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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force									Date: February 2015			
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604853F I Evolved Expendable Launch Vehicle Program (SPACE) - EMD							
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	1,613.062	19.431	225.600	84.438	-	84.438	59.528	49.589	49.581	49.575	-	2,150.804
650004: Evolved Expendable Launch Vehicle	1,613.062	19.431	5.600	-	-	-	-	-	-	-	-	1,638.093
650006: Next Generation Liquid Rocket Engine	0.000	-	220.000	84.438	-	84.438	59.528	49.589	49.581	49.575	-	512.711
Program MDAP/MAIS Code: 176												
Note In FY 2015, Project 650006, Next Generation Liquid Rocket Engine, includes new start efforts for Evolved Expendable Launch Vehicle (EELV)												
A. Mission Description and Budget Item Justification The Evolved Expendable Launch Vehicle (EELV) program is a space launch system that satisfies the government's National Launch Forecast (NLF) requirements to place national Security Space (NSS) space vehicles on orbit. EELV is a launch service, not a weapon system, which is primarily funded with production funds.  Prior to FY2015 EELV funded product improvements, replacement components, system enhancements and special studies to allow EELV to meet National Launch Forecast requirements through 2030.  The FY2015 National Defense appropriations Act and the FY15 DoD Appropriations Act added \$220M to begin a rocket propulsion system development program to mitigate reliance on the Russian RD-180 engine used on the Atlas V launch system. In FY2016, the Department of Defense will build off the FY15 efforts and fund a program to invest in the development of new or upgraded domestic launch systems via a shared investment approach with domestic launch providers. The end goal of these investment are two or more domestic, commercially-viable launch providers that also meet NSS requirement.  The EELV program has been designated as an Acquisition Category ID (ACAT ID) program.  This program element is in Budget Activity 5, System Development and Demonstration, 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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Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)		PE 0604853F I Evolved Expendable Launch Vehicle Program (SPACE) - EMD			
B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	24.938	-	-	-	-
Current President's Budget	19.431	225.600	84.438	-	84.438
Total Adjustments	-5.507	225.600	84.438	-	84.438
• Congressional General Reductions	-	-0.400			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	226.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.504	-			
• SBIR/STTR Transfer	-5.003	-			
• Other Adjustments	-	-	84.438	-	84.438
Congressional Add Details (\$ in Millions, and Includes General Reductions)				FY 2014	FY 2015
Project: 650004: Evolved Expendable Launch Vehicle					
Congressional Add: Space Launch Range services and capability				-	5.600
Congressional Add Subtotals for Project: 650004				-	5.600
Project: 650006: Next Generation Liquid Rocket Engine					
Congressional Add: Rocket Propulsion System Technical Maturation and Risk Reduction				-	220.000
Congressional Add Subtotals for Project: 650006				-	220.000
Congressional Add Totals for all Projects				-	225.600
Change Summary Explanation					
FY15: +\$6 million congressional add for commercial spaceports or launch and range complexes to develop the capacity to provide mid-to-low inclination orbits or polar-to-high inclination orbits in support of the national security space program; +\$220M Congressional add for rocket propulsion program development. -\$0.4M FFRDC reduction.					
FY16: \$84.4M domestic launch system development.					

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015			
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD				Project (Number/Name) 650004 / Evolved Expendable Launch Vehicle				
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	
650004: Evolved Expendable Launch Vehicle	1,613.062	19.431	5.600	-	-	-	-	-	-	-	-	1,638.093	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			
A. Mission Description and Budget Item Justification													
Evolved Expendable Launch Vehicle (EELV) is a Major Defense Acquisition Program (MDAP) Acquisition Category (ACAT) 1D program that procures launch services to deliver National Security Space (NSS) space vehicles (SVs) on orbit.													
This program funds research to develop new engine possibilities, propulsion development, completion of the secondary payload adaptor standard service, and special studies (to include but not limited to RD180 engine replacement, alternative manufacturing process, industrial base studies and other related support activities).													
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	
Title: EELV Pre-planned product improvement (P3I) and Special Studies								19.431	-	-	-	-	
Description: Funded EELV product improvements, replacement components, system enhancements, and special studies to allow EELV to meet National Launch Forecast requirements through 2030.													
FY 2014 Accomplishments: Continue P3I efforts to include but not limited to the completion of secondary payload standard service, research to develop new engine possibilities and propulsion development. Conduct special studies (to include but not limited to RD180 engine replacement, alternative manufacturing process, industrial base and other related support activities).													
FY 2015 Plans: Space Launch Range services and capability													
FY 2016 Base Plans: N/A													
Accomplishments/Planned Programs Subtotals								19.431	-	-	-	-	
								FY 2014	FY 2015				
Congressional Add: Space Launch Range services and capability								-	5.600				

