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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2016 Air Force **Date:** February 2015

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604327F I <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>
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COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	333.298	109.602	-	54.637	-	54.637	-	-	-	-	-	497.537
645341: <i>Direct Strike Penetrator Systems</i>	333.298	109.602	-	54.637	-	54.637	-	-	-	-	-	497.537
Quantity of RDT&E Articles	21	7	-	-	-	-	-	-	-	-	-	

**Program MDAP/MAIS Code:** 475

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

Direct Strike Penetrator Systems project includes the development of a Quick Reaction Capability (QRC) known as Massive Ordnance Penetrator (MOP) and analysis efforts for the follow-on Hard Target Munitions (HTM) program. The Hard and Deeply Buried Target Defeat System (HDBTDS) development activity is based on the Initial Capabilities Document (ICD) for HDBTDS, 1 Aug 2005, and the MOP development is based on the 2007 Urgent Operational Need (UON) document (revalidated Oct 2014). The Direct Strike Penetrator System is an advanced precision guided penetrator munition that will provide the Air Force with an improved capability using air-to-surface conventional munitions to attack Hard & Deeply Buried Targets (HDBT), such as bunker and tunnel facilities. This system holds HDBTs at risk using fewer weapons and reducing the number of missions necessary to defeat targets, resulting in an increase to overall mission survivability. The Direct Strike Penetrator provides a critical global strike capability not currently met by inventory conventional weapons. It will hold at risk those highest priority assets essential to the enemy's warfighting ability, which are heavily defended and protected. The Direct Strike Penetrator Systems project is also conducting a HTM analysis-of-alternative (AoA) to determine the best weapons and/or development efforts for addressing the Hard and Deeply Buried Targets (HDBT) mission area. At the completion of the AoA, the Air Force will add funds to start the development, production, modification activities for the HDBT attack weapons identified in the AoA as the most effective and affordable weapons. The AoA will include the performance, operational suitability, and cost of alternative hard target defeat systems. HTM is a pre-MDAP program.

This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because effort is necessary to evaluate integrated technologies, representative modes or prototype systems in high fidelity and realistic operating environment.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016 Base</b>	<b>FY 2016 OCO</b>	<b>FY 2016 Total</b>
Previous President's Budget	0.103	-	-	-	-
Current President's Budget	109.602	-	54.637	-	54.637
Total Adjustments	109.499	-	54.637	-	54.637
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	109.500	-			
• SBIR/STTR Transfer	-0.001	-			
• Other Adjustments	-	-	54.637	-	54.637

**Change Summary Explanation**

Due to the delay in testing from late FY14 to FY15, reprogrammed \$5M into FY14 to complete flight testing for the second phase of Enhanced Threat Response (ETR-II) and gave up \$5M in FY13 funds. For further capability upgrade to the MOP weapon System, reprogrammed \$104.5M in FY14 and added \$54.637M in FY16.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>
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<p><b>Title:</b> Massive Ordnance Penetrator (MOP) Weapon Development</p> <p><b>Description:</b> MOP Weapon development/redesign and test and integration on the B-2. Develop the Enhanced Threat Response (ETR III &amp; IV) capability for the current MOP weapon.</p> <p><b>FY 2014 Accomplishments:</b> Start development of the third and fourth phase of Enhanced Threat Response (ETR III &amp; IV) capability for the current MOP weapon.</p> <p><b>FY 2016 Plans:</b> Complete development of the the third and fourth phase of Enhanced Threat Response (ETR III &amp; IV) capability for the current MOP weapon.</p>	51.000	-	22.000
<p><b>Title:</b> Massive Ordnance Penetrator (MOP) Target Construction</p> <p><b>Description:</b> Construct several hard and deeply buried targets for MOP ETR-II, ETR-III, and ETR-IV testing.</p> <p><b>FY 2014 Accomplishments:</b></p>	43.000	-	23.807

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>
Construct several hard and deeply buried targets for live testing of the the second (ETR-II) and third phase of the MOP Enhanced Threat Response (ETR-III) weapon modification. <b>FY 2016 Plans:</b> Construct several Hard and deeply buried targets for live weapon testing for the fourth phase of the MOP Enhanced Threat Response (ETR-IV) weapon modification.				
<b>Title:</b> Massive Ordnance Penetrator (MOP) Testing <b>Description:</b> Conduct MOP ground, subscale and live testing in support of the Enhanced Threat Response II-IV development efforts. <b>FY 2014 Accomplishments:</b> Complete ETR-II flight testing to validate the ETR-II modifications. In support of ETR-III, conduct multiple subscale tests and multiple live drop tests . <b>FY 2016 Plans:</b> Conduct several live weapon tests to validate the MOP ETR-III and IV modifications.		9.000	-	6.520
<b>Title:</b> Massive Ordnance Penetrator (MOP) Analysis <b>Description:</b> Analyze MOP weapon effectiveness <b>FY 2014 Accomplishments:</b> Analyze weapons effects and develop methods to optimize the MOP weapon's effectiveness. <b>FY 2016 Plans:</b> Analyze weapons effects and develop methods to optimize the MOP weapon's effectiveness.		6.500	-	2.310
<b>Title:</b> Hard and Deeply Buried Target (HDBT) Capability Analysis <b>Description:</b> Conduct an Analysis of Alternatives (AoA) of HDBT: Evaluation of alternative hard target weapons to assess the performance, operational effectiveness, operational suitability, and estimated system procurement costs. <b>FY 2014 Accomplishments:</b> Complete the report of the HDBT AoA.		0.102	-	-
<b>Accomplishments/Planned Programs Subtotals</b>		109.602	-	54.637

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**D. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA07: PE 0604240F: <i>B-2 Bomber</i>	-	-	-	-	-	-	-	-	-	-	80.683
• APAF: BA05: Line Item # B01B00: <i>B-2 Squadrons, PE 0101127F</i>	-	-	-	-	-	-	-	-	-	-	75.651
• PAAF: BA01: Line Item #353020: <i>WRM-Ammunition</i> <i>(General Purpose Bombs)</i>	16.500	-	-	-	-	-	-	-	-	-	73.498
• PAAF: BA01: Line Item #353190: <i>WRM-Ammunition (MOP)</i>	-	-	39.690	-	39.690	-	-	-	-	-	39.690

**Remarks**

**E. Acquisition Strategy**

MOP is a Quick Reaction Capability (QRC) with a sole source cost plus incentive fee contract to a single contractor.

