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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2012 Air Force	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604706F: <i>Life Support Systems</i>
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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	13.997	10.650	11.280	-	11.280	9.943	9.645	9.053	9.247	Continuing	Continuing
65412A: <i>Life Support Systems</i>	13.997	10.650	11.280	-	11.280	9.943	9.645	9.053	9.247	Continuing	Continuing

**Note**

In FY2012, Project 65412A, Life Support Systems, includes new starts for Aircrew Laser Eye Protection (ALEP) Block 3 and Voice in Beacon (ViB) programs.

The program funding includes reductions for overhead reduction efficiencies that are not intended to impact program content. The efficiencies reductions total \$0.879M in FY12.

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

This program element provides for recapitalization, continuing research and development, and integration of aircrew flight equipment/airmen combat effectiveness equipment and subsystems to satisfy operational command requirements for improved/enhanced airmen performance capabilities. Aircrew flight equipment/airmen combat effectiveness systems consist of human-centered programs that enable weapons systems to use more of their full mission envelopes, maximize combat capabilities, and protect airmen. This includes, but is not limited to, the following projects: directed energy protective equipment, flight helmets and visors, oxygen breathing equipment for aviators, radios and locator beacons support equipment, nuclear flash blindness protection, night vision devices, noise reduction devices, anti-g suits, flame resistant/retardant and blast protective gear, aircraft seating, impact protection, flotation devices, and personnel parachutes. Program management support includes tasks to assess deficiencies of currently fielded equipment, evaluate and demonstrate feasibility of new technologies, provide for the transition of new technologies to development programs/projects, conduct business case analyses, assess suitability of commercially available items, and support all current aircrew flight equipment/airmen combat effectiveness programs.

This program is in Budget Activity 5, Engineering and Manufacturing Development (EMD) 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>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0604706F: <i>Life Support Systems</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	14.331	10.650	10.691	-	10.691
Current President's Budget	13.997	10.650	11.280	-	11.280
Total Adjustments	-0.334	-	0.589	-	0.589
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.274	-			
• Other Adjustments	-0.060	-	0.589	-	0.589

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

**Project:** 65412A: *Life Support Systems*

Congressional Add: *Advanced Concept Ejection Seat (ACES) Improvements*

Congressional Add: *Backpack Medical Oxygen System (BMOS)*

Congressional Add: *Bomber Crew Safety Study*

Congressional Add Subtotals for Project: 65412A

Congressional Add Totals for all Projects

<b>FY 2010</b>	<b>FY 2011</b>
1.920	-
0.800	-
0.900	-
3.620	-
3.620	-

**Change Summary Explanation**

FY2012: Funding totals include \$2.0M increase to support Integrated Aircrew Ensemble schedule delay; funding totals include \$0.879M reduction for overhead reduction efficiencies; funding totals include \$0.532M reduction to support higher Air Force priorities.

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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 5: Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0604706F: Life Support Systems				PROJECT 65412A: Life Support Systems			
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
65412A: Life Support Systems	13.997	10.650	11.280	-	11.280	9.943	9.645	9.053	9.247	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
Note In FY12, Project 65412A, Life Support Systems, includes new starts for Aircrew Laser Eye Protection (ALEP) Block 3 and Voice in Beacon (ViB) programs.											
A. Mission Description and Budget Item Justification This program element provides for recapitalization, continuing research and development, and integration of aircrew flight equipment/airmen combat effectiveness equipment and subsystems to satisfy operational command requirements for improved/enhanced airmen performance capabilities. Aircrew flight equipment/airmen combat effectiveness systems consist of human-centered programs that enable weapons systems to use more of their full mission envelopes, maximize combat capabilities, and protect airmen. This includes, but is not limited to, the following projects: directed energy protective equipment, flight helmets and visors, oxygen breathing equipment for aviators, radios and locator beacons support equipment, nuclear flash blindness protection, night vision devices, noise reduction devices, anti-g suits, flame resistant/retardant and blast protective gear, aircraft seating, impact protection, flotation devices, and personnel parachutes. Program management support includes tasks to assess deficiencies of currently fielded equipment, evaluate and demonstrate feasibility of new technologies, provide for the transition of new technologies to development programs/projects, conduct business case analyses, assess suitability of commercially available items, and support all current aircrew flight equipment/airmen combat effectiveness programs.  This program is in Budget Activity 5, Engineering and Manufacturing Development (EMD) 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.											
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: Aircrew Flight Equipment (AFE) Description: AFE effort investigates the feasibility of using commercial-off-the-shelf/non-developmental item technology. Effort is centered around quick replacement of antiquated Vietnam-era flight equipment. Efforts include EMD tasks associated with equipment engineering, modification, integration, testing, and procurement of test articles. Major initiatives include Low Profile Parachute (LPP), Aircrew Body Armor (ABA), Aircrew Integrated Recovery Survival, Armor, Vest & Equipment (AIRSAVE), and the Night Vision Goggle Head Harness (NVGHH).  FY 2010 Accomplishments: FY 2011 Plans:							-	0.824	0.050	-	0.050

