Department of Defense
Fiscal Year (FY) 2020 Budget Estimates

March 2019

Air Force

Justification Book Volume 1 of 1

Space Procurement, Air Force

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Volume 1 Table of Contents

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Appropriation Language
Fiscal Year (FY) 2020 President's Budget
Space Procurement, Air Force

For construction, procurement, and modification of spacecraft, launch services, and related equipment (including ground control and communication equipment) and training devices; expansion of public and private plants, Government-owned equipment and installation thereof in such plants, erection of structures, and acquisition of land, for the foregoing purposes, and such lands and interests therein, may be acquired, and construction prosecuted thereon prior to approval of title; reserve plant and Government and contractor-owned equipment layaway; and other expenses necessary for the foregoing purposes including rents and transportation of things; $2,414,383,000 to remain available for obligations until September 30, 2022.

FY 2020 Overseas Contingency Operations funding can be separated into the following categories:

- OCO for Direct War Costs ($0): Direct War costs are those combat or direct combat support costs that will not continue to be expended once combat operations end at major contingency locations.
- OCO for Enduring Requirements ($0): OCO for Enduring Requirements are enduring in-theater and in-CONUS costs that will likely remain after combat operations cease, and have previously been funded in OCO.
- OCO for Base Requirements ($0): OCO for Base Requirements is OCO funding for base budget requirements in support of the National Defense Strategy. The Budget requests these funds in OCO to comply with the base budget defense caps included in the Budget Control Act of 2011.

Department of the Air Force
FY 2020 President's Budget
Exhibit P-1 FY 2020 President's Budget
Total Obligational Authority
(Dollars in Thousands)

19 Feb 2019

Appropriation: Space Procurement, Air Force

Budget Activity	FY 2018 (Base + OCO)	FY 2019 Base Enacted	FY 2019 OCO Enacted	FY 2019 Total Enacted
01. Space Procurement, Air Force	3,543,893	2,312,602		2,312,602
02. Spares	8,579	16,812		16,812
Total Space Procurement, Air Force	3,552,472	2,329,414		2,329,414

P-120PB: FY 2020 President's Budget (Published Version), as of February 19, 2019 at 15:31:27

Department of the Air Force
FY 2020 President's Budget
Exhibit P-1 FY 2020 President's Budget
Total Obligational Authority
(Dollars in Thousands)

19 Feb 2019

Appropriation: Space Procurement, Air Force

Budget Activity	FY 2020 Base	FY 2020 OCO for Base Requirements	FY 2020 OCO for Direct War and Enduring Costs	FY 2020 Total OCO
01. Space Procurement, Air Force	2,407,120			
02. Spares	7,263			
Total Space Procurement, Air Force	2,414,383			

P-120PB: FY 2020 President's Budget (Published Version), as of February 19, 2019 at 15:31:27

Department of the Air Force
FY 2020 President's Budget
Exhibit P-1 FY 2020 President's Budget
Total Obligational Authority
(Dollars in Thousands)

19 Feb 2019

Appropriation: Space Procurement, Air Force

Budget Activity	FY 2020 Total (Base + OCO)
01. Space Procurement, Air Force	2,407,120
02. Spares	7,263
Total Space Procurement, Air Force	2,414,383

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Department of the Air Force
FY 2020 President's Budget
Exhibit P-1 FY 2020 President's Budget
Total Obligational Authority
(Dollars in Thousands)

19 Feb 2019

Appropriation: 3021F Space Procurement, Air Force

Line No	Item Nomenclature	Ident Code	FY 2018 (Base + OCO) Quantity	FY 2018 (Base + OCO) Cost	FY 2019 Base Enacted Quantity	FY 2019 Base Enacted Cost	FY 2019 OCO Enacted Quantity	FY 2019 OCO Enacted Cost	FY 2019 Total Enacted Quantity	FY 2019 Total Enacted Cost	Sec
Budget Activity 01: Space Procurement, Air Force											
	Space Programs										
1	Advanced EHF	A		55,667		29,829				29,829	U
2	AF Satellite Comm System	A		57,148		35,400				35,400	U
3	Cancelled Account	A		917							U
4	Counterspace Systems	A		28,750		1,121				1,121	U
5	Family of Beyond Line-of-Sight Terminals	A		100,951		27,867				27,867	U
6	Wideband Gapfiller Satellites(Space)	A		675,259		12,106				12,106	U
7	General Information Tech - Space	A				2,425				2,425	U
8	GPSIII Follow On	A									U
9	GPS III Space Segment	A		84,064		69,386				69,386	U
10	Global Postioning (Space)	A		2,159		2,181				2,181	U
11	Integ Broadcast Service	A				16,445				16,445	U
12	Spaceborne Equip (Comsec)	A		25,034		28,478				28,478	U
13	MILSATCOM	A		35,225		11,265				11,265	U
14	Evolved Expendable Launch Capability	A		904,948		659,981				659,981	U
15	Evolved Expendable Launch Veh(Space)	A	2	487,918	5	954,555			5	954,555	U
16	SBIR High (Space)	A		929,058		108,397				108,397	U
17	NUDET Detection System	A		6,370		7,705				7,705	U

P-120PB: FY 2020 President's Budget (Published Version), as of February 19, 2019 at 15:31:27

Department of the Air Force
FY 2020 President's Budget
Exhibit P-1 FY 2020 President's Budget
Total Obligational Authority
(Dollars in Thousands)

19 Feb 2019

Appropriation: 3021F Space Procurement, Air Force

Line No	Item Nomenclature	Ident Code	FY 2020 Base Quantity	FY 2020 Base Cost	FY 2020 OCO for Base Requirements Quantity	FY 2020 OCO for Base Requirements Cost	FY 2020 OCO for Direct War and Enduring Costs Quantity	FY 2020 OCO for Direct War and Enduring Costs Cost	FY 2020 Total OCO Quantity	FY 2020 Total OCO Cost	Sec
Budget Activity 01: Space Procurement, Air Force											
	Space Programs										
1	Advanced EHF	A		31,894							U
2	AF Satellite Comm System	A		56,298							U
3	Cancelled Account	A									U
4	Counterspace Systems	A		5,700							U
5	Family of Beyond Line-of-Sight Terminals	A		34,020							U
6	Wideband Gapfiller Satellites(Space)	A									U
7	General Information Tech - Space	A		3,244							U
8	GPSIII Follow On	A	1	414,625							U
9	GPS III Space Segment	A		31,466							U
10	Global Postioning (Space)	A									U
11	Integ Broadcast Service	A									U
12	Spaceborne Equip (Comsec)	A		32,031							U
13	MILSATCOM	A		11,096							U
14	Evolved Expendable Launch Capability	A									U
15	Evolved Expendable Launch Veh(Space)	A	4	1,237,635							U
16	SBIR High (Space)	A		233,952							U
17	NUDET Detection System	A		7,432							U

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Department of the Air Force
FY 2020 President's Budget
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Total Obligational Authority
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19 Feb 2019

Appropriation: 3021F Space Procurement, Air Force

Line No	Item Nomenclature	Ident Code	FY 2020 Total (Base + OCO) Quantity	FY 2020 Total (Base + OCO) Cost	Sec
Budget Activity 01: Space Procurement, Air Force					
	Space Programs				
1	Advanced EHF	A		31,894	U
2	AF Satellite Comm System	A		56,298	U
3	Cancelled Account	A			U
4	Counterspace Systems	A		5,700	U
5	Family of Beyond Line-of-Sight Terminals	A		34,020	U
6	Wideband Gapfiller Satellites(Space)	A			U
7	General Information Tech - Space	A		3,244	U
8	GPSIII Follow On	A	1	414,625	U
9	GPS III Space Segment	A		31,466	U
10	Global Postioning (Space)	A			U
11	Integ Broadcast Service	A			U
12	Spaceborne Equip (Comsec)	A		32,031	U
13	MILSATCOM	A		11,096	U
14	Evolved Expendable Launch Capability	A			U
15	Evolved Expendable Launch Veh(Space)	A	4	1,237,635	U
16	SBIR High (Space)	A		233,952	U
17	NUDET Detection System	A		7,432	U

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Department of the Air Force
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19 Feb 2019

Appropriation: 3021F Space Procurement, Air Force

Line No	Item Nomenclature	Ident Code	FY 2018 (Base + OCO) Quantity	FY 2018 (Base + OCO) Cost	FY 2019 Base Enacted Quantity	FY 2019 Base Enacted Cost	FY 2019 OCO Enacted Quantity	FY 2019 OCO Enacted Cost	FY 2019 Total Enacted Quantity	FY 2019 Total Enacted Cost	Sec
18	Rocket Systems Launch Program	A				47,609				47,609	U
19	space fence	A				46,361				46,361	U
20	Space Mods	A		37,203		133,854				133,854	U
21	Spacelift Range System Space	A		113,222		117,637				117,637	U
Total Space Procurement, Air Force				3,543,893		2,312,602				2,312,602	
Budget Activity 02: Spares											
SSpares											
22	Spares and Repair Parts	A		8,579		16,812				16,812	U
Total Spares				8,579		16,812				16,812	
Total Space Procurement, Air Force				3,552,472		2,329,414				2,329,414	

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Department of the Air Force
FY 2020 President's Budget
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(Dollars in Thousands)

19 Feb 2019

Appropriation: 3021F Space Procurement, Air Force

Line No	Item Nomenclature	Ident Code	FY 2020 Base Quantity	FY 2020 Base Cost	FY 2020 OCO for Base Requirements Quantity	FY 2020 OCO for Base Requirements Cost	FY 2020 OCO for Direct War and Enduring Costs Quantity	FY 2020 OCO for Direct War and Enduring Costs Cost	FY 2020 Total OCO Quantity	FY 2020 Total OCO Cost	Sec
18	Rocket Systems Launch Program	A		11,473							U
19	space fence	A		71,784							U
20	Space Mods	A		106,330							U
21	Spacelift Range System Space	A		118,140							U
Total Space Procurement, Air Force				2,407,120							
Budget Activity 02: Spares											
SSpares											
22	Spares and Repair Parts	A		7,263							U
Total Spares				7,263							
Total Space Procurement, Air Force				2,414,383							

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Department of the Air Force
FY 2020 President's Budget
Exhibit P-1 FY 2020 President's Budget
Total Obligational Authority
(Dollars in Thousands)

19 Feb 2019

Appropriation: 3021F Space Procurement, Air Force

Line No	Item Nomenclature	Ident Code	FY 2020 Total (Base + OCO) Quantity	Cost	Sec
18	Rocket Systems Launch Program	A		11,473	U
19	space fence	A		71,784	U
20	Space Mods	A		106,330	U
21	Spacelift Range System Space	A		118,140	U
	Total Space Procurement, Air Force			2,407,120	
	Budget Activity 02: Spares				
	SSpares				
22	Spares and Repair Parts	A		7,263	U
	Total Spares			7,263	
	Total Space Procurement, Air Force			2,414,383	

P-120PB: FY 2020 President's Budget (Published Version), as of February 19, 2019 at 15:31:27

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Line Item Table of Contents (by Appropriation then Line Number)

Appropriation 3021F: Space Procurement, Air Force

Appropriation 3021F: Space Procurement, Air Force

Appropriation 3021F: Space Procurement, Air Force

Line Item Table of Contents (Alphabetically by Line Item Title)

Air Force • Budget Estimates FY 2020 • Procurement
Exhibit P-1M, Procurement Programs - Modification Summary
(Listing by Model)

Lookup Matrix by Model

Model:	AFSCN	
P-3a Individual Modifications		
Modification Number	**Modification Title**	**Applies to Multiple Models**
1	Remote Tracking Station Block Change (RBC)	No

Model:	SBIRS	
P-3a Individual Modifications		
Modification Number	**Modification Title**	**Applies to Multiple Models**
1	SBIRS Mobile System & Fixed Comm Electronics Upgrades	No

Model:	GPS-OCS	
P-3a Individual Modifications		
Modification Number	**Modification Title**	**Applies to Multiple Models**
1	NAVSTAR GPS-OCS COTS UPGRADE	No

Model:	SEWS	
Modification P-40a Aggregated Items Title:	**Shared Early Warning (SEW)**	
Item Number	**Item Title**	**Applies to Multiple Models**
Uncategorized		
SEWS	SEWS	No

Air Force • Budget Estimates FY 2020 • Procurement
Exhibit P-1M, Procurement Programs - Modification Summary
(Listing by Model)

Model:	No text provided.	
Modification P-40a Aggregated Items Title:	EO/IR Weather Systems	
Item Number	**Item Title**	**Applies to Multiple Models**
Uncategorized		
RGS01	EO/IR Weather Systems	No

Model:	NA	
Modification P-40a Aggregated Items Title:	Ballistic Missile Early Warning System (BMEWS)	
Item Number	**Item Title**	**Applies to Multiple Models**
Uncategorized		
BMEWS	DP/SP	No
Modification P-40a Aggregated Items Title:	Submarine-Launched Ballistic Missile (SLBM) Radar Warning System	
Item Number	**Item Title**	**Applies to Multiple Models**
Uncategorized		
PARCSB1	PARCS Block 01	No
P-3a Individual Modifications		
Modification Number	**Modification Title**	**Applies to Multiple Models**
1	BPP Block 02	No
1	PARCS Block 02	No

Model:	Spacelift Range System Space	
Modification P-40a Aggregated Items Title:	Spacelift Range System (SPACE)	
Item Number	**Item Title**	**Applies to Multiple Models**
Uncategorized		
02-WMN	Western Range Modernization of Network (WMN)	No

Air Force • Budget Estimates FY 2020 • Procurement
Exhibit P-1M, Procurement Programs - Modification Summary
(Listing by Model)

Model:	Spacelift Range System Space	
Modification P-40a Aggregated Items Title:	**Spacelift Range System (SPACE)**	
Item Number	**Item Title**	**Applies to Multiple Models**
03-RCDM	Range Command Destruct Modernization (RCDM)	No
P-3a Individual Modifications		
Modification Number	**Modification Title**	**Applies to Multiple Models**
2	Range Communications Facility (RCF)	No

Model:	MEN	
P-3a Individual Modifications		
Modification Number	**Modification Title**	**Applies to Multiple Models**
1	Modernization of Eastern Range Network (MEN)	No

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Air Force • Budget Estimates FY 2020 • Procurement
Exhibit P-1M, Procurement Programs - Modification Summary
(Funding for Modifications)

Funding ($ M)

Modification P-40a Item Title P-3a Modification Title	PYS	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024
Exhibit P-40a										
SEWS	-	-	0.348	0.355	-	0.355	0.361	0.367	0.374	0.381
EO/IR Weather Systems	0.000	18.620	49.526	0.000	-	0.000	0.000	0.000	-	-
DP/SP	-	-	1.500	1.500	0.000	1.500	1.500	-	-	-
PARCS Block 01	-	-	1.917	-	-	-	-	-	-	-
Western Range Modernization of Network (WMN)	52.506	7.892	3.472	3.251	-	3.251	2.384	1.014	-	-
Range Command Destruct Modernization (RCDM)	7.536	2.387	3.000	2.345	-	2.345	1.338	1.121	-	-
Exhibit P-3a										
Remote Tracking Station Block Change (RBC)	45.185	14.807	0.000	19.315	0.000	19.315	0.000	0.000	0.000	-
SBIRS Mobile System & Fixed Comm Electronics Upgrades	7.305	17.040	7.742	15.883	0.000	15.883	71.026	55.188	8.340	8.490
NAVSTAR GPS-OCS COTS UPGRADE	21.136	13.654	13.481	30.501	0.000	30.501	13.902	2.043	5.457	0.000
BPP Block 02	-	-	18.767	6.272	0.000	6.272	6.800	0.000	0.000	0.000
PARCS Block 02	-	-	0.500	8.165	0.000	8.165	8.307	8.456	8.615	8.770
Modernization of Eastern Range Network (MEN)	8.394	3.000	3.000	5.500	0.000	5.500	0.000	0.000	-	-
Range Communications Facility (RCF)	8.707	19.099	29.200	45.800	0.000	45.800	34.600	4.100	4.300	0.000
Totals (Total Obligation Authority)										
Total Obligation Authority	**150.769**	**96.499**	**132.453**	**138.887**	**0.000**	**138.887**	**140.218**	**72.289**	**27.086**	**17.641**

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ACRONYMS

GENERAL ACRONYMS

A&AS	- Advisory & Assistance Services
ABIDES	- Automated Budget Interactive Data Environment System
ACAT	- Acquisition Category
ACTD	- Advanced Concept Technology Demonstration
AGM	- Air-to-Ground Missile
AIM	- Air Intercept Missile
AIS	- Avionics Intermediate Shop
ACMI	- Aircraft Combat Maneuvering Instrumentation
AMRAAM	- Advanced Medium-Range Air-to-Air Missile
APPN	- Appropriation
ATD	- Advanced Technology Development
BA	- Budget Activity
BLSS	- Base Level Self-Sufficiency Spares
BY	- Budget Year
C3	- Command, Control, and Communication System
CFE	- Contractor Furnished Equipment
CONOPS	- Concept of Operation
CONUS	- Continental United States
CPMS	- Comprehensive Power Management System
CPT	- Cockpit Procedures Trainer
CRA	- Continuing Resolution Authority
CTS	- Countermeasures Test Set
CY	- Current Year
ECCM	- Electronic Counter Counter-Measures
ECM	- Electronic Counter Measures
ECO	- Engineering Change Orders
EOQ	- Economic Order Quantity
ECP	- Engineering Change Proposal
EPA	- Economic Price Adjustment
EW	- Electronic Warfare
EWAISP	- Electronic Warfare Avionics Integration Support Facility
FLIR	- Forward Looking Infra Red

FOT&E	- Follow-on Test and Evaluation
FOC	- Fully Operational Capability
FLTS	- Flight Line Test Set
FPIF	- Fixed Price Incentive Firm
FPIS	- Fixed Price Incentive Fee, Successive Targets
FY	- Fiscal Year
GANS	- Global Access Navigation & Safety
GATM	- Global Air Traffic Management
GFE	- Government Furnished Equipment
GFP	- Government Furnished Property
GPS	- Global Positioning System
GSE	- Ground Support Equipment
ICS	- Interim Contractor Support
IOC	- Initial Operating Capability
IPE	- Increased Performance Engine
JPALS	- Joint Precision Approach and Landing System
MAIS	- Major Automated Information System Program
MDAP	- Major Defense Acquisition Program
METS	- Mobile Electronic Test Stations
MYP	- Multiyear Procurement
MSIP	- Multi-Stage Improvement Program
NAVWAR	- Navigation Warfare
NMC Rate	- Not Mission Capable Rate
OFP	- Operational Flight Program
OT&E	- Operational Test and Evaluation
OWRM	- Other War Reserve Material
PAGEL	- Priced Aerospace Ground Equipment List
PB	- President's Budget
PGSE	- Peculiar Ground Support Equipment
PMA	- Program Management Administration
PMC	- Procurement Method Code
PNO	- Acquisition Program Number (MDAP Codes)
PR	- Purchase Request
PRCP	- Program Resource Collection Process
PTT	- Part Task Trainer
PY	- Prior Year

R&M	- Reliability and Maintainability
RAA	- Required Asset Availability
RDT&E	- Research, Development, Test and Evaluation
RWR	- Radar Warning Receiver
ROM	- Rough Order of Magnitude
SS	- Sole Source
SOF	- Special Operation Force
TAF	- Tactical Air Force
TCAS	- Traffic Collision Alert and Avoidance System
TEWS	- Tactical Electronic Warfare System
TISS	- TEWS Intermediate Support System
TOA	- Total Obligation Authority
WCF	- Working Capital Fund
WRM	- War Reserve Material
WST	- Weapon System Trainer
UAV	- Unmanned Aerial Vehicle
XML	- Extensible Markup Language

BASE / ORGANIZATIONAL ACRONYMNS

ACC	- Air Combat Command
AETC	- Air Education & Training Command
AFCAO	- Air Force Computer Acquisition Office
AFCESA	- Air Force Civil Engineering Support Agency
AFCIC	- AF Communications & Information Center
AFCSC	- Air Force Cryptologic Service Center
AFESC	- Air Force Engineering Services Center
AFGWC	- Air Force Global Weather Central
AFIT	- Air Force Institute of Technology
AFLCMC	- Air Force Life Cycle Management Center
AFMC	- Air Force Materiel Command
AFMETCAL	- Air Force Metrology and Calibration Office
AFMLO	- Air Force Medical Logistics Office
AFOSI	- Air Force Office of Special Investigation
AFOTEC	- Air Force Operational Test & Evaluation Center
AFPC	- Air Force Personnel Center

AFPSL	- AF Primary Standards Lab
AFR	- Air Force Reserve
AFSOC	- AF Special Operations Command
AFSPC	- Air Force Space Command
AIA	- Air Intelligence Agency
ALC	- Air Logistics Center
AMC	- Air Mobility Command
ANG	- Air National Guard
ASC	- Aeronautical Systems Center
AETC	- Air Education Training Command
AU	- Air University
AWS	- Air Weather Service
CIA	- Central Intelligence Agency
DGSC	- Defense General Support Center
DLA	- Defense Logistics Center
DOE	- Department of Energy
DPSC	- Defense Personnel Support Center
DSCC	- Defense Supply Center, Columbus
DTIC	- Defense Technical Information Center
ER	- Eastern Range
ESC	- Electronic Systems Center
FAA	- Federal Aviation Agency
FBI	- Federal Bureau of Investigation
GSA	- General Services Administration
JCS	- Joint Chiefs of Staff
NATO	- North Atlantic Treaty Organization
OSD	- Office of the Secretary of Defense
PACAF	- Pacific Air Forces
USAF	- United States Air Force
USAFA	- United States Air Force Academy
USAFE	- United States Air Force Europe
USCENTCOM	- United States Central Command
USEUCOM	- United States European Command
USMC	- United States Marine Corps
USSTRATCOM	- United States Strategic Command
WP AFB	- Wright-Patterson AFB, OH

CONTRACT METHOD / TYPE ACRONYMNS

C	- Competitive
BA	- Basic Agreement
BOA	- Basic Ordering Agreement
BPA	- Blanket Purchasing Agreement
CS	- Cost Sharing
IDDQ	- Indefinite Delivery, Definite Quantity
IDIQ	- Indefinite Delivery, Indefinite Quantity
IDRT	- Indefinite Delivery, Requirements
Letter	- Letter
LH	- Labor-hour
MIPR	- Military Interdepartmental Purchase Request
MIPR-C	- Military Interdepartmental Purchase Request - Competitive
MIPR-OPT	- Military Interdepartmental Purchase Request - Option
MIPR-OTH	- Military Interdepartmental Purchase Request – Other
MIPR-SS	- Military Interdepartmental Purchase Request - Sole Source
OPT	- Option
OTH	- Other
PO	- Project Order
REQN	- Requisition
SS	- Sole Source
T&M	- Time and Materials
UCA	- Undefinitized Contract Action
WP	- Work Project

CONTRACTED BY ACRONYMNS

11 WING	- 11th Support Wing, Washington, DC
ACC	- Air Combat Command, Langley AFB, VA
AEDC	- Arnold Engineering Development Center, Arnold AFB, TN
AAC	- Air Armament Center, Eglin AFB, FL
AEDC	- Arnold Engineering Development Center, Arnold AFB, TN
AETC	- Air Education and Training Command, Randolph AFB, TX
AFCIC	- Air Force Communications and Information Center, Washington, DC
AFCESA	- Air Force Civil Engineering Support Agency, Tyndall AFB, FL
AFFTC	- Air Force Flight Test Center, Edwards AFB, CA

AFLCMC	- Air Force Life Cycle Management Center, Wright-Patterson AFB, OH
AFMC	- Air Force Materiel Command, Wright-Patterson AFB, OH
AFMETCAL	- Air Force Metrology and Calibration Office, Heath, Ohio
AFMLO	- Air Force Medical Logistics Office, Ft Detrick, MD
AIA	- Air Intelligence Agency, Kelly AFB, TX
AMC	- Air Mobility Command, Scott AFB, IL
ASC	- Aeronautical Systems Center, Wright-Patterson AFB, OH & Eglin AFB, FL
AFWA	- Air Force Weather Agency, Offutt AFB, NE
DGSC	- Defense General Support Center, Richmond, VA
DPSC	- Defense Personnel Support Center, Philadelphia, PA
ER	- Eastern Range, Patrick AFB, FL
ESC	- Electronic Systems Center, Hanscom AFB, MA
HSC	- Human Services Center, Brook AFB, TX
OC-ALC	- Oklahoma City Air Logistics Center, Tinker AFB, OK
OO-ALC	- Ogden Air Logistics Center, Hill AFB, UT
SMC	- Space & Missile Systems Center, Los Angeles AFB, CA
US STRATCOM	- US Strategic Command, Offutt AFB, NE
WACC	- Washington Area Contracting Center, Washington DC
WR	- Western Range, Vandenberg AFB, CA
WR-ALC	- Warner-Robins Air Logistics Center, Robins AFB, GA
AFSPC	- Air Force Space Command, Peterson AFB, CO
HQ ANG	- Headquarters, Air National Guard, Washington, DC
USAFE	- United States Air Force Europe, Ramstein AB, GE
USAFA	- United States Air Force Academy, Colorado Springs, CO

IDENTIFICATION CODES

Code “A”	- Line items of material which have been approved for Air Force service use.
Code “B”	- Line items of material that have not been approved for Service use
OBAN	- Operating Budget Account Number, 2-digit code for unit allocated funds

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** ADV555 / Advanced EHF

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0605431F
Line Item MDAP/MAIS Code: 261		

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	655.236	55.667	29.829	31.894	-	31.894	17.240	0.000	0.000	0.000	-	789.866
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	655.236	55.667	29.829	31.894	-	31.894	17.240	0.000	0.000	0.000	-	789.866
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**655.236**	**55.667**	**29.829**	**31.894**	**-**	**31.894**	**17.240**	**0.000**	**0.000**	**0.000**	**-**	**789.866**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Develop and acquire Advanced Extremely High Frequency (AEHF) Military Satellite Communications (MILSATCOM) satellites, mission control segment and cryptography for survivable, anti-jam, worldwide, secure communications for the strategic and tactical warfighter. AEHF satellites will replenish the existing EHF system (Milstar) providing much higher capacity and data rate (5x increase over Milstar II) capabilities. AEHF is a cooperative program that includes International Partners (Canada, the United Kingdom, and the Kingdom of the Netherlands). The AEHF procurement program element funds the Command and Control System - Consolidated (CCS-C) mission unique software and databases for AEHF 4-6 satellites. CCS-C provides launch and early orbit support and on-orbit anomaly resolution.

