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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2020 Air Force **Date:** February 2019

<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 1203620F / <i>National Space Defense Center</i>							
<b>COST (\$ in Millions)</b>	<b>Prior Years</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>
Total Program Element	-	18.052	55.309	2.653	0.000	2.653	2.692	2.755	2.805	0.000	Continuing	Continuing
670004: <i>OTHER STRATCOM ACTIVITIES</i>	-	0.000	55.309	2.653	0.000	2.653	2.692	2.755	2.805	0.000	Continuing	Continuing
67A035: <i>Enterprise Space BMC2</i>	-	18.052	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

## **Note**

Prior to FY2019, the funding for the National Space Defense Center was in PE 1203940F, Space Situational Awareness Operations, Project 670004, Other STRATCOM Activities

In FY2019, PE 1203620F, National Space Defense Center, Project 67A035, Enterprise Space BMC2 efforts were transferred to PE 1203620F, National Space Defense Center, Project 670004, Other STRATCOM activities to provide program transparency.

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

This program will develop, upgrade and field the National Space Defense Center's (NSDC) operational infrastructure integrating mission partner networks, data and other hardware and software solutions into NSDC's technical baseline. Additionally, this program will provide for agile requirement development, and operational and developmental test activities supporting software Development in Operations (DevOps). The NSDC allows the national security space community to effectively respond to potential future space threat events and will have the capability to develop, test, and integrate new space system tactics, techniques and procedures (TTPs) in support of both DoD and Intelligence Community operations.

Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) is transforming the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.

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.

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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 1203620F I National Space Defense Center			
B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	18.052	42.209	2.653	0.000	2.653
Current President's Budget	18.052	55.309	2.653	0.000	2.653
Total Adjustments	0.000	13.100	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	13.100			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000
Change Summary Explanation					
FY 2019: \$13.100M Congressional increase for Shadow Operations, BMC2 Application, and Commercially Augmented Mission Operations development.					

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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 1203620F / National Space Defense Center				Project (Number/Name) 670004 / OTHER STRATCOM ACTIVITIES			
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
670004: OTHER STRATCOM ACTIVITIES	-	0.000	55.309	2.653	0.000	2.653	2.692	2.755	2.805	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This program will develop Battle Management and Command and Control (BMC2) applications for the National Space Defense Center (NSDC) (formerly Joint Interagency Combined Space Operations Center (JICSpOC)). In addition, this program will develop hardware and software prototypes to support US Strategic Command Joint Emergent Operational Need (ST-0006) for an Accelerated BMC2 capability. The NSDC allows the national security space community to effectively respond to potential future space threat events and will have the capability to develop, test, and integrate new space system tactics, techniques and procedures (TTPs) in support of both DoD and Intelligence Community operations.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2018	FY 2019	FY 2020	
Title: Application Development									0.000	55.309	2.653	
Description: Develop and field Space Battle Management Command and Control capabilities.												
FY 2019 Plans: Complete delivery of the second spiral of capabilities to NSDC operators. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, etc.												
FY 2020 Plans: FY2020 Plans: Continue to analyze and assess mission partner and Intelligence Community networks and achieve authorization to connect to NSDC infrastructure. Partner with test agency to perform developmental and operational test activities to support agile DevOps environment. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, etc.												
FY 2019 to FY 2020 Increase/Decrease Statement: FY 2020 decreased compared to FY 2019 by \$52.656M. Justification is that major JEON developmental activities conclude in FY 2019. Funding in FY 2020 supports minor changes, integration, upgrades, sustainment, transition and other activities for previously NSDC JEON delivered capabilities.												
Accomplishments/Planned Programs Subtotals									0.000	55.309	2.653	

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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 1203620F / <i>National Space Defense Center</i>	Project (Number/Name) 670004 / <i>OTHER STRATCOM ACTIVITIES</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>Remarks</b>		
<b>D. Acquisition Strategy</b> The Accelerated Space BMC2 JEON (ST-0006) is led by AFRL and will utilize existing contracts (e.g. Space Security and Defense Program (SSDP)), and provide funds to other AF/DoD organizations to execute on their contracts. Additionally AFRL will initiate and utilize commercial consortiums to develop capabilities.		
<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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<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 1203620F / <i>National Space Defense Center</i>						<b>Project (Number/Name)</b> 670004 / <i>OTHER STRATCOM ACTIVITIES</i>			
<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>
SHADOW OPERATIONS CENTER DEVELOPMENT	Various	Various : Colorado Springs, CO	-	-		24.967		-		-		-	Continuing	Continuing	-
BMC2 APPLICATION DEVELOPMENT	Various	Various: : Colorado Springs, CO	-	-		21.160	Oct 2018	1.000	Jan 2020	-		1.000	Continuing	Continuing	-
SYSTEM ENGINEERING	Various	Various: : Colorado Springs, CO	-	-		6.000	Oct 2018	-		-		-	Continuing	Continuing	-
<b>Subtotal</b>			-	-		52.127		1.000		-		1.000	Continuing	Continuing	N/A
<b>Management Services (\$ 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>
A&AS	Various	Various: : Colorado Springs, CO	-	-		0.500	Oct 2018	0.500	Jan 2020	-		0.500	Continuing	Continuing	-
FFRDC	Various	Various: : Colorado Springs, CO	-	-		2.682	Oct 2018	1.153	Dec 2019	-		1.153	Continuing	Continuing	-
<b>Subtotal</b>			-	-		3.182		1.653		-		1.653	Continuing	Continuing	N/A
			<b>Prior Years</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 To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>			-	-		55.309		2.653		-		2.653	Continuing	Continuing	N/A
<b>Remarks</b>															

