

# UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	663.498	222.693	221.690	191.733	0.000	191.733	243.252	217.327	165.284	57.201	Continuing	Continuing
675145: RQ-4 Block 30	489.373	34.312	25.950	30.761	0.000	30.761	27.490	25.913	26.384	26.859	0.000	687.042
675146: RQ-4 Block 40	174.125	0.139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	174.264
675149: RQ-4 Capability Enhancements	0.000	188.242	195.740	160.472	0.000	160.472	215.762	191.414	138.900	30.342	Continuing	Continuing
67RTIP: MP-RTIP	0.000	0.000	0.000	0.500	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.500
Program MDAP/MAIS Code: 252 Project MDAP/MAIS Code(s): 293												
Note The sum of all Prior Years is actually \$2,116.752 million more than the represented total due to several projects ending.												
A. Mission Description and Budget Item Justification This program element funds related Air Force projects sharing the RQ-4 platform in common: the RQ-4 Block 30, the RQ-4 Block 40, RQ-4 Capability Enhancements, and Multi-Platform Radar Technology Insertion Program (MP-RTIP). The RQ-4 Block 30 and Block 40 projects support the development and testing of the ACAT 1C RQ-4 capability and the initiation of the major modification ACAT programs. The majority of the modernization funding was transferred to the Capability Enhancement project (675149) to support upgrades and modifications, including established ACAT I and II programs, to the fielded RQ-4 weapon system to meet evolving threats and warfighter requirements. The MP-RTIP project completes development and testing of the baseline MDAP MP-RTIP sensor capability.  When judged feasible and affordable, this program will participate in the development, testing, and implementation of international standards to enhance joint, allied, and coalition interoperability. Studies and activities may be initiated to further explore the utility of incorporating the emerging architectural standards such as the USAF Unmanned Aerial Systems (UAS) Command and Control Initiative (UCI) or the DoD's Unmanned Control Segment standards (UCS) and Open Mission Systems (OMS). Ground Segment Modernization Program (GSMP) and Communication System Modernization Program (CSMP) will incorporate UCI and UCS standards.  Per direction of USD(AT&L), the RQ-4 program was restructured from the original project 675144 (Baseline) into multiple projects: (1) Block 30, (2) Block 40, (3) GroundSegment/Communications System, and (4) Common-Airborne Sense and Avoid (C-ABSAA). In FY17 the Ground Segment/Communications System project (675147) ended. Prior year funds in the amount of \$2031.377M were accounted for in project 675144 and \$85.375M were accounted for in project 675147.  The FY2018 funding was increased by \$8.000 million to develop a Block 40 ISR Payload Adapter design and documentation.												

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2020 Air Force	<b>Date:</b> February 2019
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver RQ-4 UAV weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is \$14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
Previous President's Budget	214.849	221.690	214.272	0.000	214.272
Current President's Budget	222.693	221.690	191.733	0.000	191.733
Total Adjustments	7.844	0.000	-22.539	0.000	-22.539
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	8.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	-0.156	0.000	-22.539	0.000	-22.539

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

**Project:** 675149: *RQ-4 Capability Enhancements*

Congressional Add: *RQ-4 Block 40 ISR Payload Adapter*

Congressional Add Subtotals for Project: 675149

Congressional Add Totals for all Projects

<b>FY 2018</b>	<b>FY 2019</b>
8.000	0.000
8.000	0.000
8.000	0.000

**Change Summary Explanation**

- FY 2020 funds adjustment attributed to Air Force adjustments/re-phasing for higher priorities (-\$46.8M), realignment for proper execution (+\$4.3M), and RDT&E increase for Mobile User Objective System (MUOS) (+\$20.0M).

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV				Project (Number/Name) 675145 / RQ-4 Block 30			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
675145: RQ-4 Block 30	489.373	34.312	25.950	30.761	0.000	30.761	27.490	25.913	26.384	26.859	0.000	687.042
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

The RQ-4 Block 30 Project was directed by an Acquisition Decision Memorandum (ADM) signed 14 Jun 2011 by USD (AT&L). At the time of the ADM signature, and subsequent designation of projects, budgets had already been finalized. Prior budgets for all projects are captured under the RQ-4 Baseline project, as its related Project (675144) was the core project for the RQ-4 program prior to the directed restructure.

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

The RQ-4 Remotely Piloted Aircraft (RPA) provides a high altitude, deep look, long-endurance Intelligence, Surveillance, and Reconnaissance (ISR) capability that complements space and other airborne collectors during peacetime, crisis, and war-fighting scenarios. RDT&E funding in this project supports design, development, integration, and testing of capabilities needed to meet validated requirements for Block 30 aircraft, including continuing aircraft system upgrade for Enhanced Integrated Sensor Suite (EISS) sensors, the Airborne Signals Intelligence Payload (ASIP), and alternate sensor payloads.

This funding also supports aircraft systems upgrades to include continuing airframe updates, aircraft operations surety, cybersecurity, airspace and interoperability enhancements, information assurance, and mission critical repair of Government Furnished Equipment (GFE).

Activities include mission planning interoperability enhancements, weather capability enhancements and testing, airspace and interoperability enhancements and updates, airframe and software upgrades and deficiency report resolution across RQ-4 fleet, periodic Operational Flight Program updates and releases, sensor interoperability and communication enhancements and alternate sensor upgrades, upgrades to ASIP Signals Intelligence (SIGINT) sensor, Identification Friend or Foe (IFF) Mode 5 Automatic Dependent Surveillance-Broadcast (ADS-B) development and testing, development and testing activities associated with enhancing sensor capability and sensor integration, integration of alternate sensors, development and testing of ice protection system, support of demonstration/development and technology insertion, and studies and analysis supporting future system enhancements.

