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Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force **Date:** March 2014

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0207138F / <i>F-22A Squadrons</i>
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
Total Program Element	2,944.282	326.012	274.407	156.962	-	156.962	275.230	370.252	398.208	418.720	Continuing	Continuing
674785: <i>F-22</i>	2,944.282	326.012	274.407	153.999	-	153.999	221.551	258.075	242.229	282.832	Continuing	Continuing
674788: <i>F-22 Tactical Mandates</i>	0.000	-	-	2.963	-	2.963	53.679	112.177	155.979	135.888	41.618	502.304

MDAP/MAIS Code: 265

The FY 2015 OCO Request will be submitted at a later date.

Note

In FY15, Project 674785 efforts transferred to Project 674788 F-22 Tactical Mandates, formerly known as F-22 Mandates.

A. Mission Description and Budget Item Justification

The F-22 Raptor represents the USAF's top priority for providing the Joint Force with air dominance, operational access, and homeland and cruise missile defense for the next 20+ years. The F-22 is a first-of-a-kind multi-mission fighter aircraft that combines stealth, supercruise, advanced maneuverability and integrated avionics to make it the world's most capable combat aircraft. The Engineering and Manufacturing Development (EMD) phase of F-22 acquisition is complete. The program is now continuing the pre-planned modernization effort through incremental development phases that enhance the F-22 Global Strike capability. The development program enhances the air vehicle, engine, and training system to improve/enhance F-22 weapons, communications, and Intelligence Surveillance Reconnaissance (ISR) capabilities.

BA7 - This program is in Budget Activity 7, Operational Systems 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.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015 Base</u>	<u>FY 2015 OCO</u>	<u>FY 2015 Total</u>
Previous President's Budget	371.667	328.542	248.319	-	248.319
Current President's Budget	326.012	274.407	156.962	-	156.962
Total Adjustments	-45.655	-54.135	-91.357	-	-91.357
• Congressional General Reductions	-0.482	-0.041			
• Congressional Directed Reductions	-6.500	-54.094			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-10.409	-			
• Other Adjustments	-28.264	-	-91.357	-	-91.357

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<p><u>Change Summary Explanation</u></p> <p>FY13: \$45.655M reduction includes \$28.264M for sequestration, \$6.5M should cost review savings congressional mark, \$10.409M for Small Business Innovative Research (SBIR), and \$0.482M Congressional General Reduction (CGR) reduction</p> <p>FY14: \$54.135M reduction due to: \$54.094M program decrease and \$0.041M CGR reduction</p> <p>FY15: \$91.357M reduction includes: \$44.8M reprogrammed to Increment 3.2B (PE 0605213F) to support full funding, \$44.6M reduction due to restructure of F-22A Modernization</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force										Date: March 2014		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0207138F / F-22A Squadrons				Project (Number/Name) 674785 / F-22			
COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
674785: F-22	2,944.282	326.012	274.407	153.999	-	153.999	221.551	258.075	242.229	282.832	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note

Totals include funding for PRCP Program Number, 265 F-22A Squadrons.

In FY13, a separate Program Element (060513F) was created for Increment 3.2B FY13 milestone B and beyond efforts for greater transparency. All Increment 3.2B efforts and associated funding prior to FY13 are included in the F-22A Squadrons (0207138F) budget documentation.

In FY15, a separate Budget Program Activity Code (BPAC 674788) was created for F-22 Tactical Mandates, formerly known as F-22 Mandates. All F-22 Tactical Mandates efforts and funding prior to FY15 are included in the F-22 Squadrons (PE 0207138F/BPAC 674785).

F-22 development and production is complete. The remaining program is a compilation of F-22 Operational Flight Program (OFP) updates, capability enhancements, and mandates necessary to keep the F-22 weapon system the world's most capable fighter. The Cost to Complete and Total Cost are entered as "Continuing" due to ongoing individual Reliability and Maintainability Maturation Program (RAMMP) initiatives to improve operational availability.

A. Mission Description and Budget Item Justification

The F-22 Raptor represents the USAF's top priority for providing the Joint Force with air dominance, operational access, homeland and cruise missile defense for the next 20+ years. The F-22 is a first-of-a-kind multi-mission fighter aircraft that combines stealth, supercruise, advanced maneuverability and integrated avionics to make it the world's most capable combat aircraft. While F-22 Engineering and Manufacturing Development (EMD) and aircraft production completed May 2012, funding for F-22 modernization is "continuing" beyond the FYDP.

This program funds all non-MDAP development efforts for the F-22. The program is now continuing the pre-planned and evolutionary modernization effort through incremental development phases that enhance the F-22 anti-access, area denial, and Global Strike capability. The development program modernizes and upgrades the air vehicle, engine, avionics, and training systems to improve/enhance F-22 weapons, communications, and Intelligence Surveillance Reconnaissance (ISR) capabilities.

BA7 - 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 2013	FY 2014	FY 2015
Title: Increment 3.2A	99.795	52.833	3.316