AEHF Space Vehicle-3 (SV-3) and SV-4 are derivatives of the first two AEHF satellites which were delivered on the AEHF System Development and Demonstration (SDD) contract (RDT&E funded). SV-3 was successfully launched on September 18, 2013. SV-4 successfully launched on October 17, 2018.

SVs 5 and 6 are being procured under the Department of Defense's Efficient Space Procurement (ESP) approach which enables stable production and strategic sub-tier management through the block buy of space vehicles employing fixed-price contracting. The AEHF block buy of two satellites enables savings by reducing the effect of obsolescence and production breaks, allowing for economic buying of components, and optimizing production resources. Additionally, ESP enables cost efficiencies with the prime and subcontractor team as well as predictability for the space industrial base. SV-5 has a projected initial launch capability of 4QFY 2019. SV-6 has a projected initial launch capability of 2QFY 2020.

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.

The flyaway unit cost is not included on P-40 exhibit because there are multiple P-5 Cost Analysis exhibits.

As of the FY 2016 PB submission, space programs' satellite procurement funding has been re-categorized from appropriation 3020, Missile Procurement Air Force (MPAF) to appropriation 3021, Space Procurement Air Force (SPAF), in FY2016 and beyond. Total MPAF/SPAF procurement funding is $5,731.590M. Total AEHF SV3 SV4 MPAF/SPAF funds are $3,118.354M. Total AEHF SV5 SV6 MPAF/SPAF funds are $2,613.236M.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: ADV555 / Advanced EHF	
ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0605431F
Line Item MDAP/MAIS Code: 261		

Funding for this exhibit is contained in PE 1203604F.

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** ADV555 / Advanced EHF

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0605431F

Line Item MDAP/MAIS Code: 261

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-5	AEHF SV3 SV4		A		- / 74.194	- / 4.355	- / -	- / -	- / -	- / -
P-5	AEHF SV5 SV6		A		- / 581.042	- / 51.312	- / 29.829	- / 31.894	- / -	- / 31.894
P-40	**Total Gross/Weapon System Cost**				**- / 655.236**	**- / 55.667**	**- / 29.829**	**- / 31.894**	**- / -**	**- / 31.894**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
In FY 2020 AEHF will continue funding efforts for SV-5 and SV-6 to include launch readiness activities, mission assurance, orbit raising, post-launch activities, anomaly resolution, and AEHF Calibration Facility/ Interim Command and Control (ACF/IC2) test asset support. Additionally, funding will be used to maintain program expertise and continue technical mission analysis and systems engineering and integration (SE&I) in preparation for SV-5 and SV-6 launches. 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, prototyping, etc.

On October 31, 2013, a Fixed-Price Incentive (Firm Target) contract for the AEHF SV 5/6 Production and Launch Operations was definitized, with a period of performance from fiscal years 2012 through 2021. The maximum total program funding liability is $2.232 billion (includes $227M in FY11 advanced procurement funds).

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** ADV555 / Advanced EHF	**Item Number / Title [DODIC]:** AEHF SV3 SV4
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	74.194	4.355	-	-	-	-
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	74.194	4.355	-	-	-	-
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**74.194**	**4.355**	**-**	**-**	**-**	**-**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Space Vehicle - AEHF SV3 SV4 Cost																		
Non Recurring Cost																		
Enterprise SE&I	-	-	1.479	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Technical Mission Analysis	-	-	9.279	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NSA Production Support	-	-	0.830	-	-	0.950	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Non Recurring Cost	-	-	*11.588*	-	-	*0.950*	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Space Vehicle - AEHF SV3 SV4 Cost	**-**	**-**	***11.588***	**-**	**-**	***0.950***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Checkout and Launch - AEHF SV3 SV4 Cost																		
AEHF SV 4 Launch Support Services/Launch Readiness	-	-	61.649	-	-	3.405	-	-	-	-	-	-	-	-	-	-	-	-
AEHF SV 3-4 Satellite Transportation for Launch	-	-	0.538	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Checkout and Launch - AEHF SV3 SV4 Cost	**-**	**-**	***62.187***	**-**	**-**	***3.405***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Support - AEHF SV3 SV4 Cost																		
Other Support	-	-	0.419	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Support - AEHF SV3 SV4 Cost	**-**	**-**	***0.419***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Gross/Weapon System Cost	**-**	**-**	**74.194**	**-**	**-**	**4.355**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** ADV555 / Advanced EHF	**Item Number / Title [DODIC]:** AEHF SV3 SV4
ID Code (A=Service Ready, B=Not Service Ready) : A	**MDAP/MAIS Code:**	

Remarks:
Total AEHF SV3 SV4 funds are $3,118.354M.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** ADV555 / Advanced EHF	**Item Number / Title [DODIC]:** AEHF SV5 SV6
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	581.042	51.312	29.829	31.894	-	31.894
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	581.042	51.312	29.829	31.894	-	31.894
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**581.042**	**51.312**	**29.829**	**31.894**	**-**	**31.894**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Space Vehicle - SV5 SV6 Cost																		
Recurring Cost																		
AEHF SV 5-6 Block Buy	-	-	516.840	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Enterprise SE&I	-	-	15.955	-	-	3.884	-	-	3.059	-	-	4.000	-	-	-	-	-	4.000
Technical Mission Analysis	-	-	14.681	-	-	17.897	-	-	13.409	-	-	14.698	-	-	-	-	-	14.698
ACF/IC2 Test Asset Support	-	-	10.484	-	-	9.047	-	-	7.097	-	-	7.244	-	-	-	-	-	7.244
Subtotal: Recurring Cost	-	-	*557.960*	-	-	*30.828*	-	-	*23.565*	-	-	*25.942*	-	-	-	-	-	*25.942*
Subtotal: Space Vehicle - SV5 SV6 Cost	**-**	**-**	***557.960***	**-**	**-**	***30.828***	**-**	**-**	***23.565***	**-**	**-**	***25.942***	**-**	**-**	**-**	**-**	**-**	***25.942***
Checkout and Launch - SV5 SV6 Cost																		
AEHF SV 5-6 Propellant	-	-	-	-	-	7.862	-	-	-	-	-	-	-	-	-	-	-	-
AEHF Spectrum Management	-	-	0.168	-	-	0.161	-	-	0.171	-	-	-	-	-	-	-	-	-
AEHF SV 5-6 Launch Support Services/Launch Readiness	-	-	1.109	-	-	0.755	-	-	1.022	-	-	0.500	-	-	-	-	-	0.500
Command & Control System-Consolidated (CCS-C) Launch Support AEHF 5-6	-	-	-	-	-	3.244	-	-	-	-	-	-	-	-	-	-	-	-
AEHF SV 5-6 Satellite Transportation for Launch	-	-	-	-	-	1.501	-	-	-	-	-	-	-	-	-	-	-	-

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: ADV555 / Advanced EHF	Item Number / Title [DODIC]: AEHF SV5 SV6
ID Code (A=Service Ready, B=Not Service Ready) : A	MDAP/MAIS Code:	

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Subtotal: Checkout and Launch - SV5 SV6 Cost	**-**	**-**	***1.277***	**-**	**-**	***13.523***	**-**	**-**	***1.193***	**-**	**-**	***0.500***	**-**	**-**	**-**	**-**	**-**	***0.500***
Support - SV5 SV6 Cost																		
FFRDC	-	-	-	-	-	2.400	-	-	2.060	-	-	1.763	-	-	-	-	-	1.763
A&AS	-	-	21.805	-	-	4.103	-	-	2.511	-	-	3.189	-	-	-	-	-	3.189
Other Support	-	-	-	-	-	0.458	-	-	0.500	-	-	0.500	-	-	-	-	-	0.500
Subtotal: Support - SV5 SV6 Cost	**-**	**-**	***21.805***	**-**	**-**	***6.961***	**-**	**-**	***5.071***	**-**	**-**	***5.452***	**-**	**-**	**-**	**-**	**-**	***5.452***
Gross/Weapon System Cost	**-**	**-**	**581.042**	**-**	**-**	**51.312**	**-**	**-**	**29.829**	**-**	**-**	**31.894**	**-**	**-**	**-**	**-**	**-**	**31.894**

Remarks:
Total AEHF SV5 SV6 funds are $2,613.236M.

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Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** AFSCOM / AF Satellite Comm System

ID Code (A=Service Ready, B=Not Service Ready): B	Program Elements for Code B Items: 0305110F	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	45.185	57.148	35.400	56.298	-	56.298	48.376	49.359	50.284	51.188	-	393.238
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	45.185	57.148	35.400	56.298	-	56.298	48.376	49.359	50.284	51.188	-	393.238
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**45.185**	**57.148**	**35.400**	**56.298**	**-**	**56.298**	**48.376**	**49.359**	**50.284**	**51.188**	**-**	**393.238**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

The Air Force Satellite Control Network (AFSCN) is a satellite ground terminal network comprised of two communication nodes (Schriever AFB & Vandenberg AFB) and 15 antenna systems. The antennas are distributed around the world at seven locations -- Vandenberg Tracking Station (VTS), Diego Garcia Station (DGS), Guam Tracking Station (GTS), Hawaii Tracking Station (HTS), New Hampshire Tracking Station (NHS), Thule Tracking Station (TTS), and Telemetry and Commanding Station (TCS) at RAF Oakhanger, England -- to ensure global coverage for over 170 satellites in various orbits operating in a congested and contested environment. The AFSCN conducts an average of 450 satellite contacts per day supporting Positioning, Navigation and Timing (PNT); Intelligence, Surveillance and Reconnaissance (ISR); Missile Warning; Communications; Weather; and Research and Development (R&D) satellites for Department of Defense (DoD), Intelligence Community (IC), and National Aeronautics and Space Administration (NASA) operations. While most of the 450 satellite contacts/day are routine command and control (C2) activities, the AFSCN is also used for satellite emergencies (e.g. tumbling satellite) because its high power antennas are often the only earthbound assets that can contact a non-responsive satellite to re-establish command & control. During FY 2018, the AFSCN supported 10 space vehicle emergencies resulting in the preservation of over $3.6B worth of satellites. In addition to routine and emergency satellite operations C2, the AFSCN provides support to launch vehicle and early orbit operations, ensuring worldwide antennas receive telemetry and transmit commands to newly orbiting satellites to initiate early orbit checkout. During FY 2018 to date, the AFSCN supported 19 launches delivering $13.7B worth of satellites to their operational orbits. Finally, the AFSCN provides Factory Compatibility Testing (FCT) to ensure satellites and launch vehicles can communicate via the AFSCN before the satellite is launched. These funds are used to procure modernized equipment and SE&I for the AFSCN to ensure the capability is available to support DoD, Intelligence community, and civil users. Funds may be used to address Diminishing Manufacturing Sources (DMS) issues, support Enterprise Ground Service (EGS), Commercial Augmentation, and cybersecurity operations.

In the FY 2019 budget, AFSCN received a Congressional rescission of $5.000M. The correct total for FY 2018 is $52.148M.

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.

Principal efforts include:

AFSCN Interim Supply Support: procures support services, peculiar and common support materials, and required re-procurement data for the Consolidated Air Force Satellite Control Network Modifications, Maintenance and Operations (CAMMO) Contract, and to transition to government supply support.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: AFSCOM / AF Satellite Comm System	
ID Code (A=Service Ready, B=Not Service Ready): B	Program Elements for Code B Items: 0305110F	Other Related Program Elements: N/A
Line Item MDAP/MAIS Code: N/A		

AFSCN Commodity Procurement: The Air Force will use various contract vehicles to address the highest priority concerns/issues. Obsolescence and sustainment "worst actors" are prioritized annually in order of criticality to the mission. The potential for failed satellite contacts drives priority. In FY 2020, funds are planned to be used for required radome replacements, Communication IP Protocol, Defensive Cyber Operations activities and other Cyber security related projects. Other FYDP projects include: Authentication, Authorization, Auditing/Host Based Security System (AAA/HBSS) implementation to external users, AFSCN test bed (ATB) replacements, continued cyber defense work, network automation, moving the ATB from a leased contractor facility to a government facility, Range/Network/Communication obsolescence replacements, and Multi-band & Phased Array projects.

Remote Tracking Station (RTS) Block Change (RBC): The RBC Program was initiated in Dec 2001 to modernize the legacy system. The RBC program replaces legacy remote ground antenna systems that have reached end of life. To date, RBC systems have been installed at VTS, DGS, TCS, GTS, HTS, NHS, and TTS. TTS completed in 1Q FY 2016. In addition, the Air Force is upgrading the electronics in the remaining eight serviceable systems. This "hybrid" architecture couples the RBC electronics with existing antennas and normalizes electronics across the network. A prototype effort was implemented in FY 2012 to validate the approach and the first two hybrid articles were awarded in FY 2013 to upgrade legacy systems at GTS and HTS. HTS Hybrid was operationally accepted in July 2017. A third article was awarded in FY 2014 to upgrade the legacy system at VTS and funds were applied in FY 2015 to DGS, TTS and FY 2016 to NHS, and FY 2017 to TCS. This project is required to prevent a significant increase to sustainment costs and decrease in operational capability of the already obsolete Automated Remote Tracking Station (ARTS) system. There are several significant operational issues that must be corrected as soon as possible within the ARTS system and any delay to the RBC Hybridization of sites requires that ARTS be maintained and sustained well past its expected life. If RBC Hybridization is not sufficiently funded to keep ARTS operationally viable, the system will experience increased failure rates and lost contacts over time with the potential to impact or lose operational capability of on-orbit payloads that rely on the AFSCN for command and control. The antiquated AFSCN system is already operating at the very edge of its capacity supporting over 170 satellites. The RBC Hybridization project is intended to bring the system up to modern standards by FY 2022, and any delay in funding will push that completion date farther into the future, endangering additional satellite contacts and payloads. In addition, the Enhanced High Power Amplifier (EHPA) spacecraft anomaly resolution system will provide high power capability at four sites (GTS, VTS, NHS, and DGS), replaces obsolete parts, and enables emergency satellite operations. The first article delivery of EHPA at GTS is scheduled to complete in FY 2019. The remaining EHPA procurements and deliveries (VTS, NHS, and DGS) will be executed as separate projects with the first two in FY 2020 and the third in future budget years.

Funding for this exhibit contained in PE 1203110F.

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** AFSCOM / AF Satellite Comm System

ID Code (A=Service Ready, B=Not Service Ready): B	Program Elements for Code B Items: 0305110F	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)
P-3a	1 / Remote Tracking Station Block Change (RBC) (Capability Improvement)		B		- / 45.185	- / 14.807	- / 0.000	- / 19.315	- / 0.000	- / 19.315
P-5	Satellite Control Network (SPACE)		B		- / -	- / 42.341	- / 35.400	- / 36.983	- / -	- / 36.983
P-40	**Total Gross/Weapon System Cost**				**- / 45.185**	**- / 57.148**	**- / 35.400**	**- / 56.298**	**- / -**	**- / 56.298**

Exhibits Schedule					FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)
P-3a	1 / Remote Tracking Station Block Change (RBC) (Capability Improvement)		B		- / 0.000	- / 0.000	- / 0.000	- / -	- / -	- / 79.307
P-5	Satellite Control Network (SPACE)		B		- / -	- / -	- / -	- / -	- / -	- / -
P-40	**Total Gross/Weapon System Cost**				**- / 48.376**	**- / 49.359**	**- / 50.284**	**- / 51.188**	**- / -**	**- / 393.238**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:

1) AFSCN Interim Supply Support (P-5): FY 2020 funding provides peculiar and common support material, required re-procurement data, and interim supply support management. In addition, funds procure the most urgently needed capital equipment replacements for items that exceed the O&M dollar threshold. This equipment replaces items such as, but not limited to, high power amplifiers, processors, archival event recorders, and router switches, AFSCN Link Projection System (ALPS) equipment, legacy Electronic Scheduling Dissemination (ESD) equipment and Diminishing Manufacturing Sources and Material Shortages (DMSMS) items which are at the top of the sustainers "worst actors" list and account for significant maintenance effort, down time, and lost or failed contacts.

2) AFSCN Commodity Procurement (P-5): FY 2020 funds are critical to ensuring telemetry, tracking, and commanding are provided for over 170 satellites and that satellite emergencies requiring high-power antennas can be supported. These projects include Migration to Commercial Augmentation, EGS and Self Sufficient Transportables, Communication, Cyber and Range Upgrades.

3) RBC (P3a): FY 2020 funding is for two EHPA procurements and deliveries. Ensures telemetry, tracking, and commanding are provided for over 170 satellites and that satellite emergencies requiring high-power antennas can be supported.

4) FY 2020 funds will continue program office support and other related support activities. 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, prototyping, etc.

Efforts with funding starting in FY 2021 through FY 2024 are summarized on the P-40. Not all details of this funding are included in this P-40 exhibit set. A summary of the excepted details is as follows:

(a) FY 2021 Cost Delta: 48.376 million

(b) FY 2022 Cost Delta: 49.359 million

(c) FY 2023 Cost Delta: 50.284 million

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: AFSCOM / AF Satellite Comm System	
ID Code (A=Service Ready, B=Not Service Ready): B	Program Elements for Code B Items: 0305110F	Other Related Program Elements: N/A
Line Item MDAP/MAIS Code: N/A		

(d) FY 2024 Cost Delta: 51.188 million

(e) FY Total Cost Delta: 313.931 million

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** AFSCOM / AF Satellite Comm System	**Modification Number / Title:** 1 / Remote Tracking Station Block Change (RBC)

ID Code (A=Service Ready, B=Not Service Ready) : B

MDAP/MAIS Code:

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	45.185	14.807	0.000	19.315	0.000	19.315	0.000	0.000	0.000	-	-	79.307
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	45.185	14.807	0.000	19.315	0.000	19.315	0.000	0.000	0.000	-	-	79.307
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**45.185**	**14.807**	**0.000**	**19.315**	**0.000**	**19.315**	**0.000**	**0.000**	**0.000**	**-**	**-**	**79.307**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Remote Tracking Station (RTS) Block Change (RBC): FY 2020 funding is for two EHPA procurements and deliveries. Ensures telemetry, tracking, and commanding are provided for over 170 satellites and that satellite emergencies requiring high-power antennas can be supported. These efforts include systems engineering and integration (SE&I) activities.

The RBC Program was initiated in Dec 2001 to modernize the legacy system. The RBC program replaces legacy remote ground antenna systems that have reached end of life. To date, RBC systems have been installed at VTS, DGS, TCS, GTS, HTS, NHS, and TTS. TTS completed in 1Q FY 2016. In addition, the Air Force is upgrading the electronics in the remaining eight serviceable systems. This "hybrid" architecture couples the RBC electronics with existing antennas and normalizes electronics across the network. A prototype effort was implemented in FY 2012 to validate the approach and the first two hybrid articles were awarded in FY 2013 to upgrade legacy systems at GTS and HTS. HTS Hybrid was operationally accepted in July 2017. A third article was awarded in FY 2014 to upgrade the legacy system at VTS and funds were applied in FY 2015 to DGS, TTS and FY 2016 to TCS-A, NHS-A. This project is required to prevent a significant increase to sustainment costs and decrease in operational capability of the already obsolete Automated Remote Tracking Station (ARTS) system. There are several significant operational issues that must be corrected as soon as possible within the ARTS system and any delay to the RBC Hybridization of sites requires that ARTS be maintained and sustained well past its expected life. If RBC Hybridization is not sufficiently funded to keep ARTS operationally viable, the system will experience increased failure rates and lost contacts over time with the potential to impact or lose operational capability of on-orbit payloads that rely on the AFSCN for command and control. The antiquated AFSCN system is already operating at the very edge of its capacity supporting over 170 satellites. The RBC Hybridization project is intended to bring the system up to modern standards by FY 2022, and any delay in funding will push that completion date farther into the future, endangering additional satellite contacts and payloads. In addition, the Enhanced High Power Amplifier (EHPA) spacecraft anomaly resolution system will provide high power capability at four sites (GTS, VTS, NHS, and DGS), replaces obsolete parts, and enables emergency satellite operations. The first article delivery of EHPA at GTS is scheduled to complete in FY 2019. The remaining EHPA procurements and deliveries (VTS, NHS, and DGS) will be executed as separate projects with the first two in FY 2020 and the third to be requested in future budget years.

NOTE: Kit costs include all recurring, non-recurring and installation costs.