This project supports system engineering/program management, test and evaluation, management services, and fielding support for all RQ-4 projects. This reflects contracting/acquisition strategy for these common elements within the Global Hawk program to provide efficiencies.

The RQ-4 program will maintain and upgrade interoperability for Blocks 20/30/40 with system of systems partners and continue to incorporate applicable synergies with other platforms such as the U.S. Navy's Triton, other RPA weapon systems, and Processing, Exploitation & Dissemination (PED) elements. The networking capability for intelligence dissemination is required to provide the data transport interface between the Weapons System, Operations Centers, and external Intelligence Community customers.

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force			Date: February 2019		
Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675145 / RQ-4 Block 30		
This program element may include necessary civilian pay expenses required to manage, execute, and deliver RQ-4 UAV weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.					
When judged feasible and affordable, this program will participate in the development, testing, and implementation of international standards to enhance joint, allied, and coalition interoperability. Studies and activities may be initiated to further explore the utility of incorporating the emerging architectural standards such as the USAF Unmanned Aerial Systems (UAS) Command and Control Initiative (UCI) or the DoD's Unmanned Control Segment standards (UCS) and Open Mission Systems (OMS). Ground Segment Modernization Program (GSMP) and Communication System Modernization Program (CSMP) will incorporate UCI and UCS standards.					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2018	FY 2019	FY 2020
Title: RQ-4 Block 30 Development and Demonstration			28.521	8.377	3.300
Description: Global Hawk Unmanned Aerial Vehicle Development and Demonstration includes enterprise management, test and evaluation, software integration, and fielding support for all RQ-4 projects as well as periodic Operational Flight Program updates and releases, studies and analysis supporting future system enhancements.					
FY 2019 Plans: - Continue upgrades to ASIP SIGINT and EISS sensors - Continue airspace integration activities including comm interoperability and upgrades, cybersecurity and information assurance and reliability & maintainability, and associated testing - Conduct Battlefield Airborne Communication Node enhanced weather capability testing					
FY 2020 Plans: - Conclude EISS modification effort					
FY 2019 to FY 2020 Increase/Decrease Statement: Funding decreased due to program transitioning modernization into separate Accomplishments/Planned Programs					
Title: RQ-4 MS-177 Sensor Integration			3.362	0.000	0.000
Description: Integration of MS-177 multispectral sensor into Block 30					
FY 2019 Plans: - Continue in project 675149					
FY 2020 Plans: - N/A					
FY 2019 to FY 2020 Increase/Decrease Statement: - N/A					
Title: RQ-4 Infrastructure			0.000	16.341	27.461

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Air Force		<b>Date:</b> February 2019	
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675145 / RQ-4 Block 30	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2018</b>	<b>FY 2019</b>
<p><b>Description:</b> RQ-4 Infrastructure includes systems engineering, program management, test and evaluation, and fielding support for all RQ-4 projects as well as periodic Operational Flight Program updates and releases, studies, development testing, and Other Government Costs (OGC). This funding was previously included in the RQ-4 Block 30 Development and Demonstration and Block 30 Government Test and Non-Prime Support Accomplishments/Planned Programs, including funding for the 412 TW at Edwards AFB, AFOTEC, JTIC DCGS and other interoperability partners.</p> <p><b>FY 2019 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue development of Operational Flight Program updates</li> <li>- Continue program test activities</li> <li>- Continue non-prime engineering and technical support and Other Government Costs</li> </ul> <p><b>FY 2020 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue development of Operational Flight Program updates</li> <li>- Will continue program test activities</li> <li>- Will continue non-prime engineering and technical support and Other Government Costs</li> </ul> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b></p> <p>Funding increased due to program transitioning modernization into separate Accomplishments/Planned Programs. Global Hawk flight test and system engineering/program management within infrastructure transitions into its own effort and will be contracted in conjunction with capability development.</p>			
<p><b>Title:</b> Block 30 Government Test and Non-Prime Support</p> <p><b>Description:</b> Government test, non-prime technical support and Other Government Costs (OGC) -- Funding supports RQ-4 development testing at the 412 Test Wing at Edwards AFB, CA as well as for support from Air Force Operational Test and Evaluation Center (AFOTEC), Joint Interoperability Test Command (JITC), Distributed Common Ground System (DCGS), other interoperability partners and OGC.</p> <p><b>FY 2019 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue non-prime engineering and technical support and Other Government Costs</li> </ul> <p><b>FY 2020 Plans:</b></p> <ul style="list-style-type: none"> <li>- N/A</li> </ul> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b></p> <p>Funding decreased because efforts were realigned to RQ-4 Infrastructure Accomplishments/Planned Program.</p>		2.429	1.232
<b>Accomplishments/Planned Programs Subtotals</b>		34.312	25.950

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force										Date: February 2019	
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV				Project (Number/Name) 675145 / RQ-4 Block 30			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• APAF 05 Line Item HAWK00: RQ-4 Mods	78.435	123.715	1.704	-	1.704	34.121	32.117	73.520	120.261	0.000	463.873
• APAF 07 Line Item RQ4DIS: RQ-4 Post Production Support	56.325	40.641	47.246	-	47.246	153.940	105.070	42.900	15.982	0.000	462.104
Remarks											
D. Acquisition Strategy											
The RQ-4 program uses an evolutionary acquisition strategy to provide the warfighter with a near-term combat capability with increased time-phased capability improvements as technology and risk achieve satisfactory levels. Northrop Grumman Corporation is the prime contractor. A suite of contract vehicles is used for development efforts: primarily, Indefinite Delivery, Indefinite Quantity (IDIQ) contracts cover development, system upgrade, production, retrofit, fielding, and sustainment efforts. MS-177 Sensor Enhancement RDT&E is being contracted directly with the Original Equipment Manufacturer (OEM), United Technology Corporation Aerospace Systems (UTAS).											
The program successfully completed Milestone (MS) C in February 2015 and is transitioning core program activities to the Operations and Support phase of the Defense Acquisition System over the next several years. Future required capabilities beyond the core Acquisition Category (ACAT) IC RQ-4 program will be completed as separate ACAT II and ACAT III modification programs.											
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 2020 Air Force** **Date:** February 2019