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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207138F / F-22A Squadrons	Project (Number/Name) 674785 / F-22		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Description: The F-22 Increment 3.2A Modernization Program consists of the software development necessary to provide Increment 3.2A capabilities including improvements to Electronic Protection, Combat Identification and Link-16 Receive.</p> <p>FY 2013 Accomplishments: Continued to prepare lab and test facilities for Development, Integration, and Test. All software coding, integration and testing continued and Developmental Test was conducted.</p> <p>FY 2014 Plans: Continue Development, Integration, and Test. All software coding, integration and testing continue. Developmental Test will be conducted and completed. Operation Test will begin.</p> <p>FY 2015 Plans: Operational Test will complete. Operation Flight Program upgrade on combat coded F-22 aircraft will begin.</p>				
<p>Title: F-22 Tactical Mandates</p> <p>Description: The F-22 Tactical Mandates program (previously documented as F-22 Mandates) consists of the software and hardware development necessary to provide tactical Mode 5 and Link 16 Transmit on the F-22. The mandate for Mode 5 is required by the Joint Requirements Oversight Council (JROC).</p> <p>FY 2013 Accomplishments: Not Applicable</p> <p>FY 2014 Plans: F-22 Tactical Mandates requirements definition and proposal preparation activities.</p> <p>FY 2015 Plans: Not Applicable</p>		-	2.400	-
<p>Title: Update 5</p> <p>Description: Update 5 is a software only upgrade previously documented under the Major thrust "Software Support". It is now separated out for better clarity and insight and is not a New Start. Software updates develop, test and field new capabilities and capability enhancements. Software updates include changes driven by real world evolving threats, emergency/safety of flight issues, and deficiency reports. The Update 5 Operation Flight Program (OFP) includes Automatic Ground Collision Avoidance System (AGCAS), Intra Flight Data Link Mode 5th to 4th generation IFDL capability (IFDL GWY Mode), and basic to Block I AIM-9X missile launch capability.</p> <p>FY 2013 Accomplishments:</p>		36.184	29.560	27.670

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>Update 5 OFP, to include AGCAS, IFDL GWY Mode, and AIM-9X Basic, continued code, integration, and test.</p> <p>FY 2014 Plans: The Update 5 OFP, to include AGCAS, IFDL GWY Mode, and AIM-9X Basic, will be tested in both the Raptor Integration Lab (RAIL), and the Avionics Integration Lab (AIL). In addition, the Combined Test Force will conduct developmental flight test on the Update 5 OFPs during FY14.</p> <p>FY 2015 Plans: The Update 5 OFP will complete both developmental and operational flight test. The Update 5 OFP will release for fielding.</p>			
<p>Title: Update 6 Interoperability</p> <p>Description: Update 6 Interoperability is a software only upgrade previously documented under the Major thrust "Software Support" and has been separated out for better clarity and insight and is not a New Start. Software updates develop, test and field new capabilities and capability enhancements. Software Updates include changes driven by real world evolving threats, emergency/safety of flight issues, and deficiency reports. U6 Interoperability provides for development to support cryptographic updates required by the National Security Agency (NSA) to IFDL, Link-16, and Secure Voice and development to maintain interoperability with the enhancements to Link-16 and Secure Voice networks. The U6 Interoperability program will absorb and build upon the development work already accomplished in the KOV-20 Cryptographic Modernization Program and integrate that development into a single Operational Flight Program (OFP) for fleet release. In addition, U6 Interoperability will develop and deliver software fixes identified as critical by the operational community.</p> <p>FY 2013 Accomplishments: The KOV-20 Crypto Modernization portion of U6 Interoperability finished requirements analysis towards conducting a System Design Review (SDR) in 1QFY14. The design phase continued toward a Critical Design Review (CDR) in 1QFY15.</p> <p>FY 2014 Plans: Update 6 Interoperability Materiel Development Decision (MDD) in 2QFY14. Once the approval for the program is received via the Acquisition Decision Memorandum (ADM), U6 Interoperability will release the program Request for Proposal (RFP) for development contract and begin the requirements definition phase by 3QFY14. KOV-20 Crypto Modernization will complete the requirements analysis phase at SDR. U6 Interoperability will allow KOV-20 to continue the design phase toward a CDR in 1QFY15. Will Code, integrate, and test the KOV-20 module firmware to position the module for NSA recertification.</p> <p>FY 2015 Plans: Update 6 Interoperability development will transition from requirements definition to design with a SDR TIM in 2QFY15. Concurrently, Crypto Modernization will complete the design phase at CDR. The project will complete the code and test</p>	15.200	22.163	23.416

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
phase, while subsequently kicking off the subsystem testing of the software, which will continue throughout FY15. Update 6 Interoperability will meet Milestone B requirements in 1QFY16.				
Title: Software Support		12.169	12.134	10.647
<p>Description: Software Support includes Air Vehicle Software Development ("Updates"), Pilot Training Systems (PTS) Software Development, and Integrated Maintenance Information System (IMIS) Software Development through FY 2013. Beginning with this budget submission, Air Vehicle Software Development ("Updates") are broken out as separate line items for clarity. Updates 5 and 6 are both separate line items from software support. Software Support updates develop, test and field new capabilities and capability enhancements. Software Updates also include changes driven by real world evolving threats, emergency/safety of flight issues, deficiency reports, upgrades to training devices in order to maintain concurrency with aircraft configuration and capability.</p> <p>FY 2013 Accomplishments: Update 4 software support Operational Flight Programs (OFP) completed and fielded. Pilot Training Systems (PTS) software development continued software upgrades for the field -- software enhancements, which include pilot, maintenance and training device reliability improvement, software upgrades, modernization program integration, Distributed Mission Operations (DMO) integration, IMIS integration, and safety critical items. IMIS continued ADA to C++ conversion with focus on completion of the Present Tech Order (TO) and Air Vehicle Interface Modules.</p> <p>FY 2014 Plans: Pilot Training Systems (PTS) software development to continue software upgrades for the field -- software enhancements, which include pilot, maintenance, and training device reliability improvement, software upgrades, modernization program integration, DMO integration, IMIS integration, and safety critical items. IMIS to continue incremental conversion of ADA to C++ with focus on completion of final phase of Present TO and Air Vehicle Interface modules. Funding to fully integrate the enhanced Advanced Diagnostic Interface Tool (ADIT) capability as an application within IMIS; Provide integrated Multiplex Bus Fault Isolation (MBFI) software capability to operate within the IMIS Solaris environment; Provide integrated Engine Usage Based Lifeing (UBL) algorithms for IMIS to support Update 5 OFP; Provide capability to record actual aircraft flight time within IMIS; Design, planning, and preliminary development for the IMIS scheduling and analysis functionality.</p> <p>FY 2015 Plans: Pilot Training Systems (PTS) software development to continue software upgrades for the field -- software enhancements, which include pilot, maintenance, and training device reliability improvement development, software upgrades, modernization program integration, DMO integration, IMIS integration, and safety critical items. IMIS continues to fully integrate the enhanced Advanced Diagnostic Interface Tool (ADIT) capability as an application within IMIS; Provide integrated Multiplex Bus Fault Isolation (MBFI) software capability to operate within the IMIS Solaris environment; Provide capability to record actual aircraft flight time within IMIS; Continue development of the IMIS scheduling and analysis functionality.</p>				
Title: Advanced Technology Development		8.189	28.651	8.915