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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 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604706F: Life Support Systems	PROJECT 65412A: Life Support Systems				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Begin Engineering & Manufacturing Development of LPP. <b>FY 2012 Base Plans:</b> Continue Engineering & Manufacturing Development of LPP. <b>FY 2012 OCO Plans:</b>						
<b>Title:</b> Aircrew Laser Eye Protection (ALEP) Block 3 - New Start <b>Description:</b> ALEP Block 3 effort is for development of eye protection against hazardous lasers. Develop system capable of protecting aircrew members susceptible from the harmful effects of visible and infrared laser threats and enhancing aircrew member's safety from laser induced eye injury. <b>FY 2010 Accomplishments:</b> <b>FY 2011 Plans:</b> <b>FY 2012 Base Plans:</b> Begin Engineering & Manufacturing Development of ALEP Block 3. <b>FY 2012 OCO Plans:</b>		-	-	0.500	-	0.500
<b>Title:</b> Flash Blindness Goggles <b>Description:</b> Flash Blindness Goggles effort is for development of eye protection against high-intensity, rapid onset flashes encountered during nuclear blast. <b>FY 2010 Accomplishments:</b> <b>FY 2011 Plans:</b> Release a Request for Information and conduct market research to set foundation for program. <b>FY 2012 Base Plans:</b> Continue execution of program. <b>FY 2012 OCO Plans:</b>		-	0.010	0.050	-	0.050
<b>Title:</b> Integrated Aircrew Ensemble (IAE)		3.688	5.176	5.980	-	5.980

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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 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604706F: Life Support Systems	PROJECT 65412A: Life Support Systems				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p><b>Description:</b> IAE effort is for development of an improved aircrew flight ensemble to replace the existing aircrew flight ensemble.</p> <p><b>FY 2010 Accomplishments:</b> Awarded Engineering &amp; Manufacturing Development contract 4 Nov 11 to design, develop, and test an ejection seat compatible ensemble (Engineering &amp; Manufacturing Development contract delayed from 2010-03 to 2010-11). Major program events for FY10 are kick-off meeting, System Functional Review, and transfer program to Wright-Patterson Air Force Base.</p> <p><b>FY 2011 Plans:</b> Begin Engineering &amp; Manufacturing Development contract. Major program events for FY11 are Preliminary Design Review and component level testing.</p> <p><b>FY 2012 Base Plans:</b> Continue Engineering &amp; Manufacturing Development. Major program events for FY12 are Critical Design Review, Developmental Test &amp; Evaluation, Test Readiness Review and Design Verification Test.</p> <p><b>FY 2012 OCO Plans:</b></p>						
<p><b>Title:</b> Modular Aircrew Common Helmet (MACH)</p> <p><b>Description:</b> MACH effort is to develop a common helmet to reduce helmet variants and parts, and increase capability.</p> <p><b>FY 2010 Accomplishments:</b> Developmental Test &amp; Evalution - Reaccomplished wind blast and sled testing in an attempt to determine if the final product is ready for production. The product will get certified for operational testing during this phase. Initial Operational Test &amp; Evaluation of Low Rate Initial Production assets will be purchased and operators will use these in the field during this time.</p> <p><b>FY 2011 Plans:</b> Developmental Test &amp; Evaluation continued and Operational Assessment accomplished.</p> <p><b>FY 2012 Base Plans:</b></p>		3.299	1.446	1.000	-	1.000