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675145 / RQ-4 Block 30
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Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Global Hawk Engineering Manufacturing and Development	SS/ Various	Northrop Grumman Integrated Systems : San Diego, CA	312.831	28.521	May 2018	8.377	Feb 2019	3.300	Dec 2019	-		3.300	0.000	353.029	353.029
RQ-4 MS-177 Sensor Integration	SS/ Various	Various : Various	117.970	3.362	May 2018	-		-		-		-	0.000	121.332	272.886
RQ-4 Infrastructure	Various	Various : Various	0.000	-		10.590	May 2019	22.461	May 2020	-		22.461	106.646	139.697	139.697
<b>Subtotal</b>			430.801	31.883		18.967		25.761		-		25.761	106.646	614.058	N/A

**Remarks**

Target Value of the Global Hawk EMD, IDIQ, and EPIC Contracts are not segregated by Budget Project Number.  
 Target Value of MS-177 contract includes \$151.554M of funding in Budget Project Number 675149, RQ-4 Capability Enhancements.  
 Target Value of RQ-4 Infrastructure Contracts are not segregated by Budget Project Number.

Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Non Prime Technical Support	Various	Various : Dayton, OH	3.038	0.478	Sep 2018	-		-		-		-	0.000	3.516	3.516
<b>Subtotal</b>			3.038	0.478		-		-		-		-	0.000	3.516	N/A

**Remarks**

Target Value of the Global Hawk effort is not segregated by Budget Project Number.

Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Flight Test & Evaluation	MIPR	412 TW : Edwards AFB, CA	40.626	-		5.163	Mar 2019	5.000	Nov 2019	-		5.000	0.000	50.789	50.789
<b>Subtotal</b>			40.626	-		5.163		5.000		-		5.000	0.000	50.789	N/A

**Remarks**

Target Value of the Global Hawk effort is not segregated by Budget Project Number.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force												Date: February 2019			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV				Project (Number/Name) 675145 / RQ-4 Block 30					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
PMA: A&AS	Various	Various : Dayton, OH	11.082	1.444	Nov 2017	0.101	Jan 2019	-		-		-	0.000	12.627	12.627
PMA: Other Government Costs	Various	Various : Dayton, OH	3.826	0.507	Oct 2017	1.719	Oct 2018	-		-		-	0.000	6.052	6.052
Subtotal			14.908	1.951		1.820		-		-		-	0.000	18.679	N/A
Remarks															
Target Value of the Global Hawk effort is not segregated by Budget Project Number.															
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			489.373	34.312		25.950		30.761		-		30.761	106.646	687.042	N/A
Remarks															



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2020 Air Force	<b>Date:</b> February 2019
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675145 / RQ-4 Block 30
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	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
<b>RQ-4 Block 30</b>																												
Enhanced Weather Capability Development																												
Mode 5/ADS-B Development																												
ASIP Inc 1 Development																												
Sensor Enhancements & Upgrades (MS-177) Development																												
Test Support																												
RQ-4 Infrastructure & Test																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Air Force			<b>Date:</b> February 2019
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675145 / RQ-4 Block 30	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>RQ-4 Block 30</b>				
Enhanced Weather Capability Development	1	2018	2	2019
Mode 5/ADS-B Development	1	2018	2	2020
ASIP Inc 1 Development	1	2018	1	2020
Sensor Enhancements & Upgrades (MS-177) Development	1	2018	3	2018
Test Support	1	2018	4	2018
RQ-4 Infrastructure & Test	1	2019	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV				Project (Number/Name) 675146 / RQ-4 Block 40			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
675146: RQ-4 Block 40	174.125	0.139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	174.264
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

## Note

The RQ-4 Block 40 Project was directed by an Acquisition Decision Memorandum (ADM) signed 14 Jun 2011 by USD (AT&L). At the time of the ADM signature, and subsequent designation of projects, budgets had already been finalized. Prior budgets for all projects are captured under the RQ-4 Baseline project, as its related Project (675144) was the core project for the RQ-4 program prior to the directed restructure.

In FY 2019, PE 0305220F, RQ-4 UAV, Project 675146, RQ-4 Block 40, efforts were transferred to PE 0305220F, RQ-4 UAV, Project 675149, RQ-4 Capability Enhancements, in order to allow greater visibility into Global Hawk modernization efforts.

## A. Mission Description and Budget Item Justification

The RQ-4 Remotely Piloted Aircraft (RPA) provides a high altitude, deep look, long-endurance Intelligence, Surveillance, and Reconnaissance (ISR) capability that complements space and other airborne collectors during peacetime, crisis, and war-fighting scenarios.

RDT&E funding in this project supports design, development, integration, and testing of items needed to meet validated requirements for Block 40 aircraft, including further development, creation of additional radar modes, integration and test of the Multi-Platform Radar Technology Insertion Program (MP-RTIP) sensor capabilities. The Block 40 program provides critical Synthetic Aperture Radar (SAR) and Ground Moving Target Indicator (GMTI) data to the warfighter. This funding also supports continued aircraft/communications systems upgrade to include Identification Friend or Foe (IFF) Mode 5/Automatic Dependent Surveillance-Broadcast (ADS-B), mission planning upgrade development and testing, airspace and interoperability and communication enhancements and updates, periodic Operational Flight Program updates and releases, enhanced weather capability, development and testing of ice protection system, additional radar modes, sensor enhancements, reliability and maintainability improvements, Airframe improvements to support alternate sensors, and support of demonstration and technology insertion. Funding continues RQ-4 unique development and integration of upgraded capabilities.