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Description: Technology maturation, risk reduction, studies, and demonstrations of Classified F-22 related development efforts.</p> <p>FY 2013 Accomplishments: Completed Phase 2 for flight testing and integration of Candidate M3, ready for handoff to Update 5. Wing seal test planning and hardware development ongoing with planned ground and flight testing in FY14. Continued support for technology development and maturation of current projects and added several additional projects.</p> <p>FY 2014 Plans: Continued support for technology development and maturation of projects. Establish contracts to perform studies of several new technology candidates to determine feasibility for integration onto F-22. Planned wind tunnel testing of scale model shapes for concept evaluation. Ground and flight test evaluation of wing seal covers.</p> <p>FY 2015 Plans: Continue support for technology development and maturation of projects.</p>				
<p>Title: Virtual Address eXtension Migration</p> <p>Description: The VAX Migration program develops, integrates, tests, and deploys computer infrastructure and software tools to replace existing VAX-based resources used to develop, field, and sustain F-22 capabilities. The current VAX architecture is obsolete, resulting in increased program risk, and delays in development due to reliance upon increasingly unreliable and unsupported infrastructure.</p> <p>FY 2013 Accomplishments: In FY 2013: Completed development and delivery of Network User Control Interface (NUCIF) card allowing for non-VAX computers to interface with F-22 test aircraft and development labs. Began site-by-site replacement of VAX systems through deployment of PC-based systems, compilers and software support tools including: Dimensions, Cradle, Quicksilver; Deployment of Instrumentation Tools, Simulations Tools and User Unique Tools.</p> <p>FY 2014 Plans: In FY 2014: Complete site-by-site replacement of VAX systems through deployment of PC-based systems, compilers and software support tools including: Dimensions, Cradle, Quicksilver; Deployment of Instrumentation Tools, Simulations Tools and User Unique Tools. Complete full the migration of F-22 development efforts from legacy VAX-dependent architecture; Re-host essential software tools to a PC environment without loss of capability, reliability, or degradation of the existing functionality. Shut-down of all VAX per requirement.</p> <p>FY 2015 Plans: In FY 2015: No planned activities.</p>		7.586	5.474	-
<p>Title: System Engineering/Program Management Support</p>		5.423	4.432	5.292

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
<p>Description: Provides for F-22 program-wide planning and execution to include studies, analysis, and requirements definition.</p> <p>FY 2013 Accomplishments: Provided for F-22 program-wide planning and execution comprised of, but not limited to, the following: Future Capabilities Planning and F-22 Mandates Requirements Definition, Cost Estimating Data, and Systems Engineering Process Management.</p> <p>FY 2014 Plans: Provides for F-22 program-wide planning and execution comprised of, but not limited to, the following: Future Capabilities Planning, Cost Estimating Data, and Systems Engineering Process Management.</p> <p>FY 2015 Plans: Provides for F-22 program-wide planning and execution comprised of, but not limited to, the following: Future Capabilities Planning, Cost Estimating Data, and Systems Engineering Process Management.</p>				
<p>Title: Reliability and Maintainability Maturation Program (RAMMP)</p> <p>Description: The Reliability, Availability, and Maintainability Maturation Program (RAMMP) provides for the development and integration of upgrades to improve reliability, availability and maintainability (RAM). The associated RAMMP RDT&E effort develops candidate RAMMP initiatives which are down-selected for implementation based on their development maturity and impact on F-22 life cycle costs. RAMMP provides for the development of urgent response requirements for the aircraft, for example Automatic Back-Up Oxygen System (ABOS).</p> <p>FY 2013 Accomplishments: Provided for development of multiple efforts to improve Mean Time Between Maintenance (MTBM), Maintainability, and reduce F-22 Weapon System Life Cycle Costs. FY 2013 active RAMMP development projects included, but are not limited to: Mighty Tough Boot Development, Aircraft Mounted Nozzle Shield (AMNS) Liner Redesign, Integrated Forebody (IFB) Rain Erosion Nose Cap, Canopy Topcoat Redesign, Stored Energy System (SES) Air Filter, Auxiliary Power Unit (APU) Plenum Sealing, Gland Redesign, Automated Backup Oxygen System, Secondary Multi-Function Display (SMFD) Backlight to Lower Power LED, Gland Redesign, and Driver B RF Circuit Redesign.</p> <p>FY 2014 Plans: Provides for development of multiple efforts to improve Mean Time Between Maintenance (MTBM), Maintainability, and reduce F-22 Weapon System Life Cycle Costs. FY2014 active RAMMP development projects include, but are not limited to: Mighty Tough Boot, AMNS Liner Redesign, IFB Rain Erosion Nose Cap, and Gland Redesign.</p> <p>FY 2015 Plans:</p>		12.928	17.011	1.105

