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* / BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 1206425F / *Space Situation Awareness Systems*							
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	22.429	47.580	134.464	412.894	0.000	412.894	173.131	310.602	75.533	57.297	0.000	1,233.930
65A006: *Space Based Space Surveillance*	22.429	47.580	134.464	412.894	0.000	412.894	173.131	310.602	75.533	57.297	0.000	1,233.930
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Program MDAP/MAIS Code: 328

A. Mission Description and Budget Item Justification

The Space-Based Space Surveillance (SBSS) Block 10 satellite was launched September 2010 with a design life through 2018 and an extended operational capability through 2020. The SBSS Follow-On (SBSS FO) program will develop and deliver a system to continue providing space object surveillance from space post SBSS Block 10 End-of-Life. AFSPC and NRO have signed a Memorandum of Agreement partnering SBSS FO with an NRO program based on overlapping requirements. The new partner program is called SILENTBARKER. SILENTBARKER requirements are based on a Statement of Capabilities and upon the current Space Situational Awareness (SSA) Initial Capabilities Document architectural requirements focused on protecting High Value Assets. SILENTBARKER will provide the capability to search, detect, and track objects from a space-based sensor for timely custody and event detection. Surveillance from space augments and overcomes existing ground sensor limitations with timely 24-hour above-the-weather collection of satellite metric data only possible with a space-based sensor and then communicates its findings to the Combined Space Operations Center (CSpOC), National Space Defense Center (NSDC), and other classified users. This program element includes efforts related to SILENTBARKER, its integration into the broader space superiority architecture, and analysis and experimentation to ensure space-based space surveillance capabilities against the evolving threat.

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.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

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.

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This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

B. Program Change Summary ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	48.448	134.463	122.698	0.000	122.698
Current President's Budget	47.580	134.464	412.894	0.000	412.894
Total Adjustments	-0.868	0.001	290.196	0.000	290.196
• Congressional General Reductions	-1.201	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	2.000	0.000			
• SBIR/STTR Transfer	-1.667	0.000			
• Other Adjustments	0.000	0.001	290.196	0.000	290.196

Change Summary Explanation

FY 2018: $2.000M reprogramming for environmental monitoring effort.

FY 2020: $290.196M increase for acquisition of increased coverage of deep space belt and to update mission data processing and scheduling for ground segment to leverage full capability of National Space Defense Center (NSDC) SSA and Indications and Warnings (I&W) missions to track and target high interest objects.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: SBSS Follow-On (SBSS FO) Design & Development	47.580	134.464	412.894
Description: Performs space based SSA analysis, research, and development for the SILENTBARKER system in partnership with SILENTBARKER. ***FY 2019 Plans:*** Continue SILENTBARKER partner development in the Engineering and Manufacturing Development (EMD) phase. Prepare for and conduct Preliminary Design Review (PDR). Continue development in EMD phase in preparation for Critical Design Review in FY 2020. Continue analyses of associated sensors and mission data processing in order to develop architectures and acquisition approaches for delivery of critical space-based space surveillance data from SILENTBARKER, hosted payloads, and other systems to warfighting decision makers. Continue rapid response to implement system resiliency and situational awareness			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, integration, technical analysis, prototyping, demonstrations, etc. ***FY 2020 Plans:*** Complete SILENTBARKER partner development in EMD phase and transition to Production phase. Prepare for and conduct Critical Design Review. Initiate acquisition of capabilities to expand SILENTBARKER coverage in deep space belt. Implement ground mission data processing and scheduling acquisition approach. Identify requirements and technology enhancements to ensure space-based space surveillance capabilities against the evolving threat for future upgrades, extensions, and augmentations through analysis, prototyping, and experimentation. Rapidly respond to and 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, integration, technical analysis, experimentation, prototyping, demonstrations, etc. and leverages opportunities for commercial and international partnerships. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** FY 2020 increased compared to FY 2019 by $278.430M. Justification is expanded capabilities and update of mission data processing and scheduling for ground segment to leverage full capability of National Space Defense Center SSA and Indications and Warnings missions to track and target high interest objects.			
Accomplishments/Planned Programs Subtotals	47.580	134.464	412.894

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

The Acquisition Strategy was approved to minimize the space-based SSA gap post-SBSS Block 10. SILENTBARKER anticipates Initial Launch Capability in FY 2022. The SBSS FO Materiel Development Decision was approved by the Milestone Decision Authority (MDA) on April 5, 2016. The Acquisition Strategy Panel was completed with the MDA on August 29, 2016. To satisfy the SSA architecture needs, the SBSS FO program requirements combined with an NRO program and were updated in the December 2017 SILENTBARKER Statement of Capabilities. The SBSS FO program remains an Air Force program, but will leverage NRO processes to fulfill SBSS FO space segment and telemetry, tracking, and commanding (TT&C) program segments in order to further National Security Space objectives. Mutual investment for the non-recurring engineering (NRE) cost enables the potential for a larger initial constellation buy and lower unit costs. The Air Force and NRO will determine the approach to meet mission processing requirements, develop the ground architecture, and initiate acquisition of extended capabilities in 2020.