When judged feasible and affordable, this program will participate in the development, testing, and implementation of international standards to enhance joint, allied, and coalition interoperability. Studies and activities may be initiated to further explore the utility of incorporating the emerging architectural standards such as the USAF Unmanned Aerial Systems (UAS) Command and Control Initiative (UCI) or the DoD's Unmanned Control Segment standards (UCS) and Open Mission Systems (OMS). Ground Segment Modernization Program (GSMP) and Communication System Modernization Program (CSMP) will incorporate UCI and UCS standards.

The RQ-4 program will maintain capability and interoperability for Block 40 including efforts with system of systems partners and continue to incorporate applicable synergies with other platforms, such as the U.S. Navy's Triton, other RPA weapon systems, and Processing, Exploitation & Dissemination (PED) elements.

Activities also include studies and analysis, support to future system enhancements, communication and interoperability enhancements, current and future program planning, and project execution.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Air Force			<b>Date:</b> February 2019
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675146 / RQ-4 Block 40	

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
<b>Title:</b> RQ-4 Block 40 Development and Demonstration  <b>Description:</b> RQ-4 Block 40 Payload and Aircraft/Communications Development and Demonstration as well as periodic Operational Flight Program updates and releases  <b>FY 2019 Plans:</b> - N/A  <b>FY 2020 Plans:</b> - N/A  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> - N/A	0.139	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>	0.139	0.000	0.000

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

<u>Line Item</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u> <u>Base</u>	<u>FY 2020</u> <u>OCO</u>	<u>FY 2020</u> <u>Total</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item HAWK00: RQ-4 Mods	78.435	123.715	1.704	-	1.704	34.121	32.117	73.520	120.261	0.000	463.873
• APAF 07 Line Item RQ4DIS: RQ-4 Post Production Support	56.325	40.641	47.246	-	47.246	153.940	105.070	42.900	15.982	0.000	462.104
• RDTE 07 PE 0305238F: NATO AGS	44.729	51.527	32.567	-	32.567	1.787	0.796	0.810	0.825	0.000	133.041

**Remarks**

**D. Acquisition Strategy**

The RQ-4 program uses an evolutionary acquisition strategy to provide the warfighter with a near-term combat capability with increased time-phased capability improvements as technology and risk achieve satisfactory levels. Northrop Grumman Corporation is the prime contractor. A suite of contract vehicles is used for development efforts: a legacy Engineering & Manufacturing Development (EMD) "C" contract is being phased out with the completion of current efforts; Indefinite Delivery, Indefinite Quantity (IDIQ) contracts cover development, upgrade, production, retrofit, fielding, and sustainment efforts.

The program successfully completed Milestone (MS) C in February 2015 and is transitioning core program activities to the Operations and Support phase of the Defense Acquisition System over the next several years. Future required capabilities beyond the core Acquisition Category (ACAT) IC RQ-4 program will be completed as separate ACAT II and ACAT III modification programs.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Air Force		<b>Date:</b> February 2019
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675146 / RQ-4 Block 40

**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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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2020 Air Force</b>												<b>Date:</b> February 2019			
<b>Appropriation/Budget Activity</b> 3600 / 7						<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV						<b>Project (Number/Name)</b> 675146 / RQ-4 Block 40			
<b>Product Development (\$ in Millions)</b>				<b>FY 2018</b>		<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 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>
Global Hawk Engineering Manufacturing and Development	SS/ Various	Northrop Grumman Integrated Systems : San Diego, CA	139.073	0.139	Feb 2018	-		-		-		-	0.000	139.212	139.212
<b>Subtotal</b>			139.073	0.139		-		-		-		-	0.000	139.212	N/A
<b>Remarks</b> Target Value of the RQ-4 EMD, IDIQ, and EPIC contracts are not segregated by Budget Project Number.															
<b>Support (\$ in Millions)</b>				<b>FY 2018</b>		<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 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>
Non-Prime Technical Support	Various	Various : Dayton, OH	1.369	-		-		-		-		-	0.000	1.369	1.369
<b>Subtotal</b>			1.369	-		-		-		-		-	0.000	1.369	N/A
<b>Remarks</b> Target Value of the Global Hawk effort is not segregated by Budget Project Number.															
<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2018</b>		<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 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>
Flight Test & Evaluation	MIPR	412 TW : Edwards AFB, CA	23.231	-		-		-		-		-	0.000	23.231	23.231
<b>Subtotal</b>			23.231	-		-		-		-		-	0.000	23.231	N/A
<b>Remarks</b> Target Value of the Global Hawk effort is not segregated by Budget Project Number.															