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2013	FY 2014	FY 2015
Development of efforts to improve Mean Time Between Maintenance (MTBM), Maintainability, and reduce F-22 Weapon System Life Cycle Costs.				
<p>Title: F-22 Small Projects</p> <p>Description: Provides for F-22 modernization activities including, but not limited to: technology studies and demonstrations, Low Observable (LO) Signature Management, EN/Threat Modeling Support, Developmental Test (DT) Weapon Assets, Pilot Training (PT), Dynamic Synthetic Appeture Radar (SAR), Flight Test Engine Refurbishment, Support Equipment Development, and Other Government Costs (OGC)/Government Furnished Equipment (GFE).</p> <p>FY 2013 Accomplishments: Continued F-22 modernization development and support activities including, but not limited to: DT Weapons Assets, Threat Modeling Support, Test Support, Test Aircraft Modifications, Scorpion Helmet Mounted Display Demo, CRIIS Network development, PT, Dynamic SAR, AIM-9X Risk Reduction, and OGC/GFE.</p> <p>FY 2014 Plans: Continue F-22 modernization development and support activities including, but not limited to: DT Weapons Assets, Threat Modeling Support, Test Support, Test Aircraft Modifications, Scorpion Helmet Mounted Display Demo, CRIIS Network development, PT Dynamic SAR, AIM-9X Risk Reduction, and OGC/GFE.</p> <p>FY 2015 Plans: Continue F-22 modernization development and support activities including, but not limited to: DT Weapons Assets, Threat Modeling Support, Test Support, Test Aircraft Modifications, Scorpion Helmet Mounted Display Demo, CRIIS Network development, PT Dynamic SAR, AIM-9X Risk Reduction, and OGC/GFE.</p>		6.133	1.585	2.235
<p>Title: Combined Test Force</p> <p>Description: The F-22 Combined Test Force (CTF), located at Edwards Air Force Base, conducts full-up weapons system testing to assess the synergistic effect of the F-22 combined characteristics of stealth, speed, maneuverability, and integrated avionics in mission accomplishment. The CTF uses operationally significant ground and flight test scenarios, when practical, to identify system performance deficiencies early before they are more difficult and costly to resolve. Starting in FY13, CTF efforts directly associated with F-22 Increment 3.2B development are located in the Increment 3.2B program documentation, Program Element 0605213F.</p> <p>FY 2013 Accomplishments: The significant programs that underwent flight test at AFFTC included: final separation event (#5) for the AIM-9X safe separation risk reduction project, ABOS Flight Testing, 1st AIM-9X Captive Carry Mission, Upper Pressure Garment Verification, Increment 2 Lot 3B Update 4, First AIM-9X AFSEO launch 1, Increment 2 Update 4.1 OFP, Automatic Ground Collision Avoidance System (LIS-AGCAS), Quick turn test of Update 4.1 OFP, Two High Density Evaluation missions, Global Inertial Navigation System</p>		65.116	60.236	27.633

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
<p>(GINS) 09 initial retrofit, 3.2A Link 16 sensor fusion, F-119 Redesigned Fuel Nozzle, and first flight of AIM-9X Basic (and all associated ground testing).</p> <p>FY 2014 Plans: The significant programs undergoing flight test at AFFTC include: Inc 3.2A, AIM-9X Seek Eagle support, Update 5 including Line-in-the-Sky Automated Ground Collision Avoidance System (LIS-AGCAS), GPS Internal Navigation System (GINS) 09 with Inc. 3.2A, Pylon Wing Covers, and Airborne and Ground Integrated Lab Experiment support.</p> <p>FY 2015 Plans: The significant programs undergoing flight test at AFFTC include: Completion of misc minor projects (outlined in FY 2014), Increment 3.2B, KC-46 Refueling Certification, F-22 Tactical Mandates planning activities, and KOV-20 Crypto Modernization planning activities.</p>			
<p>Title: Laboratory Test & Operations (LTO)</p> <p>Description: Lab Test & Operations is a continuous activity that plans and conducts development, integration, test, & verification (IT&V) of F-22 OFPs with F-22 hardware. LTO provides maintenance, staffing, and operation of 18 development labs including 5 unique major System Integration Laboratories (SILs): the Agile Integration Lab (AIL); the Raptor Integration Lab (RAIL); the Air Combat Simulation (ACS) Lab; Vehicle Integration Facility (VIF); and the Vehicle System Simulator (VSS). Through the ACS, LTO provides the combat air forces with advanced mission-level test and training capability through a fully representative virtual simulation. Starting in FY13, LTO efforts directly associated with Increment 3.2B development are located in the Increment 3.2B program documentation, Program Element 0605213F.</p> <p>FY 2013 Accomplishments: Maintained lab availability in support of F-22 programs. Updated critical systems as required to support new aircraft configurations and capabilities. Accomplished OFP verification and risk reduction. Supported pilot training for Air Combat Command exercises and war gaming; Air Force Operation Test & Evaluation Center test planning; and test event rehearsals. Supported periodic Air Warfare Center operational mission data updates. The significant programs that underwent lab test were Increment 3.2A, Update 5, AFWC Mission Data Loads, and Increment 3.2B.</p> <p>FY 2014 Plans: Maintain lab availability in support of F-22 programs. Update critical systems as required to support new aircraft configurations and capabilities. Accomplish OFP verification and risk reduction. Support pilot training in support of Air Combat Command exercises and war gaming; Air Force Operation Test & Evaluation Center test planning; and test event rehearsals. Support periodic Air Warfare Center operational mission data updates. The significant programs planned for lab test are Update 5, Increment 3.2B, and AFWC Mission Data Loads.</p> <p>FY 2015 Plans:</p>	57.289	37.928	43.770

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Maintain lab availability in support of F-22 programs. Update critical systems as required to support new aircraft configurations and capabilities. Accomplish OFP verification and risk reduction. Support Air Combat Command exercises and war gaming; Air Force Operation Test & Evaluation Center test planning; and test event rehearsals. Support periodic Air Warfare Center operational mission data updates. The significant programs planned for lab test are Increment 3.2B and AFWC Mission Data Loads.			
Accomplishments/Planned Programs Subtotals	326.012	274.407	153.999