Milestone/Development Status

N/A

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** AFSCOM / AF Satellite Comm System	**Modification Number / Title:** 1 / Remote Tracking Station Block Change (RBC)
ID Code (A=Service Ready, B=Not Service Ready) : B	**MDAP/MAIS Code:**	
Models of Systems Affected: AFSCN	**Modification Type:** Capability Improvement	**Related RDT&E PEs:**

Financial Plan	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*
Procurement												
Modification Item 1 of 2: E-HPA												
B Kits												
Recurring												
E-HPA:EQUIPMENT Group B (Active)	- / -	1 / 8.513	- / -	2 / 19.315	- / -	2 / 19.315	- / 0.000	- / -	- / -	- / -	- / -	3 / 27.828
Subtotal: Recurring	*- / -*	*- / 8.513*	*- / -*	*- / 19.315*	*- / -*	*- / 19.315*	*- / 0.000*	*- / -*	*- / -*	*- / -*	*- / -*	*- / 27.828*
Subtotal: E-HPA	*- / -*	*- / 8.513*	*- / -*	*- / 19.315*	*- / -*	*- / 19.315*	*- / 0.000*	*- / -*	*- / -*	*- / -*	*- / -*	*- / 27.828*
Modification Item 2 of 2: RBC/Hybrid												
B Kits												
Recurring												
RBC/Hybrid:EQUIPMENT Group B (Active)	2 / 45.185	1 / 6.294	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	3 / 51.479
Subtotal: Recurring	*- / 45.185*	*- / 6.294*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / 51.479*
Subtotal: RBC/Hybrid	*- / 45.185*	*- / 6.294*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / 51.479*
Subtotal: Procurement, All Modification Items	*- / 45.185*	*- / 14.807*	*- / -*	*- / 19.315*	*- / -*	*- / 19.315*	*- / 0.000*	*- / -*	*- / -*	*- / -*	*- / -*	*- / 79.307*
Installation												
Modification Item 1 of 2: E-HPA	- / -	- / -	- / -	1 / 0.000	- / -	1 / 0.000	- / -	2 / 0.000	- / -	- / -	- / -	3 / 0.000
Modification Item 2 of 2: RBC/Hybrid	- / -	- / -	1 / 0.000	1 / 0.000	- / -	1 / 0.000	1 / 0.000	- / -	- / -	- / -	- / -	3 / 0.000
Subtotal: Installation	*- / -*	*- / -*	*1 / -*	*2 / -*	*- / -*	*2 / -*	*1 / -*	*2 / -*	*- / -*	*- / -*	*- / -*	*6 / -*
Total												
Total Cost (Procurement + Support + Installation)	**45.185**	**14.807**	**0.000**	**19.315**	**0.000**	**19.315**	**0.000**	**0.000**	**0.000**	**-**	**-**	**79.307**

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** AFSCOM / AF Satellite Comm System	**Modification Number / Title:** 1 / Remote Tracking Station Block Change (RBC)

ID Code (A=Service Ready, B=Not Service Ready) : B | **MDAP/MAIS Code:**

Modification Item 1 of 2: E-HPA

Manufacturer Information

Manufacturer Name: KBR Wylie	Manufacturer Location: Colorado Springs, CO
Administrative Leadtime *(in Months)*: 12	Production Leadtime *(in Months)*: 9

Dates	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Contract Dates	Sep 2019		Oct 2020				
Delivery Dates	Jun 2020		Jul 2021				

Installation Information

Method of Implementation: Contract Field Team

Installation Cost	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*
Prior Years	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2018	- / -	- / -	- / -	1 / 0.000	- / -	1 / 0.000	- / -	- / -	- / -	- / -	- / -	1 / 0.000
FY 2019	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2020	- / -	- / -	- / -	- / -	- / -	- / -	- / -	2 / 0.000	- / -	- / -	- / -	2 / 0.000
FY 2021	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2022	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2023	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2024	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
To Complete	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
Total	- / -	- / -	- / -	1 / 0.000	- / -	1 / 0.000	- / -	2 / 0.000	- / -	- / -	- / -	3 / 0.000

Installation Schedule

		FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024					
	PYS	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	TC	Tot
In	0	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	0	3
Out	0	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	0	3

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** AFSCOM / AF Satellite Comm System	**Modification Number / Title:** 1 / Remote Tracking Station Block Change (RBC)

ID Code (A=Service Ready, B=Not Service Ready) : B | **MDAP/MAIS Code:**

Modification Item 2 of 2: RBC/Hybrid

Manufacturer Information

Manufacturer Name: KBR Wylie	Manufacturer Location: Colorado Springs, CO
Administrative Leadtime *(in Months)*: 12	Production Leadtime *(in Months)*: 9

Dates	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Contract Dates	Sep 2019		Oct 2020				
Delivery Dates	Jun 2020		Jul 2021				

Installation Information

Method of Implementation: Contract Field Team

Installation Cost	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*
Prior Years	- / -	- / -	1 / 0.000	1 / 0.000	- / -	1 / 0.000	- / -	- / -	- / -	- / -	- / -	2 / 0.000
FY 2018	- / -	- / -	- / -	- / -	- / -	- / -	1 / 0.000	- / -	- / -	- / -	- / -	1 / 0.000
FY 2019	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2020	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2021	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2022	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2023	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2024	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
To Complete	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
Total	- / -	- / -	1 / 0.000	1 / 0.000	- / -	1 / 0.000	1 / 0.000	- / -	- / -	- / -	- / -	3 / 0.000

Installation Schedule

		FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024					
	PYS	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	TC	Tot
In	0	-	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3
Out	0	-	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** AFSCOM / AF Satellite Comm System	**Item Number / Title [DODIC]:** Satellite Control Network (SPACE)
ID Code (A=Service Ready, B=Not Service Ready) : B		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	42.341	35.400	36.983	-	36.983
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	42.341	35.400	36.983	-	36.983
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**42.341**	**35.400**	**36.983**	**-**	**36.983**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Hardware - AF Satellite Control Network Cost																		
Non Recurring Cost																		
Commodities Procurement	-	-	-	-	-	7.513	-	-	6.158	-	-	9.514	-	-	-	-	-	9.514
Defensive Cyberspace Operations - Onboard Legacy Mission	-	-	-	-	-	10.000	-	-	-	-	-	-	-	-	-	-	-	-
Undocumented Congressional Rescission	-	-	-	-	-	5.000	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Non Recurring Cost	-	-	-	-	-	*22.513*	-	-	*6.158*	-	-	*9.514*	-	-	-	-	-	*9.514*
Subtotal: Hardware - AF Satellite Control Network Cost	**-**	**-**	**-**	**-**	**-**	***22.513***	**-**	**-**	***6.158***	**-**	**-**	***9.514***	**-**	**-**	**-**	**-**	**-**	***9.514***
Logistics - AFSCNS Cost																		
Recurring Cost																		
INTERIM SUPPLY SPT - Labor	-	-	-	-	-	1.110	-	-	0.888	-	-	0.527	-	-	-	-	-	0.527
INTERIM SUPPLY SPT -- Materiel	-	-	-	-	-	1.665	-	-	1.200	-	-	0.073	-	-	-	-	-	0.073
Technical Mission Analysis	-	-	-	-	-	5.636	-	-	8.427	-	-	8.602	-	-	-	-	-	8.602
Test & Evaluation	-	-	-	-	-	0.534	-	-	1.922	-	-	1.566	-	-	-	-	-	1.566

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: AFSCOM / AF Satellite Comm System	Item Number / Title [DODIC]: Satellite Control Network (SPACE)
ID Code (A=Service Ready, B=Not Service Ready) : B	MDAP/MAIS Code:	

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Enterprise Systems Engineering and Integration (SE&I)	-	-	-	-	-	5.891	-	-	11.269	-	-	10.588	-	-	-	-	-	10.588
Subtotal: Recurring Cost	-	-	-	-	-	*14.836*	-	-	*23.706*	-	-	*21.356*	-	-	-	-	-	*21.356*
Subtotal: Logistics - AFSCNS Cost	**-**	**-**	**-**	**-**	**-**	***14.836***	**-**	**-**	***23.706***	**-**	**-**	***21.356***	**-**	**-**	**-**	**-**	**-**	***21.356***
Support - Support End Item Cost																		
Advisory & Assistance Services (A&AS)	-	-	-	-	-	2.390	-	-	3.031	-	-	3.566	-	-	-	-	-	3.566
Other Support	-	-	-	-	-	0.798	-	-	0.656	-	-	0.643	-	-	-	-	-	0.643
FFRDC	-	-	-	-	-	1.804	-	-	1.849	-	-	1.904	-	-	-	-	-	1.904
Subtotal: Support - Support End Item Cost	**-**	**-**	**-**	**-**	**-**	***4.992***	**-**	**-**	***5.536***	**-**	**-**	***6.113***	**-**	**-**	**-**	**-**	**-**	***6.113***
Gross/Weapon System Cost	**-**	**-**	**-**	**-**	**-**	**42.341**	**-**	**-**	**35.400**	**-**	**-**	**36.983**	**-**	**-**	**-**	**-**	**-**	**36.983**

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** CTRSPC / Counterspace Systems

ID Code (A=Service Ready, B=Not Service Ready): B	Program Elements for Code B Items: 1206421F	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	28.750	1.121	5.700	-	5.700	0.000	0.000	0.000	0.000	-	35.571
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	28.750	1.121	5.700	-	5.700	0.000	0.000	0.000	0.000	-	35.571
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**28.750**	**1.121**	**5.700**	**-**	**5.700**	**0.000**	**0.000**	**0.000**	**0.000**	**-**	**35.571**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

The Counter Communications System (CCS) Pre-planned Product Improvement (P3I) program provides expeditionary, deployable, reversible offensive space control (OCS) effects applicable across the full spectrum of conflict. It prevents adversary satellite communications (SATCOM) in the Area of Responsibility (AOR) including Command and Control (C2), Early Warning, and Propaganda; and hosts Rapid Reaction Capabilities in response to Urgent Needs. Acquisition Decision Memorandum (24 April 2009) directed all capabilities identified in the October 2006 CCS Block 20, Joint Requirements Oversight Council (JROC) approved Capability Development Document (CDD) shall be accomplished as P3I upgrades to the CCS Block 10. No funding is requested for CCS in FY 2020.

Funding for this exhibit is in Program Element (PE) 1206421F, Counterspace Systems. Developmental funding for CCS is in PE 1206421F, Project 65A001 Counter Satellite Communications System.

Bounty Hunter (BH) supports the Defensive Space Control of US systems in a specific AOR and provides the capacity to prevent effective adversary use of Command, Control, Communications, Computers, and Intelligence (C4I). The system was originally a response to Joint Urgent Operational Need. In 2013 AF Requirements Oversight Council directed incorporation of BH capabilities into a Program of Record. Funds requested in FY 2020 are for Bounty Hunter.

Developmental funding for BH is in PE 1206421F, Counterspace Systems, Project 65A013 Bounty Hunter.

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** CTRSPC / Counterspace Systems

ID Code (A=Service Ready, B=Not Service Ready): B	Program Elements for Code B Items: 1206421F	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-5	Counterspace Systems	P-5a	B		- / -	- / 28.750	- / 1.121	- / 5.700	- / -	- / 5.700
P-40	**Total Gross/Weapon System Cost**				**- / -**	**- / 28.750**	**- / 1.121**	**- / 5.700**	**- / -**	**- / 5.700**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:

Bounty Hunter (BH): Funding requested in FY 2020 is for Bounty Hunter. Funding requested is to procure INDOPACOM Bounty Hunter in the amount of $5.7M. Funding in FY 2020 provides for equipment purchases needed to support the addition of one complete additional system to the BH 2.0 fleet. This is inclusive of all components, ancillary equipment, and end items (this includes emitters, antennas and spectrum analyzers). This also includes funding for technical refresh of obsolete components to keep on-hand systems operationally relevant. Additional funded activities may include but are not limited to program office support, as well as, MITRE STE technical analysis, studies and prototyping of new capabilities requested by sponsoring command.

Counter Communications System (CCS): No funding for CCS requested in FY 2020.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** CTRSPC / Counterspace Systems	**Item Number / Title [DODIC]:** Counterspace Systems
ID Code (A=Service Ready, B=Not Service Ready) : B		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	28.750	1.121	5.700	-	5.700
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	28.750	1.121	5.700	-	5.700
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**28.750**	**1.121**	**5.700**	**-**	**5.700**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Hardware - Hardware End Item Cost																		
Recurring Cost																		
a. CCS 10.2 Upgrade Kit	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-	-	-	-
b. CCS 10.2 System(†)	-	-	-	7.108	2	14.217	-	-	-	-	-	-	-	-	-	-	-	-
c. CCS Antennas(†)	-	-	-	3.982	2	7.963	-	-	-	-	-	-	-	-	-	-	-	-
f. BH EMI Upgrade Kit(†)	-	-	-	0.800	2	1.600	0.791	1	0.791	-	-	-	-	-	-	-	-	-
g. BH Reference Emitters(†)	-	-	-	0.235	7	1.645	0.330	1	0.330	-	-	-	-	-	-	-	-	-
h. BH Training / Accreditation Systems(†)	-	-	-	1.408	2	2.816	-	-	-	-	-	-	-	-	-	-	-	-
i. Procure INDOPACOM BH(†)	-	-	-	-	-	-	-	-	-	5.700	1	5.700	-	-	-	5.700	1	5.700
Subtotal: Recurring Cost	-	-	-	-	-	*28.241*	-	-	*1.121*	-	-	*5.700*	-	-	-	-	-	*5.700*
Subtotal: Hardware - Hardware End Item Cost	**-**	**-**	**-**	**-**	**-**	***28.241***	**-**	**-**	***1.121***	**-**	**-**	***5.700***	**-**	**-**	**-**	**-**	**-**	***5.700***
Support - Support End Item Cost																		
e. FFRDC	-	-	-	-	-	0.230	-	-	0.000	-	-	-	-	-	-	-	-	-
f. A&AS	-	-	-	-	-	0.279	-	-	0.000	-	-	-	-	-	-	-	-	-
Subtotal: Support - Support End Item Cost	**-**	**-**	**-**	**-**	**-**	***0.509***	**-**	**-**	***0.000***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: CTRSPC / Counterspace Systems	Item Number / Title [DODIC]: Counterspace Systems
ID Code (A=Service Ready, B=Not Service Ready) : B	MDAP/MAIS Code:	

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Gross/Weapon System Cost	-	-	-	-	-	28.750	-	-	1.121	-	-	5.700	-	-	-	-	-	5.700

Remarks:

Bounty Hunter (BH): Funding requested in FY 2020 is for Bounty Hunter. Funding requested is to procure INDOPACOM Bounty Hunter in the amount of $5.7M. Funding in FY 2020 provides for equipment purchases needed to support the addition of one complete additional system to the BH 2.0 fleet. This is inclusive of all components, ancillary equipment, and end items (this includes emitters, antennas and spectrum analyzers). This also includes funding for technical refresh of obsolete components to keep on-hand systems operationally relevant. Additional funded activities may include but are not limited to program office support, as well as, MITRE STE technical analysis, studies and prototyping of new capabilities requested by sponsoring command.

Counter Communications System (CCS): No funding for CCS requested in FY 2020.

(†) indicates the presence of a P-5a

Exhibit P-5a, Procurement History and Planning: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: CTRSPC / Counterspace Systems	Item Number / Title [DODIC]: Counterspace Systems

Cost Elements	OCO	FY	Contractor and Location	Method/Type or Funding Vehicle	Location of PCO	Award Date	Date of First Delivery	Qty (Each)	Unit Cost ($ M)	Specs Avail Now?	Date Revision Available	RFP Issue Date
b. CCS 10.2 System		2018	Harris / Melbourne, FL	Various	LAAFB, CA	Mar 2016	Oct 2018	2	7.108	N	Jan 2016	
c. CCS Antennas		2018	Harris / Melbourne, FL	Various	LAAFB, CA	Jan 2018	Oct 2018	2	3.982	N	Jan 2018	Jan 2018
f. BH EMI Upgrade Kit		2018	Various / Various	Various	N/A	Jan 2018	Jul 2018	2	0.800	N	Dec 2017	
f. BH EMI Upgrade Kit		2019	Various / Various	Various	N/A	Jan 2019	Jul 2019	1	0.791	N	Dec 2018	
g. BH Reference Emitters		2018	Naval Research Laboratory / Washington D.C	MIPR	N/A	Jan 2018	Jul 2018	7	0.235	N	Dec 2017	
g. BH Reference Emitters		2019	Naval Research Laboratory / Washington D.C.	MIPR	N/A	Jan 2019	Jul 2019	1	0.330	N	Dec 2018	
h. BH Training / Accreditation Systems		2018	Various / Various	Various	N/A	Jan 2018	Sep 2018	2	1.408	N	Dec 2017	
i. Procure INDOPACOM BH		2020	MITRE / Colorado Springs, CO	TBD	N/A	Sep 2019	Apr 2020	1	5.700	N	Aug 2019	

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Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** FBLOST / Family of Beyond Line-of-Sight Terminals

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0303601F
Line Item MDAP/MAIS Code: 199		

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	36	-	-	-	-	-	-	-	-	-	-	36
Gross/Weapon System Cost *($ in Millions)*	141.155	100.951	27.867	34.020	-	34.020	13.743	5.877	1.578	1.607	-	326.798
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	141.155	100.951	27.867	34.020	-	34.020	13.743	5.877	1.578	1.607	-	326.798
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**141.155**	**100.951**	**27.867**	**34.020**	**-**	**34.020**	**13.743**	**5.877**	**1.578**	**1.607**	**-**	**326.798**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	3.598	15.583	0.057	-	0.057	-	-	-	-	-	19.238
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	3.921	-	-	-	-	-	-	-	-	-	-	9.078

Description:

The Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) program replaces legacy Milstar terminals and will provide Extremely High Frequency (EHF), protected high data rate communication for nuclear and conventional forces to include Presidential and National Voice Conferencing (PNVC).

FAB-T will provide this new, highly secure, state-of-the-art capability for DoD platforms to include strategic platforms and airborne/ground command posts via Milstar, AEHF, and Enhanced Polar System (EPS) satellites. FAB-T terminals will also support the critical command and control (C2) of the Milstar, AEHF and EPS satellite constellations. In June 2014 the Air Force down-selected to Raytheon for production of FAB-T Command Post Terminals (CPT). Production contract options to produce CPT terminals were exercised after a successful Milestone C decision was approved September 1, 2015. In FY 2020, FAB-T will continue to pursue activities that ensure FAB-T terminal interoperability with the full AEHF satellite constellation.

FAB-T CPT terminal requirement is 61 terminals. 36 have been programmed for Low Rate Initial Production Buys.

In the FY 2019 budget, FAB-T received a Congressional rescission of $20.000M. The correct total for FY18 is $80.951M.

PNVC communication Baseband Interface Group (BIG) equipment purchases will provide voice encoding/decoding and encryption/decryption via KY-280s for use with Milstar and Advanced EHF satellite communication networks. The equipment will support Senior Leader Conferencing via Survivable Emergency Communication Networks (SECN) digitization and support, secure, survivable voice conferencing capability for the President and national senior leaders.

In the prior years through FY 2014, FAB-T was in OPAF Line Item Number 836780.
In FY 2015 FAB-T was in OPAF Line Item Number 836700.
This exhibit is funded in PE 1203001F.

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** FBLOST / Family of Beyond Line-of-Sight Terminals	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** 0303601F
Line Item MDAP/MAIS Code: 199		

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** FBLOST / Family of Beyond Line-of-Sight Terminals
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** 0303601F
Line Item MDAP/MAIS Code: 199		

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-5	Family of Beyond Line-of-Sight Terminals	P-5a, P-21	A		36 / 141.155	- / 100.951	- / 27.867	- / 34.020	- / -	- / 34.020
P-40	**Total Gross/Weapon System Cost**				**36 / 141.155**	**- / 100.951**	**- / 27.867**	**- / 34.020**	**- / -**	**- / 34.020**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
In FY 2020, FAB-T will continue to pursue activities that ensure FAB-T terminal interoperability with the full AEHF satellite constellation, conduct site surveys, perform install activities, provide Interim Contractor Support for the existing fielded terminals. 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, prototyping, etc.

In FY 2020, PNVC will procure 4 Baseband Kit units, which will provide a secure enclosure for the PNVC equipment, allowing secure, survivable voice conferencing capability for mobile users.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** FBLOST / Family of Beyond Line-of-Sight Terminals	**Item Number / Title [DODIC]:** Family of Beyond Line-of-Sight Terminals
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	36	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	141.155	100.951	27.867	34.020	-	34.020
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	141.155	100.951	27.867	34.020	-	34.020
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**141.155**	**100.951**	**27.867**	**34.020**	**-**	**34.020**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	3.598	15.583	0.057	-	0.057
Gross/Weapon System Unit Cost *($ in Millions)*	3.921	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Hardware - 0303601F MILSATCOM Space; 0303001F FBLOST Cost																		
Recurring Cost																		
FAB-T Terminals (PE 33601F/33001F)(†)	3.269	36	117.696	3.697	25	92.416	-	-	14.767	-	-	16.505	-	-	-	-	-	16.505
Technical Mission Analysis	-	-	10.615	-	-	1.350	-	-	4.800	-	-	6.100	-	-	-	-	-	6.100
Enterprise SE&I	-	-	2.058	-	-	0.940	-	-	0.500	-	-	1.400	-	-	-	-	-	1.400
GFE	-	-	3.686	-	-	0.000	-	-	2.400	-	-	2.100	-	-	-	-	-	2.100
Subtotal: Recurring Cost	-	-	*134.055*	-	-	*94.706*	-	-	*22.467*	-	-	*26.105*	-	-	-	-	-	*26.105*
Subtotal: Hardware - 0303601F MILSATCOM Space; 0303001F FBLOST Cost	**-**	**-**	***134.055***	**-**	**-**	***94.706***	**-**	**-**	***22.467***	**-**	**-**	***26.105***	**-**	**-**	**-**	**-**	**-**	***26.105***
Hardware - PNVC Cost																		
Recurring Cost																		
BIG Terminal	-	-	-	0.369	6	2.214	-	-	-	0.479	4	1.915	-	-	-	0.479	4	1.915
Subtotal: Recurring Cost	-	-	-	-	-	*2.214*	-	-	-	-	-	*1.915*	-	-	-	-	-	*1.915*
Subtotal: Hardware - PNVC Cost	**-**	**-**	**-**	**-**	**-**	***2.214***	**-**	**-**	**-**	**-**	**-**	***1.915***	**-**	**-**	**-**	**-**	**-**	***1.915***
Support - 0303001F FBLOST Cost																		
FAB-T A&AS	-	-	2.263	-	-	3.308	-	-	3.200	-	-	2.300	-	-	-	-	-	2.300
FAB-T Other Support	-	-	4.837	-	-	0.723	-	-	2.200	-	-	3.700	-	-	-	-	-	3.700
Subtotal: Support - 0303001F FBLOST Cost	**-**	**-**	***7.100***	**-**	**-**	***4.031***	**-**	**-**	***5.400***	**-**	**-**	***6.000***	**-**	**-**	**-**	**-**	**-**	***6.000***

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** FBLOST / Family of Beyond Line-of-Sight Terminals	**Item Number / Title [DODIC]:** Family of Beyond Line-of-Sight Terminals
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Gross/Weapon System Cost	3.921	36	141.155	-	-	100.951	-	-	27.867	-	-	34.020	-	-	-	-	-	34.020

Remarks:
This P-Doc incorporates three Program Elements for FAB-T:
PE 030601F Prior years through FY 2015; PE 0303001F - FY 2016 and FY 2017; and 1203001F - FY 2018 and out.

(†) indicates the presence of a P-5a

Exhibit P-5a, Procurement History and Planning: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: FBLOST / Family of Beyond Line-of-Sight Terminals	Item Number / Title [DODIC]: Family of Beyond Line-of-Sight Terminals

Cost Elements	OCO	FY	Contractor and Location	Method/Type or Funding Vehicle	Location of PCO	Award Date	Date of First Delivery	Qty (Each)	Unit Cost ($ M)	Specs Avail Now?	Date Revision Available	RFP Issue Date
FAB-T Terminals (PE 33601F/33001F)(†)		2017	Raytheon / Largo, FL	Various	AFLCMC Hanscom AFB	Apr 2017	Oct 2018	17	4.094	Y	Mar 2017	Mar 2013

(†) indicates the presence of a P-21

Exhibit P-21, Production Schedule: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: FBLOST / Family of Beyond Line-of-Sight Terminals	Item Number / Title [DODIC]: Family of Beyond Line-of-Sight Terminals

Cost Elements (Units in Each)							Fiscal Year 2017												Fiscal Year 2018												BALANCE
										Calendar Year 2017														Calendar Year 2018									
OCO	MFR #	FY	SERVICE	PROC QTY	ACCEPT PRIOR TO 1 OCT 2016	BAL DUE AS OF 1 OCT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
FAB-T Terminals (PE 33601F/33001F)																															
Prior Years Deliveries: 19																															
	1	2017	AF	17	0	17							A -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17
							OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	

Exhibit P-21, Production Schedule: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: FBLOST / Family of Beyond Line-of-Sight Terminals	Item Number / Title [DODIC]: Family of Beyond Line-of-Sight Terminals

Cost Elements (Units in Each)							Fiscal Year 2019												Fiscal Year 2020												BALANCE
							Calendar Year 2019												Calendar Year 2020													
OCO	MFR #	FY	SERVICE	PROC QTY	ACCEPT PRIOR TO 1 OCT 2018	BAL DUE AS OF 1 OCT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
FAB-T Terminals (PE 33601F/33001F)																															
Prior Years Deliveries: 19																															
	1	2017	AF	17	0	17	1	2	2	2	2	1	2	2	1	1	1														0
							OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	

Exhibit P-21, Production Schedule: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** FBLOST / Family of Beyond Line-of-Sight Terminals	**Item Number / Title [DODIC]:** Family of Beyond Line-of-Sight Terminals

MFR Ref #	Manufacturer Name - Location	Production Rates (Each / Year)			Procurement Leadtime (Months)							
					Initial				Reorder			
		MSR For 2020	1-8-5 For 2020	MAX For 2020	ALT Prior to Oct 1	ALT After Oct 1	Manufacturing PLT	Total After Oct 1	ALT Prior to Oct 1	ALT After Oct 1	Manufacturing PLT	Total After Oct 1
1	Raytheon - Largo, FL				0	0	0	0	0	0	0	0

"A" in the Delivery Schedule indicates the Contract Award Date.
Note: Due to space limitations, quantities in the Exhibit P-21 delivery calendar are truncated and rounded based on the maximum quantity in the calendar as follows. If the maximum quantity is less than or equal to than 9,999, all quantities are shown as each. If the maximum quantity is between 10,000 and 999,999 all quantities are shown in thousands. If the maximum quantity is between 1,000,000 and 999,999,999 all quantities are shown in millions (rounded to the nearest thousand).If the maximum quantity is equal or greater than 1,000,000,000 all quantities are shown in billions (rounded to the nearest million).

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Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** GAP000 / Wideband Gapfiller Satellites(Space)

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0605433F
Line Item MDAP/MAIS Code: 326		

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	48.772	675.259	12.106	0.000	-	0.000	0.000	0.000	0.000	159.345	-	895.482
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	48.772	675.259	12.106	0.000	-	0.000	0.000	0.000	0.000	159.345	-	895.482
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**48.772**	**675.259**	**12.106**	**0.000**	**-**	**0.000**	**0.000**	**0.000**	**0.000**	**159.345**	**-**	**895.482**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

The Wideband Global SATCOM (WGS) System provides the DoD with high data rate military satellite communication (MILSATCOM) services in accordance with the Joint Space Management Board-approved MILSATCOM architecture (August 1996), the Joint Requirements Oversight Council (JROC)-approved MILSATCOM Capstone Requirements Document (October 1997), and JROC-approved WGS Operational Requirements Document (May 2000). This program was originally conceived to augment the near-term "bandwidth gap" in warfighter communications needs. Dual-frequency WGS satellites augment, then replace the DoD's Defense Satellite Communications System X-band service and augment one-way Global Broadcast Service Ka-band capabilities. In addition, WGS provides a high capacity two-way Ka-band service.

WGS Block I consists of satellites 1-3. These satellites were successfully launched on 10 October 2007, 3 April 2009, and 5 December 2009, respectively.