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Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 1206425F / *Space Situation Awareness Systems*

F. 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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 1206425F / *Space Situation Awareness Systems*	**Project (Number/Name)** 65A006 / *Space Based Space Surveillance*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SBSS Follow On Prime Development	MIPR	TBD : TBD	14.110	39.462	Dec 2017	118.618	Oct 2018	394.931	Oct 2019	-		394.931	236.476	803.597	-
Technical Mission Analysis	Various	Various : Various, CA	1.446	0.796	Oct 2017	0.820	Oct 2018	1.841	Oct 2019	-		1.841	3.465	8.368	-
Enterprise SE&I	Various	Not specified. : TBD	1.160	1.443	Oct 2017	1.000	Oct 2018	1.360	Oct 2019	-		1.360	0.000	4.963	-
		Subtotal	16.716	41.701		120.438		398.132		-		398.132	239.941	816.928	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	C/FFP	Aerospace Corp. : Los Angeles, CA	0.784	0.398	Oct 2017	0.819	Oct 2018	1.842	Oct 2019	-		1.842	3.465	7.308	-
A&AS	Various	Various : CA	4.839	5.381	Oct 2017	13.006	Oct 2018	11.820	Oct 2019	-		11.820	39.687	74.733	-
Other Support	Various	Various : TBD	0.090	0.100	Oct 2017	0.201	Oct 2018	1.100	Oct 2019	-		1.100	0.400	1.891	-
		Subtotal	5.713	5.879		14.026		14.762		-		14.762	43.552	83.932	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	22.429	47.580		134.464		412.894		-		412.894	283.493	900.860	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 1206425F / *Space Situation Awareness Systems*	**Project (Number/Name)** 65A006 / *Space Based Space Surveillance*

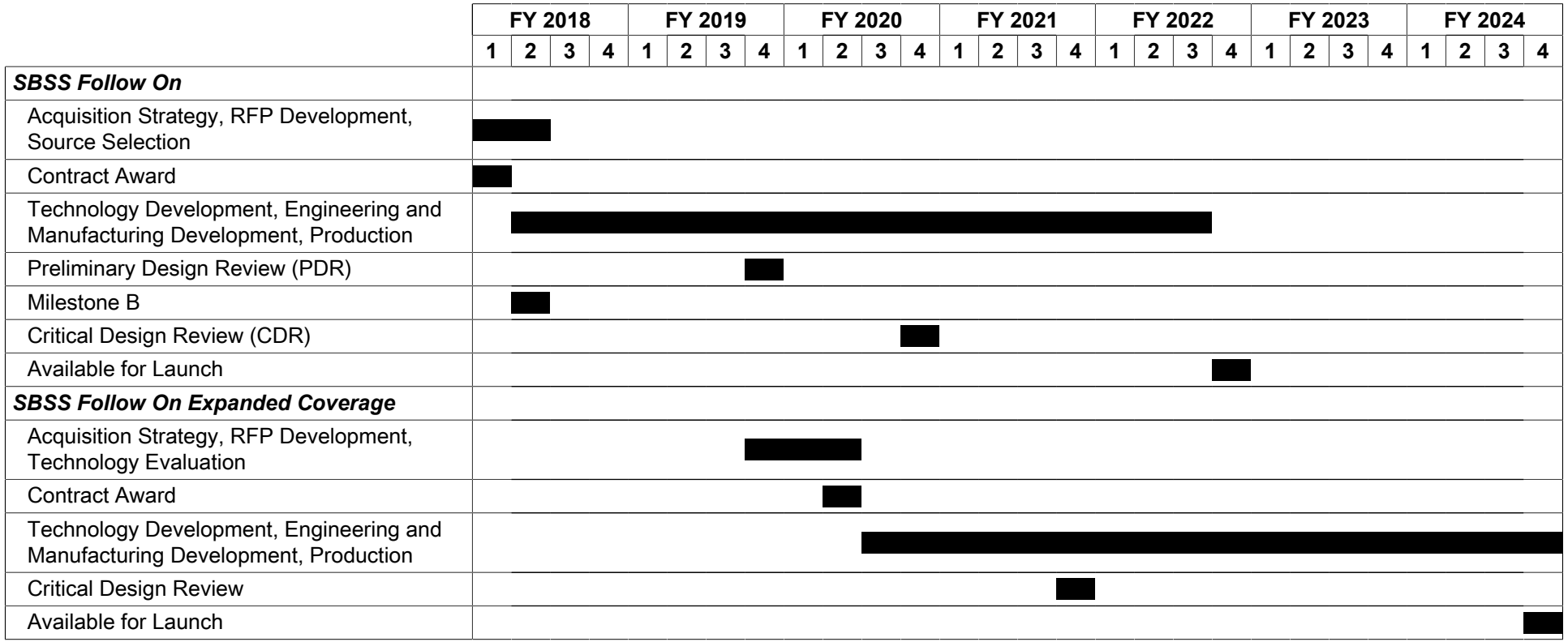

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 1206425F / *Space Situation Awareness Systems*	**Project (Number/Name)** 65A006 / *Space Based Space Surveillance*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
SBSS Follow On				
Acquisition Strategy, RFP Development, Source Selection	1	2018	2	2018
Contract Award	1	2018	1	2018
Technology Development, Engineering and Manufacturing Development, Production	2	2018	3	2022
Preliminary Design Review (PDR)	4	2019	4	2019
Milestone B	2	2018	2	2018
Critical Design Review (CDR)	4	2020	4	2020
Available for Launch	4	2022	4	2022
SBSS Follow On Expanded Coverage				
Acquisition Strategy, RFP Development, Technology Evaluation	4	2019	2	2020
Contract Award	2	2020	2	2020
Technology Development, Engineering and Manufacturing Development, Production	3	2020	4	2024
Critical Design Review	4	2021	4	2021
Available for Launch	4	2024	4	2024

Note

Acq Strategy, RFP Dev and Source Selection completed in 1QFY2017, but changed to 1QFY2018 due to data entry system limitations.
Event dates are aligned with SILENTBARKER program threshold schedule.