

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Air Force	DATE: February 2011
--	----------------------------

APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0207163F: <i>Advanced Medium Range Air-to-Air Missile</i>
--	--

COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	49.763	62.922	77.830	-	77.830	95.078	82.456	57.130	34.715	Continuing	Continuing
673777: AMRAAM	49.763	62.922	77.830	-	77.830	95.078	82.456	57.130	34.715	Continuing	Continuing

Note

Prior Year Funding Estimate is \$1.988B. To complete funding estimate is \$255.7M.

A. Mission Description and Budget Item Justification

The Air Force and Navy continue to develop improvements to the Advanced Medium Range Air-to-Air Missile (AMRAAM) to counter existing and emerging air vehicle threats, operating at high or low altitude and having advanced Electronic Attack (EA) capabilities. The AMRAAM Pre-Planned Product Improvement (P3I) program allows the Air Force and Navy to continue a joint research and development program. This enables AMRAAM to be compatible with advanced fighters, enhances AMRAAM capability and operational flexibility against current and projected threats, incorporates high payoff technology development, performs risk reduction activities and investigates new variants and/or alternate missions which may use AMRAAM attributes. The AIM-120D (Phase 4) delivers improved performance via GPS-aided navigation, a two-way datalink capability for enhanced aircrew survivability and improved network compatibility, and incorporates new guidance software which improves kinematic and weapon effectiveness performance. Phase 4 Functional Configuration Audit (FCA) was successfully completed in September 09. In FY10, a period of combined Developmental Test (DT)/Operational Test (OT) was initiated to ensure overall aircraft/missile weapons system maturity prior to the start of dedicated OT. Dedicated OT will start in FY11, with Initial Operational Capability (IOC) on the F/A-18 E/F and F-15 C/D expected in FY12. In addition to integration on these IOC platforms, the program includes integration of the missile onto the F-16, F-15E, F-22A, and F-18 C/D. To keep the existing inventory as effective as possible, the AF and Navy also develop, test, and field improvements that are implemented via software upgrades reprogrammed into fielded weapons, and/or hardware upgrades inserted into production units. AMRAAM is a joint Air Force/Navy, Acquisition Category IC (ACAT IC) program with Air Force as lead service. This program is in budget activity 7 - Operational System Development, providing upgrades to AIM-120 missiles currently fielded or in production.

Prior Years funding estimate is \$1.988B. To complete funding estimate is \$255.7M * (FY17 to complete).

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Air Force	DATE: February 2011
--	----------------------------

APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0207163F: <i>Advanced Medium Range Air-to-Air Missile</i>
--	--

B. Program Change Summary (\$ in Millions)	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012 Base</u>	<u>FY 2012 OCO</u>	<u>FY 2012 Total</u>
Previous President's Budget	49.971	62.922	60.935	-	60.935
Current President's Budget	49.763	62.922	77.830	-	77.830
Total Adjustments	-0.208	-	16.895	-	16.895
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-0.208	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	16.895	-	16.895

Change Summary Explanation

Funding added in FY12 to increase the Electronic Program Improvement Plan (EPIP) effort. Funds will support additional risk reduction studies and candidate selection activities to provide enhanced capability to counter electronic attack (EA) for current and emerging threats.