WGS Block II consists of satellites 4-6. Block II satellites are designed with slight modifications to better support the Airborne Intelligence, Surveillance and Reconnaissance mission. WGS-4 was successfully launched on 19 January 2012. WGS-5 was successfully launched on 24 May 2013.

A United States-Australia WGS partnership was codified in a Memorandum of Understanding (MOU) dated 14 November 2007. Australia provides funds needed to buy satellite 6 in exchange for access to constellation-wide (satellites 1-6) resources. WGS-6 was successfully launched on 7 August 2013. WGS-6 is not included in the Procurement Quantities in these documents.

WGS Block II Follow-On (B2FO) consists of satellites 7-10. The WGS procurement program element funds the Command and Control System - Consolidated (CCS-C) mission unique software and databases for the WGS B2FO satellites.

A multilateral partnership between the United States, Canada, Denmark, Luxembourg, the Netherlands, and New Zealand was codified in an MOU in January 2012. Norway and the Czech Republic joined the multilateral partnership in mid-2017. The United States' contributions include existing and programmed infrastructure, to include the acquisition, launch, operations, and sustainment costs of WGS 1-8, and the launch, operations, and sustainment of WGS-9. Other Partners' contributions fund WGS-9 acquisition and support activities. Each Partner provides funds needed to buy WGS-9 in exchange for access to constellation-wide (satellites 1-9) resources commensurate with its level of contribution. WGS-9 is not included in the Procurement Quantities in these documents.

WGS-7 was successfully launched on 23 July 2015. WGS-8 was successfully launched on 7 December 2016. WGS-9 was successfully launched on 18 March 2017. WGS-10 will be launched in FY 2019.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: GAP000 / Wideband Gapfiller Satellites(Space)	
ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0605433F
Line Item MDAP/MAIS Code: 326		

Discussions for potential future partnerships regarding the WGS program continue in support of National Space Policy and improved operational efficiency.

In the Consolidated Appropriations Act, 2018, Congress added $600.0M SPAF in FY 2018 for "full funding for WGS 11 and 12." A sole source Request for Proposal for WGS 11 & 12 was released to Boeing in June 2018.

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.

The flyaway unit cost is not included on P-40 exhibit because there are multiple P-5 Cost Analysis exhibits.

As of the FY 2016 PB submission, space programs' satellite procurement funding has been re-categorized from Appropriation 3020, Missile Procurement Air Force (MPAF), to Appropriation 3021, SPAF, in FY 2016 and beyond. Total MPAF/SPAF procurement funding is $3,769.324M. Total WGS SV1-SV5 MPAF funds are $1,619.426M. There are no WGS SV1-SV5 SPAF funds. Total WGS Block II Follow-On (B2FO) MPAF/SPAF funds are $2,149.898M. The total WGS B2FO procurement funding includes the FY 2018 $600M congressional add for WGS 11-12.

Funding for this exhibit is contained in PE 1203600F.

This program has associated Research Development Test and Evaluation funding in PE 1206433F.

In the Department of Defense Appropriation Act, 2019, Congress cancelled Pathfinder #5 by realigning $49.5M of FY 2019 SPAF funds to a new RDT&E program element (PE 1206445F) for Commercial Satellite Communications (COMSATCOM). Additionally, in the same Act, Congress rescinded $41.0M of FY 2018 SPAF funds to cancel COMSATCOM Pathfinder #4. The correct total for FY 2018 is $634.259M.

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** GAP000 / Wideband Gapfiller Satellites(Space)

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0605433F

Line Item MDAP/MAIS Code: 326

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-5	WGS B2FO		A		- / 48.772	- / 675.259	- / 12.106	- / -	- / -	- / -
P-40	**Total Gross/Weapon System Cost**				**- / 48.772**	**- / 675.259**	**- / 12.106**	**- / 0.000**	**- / -**	**- / 0.000**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
No FY 2020 funding requested.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** GAP000 / Wideband Gapfiller Satellites(Space)	**Item Number / Title [DODIC]:** WGS B2FO
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	48.772	675.259	12.106	-	-	-
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	48.772	675.259	12.106	-	-	-
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**48.772**	**675.259**	**12.106**	**-**	**-**	**-**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Space Vehicle - WGS Production Cost																		
Recurring Cost																		
WGS 11 & 12	-	-	-	-	-	600.000	-	-	0.000	-	-	-	-	-	-	-	-	-
Technical Mission Analysis	-	-	9.142	-	-	7.132	-	-	4.500	-	-	-	-	-	-	-	-	-
SE&I	-	-	1.872	-	-	0.846	-	-	1.508	-	-	-	-	-	-	-	-	-
Subtotal: Recurring Cost	-	-	*11.014*	-	-	*607.978*	-	-	*6.008*	-	-	-	-	-	-	-	-	-
Subtotal: Space Vehicle - WGS Production Cost	**-**	**-**	***11.014***	**-**	**-**	***607.978***	**-**	**-**	***6.008***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Checkout and Launch - WGS Block II Follow-On Cost																		
WGS Block II Follow-On Checkout & Launch/ Launch Readiness	-	-	12.989	-	-	11.852	-	-	4.155	-	-	-	-	-	-	-	-	-
WGS Block II Follow-On Storage, Reactivation and Transport	-	-	17.556	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Checkout and Launch - WGS Block II Follow-On Cost	**-**	**-**	***30.545***	**-**	**-**	***11.852***	**-**	**-**	***4.155***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Support - WGS Block II Follow-On Cost																		
WGS Block II Follow-on Test Support	-	-	0.273	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WGS Block II Follow-on Lincoln Labs	-	-	1.035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: GAP000 / Wideband Gapfiller Satellites(Space)	Item Number / Title [DODIC]: WGS B2FO
ID Code (A=Service Ready, B=Not Service Ready) : A		MDAP/MAIS Code:

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Pathfinder COMSATCOM pooled bandwidth and demo	-	-	0.000	-	-	8.945	-	-	0.000	-	-	-	-	-	-	-	-	-
WGS Block II Follow-on A&AS	-	-	5.217	-	-	5.400	-	-	1.443	-	-	-	-	-	-	-	-	-
FFRDC	-	-	0.688	-	-	0.084	-	-	0.500	-	-	-	-	-	-	-	-	-
FY 2018 Congressional rescission	-	-	-	-	-	41.000	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Support - WGS Block II Follow-On Cost	**-**	**-**	***7.213***	**-**	**-**	***55.429***	**-**	**-**	***1.943***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Gross/Weapon System Cost	**-**	**-**	**48.772**	**-**	**-**	**675.259**	**-**	**-**	**12.106**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Remarks:
Total WGS Block II Follow-On (B2FO) 3020/3021 funds are $2,149.898M.

In the Consolidated Appropriations Act, 2018, Congress added $600.0M SPAF in FY 2018 for "full funding for WGS 11 and 12."
In the Department of Defense Appropriation Act, 2019, Congress cancelled Pathfinder #5 by realigning $49.5M of FY 2019 SPAF to a new RDT&E program element for COMSATCOM. Additionally, in the same Act, Congress rescinded $41.0M of FY 2018 SPAF funds to cancel COMSATCOM Pathfinder #4.

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Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** GNRLIT / General Information Tech - Space

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 1203173F, 1203174F

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	0.000	2.425	3.244	-	3.244	3.302	3.362	3.426	3.488	-	19.247
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	0.000	2.425	3.244	-	3.244	3.302	3.362	3.426	3.488	-	19.247
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**0.000**	**2.425**	**3.244**	**-**	**3.244**	**3.302**	**3.362**	**3.426**	**3.488**	**-**	**19.247**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

PE 1203173F R&D Space and Missile Operations
The Research and Development Space and Missile Operations (RDSMO) program, executed by the Advanced Systems and Development Directorate at Kirtland AFB (KAFB), NM, conducts space and missile Research and Developmental Test and Evaluation (RDT&E) and Initial Operational Test and Evaluation (IOT&E) in support of prototype, experimental, demonstration, and operational satellites at the RDT&E Support Complex (RSC) and Mobile Range (MRF) at KAFB and at Schriever AFB (SAFB), CO. The RDSMO program develops, acquires, delivers, integrates, tests, operates, and sustains the Multi-Mission Satellite Operations Center (MMSOC) satellite command and control (C2) Ground System Enterprise (GSE) and fixed/deployable telemetry, tracking, and commanding (TT&C) antenna systems in support of AF and DoD missions and transitions designated satellite missions to the operational command upon user needs. In addition RDSMO supports the deployment and sustainment of Enterprise Ground Services (EGS) in multiple locations as Air Force Space systems transition to an Enterprise-based ground C2. Funds in the General Information Technology (Space) line procures Information Technology products to support RDSMO.

PE 1203174F Space Innovation, Integration and Rapid Technology Development
Located at Peterson AFB, Colorado, the Space Innovation, Integration and Rapid Technology Development (SIIRTD) program supports the AFSPC Space Analysis Center Virtual Analysis Capability (AVAC) system. AVAC is a stand-alone system that provides a crosscutting capability to conduct, support, and report analysis on a myriad of tools, data, models and simulations. This system allows leadership to make decisions based on quantifiable operational impacts output from AVAC based on various vignettes and studies applied to space and cyber assets. Funding buys system-specific hardware, software, routers, licenses, etc., to maintain the efficiency and compatibility with all current models.

DISTRIBUTED COMMUNICATIONS ARCHITECTURE: Procures Information Technology (IT) hardware & software infrastructure for the Distributed Communications Architecture. This system provides a network-based communications capability enabling dispersed space personnel to participate in space exercises and wargames and to assist in development, testing, and validation of SIIRTD innovation projects supporting the Combat Air Forces. It can also support limited command and control capabilities for space operations.

SPACE ANALYSIS CENTER: Procures Information Technology (IT) hardware & software infrastructure for the Air Force Space Command Virtual Analysis Capability (AVAC) system. The system provides classified modeling and simulation tools for the AFSPC Space Analysis Center to conduct operations research, military utility analyses, tradeoff studies, and other evaluations of space mission areas to guide planning, programming, requirements generation, analyses of alternatives, and other activities. Related modeling and simulation tool development is funded in RDT&E, AF, PE 1203174F, Space Innovation, Integration and Rapid Technology Development.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: GNRLIT / General Information Tech - Space	
ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 1203173F, 1203174F
Line Item MDAP/MAIS Code: N/A		

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.

FY 2019 -$1.000M reduction due to insufficient justification; FY 2020 -$0.229M to reduce Air Force Space Command (AFSPC) Virtual Analysis Cap.

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.

Justification:

PE 1203173F RDSMO

FY 2020 funds will be used to recapitalize RDSMO common user equipment, communication systems, fixed/deployable telemetry, tracking, and commanding (TT&C) antenna systems and hardware and software to support the transition and implementation of EGS baseline requirements into the RSC and SAFB C2 environments. This recapitalization will support the Long Duration Propulsive Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA) (LDPE)-1 mission, the AFSPC-12 mission, the Navigation Technology Satellite 3 (NTS-3) mission, the Tetra (1-3) and LDPE-2-3 follow-on prototyping missions. The MMSOC C2 baseline will continue to be supported through FY2020 for legacy missions being operated at the RSC and SAFB. Funding will assist RDSMO to rapidly respond 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.

PE 1203174F SIIRTD

FY 2020 funding modifies modeling and simulation tools that Air Force Space Command's Space Analysis Center uses for operations research, military utility analyses, tradeoff studies, and other evaluations of space mission areas to guide planning, programming, requirements generation, analyses of alternatives, and other activities. This effort will incorporate changes in fielded and projected space operational capabilities, as well as technical improvements, into the group's software tools to ensure their data and technology remain current. Its innovation, education, and training activities foster solutions to operational deficiencies and enhance the integration of space systems into Air Force operations, thereby enabling service and joint warfighters to realized the full potential of existing and planned space capabilities.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** GPS03C / GPS IIIF SPAF

ID Code (A=Service Ready, B=Not Service Ready): B	Program Elements for Code B Items: 1203269F	Other Related Program Elements: 1203265F
Line Item MDAP/MAIS Code: 590		

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	1	-	1	2	3	3	3	-	12
Gross/Weapon System Cost *($ in Millions)*	-	0.000	0.000	414.625	0.000	414.625	628.445	890.355	897.544	962.300	-	3,793.269
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	0.000	0.000	414.625	0.000	414.625	628.445	890.355	897.544	962.300	-	3,793.269
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**0.000**	**0.000**	**414.625**	**0.000**	**414.625**	**628.445**	**890.355**	**897.544**	**962.300**	**-**	**3,793.269**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	414.625	-	414.625	314.223	296.785	299.181	320.767	-	316.106

Description:

The Global Positioning System (GPS) is a space-based navigation system that fills validated Joint Service requirements for worldwide, accurate, common grid three-dimensional positioning/navigation for military aircraft, ships, and ground personnel. The consistent accuracy, unaffected by location or weather and available in real time, significantly improves effectiveness of reconnaissance, weapons delivery, mine countermeasures and rapid deployment for all services. GPS must comply with Title 10 United States Code (USC) Sec. 2281, which requires that the Secretary of Defense ensures the continued sustainment and operation of GPS for military and civilian purposes, and 51 USC Sec. 50112, which requires that GPS complies with certain standards and facilitates international cooperation.

The system is composed of three segments: User Equipment (funded under Program Element (PE) 1203164F), Space (funded under PE 1203265F, 1203165F, and 1203269F), and a Control Network (funded under PE 1206423F and 1203165F). Research, Development, Test and Evaluation (RDT&E) Air Force (AF) funding for GPS III Follow-On (GPS IIIF), including development and acquisition of Space Vehicles (SVs) 11-12, is in PE 1203269F, Project 653170, GPS IIIF. The satellites broadcast high-accuracy data using precisely synchronized signals that are received and processed by user equipment installed in military platforms. This equipment computes the platform position and velocity and provides steering vectors to target locations or navigation waypoints. The control segment provides daily updates to the navigation messages broadcast from the satellites to maintain system precision in three dimensions to 16 meters (spherical error probable) worldwide. Additionally, GPS supports the United States Nuclear Detonation (NUDET) Detection System (USNDS) mission and provides strategic and tactical support to the following Department of Defense (DoD) missions: Joint Operations by providing capabilities for Positioning, Navigation, and Timing (PNT); Command, Control, Communications, and Intelligence (C3I); Special Operations; Military Operations in Urban Terrain (MOUT); Defense-Wide Mission Support (DWMS); Air Mobility; and Space Launch Orbital Support.

GPS IIIF delivers GPS III satellites beyond the first ten SVs being delivered by the GPS III program (funded in PE 1203265F GPS III Space Segment). The GPS IIIF satellites maintain the same capabilities as the GPS III satellites, but also delivers significant enhancements to include: backward compatibility, unified S-Band (USB) interface compliance, integration of hosted payloads (redesigned USNDS), Laser Retro-reflector Arrays (LRAs), Search and Rescue/GPS (SAR/GPS), Energetic Charged Particles (ECP) sensor, and Regional Military Protection (RMP) capabilities that provide the ability to deliver high-power regional Military Code (M-Code) signals in specific areas of intended effect. Implementation of RMP into the GPS Enterprise requires integration with the ground and user segments, executed by the GPS Next Generation Operational Control System (OCX) and Military GPS User Equipment (MGUE) programs, respectively. The SAR/GPS payload provided by Canada fills a validated National Search and Rescue Committee requirement to provide enduring, space-based distress alerting capability to detect, locate, and relay distress alerts to fulfill its responsibilities under international agreements for Search and Rescue. LRA, built by the Naval Research Lab (NRL), is a passive reflector that improves accuracy and provides better ephemeris data. National Geospatial-Intelligence Agency (NGA) funds the integration costs of the LRA.

In December 2017, The Principal Deputy Assistant Secretary of the Air Force (Acquisition & Logistics) declared the GPS IIIF program a new start beginning in FY 2019 and consistent with the 2016 National Defense Authorization Act (NDAA), the program was categorized as an ACAT 1B Major Defense Acquisition Program (MDAP) with the Service Acquisition Executive (SAE) as the Milestone Decision Authority

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: GPS03C / GPS IIIF SPAF	
ID Code (A=Service Ready, B=Not Service Ready): B	Program Elements for Code B Items: 1203269F	Other Related Program Elements: 1203265F
Line Item MDAP/MAIS Code: 590		

(MDA). During this time, the MDA approved the second phase of the two-phased GPS IIIF acquisition strategy. Executed using funds in PE 1203265F, GPS III Space Segment, the Phase 1 Production Readiness Feasibility Assessments conducted during FY 2016 - FY 2017 provided data and insight into contractors' GPS satellite production designs with emphasis on a mature navigation payload and production-ready designs. Phase 1 results affirmed the viability of a competitive approach for Phase 2. The Phase 2 strategy directs the AF to conduct a full-and-open competition for GPS IIIF SVs and specified the use of RDT&E funds to deliver SVs 11-12 and conduct associated Non-Recurring Engineering (NRE). Upon Milestone C approval, procurement of SV 13+ is planned via annual contract options exercise using Space Procurement, Air Force (SPAF) funds consistent with full-funding policy under an annual-buy approach.

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.

Funding for this exhibit is contained in PE 1203269F.

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** GPS03C / GPS IIIF SPAF	
ID Code (A=Service Ready, B=Not Service Ready): B	**Program Elements for Code B Items:** 1203269F	**Other Related Program Elements:** 1203265F
Line Item MDAP/MAIS Code: 590		

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-5	GPS IIIF SPAF	P-5a, P-21	B		- / -	- / 0.000	- / 0.000	1 / 414.625	- / 0.000	1 / 414.625
P-40	**Total Gross/Weapon System Cost**				**- / -**	**- / 0.000**	**- / 0.000**	**1 / 414.625**	**- / 0.000**	**1 / 414.625**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
This program is a new start.

This program was previously funded in PE 1203265F, GPS III Space Segment (GPSIII). In FY 2020 GPS III funding for the GPS IIIF production satellites was transferred to PE 1203269F.

FY 2020 funding procures the first GPS IIIF production satellite (SV-13) in addition to any recurring, SV specific support equipment and tooling. FY 2020 funding also procures independent technical, systems engineering, and integration support critical to managing SV13 production milestones and mission assurance activities. 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.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** GPS03C / GPS IIIF SPAF	**Item Number / Title [DODIC]:** GPS IIIF SPAF
ID Code (A=Service Ready, B=Not Service Ready) : B	**MDAP/MAIS Code:**	

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	1	-	1
Gross/Weapon System Cost *($ in Millions)*	-	0.000	0.000	414.625	0.000	414.625
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	0.000	0.000	414.625	0.000	414.625
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**0.000**	**0.000**	**414.625**	**0.000**	**414.625**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	414.625	-	414.625

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Space Vehicle - GPS IIIF SPAF Cost																		
Recurring Cost																		
GPS IIIF(†)	-	-	-	-	-	0.000	-	-	0.000	382.005	1	382.005	-	-	0.000	382.005	1	382.005
GPS IIIF Enterprise SE&I	-	-	-	-	-	-	-	-	-	-	-	0.425	-	-	-	-	-	0.425
GPS IIIF Technical Mission Analysis	-	-	-	-	-	-	-	-	-	-	-	10.571	-	-	-	-	-	10.571
Subtotal: Recurring Cost	-	-	-	-	-	*0.000*	-	-	*0.000*	-	-	*393.001*	-	-	*0.000*	-	-	*393.001*
Subtotal: Space Vehicle - GPS IIIF SPAF Cost	**-**	**-**	**-**	**-**	**-**	***0.000***	**-**	**-**	***0.000***	**-**	**-**	***393.001***	**-**	**-**	***0.000***	**-**	**-**	***393.001***
Support - GPS IIIF SPAF Cost																		
GPS IIIF FFRDC	-	-	-	-	-	-	-	-	-	-	-	5.767	-	-	-	-	-	5.767
GPS IIIF A&AS	-	-	-	-	-	-	-	-	-	-	-	15.857	-	-	-	-	-	15.857
GPS IIIF Other Support	-	-	-	-	-	-	-	-	-	-	-	0.000	-	-	-	-	-	0.000
Subtotal: Support - GPS IIIF SPAF Cost	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	***21.624***	**-**	**-**	**-**	**-**	**-**	***21.624***
Gross/Weapon System Cost	**-**	**-**	**-**	**-**	**-**	**0.000**	**-**	**-**	**0.000**	**414.625**	**1**	**414.625**	**-**	**-**	**0.000**	**414.625**	**1**	**414.625**

(†) indicates the presence of a P-5a

Exhibit P-5a, Procurement History and Planning: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: GPS03C / GPS IIIF SPAF	Item Number / Title [DODIC]: GPS IIIF SPAF

Cost Elements	OCO	FY	Contractor and Location	Method/Type or Funding Vehicle	Location of PCO	Award Date	Date of First Delivery	Qty (Each)	Unit Cost ($ M)	Specs Avail Now?	Date Revision Available	RFP Issue Date
GPS IIIF(†)		2020	Lockheed Martin / Littleton, CO	C / FPIF	SMC, LA AFB, CA	Jul 2020	Sep 2026	1	382.005	N		

(†) indicates the presence of a P-21

Exhibit P-21, Production Schedule: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: GPS03C / GPS IIIF SPAF	Item Number / Title [DODIC]: GPS IIIF SPAF

Cost Elements (Units in Each)							Fiscal Year 2020												Fiscal Year 2021												BALANCE
							Calendar Year 2020												Calendar Year 2021													
OCO	MFR #	FY	SERVICE	PROC QTY	ACCEPT PRIOR TO 1 OCT 2019	BAL DUE AS OF 1 OCT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
GPS IIIF																															
	1	2020	AF	1	0	1										A -	-	-	-	-	-	-	-	-	-	-	-	-	-	1

OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

Exhibit P-21, Production Schedule: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: GPS03C / GPS IIIF SPAF	Item Number / Title [DODIC]: GPS IIIF SPAF

Cost Elements (Units in Each)							Fiscal Year 2022												Fiscal Year 2023												BALANCE
							Calendar Year 2022												Calendar Year 2023													
OCO	MFR #	FY	SERVICE	PROC QTY	ACCEPT PRIOR TO 1 OCT 2021	BAL DUE AS OF 1 OCT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
GPS IIIF																															
	1	2020	AF	1	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
							OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	

Exhibit P-21, Production Schedule: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: GPS03C / GPS IIIF SPAF	Item Number / Title [DODIC]: GPS IIIF SPAF

Cost Elements (Units in Each)							Fiscal Year 2024												Fiscal Year 2025												BALANCE
							Calendar Year 2024												Calendar Year 2025													
OCO	MFR #	FY	SERVICE	PROC QTY	ACCEPT PRIOR TO 1 OCT 2023	BAL DUE AS OF 1 OCT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
GPS IIIF																															
	1	2020	AF	1	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
							OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	

Exhibit P-21, Production Schedule: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: GPS03C / GPS IIIF SPAF	Item Number / Title [DODIC]: GPS IIIF SPAF

Cost Elements (Units in Each)							Fiscal Year 2026												Fiscal Year 2027												BALANCE
							Calendar Year 2026												Calendar Year 2027													
OCO	MFR #	FY	SERVICE	PROC QTY	ACCEPT PRIOR TO 1 OCT 2025	BAL DUE AS OF 1 OCT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
GPS IIIF																															
	1	2020	AF	1	0	1	-	-	-	-	-	-	-	-	-	-	-	1													0
							OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	

Exhibit P-21, Production Schedule: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** GPS03C / GPS IIIF SPAF	**Item Number / Title [DODIC]:** GPS IIIF SPAF

MFR Ref #	Manufacturer Name - Location	Production Rates (Each / Month)			Procurement Leadtime (Months)							
					Initial				Reorder			
		MSR For 2020	1-8-5 For 2020	MAX For 2020	ALT Prior to Oct 1	ALT After Oct 1	Manufacturing PLT	Total After Oct 1	ALT Prior to Oct 1	ALT After Oct 1	Manufacturing PLT	Total After Oct 1
1	Lockheed Martin - Littleton, CO	72	72	72	0	10	74	84	0	0	0	0

"A" in the Delivery Schedule indicates the Contract Award Date.
Note: Due to space limitations, quantities in the Exhibit P-21 delivery calendar are truncated and rounded based on the maximum quantity in the calendar as follows. If the maximum quantity is less than or equal to than 9,999, all quantities are shown as each. If the maximum quantity is between 10,000 and 999,999 all quantities are shown in thousands. If the maximum quantity is between 1,000,000 and 999,999,999 all quantities are shown in millions (rounded to the nearest thousand).If the maximum quantity is equal or greater than 1,000,000,000 all quantities are shown in billions (rounded to the nearest million).