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2020 Air Force	<b>Date:</b> February 2019
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675146 / RQ-4 Block 40
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Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
PMA: A&AS	Various	Various : Dayton, OH	7.040	-		-		-		-		-	0.000	7.040	7.040
PMA: Other Gov't Cost	Various	Various : Dayton, OH	3.412	-		-		-		-		-	0.000	3.412	3.412
<b>Subtotal</b>			10.452	-		-		-		-		-	0.000	10.452	N/A

**Remarks**  
Target Value of the Global Hawk effort is not segregated by Budget Project Number.

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	174.125	0.139	0.000	-	-	-	0.000	174.264	N/A

**Remarks**

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force										Date: February 2019			
Appropriation/Budget Activity					R-1 Program Element (Number/Name)					Project (Number/Name)			
3600 / 7					PE 0305220F / RQ-4 UAV					675146 / RQ-4 Block 40			

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
RQ-4 Block 40																												
Mode 5/ADS-B Development																												



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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675146 / RQ-4 Block 40

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>RQ-4 Block 40</i>				
Mode 5/ADS-B Development	1	2018	2	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV				Project (Number/Name) 675149 / RQ-4 Capability Enhancements			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
675149: RQ-4 Capability Enhancements	0.000	188.242	195.740	160.472	0.000	160.472	215.762	191.414	138.900	30.342	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

## A. Mission Description and Budget Item Justification

The RQ-4 Remotely Piloted Aircraft (RPA) provides a high altitude, deep look, long-endurance Intelligence, Surveillance, and Reconnaissance (ISR) capability that complements space and other airborne collectors during peacetime, crisis, and war-fighting scenarios. RDT&E funding in this project supports design, development, integration, and testing of capabilities needed to meet validated requirements for RQ-4 aircraft, including continuing aircraft system upgrade for current and alternate sensor payloads.

This funding also supports aircraft systems upgrades to include continuing airframe updates, aircraft operations surety, cybersecurity, airspace and interoperability enhancements, information assurance, and mission critical repair of Government Furnished Equipment (GFE). This project will include systems engineering/program management, configuration and data management, test and evaluation, management services, Deficiency Report (DR)/Military Intelligence Program (MIP) Investigations, studies and analysis and fielding support for Block 30, Block 40, and Ground Segment/Communication Systems.

Activities include airspace and interoperability and communication enhancements and updates, periodic Operational Flight Program updates and releases, airframe and software upgrades, effort to bring early production aircraft to current operational configurations, deficiency report resolution across RQ-4 fleet, sensor enhancements and alternate sensor upgrades including the MS-177 and the Optical Bar Camera (OBC), ISR Payload Adapter, enhanced communications capabilities, support for demonstration and technology insertion, development and testing of ice protection system, enhanced mission flexibility to accommodate changes to mission objectives inflight, enhancements to support multi-domain contested environment operations, and studies and analysis supporting future system enhancements. Additionally, this project supports design, development, integration, and testing of items needed to meet validated requirements for Block 20/30/40 aircraft, including further development, mode creation, integration and test of the Multi-Platform Radar Technology Insertion Program (MP-RTIP) sensor capabilities, continued aircraft/communications systems upgrade, increased power generation, additional radar modes, reliability and maintainability improvements, Ground Segment Modernization Program (GSMP) and Communication System Modernization Program (CSMP) efforts, as well as next-generation communications capabilities. GSMP resolves fleet grounding Diminishing Manufacturing Sources (DMS) and obsolescence issues associated with ground segment equipment and provides critical warfighter capabilities such as building-based multi-aircraft control. It will also enhance interoperability data dissemination as well as provide training capability. CSMP resolves critical DMS and obsolescence issues in the RQ-4 communication infrastructure and provides enhancements across the RQ-4 communication network.

RDT&E funding in this project also supports design, development, integration and testing of the weapon system's legacy ground elements and communications capabilities to enhance functionality and maintain interoperability prior to GSMP/CSMP fielding. The ground segment currently includes the Mission Control Elements (MCE), the Launch and Recovery Elements (LRE), and the networking resources required to simultaneously disseminate intelligence information while remaining compliant with DoD cybersecurity network requirements to operate in the DoD Information Network (DoDIN).