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force								DATE: February 2011			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0207163F: Advanced Medium Range Air-to-Air Missile				PROJECT 673777: AMRAAM			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
673777: AMRAAM	49.763	62.922	77.830	-	77.830	95.078	82.456	57.130	34.715	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
Note											
Totals include funding for PRCP Program Number 185, AMRAAM.											
The program funding includes reductions for overhead reduction efficiencies that are not intended to impact program content. The efficiencies reductions total \$.345M in FY12.											
A. Mission Description and Budget Item Justification											
The Air Force and Navy continue to develop improvements to the Advanced Medium Range Air-to-Air Missile (AMRAAM) to counter existing and emerging air vehicle threats, operating at high or low altitude and having advanced Electronic Attack (EA) capabilities. The AMRAAM Pre-Planned Product Improvement (P3I) program allows the Air Force and Navy to continue a joint research and development program. This enables AMRAAM to be compatible with advanced fighters, enhances AMRAAM capability and operational flexibility against current and projected threats, incorporates high payoff technology development, performs risk reduction activities and investigates new variants and/or alternate missions which may use AMRAAM attributes. The AIM-120D (Phase 4) delivers improved performance via GPS-aided navigation, a two-way datalink capability for enhanced aircrew survivability and improved network compatibility, and incorporates new guidance software which improves kinematic and weapon effectiveness performance. Phase 4 Functional Configuration Audit (FCA) was successfully completed in September 09. In FY10, a period of combined Developmental Test (DT)/Operational Test (OT) was initiated to ensure overall aircraft/missile weapons system maturity prior to the start of dedicated OT. Dedicated OT will start in FY11, with Initial Operational Capability (IOC) on the F/A-18 E/F and F-15 C/D expected in FY12. In addition to integration on these IOC platforms, the program includes integration of the missile onto the F-16, F-15E, F-22A, and F-18 C/D. To keep the existing inventory as effective as possible, the AF and Navy also develop, test, and field improvements that are implemented via software upgrades reprogrammed into fielded weapons, and/or hardware upgrades inserted into production units. AMRAAM is a joint Air Force/Navy, Acquisition Category IC (ACAT IC) program with Air Force as lead service. This program is in budget activity 7 - Operational System Development, providing upgrades to AIM-120 missiles currently fielded or in production.											
Prior Years funding estimate is \$1.988B. To complete funding estimate is \$255.7M * (FY17 to complete).											
This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.											
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: System Improvement Program (SIP)/Software Upgrade Program (SWUP)/Electronic Protection (EP)							29.115	35.601	32.408	-	32.408

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force			DATE: February 2011				
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development		R-1 ITEM NOMENCLATURE PE 0207163F: Advanced Medium Range Air-to-Air Missile		PROJECT 673777: AMRAAM			
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p>Description: Provide software upgrades/system improvement/electronic protection (SWUP/SIP/EP)</p> <p>FY 2010 Accomplishments:</p> <p>1. Began the AIM-120C AMRAAM missile variant (C3-C7) SWUP. Effort included beginning the first of four planned Candidate Development Set periods in which candidate improvements were identified, analyzed and selected for development continuation, maturing selected candidates from the first Candidate Development Set to a Preliminary Design Review (PDR) level of design maturity. The effort developed RF fuze signature models and vulnerability models for newly defined threat aircraft for use in subsequent SWUP efforts.</p> <p>2. Electronic Protection Improvement Program (EPIP) – began the implementation phase for the initial increment of EP upgrades for AIM-120C missiles. This program will yield two EP improvement S/W releases (one for C3-C6 missiles, one for C7 missiles) to be fielded in FY13. AIM-120D missile EP improvements will be fielded in conjunction with subsequent AIM-120D SIP releases. Tasks included start of developmental hardware in the loop (HWIL) testing, captive flight test missions, and software design activities in preparation for a Critical Design Review (CDR) in FY11. Conducted Concept Refinement/Risk Reduction (CR/RR) activities further developing EP techniques for future upgrades.</p> <p>3. AIM-120D SIP – continued candidate evaluation and selection and preliminary design activities, including lab and captive flight tests to provide data necessary to evaluate performance and feasibility of potential upgrades. Conducted quarterly candidate reviews including the warfighter and operational testers to downselect candidates for further evaluation and development. Incorporated deficiencies noted in the course of AIM-120D DT/OT testing into the improvement database and evaluated for implementation. Continued study of efficient/effective integration of other system improvements, parts obsolescence issues, and cost reduction initiatives.</p> <p>FY 2011 Plans:</p> <p>1. Continue the AIM-120C SWUP. Effort will include completing the second and beginning the third of four Candidate Development Set periods in which improvement candidates will be identified, analyzed and selected for development continuation. This will mature a larger set of selected candidates from the 2nd Candidate Development Set to a PDR level of design maturity. Finish RF fuze signature effort on vulnerability models.</p> <p>2. EPIP - continue EPIP implementation phase for AIM120C missiles.</p> <p>Specific tasks include continuing developmental HWIL testing and captive flight test missions, completion of software design, and completion of the CDR. Continue CR/RR activities further developing EP techniques for future upgrades.</p>							