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force			Date: February 2015	
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD	Project (Number/Name) 650004 / Evolved Expendable Launch Vehicle	
			FY 2014	FY 2015
FY 2014 Accomplishments: N/A				
FY 2015 Plans: Develop the capacity to provide mid-to-low inclination orbits or polar-to-high inclination orbits in support of the national security space program at spaceports or launch and range complexes that are commercially licensed by the Federal Aviation Administration (FAA).				
Congressional Adds Subtotals			-	5.600

**C. 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>
• SPAF: BA01 Line Item # MSEELV: <i>Evolved Expendable Launch Veh (Space)</i>	-	-	800.201	-	800.201	842.557	842.519	1,294.965	1,318.294	10,327.332	15,425.868
• SPAF: BA01: Line Item # MSEELC: <i>Evolved Expendable Launch Veh (Infrast.)</i>	-	-	571.276	-	571.276	778.217	764.315	511.416	520.632	9,504.815	12,650.671
• MPAF: BA05: Line Item # # MSEELV: <i>Evolved Expendable Launch Vehicle</i>	807.991	732.003	-	-	-	-	-	-	-	-	11,727.435
• MPAF: BA05: Line Item # MSEELC: <i>Evolved Expendable Launch Veh (Infrast.)</i>	559.413	687.753	-	-	-	-	-	-	-	-	-

**Remarks**

**D. Acquisition Strategy**

The Air Force structured EELV with a new cost savings acquisition strategy that stabilizes the industrial base through a quantity and rate commitment to the current provider, provides predictability to maintain mission success, and enables on ramps for other launch vehicle companies referred to as New Entrants. The Air Force, National Reconnaissance Office (NRO), and the National Aeronautics and Space Administration (NASA) agreed to a coordinated strategy for certification of New Entrants to launch payloads in support of NSS requirements. If competition is not viable at the time of need, missions will be awarded to the incumbent.

**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 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD				Project (Number/Name) 650004 / Evolved Expendable Launch Vehicle					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
Delta IV development	C/FFP	Boeing : Huntington Beach, CA	710.182	-		-		-		-		-	-	710.182	-
Atlas V development	C/FFP	Lockheed Martin : Denver, CO	583.511	-		-		-		-		-	-	583.511	-
Launch Service Development	SS/CPIF	United Launch Services : Denver, CO	174.817	-		-		-		-		-	-	174.817	TBD
Various	Various	Various : ,	0.000	10.856	Oct 2014	5.600	May 2015	-		-		-	-	16.456	-
Subtotal			1,468.510	10.856		5.600		-		-		-	-	1,484.966	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
SPO Range Mission Spt	Various	Space and Missile Center : Los Angeles AFB, CA	43.617	-		-		-		-		-	-	43.617	-
FFRDC Mission Assurance	SS/CPAF	Aerospace : El Segundo, CA	76.612	6.246	Oct 2013	-		-		-		-	-	82.858	-
Special studies	Various	Various : ,	1.566	0.260	Oct 2014	-		-		-		-	-	1.826	-
Subtotal			121.795	6.506		-		-		-		-	-	128.301	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
Subtotal			-	-		-		-		-		-	-	-	-

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2016 Air Force												<b>Date:</b> February 2015			
<b>Appropriation/Budget Activity</b> 3600 / 5						<b>R-1 Program Element (Number/Name)</b> PE 0604853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>				<b>Project (Number/Name)</b> 650004 / <i>Evolved Expendable Launch Vehicle</i>					

  

<b>Management Services (\$ 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>			
<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>
Other Cntr Spt (PMA)	Various	Various : Various,	22.757	2.069	Oct 2013	-		-		-		-	-	24.826	-
<b>Subtotal</b>			22.757	2.069		-		-		-		-	-	24.826	-

  

	<b>Prior Years</b>	<b>FY 2014</b>		<b>FY 2015</b>		<b>FY 2016 Base</b>		<b>FY 2016 OCO</b>		<b>FY 2016 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	1,613.062	19.431		5.600		-		-		-	-	1,638.093	-

  

**Remarks**  
N/A

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2016 Air Force			<b>Date:</b> February 2015		
<b>Appropriation/Budget Activity</b> 3600 / 5		<b>R-1 Program Element (Number/Name)</b> PE 0604853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>			<b>Project (Number/Name)</b> 650004 / <i>Evolved Expendable Launch Vehicle</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
ESPA Phase IID																												
RL10C First Engine Delivery																												
GPS MT Eastern and Western Range Full Operational Capability																												
Special Studies (SS) Upper Stage Engine Risk Reduction																												
Rocket Propulsion and Risk Redution																												
Space Launch Range Services and Capability																												

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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 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>	<b>Project (Number/Name)</b> 650004 / <i>Evolved Expendable Launch Vehicle</i>	