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force		Date: February 2019		
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675149 / RQ-4 Capability Enhancements		
<p>This project supports system engineering/program management, test and evaluation, management services and fielding support for all RQ-4 projects. This reflects contracting/acquisition strategy for these common elements within the Global Hawk program to provide efficiencies.</p> <p>The RQ-4 program will maintain and upgrade interoperability for Blocks 20/30/40 with system of systems partners and continue to incorporate applicable synergies with other platforms such as the U.S. Navy's Triton, other RPA weapon systems, and Processing, Exploitation &amp; Dissemination (PED) elements. The networking capability for intelligence dissemination is required to provide the data transport interface between the Weapons System, Operations Centers, and external Intelligence Community customers.</p> <p>This program element may include necessary civilian pay expenses required to manage, execute, and deliver RQ-4 UAV weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.</p> <p>When judged feasible and affordable, this program will participate in the development, testing, and implementation of international standards to enhance joint, allied, and coalition interoperability. Studies and activities may be initiated to further explore the utility of incorporating the emerging architectural standards such as the USAF Unmanned Aerial Systems (UAS) Command and Control Initiative (UCI) or the DoD's Unmanned Control Segment standards (UCS) and Open Mission Systems (OMS). Ground Segment Modernization Program (GSMP) and Communication System Modernization Program (CSMP) will incorporate UCI and UCS standards.</p>				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020
Title: RQ-4 Capability Enhancements		52.218	6.170	31.000
Description: RQ-4 Development and Demonstration (includes development, system integration, software integration, development test, and fielding support for RQ-4 projects including Communication System Modernization Program (CSMP), reliability and maintainability (R&M), diminishing manufacturer sourcing (DMS) as well as studies and analysis supporting future system enhancements). Also supports RQ-4 development testing at the 412 Test Wing at Edwards AFB, CA and also includes funding for support from Air Force Operational Test and Evaluation Center (AFOTEC), Joint Interoperability Test Command (JITC), Distributed Common Ground System (DCGS), other interoperability partners and Other Government Costs (OGC).				
FY 2019 Plans:				
- Conduct risk reduction and analysis of ice protection solutions, continued system interoperability and upgrades, cybersecurity and information assurance and reliability & maintainability, and associated testing				
- Conduct Communication System Modernization Program (CSMP) pre-contract activities and establish as a formal program				
- Continue government test and non-prime engineering and technical support and OGC				
FY 2020 Plans:				
- Will conduct risk reduction and analysis of ice protection solutions, continued system interoperability and upgrades, cybersecurity and information assurance and reliability & maintainability, and associated testing				
- Will begin Communication System Modernization Program (CSMP) system design/development				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Air Force		<b>Date:</b> February 2019	
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675149 / RQ-4 Capability Enhancements	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2018</b>	<b>FY 2019</b>
- Will continue government test and non-prime engineering and technical support and OGC			
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Funding increased because in FY20 plan to award CSMP contract and begin development			
<b>Title:</b> Integrated Functional Capability 9 (IFC 9)  <b>Description:</b> IFCs are periodic hardware and software capability, releases similar to an Operational Flight Program (OFP). IFC 9 provides, radar Software Development (RSD) 1.5, Nose Wheel Steering enhancement, in flight Waypoint Modification as well as numerous software enhancement and deficiency resolutions, and Other Government Costs (OGC).  <b>FY 2019 Plans:</b> - Will award contract and begin system design/development  <b>FY 2020 Plans:</b> - Will continue system design/development - Will continue government test and non-prime engineering and technical support and OGC  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> N/A		0.000	19.300
<b>Title:</b> RQ-4 Ground Segment Modernization Program (GSMP)  <b>Description:</b> GSMP resolves fleet grounding DMS and obsolescence issues associated with ground segment equipment and provides critical warfighter capabilities such as building-based multi-aircraft control. It will also enhance interoperability data dissemination as well as provide training capability.  <b>FY 2019 Plans:</b> - Continue software development and system level testing of the GSMP - Continue development and hardware purchases for vendor SILs, DT and OT locations for the GSMP - Continue development technical publications, courseware and a trainer for the GSMP - Begin developmental test of GSMP  <b>FY 2020 Plans:</b> - Will continue hardware purchase and installation for OT locations - Will continue development technical publications, courseware and a trainer for the GSMP - Will continue developmental test of GSMP  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b>		74.866	99.699
			30.321

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force		Date: February 2019		
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV	Project (Number/Name) 675149 / RQ-4 Capability Enhancements		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020
Funding decreased because in FY20 the major portion of software development is complete.				
<b>Title:</b> RQ-4 MS-177 Sensor Integration <b>Description:</b> Integration of MS-177 multispectral sensor into Block 30  <b>FY 2019 Plans:</b> - Continue the integration, and testing of MS-177 on Block 30, including additional spectral bands - Conduct MS-177 OT and attain Initial Operational Capability (IOC) - Continue development of MS-177A (10-Band) and integration  <b>FY 2020 Plans:</b> - Will continue development testing and integration of MS-177A  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> N/A		53.158	34.922	34.054
<b>Title:</b> RQ-4 Infrastructure <b>Description:</b> RQ-4 Infrastructure includes system engineering, program management, test and evaluation, and fielding support for all RQ-4 projects as well as periodic Operational Flight Program (OFP) updates and releases, development testing, and Other Government Costs (OGC). This funding was previously included in the RQ-4 Capability Enhancements Accomplishment/Planned Program, including funding for the 412th TW at Edwards AFB, AFOTEC, JTIC DCGS and other interoperability partners.  <b>FY 2019 Plans:</b> - Continue to develop OFP releases - Continue to perform government test and non-prime engineering and technical support and OGC - Continue to perform Contractor Flight Test supporting MS-177, GSMP, and other capabilities being developed  <b>FY 2020 Plans:</b> - Will continue to develop OFP releases - Will perform government test and non-prime engineering and technical support and OGC - Will continue to perform Contractor Flight Test supporting MS-177, GSMP, and other capabilities being developed - Will conduct risk reduction and analysis of ice protection solutions, continued system interoperability and upgrades, cybersecurity and information assurance and reliability & maintainability, and associated testing  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Funding increased because of increased testing temp/requirements.		0.000	35.649	47.247
Accomplishments/Planned Programs Subtotals		180.242	195.740	160.472

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Air Force			<b>Date:</b> February 2019
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675149 / RQ-4 Capability Enhancements	

	FY 2018	FY 2019
<b>Congressional Add:</b> RQ-4 Block 40 ISR Payload Adapter	8.000	0.000
<b>FY 2018 Accomplishments:</b> - Defined requirements and initiated acquisition planning documents for the ISR Payload Adapter on Block 40		
<b>FY 2019 Plans:</b> - Develop design and technical documentation for ISR Payload Adapter on Block 40 - Award contract for the ISR Payload Adapter on Block 40		
<b>Congressional Adds Subtotals</b>	8.000	0.000

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

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• APAF 05 Line Item HAWK00: RQ-4 Mods	78.435	123.715	1.704	-	1.704	34.121	32.117	73.520	120.261	0.000	463.873
• APAF 07 Line Item RQ4DIS: RQ-4 Post Production Support	56.325	40.641	47.246	-	47.246	153.940	105.070	42.900	15.982	0.000	462.104

## Remarks

## D. Acquisition Strategy

The RQ-4 program uses an evolutionary acquisition strategy to provide the warfighter with a near-term combat capability with increased time-phased capability improvements as technology and risk achieve satisfactory levels. Northrop Grumman Corporation is the prime contractor. A suite of contract vehicles is used for development efforts: primarily, Indefinite Delivery, Indefinite Quantity (IDIQ) contracts cover development, system upgrade, production, retrofit, fielding, and sustainment efforts. MS-177 Sensor Enhancement RDT&E is being contracted directly with the Original Equipment Manufacturer (OEM), United Technology Corporation Aerospace Systems (UTAS).