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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 1203620F / <i>National Space Defense Center</i>			<b>Project (Number/Name)</b> 670004 / <i>OTHER STRATCOM ACTIVITIES</i>

	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>NSDC INFRASTRUCTURE</b>																												
MULTI OPERATIONS CENTER NETWORK																												
SUSTAINMENT/SUPPORT																												
<b>BMC2 APPLICATION DEVELOPMENT</b>																												
SPIRAL 2 APPLICATION DEVELOPMENT																												
EAGLE EXERCISE																												
<b>SHADOW OPERATIONS CENTER</b>																												
SOFTWARE INNOVATION LAB ESTABLISHMENT																												
SHADOW OPERATIONS CENTER DEV/ ACCREDITATION																												
SHADOW OPERATIONS CENTER IOC																												

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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 1203620F / <i>National Space Defense Center</i>	<b>Project (Number/Name)</b> 670004 / <i>OTHER STRATCOM ACTIVITIES</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>NSDC INFRASTRUCTURE</i></b>				
MULTI OPERATIONS CENTER NETWORK	1	2018	2	2019
SUSTAINMENT/SUPPORT	2	2019	4	2023
<b><i>BMC2 APPLICATION DEVELOPMENT</i></b>				
SPIRAL 2 APPLICATION DEVELOPMENT	4	2018	4	2021
EAGLE EXERCISE	3	2018	3	2019
<b><i>SHADOW OPERATIONS CENTER</i></b>				
SOFTWARE INNOVATION LAB ESTABLISHMENT	1	2018	1	2019
SHADOW OPERATIONS CENTER DEV/ACCREDITATION	1	2018	1	2019
SHADOW OPERATIONS CENTER IOC	3	2019	3	2019

**Note**

FY2018 activities are funded in Project 67A035 in this PE.

Prior Year activities are funded in PE 1203940F, Project 670004.

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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 1203620F / <i>National Space Defense Center</i>				<b>Project (Number/Name)</b> 67A035 / <i>Enterprise Space BMC2</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</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>
67A035: <i>Enterprise Space BMC2</i>	-	18.052	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
<b>A. Mission Description and Budget Item Justification</b> <p>This program will develop Battle Management and Command and Control (BMC2) applications for the National Space Defense Center (NSDC) (formerly Joint Interagency Combined Space Operations Center (JICSpOC)). In addition, this program will develop hardware and software prototypes to support US Strategic Command Joint Emergent Operational Need (ST-0006) for an Accelerated BMC2 capability. The NSDC allows the national security space community to effectively respond to potential future space threat events and will have the capability to develop, test, and integrate new space system tactics, techniques and procedures (TTPs) in support of both DoD and Intelligence Community operations.</p>												
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>									<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	
<b>Title:</b> BMC2 Applications <b>Description:</b> Develop and field Space Battlement Management and Command and Control capabilities. <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									18.052	0.000	0.000	
<b>Accomplishments/Planned Programs Subtotals</b>									18.052	0.000	0.000	
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A <b>Remarks</b>												
<b>D. Acquisition Strategy</b> <p>The Accelerated Space BMC2 JEON (ST-0006) is led by AFRL and will utilize existing contracts e.g. Space Security and Defense Program (SSDP), and provide funds to other AF/DoD organizations to execute on their contracts. Additionally AFRL will initiate and utilize commercial consortiums to develop capabilities.</p>												



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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 1203620F / <i>National Space Defense Center</i>	Project (Number/Name) 67A035 / <i>Enterprise Space BMC2</i>
<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 1203620F / National Space Defense Center				Project (Number/Name) 67A035 / Enterprise Space BMC2					
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
SYSTEM ENGINEERING	Various	Various : Colorado Springs, CO	-	2.000	Oct 2017	-		-		-		-	Continuing	Continuing	-
BMC2 APPLICATION DEVELOPMENT	Various	Various : Colorado Springs, CO	-	14.000	Oct 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	16.000		-		-		-		-	Continuing	Continuing	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
A&AS	Various	Various : Colorado Springs, CO	-	0.500	Oct 2017	-		-		-		-	Continuing	Continuing	-
FFRDC	SS/FP	Various : Colorado Springs, CO	-	1.552	Oct 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			-	2.052		-		-		-		-	Continuing	Continuing	N/A
			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			-	18.052		0.000		-		-		-	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force										Date: February 2019	
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 1203620F / National Space Defense Center					Project (Number/Name) 67A035 / Enterprise Space BMC2	

	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
NSDC																												
APPLICATION DEVELOPMENT																												

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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 1203620F / <i>National Space Defense Center</i>	<b>Project (Number/Name)</b> 67A035 / <i>Enterprise Space BMC2</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>NSDC</b>				
APPLICATION DEVELOPMENT	1	2018	4	2018

**Note**  
 FY2019-FY2023 activities are funded in Project 670004, Other STRATCOM Activities in this PE.  
 Prior Year activities are funded in PE 1203940F, Project 670004.