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** GPSIII / GPS III Space Segment

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A
Line Item MDAP/MAIS Code: 292		

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	232.344	84.064	69.386	31.466	-	31.466	20.143	21.320	19.332	19.680	86.300	584.035
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	232.344	84.064	69.386	31.466	-	31.466	20.143	21.320	19.332	19.680	86.300	584.035
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**232.344**	**84.064**	**69.386**	**31.466**	**-**	**31.466**	**20.143**	**21.320**	**19.332**	**19.680**	**86.300**	**584.035**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

The Global Positioning System (GPS) is a space-based navigation system that fills validated Joint Service requirements for worldwide, accurate, common-grid three-dimensional positioning/navigation for military aircraft, ships, and ground personnel. The consistent accuracy, unaffected by location or weather and available in real time, significantly improves effectiveness of reconnaissance, weapons delivery, mine countermeasures and rapid deployment for all services. GPS must comply with Title 10 United States Code (USC) Sec. 2281, which requires that the Secretary of Defense ensures the continued sustainment and operation of GPS for military and civilian purposes, and 51 USC Sec. 50112, which requires that GPS complies with certain standards and facilitates international cooperation.

The system is composed of three segments: User Equipment (funded under Program Element (PE) 1203164F), Space (funded under PE 1203265F, 1203165F, and 1203269F), and a Control Network (funded under PE 1206423F and 1203165F). Research, Development, Test and Evaluation (RDT&E) funding for GPS III, including development and acquisition of Space Vehicles (SVs) 01-02, is in PE 1203265F, Project 67A019, GPS III Space Segment. The satellites broadcast high-accuracy data using precisely synchronized signals that are received and processed by user equipment installed in military platforms. This equipment computes the platform position and velocity and provides steering vectors to target locations or navigation waypoints. The control segment provides daily updates to the navigation messages broadcast from the satellites to maintain system precision in three dimensions to 16 meters (spherical error probable) worldwide. Additionally, GPS supports the United States Nuclear Detonation (NUDET) Detection System (USNDS) mission and provides strategic and tactical support to the following Department of Defense (DoD) missions: Joint Operations by providing capabilities for Positioning, Navigation, and Timing (PNT); Command, Control, Communications, and Intelligence (C3I); Special Operations; Military Operations in Urban Terrain (MOUT); Defense-Wide Mission Support (DWMS); Air Mobility; and Space Launch Orbital Support.

GPS III is the next generation of SVs to join the GPS constellation. GPS III SVs delivers significant enhancements, including a new international civil (L1C) Galileo-compatible signal and enhanced anti-jam power.

The Air Force GPS directorate received USD(AT&L) approval to purchase GPS III SVs 09-10 at the December 2014 Defense Acquisition Board in order to sustain the constellation while competitive options were pursued. The GPS III SVs 09-10 purchases are on the current Lockheed Martin contract as technical equivalents of SVs 01-08. SV 09 is funded with FY 2014 Missile Procurement, Air Force (MPAF) advance procurement and FY 2015 MPAF regular procurement. SV 10 is funded with FY 2015 MPAF advance procurement and FY 2016 SPAF regular procurement.

In the FY 2019 budget, GPS III received a Congressional rescission of $20.400M. The correct total for FY 2018 is $63.664M.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: GPSIII / GPS III Space Segment	
ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A
Line Item MDAP/MAIS Code: 292		

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.

The FY2020 funding request was reduced by $4.000M to account for the availability of prior year execution balances.

Funding for this exhibit is contained in PE 1203265F.

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** GPSIII / GPS III Space Segment
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: 292		

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-5	GPS III Space Segment		A		- / 232.344	- / 84.064	- / 69.386	- / 31.466	- / -	- / 31.466
P-40	**Total Gross/Weapon System Cost**				**- / 232.344**	**- / 84.064**	**- / 69.386**	**- / 31.466**	**- / -**	**- / 31.466**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
FY 2020 funding to procure independent technical, systems engineering, and integration support critical to managing SVs 03-10 production milestones, mission assurance activities, and launch preparation events. 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.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** GPSIII / GPS III Space Segment	**Item Number / Title [DODIC]:** GPS III Space Segment
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	232.344	84.064	69.386	31.466	-	31.466
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	232.344	84.064	69.386	31.466	-	31.466
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**232.344**	**84.064**	**69.386**	**31.466**	**-**	**31.466**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Hardware - GPS III Cost																		
Recurring Cost																		
GPS IIIF SAR	-	-	6.638	-	-	3.399	-	-	3.427	-	-	0.000	-	-	-	-	-	0.000
Subtotal: Recurring Cost	-	-	*6.638*	-	-	*3.399*	-	-	*3.427*	-	-	*0.000*	-	-	-	-	-	*0.000*
Subtotal: Hardware - GPS III Cost	**-**	**-**	***6.638***	**-**	**-**	***3.399***	**-**	**-**	***3.427***	**-**	**-**	***0.000***	**-**	**-**	**-**	**-**	**-**	***0.000***
Space Vehicle - Space Vehicle End Item Cost																		
Recurring Cost																		
GPS III SV 03-10	-	-	173.883	-	-	32.520	-	-	17.670	-	-	-	-	-	-	-	-	-
GPS III SV11+	-	-	1.067	-	-	0.696	-	-	0.000	-	-	-	-	-	-	-	-	-
GPS III SV 03-10 Enterprise SE&I	-	-	0.102	-	-	0.102	-	-	0.000	-	-	-	-	-	-	-	-	-
GPS III SV 03-10 Technical Mission Analysis	-	-	23.003	-	-	1.322	-	-	8.632	-	-	6.200	-	-	-	-	-	6.200
GPS III SV 11+ Technical Mission Analysis	-	-	-	-	-	5.000	-	-	-	-	-	-	-	-	-	-	-	-
GPS III SV 03-10 Less Advanced Procurement	-	-	-	-	-	0.000	-	-	0.000	-	-	0.000	-	-	-	-	-	0.000
GPS III SV 03-10 Plus Advanced Procurement	-	-	-	-	-	0.000	-	-	0.000	-	-	0.000	-	-	-	-	-	0.000
Subtotal: Recurring Cost	-	-	*198.055*	-	-	*39.640*	-	-	*26.302*	-	-	*6.200*	-	-	-	-	-	*6.200*

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: GPSIII / GPS III Space Segment	Item Number / Title [DODIC]: GPS III Space Segment
ID Code (A=Service Ready, B=Not Service Ready) : A	MDAP/MAIS Code:	

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Subtotal: Space Vehicle - Space Vehicle End Item Cost	**-**	**-**	***198.055***	**-**	**-**	***39.640***	**-**	**-**	***26.302***	**-**	**-**	***6.200***	**-**	**-**	**-**	**-**	**-**	***6.200***
Checkout and Launch - Checkout And Launch End Item Cost																		
GPS III SV 03-10 Launch Services	-	-	7.100	-	-	25.432	-	-	19.472	-	-	7.900	-	-	-	-	-	7.900
GPS III SV 03-10 On-Orbit Incentive	-	-	0.000	-	-	0.000	-	-	1.500	-	-	9.000	-	-	-	-	-	9.000
GPS III SV 03-10 Storage and MRT	-	-	1.200	-	-	0.000	-	-	8.865	-	-	3.666	-	-	-	-	-	3.666
Subtotal: Checkout and Launch - Checkout And Launch End Item Cost	**-**	**-**	***8.300***	**-**	**-**	***25.432***	**-**	**-**	***29.837***	**-**	**-**	***20.566***	**-**	**-**	**-**	**-**	**-**	***20.566***
Support - Support End Item Cost																		
GPS III SV 03-10 FFRDC	-	-	12.621	-	-	2.487	-	-	2.877	-	-	2.100	-	-	-	-	-	2.100
GPS III SV 03-10 A&AS	-	-	4.680	-	-	4.272	-	-	6.943	-	-	2.600	-	-	-	-	-	2.600
GPS III SV 03-10 Other Support	-	-	1.650	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-
GPS III SV 03-10 Launch/ On-Orbit Support (LOOS)	-	-	-	-	-	0.000	-	-	0.000	-	-	-	-	-	-	-	-	-
GPS III SV 11+ FFRDC	-	-	0.400	-	-	4.324	-	-	0.000	-	-	-	-	-	-	-	-	-
GPS III SV 11+ A&AS	-	-	-	-	-	4.510	-	-	0.000	-	-	-	-	-	-	-	-	-
Subtotal: Support - Support End Item Cost	**-**	**-**	***19.351***	**-**	**-**	***15.593***	**-**	**-**	***9.820***	**-**	**-**	***4.700***	**-**	**-**	**-**	**-**	**-**	***4.700***
Gross/Weapon System Cost	**-**	**-**	**232.344**	**-**	**-**	**84.064**	**-**	**-**	**69.386**	**-**	**-**	**31.466**	**-**	**-**	**-**	**-**	**-**	**31.466**

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Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** GPSSPC / Global Postioning (Space)

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 1203164F

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	2.159	2.181	0.000	-	0.000	2.259	2.305	2.349	2.408	-	13.661
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	2.159	2.181	0.000	-	0.000	2.259	2.305	2.349	2.408	-	13.661
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**2.159**	**2.181**	**0.000**	**-**	**0.000**	**2.259**	**2.305**	**2.349**	**2.408**	**-**	**13.661**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

The Navstar Global Positioning System (GPS) provides highly accurate time, three-dimensional position, and velocity information to an unlimited number of users anywhere on or above the surface of the earth, in any weather. GPS satisfies validated Joint Service requirements for worldwide, accurate, common grid navigation for military aircraft, ships, ground vehicles and personnel. The system is comprised of three segments: (1) satellites, (2) a ground control, and (3) user equipment. The satellites broadcast high-accuracy data using precisely synchronized signals that are received and processed by user equipment installed in military platforms. The ground control network updates the navigation messages broadcast from the satellites to provide system vectors to target location or navigational way points. Funds in this line support various GPS specific production efforts associated with the ground control and user equipment segments.

KEY DATA LOADING INSTALLATION FACILITY (KLIF)/GPS SECURITY DEVICE: The KLIF facilitates the programming of black key (cryptographic) algorithms into the Selective Availability Anti-Spoofing Module (SAASM) to provide accurate positioning solutions for GPS users using secure equipment. Similar work for the Military Global Positioning System User Equipment (MGUE) is in the planning phase.

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.

Funding for this exhibit contained in Program Element 1203164F NAVSTAR GPS (User Equipment)(Space).

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.

Justification:

PE 1203164F NAVSTAR GPS (USER EQUIPMENT) (SPACE)

KEY DATA LOADING INSTALLATION FACILITY (KLIF)/GPS SECURITY DEVICE: No FY 2020 funding requested.

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Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** IBS000 / Integ Broadcast Service

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0305220F

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	0.000	16.445	0.000	-	0.000	0.000	0.000	0.000	0.000	-	16.445
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	0.000	16.445	0.000	-	0.000	0.000	0.000	0.000	0.000	-	16.445
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**0.000**	**16.445**	**0.000**	**-**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-**	**16.445**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

PE 1203179F Integrated Broadcast Service
The IBS is a multi-sensor, multi-source, system of systems for the dissemination of integrated threat warning blue force tracking information. IBS provides intelligence producers and information sources the means to analyze and disseminate strategic, operational, and tactical intelligence and threat warning information directly to the warfighter. The IBS operational baseline represents the migration, integration, and consolidation of existing tactical data dissemination into a future common architecture message format. The IBS future common architecture is enabled by using enterprise level experimentation for future on-orbit solutions for primary and alternate over-the-air communication pathways.

In FY20 PE1203179F 3021F: Space Procurement, Air Force/BSA 1: Space Programs IBS000/INTEG BROADCAST SERV moved to PE 0305179F Integrated Broadcast Service Procurement Other Procurement/ BA 03: Electronics and Telecommunications Equip/BSA 2: Intelligence Programs P-1 Line Item: 832070 Intelligence Comm Equipment BP83.

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.

Justification:
PE 1203179F Integrated Broadcast Service (IBS) - P40A
FY19 funding for IBS procurement efforts are focused in the following areas:

1. CIB UPLINK SITE (CUS) TACTICAL INFORMATION PROCESSOR AND ONLINE FUSION FACILITY (TIPOFF): TIPOFF serves as the control system for the CIB Uplink Site and interface to the IBS Network Services (IBS-NS). Each major release of the software incorporates approved requirements as necessitated by mission changes, system interoperability requirements, and system security. The new release supports migration to CIB Uplink Sites.

2. COMMON INTERACTIVE BROADCAST PLANNING TOOL (CIB-PT): The CIB-PT provides the COCOM Planners an integrated software/hardware mechanism to allocate space-based communications resources to theater and national producers, specifically to reliably optimize the timeliness of scarce bandwidth allocation of extremely time-critical messages. Each major release of the software/hardware incorporates updated producer prioritization, bandwidth allocation, mission monitoring and interfaces to the STRATCOM systems as necessitated by mission changes, system interoperability, and system security compliance to achieve threshold requirements.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: IBS000 / Integ Broadcast Service	
ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0305220F
Line Item MDAP/MAIS Code: N/A		

3. COMMON MESSAGE FORMATE PARSER LIBRARY (CMFPL): The CMF repository is required for the automatic exchange of data among processing, exploitation, and dissemination (PED) systems. This effort procures the infrastructure for dynamic software library updates for multiple operating systems essential to broadcast operation.

4. IBS V&V Environment: Procures simulation and stimulation tools to certify and verify mission equipment for operational use. Included is the MULTI-AREA REMOTE SIMULATOR (MARS) a component of the IBS verification and validation process used to emulate multiple systems messaging under operational conditions and the UNIVERSAL CIB TEST SET (UCTS) a component that emulates the UHF SATCOM environment.

5. TERMINAL, DATALINK, & ENTERPRISE SERVER MITIGATION: Funds direct mission support activities such as verification & validation documentation; uplink receive and transmit terminal upgrade, enhancements and spares; mitigation; CMF product support; JOINT TACTICAL DATA LINK, i.e., Link 16 support; product documentation; studies and analyses; IBS Web Support and contractor system engineering activities.

6. IBS-NS/IBS-X: Scaling capability is required for messaging under operational use. Funds approved modernization of Global IBS Network Servers (GINS) and Theater Interface Nodes (TINS), technology refreshment and integration as necessitated by mission changes, system interoperability, and system security. Utilizes the existing IBS-X for resiliency as a third GINS and additional CUS for operational testing and modernization.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** MC0MSE / Spaceborne Equip (COMSEC)

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	25.034	28.478	32.031	-	32.031	35.521	27.601	28.923	27.337	-	204.925
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	25.034	28.478	32.031	-	32.031	35.521	27.601	28.923	27.337	-	204.925
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**25.034**	**28.478**	**32.031**	**-**	**32.031**	**35.521**	**27.601**	**28.923**	**27.337**	**-**	**204.925**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Space Communications Security (COMSEC) procures cryptographic products to operate in the space environment and for ground nodes that link to space assets. Space COMSEC equipment is a foundational element in achieving Air Force space and information superiority. Space COMSEC provides cybersecurity (confidentiality and integrity) for DOD satellite platforms. Space COMSEC is an enabler for space system compliance with DoDI 8581.01 - Information Assurance (IA) Policy for Space Systems Used by the Department of Defense. Space COMSEC mission provides communications security products and lifecycle sustainment support to all DoD satellite systems and commercial systems supporting DOD missions. Secure communication allows the DoD to achieve and maintain decision superiority, the key to successful application of the military instrument of national power in modern, high-tempo, full-spectrum operations. Space COMSEC equipment protects information such as warfighter positions, mission planning, target strikes, commanders' orders, intelligence, force strength, and force readiness and ensures adversaries cannot interpret, manipulate, or destroy information. When an adversary is capable of interpretation, manipulation, or destruction of the information used by the warfighter, DoD military forces will suffer significant and/or devastating mission degradation that can result in loss of life and resources and/or exceptionally grave damage to national security. Space COMSEC enables secure Command and Control (C2) of satellites and prevents unauthorized access and destruction. It enables secure transmission of satellite systems' health and status telemetry data (satellite health and relative orbital position) to ground control stations, thus protecting critical information about the capabilities of DoD satellite systems. The capability of a system must be protected from an adversary to avoid exploitation of a system weakness/limitation, knowledge of which could assist an adversary in a successful mission against DoD military forces. Space COMSEC also provides secure transmission of information collected by satellite sensors (mission data), which provides the warfighter an integrated view of the battle space. Space COMSEC provides for secure SATCOM, positioning, navigation, timing, weather, nuclear detection and early warning missions. Space COMSEC also enables Transmission Security (TRANSEC) for space platforms. Space COMSEC mission procures crypto end items and logistics elements to support developing and operational space systems. The Space Modular Common Cryptography (SMCC) Program of Record will procure a family of common cryptography (crypto) solutions that integrate Telemetry, Tracking, and Command (TT&C), Mission Data (MD), and TRANSEC key stream functions for the Air Force, Department of Defense (DoD), and Intelligence Community space systems. The SMCC requirements to procure cryptographic solutions are documented in the Capability Development Document (CDD) dated 21 August 2014. The SMCC Program's mission is to secure communication links and the data transmitted, incorporate standard interfaces that leverage existing technologies, provide a basis for future technologies, and design solutions that are scalable, upgradeable, and reconfigurable.

Funding for this effort is in program element (PE) 1203140F.

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** MC0MSE / Spaceborne Equip (COMSEC)

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-5	Information Systems Security Program	P-5a	A		- / -	- / 25.034	- / 28.478	- / 32.031	- / -	- / 32.031
P-40	**Total Gross/Weapon System Cost**				**- / -**	**- / 25.034**	**- / 28.478**	**- / 32.031**	**- / -**	**- / 32.031**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:

1. Space Communications Security (COMSEC): Procures cryptographic products to operate in the space environment and for ground nodes that link to space assets.

a. Products: FY20 funding provides for the production of Space COMSEC products to meet developing and operational space program needs. Space COMSEC products include End Crypto Units (ECU), Embedded Solutions (ES), TRANSEC and ancillaries. Due to low volume production quantities and high reliability design, Space COMSEC products can range in price from $10K per unit to $2M per unit. As a commodity item, Space COMSEC procures standard crypto products which enable minimized lifecycle footprints. Space COMSEC procures from multiple crypto vendors; however, with the low volume consumption by space programs, the space crypto industry base is less than a dozen companies. Items procured during execution may change based on critical equipment needed to support current Air Force mission requirements. Contractor support costs are included as part of the Space COMSEC products funding line in order to provide for end item operational capability.

b. Logistics: FY20 funding provides for the production of Space COMSEC Logistics elements. Space COMSEC products typically have a 20 to 40 year lifecycle to support development, launch and operation of multiple Air Force and DoD space systems. Space COMSEC is provided as Government Furnished Equipment (GFE) to the space system developing contractors and operational ground stations. Space COMSEC products are high cost critical assets and are organically sustained to include component level maintenance exclusively by the Air Force. Logistics procures the necessary lifecycle sustainment elements required to meet the 40 year mission requirements. Logistics elements include, but not limited to, specialized test sets, certified training materials and courses, maintenance manuals, provisioning, spare components, and modifications. Contractor support costs are included as part of the Space COMSEC logistics funding line in order to provide for end item operational capability.

c. Aerospace Vehicle Equipment (AVE): FY20 funding provides cryptographic products to operate in the space environment. AVE provides the procurement of space qualified command up link algorithm embedment Application-Specific Integrated Circuits (ASICs).

d. Ground Operating Equipment (GOE): FY20 funding provides cryptographic products for ground nodes that link to space assets. GOE provide the procurement of ground equipment for operational and developmental space systems (Telemetry, Tracking, and Command (TT&C) (KS-252, KIV-7MS), Mission Data (KGR-42), and Satellite Communication (SATCOM) products).

2. Space Modular Common Cryptography (SMCC): Reduces space programs development costs by providing a common, modular and upgradable cryptographic solution set. SMCC is fully endorsed by NSA as the preferred solution for all emerging National Security Space Systems. The SMCC Program will award a separate production contract to procure Medium/Large Satellite Common Solution in FY20 for GLOBAL POSITIONING SYSTEM (GPS) IIIF satellites. SMCC meets NSA mandated space algorithm transition/modernization guidance to mitigate evolving threats/vulnerabilities and will provide modernized cryptographic capabilities.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MC0MSE / Spaceborne Equip (COMSEC)	**Item Number / Title [DODIC]:** Information Systems Security Program
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	25.034	28.478	32.031	-	32.031
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	25.034	28.478	32.031	-	32.031
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**25.034**	**28.478**	**32.031**	**-**	**32.031**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Hardware - 1. Space Communications Security (COMSEC) (PE 1203140F) Cost																		
Recurring Cost																		
a. Products	-	-	-	0.027	833	22.473	0.016	1,440	23.039	-	-	-	-	-	-	-	-	-
b. Logistics	-	-	-	0.427	6	2.561	1.088	5	5.439	1.167	4	4.666	-	-	-	1.167	4	4.666
c. Ave	-	-	-	-	-	-	-	-	-	0.018	247	4.470	-	-	-	0.018	247	4.470
d. GOE(†)	-	-	-	-	-	-	-	-	-	0.033	182	5.948	-	-	-	0.033	182	5.948
Subtotal: Recurring Cost	-	-	-	-	-	*25.034*	-	-	*28.478*	-	-	*15.084*	-	-	-	-	-	*15.084*
Subtotal: Hardware - 1. Space Communications Security (COMSEC) (PE 1203140F) Cost	**-**	**-**	**-**	**-**	**-**	***25.034***	**-**	**-**	***28.478***	**-**	**-**	***15.084***	**-**	**-**	**-**	**-**	**-**	***15.084***
Hardware - 2. Space Modular Common Crypto (SMCC) (PE 1203140F) Cost																		
Recurring Cost																		
SMCC(†)	-	-	-	-	-	-	-	-	-	1.304	13	16.947	-	-	-	1.304	13	16.947
Subtotal: Recurring Cost	-	-	-	-	-	-	-	-	-	-	-	*16.947*	-	-	-	-	-	*16.947*
Subtotal: Hardware - 2. Space Modular Common Crypto (SMCC) (PE 1203140F) Cost	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	***16.947***	**-**	**-**	**-**	**-**	**-**	***16.947***
Gross/Weapon System Cost	**-**	**-**	**-**	**-**	**-**	**25.034**	**-**	**-**	**28.478**	**-**	**-**	**32.031**	**-**	**-**	**-**	**-**	**-**	**32.031**

(†) indicates the presence of a P-5a

Exhibit P-5a, Procurement History and Planning: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: MC0MSE / Spaceborne Equip (COMSEC)	Item Number / Title [DODIC]: Information Systems Security Program

Cost Elements	OCO	FY	Contractor and Location	Method/Type or Funding Vehicle	Location of PCO	Award Date	Date of First Delivery	Qty (Each)	Unit Cost ($ M)	Specs Avail Now?	Date Revision Available	RFP Issue Date
d. GOE		2020	Multiple / Multiple	Various	AFMC	Jan 2020	Nov 2020	182	0.033	Y		
SMCC		2020	TBD / TBD	Various	AFMC	Apr 2020	Jan 2022	13	1.304	Y		

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** MILSAT / MILSATCOM

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A
Line Item MDAP/MAIS Code: 199		

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	35.225	11.265	11.096	0.000	11.096	15.811	28.535	20.736	11.947	172.204	306.819
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	35.225	11.265	11.096	0.000	11.096	15.811	28.535	20.736	11.947	172.204	306.819
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**35.225**	**11.265**	**11.096**	**0.000**	**11.096**	**15.811**	**28.535**	**20.736**	**11.947**	**172.204**	**306.819**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Program Element (PE) 1203601F MILSATCOM TERMINALS

MILITARY SATELLITE COMMUNICATIONS (MILSATCOM) joint-service systems collectively provide a broad range of satellite communication capabilities, including secure, jam-resistant, 24-hour worldwide communications to meet essential strategic, tactical and general-purpose operational requirements. MILSATCOM terminals support communications requirements for the President and Secretary of Defense, unified and specified commanders, uniformed services and defense agencies. Funding for this exhibit is contained in PE 1203601F, MILSATCOM Terminals, except where otherwise noted.

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** MILSAT / MILSATCOM

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: 199

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-5	AFWET		A		- / -	- / 28.769	- / 10.986	- / 11.096	- / -	- / 11.096
P-5	GBS		A		- / -	- / 6.179	- / 0.279	- / -	- / -	- / -
P-40a	Satellite Communications (SATCOM) O&M				- / -	- / 0.277	- / -	- / -	- / -	- / -
P-40	**Total Gross/Weapon System Cost**				**- / -**	**- / 35.225**	**- / 11.265**	**- / 11.096**	**- / 0.000**	**- / 11.096**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications. Title represents the P-40a Title when only the P-40a Summary/Total is shown.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:

AIR FORCE WIDEBAND ENTERPRISE TERMINALS (AFWET) TERMINAL MODERNIZATION: AFWET terminals form the Satellite Communications (SATCOM) backbone of the DoD Information Network (DoDIN), operating over Wideband Global SATCOM (WGS), Defense Satellite Communications System, commercial and Allied satellites. These Enterprise terminals support the command and control requirements of Combatant Commanders worldwide and the communication requirements of the President, Secretary of Defense, Department of State (DoS), US strategic and tactical forces, and the North Atlantic Treaty Organization. The Air Force is responsible for terminal equipment at Air Force operated and maintained Enterprise ground terminal locations.

In FY 2020, the Air Force funds will extend the life of the system, sustain operational suitability, safety and effectiveness, and maintain high interoperability with other DoD, Army, Navy, and Air Force strategic and tactical terminals.