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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 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604706F: Life Support Systems	PROJECT 65412A: Life Support Systems				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Complete Developmental Test & Evaluation, accomplish Milestone C decision and start Initial Operational Test & Evaluation. <b>FY 2012 OCO Plans:</b>						
<b>Title:</b> Voice in Beacon (ViB) - New Start <b>Description:</b> Voice in Beacon (ViB) will provide two-way, line of sight Amplitude Modulation voice and personnel locator beacon capability for peacetime operations to allow downed aircrew to communicate with Civil and Combat Search and Rescue assets. <b>FY 2010 Accomplishments:</b> <b>FY 2011 Plans:</b> <b>FY 2012 Base Plans:</b> Begin Engineering & Manufacturing Development of ViB. <b>FY 2012 OCO Plans:</b>		-	-	0.500	-	0.500
<b>Title:</b> Management Services <b>Description:</b> Support/Travel/Technical Engineering & Acquisition Support/Test & Evaluation. <b>FY 2010 Accomplishments:</b> Continuation of listed activities. <b>FY 2011 Plans:</b> Continuation of listed activities. <b>FY 2012 Base Plans:</b> Continuation of listed activities. <b>FY 2012 OCO Plans:</b>		3.390	3.194	3.200	-	3.200
Accomplishments/Planned Programs Subtotals		10.377	10.650	11.280	-	11.280
		FY 2010	FY 2011			
Congressional Add: Advanced Concept Ejection Seat (ACES) Improvements		1.920	-			

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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 5: Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0604706F: Life Support Systems				PROJECT 65412A: Life Support Systems			
								FY 2010	FY 2011		
FY 2010 Accomplishments: ACES Ejection Seat study determined feasibility and safety advantages of upgrades. Improvement effort to accommodate a wider range of pilots accomplished through qualification testing and Business Case Analysis.											
FY 2011 Plans:											
Congressional Add: Backpack Medical Oxygen System (BMOS)								0.800	-		
FY 2010 Accomplishments: Study to investigate current configuration of BMOS, test and evaluate design modifications, conduct operational utility evaluation and recommend solutions.											
FY 2011 Plans:											
Congressional Add: Bomber Crew Safety Study								0.900	-		
FY 2010 Accomplishments: Study to investigate ejection seat sustainment issues and recommended solutions.											
FY 2011 Plans:											
Congressional Adds Subtotals								3.620	-		
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 0702833F: OPAF, Other Procurement, AF Items Less Than \$5M (Safety/Rescue Equipment) Life Support Procurement, WSC 842990	13.233	10.675	12.901	0.000	12.901	8.821	8.941	8.027	8.058	Continuing	Continuing
D. Acquisition Strategy											
Acquisition Strategy is carried out at the project level.											
E. 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 2012 Air Force** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: Research, Development, Test & Evaluation, Air Force BA 5: Development & Demonstration (SDD)	<b>R-1 ITEM NOMENCLATURE</b> PE 0604706F: Life Support Systems	<b>PROJECT</b> 65412A: Life Support Systems
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</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>
ACES Ejection Seat Improvements (Congressional Add)	C/CPFF	VSE:Alexandria, VA	19.505	-		-		-		-	1.600	21.105	TBD
Backpack Medical Oxygen System (BMOS) (Congressional Add)	TBD	TBD:TBD,	0.800	-		-		-		-	0.000	0.800	TBD
Bomber Crew Safety Study (Congressional Add)	TBD	TBD:TBD,	0.900	-		-		-		-	0.000	0.900	TBD
Aircrew Flight Equipment (AFE) (Low Profile Parachute) EMD	C/FFP	TBD:TBD,	-	0.824	Apr 2011	0.050	Jan 2012	-		0.050	0.000	0.874	TBD
Aircrew Laser Eye Protection (ALEP) Block 3 EMD	TBD	TBD:TBD,	-	-		0.500	Feb 2012	-		0.500	Continuing	Continuing	TBD
Flash Blindness Goggles EMD	TBD	TBD:TBD,	-	0.010		0.050		-		0.050	Continuing	Continuing	TBD
Integrated Aircrew Ensemble (IAE) EMD	C/TBD	Tiix:Lexington, MA	3.833	5.226	Nov 2010	5.980	Jan 2012	-		5.980	Continuing	Continuing	TBD
Modular Aircrew Common Helmet (MACH) EMD	C/TBD	Gentex:Simpson, PA	11.209	1.446	Jan 2011	1.000	Jan 2012	-		1.000	Continuing	Continuing	TBD
Voice in Beacon (ViB) EMD	TBD	TBD:TBD,	-	-		0.500	Jan 2012	-		0.500	Continuing	Continuing	TBD
<b>Subtotal</b>			36.247	7.506		8.080		-		8.080			