**Schedule Details**

<b>Events</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
ESPA Phase IID	2	2014	1	2016
RL10C First Engine Delivery	1	2014	2	2014
GPS MT Eastern and Western Range Full Operational Capability	2	2014	2	2015
Special Studies (SS) Upper Stage Engine Risk Reduction	1	2014	1	2015
Rocket Propulsion and Risk Redution	4	2014	4	2015
Space Launch Range Services and Capability	3	2015	1	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD				Project (Number/Name) 650006 / Next Generation Liquid Rocket Engine			
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
650006: Next Generation Liquid Rocket Engine	-	-	220.000	84.438	-	84.438	59.528	49.589	49.581	49.575	-	512.711
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note In FY 2016, Project 650006, Next Generation Rocket Engine, includes new start efforts for the Evolved Expendable Launch Vehicle program.												
A. Mission Description and Budget Item Justification This program funds research and development activities and related studies support to reduce risk and mature domestic rocket propulsion technologies to enable our long-term rocket propulsion/launch system national security space requirements and shared investments in the development of new or upgraded launch systems.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Domestic Launch Service Providers								-	-	84.438	-	84.438
Description: Invest in two or more launch service providers' new launch system development and/or upgrades to existing launch systems to provide two or more domestic, commercially-viable launch providers that also meet NSS requirement available by the end of FY2022.												
FY 2014 Accomplishments: N/A												
FY 2015 Plans: N/A												
FY 2016 Base Plans: Invest in domestic launch providers' launch systems. This investment is for in the providers' development of new launch systems or upgrades to existing launch systems with the goal of two or more domestic, commercially-viable launch providers that also meet NSS requirements.												
FY 2016 OCO Plans: N/A												
Accomplishments/Planned Programs Subtotals								-	-	84.438	-	84.438

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force									Date: February 2015			
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD				Project (Number/Name) 650006 / Next Generation Liquid Rocket Engine				
								FY 2014	FY 2015			
Congressional Add: Rocket Propulsion System Technical Maturation and Risk Reduction								-	220.000			
FY 2014 Accomplishments: N/A												
FY 2015 Plans: Continue research to develop new engine possibilities and propulsion development. Conduct special studies (to include but not limited to alternate manufacturing processes, launch system architecture, and other related activities). Continue efforts to provide robust modeling and design tools, reduce the risk of key propulsion system components, invest in material and manufacturing development, and advanced propulsion technologies.												
Congressional Adds Subtotals								-	220.000			
C. Other Program Funding Summary (\$ in Millions)												
Line Item	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	
• SPAF BA01: Line Item # MSEELV: Evolved Expendable Launch Veh (Space)	-	-	800.201	-	800.201	842.557	842.519	1,294.965	1,318.294	10,327.332	15,425.868	
• SPAF: BA01: Line Item # MSEELC: Evolved Expendable Launch Veh (Infrast)	-	-	571.276	-	571.276	778.217	764.315	511.416	520.632	9,504.815	12,650.671	
• MPAF: BA05: Line Item # MSEELV: Evolved Expendable Launch Veh (Space)	807.991	732.003	-	-	-	-	-	-	-	-	11,727.435	
• MPAF: BA05: Line Item # MSEELC: Evolved Expendable Launch Veh (infrast)	559.413	687.735	-	-	-	-	-	-	-	-	-	
Remarks												
D. Acquisition Strategy												
The Department intends to pursue a strategy to competitively invest in two or more domestic launch providers' development of new launch systems or upgrades to existing systems. This shared investment approach may also leverage commitments to a portion of the planned phase 2 launch services (planned for launch between FY2020 and FY2024) to decrease the required up front Government investment.												

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<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>	<b>Project (Number/Name)</b> 650006 / <i>Next Generation Liquid Rocket Engine</i>

### 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 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD				Project (Number/Name) 650006 / Next Generation Liquid Rocket Engine					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
Various	Various	Various : ,	0.000	-		204.390	Feb 2015	74.888	Oct 2015	-		74.888	167.121	446.399	-
Subtotal			0.000	-		204.390		74.888		-		74.888	167.121	446.399	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
FFRDC Mission Assurance	SS/CPAF	Aerospace : El Segundo, CA	0.000	-		7.600	Feb 2015	4.240	Oct 2015	-		4.240	18.271	30.111	-
Subtotal			0.000	-		7.600		4.240		-		4.240	18.271	30.111	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
Other Cntr Spt	Various	Various : ,	0.000	-		8.010	Feb 2015	5.310	Oct 2015	-		5.310	22.881	36.201	-
Subtotal			0.000	-		8.010		5.310		-		5.310	22.881	36.201	-
			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		220.000		84.438		-		84.438	208.273	512.711	-
Remarks Preliminary program office estimate only.															

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2016 Air Force															<b>Date:</b> February 2015														
<b>Appropriation/Budget Activity</b> 3600 / 5										<b>R-1 Program Element (Number/Name)</b> PE 0604853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>										<b>Project (Number/Name)</b> 650006 / <i>Next Generation Liquid Rocket Engine</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
Next Generation Rocket Engine Risk Reduction																												
Rocket propulsion system development																												

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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 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>	<b>Project (Number/Name)</b> 650006 / <i>Next Generation Liquid Rocket Engine</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Next Generation Rocket Engine Risk Reduction	3	2014	4	2015
Rocket propulsion system development	2	2015	4	2020