For 18 of 32 new terminals yet to be installed and commissioned; AFWET Terminal Modernization includes: Terminal, installation, engineering, integration and site preparation, radomes, initial spares and acceptance testing. Installation, integration and site preparation costs change substantially based on location.

For 14 of 32 installed and already commissioned new terminals; AFWET Maintenance Upgrades and Sustainment includes: Facility Infrastructure Monitoring Systems (FIMS), power and communication infrastructure, and Interconnect Facility (ICF) installations which provide incidental increases in capability, allowing for full utilization of WGS capabilities, compliance with directives on the usage of Internet Protocol, adherence to Unified Capabilities Requirements, compliance with Defense Information Systems Agency (DISA) and National Security Agency directives and more efficient and effective usage of satellite resources for jam-resistant and anti-scintillation wideband links.

AFWET Product Support includes: Product Support Services (PSS) skillsets required for specialized SATCOM fielding and training supporting Terminal Modernization.
AFWET Other Support includes: Advisory and Assistance Services (A&AS), system engineering, and other related activities supporting successful program execution.

GLOBAL BROADCAST SERVICE (GBS): No FY 2020 funding is requested.

MILSATCOM SUSTAINMENT MODIFICATIONS: No FY 2020 funding is requested.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: MILSAT / MILSATCOM	Item Number / Title [DODIC]: AFWET
ID Code (A=Service Ready, B=Not Service Ready) : A		MDAP/MAIS Code:

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	28.769	10.986	11.096	-	11.096
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	28.769	10.986	11.096	-	11.096
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**28.769**	**10.986**	**11.096**	**-**	**11.096**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Hardware - 1203601F Cost																		
Recurring Cost																		
AFWET - Terminal Modernization	-	-	-	4.061	2	8.122	-	-	3.569	-	-	3.768	-	-	-	-	-	3.768
AFWET - Maintenance Upgrades/ Sustainment	-	-	-	-	-	17.673	-	-	3.449	-	-	4.354	-	-	-	-	-	4.354
AFWET - Product Support	-	-	-	-	-	0.987	-	-	2.313	-	-	1.585	-	-	-	-	-	1.585
Subtotal: Recurring Cost	-	-	-	-	-	*26.782*	-	-	*9.331*	-	-	*9.707*	-	-	-	-	-	*9.707*
Subtotal: Hardware - 1203601F Cost	**-**	**-**	**-**	**-**	**-**	***26.782***	**-**	**-**	***9.331***	**-**	**-**	***9.707***	**-**	**-**	**-**	**-**	**-**	***9.707***
Support - 1203601F Cost																		
AFWET - Advisory and Assistance Services (A&AS)	-	-	-	-	-	0.588	-	-	0.615	-	-	0.626	-	-	-	-	-	0.626
AFWET - OTHER SUPPORT	-	-	-	-	-	1.399	-	-	1.040	-	-	0.763	-	-	-	-	-	0.763
Subtotal: Support - 1203601F Cost	**-**	**-**	**-**	**-**	**-**	***1.987***	**-**	**-**	***1.655***	**-**	**-**	***1.389***	**-**	**-**	**-**	**-**	**-**	***1.389***
Gross/Weapon System Cost	**-**	**-**	**-**	**-**	**-**	**28.769**	**-**	**-**	**10.986**	**-**	**-**	**11.096**	**-**	**-**	**-**	**-**	**-**	**11.096**

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: MILSAT / MILSATCOM	Item Number / Title [DODIC]: GBS
ID Code (A=Service Ready, B=Not Service Ready) : A	MDAP/MAIS Code:	

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	6.179	0.279	-	-	-
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	6.179	0.279	-	-	-
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**6.179**	**0.279**	**-**	**-**	**-**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Hardware - 1203601F Cost																		
Recurring Cost																		
GBS - Enterprise Systems Engineering & Integration	-	-	-	-	-	3.923	-	-	0.279	-	-	-	-	-	-	-	-	-
GBS - Receive Suites, Integration and Installation	-	-	-	-	-	2.256	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Recurring Cost	-	-	-	-	-	*6.179*	-	-	*0.279*	-	-	-	-	-	-	-	-	-
Subtotal: Hardware - 1203601F Cost	**-**	**-**	**-**	**-**	**-**	***6.179***	**-**	**-**	***0.279***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Gross/Weapon System Cost	**-**	**-**	**-**	**-**	**-**	**6.179**	**-**	**-**	**0.279**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Exhibit P-40a, Budget Item Justification For Aggregated Items: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MILSAT / MILSATCOM	**Aggregated Items Title:** Satellite Communications (SATCOM) O&M

Item Number / Title [DODIC]	ID CD	MDAP/ MAIS Code	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Uncategorized																				
CCS-C	A		-	-	-	-	-	0.277	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Uncategorized			**-**	**-**	**-**	**-**	**-**	***0.277***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Total			**-**	**-**	**-**	**-**	**-**	**0.277**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Note: Subtotals or Totals in this Exhibit P-40a may not be exact or sum exactly, due to rounding.

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Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** MSEELC / Evolved Expendable Launch Capability

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0604853F
Line Item MDAP/MAIS Code: 176		

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	1,307.662	904.948	659.981	0.000	-	0.000	0.000	0.000	0.000	0.000	-	2,872.591
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	1,307.662	904.948	659.981	0.000	-	0.000	0.000	0.000	0.000	0.000	-	2,872.591
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**1,307.662**	**904.948**	**659.981**	**0.000**	**-**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-**	**2,872.591**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Per FY 2019 National Defense Authorization Act, the Evolved Expendable Launch Vehicle (EELV) program was renamed the National Security Space Launch (NSSL) program, effective 1 Mar 2019. Funding for this exhibit is contained in Program Element (PE) 1203953F.

The Air Force requested funding for the Evolved Expendable Launch Vehicle (EELV) program in two separate P-1 line items in compliance with the FY 2013 and FY 2014 Appropriation Acts. Launch services were executed from the Evolved Expendable Launch Veh (Space) P-1 line item. Launch capability were executed from the Evolved Expendable Launch Veh (Infrastructure) P-1 line item. Both line items were necessary to achieve successful placement of National Security Space (NSS) space vehicles (SVs) on-orbit. To comply with FY 2016 National Defense Authorization Act, Air Force ended the EELV Launch Capability at the end of FY 2019. Beginning in FY 2020, the EELV budget request will be in a single P-1 line.

This program does not require and does not include advance procurement or initial spares. Flyaway Unit Cost is not applicable and Weapon System Unit Cost are not representative due to the mix (medium through heavy) of vehicles in the program. EELV procures launch services and is not a weapon system. The program provides launch capacity for Government National Launch Forecast (NLF) requirements, but does not take ownership of any specific launch hardware. The requirements for EELV launch services are derived from multiple spacecraft requirements.

The EELV program is a Major Defense Acquisition Program (MDAP) Acquisition Category (ACAT) 1D program that acquires launch services to provide critical space support required to satisfy Department of Defense (DoD) warfighter, national security, and other Government space lift missions while fostering interagency and commercial cooperation. The EELV program provides satellite delivery to specific orbits through certified launch vehicle providers. In the FY 2019 budget, the NSSL program received a Congressional rescission of $68.250M. The correct total for FY 2018 is $836.698M.

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** MSEELC / Evolved Expendable Launch Capability	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** 0604853F
Line Item MDAP/MAIS Code: 176		

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-5	Evolved Expendable Launch Capability	P-5a	A		- / 1,307.662	- / 904.948	- / 659.981	- / 0.000	- / -	- / 0.000
P-40	**Total Gross/Weapon System Cost**				**- / 1,307.662**	**- / 904.948**	**- / 659.981**	**- / 0.000**	**- / -**	**- / 0.000**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
No FY 2020 funding requested.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MSEELC / Evolved Expendable Launch Capability	**Item Number / Title [DODIC]:** Evolved Expendable Launch Capability
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	1,307.662	904.948	659.981	0.000	-	0.000
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	1,307.662	904.948	659.981	0.000	-	0.000
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**1,307.662**	**904.948**	**659.981**	**0.000**	**-**	**0.000**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Launch - Phase 1/1A Launch Capability Cost																		
Recurring Cost																		
Phase 1 Launch Capability(†)	1,114.302	1	1,114.302	718.228	1	718.228	359.659	1	359.659	-	-	0.000	-	-	-	-	-	0.000
Phase 1A Launch Capability	-	-	157.857	134.582	1	134.582	273.923	1	273.923	-	-	-	-	-	-	-	-	-
Subtotal: Recurring Cost	-	-	*1,272.159*	-	-	*852.810*	-	-	*633.582*	-	-	*0.000*	-	-	-	-	-	*0.000*
Subtotal: Launch - Phase 1/1A Launch Capability Cost	**-**	**-**	***1,272.159***	**-**	**-**	***852.810***	**-**	**-**	***633.582***	**-**	**-**	***0.000***	**-**	**-**	**-**	**-**	**-**	***0.000***
Support - Support End Item Cost																		
Other Support	-	-	0.555	-	-	-	-	-	0.000	-	-	-	-	-	-	-	-	-
Independent Readiness Review Team	-	-	34.948	-	-	52.138	-	-	26.399	-	-	-	-	-	-	-	-	-
Subtotal: Support - Support End Item Cost	**-**	**-**	***35.503***	**-**	**-**	***52.138***	**-**	**-**	***26.399***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Gross/Weapon System Cost	**-**	**-**	**1,307.662**	**-**	**-**	**904.948**	**-**	**-**	**659.981**	**-**	**-**	**0.000**	**-**	**-**	**-**	**-**	**-**	**0.000**

Remarks:
A revised Memorandum of Understanding (MOU) between the Air Force and National Reconnaissance Office (NRO), dated 7 October 2011 provides a cost share agreement for the Phase 1 Launch Capability. This PE contains only the Air Force position.

(†) indicates the presence of a P-5a

Exhibit P-5a, Procurement History and Planning: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: MSEELC / Evolved Expendable Launch Capability	Item Number / Title [DODIC]: Evolved Expendable Launch Capability

Cost Elements	OCO	FY	Contractor and Location	Method/Type or Funding Vehicle	Location of PCO	Award Date	Date of First Delivery	Qty (Each)	Unit Cost ($ M)	Specs Avail Now?	Date Revision Available	RFP Issue Date
Phase 1 Launch Capability		2017	United Launch Alliance (ULA)/CO / CO	Various	SMC, LA AFB, CA	Oct 2016	Oct 2016	1	614.700	Y		Mar 2012
Phase 1 Launch Capability		2018	United Launch Alliance (ULA)/CO / CO	Various	SMC, LA AFB, CA	Oct 2017	Oct 2017	1	718.228	Y		Mar 2012
Phase 1 Launch Capability		2019	United Launch Alliance (ULA)/CO / CO	Various	SMC, LA AFB, CA	Oct 2018	Oct 2018	1	359.659	Y		Mar 2012

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** MSEELV / Evolved Expendable Launch Veh(Space)

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0604853F
Line Item MDAP/MAIS Code: 176		

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	6	3	5	4	-	4	1	2	3	4	38	66
Gross/Weapon System Cost *($ in Millions)*	1,071.904	487.918	954.555	1,237.635	-	1,237.635	734.165	1,101.442	1,259.445	1,483.922	11,280.649	19,611.635
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	1,071.904	487.918	954.555	1,237.635	-	1,237.635	734.165	1,101.442	1,259.445	1,483.922	11,280.649	19,611.635
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**1,071.904**	**487.918**	**954.555**	**1,237.635**	**-**	**1,237.635**	**734.165**	**1,101.442**	**1,259.445**	**1,483.922**	**11,280.649**	**19,611.635**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	178.651	162.639	190.911	309.409	-	309.409	734.165	550.721	419.815	370.981	296.859	297.146

Description:

Per FY 2019 National Defense Authorization Act, the Evolved Expendable Launch Vehicle (EELV) program was renamed the National Security Space Launch (NSSL) program, effective 1 Mar 2019. Funding for this exhibit is contained in Program Element (PE) 1203953F.

The NSSL program is a Major Defense Acquisition Program (MDAP) Acquisition Category (ACAT) 1D program that acquires launch services to provide critical space support to satisfy Department of Defense (DoD) warfighter, national security, and other United States Government (USG) space lift missions. The NSSL program will leverage USG inter-agency and commercial cooperation by utilizing the total launch vehicle performance and maximizing on-orbit opportunities that will expedite delivery of critical capabilities. The NSSL program provides satellite delivery to specific orbits through certified Launch Vehicle (LV) providers. In the FY 2019 budget, the NSSL program received a Congressional rescission of $53.450M. The correct total for FY 2018 is $434.468M. The correct quantity for FY 2018 is two.

NSSL procures launch services and is not a weapon system. The program provides launch capacity for the Government National Launch Forecast (NLF) requirements, but does not take ownership of any specific launch hardware. This program does not require and does not include advance procurement or initial spares. Flyaway Unit Cost is not applicable and Weapon System Unit Cost are not representative due to the mix (medium through heavy) of vehicles in the program. The requirements for NSSL launch services are derived from multiple spacecraft requirements. The Air Force procurement satisfies National Security Space (NSS) unique capabilities for NSS requirements that are beyond the scope of current commercial capability. "To Complete" projections include only known requirements at this time.

The Air Force, National Reconnaissance Office (NRO), and the National Aeronautics and Space Administration (NASA) agreed to a coordinated strategy for certification of New Entrants to launch payloads in support of NSS and other USG requirements, which has so far resulted in the certification of one New Entrant. The Air Force continues to actively work with potential New Entrants to reliably meet NSS requirements. The Government may award early integration contracts to ensure each potential offeror's launch system is compatible with the intended payload. The Air Force's intent is to compete as much as possible all launch service procurements where more than one certified provider can service the required reference orbit.

To comply with the FY 2016 National Defense Authorization Act, the Air Force ended EELV Launch Capability at the end of FY 2019. Beginning in FY 2020, the NSSL budget request is being submitted in a single P-1 line. This will merge two separate EELV program P-1 line items that were established based on the FY 2013 and FY 2014 Appropriations Acts.

In addition, beginning in FY 2020, the Air Force transferred funding for the Long Duration Propulsive EELV Secondary Payload Adapters (LDPE) to PE 1206427F, Space System Prototype Transition (SSPT), Project 645601, Appropriation RDT&E.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** MSEELV / Evolved Expendable Launch Veh(Space)	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** 0604853F
Line Item MDAP/MAIS Code: 176		

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** MSEELV / Evolved Expendable Launch Veh(Space)	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** 0604853F
Line Item MDAP/MAIS Code: 176		

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-5	Evolved Expendable Launch Veh(Space)	P-5a, P-21	A		6 / 1,071.904	3 / 487.918	5 / 954.555	4 / 1,237.635	- / -	4 / 1,237.635
P-40	**Total Gross/Weapon System Cost**				**6 / 1,071.904**	**3 / 487.918**	**5 / 954.555**	**4 / 1,237.635**	**- / -**	**4 / 1,237.635**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
FY 2020 NSSL procurement funding will acquire launch services to provide critical space support required to satisfy Department of Defense (DoD) warfighter, national security, and other US Government space lift missions while fostering inter-agency and commercial cooperation. Launch services include, but are not limited to, launch vehicle manufacturing, mission success incentives, recurring costs for Orbital Debris Mitigation Standard Practice, secondary payload adapters (i.e. multi-mission manifest adapters) and integration onto NSS or other USG agency procured launch services, launch propellants, independent mission assurance, evaluation and certification of potential New Entrants, early integration activities and analysis/support, and any other related studies to support mission requirements. Phase 2 (launch service procurement) will competitively acquire launch services from FY20-FY24 through two providers.

Beginning in FY 2020, NSSL procurement funding is also required for launch operations support tasks such as systems and factory engineering, program management, standard integration/testing, launch and range activities, infrastructure, parts obsolescence mitigation, studies and analysis, program office support and other related activities to support mission requirements to include completing Phase 1 launches that slip beyond 30 September 2019, Phase 1A extension and Phase 2 activities.

Section 1608 of the FY 2016 National Defense Authorization Act (NDAA) requires the Air Force to discontinue the Launch Capability arrangement, as structured, no later than 31 December 2019. There are three Phase 1 Atlas missions that are launching outside of the period of performance, therefore, the Air Force is using a fixed price contract sized specifically to launch these three remaining Phase 1 launches. The Air Force is not extending the Launch Capability arrangement, as structured in its prior cost-plus, mission agnostic format.

The Air Force is responsible for funding its own missions. Generally, non-Air Force launch services are funded within their respective entities (e.g. NRO, Navy).

The Space Vehicle (SV) Program offices and other partners are responsible for funding mission unique requirements, integration and testing.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MSEELV / Evolved Expendable Launch Veh(Space)	**Item Number / Title [DODIC]:** Evolved Expendable Launch Veh(Space)
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	6	3	5	4	-	4
Gross/Weapon System Cost *($ in Millions)*	1,071.904	487.918	954.555	1,237.635	-	1,237.635
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	1,071.904	487.918	954.555	1,237.635	-	1,237.635
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**1,071.904**	**487.918**	**954.555**	**1,237.635**	**-**	**1,237.635**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	178.651	162.639	190.911	309.409	-	309.409

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Launch - Launch End Item Cost																		
Recurring Cost																		
Launch Services(†)	133.529	6	801.173	115.499	3	346.498	146.088	5	730.440	211.937	4	752.960	-	-	-	188.240	4	752.960
Enterprise Systems Engineering & Integration	-	-	43.526	-	-	41.125	-	-	60.335	-	-	71.320	-	-	-	-	-	71.320
Mission Assurance	-	-	164.060	-	-	70.076	-	-	119.151	-	-	102.444	-	-	-	-	-	102.444
Launch Services Support(†)	-	-	-	-	-	-	-	-	-	174.410	1	174.410	-	-	-	174.410	1	174.410
Phase 1 Atlas V completion	-	-	-	-	-	-	-	-	-	-	-	94.790	-	-	-	-	-	94.790
Subtotal: Recurring Cost	-	-	*1,008.759*	-	-	*457.699*	-	-	*909.926*	-	-	*1,195.924*	-	-	-	-	-	*1,195.924*
Subtotal: Launch - Launch End Item Cost	**-**	**-**	***1,008.759***	**-**	**-**	***457.699***	**-**	**-**	***909.926***	**-**	**-**	***1,195.924***	**-**	**-**	**-**	**-**	**-**	***1,195.924***
Support - Support End Item Cost																		
Other Support	-	-	4.022	-	-	2.084	-	-	2.536	-	-	2.611	-	-	-	-	-	2.611
A&AS	-	-	10.282	-	-	12.006	-	-	16.089	-	-	13.400	-	-	-	-	-	13.400
FFRDC	-	-	48.841	-	-	16.129	-	-	26.004	-	-	25.700	-	-	-	-	-	25.700
Subtotal: Support - Support End Item Cost	**-**	**-**	***63.145***	**-**	**-**	***30.219***	**-**	**-**	***44.629***	**-**	**-**	***41.711***	**-**	**-**	**-**	**-**	**-**	***41.711***
Gross/Weapon System Cost	**178.651**	**6**	**1,071.904**	**162.639**	**3**	**487.918**	**190.911**	**5**	**954.555**	**309.409**	**4**	**1,237.635**	**-**	**-**	**-**	**309.409**	**4**	**1,237.635**

Remarks:

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: MSEELV / Evolved Expendable Launch Veh(Space)	Item Number / Title [DODIC]: Evolved Expendable Launch Veh(Space)
ID Code (A=Service Ready, B=Not Service Ready) : A		MDAP/MAIS Code:

A Memorandum of Understanding (MOU) between the NRO and the Air Force, dated 7 October 2011, specifies a 60/40 Air Force/NRO share ratio for Federally Funded Research and Development Center (FFRDC) Mission Assurance.

(†) indicates the presence of a P-5a

Exhibit P-5a, Procurement History and Planning: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: MSEELV / Evolved Expendable Launch Veh(Space)	Item Number / Title [DODIC]: Evolved Expendable Launch Veh(Space)

Cost Elements	OCO	FY	Contractor and Location	Method/Type or Funding Vehicle	Location of PCO	Award Date	Date of First Delivery	Qty (Each)	Unit Cost ($ M)	Specs Avail Now?	Date Revision Available	RFP Issue Date
Launch Services(†)		2016	United Launch Alliance (ULA)/SpaceX / CO/CA	Various	SMC, LA AFB, CA	Dec 2015	Feb 2019	3	139.014	Y		Mar 2012
Launch Services(†)		2017	United Launch Alliance (ULA)/SpaceX / CO/CA	Various	SMC, LA AFB, CA	Dec 2016	Dec 2019	3	134.721	Y		Mar 2012
Launch Services(†)		2018	United Launch Alliance (ULA)/SpaceX / CO/CA	Various	SMC, LA AFB, CA	Mar 2018	Mar 2020	3	115.499	Y		Jun 2017
Launch Services(†)		2019	United Launch Alliance (ULA)/SpaceX / CO/CA	Various	SMC, LA AFB, CA	Dec 2018	Nov 2020	5	146.088	Y		Jun 2017
Launch Services(†)		2020	TBD / TBD	Various	SMC, LA AFB, CA	Dec 2019	Dec 2021	4	211.937	Y		Mar 2019
Launch Services Support		2020	TBD / TBD	Various	SMC, LA AFB, CA	Dec 2019	Dec 2019	1	174.410	Y		Mar 2019

(†) indicates the presence of a P-21

Exhibit P-21, Production Schedule: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: MSEELV / Evolved Expendable Launch Veh(Space)	Item Number / Title [DODIC]: Evolved Expendable Launch Veh(Space)

Cost Elements (Units in Each)							Fiscal Year 2016												Fiscal Year 2017												BALANCE
							Calendar Year 2016															Calendar Year 2017										
OCO	MFR #	FY	SERVICE	PROC QTY	ACCEPT PRIOR TO 1 OCT 2015	BAL DUE AS OF 1 OCT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
Launch Services																															
	1	2016	AF	3	0	3			A -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
	1	2017	AF	3	0	3															A -	-	-	-	-	-	-	-	-	-	3
	1	2018	AF	3	0	3																									3
	1	2019	AF	5	0	5																									5
	2	2020	AF	4	0	4																									4
							OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	

Exhibit P-21, Production Schedule: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MSEELV / Evolved Expendable Launch Veh(Space)	**Item Number / Title [DODIC]:** Evolved Expendable Launch Veh(Space)

Cost Elements (Units in Each)							Fiscal Year 2018												Fiscal Year 2019											BALANCE
										Calendar Year 2018														Calendar Year 2019								
OCO	MFR #	FY	SERVICE	PROC QTY	ACCEPT PRIOR TO 1 OCT 2017	BAL DUE AS OF 1 OCT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
Launch Services																														
	1	2016	AF	3	0	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	1			0
	1	2017	AF	3	0	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
	1	2018	AF	3	0	3						A -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
	1	2019	AF	5	0	5															A -	-	-	-	-	-	-	-	-	-	5
	2	2020	AF	4	0	4																									4
							OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	

Exhibit P-21, Production Schedule: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MSEELV / Evolved Expendable Launch Veh(Space)	**Item Number / Title [DODIC]:** Evolved Expendable Launch Veh(Space)

Cost Elements (Units in Each)							Fiscal Year 2020												Fiscal Year 2021												BALANCE
							Calendar Year 2020												Calendar Year 2021													
OCO	MFR #	FY	SERVICE	PROC QTY	ACCEPT PRIOR TO 1 OCT 2019	BAL DUE AS OF 1 OCT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
Launch Services																															
	1	2016	AF	3	3	0																									0
	1	2017	AF	3	0	3	-	-	1	-	-	1	1																		0
	1	2018	AF	3	0	3	-	-	-	-	-	2																			1
	1	2019	AF	5	0	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	1	1	-	-	-	-	-	1
	2	2020	AF	4	0	4			A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
							OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	

Exhibit P-21, Production Schedule: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: MSEELV / Evolved Expendable Launch Veh(Space)	Item Number / Title [DODIC]: Evolved Expendable Launch Veh(Space)

Cost Elements (Units in Each)							Fiscal Year 2022												Fiscal Year 2023												BALANCE
							Calendar Year 2022												Calendar Year 2023													
OCO	MFR #	FY	SERVICE	PROC QTY	ACCEPT PRIOR TO 1 OCT 2021	BAL DUE AS OF 1 OCT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
Launch Services																															
	1	2016	AF	3	3	0																									0
	1	2017	AF	3	3	0																									0
	1	2018	AF	3	2	1																									1
	1	2019	AF	5	4	1	1																								0
	2	2020	AF	4	0	4	-	-	4																						0
							OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	

Exhibit P-21, Production Schedule: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MSEELV / Evolved Expendable Launch Veh(Space)	**Item Number / Title [DODIC]:** Evolved Expendable Launch Veh(Space)

MFR Ref #	Manufacturer Name - Location	Production Rates (Each / Year)			Procurement Leadtime (Months)							
					Initial				Reorder			
		MSR For 2020	1-8-5 For 2020	MAX For 2020	ALT Prior to Oct 1	ALT After Oct 1	Manufacturing PLT	Total After Oct 1	ALT Prior to Oct 1	ALT After Oct 1	Manufacturing PLT	Total After Oct 1
1	United Launch Alliance (ULA)/SpaceX - CO/CA				0	0	0	0	0	0	0	0
2	TBD - TBD	2	6	6	1	3	24	27	0	0	0	0

"A" in the Delivery Schedule indicates the Contract Award Date.
Note: Due to space limitations, quantities in the Exhibit P-21 delivery calendar are truncated and rounded based on the maximum quantity in the calendar as follows. If the maximum quantity is less than or equal to than 9,999, all quantities are shown as each. If the maximum quantity is between 10,000 and 999,999 all quantities are shown in thousands. If the maximum quantity is between 1,000,000 and 999,999,999 all quantities are shown in millions (rounded to the nearest thousand).If the maximum quantity is equal or greater than 1,000,000,000 all quantities are shown in billions (rounded to the nearest million).