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</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>
<b>Subtotal</b>			-	-		-		-		-	0.000	0.000	0.000

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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 5: Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0604706F: Life Support Systems				PROJECT 65412A: Life Support Systems						
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	
Program Tests (ACES, ALEP, IAE, MACH, etc.)	Various	Various:Various,	0.680	0.400		0.300		-		0.300	Continuing	Continuing	0.000	
Subtotal			0.680	0.400		0.300		-		0.300			0.000	
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	
Program Management Support (BRAC)	TBD	77 AESG:Brooks City-Base, TX	1.298	-		-		-		-	0.000	1.298	0.000	
Program Management Support	TBD	ASC/WNU:Wright-Patterson AFB, OH	-	0.767		0.831		-		0.831	Continuing	Continuing	0.000	
Travel	Various	Various:Various,	0.245	0.130		0.140		-		0.140	Continuing	Continuing	0.000	
Technical Engineering & Acquisition Support (BRAC)	TBD	Terra Health:Brooks City-Base, TX	3.855	-		-		-		-	0.000	3.855	0.000	
Technical Engineering & Acquisition Support	C/FFP	Booze Allen Hamilton:Wright-Patterson AFB, OH	-	1.847	Jan 2011	1.929	Jan 2012	-		1.929	Continuing	Continuing	0.000	
Subtotal			5.398	2.744		2.900		-		2.900			0.000	
Remarks Program management transitioned from Brooks City-Base, TX to Wright-Patterson AFB, OH 31 Jul 10 due to Base Realignment and Closure Commission.														
			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			42.325	10.650		11.280		-		11.280				
Remarks														

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Air Force		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604706F: <i>Life Support Systems</i>	PROJECT 65412A: <i>Life Support Systems</i>

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2012 Air Force

**DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**

3600: *Research, Development, Test & Evaluation, Air Force*  
BA 5: *Development & Demonstration (SDD)*

**R-1 ITEM NOMENCLATURE**

PE 0604706F: *Life Support Systems*

**PROJECT**

65412A: *Life Support Systems*

## Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ACES Improvements [Critical Design Review]	2	2012	2	2012
AFE (Low Profile Parachute) [Engineering & Manufacturing Development]	3	2011	2	2013
ALEP Block 2 [Full Rate Production]	4	2011	2	2015
ALEP Block 3 [Engineering & Manufacturing Development]	1	2013	4	2015
Flash Blindness Goggles [Engineering & Manufacturing Development]	1	2012	2	2016
IAE [Preliminary Design Review]	4	2011	4	2011
IAE [Engineering & Manufacturing Development]	2	2011	3	2013
IAE [Critical Design Review]	3	2012	3	2012
IAE [Developmental Test & Evaluation]	4	2012	4	2012
IAE [Milestone C]	3	2013	3	2013
IAE [Low Rate Initial Production]	3	2013	2	2015
IAE [Initial Operational Test & Evaluation]	3	2014	3	2014
IAE [Full Rate Production Decision Review]	1	2015	1	2015
MACH [Critical Design Review]	4	2010	4	2010
MACH [Developmental Test & Evaluation]	2	2011	1	2012
MACH [Operational Assessment]	4	2011	4	2011
MACH [Milestone C]	2	2012	2	2012
MACH [Initial Operational Test & Evaluation]	3	2012	1	2013
MACH [Full Rate Production Decision Review]	2	2013	2	2013
ViB [Engineering & Manufacturing Development]	1	2012	4	2015

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