The program successfully completed Milestone (MS) C in February 2015 and is transitioning core program activities to the Operations and Support phase of the Defense Acquisition System over the next several years. Future required capabilities beyond the core Acquisition Category (ACAT) IC RQ-4 program will be completed as separate ACAT II and ACAT III modification programs.

## 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 2020 Air Force** **Date:** February 2019

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675149 / RQ-4 Capability Enhancements
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Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
RQ-4 Capability Enhancements	SS/ Various	Northrop Grumman Integrated Systems : San Diego, CA	0.000	29.646	May 2018	-		31.000	Jun 2020	-		31.000	Continuing	Continuing	493.146
Integrated Functional Capability 9	SS/CPIF	Northrop Grumman Integrated Systems : San Diego, CA	0.000	-		19.300	Sep 2019	17.850	Apr 2020	-		17.850	Continuing	Continuing	150.001
RQ-4 Ground Segment Modernization Program (GSMP)	SS/CPIF	Northrop Grumman Integrated Systems : San Diego, CA	0.000	74.866	Oct 2017	99.699	Nov 2018	30.321	Dec 2019	-		30.321	Continuing	Continuing	301.439
RQ-4 MS-177 Sensor Integration	SS/ Various	Various : San Diego, CA	0.000	53.158	Aug 2018	34.922	Feb 2019	34.054	Jun 2020	-		34.054	Continuing	Continuing	272.886
RQ-4 Infrastructure	Various	Various : Various	0.000	-		32.812	May 2019	32.869	May 2020	-		32.869	Continuing	Continuing	319.143
RQ-4 Block 40 ISR Payload Adapter	SS/TBD	NGAS : San Diego, CA	0.000	8.000	Sep 2019	-		-		-		-	Continuing	Continuing	8.000
<b>Subtotal</b>			0.000	165.670		186.733		146.094		-		146.094	Continuing	Continuing	N/A

**Remarks**

Target Value of the RQ-4 EMD, IDIQ, and EPIC Contracts is not segregated by Budget Project Number.  
 Target Value of GSMP contract includes \$43.414M of funding in Budget Project Number 675147, RQ-4 Grnd Segment/Comm System  
 Target Value of MS-177 contract includes \$121.332M of funding in Budget Project Number 675145, RQ-4 Block 30  
 Target Value of RQ-4 Infrastructure is not segregated by Budget Project Number.

Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Non Prime Technical Support	Various	Various : Dayton, OH	0.000	0.527	Oct 2018	1.290	Jan 2019	1.290	Jan 2020	-		1.290	Continuing	Continuing	-
<b>Subtotal</b>			0.000	0.527		1.290		1.290		-		1.290	Continuing	Continuing	N/A

**Remarks**

Target Value of the RQ-4 effort is not segregated by Budget Project Number.

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**Exhibit R-3, RDT&E Project Cost Analysis:** PB 2020 Air Force **Date:** February 2019

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675149 / RQ-4 Capability Enhancements
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Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Flight Test & Evaluation	MIPR	412 TW : Edwards AFB, CA	0.000	16.421	Jan 2018	5.280	Mar 2019	5.562	Nov 2019	-		5.562	Continuing	Continuing	-
<b>Subtotal</b>			0.000	16.421		5.280		5.562		-		5.562	Continuing	Continuing	N/A

**Remarks**

Target Value of the RQ-4 effort is not segregated by Budget Project Number.

Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
PMA: A&AS	Various	Various : Dayton, OH	0.000	5.188	Nov 2017	1.184	Nov 2018	4.700	Nov 2019	-		4.700	Continuing	Continuing	-
PMA: Other Government Costs	Various	Varous : Dayton, OH	0.000	0.436	Oct 2017	1.253	Oct 2018	2.826	Oct 2019	-		2.826	Continuing	Continuing	-
<b>Subtotal</b>			0.000	5.624		2.437		7.526		-		7.526	Continuing	Continuing	N/A

**Remarks**

Target Value of the RQ-4 effort is not segregated by Budget Project Number.

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	0.000	188.242	195.740	160.472	-	160.472	Continuing	Continuing	N/A

**Remarks**



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2020 Air Force			<b>Date:</b> February 2019		
<b>Appropriation/Budget Activity</b> 3600 / 7		<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV		<b>Project (Number/Name)</b> 675149 / RQ-4 Capability Enhancements	