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Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** MSSBIR / SBIR High (Space)

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: 0604441F	Other Related Program Elements: 1206441F
Line Item MDAP/MAIS Code: 210		

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	916.611	929.058	108.397	233.952	-	233.952	176.065	55.188	8.340	8.490	0.000	2,436.101
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	916.611	929.058	108.397	233.952	-	233.952	176.065	55.188	8.340	8.490	0.000	2,436.101
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**916.611**	**929.058**	**108.397**	**233.952**	**-**	**233.952**	**176.065**	**55.188**	**8.340**	**8.490**	**0.000**	**2,436.101**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Note: This program had $132.420M Advance Procurement for SBIRS SV 7-8. That effort has been canceled and Congress zeroed out the AP in the FY 2018 budget.

Note: The flyaway unit cost is not included on the P-40 exhibit because there are multiple P-5 Cost Analysis exhibits.

Funding for this exhibit contained in PE 1203915F.

The Space Based Infrared System's (SBIRS) primary mission is to provide initial warning of a ballistic missile attack on the US, its deployed forces and its allies. SBIRS enhances detection and improves reporting of intercontinental ballistic missiles, submarine launched ballistic missiles, and tactical ballistic missiles. SBIRS provides increased detection and tracking performance in order to meet requirements in the Operational Requirements Document (ORD). SBIRS will consist of satellites in Geosynchronous Earth Orbit (GEO) and in Highly Elliptical Orbit (HEO) with an integrated, centralized ground station serving all SBIRS space elements, Defense Support Program (DSP) satellites and other program related support activities. The HEO payloads operate on a classified host.

SBIRS 3-6 SATELLITES:

SBIRS GEO-3 and 4 satellites are derivatives of the first two GEO satellites which were delivered on the SBIRS Engineering and Manufacturing Development (EMD) contract (RDT&E funded). The GEO-3 and 4 satellite production efforts are necessary to meet constellation requirements. In Dec 2008, the Department approved the procurement of GEO-3 and 4 satellites and the HEO-3 and 4 payloads using a Cost-Plus contract. In order to minimize the number of storage actions and costs associated with aligning the SBIRS launches to the earliest assigned Initial Launch Capability (ILC) date of Apr 2016, the GEO-3 satellite completed production and was placed into storage in Jul 2015. The GEO-4 satellite launched as the third flight (GEO-4 Flight-3) in Jan 2017. The GEO-3 (Flight-4) satellite launched in Jan 2018.

SBIRS GEO-5 and 6 satellites are derivatives of the GEO-3 and 4 satellites and will be replacements for GEO-1 and 2. A four phased contract approach awarded non-recurring engineering and parts obsolescence using advanced procurement funds in Sep 2012, followed by award of long lead items in Feb 2013, full production in Jun 2014, and technical refresh in Jun 2015. The GEO-5 and 6 technical refresh contract modification modernizes the existing spacecraft bus design to improve commonality across Air Force and Government satellite programs, and enable compatibility with multiple launch vehicles. The full production effort includes 2 satellites with persistent infrared missile and threat warning payloads, launch vehicle integration, launch and early orbit test, dual communication band modification (unified SBand), and contractor operations support through operational acceptance.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: MSSBIR / SBIR High (Space)	
ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: 0604441F	Other Related Program Elements: 1206441F
Line Item MDAP/MAIS Code: 210		

For the GEO 5-6 block buy, the FY 2013 NDAA authorizes six years of incremental production funding and limits the incrementally funded contract obligation to $3,900M. The years of incremental funding are FY 2013-2018. Advance procurement was appropriated in FY 2011 and FY 2012. GEO 5-6 advance procurement and incremental funding are attributed to FY 2013 for the purposes of identifying full funding for procurement end items. Each year of appropriation FY 2013-2018 is in two parts, the incrementally funded contract amount and annual program support costs. The incrementally funded amount complies with the NDAA cap.

SBIRS HEO-3 and 4 payloads are replenishments for HEO-1 and 2 payloads, which were delivered on the SBIRS Engineering and Manufacturing Development (EMD) contract (RDT&E funded). The HEO-1 and 2 payloads are on-orbit and certified for Integrated Tactical Warning/Attack Assessment (ITW/AA) missile warning operations and certified for technical intelligence operations. The HEO-3 payload is on-orbit and has completed its initial checkout. The HEO-4 payload was delivered to the classified host in May 2015.

Total GEO 3-4 3020/3021 funds are $2,818.760M.
Total GEO 5-6 3020/3021 funds are $3,336.571M.
Total HEO 3-4 3020/3021 funds are $1,146.672M.
Total S2E2 3080/3020/3021 funds are $394.010M.

SBIRS MOBILE AND FIXED SITE COMMUNICATIONS/ELECTRONIC REPLACEMENT: This effort procures DSP and SBIRS assets to maintain the Data Processing Sub-System. Fixed site examples include, but are not limited to, legacy receiver, antenna drive system, Spacecraft Simulator RF, MCS display, Rapid Delog (instantaneous translation of computer data to a human-readable format), Sybase database obsolescence, communications and network routers, and switches and time server replacements. Mobile system examples include, but are not limited to, aging radio frequency communications equipment, aging antenna equipment, aging electrical equipment and cabling, and unsupportable data processing subsystem components. This effort Includes the recurring hardware/software antenna obsolescence updates to peacetime survivable ground effort called Rapid Adaption GEO Relay Station (RANGERS).

SBIRS SURVIVABLE ENDURABLE EVOLUTION (S2E2): The S2E2 effort recapitalizes the DSP Mobile Ground System (MGS) DSP Mobile Ground Terminals with SBIRS Mobile Ground Terminals (SMGT) and prime mover tractor trailers. The MGS is the only US Survivable and Endurable (S/E) Tactical Warning and Attack Assessment (TW/AA) system (S/E TW/AA). It is the critical Situation Monitoring element in three national-level architectures: Integrated TW/AA System, Chairman, Joint Chiefs of Staff (CJCS) Critical Nodes, and Nuclear Command and Control System (NCCS). USSTRATCOM needs AFSPCs global S/E TW/AA operational capabilities to meet President of the United States, Joint Staff, Combatant Commander and Forward User (FU) requirements for continuous, persistent, and enduring TW/AA non-imaging infrared (NIR) for Missile Warning and static events, and Nuclear Detonation (NUDET) detection and reporting across all phases of military operations. The current MGS can only process DSP data for strategic Missile Warning and NUDET detection. This effort will address long-standing obsolescence/supportability and cyber security concerns of the MGS, enable the MGS to process SBIRS and DSP satellite data. Training software, spares and integration of Universal Ground NDS Terminals (UGNTs) are included. The shelters will also be upgraded for increased protection from high altitude electromagnetic pulse (HEMP) per MIL-STD-188-125-2.

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** MSSBIR / SBIR High (Space)
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** 0604441F / **Other Related Program Elements:** 1206441F
Line Item MDAP/MAIS Code: 210	

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)
P-5	GEO 3-4		A		- / 141.944	- / 17.787	- / -	- / -	- / -	- / -
P-5	GEO 5-6		A		- / 609.849	- / 858.843	- / 99.970	- / 128.002	- / -	- / 128.002
P-5	HEO 3-4		A		- / 28.518	- / 7.499	- / -	- / -	- / -	- / -
P-5	SBIRS Survivable Endurable Evolution (S2E2)		A		- / 128.995	- / 27.889	- / 0.685	- / 90.067	- / -	- / 90.067
P-3a	1 / SBIRS Mobile System & Fixed Comm Electronics Upgrades (Reliability & Maintainability)		B		- / 7.305	- / 17.040	- / 7.742	- / 15.883	- / 0.000	- / 15.883
P-40	**Total Gross/Weapon System Cost**				**- / 916.611**	**- / 929.058**	**- / 108.397**	**- / 233.952**	**- / -**	**- / 233.952**

Exhibits Schedule					FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)	Quantity / Total Cost (Each) / ($ M)
P-5	GEO 3-4		A		- / -	- / -	- / -	- / -	- / -	- / -
P-5	GEO 5-6		A		- / -	- / -	- / -	- / -	- / -	- / -
P-5	HEO 3-4		A		- / -	- / -	- / -	- / -	- / -	- / -
P-5	SBIRS Survivable Endurable Evolution (S2E2)		A		- / -	- / -	- / -	- / -	- / -	- / -
P-3a	1 / SBIRS Mobile System & Fixed Comm Electronics Upgrades (Reliability & Maintainability)		B		- / 71.026	- / 55.188	- / 8.340	- / 8.490	- / -	- / 191.014
P-40	**Total Gross/Weapon System Cost**				**- / 176.065**	**- / 55.188**	**- / 8.340**	**- / 8.490**	**- / 0.000**	**- / 2,436.101**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
FY 2020 funding provides for launch integration and early on orbit test for GEO-5 and 6 satellites, resilience efforts and continued program/product support.

FY 2020 funding procures SBIRS mobiles/ground hardware and/or software. SBIRS Mobile System & Fixed Site Communications/Electronics Upgrades. The RANGERS upgrade to the Survivable Mission Control Station (SMCS) and Survivable Remote Ground Station (SRGS)antennas to common GEO capable antennas required to provide Survivable GEO downlink capability and reduce SRGS sustainment posture risk.

FY 2020 S2E2 Funds are required to deliver initial SBIRS ORD survivable and endurable performance requirements. The updated program baseline will deliver S2E2 through Initial Operating Capability (IOC) and bring SBIRS GEO and GPS NUDET into the USSTRATCOM NC3 endurable mission. Funding also provides Interim Contractor Support (ICS).

Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. These activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.

Efforts with funding starting in FY 2021 through FY 2024 are summarized on the P-40. Not all details of this funding are included in this P-40 exhibit set. A summary of the excepted details is as follows:

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: MSSBIR / SBIR High (Space)	
ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: 0604441F	Other Related Program Elements: 1206441F
Line Item MDAP/MAIS Code: 210		

(a) FY 2021 Cost Delta: 105.039 million

(b) FY Total Cost Delta: 2,245.087 million

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MSSBIR / SBIR High (Space)	**Item Number / Title [DODIC]:** GEO 3-4
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	141.944	17.787	-	-	-	-
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	141.944	17.787	-	-	-	-
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**141.944**	**17.787**	**-**	**-**	**-**	**-**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Space Vehicle - GEO 3-4 Cost																		
Recurring Cost																		
GEO 3-4 Hardware	-	-	0.342	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GEO 3-4 Integration and Assembly	-	-	1.282	-	-	13.535	-	-	-	-	-	-	-	-	-	-	-	-
GEO 3-4 Enterprise Systems Engineering & Integration (SE&I)	-	-	14.853	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Recurring Cost	-	-	*16.477*	-	-	*13.535*	-	-	-	-	-	-	-	-	-	-	-	-
Non Recurring Cost																		
GEO 3-4 Launch Vehicle and Range Integration	-	-	5.772	-	-	0.500	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Non Recurring Cost	-	-	*5.772*	-	-	*0.500*	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Space Vehicle - GEO 3-4 Cost	**-**	**-**	***22.249***	**-**	**-**	***14.035***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Checkout and Launch - GEO 3-4 Cost																		
GEO 3-4 Launch Ops & Checkout	-	-	72.112	-	-	3.752	-	-	-	-	-	-	-	-	-	-	-	-
Interim Contractor Support (ICS)	-	-	47.583	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Checkout and Launch - GEO 3-4 Cost	**-**	**-**	***119.695***	**-**	**-**	***3.752***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Gross/Weapon System Cost	**-**	**-**	**141.944**	**-**	**-**	**17.787**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MSSBIR / SBIR High (Space)	**Item Number / Title [DODIC]:** GEO 3-4
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Remarks:
Total GEO 3-4 3020/3021 funds are $2,818.760M.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MSSBIR / SBIR High (Space)	**Item Number / Title [DODIC]:** GEO 5-6
ID Code (A=Service Ready, B=Not Service Ready) : A	**MDAP/MAIS Code:**	

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	609.849	858.843	99.970	128.002	-	128.002
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	609.849	858.843	99.970	128.002	-	128.002
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**609.849**	**858.843**	**99.970**	**128.002**	**-**	**128.002**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	0.000	-	0.000
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Space Vehicle - GEO 5-6 Cost																		
Recurring Cost																		
GEO 5-6 Hardware	-	-	307.148	-	-	194.783	-	-	3.402	-	-	3.461	-	-	-	-	-	3.461
GEO 5-6 Integration and Assembly	-	-	107.889	-	-	312.515	-	-	19.279	-	-	24.611	-	-	-	-	-	24.611
GEO 5-6 Enterprise Systems Engineering & Integration (SE&I)	-	-	17.114	-	-	19.975	-	-	5.869	-	-	6.743	-	-	-	-	-	6.743
Technical Mission Analysis	-	-	49.203	-	-	14.095	-	-	6.082	-	-	6.075	-	-	-	-	-	6.075
Subtotal: Recurring Cost	-	-	*481.354*	-	-	*541.368*	-	-	*34.632*	-	-	*40.890*	-	-	-	-	-	*40.890*
Non Recurring Cost																		
GEO 5-6 Obsolescence Non-Recurring	-	-	41.385	-	-	5.012	-	-	-	-	-	-	-	-	-	-	-	-
GEO 5-6 Launch Vehicle and Range Integration	-	-	4.029	-	-	23.844	-	-	8.428	-	-	25.464	-	-	-	-	-	25.464
Subtotal: Non Recurring Cost	-	-	*45.414*	-	-	*28.856*	-	-	*8.428*	-	-	*25.464*	-	-	-	-	-	*25.464*
Subtotal: Space Vehicle - GEO 5-6 Cost	**-**	**-**	***526.768***	**-**	**-**	***570.224***	**-**	**-**	***43.060***	**-**	**-**	***66.354***	**-**	**-**	**-**	**-**	**-**	***66.354***
Checkout and Launch - GEO 5-6 Cost																		
GEO 5-6 Launch Ops & Checkout	-	-	0.500	-	-	212.116	-	-	6.045	-	-	13.459	-	-	-	-	-	13.459

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: MSSBIR / SBIR High (Space)	Item Number / Title [DODIC]: GEO 5-6
ID Code (A=Service Ready, B=Not Service Ready) : A	MDAP/MAIS Code:	

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Interim Contractor Support (ICS)	-	-	-	-	-	26.884	-	-	25.000	-	-	25.000	-	-	-	-	-	25.000
Subtotal: Checkout and Launch - GEO 5-6 Cost	***-***	***-***	***0.500***	***-***	***-***	***239.000***	***-***	***-***	***31.045***	***-***	***-***	***38.459***	***-***	***-***	***-***	***-***	***-***	***38.459***
Support - GEO 5-6 Cost																		
Other Support	-	-	30.854	-	-	23.171	-	-	6.867	-	-	6.883	-	-	-	-	-	6.883
FFRDC	-	-	21.818	-	-	8.844	-	-	9.923	-	-	9.913	-	-	-	-	-	9.913
A&AS	-	-	29.909	-	-	17.604	-	-	9.075	-	-	6.393	-	-	-	-	-	6.393
Subtotal: Support - GEO 5-6 Cost	***-***	***-***	***82.581***	***-***	***-***	***49.619***	***-***	***-***	***25.865***	***-***	***-***	***23.189***	***-***	***-***	***-***	***-***	***-***	***23.189***
Gross/Weapon System Cost	**-**	**-**	**609.849**	**-**	**-**	**858.843**	**-**	**-**	**99.970**	**-**	**-**	**128.002**	**-**	**-**	**-**	**-**	**-**	**128.002**

Remarks:

The incrementally funded amount includes the above Total Space Vehicle Cost (less: SE&I,Launch Vehicle & Range Integration, and Interim Contractor Support) and Launch Ops & Checkout Cost. Total incrementally funded amount of $2,883.5M complies with FY13 NDAA limiting procurement cost to $3,900M.

The FY 2013 gross weapon system cost includes advance procurement amount of $243.314M appropriated in FY 2011 and $243.500M appropriated in FY12.

Total GEO 5-6 3020/3021 funds are $3,336.571M.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MSSBIR / SBIR High (Space)	**Item Number / Title [DODIC]:** HEO 3-4
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	28.518	7.499	-	-	-	-
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	28.518	7.499	-	-	-	-
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**28.518**	**7.499**	**-**	**-**	**-**	**-**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Space Vehicle - HEO 3-4 Cost																		
Recurring Cost																		
HEO 3-4 Integration and Assembly	-	-	0.244	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Recurring Cost	-	-	*0.244*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non Recurring Cost																		
HEO 3-4 Launch Vehicle and Range Integration	-	-	0.244	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Non Recurring Cost	-	-	*0.244*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Space Vehicle - HEO 3-4 Cost	**-**	**-**	***0.488***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Checkout and Launch - HEO 3-4 Cost																		
HEO Host Accommodation	-	-	2.468	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HEO 3-4 Launch Ops & Checkout	-	-	25.162	-	-	7.499	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Checkout and Launch - HEO 3-4 Cost	**-**	**-**	***27.630***	**-**	**-**	***7.499***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Support - HEO 3-4 Cost																		
Other Support	-	-	0.400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Support - HEO 3-4 Cost	**-**	**-**	***0.400***	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: MSSBIR / SBIR High (Space)	Item Number / Title [DODIC]: HEO 3-4
ID Code (A=Service Ready, B=Not Service Ready) : A		MDAP/MAIS Code:

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Gross/Weapon System Cost	-	-	28.518	-	-	7.499	-	-	-	-	-	-	-	-	-	-	-	-

Remarks:
Total HEO 3-4 3020/3021 funds are $1,146.672M.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MSSBIR / SBIR High (Space)	**Item Number / Title [DODIC]:** SBIRS Survivable Endurable Evolution (S2E2)
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	128.995	27.889	0.685	90.067	-	90.067
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	128.995	27.889	0.685	90.067	-	90.067
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**128.995**	**27.889**	**0.685**	**90.067**	**-**	**90.067**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Hardware - SBIRS Survivable Endurable Evolution (S2E2) Cost																		
Recurring Cost																		
2.5 S2E2 SMGT	30.452	2	60.903	-	-	5.776	-	-	0.343	-	-	0.334	-	-	-	-	-	0.334
Subtotal: Recurring Cost	-	-	*60.903*	-	-	*5.776*	-	-	*0.343*	-	-	*0.334*	-	-	-	-	-	*0.334*
Non Recurring Cost																		
2.2 S2E2 Software Integration Facility (SIF)	-	-	0.000	-	-	0.000	-	-	-	-	-	-	-	-	-	-	-	-
2.4 S2E2 SMGT 1-3 DSP/GEO Stereo Capability Modification	10.729	3	32.187	-	-	15.492	-	-	0.342	-	-	74.544	-	-	-	-	-	74.544
2.6 S2E2 Integration	-	-	17.532	-	-	4.943	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Non Recurring Cost	-	-	*49.719*	-	-	*20.435*	-	-	*0.342*	-	-	*74.544*	-	-	-	-	-	*74.544*
Subtotal: Hardware - SBIRS Survivable Endurable Evolution (S2E2) Cost	**-**	**-**	***110.622***	**-**	**-**	***26.211***	**-**	**-**	***0.685***	**-**	**-**	***74.878***	**-**	**-**	**-**	**-**	**-**	***74.878***
Software - SBIRS Survivable Endurable Evolution (S2E2) Cost																		
Non Recurring Cost																		
2.1 S2E2 Software	18.373	1	18.373	-	-	1.678	-	-	-	-	-	15.189	-	-	-	-	-	15.189
Subtotal: Non Recurring Cost	-	-	*18.373*	-	-	*1.678*	-	-	-	-	-	*15.189*	-	-	-	-	-	*15.189*

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MSSBIR / SBIR High (Space)	**Item Number / Title [DODIC]:** SBIRS Survivable Endurable Evolution (S2E2)
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Subtotal: Software - SBIRS Survivable Endurable Evolution (S2E2) Cost	-	-	***18.373***	-	-	***1.678***	-	-	-	-	-	***15.189***	-	-	-	-	-	***15.189***
Gross/Weapon System Cost	-	-	**128.995**	-	-	**27.889**	-	-	**0.685**	-	-	**90.067**	-	-	-	-	-	**90.067**

Remarks:
SBIRS Survivable Endurable Evolution (S2E2): SBIRS capable MGS require the interim deliverables over this period as described below.

S2E2 Software Non-Recurring:
-FY 2016 (Prior Year) - Provided training software for Standardized Space Trainer. (SPAF funded)

S2E2 Hardware Non-Recurring:
-FY 2016 (Prior Year) - Modified SMGTs 1-3 to add PDSS antennas and other hardware for full Stereo DSP/GEO capability; completes UGNT integration (SPAF funded)

S2E2 Hardware Recurring:
-FY 2015 (Prior Year) - Procured 1 fully tested and sustainable GEO SMGT with two PDSSs. Procures the System Test Environment (STE) for high fidelity Development, Testing & Evaluation (DT&E) and future sustainment.
-FY 2016 (Prior Year) - Procured 2 fully capable Stereo DSP/GEO SMGTs with two PDSSs each, as well as 9 additional PDSSs needed to field full, simultaneous DSP and SBIRS downlink capability for FOC. (SPAF funded)

Total S2E2 Funding for FY 2011-2021 = $394.010M
Quantity = 5

Gross Unit Cost = $78.802M

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MSSBIR / SBIR High (Space)	**Modification Number / Title:** 1 / SBIRS Mobile System & Fixed Comm Electronics Upgrades
ID Code (A=Service Ready, B=Not Service Ready) : B		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	7.305	17.040	7.742	15.883	0.000	15.883	71.026	55.188	8.340	8.490	-	191.014
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	7.305	17.040	7.742	15.883	0.000	15.883	71.026	55.188	8.340	8.490	-	191.014
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**7.305**	**17.040**	**7.742**	**15.883**	**0.000**	**15.883**	**71.026**	**55.188**	**8.340**	**8.490**	**-**	**191.014**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

SBIRS MOBILE AND FIXED SITE COMMUNICATIONS/ELECTRONIC REPLACEMENT: This effort procures DSP and SBIRS assets to maintain the ground system equipment. Fixed site examples include, but are not limited to, legacy receiver, antenna drive system, Spacecraft Simulator RF, MCS display, Rapid Delog (instantaneous translation of computer data to a human-readable format), Sybase database obsolescence, communications and network routers, and switches and time server replacements. Mobile system examples include, but are not limited to, aging radio frequency communications equipment, aging antenna equipment, aging electrical equipment and cabling, and unsupportable data processing subsystem components. Funding also provides for Program Office and related support activities to include but not limited to, Systems Engineering and Technical Assistance (SETA) enterprise activities which provides intra-and inter-program office support. Funding for this effort is in program element 1203915F.

This effort includes the recurring hardware/software antenna obsolescence updates to peacetime survivable ground effort called Rapid Adaption GEO Relay Station (RANGERS).

Milestone/Development Status

Program office has recurring DSP and SBIRS requirements that is planned and programmed on an annual basis to maintain the ground system equipment.

