	81.592	27.564	0.000	27.564		
Total Adjustments		-9.606	-10.315	-8.600	0.000	-8.600		
• Congressional General Reductions		0.000	-3.500					
• 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		-6.400	-6.815					
• SBIR/STTR Transfer		-3.206	0.000					
• Other Adjustments		0.000	0.000	-8.600	0.000	-8.600		
Change Summary Explanation								
FY 2018 Reprogrammings include: \$0.3M BTR to ALCM; \$4.0M BTR to GBSD; and \$2.1M BTR to LRSO.								
FY 2019 Reprogrammings include: \$6.815M FFRDC and \$3.5M mark for test support excess to need .								
FY 2020 Other Adjustments include: \$8.6M reduction aligns program to the October 2018 Milestone C Service Cost Position.								
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Engineering & Manufacturing Development Contract (B61)				28.723	32.859	12.388	0.000	12.388
Description: Prime contract to develop, test, integrate and nuclear certify a guided TKA in support of the B61-12 LEP.								
FY 2019 Plans:								
Continues B61-12 TKA test, integration, qualification and nuclear certification activities in support of the B61-12 LEP. Continues integration and testing of the B61-12 system, verification of requirements and validation of TKA performance. Continues all-up round system and IOT&E flight testing to validate 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.								

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Provides support to aircraft Operational Flight Plan (OFP) development and integration to deliver the OFP test tapes in support of IOT&E. FY 2020 Base Plans: Continues B61-12 TKA test, integration, qualification and nuclear certification activities in support of the B61-12 LEP. Continues integration and testing of the B61-12 system, verification of requirements and validation of TKA performance. Continues all-up round system and IOT&E flight testing to validate 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 IOT&E. FY 2020 OCO Plans: NA FY 2019 to FY 2020 Increase/Decrease Statement: Funding decreased to align with overall program schedule and associated ramp down in EMD test activities.						
Title: All Up Round (AUR) Technical Integration (B61) Description: Covers all system engineering tasks in support of AUR technical integration, qualification & fielding, including program support to the B61 LEP POG. FY 2019 Plans: 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 and sustainment 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-owned, DOE-designed configurations such as the Code Management System and ancillary equipment. Provides for management of system security requirements.		9.844	7.914	0.100	0.000	0.100

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Provides AUR integration support to the DOE in support of System Qualification drops. Efforts support the AUR Design Review and Acceptance Group (DRAAG). FY 2020 Base Plans: 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 and sustainment 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-owned, DOE-designed configurations such as the Code Management System and ancillary equipment. Provides for management of system security requirements. Provides AUR integration support to the DOE in support of System Qualification drops. Efforts support the AUR Design Review and Acceptance Group (DRAAG). FY 2020 OCO Plans: NA FY 2019 to FY 2020 Increase/Decrease Statement: Funding decreased to align to overall program schedule and associated ramp down in AUR integration activities.						
Title: Aircraft Integration (B61) Description: 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. FY 2019 Plans: Continues aircraft F-15E integration activities and continues B-2 integration. FY 2020 Base Plans: Continues aircraft F-15E integration activities and completes B-2 integration. FY 2020 OCO Plans:		28.090	18.986	14.523	0.000	14.523

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
No 2020 OCO						
FY 2019 to FY 2020 Increase/Decrease Statement: Funding decreased to align with overall program schedule and associated ramp down in aircraft integration activities.						
Title: Test Support (B61) Description: 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). FY 2019 Plans: 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 during IOT&E 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 B-2, F-15E, F-16 system qualification testing for B61-12 AUR and B-2 mission planning. FY 2020 Base Plans: 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 during IOT&E 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 B-2, F-15E, F-16 system qualification testing for B61-12 AUR and B-2 mission planning. FY 2020 OCO Plans: NA FY 2019 to FY 2020 Increase/Decrease Statement: Funding decreased to align with overall program schedule and associated ramp down in test support activities.		14.974	21.833	0.553	0.000	0.553
Accomplishments/Planned Programs Subtotals		81.631	81.592	27.564	0.000	27.564