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• APAF: BA05: Line Item # F02200: F-22A Squadrons, PE 0207138F*	316.516	358.268	301.426	-	301.426	188.794	264.277	206.349	224.861	Continuing	Continuing
• RDT&E: BA07: PE 0605213F: Increment 3.2B, RDT&E**	110.432	115.000	173.647	-	173.647	141.575	73.042	1.411	1.438	24.751	641.296
• APAF: BA05: Line Item # F2232B: F-22 Increment 3.2B, PE 0207138F***	-	-	28.500	-	28.500	73.952	83.899	153.694	13.322	20.546	373.913
• OPAF: BA03: Line Item 837300: Other Procurement, PE 0207138F, F-22A	0.577	0.971	1.072	-	1.072	0.942	0.987	1.005	1.022	Continuing	Continuing
• MILCON: PE 0207138F: MILCON	-	13.900	11.000	-	11.000	-	-	-	-	-	24.900
• RDT&E: BA07: PE 0207163F: AIM-120D, AMRAAM, RDT&E****	18.590	20.830	23.940	-	23.940	5.820	-	-	-	-	69.180

Remarks
NOTES:

*F-22A Squadrons, APAF/PE 0207138F, includes funding for F-22A Squadrons BPs 11 (Aircraft Modifications), 13 (Post-Production Support), 16 (Initial Spares), and 19 (Depot Activation) only.

**F-22 Increment 3.2B, RDT&E/PE 0605213F, includes funding for FY13 and beyond identified in the Increment 3.2B documentation. PEs 0605213F and 0207318F share lab and infrastructure support costs across the F-22 enterprise.

***F-22 Increment 3.2B, APAF/PE 0207138F includes funding for associated Increment 3.2B BPs 11 (Aircraft Modifications) and 16 (Initial Spares) only.

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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207138F / F-22A Squadrons	Project (Number/Name) 674785 / F-22

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u> <u>Base</u>	<u>FY 2015</u> <u>OCO</u>	<u>FY 2015</u> <u>Total</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
****AIM-120D, AMRAAM RDT&E/PE 0207163F, funding provides for the AIM-120 development as a part of the F-22 Increment 3.2B effort.											

D. Acquisition Strategy

The Raptor Enhancement Development & Integration (REDI) contract is an Indefinite Delivery/Indefinite Quantity Ordering contract that maximizes flexibility to start, stop, accelerate and decelerate projects as required. The REDI contract was established to be more responsive to evolving war fighter requirements. The REDI contract allows the issuance of orders for the highest priority war fighter capabilities in operationally meaningful capability increments, requirements analysis, contractor cost estimates and studies, development and demonstration of capability enhancements, and unanticipated future war fighter requirements. Each increment is broken into phases to initiate requirements analysis, the design phase and the development, integration and verification phase of a specific incremental development effort. The (REDI) II contract is a follow-on Indefinite Delivery/Indefinite Quantity contract to the initial REDI contract. REDI II provides maximum flexibility to manage various modernization projects. The REDI II contract allows for the issuance of orders for efforts associated with the planning, analysis, design, development, qualification, test and documentation of F-22 weapon system performance enhancements, life-cycle improvements, Operational Flight Program (OFF) upgrades, and associated efforts essential to accomplishing the F-22 mission.

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 2015 Air Force											Date: March 2014				
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0207138F / F-22A Squadrons					Project (Number/Name) 674785 / F-22				

Product Development (\$ in Millions)				FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 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			
Increment 3.2A	SS/CPIF	Lockheed Martin : Fort Worth, TX	254.693	99.795	Oct 2012	52.833	Oct 2013	3.316	Oct 2014	-		3.316	-	410.637	-
F-22 Tactical Mandates	SS/CPIF	Lockheed Martin : Fort Worth, TX	0.000	-		2.400	Jul 2015	-	May 2015	-		-	-	2.400	-
Update 5	SS/ Various	Lockheed Martin : Fort Worth, TX	8.600	36.184	Nov 2012	29.560	Nov 2013	27.670	Nov 2014	-		27.670	6.249	108.263	-
Update 6 Interoperability	SS/ Various	Lockheed Martin : Fort Worth, TX	0.000	15.200	Nov 2012	22.163	Nov 2013	23.416	Nov 2014	-		23.416	132.897	193.676	-
Software Support	SS/ Various	Lockheed Martin : Fort Worth, TX	264.710	12.169	Nov 2012	12.134	Nov 2013	10.647	Nov 2014	-		10.647	Continuing	Continuing	-
Advanced Technology Development	Various	Various : Various,	40.378	8.189	Nov 2012	28.651	Feb 2014	8.915	Nov 2014	-		8.915	Continuing	Continuing	-
VAX Migration	SS/CPIF	Lockheed Martin : Fort Worth, TX	167.318	7.586	Nov 2012	5.474	Mar 2014	-		-		-	-	180.378	-
System Engineering / Program Management	SS/CPFF	Lockheed Martin : Fort Worth, TX	199.987	5.423	Nov 2012	4.432	Mar 2014	5.292	Nov 2014	-		5.292	Continuing	Continuing	-
RAMMP	SS/CPFF	Lockheed Martin : Fort Worth, TX	140.516	12.928	Nov 2012	17.011	Feb 2014	1.105	Jan 2015	-		1.105	Continuing	Continuing	-
F-22 Small Projects	Various	Various : Various,	541.242	6.133	Nov 2012	1.585	Nov 2013	2.235	Nov 2014	-		2.235	Continuing	Continuing	-
Subtotal			1,617.444	203.607		176.243		82.596		-		82.596	-	-	-

Remarks
 FY13 - Total Cost Increment 3.2B costs and estimated contract award dates are summarized in separate documentation PE/BPAC 0605213F/654785. All Increment 3.2B efforts and funding prior to FY13 continue to be included in PE/BPAC 0207138F/674785.
 FY15 - Total Cost F-22 Tactical Mandates costs and estimated contract award dates are summarized in separate documentation PE/BPAC 0207138F/674788.