**F. Performance Metrics**

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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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force** **Date:** February 2015

<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>	<b>Project (Number/Name)</b> 645341 / <i>Direct Strike Penetrator Systems</i>
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<b>Product Development (\$ in Millions)</b>				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MOP Weapon Development	SS/CPIF	Boeing : St Louis, MO	195.772	51.000	May 2015	-		22.000	Nov 2015	-		22.000	-	268.772	195.772
Hard Target Munitions (HTM) Capabilities Analysis	Various	Whitney, Bradley & Brown; ARA; Booz Allen : Eglin, FL	3.614	-		-		-		-		-	-	3.614	3.614
HTM Concept/Technology Study	Various	Several Local Companies : Eglin, FL	2.779	-		-		-		-		-	-	2.779	2.779
HTM Weapons Effects/ Target Analysis	RO	Defense Threat Reduction Agency : Eglin AFB, FL	1.087	-		-		-		-		-	-	1.087	1.087
HTM Concept Tech Data	Various	Several Local Companies : Eglin AFB, FL	1.811	-		-		-		-		-	-	1.811	1.811
HTM Technical Support	Various	Jacobs Engr. : Eglin, FL	1.751	-		-		-		-		-	-	1.751	1.751
<b>Subtotal</b>			206.814	51.000		-		22.000		-		22.000	-	279.814	206.814

<b>Support (\$ in Millions)</b>				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Govt Support	Various	Several Govt Labs and test Centers : Eglin AFB, FL	10.199	5.000	Feb 2015	-	Feb 2015	0.967	Dec 2015	-		0.967	-	16.166	10.199
<b>Subtotal</b>			10.199	5.000		-		0.967		-		0.967	-	16.166	10.199

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<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>	<b>Project (Number/Name)</b> 645341 / <i>Direct Strike Penetrator Systems</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MOP System Test & Evaluation	RO	AFLCMC : Eglin AFB, FL	6.369	4.000	Aug 2015	-		2.500	Dec 2015	-		2.500	-	12.869	6.369
MOP Flight Test Range Support	Various	White Sands Missile Range : White Sands Missile Range, NM	10.504	3.500	Aug 2015	-		4.020	Dec 2015	-		4.020	-	18.024	13.644
Target Construction and Instrumentation (MOP)	Various	Defense Threat Reduction Agency : Albuquerque, NM	76.527	25.000	Mar 2015	-		16.300	Dec 2015	-		16.300	-	117.827	81.527
MOP Test and Evaluation Activities	Various	AF Flight Test Center : Albuquerque, NM	13.123	18.000	Mar 2015	-		7.550	Dec 2015	-		7.550	-	38.673	13.123
<b>Subtotal</b>			106.523	50.500		-		30.370		-		30.370	-	187.393	114.663

<b>Management Services (\$ in Millions)</b>				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration (PMA) for MOP	Various	AFLCMC/EBD : Eglin AFB, FL	9.252	3.000	Sep 2015	-		1.300	Dec 2015	-		1.300	-	13.552	-
Program Management Administration (PMA) for Hard Target Munitions	Various	AFLCMC/XR : Eglin AFB, FL	0.510	0.102	Jun 2014	-		-		-		-	-	0.612	-
<b>Subtotal</b>			9.762	3.102		-		1.300		-		1.300	-	14.164	-

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>		333.298	109.602	-	54.637	54.637	-	497.537	-

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2016 Air Force</b>		<b>Date:</b> February 2015
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>	<b>Project (Number/Name)</b> 645341 / <i>Direct Strike Penetrator Systems</i>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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
MOP ETR-II Modification Design and Qualification Testing	██████████																											
MOP ETR-II Flight Testing					██████████																							
Conduct Hard Target Munitions (HTM) Analysis of Alternatives (AoA)	██████████																											
Complete Hard Target Munitions Analysis of Analysis Report					██████████																							
MOP ETR-III Modification Design and Qualification Testing					██████████																							
MOP ETR-IV Modification Design and Qualification Testing					████████████████████																							
MOP ETR-III Flight Testing									██████████																			
MOP ETR-IV Flight Testing													██████████															

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2016 Air Force		<b>Date:</b> February 2015
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>	<b>Project (Number/Name)</b> 645341 / <i>Direct Strike Penetrator Systems</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MOP ETR-II Modification Design and Qualification Testing	1	2014	1	2015
MOP ETR-II Flight Testing	3	2014	2	2015
Conduct Hard Target Munitions (HTM) Analysis of Alternatives (AoA)	1	2014	3	2014
Complete Hard Target Munitions Analysis of Analysis Report	3	2014	4	2014
MOP ETR-III Modification Design and Qualification Testing	1	2015	1	2016
MOP ETR-IV Modification Design and Qualification Testing	1	2015	1	2017
MOP ETR-III Flight Testing	4	2015	1	2016
MOP ETR-IV Flight Testing	3	2016	1	2017