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force			DATE: February 2011					
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development		R-1 ITEM NOMENCLATURE PE 0207163F: Advanced Medium Range Air-to-Air Missile		PROJECT 673777: AMRAAM				
B. Accomplishments/Planned Programs (\$ in Millions)				FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
3. AIM-120D SIP – continue candidate evaluation and selection and preliminary design activities, including lab and/or captive flight tests to provide data necessary to evaluate performance and feasibility of potential upgrades. Conduct quarterly candidate reviews including the warfighter and operational testers to downselect candidates for further evaluation and development. Conduct a Preliminary Design Review (PDR) for the initial SIP release and award contract to implement the candidates selected in the initial evaluation and selection phase. Software Trouble Reports (STRs)/Deficiency Reports (DRs) from OT and the field will be incorporated where possible in the S/W and/or hardware developed under this contract. A CR/RR contract will be awarded to continue prototyping and evaluation of selected hardware candidates. Continue study of efficient/effective integration of other system improvements, parts obsolescence issues, and cost reduction initiatives. FY 2012 Base Plans: 1. Continue the AIM-120C SWUP. Effort will include maturing Candidate Development Set 3 to a PDR maturity level. Begin study of software candidates for Set 4, which will provide fidelity improvements to C-7 tactical software and simulation model upgrades to enhance the fidelity of missile performance predictions. 2. EPIP – Complete software development captive flight testing and Formal Qualification Testing (FQT) for both C3-C6 and C7 configurations. Release S/W for the live fire test program. Hold PDR and begin implementation effort, to address advanced threats in AIM-120C7 missiles. Continue CR/RR activities further developing EP techniques for future upgrades. 3. AIM-120D System Improvement Program (SIP)- continue candidate evaluation and selection and preliminary design activities, including lab and/or captive flight tests to provide data necessary to evaluate performance and feasibility of potential upgrades. Conduct quarterly candidate reviews including the warfighter and operational testers to downselect candidates for further evaluation and development. Continue implementation phase for the initial SIP release. Continue CR/RR prototyping and evaluation of selected hardware candidates and award follow-on hardware design and development contract to implement selected candidates. Continue study of efficient/effective integration of other system improvements, parts obsolescence issues, and cost reduction initiatives. FY 2012 OCO Plans:								
Title: Test and Evaluation Description: Continue test and evaluation: Provide support to DT/OT FY 2010 Accomplishments:				14.096	11.841	17.809	-	17.809

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force									DATE: February 2011			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0207163F: Advanced Medium Range Air-to-Air Missile				PROJECT 673777: AMRAAM				
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Continue AIM-120D DT/OT and preparation for OT Readiness Review (OTRR). Continue infrastructure investments to support AIM-120D OT, SIP, SWUP and EPIP activities. FY 2011 Plans: Complete AIM-120D DT/OT testing. Accomplish OT Readiness Review (OTRR) and certify the missile ready for dedicated OT. Start dedicated OT captive carry and free flight testing on F/A-18E/F and F-15C/D, and continue infrastructure investments to support AIM-120D OT, SIP, SWUP and EPIP activities. FY 2012 Base Plans: Complete AIM-120D dedicated OT. Continue infrastructure investments to support AIM-120D OT, SIP, SWUP and EPIP activities. FY 2012 OCO Plans:												
Title: Aircraft Integration Description: Aircraft Integration - Integrate Phase 4 on multiple aircraft platforms FY 2010 Accomplishments: Aircraft Integration - Integrate Phase 4 on multiple aircraft platforms FY 2011 Plans: Aircraft Integration - Integrate Phase 4 on multiple aircraft platforms FY 2012 Base Plans: Aircraft Integration - Integrate Phase 4 on multiple aircraft platforms FY 2012 OCO Plans:								6.552	15.480	27.613	-	27.613
Accomplishments/Planned Programs Subtotals								49.763	62.922	77.830	-	77.830
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost	
• PE 0207163F: AMRAAM, MPAF, BP20	272.714	355.358	309.561	0.000	309.561	464.837	450.844	448.775	367.163	Continuing	Continuing	
• PE 0207163F (1): AMRAAM, MPAF, BP25)	0.801	0.798	0.804	0.000	0.804	0.803	0.809	0.808	0.823	Continuing	Continuing	

