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 1203940F / *Space Situation Awareness Operations*							
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	-	9.684	46.015	76.829	0.000	76.829	70.704	51.977	16.067	19.643	Continuing	Continuing
65A037: *Ground Based Optical Sensor System (GBOSS)*	-	9.684	46.015	76.829	0.000	76.829	70.704	51.977	16.067	19.643	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Space Situational Awareness (SSA) is knowledge of all aspects of space related to operations. As the foundation for space control, SSA encompasses surveillance of all space objects and activities; detailed surveillance of specific space assets; monitoring space environmental conditions; monitoring cooperative space assets; gathering indications and warning on adversary space operations; and conducting integrated command, control, communications, processing, analysis, dissemination, and archiving activities. This program element fields, upgrades, operationalizes, operates and maintains Air Force sensors and information integration capabilities within the SSA network while companion program element 1206425F, Space Situational Awareness Systems, develops new network sensors and improved information integration capabilities across the network. Funds also support efforts such as engineering studies and analyses, architectural engineering studies, trade studies, technology needs forecasting, modernization initiatives, systems engineering, system development, and test & evaluation, and may include prototyping and technology demonstration. Activities funded in this program element (1203940F) focus on surveillance of objects in earth orbit to aid tasks including satellite tracking; space object identification; tracking and cataloging; satellite attack warning; notification of satellite flyovers to U.S. forces; space treaty monitoring; and technical intelligence gathering.

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 Ground Based Optical Sensor System (GBOSS) capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

Reduce Ground Based Optical Sensor System (GBOSS) saved $85.000M in FY 2020. Reduce GBOSS description: Due to anticipated inability to execute an increase to program funding above the historical baseline in FY 2020, funds were adjusted to levels consistent with prior year execution. In alignment with the National Defense Strategy, funding was applied to improving of lethality including higher priority space technologies.

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	10.029	46.668	161.829	0.000	161.829
Current President's Budget	9.684	46.015	76.829	0.000	76.829
Total Adjustments	-0.345	-0.653	-85.000	0.000	-85.000
• Congressional General Reductions	0.000	-0.653			
• 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	0.000	0.000			
• SBIR/STTR Transfer	-0.345	0.000			
• Other Adjustments	0.000	0.000	-85.000	0.000	-85.000

Change Summary Explanation

FY 2020: GBOSS reduced by $85M for higher Air Force Space priorities.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Ground Based Optical Sensor System (GBOSS)	9.684	46.015	76.829

Description: GBOSS provides global ground based optical sensor capability for Space Situational Awareness (SSA). GBOSS improves sensitivity, search rate, tracking of non-cooperative launches, precise tagging of clustered objects, and detection of closely spaced dim objects. This effort includes fielding GBOSS capabilities in optimal global locations, upgrading existing Ground-based Electro-Optical Deep Space Surveillance (GEODSS) sensors to improve sensitivity and search rates, and may acquire new advanced technology sensor(s) to improve global electro-optical sensor resilience and persistence. The effort will coordinate with Combined Space Operations Center (CSpOC), National Space Defense Center (NSDC), and National Air and Space Intelligence Center (NASIC) efforts to ensure enterprise data fusion and dissemination supporting Enterprise Space Battle Management Command, and Control (ESBMC2).

FY 2019 Plans:

Continue GBOSS Technology Maturation and Risk Reduction (TMRR) activities. Continue program office support and other related support activities that may include, but are not limited to, studies, technical analysis, prototyping, etc.

FY 2020 Plans:

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Complete final GBOSS Technology Maturation and Risk Reduction activities and initiate Engineering Manufacturing Development. 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, technical analysis, experimentation, prototyping, etc. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** FY 2020 increased compared to FY 2019 by $30.814M. Justification for this increase is described above.			
Accomplishments/Planned Programs Subtotals	9.684	46.015	76.829

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

Program established as an FY 2018 new start to address ground-based optical SSA gaps and shortfalls in supporting the Space Warfighting Construct (SWC). The acquisition strategy approved by AFPEO/SP in March 2018 accelerates the development and fielding of the solution, minimizing the time to address the requirements in light of current and emerging threats. Initial technology maturation and risk reduction will be executed using existing DoD, IC, and lab contracts. Final TMRR and Engineering and Manufacturing Development effort will be executed on a new contract awarded through full and open competition with a planned award date in 2019. The approved acquisition strategy supports fielding Initial Operational Capability (IOC) in the Pacific theater in 2021 and Final Operational Capability (FOC) of the global capability in 2023.

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 1203940F / *Space Situation Awareness Operations*	**Project (Number/Name)** 65A037 / *Ground Based Optical Sensor System (GBOSS)*

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
GBOSS design, development and life extension	Various	Multiple : Colorado Springs, CO	-	6.656	May 2018	40.643	Nov 2018	69.800	Dec 2019	-		69.800	Continuing	Continuing	-
GBOSS Technical Mission Analysis	C/CPIF	NASA/JPL: : Pasadena, CA	-	1.500	May 2018	2.000	Dec 2018	-		-		-	Continuing	Continuing	-
		Subtotal	-	8.156		42.643		69.800		-		69.800	Continuing	Continuing	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
A&AS	Various	Multiple : TBD	-	1.177	May 2018	1.570	May 2019	2.000	Apr 2020	-		2.000	Continuing	Continuing	-
FFRDC	Various	Multiple: TBD : TBD	-	0.351	May 2018	1.752	May 2019	4.929	Apr 2020	-		4.929	Continuing	Continuing	-
Other Support	C/CPAF	Various: TBD : TBD	-	0.000		0.050	Oct 2018	0.100	Nov 2019	-		0.100	Continuing	Continuing	-
		Subtotal	-	1.528		3.372		7.029		-		7.029	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	-	9.684		46.015		76.829		-		76.829	Continuing	Continuing	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 1203940F / *Space Situation Awareness Operations*	**Project (Number/Name)** 65A037 / *Ground Based Optical Sensor System (GBOSS)*

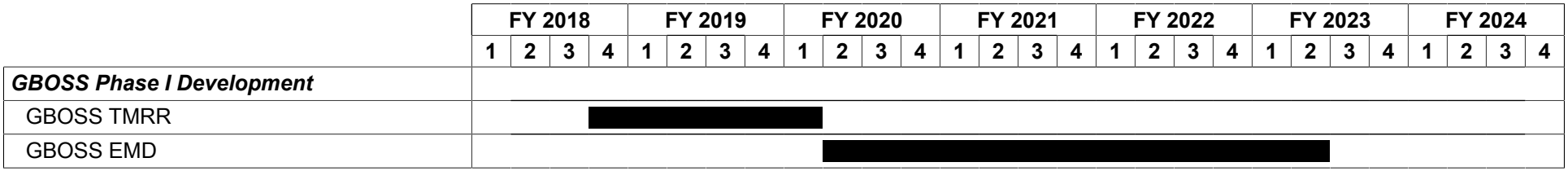

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 5	**R-1 Program Element (Number/Name)** PE 1203940F / *Space Situation Awareness Operations*	**Project (Number/Name)** 65A037 / *Ground Based Optical Sensor System (GBOSS)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
GBOSS Phase I Development				
GBOSS TMRR	4	2018	1	2020
GBOSS EMD	2	2020	2	2023