Support (\$ in Millions)				FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 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			
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2015 Air Force **Date:** March 2014

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207138F / F-22A Squadrons	Project (Number/Name) 674785 / F-22
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Test and Evaluation (\$ in Millions)				FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 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			
Combined Test Force	Various	Various : Various,	660.946	65.116	Nov 2012	60.236	Nov 2013	27.633	Nov 2014	-		27.633	Continuing	Continuing	-
Laboratory Test & Operations (LTO)	SS/ Various	Lockheed Martin : Ft Worth, TX	535.046	57.289	Nov 2012	37.928	Nov 2013	43.770	Nov 2014	-		43.770	Continuing	Continuing	-
Subtotal			1,195.992	122.405		98.164		71.403		-		71.403	-	-	-

Remarks
The Combined Test Force and Laboratory Test & Operations costs appear to decrease significantly FY2013-2015 due to Increment 3.2B test costs which have been segregated beginning FY13 and subsequently captured in the PE 0605213F documentation. Upon completion of Increment 3.2B testing, costs will again be captured in this PE 0207138F, F-22A Squadrons documentation.

Management Services (\$ in Millions)				FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 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			
Mission Support	Various	Various : Various,	130.846	-		-		-		-		-	-	130.846	-
Subtotal			130.846	-		-		-		-		-	-	130.846	-

	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		2,944.282	326.012	274.407	153.999	153.999	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2015 Air Force

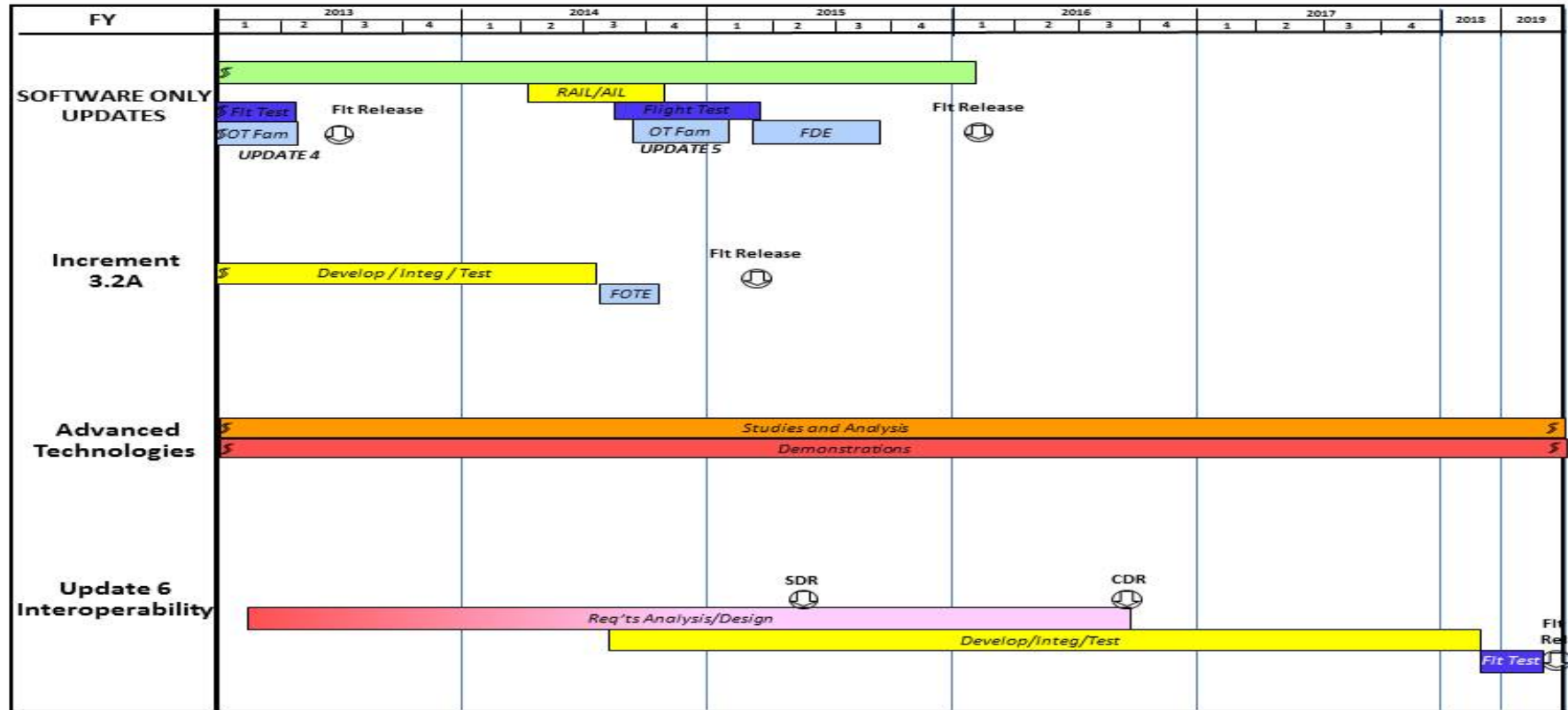
Date: March 2014

Appropriation/Budget Activity
3600 / 7

R-1 Program Element (Number/Name)
PE 0207138F / F-22A Squadrons

Project (Number/Name)
674785 / F-22

Baseline F-22 Program Schedule Summary



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Exhibit R-4A, RDT&E Schedule Details: PB 2015 Air Force **Date:** March 2014