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
<b>RQ-4 Capability Enhancements</b>																												
Sensor Enhancements & Upgrades (MS-177) Development																												
Ice Protection System Risk Reduction & Analysis																												
Ground Segment Maintenance/Upgrades Development																												
Ground Segment Modernization Program Development																												
Comms Systems Maintenance/Upgrades Development																												
Communication System Modernization Program Development																												
RQ-4 Infrastructure & Test																												
Integrated Functional Capability 9																												
Block 40 ISR Payload Adapter																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Air Force			<b>Date:</b> February 2019
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675149 / RQ-4 Capability Enhancements	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>RQ-4 Capability Enhancements</i></b>				
Sensor Enhancements & Upgrades (MS-177) Development	1	2018	1	2022
Ice Protection System Risk Reduction & Analysis	4	2018	3	2019
Ground Segment Maintenance/Upgrades Development	1	2018	4	2019
Ground Segment Modernization Program Development	1	2018	2	2021
Comms Systems Maintenance/Upgrades Development	1	2018	3	2019
Communication System Modernization Program Development	3	2020	4	2024
RQ-4 Infrastructure & Test	1	2019	4	2024
Integrated Functional Capability 9	4	2019	4	2023
Block 40 ISR Payload Adapter	4	2019	2	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV				Project (Number/Name) 67RTIP / MP-RTIP			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
67RTIP: MP-RTIP	0.000	0.000	0.000	0.500	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.500
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: 293												
Note												
Beginning in FY09, the Multi-Platform Radar Technology Insertion Program (MP-RTIP) funding was transferred to program 0305220F (RQ-4) Global Hawk (GH). Therefore, the data in this package includes only FY09 and subsequent funding related to program 0305220F.												
A. Mission Description and Budget Item Justification												
The MP-RTIP sensor was designed as a family of modular, scalable sensors to provide next generation capabilities to support sustainable network centric operations with integrated Command and Control, Intelligence, Surveillance and Reconnaissance (C2ISR) capability. MP-RTIP provides the RQ-4 Block 40 aircraft with advanced Synthetic Aperture Radar (SAR) and Moving Target Indicator (MTI) sensor capabilities.												
This project (67RTIP) includes MP-RTIP modernization and integration efforts for the RQ-4 Block 40 Platform. MP-RTIP modernization studies and development insertion include the implementation of Maritime Modes (MM), Maritime Inverse SAR(MISAR), product improvements and other advanced capabilities. GH Program Office will continue integration of radar capabilities to include Maritime Modes integration into RQ-4 aircraft and ground systems.												
Activities also include studies and analysis supporting current and future program planning and future modes development based on user requirements.												
This program element may include necessary civilian pay expenses required to manage, execute, and deliver MPRTIP weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F,0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2018	FY 2019	FY 2020	
Title: Multi-Platform Radar Tech Insertion Program (MP-RTIP)									0.000	0.000	0.500	
Description: MP-RTIP development and integration												
FY 2019 Plans:												
- Will complete transition to sustainment. GH Program Office will have responsibility for future radar development in the RQ-4 Capability Enhancements Program.												
FY 2020 Plans:												

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Air Force										<b>Date:</b> February 2019		
<b>Appropriation/Budget Activity</b> 3600 / 7				<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV				<b>Project (Number/Name)</b> 67RTIP / MP-RTIP				
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>										<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
- Funding will be utilized to complete close-out actions for Prime contract.												
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Wrap-up activities through FY19 and FY20; no funding required in FY19. FY20 funding is for contract close-out liabilities.												
<b>Accomplishments/Planned Programs Subtotals</b>										0.000	0.000	0.500
<b>C. Other Program Funding Summary (\$ in Millions)</b>												
<b>Line Item</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	
• APAF 05 Line Item HAWK00: RQ-4 Mods	78.435	123.715	1.704	-	1.704	34.121	32.117	73.520	120.261	0.000	463.873	
• APAF 07 Line Item RQ4DIS: RQ-4 Post Production Support	56.325	40.641	47.246	-	47.246	153.940	105.070	42.900	15.982	0.000	462.104	
• RDTE 07 PE 0305238F: NATO AGS	44.729	51.527	32.567	-	32.567	1.787	0.796	0.810	0.825	0.000	133.041	
<b>Remarks</b>												
<b>D. Acquisition Strategy</b> - Will complete transition to sustainment and GH Program Office will have responsibility for future radar development including integration of RSD 1.5 and Maritime Mode software incorporated into Integrated Functional Capability (IFC) 9 plan.												
<b>E. Performance Metrics</b> 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 2020 Air Force												Date: February 2019			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV				Project (Number/Name) 67RTIP / MP-RTIP					
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
MP-RTIP	SS/CPFF	Northrop Grumman Integrated Systems : El Segundo, CA	0.000	0.000		0.000		0.500		-		0.500	0.000	0.500	-
Subtotal			0.000	0.000		0.000		0.500		-		0.500	0.000	0.500	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
IRT Study	Various	Various : Various, NV	0.000	-		-		-		-		-	0.000	0.000	-
Logistics Planning	SS/CPFF	Northrop Grumman Integrated Systems : El Segundo, CA	0.000	-		-		-		-		-	0.000	0.000	-
Subtotal			0.000	-		-		-		-		-	0.000	0.000	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Flight Test & Evaluation	MIPR	Various : Various, NV	0.000	-		-		-		-		-	0.000	0.000	-
Subtotal			0.000	-		-		-		-		-	0.000	0.000	N/A
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
PMA: A&AS	C/CPFF	Various : Various, NV	0.000	-		-		-		-		-	0.000	0.000	-
PMA: Other Gov't Cost	Various	Various : Boston, MA	0.000	-		-		-		-		-	0.000	0.000	-
Subtotal			0.000	-		-		-		-		-	0.000	0.000	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force											Date: February 2019				
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV					Project (Number/Name) 67RTIP / MP-RTIP					
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		0.000		0.500		-		0.500	0.000	0.500	N/A

**Remarks**

Funds are required in FY20 to close out the entire MP-RTIP SDD contract #F19628-00-C-0100.

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force										Date: February 2019			
Appropriation/Budget Activity					R-1 Program Element (Number/Name)					Project (Number/Name)			
3600 / 7					PE 0305220F / RQ-4 UAV					67RTIP / MP-RTIP			

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
MP-RTIP																												
SDD MP-RTIP Radar Transition to RQ-4 Block 40 Program Office																												
Radar Mode Integration & Mode Development (IFC 9/10)																												
SDD Contract Close Out																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Air Force			<b>Date:</b> February 2019
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 67RTIP / MP-RTIP	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>MP-RTIP</i></b>				
SDD MP-RTIP Radar Transition to RQ-4 Block 40 Program Office	1	2018	4	2018
Radar Mode Integration & Mode Development (IFC 9/10)	1	2018	4	2018
SDD Contract Close Out	2	2020	3	2020