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D. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2020</u>	<u>FY 2020</u>	<u>FY 2020</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Complete</u>	<u>Total Cost</u>
• PAAF 01 11125F/354040: <i>B61</i>	74.907	152.223	0.000	80.773	80.773	35.720	2.800	0.000	0.000	0.000	346.423
Remarks											
E. Acquisition Strategy											
<p>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 was awarded for production to the EMD contractor.</p> <p>MS-C in 1QFY19 approved entry into Low Rate Initial Production/Lot 1 and the purchase of both long-lead items and life-of-type buys supporting Lot 2 Advanced Procurement for Full Rate Production.</p> <p>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 Project Officers Group (POG). Sandia National Laboratory will conduct the TKA/BA technical integration on behalf of the Air Force.</p>											
F. Performance Metrics											
<p>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.</p>											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force												Date: February 2019			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0101125F / Nuclear Weapons Modernization				Project (Number/Name) 657007 / B61 LIFE EXTENSION PROGRAM					
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
B61 LEP EMD Contracts	C/CPIF	Boeing : St Charles, MO	288.340	23.419	Oct 2017	25.287	Mar 2019	8.706	Nov 2019	-		8.706	0.000	345.752	0.000
Subtotal			288.340	23.419		25.287		8.706		-		8.706	0.000	345.752	N/A
Remarks															
FY19 EMD contract cost increase aligns with program schedule, continued AUR system qualification testing and IOT&E in 2Q-4Q FY19.															
FY20 EMD contract cost decrease aligns with program schedule and associated ramp down in program testing.															
EMD Phase II Period of Performance extended until December 2019.															
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AUR Technical Integration	MIPR	Various : various	57.890	9.844	Jan 2018	7.914	Mar 2019	0.100	Jun 2020	-		0.100	0.000	75.748	-
Aircraft Integration	MIPR	Various : various	141.610	28.090	Nov 2017	18.986	Feb 2019	14.523	Jan 2020	-		14.523	8.728	211.937	-
Subtotal			199.500	37.934		26.900		14.623		-		14.623	8.728	287.685	N/A
Remarks															
FY20 AUR Technical Integration cost decrease aligns with program schedule and ramp down in integration activities.															
FY19 & FY20 Aircraft Integration cost decrease aligns with program schedule and ramp down in aircraft integration activities.															
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Support for B61 LEP Development	PO	96 TW : Eglin, FL	55.842	9.034	Nov 2017	12.972	Feb 2019	0.553	Jan 2020	-		0.553	0.000	78.401	-
526.1 Assets	MIPR	Various : Various	0.000	5.940	Jul 2018	8.861	Feb 2019	-		-		-	0.000	14.801	-
Subtotal			55.842	14.974		21.833		0.553		-		0.553	0.000	93.202	N/A
Remarks															
FY20 Test Support cost decrease aligns with program schedule and ramp down in test activities.															

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Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0101125F / <i>Nuclear Weapons Modernization</i>						Project (Number/Name) 657007 / <i>B61 LIFE EXTENSION PROGRAM</i>			
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PMA	Various	various : various	32.970	5.304	Oct 2017	7.572	Feb 2019	3.682	Dec 2019	-		3.682	0.972	50.500	-
Subtotal			32.970	5.304		7.572		3.682		-		3.682	0.972	50.500	N/A
Remarks FY20 PMA cost decrease aligns with program schedule and ramp down in integration and test activities.															
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			576.652	81.631		81.592		27.564		-		27.564	9.700	777.139	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force										Date: February 2019			
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0101125F / <i>Nuclear Weapons Modernization</i>					Project (Number/Name) 657007 / <i>B61 LIFE EXTENSION PROGRAM</i>			

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
<i>B61 LIFE EXTENSION PROGRAM</i>																												
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																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force			Date: February 2019
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>B61 LIFE EXTENSION PROGRAM</i>				
Engineering & Manufacturing Development Phase 1	1	2018	1	2018
Engineering & Manufacturing Development Phase 2	1	2018	1	2020
All-Up-Round Developmental/System Qualification Testing	1	2018	2	2020
Ground Test/WTT/Flight Test	1	2018	2	2020
Aircraft Integration	1	2018	3	2021
TKA Milestone C Decision	1	2019	1	2019

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)