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207138F / <i>F-22A Squadrons</i>	Project (Number/Name) 674785 / <i>F-22</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Software Support Update 4 Fleet Release	3	2013	3	2013
Update 5 Fleet Release	1	2016	1	2016
Increment 3.2A Development, Integration, & Test	1	2013	3	2014
Increment 3.2A Fleet Release	1	2015	1	2015
Advanced Technology Development Studies & Analysis	1	2013	4	2019
Advanced Technology Development Demonstrations	1	2013	4	2019
Update 6 Interoperability Requirements Analysis/Design	1	2013	3	2016
Update 6 Interoperability Development, Integration, & Test	3	2014	3	2018
Update 6 Interoperability System Design Review (SDR)	2	2015	2	2015
Update 6 Interoperability Critical Design Review (CDR)	3	2016	3	2016
Update 6 Interoperability Flight Test	3	2018	3	2019
Update 6 Interoperability Fleet Release	4	2019	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force **Date:** March 2014

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207138F / F-22A Squadrons	Project (Number/Name) 674788 / F-22 Tactical Mandates
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COST (\$ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
674788: F-22 Tactical Mandates	-	-	-	2.963	-	2.963	53.679	112.177	155.979	135.888	41.618	502.304
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

Note

Totals include funding for PRCP Program Number, 265 F-22 Tactical Mandates

In FY15, a separate Budget Program Activity Code (BPAC 674788) within PE 0207138F was created for F-22 Tactical Mandates, formerly known as F-22 Mandates. All F-22 Tactical Mandates efforts and funding prior to FY15 are included in the F-22 Squadrons Program documentation (PE 0207138F/BPAC 674785).

A. Mission Description and Budget Item Justification

The F-22 Tactical Mandates program is the follow-on modernization effort to Increment 3.2B. This program includes Link 16 Transmit and Mode 5 Identification Friend or Foe (IFF) Transpond/Interrogate. Integration will be accomplished using Open Systems Architecture, to enable future life cycle savings opportunities for the platform. The program will require hardware and software modifications to the Block 30/35 combat-coded F-22 fleet.

Mode 5 IFF is a Joint Requirements Oversight Council (JROC) mandated blue force identification capability that will directly improve the combat effectiveness of the Raptor as well as reducing fratricide risk DoD-wide.

Link 16 Transmit enables 5th-to-5th and 5th-to-4th tactical information exchange - a top Air Force priority. The Raptor's superior 5th Gen sensor suite will now aid the situational awareness of all participants, in any battle space, while further reducing fratricide risk.

BA07 - This program is in Budget Activity 07, 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 2013	FY 2014	FY 2015
Title: F-22 Tactical Mandates	-	-	2.963
Description: The F-22 Tactical Mandates program (previously documented as F-22 Mandates; PE 0207138F, BPAC 674785) consists of the software and hardware development necessary to provide tactical Mode 5 and Link 16 Transmit on the F-22. The mandate for Mode 5 is required by the Joint Requirements Oversight Council (JROC).			
FY 2013 Accomplishments: Not Applicable			
FY 2014 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force		Date: March 2014
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207138F / <i>F-22A Squadrons</i>	Project (Number/Name) 674788 / <i>F-22 Tactical Mandates</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2013	FY 2014	FY 2015
Not Applicable			
<i>FY 2015 Plans:</i> F-22 Tactical Mandates will begin capabilities analysis and selection, requirements development, design maturity, and early software modeling and test. The intent is to deliver design content toward achievement of the next milestone.			
Accomplishments/Planned Programs Subtotals	-	-	2.963

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• RDT&E: BA07: PE 0207138F: <i>F-22A Squadrons*</i>	326.012	274.407	153.999	-	153.999	221.551	258.075	242.229	282.832	Continuing	Continuing
• APAF: BA05: Line Item #F02200: <i>F-22A Squadrons, PE 0207138F**</i>	316.516	358.268	301.426	-	301.426	188.794	264.277	206.349	224.861	Continuing	Continuing
• RDT&E, BA05, PE 0605213F: <i>F-22A Increment 3.2B***</i>	110.432	115.000	173.647	-	173.647	141.575	73.042	1.411	1.438	24.751	641.296
• APAF: BA05: Line Item #F2232B: <i>F-22A Increment 3.2B, PE 0207138F****</i>	-	-	28.500	-	28.500	73.952	83.899	153.694	13.322	20.546	373.913

Remarks

*F-22 Squadrons, RDT&E/PE 0207138F, includes funding for F-22A Squadrons modernization and development BPAC 674785.

**F-22A Squadrons, APAF/PE 0207138F, includes funding for F-22A Squadrons BPs 11 (Aircraft Modifications), 13 (Post-Production Support), 16 (Initial Spares), and 19 (Depot Activation) only.

***F-22 Increment 3.2B, RDT&E/PE 0605213F, includes funding for the development of F-22A, Increment 3.2B.

****F-22 Squadrons, APAF/PE 0207138F/F2232B, includes funding for F-22 Increment 3.2B BPs 11 (Aircraft Modifications) and 16 (Initial Spares) only.

D. Acquisition Strategy

The Raptor Enhancement Development & Integration (REDI) contract is an Indefinite Delivery/Indefinite Quantity Ordering contract that maximizes flexibility to start, stop, accelerate and decelerate projects as required. The REDI contract was established to be more responsive to evolving war fighter requirements. The REDI contract allows the issuance of orders for the highest priority war fighter capabilities in operationally meaningful capability increments, requirements analysis, contractor cost estimates and studies, development and demonstration of capability enhancements, and unanticipated future war fighter requirements. Each increment is broken into phases to initiate requirements analysis, the design phase and the development, integration and verification phase of a specific incremental development effort.

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Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force Date: March 2014

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
3600 / 7	PE 0207138F / <i>F-22A Squadrons</i>	674788 / <i>F-22 Tactical Mandates</i>

The (REDI) II contract is a follow-on Indefinite Delivery/Indefinite Quantity contract to the initial REDI contract. REDI II provides maximum flexibility to manage various modernization projects. The REDI II contract allows for the issuance of orders for efforts associated with the planning, analysis, design, development, qualification, test and documentation of F-22 weapon system performance enhancements, life-cycle improvements, Operational Flight Program (OFP) upgrades, and associated efforts essential to accomplishing the F-22 mission.