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2012 Air Force										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>				R-1 ITEM NOMENCLATURE PE 0207163F: <i>Advanced Medium Range Air-to-Air Missile</i>				PROJECT 673777: <i>AMRAAM</i>			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2012</u>	<u>FY 2012</u>	<u>FY 2012</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Complete</u>	<u>Total Cost</u>
• PE 0207163F (2): <i>AMRAAM, MPAF (BP26)</i>	2.335	0.079	0.082	0.000	0.082	0.082	0.084	0.085	0.087	Continuing	Continuing
• PE 0207163F (3): <i>AMRAAM, MPAF (BP22)</i>	5.249	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
D. Acquisition Strategy											
<p>The AIM-120D development completed Sep 09 with the accomplishment of a successful FCA. Initial AIM-120D production units were delivered beginning in Aug 09 and are continuing per contract requirements. The AIM-120D Missile Performance Specification (MPS) and Interface Control Document (ICD) define the requirement to integrate the Phase 4 AMRAAM onto the F-15, F-16, and F-22A; with integration activities supported via a series of contractual efforts managed via the host platform programs. For AMRAAM upgrades, contracts are awarded to analyze potential candidates to improve the AIM-120C/D configurations to provide the warfighter the capability to counter current and emerging threats. Candidates that are at the appropriate level of technical maturity will be incorporated via a series of design implementation contracts. Less mature high-payoff candidates will continue to be developed further via concept refinement/risk reduction contracts for incorporation in future development activities.</p>											
E. 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>											

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Air Force											DATE: February 2011			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development					R-1 ITEM NOMENCLATURE PE 0207163F: Advanced Medium Range Air-to-Air Missile				PROJECT 673777: AMRAAM					
Product Development (\$ in Millions)					FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Software Upgrade Program (SWUP)/System Improvement Program (SIP)/Electronic Protection (EP)	SS/CPFF	Raytheon:Tucson, AZ	35.648	33.777	Jan 2011	30.582	Jan 2012	-		30.582	444.665	544.672	TBD	
Aircraft Integration	MIPR	Wright-Patterson AFB:Dayton, OH	34.888	15.480	Jan 2011	27.613	Mar 2012	-		27.613	57.428	135.409	TBD	
Subtotal			70.536	49.257		58.195		-		58.195	502.093	680.081		
Remarks CPFF software development design implementation contracts include incentive events which must be achieved in order to earn full fixed fee amount.														
Support (\$ in Millions)					FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Joint System Program Office (JSPO) Operations	WR	Various:Various,	5.963	1.824	Jan 2011	1.826	Jan 2012	-		1.826	21.466	31.079	TBD	
Subtotal			5.963	1.824		1.826		-		1.826	21.466	31.079		
Test and Evaluation (\$ in Millions)					FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Government Test	WR	Various:Various,	35.974	11.841	Jan 2011	17.809	Jan 2012	-		17.809	1.520	67.144	TBD	
Subtotal			35.974	11.841		17.809		-		17.809	1.520	67.144		
Management Services (\$ in Millions)					FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Subtotal			-	-		-		-		-	0.000	0.000	0.000	

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Air Force						DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>			R-1 ITEM NOMENCLATURE PE 0207163F: <i>Advanced Medium Range Air-to-Air Missile</i>			PROJECT 673777: <i>AMRAAM</i>	

	Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	112.473	62.922	77.830	-	77.830	525.079	778.304	

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0207163F: <i>Advanced Medium Range Air-to-Air Missile</i>	PROJECT 673777: <i>AMRAAM</i>

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Air Force			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0207163F: <i>Advanced Medium Range Air-to-Air Missile</i>	PROJECT 673777: <i>AMRAAM</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Lot 24 (FY10) contract award	4	2010	4	2010
AIM-120C EPIP Increment 1 PDR	2	2010	2	2010
EPIP CDR	1	2011	1	2011
EP/SWUP increment 1 contract award	2	2010	2	2010
AIM-120C SWUP contract award	2	2010	2	2010
AIM-120D SIP Post-OT build contract award	4	2011	4	2011
AIM-120D SIP Post-OT build PDR	4	2011	4	2011
Lot 25 (FY11) contract award	3	2011	3	2011
AIM-120D SIP hardware CR/RR award	1	2011	1	2011
EPIP 1st DT/OT Live Fire	2	2012	2	2012
Complete AIM-120D OT	4	2012	4	2012

UNCLASSIFIED