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 2015 Air Force **Date:** March 2014

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207138F / F-22A Squadrons	Project (Number/Name) 674788 / F-22 Tactical Mandates
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Product Development (\$ in Millions)				FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 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			
F-22 Tactical Mandates	SS/CPIF	Lockheed Martin : Ft Worth, TX	0.000	-		-		2.963	Jun 2015	-		2.963	410.670	413.633	-
Subtotal			0.000	-		-		2.963		-		2.963	410.670	413.633	-

Support (\$ in Millions)				FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 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			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 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			
Lab Test & Operations	SS/ Various	Lockheed Martin : Ft Worth, TX	0.000	-		-		-		-		-	63.091	63.091	-
Combined Test Force (CTF)	Various	Various : Various,	0.000	-		-		-		-		-	25.580	25.580	-
Subtotal			0.000	-		-		-		-		-	88.671	88.671	-

Management Services (\$ in Millions)				FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 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			
Subtotal			-	-		-		-		-		-	-	-	-

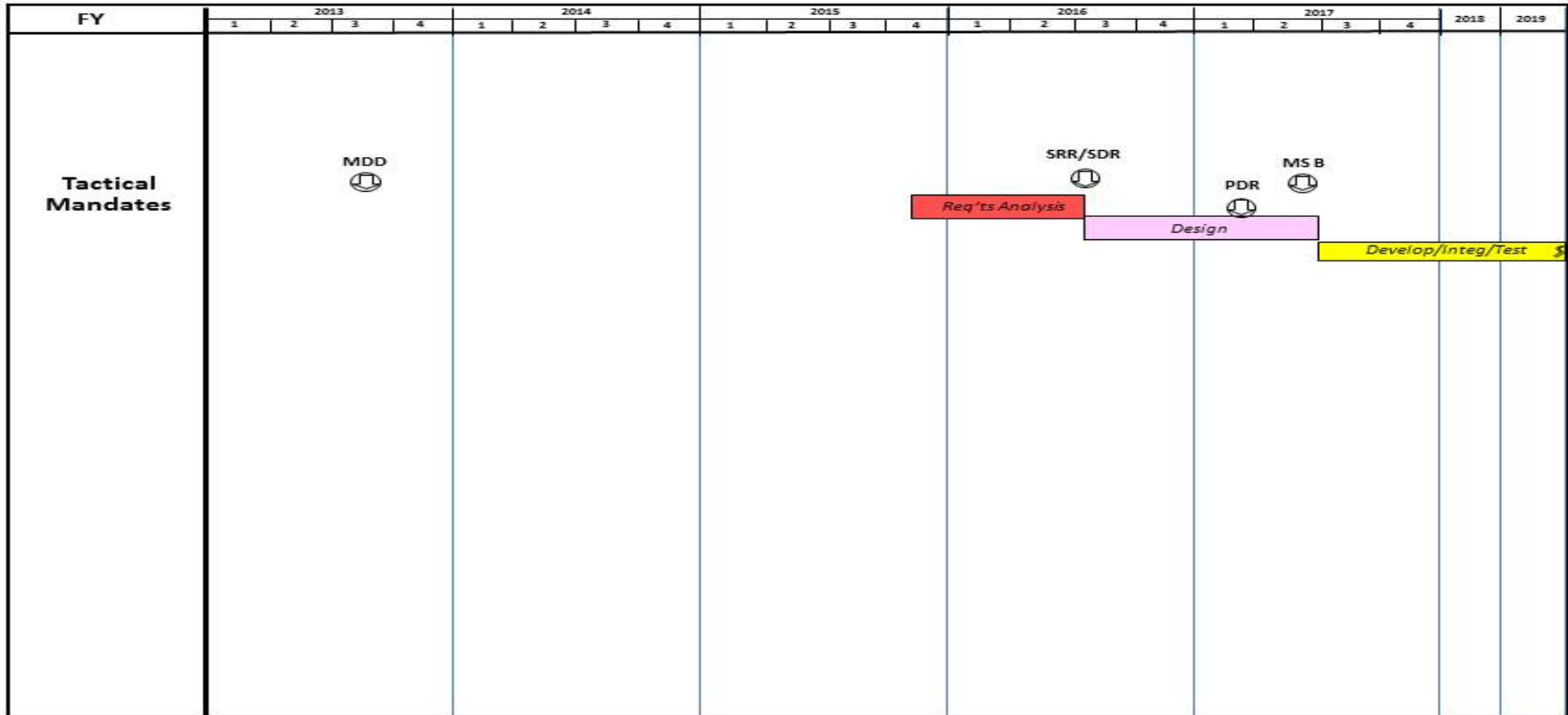
			Prior Years	FY 2013		FY 2014		FY 2015 Base		FY 2015 OCO		FY 2015 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		-		2.963		-		2.963	499.341	502.304	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2015 Air Force		Date: March 2014
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207138F / F-22A Squadrons	Project (Number/Name) 674788 / F-22 Tactical Mandates

F-22 Tactical Mandates Program Schedule Summary



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Exhibit R-4A, RDT&E Schedule Details: PB 2015 Air Force **Date:** March 2014

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207138F / <i>F-22A Squadrons</i>	Project (Number/Name) 674788 / <i>F-22 Tactical Mandates</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
F-22 Tactical Mandates Material Development Decision (MDD)	3	2013	3	2013
F-22 Tactical Mandates Requirements Analysis	4	2015	3	2016
F-22 Tactical Mandates System Requirements Review (SRR)	3	2016	3	2016
F-22 Tactical Mandates System Design Review (SDR)	3	2016	3	2016
F-22 Tactical Mandates Design	3	2016	2	2017
F-22 Tactical Mandates Preliminary Design Review (PDR)	1	2017	1	2017
F-22 Tactical Mandates Milestone B	2	2017	2	2017
F-22 Tactical Mandates Development, Integration & Test*	2	2017	4	2019