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MSSBIR / SBIR High (Space)	**Modification Number / Title:** 1 / SBIRS Mobile System & Fixed Comm Electronics Upgrades
ID Code (A=Service Ready, B=Not Service Ready) : B	**MDAP/MAIS Code:**	
Models of Systems Affected: SBIRS	**Modification Type:** Reliability & Maintainability	**Related RDT&E PEs:**

Financial Plan	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*
Procurement												
Modification Item 1 of 1: SBIRS Mobiles Sys & Fixed Comm Elect Upgrades												
B Kits												
Recurring												
SBIRS Mobiles Sys & Fixed Comm Elect Upgrades:EQUIPMENT Group B (Active)	1 / 3.735	1 / 15.612	1 / 6.292	1 / 13.229	- / -	1 / 13.229	1 / 69.425	1 / 53.531	1 / 6.540	- / 6.671	- / -	7 / 175.035
Subtotal: Recurring	*- / 3.735*	*- / 15.612*	*- / 6.292*	*- / 13.229*	*- / -*	*- / 13.229*	*- / 69.425*	*- / 53.531*	*- / 6.540*	*- / 6.671*	*- / -*	*- / 175.035*
Subtotal: SBIRS Mobiles Sys & Fixed Comm Elect Upgrades	*- / 3.735*	*- / 15.612*	*- / 6.292*	*- / 13.229*	*- / -*	*- / 13.229*	*- / 69.425*	*- / 53.531*	*- / 6.540*	*- / 6.671*	*- / -*	*- / 175.035*
Subtotal: Procurement, All Modification Items	*- / 3.735*	*- / 15.612*	*- / 6.292*	*- / 13.229*	*- / -*	*- / 13.229*	*- / 69.425*	*- / 53.531*	*- / 6.540*	*- / 6.671*	*- / -*	*- / 175.035*
Support *(All Modification Items)*												
OTHER GOVT	- / 0.000	- / 0.000	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / 0.000
A&AS	- / 3.570	- / 1.428	- / 1.450	- / 2.654	- / -	- / 2.654	- / 1.601	- / 1.657	- / 1.800	- / 1.819	- / -	- / 15.979
Subtotal: Support	*- / 3.570*	*- / 1.428*	*- / 1.450*	*- / 2.654*	*- / -*	*- / 2.654*	*- / 1.601*	*- / 1.657*	*- / 1.800*	*- / 1.819*	*- / -*	*- / 15.979*
Installation												
Subtotal: Installation	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*
Total												
Total Cost (Procurement + Support + Installation)	**7.305**	**17.040**	**7.742**	**15.883**	**0.000**	**15.883**	**71.026**	**55.188**	**8.340**	**8.490**	**-**	**191.014**

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** MSSBIR / SBIR High (Space)	**Modification Number / Title:** 1 / SBIRS Mobile System & Fixed Comm Electronics Upgrades

ID Code (A=Service Ready, B=Not Service Ready) : B	**MDAP/MAIS Code:**

Modification Item 1 of 1: SBIRS Mobiles Sys & Fixed Comm Elect Upgrades

Manufacturer Information

Manufacturer Name: Lockheed Martin Space Systems	Manufacturer Location: Colorado Springs, CO
Administrative Leadtime *(in Months)*: 8	Production Leadtime *(in Months)*: 12

Dates	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Contract Dates	Feb 2019	Jun 2019	Jun 2020	Jun 2021	Jun 2022	Jun 2023	Jun 2024
Delivery Dates	Mar 2021	Jun 2020	Jun 2021	Jun 2022	Jun 2023	Jun 2024	Jun 2025

Installation Information

Method of Implementation (Organic): Org/Intermediate	**Installation Quantity:** 7

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Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** NUDETS / NUDET Detection System

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 1203913F

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	6.370	7.705	7.432	-	7.432	6.645	6.780	6.907	0.000	-	41.839
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	6.370	7.705	7.432	-	7.432	6.645	6.780	6.907	0.000	-	41.839
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**6.370**	**7.705**	**7.432**	**-**	**7.432**	**6.645**	**6.780**	**6.907**	**0.000**	**-**	**41.839**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

The United States Nuclear Detonation (NUDET) Detection System (USNDS) provides a near real-time worldwide, highly survivable/endurable capability to detect, locate, and report any nuclear detonations in the atmosphere of the earth or in near space. The USNDS Operational Requirements Document (ORD), dated 21 Jan 2004, documents the requirements for space-based NUDET detection. Space-based NUDET detection is also mandated by Public Law 110-181, dated 28 Jan 2008, which directs the Secretary of Defense (SECDEF) to maintain the capability for space-based nuclear detection at or above 2008 capability levels. USNDS supports NUDET detection requirements across five mission areas: Integrated Tactical Warning and Attack Assessment (ITW/AA), Nuclear Force Management (NFM), Space Control (SC), Treaty Monitoring (TM) and a classified mission.

The USNDS 6 program is jointly sponsored and funded by the Department of Defense (DoD), through the Air Force (AF), and the Department of Energy (DOE), through the National Nuclear Security Administration (NNSA) and its Nuclear Detonation Detection (NA-22) office, respectively. NNSA/NA-22 supplies USNDS space sensors as Government Furnished Equipment (GFE) to the AF USNDS Program Office, which is responsible for all acquisition and systems engineering, integration and test (SEI&T) activities on space vehicles (SVs), to include Global Positioning System (GPS) and additional hosts, and their supporting ground control segments. The AF directly funds the procurement of the USNDS 6 ground segment (described below).

DoD funds its contribution to the USNDS program in Program Element (PE) 1203913F with Research Development, Test and Evaluation (RDT&E), Space Procurement AF (SPAF), and Operations and Maintenance (O&M) dollars. USNDS payload integration onto GPS satellites is funded in the GPS III Space Segment PE 1203265F for GPS III SVs. USNDS payload integration onto Geosynchronous Earth Orbit (GEO) satellites is funded by NNSA/NA-22.

USNDS consists of space sensors and complex ground segments. The space segment sensors, funded by DOE, consists of three nuclear detection sensor payloads: the Radiation Detection Capability (RADEC) payload for Defense Support Program (DSP) satellites, the Global Burst Detection (GBD) payload for Medium Earth Orbit (MEO) platforms (GPS satellites), and the Space Atmospheric Burst Reporting System (SABRS) payload for GEO platforms (classified GEO hosts). Together, these sensors and associated communications capabilities provided by the host satellites comprise the global NUDET space segment detection capability for the USNDS. Space sensors communicate NUDET indications to the fixed ground segment (the RADEC Data Processor (RDP), the Integrated Correlation and Display System (ICADS)) and the deployable mobile ground segment (survivable Ground NDS Terminals (GNTs), and the five survivable/endurable Universal Ground NDS Terminals (UGNTs), when fielded. The ground segment provides ground receiving analysis and reporting capabilities to national authorities, commands, and forward users as well as Department of State for the Treaty Monitoring and Verification mission.

The ground control segment is being modernized and continuously improved through an incremental evolutionary acquisition approach. Fact of life upgrades include operating system changes (Red Hat Linux) to meet information assurance requirements and hardware/software technology refreshes.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** NUDETS / NUDET Detection System	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** 1203913F
Line Item MDAP/MAIS Code: N/A		

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.

Funding for this exhibit contained in PE 1203913F, NUDET Detection System (SPACE).

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** NUDETS / NUDET Detection System
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** N/A	**Other Related Program Elements:** 1203913F
Line Item MDAP/MAIS Code: N/A		

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-5	NUDET Detection System		A		- / -	- / 6.370	- / 7.705	- / 7.432	- / -	- / 7.432
P-40	**Total Gross/Weapon System Cost**				**- / -**	**- / 6.370**	**- / 7.705**	**- / 7.432**	**- / -**	**- / 7.432**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
GROUND NUCLEAR DETONATION DETECTION TERMINALS UPGRADES/SENSOR CHECKOUT ACTIVITIES : FY 2020 funding includes but is not limited to; purchase of USNDS 6 equipment, integration and testing for the ICADS re-architecture addressing unsupportable hardware (HW) as a result of the upgrade of the Red Hat Enterprise Linux (RHEL) Operating System. The upgrade to RHEL 7.x will result in an improved cyber security posture. These upgrades will result in improved reliability and insure the continued support of the ITW/AA and NFM to the National Command Authorities. USNDS is classified as a Nuclear Command, Control and Communications (NC3) system. 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.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** NUDETS / NUDET Detection System	**Item Number / Title [DODIC]:** NUDET Detection System
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	6.370	7.705	7.432	-	7.432
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	6.370	7.705	7.432	-	7.432
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**6.370**	**7.705**	**7.432**	**-**	**7.432**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Hardware - Hardware End Item Cost																		
Recurring Cost																		
ADP + Spares	-	-	-	0.333	3	1.000	-	-	-	-	-	-	-	-	-	-	-	-
Red Hat Linux Upgrades	-	-	-	5.370	1	5.370	7.705	1	7.705	7.432	1	7.432	-	-	-	7.432	1	7.432
Subtotal: Recurring Cost	-	-	-	-	-	*6.370*	-	-	*7.705*	-	-	*7.432*	-	-	-	-	-	*7.432*
Subtotal: Hardware - Hardware End Item Cost	**-**	**-**	**-**	**-**	**-**	***6.370***	**-**	**-**	***7.705***	**-**	**-**	***7.432***	**-**	**-**	**-**	**-**	**-**	***7.432***
Gross/Weapon System Cost	**-**	**-**	**-**	**-**	**-**	**6.370**	**-**	**-**	**7.705**	**-**	**-**	**7.432**	**-**	**-**	**-**	**-**	**-**	**7.432**

Remarks:

(1) Quantity/unit cost data represents the average unit cost per system installation. Due to cost variances between local configurations, unit cost data will fluctuate between fiscal years.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** RSLP00 / Rocket Systems Launch Program

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 1206860F

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	0.000	47.609	11.473	-	11.473	57.862	12.115	63.444	64.586	-	257.089
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	0.000	47.609	11.473	-	11.473	57.862	12.115	63.444	64.586	-	257.089
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**0.000**	**47.609**	**11.473**	**-**	**11.473**	**57.862**	**12.115**	**63.444**	**64.586**	**-**	**257.089**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Per FY 2019 National Defense Authorization Act, the Evolved Expendable Launch Vehicle (EELV) program, will be renamed the National Security Space Launch program, effective 1 Mar 2019.

The Rocket Systems Launch Program (RSLP) acquires small launch services to deliver affordable, flexible spacelift for small payloads. The small launch program complements the National Security Space Launch (NSSL) program with multiple options to acquire dedicated spacelift and rideshare services for developmental, demonstration, and small operational space vehicles. The Spacelift Capability Production Document approved 31 May 2016 supports the requirement for small spacelift capability (0-8,000 lbs to low Earth through geostationary transfer orbit).

Starting in FY 2019, the Air Force uses this procurement line for small launch services procurement requirements. Previously, small launch funding resided in the satellite program budgets. This change aligns launch service procurement activities with the necessary funding under SMC's Launch Enterprise. This approach is now consistent across Air Force procured launch services and allows the Air Force the flexibility to manage dynamic manifest requirements as new launch service providers emerge.

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 does not require and does not include advance procurement or initial spares. Flyaway Unit Cost is not applicable and Weapon System Unit Cost are not representative due to the mix of vehicles in the program. RSLP procures launch services and is not a weapon system. The program provides launch capacity for the Government National Launch Forecast (NLF) requirements, but does not take ownership of any specific launch vehicle. The requirements for small launch services are derived from multiple spacecraft requirements.

Funding for this exhibit is contained in PE 1206860F.

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** RSLP00 / Rocket Systems Launch Program

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 1206860F

Line Item MDAP/MAIS Code: N/A

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-40a	Rocket Systems Launch Program				- / -	- / 0.000	- / 47.609	- / 11.473	- / -	- / 11.473
P-40	**Total Gross/Weapon System Cost**				**- / -**	**- / 0.000**	**- / 47.609**	**- / 11.473**	**- / -**	**- / 11.473**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications. Title represents the P-40a Title when only the P-40a Summary/Total is shown.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
Fiscal Year 2020 RSLP procurement funding supports small launch and rideshare services to satisfy Department of Defense (DoD) warfighter, national security, and other Government Spacelift missions. This includes range and launch complex support, independent mission assurance, early integration activities and analysis/support, and any related studies to support mission requirements. Also includes program office support and other related support activities that may include, but are not limited to cybersecurity, program management, financial management, systems engineering, studies, and technical analysis.

Exhibit P-40a, Budget Item Justification For Aggregated Items: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** RSLP00 / Rocket Systems Launch Program	**Aggregated Items Title:** Rocket Systems Launch Program

Item Number / Title [DODIC]	ID CD	MDAP/ MAIS Code	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Small Launch Service																				
Small Launch Service	A		-	-	-	-	-	0.000	47.609	1	47.609	-	-	11.473	-	-	-	-	-	11.473
Subtotal: Small Launch Service			**-**	**-**	**-**	**-**	**-**	***0.000***	**-**	**-**	***47.609***	**-**	**-**	***11.473***	**-**	**-**	**-**	**-**	**-**	***11.473***
Total			**-**	**-**	**-**	**-**	**-**	**0.000**	**-**	**-**	**47.609**	**-**	**-**	**11.473**	**-**	**-**	**-**	**-**	**-**	**11.473**

Note: Subtotals or Totals in this Exhibit P-40a may not be exact or sum exactly, due to rounding.

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Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** SPCFNC / space fence

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0604426F
Line Item MDAP/MAIS Code: 438		

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	0.000	46.361	71.784	-	71.784	11.291	0.000	0.000	0.000	-	129.436
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	0.000	46.361	71.784	-	71.784	11.291	0.000	0.000	0.000	-	129.436
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**0.000**	**46.361**	**71.784**	**-**	**71.784**	**11.291**	**0.000**	**0.000**	**0.000**	**-**	**129.436**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

The Space Fence effort is a system of ground-based sensors that improves upon the former Air Force Space Surveillance System (AFSSS), a Very High Frequency (VHF) radar operational from 1961 to 2013. The Space Fence will provide a more accurate and timely detection capability of smaller orbiting objects, primarily in low-earth orbit (LEO). The system will use higher frequency S-band radars at globally dispersed sites. As a result, it will greatly expand the uncued detection and tracking capacity of the Space Surveillance Network, from around 20,000 to up to 100,000+ objects, while working in concert with other network sensors. Space Fence site 1 will be delivered in FY 2019.

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.

Funding for this exhibit is contained in PE 1206426F. In FY 2019, Space Fence was a New Start.

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** SPCFNC / space fence

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0604426F

Line Item MDAP/MAIS Code: 438

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-5	space fence		A		- / -	- / 0.000	- / 46.361	- / 71.784	- / -	- / 71.784
P-40	**Total Gross/Weapon System Cost**				**- / -**	**- / 0.000**	**- / 46.361**	**- / 71.784**	**- / -**	**- / 71.784**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
In FY 2020, Space Fence requires funding for interim contractor support (ICS), energy costs, Space Fence Operation Center (SOC) operators, services at the SOC (US Army Strategic Command/Space and Missile Defense Center) and Diminishing Manufacturing Sources (DMS).

Start Depot Activation activities in support of ICS and activities to include, but not limited to, Technical Order management, depot-level repair funding reporting, DMS, obsolescence management and other analysis requirements.

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.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCFNC / space fence	**Item Number / Title [DODIC]:** space fence
ID Code (A=Service Ready, B=Not Service Ready) : A	**MDAP/MAIS Code:**	

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	0.000	46.361	71.784	-	71.784
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	0.000	46.361	71.784	-	71.784
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**0.000**	**46.361**	**71.784**	**-**	**71.784**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Logistics - Space Fence Cost																		
Recurring Cost																		
Interim Contractor Support	-	-	-	-	-	0.000	-	-	31.048	-	-	36.083	-	-	-	-	-	36.083
Energy	-	-	-	-	-	-	-	-	11.630	-	-	15.316	-	-	-	-	-	15.316
Security	-	-	-	-	-	-	-	-	0.339	-	-	0.331	-	-	-	-	-	0.331
Depot Activation	-	-	-	-	-	-	-	-	-	-	-	16.024	-	-	-	-	-	16.024
Subtotal: Recurring Cost	-	-	-	-	-	*0.000*	-	-	*43.017*	-	-	*67.754*	-	-	-	-	-	*67.754*
Subtotal: Logistics - Space Fence Cost	**-**	**-**	**-**	**-**	**-**	***0.000***	**-**	**-**	***43.017***	**-**	**-**	***67.754***	**-**	**-**	**-**	**-**	**-**	***67.754***
Support - Space Fence Cost																		
FFRDC	-	-	-	-	-	-	-	-	0.982	-	-	1.686	-	-	-	-	-	1.686
A&AS	-	-	-	-	-	-	-	-	2.362	-	-	2.344	-	-	-	-	-	2.344
Subtotal: Support - Space Fence Cost	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	***3.344***	**-**	**-**	***4.030***	**-**	**-**	**-**	**-**	**-**	***4.030***
Gross/Weapon System Cost	**-**	**-**	**-**	**-**	**-**	**0.000**	**-**	**-**	**46.361**	**-**	**-**	**71.784**	**-**	**-**	**-**	**-**	**-**	**71.784**

Remarks:

FY 2020: Cost increase due to first full year of projected Energy Costs and Depot Activation funded by procurement appropriation. FY 2019 Energy Costs are split between RDT&E and Space Procurement funding.

The program is completing the final year of Engineering Manufacturing and Development (RDT&E funded) in FY 2019, causing FY 2019 procurement cost to be lower in some areas. These areas cover less than a full year of support.

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: SPCFNC / space fence	Item Number / Title [DODIC]: space fence
ID Code (A=Service Ready, B=Not Service Ready) : A	MDAP/MAIS Code:	

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** SPCMOD / Space Mods

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: 1203165F, 1203699F, 1203710F	Other Related Program Elements: 0305614F, 1203710F

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	21.136	37.203	133.854	106.330	-	106.330	113.614	95.689	67.915	63.678	-	639.419
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	21.136	37.203	133.854	106.330	-	106.330	113.614	95.689	67.915	63.678	-	639.419
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**21.136**	**37.203**	**133.854**	**106.330**	**-**	**106.330**	**113.614**	**95.689**	**67.915**	**63.678**	**-**	**639.419**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Space Mods Space enables the development of advanced Command and Control (C2) Battle Management, Intelligence Surveillance and Reconnaissance (ISR), and Command, Control, Communications, Computers, and Intelligence (C4I) systems to conduct effective predictive battle space awareness, facilitate precision attack, and compress the sensor-to-shooter kill chain. Permanent modifications are configuration changes to in-service systems and equipment that correct materiel or other deficiencies, or that add or delete capability. Safety modifications correct deficiencies that produce hazards to personnel, systems, or equipment. This budget line covers both new and on-going modification efforts for space equipment and systems. Modification installation funding is budgeted in the year the installation occurs.

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.

PE 1203873F Ballistic Missile Defense Radars - P-40A

COBRA DANE is the most powerful, sensitive, and accurate Ground-based Midcourse Defense (GMD) radar and the premiere Ballistic Missile Defense (BMD) radar. At the same time it is the most accurate and capable phased array available to the Space Surveillance Network (SSN) for cataloging hazardous and difficult-to-track satellites and space debris objects that clutter the near-earth orbital regime that cannot be detected by most other SSN tracking assets. (U) COBRA DANE's primary mission is to support US Strategic Command's (USSTRATCOM) Ballistic Missile Defense mission by providing midcourse coverage for the Ballistic Missile Defense System (BMDS). COBRA DANE detects Intercontinental Ballistic Missiles (ICBMs) and Sea-Launched Ballistic Missiles (SLBMs), classifies reentry vehicles (RVs) and other missile objects, provides real-time information to the Ground-based Midcourse Defense (GMD) Fire Control (GFC), and provides tracking of threat ballistic missiles with sufficient accuracy to commit the launch of interceptors and to update the target tracks to the interceptor while the interceptor is in flight. (U) COBRA DANE's corollary mission is to support USSTRATCOM's Space Situational Awareness (SSA) mission by detecting, tracking, correlating, and characterizing man-made resident space objects, primarily in the Low-Earth Orbit (LEO) regime, including space debris and early observation of New Foreign Launches (NFL's). It operates as part of the larger Space Surveillance Network (SSN) and provides metric observation data to its command and control nodes: the Joint Space Operations Center (JSpOC) and the Distributed Space Command and Control - Dahlgren (DSC2-D (U) COBRA DANE also supports USSTRATCOM's Space Object Identification (SOI) mission by providing narrowband radar data of man-made resident space objects in the LEO regime. SOI information is used to ascertain the mission and operational status of various payloads and aids in forecasting maneuvers or deorbits. Cobra Dane mission equipment and associated sustainment suites consist of a mix of unique, custom-built components that are increasingly difficult to maintain on a 40 year old radar due to non-availability of replacement parts.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: SPCMOD / Space Mods	
ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: 1203165F, 1203699F, 1203710F	Other Related Program Elements: 0305614F, 1203710F
Line Item MDAP/MAIS Code: N/A		

Subsystems are no longer supported by the original equipment manufacturers. In addition, transmitter groups, Traveling Wave Tubes, Time Delay units and all associated components and spares requires replacement. Due to the limited spares demand rates, and indefinite system lifespan, Life of Type buys may be required to support this weapon system. Without these replacements there is a high risk that equipment failures will cause unacceptable mission downtime.

PE 1203909F Ballistic Missile Early Warning System (BMEWS) - P-40A

The BALLISTIC MISSILE EARLY WARNING SYSTEM (BMEWS) and the PAVE PHASED ARRAY WARNING SYSTEM (PAVE PAWS) are ground based radar systems with missions to support the Missile Correlation, Space Surveillance, and Missile Defense Centers. The radar systems provide United States Strategic Command (USSTRATCOM) with credible Integrated Tactical Warning/Attack Assessment (ITW/AA) data on all Sea-Launched Ballistic Missiles (SLBMs) and Inter-Continental Ballistic Missiles (ICBMs) penetrating the coverage area including Launch and Predicted Impact (L&PI) data for attack assessment and response determination. The radar systems also supports the Space Situational Awareness (SSA) network providing near-earth satellite surveillance and tracking, reporting observational (metric), SOI on man-made satellites and maintenance of the space catalog as required by the Joint Space Operations Center, Alternate Space Operations Center, and the National Air and Space Intelligence Center mitigating the significantly increasing potential for collisions with national assets, including manned space platforms. The Upgraded Early Warning Radar (UEWR) site at Beale AFB also has a Missile Defense (MD) mission supporting the Missile Defense Agency. The BMEWS and PAVE PAWS shares a common baseline and mission with the difference that BMEWS deploys more array elements on its radar faces. BMEWS radars are located at Thule Air Base, Greenland; Clear Air Force Station, AK; and Royal Air Force (RAF) Fylingdales, UK. PAVE PAWS radars are located at Beale AFB, CA and Cape Cod AFS, MA. Additionally there is a site for testing (System Program Agency) located in the Centralized Integration Support Facility (CISF) at Peterson AFB, CO. The BMEWS and PAVE PAWS mission equipment and associated sustainment suites consist of a mix of unique, custom-built components that are increasingly more difficult to maintain due to availability of replacement parts and obsolete COTS based subsystems that are no longer supported by the original equipment manufacturers. In addition, radar transmit & receive components, processing equipment, and power distribution elements, and other radar front-end equipment are 30+ years old, highly inefficient, and require replacement. Without these replacements there is a high risk that equipment failures will cause unacceptable mission downtime in order to troubleshoot and repair.

PE 1203160F DEF METEOROLOGICAL SAT PROG (SPACE)

The DEFENSE METEOROLOGICAL SATELLITE PROGRAM (DMSP) is a fully operational program supporting a broad range of national security users who require timely and accurate global weather information. DMSP is DoD only assured source of global weather data providing visible and infrared cloud cover imagery (1/3 nautical miles (nm) constant resolution) and other meteorological, oceanographic, land surface, and space environmental data. DMSP satellites are flown in sun-synchronous, 450nm polar-orbits to meet mission requirements (sun-synchronous means the satellites cross the equator at the same local sun time on each of their 14 orbits/day).

Key elements of the DMSP Command, Control, and Communication Ground System (DC3GS) have not been recapitalized since the equipment was transferred to the National Oceanic and Atmospheric Administration Office of Satellite Operations in 1998. Critical DC3GS component spares have been depleted, parts cannibalized, and are no longer sustainable. Therefore, DMSP re-established an OPAF (now SPAF) funding line beginning in FY15 to enable continued DC3GS sustainment through a selective re-capitalization effort. DC3GS subsystems to be addressed include, but are not limited to the Link/2 Communication System, and Mission Planning and Scheduling System. This selective re-capitalization effort is intended to ensure the DC3GS remains viable through the planned DMSP mission fly-out no later than 2027. 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. Programs and projects in the space warfighting enterprise are evaluating ways to maximize innovation, resiliency, and our ability to rapidly respond to known and emerging threats. Space enterprise efforts aim to execute technology risk reduction efforts, integration of new or repurposed capabilities, enterprise decision-making tools, experimentation, and rapid prototyping and fielding via all appropriate acquisition authorities and contract mechanisms.

PE 1203165F NAVSTAR GPS (SPACE AND CONTROL SEGMENTS)

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: SPCMOD / Space Mods	
ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: 1203165F, 1203699F, 1203710F	Other Related Program Elements: 0305614F, 1203710F
Line Item MDAP/MAIS Code: N/A		

NAVSTAR GLOBAL POSITIONING SYSTEM (GPS) provides highly accurate time and three dimensional position and velocity information to an unlimited number of users anywhere on or above the surface of the earth, in any weather. This system supplies highly accurate position, velocity, timing, and Nuclear Detonation (NUDET) Detection System (NDS) information to properly equipped air, land, sea, and space-based users worldwide. The GPS system consists of three segments: space, control, and user equipment. The Operational Control System (OCS) is part of the control segment and requires modifications to replace high failure rate parts and preclude system operational degradation. Without these mods, aging and obsolete equipment will excessively degrade, ultimately resulting in system failure. System failure or even partial system failure will cause a loss of operational availability and the transmission of inaccurate navigation data to worldwide users, resulting in potential loss of life and/or operational equipment, including multi-million dollar satellites. OCS is required to operate until the Next Generation Operational Control System (OCX) transitions to operations, to include support for GPS III and fielding of Modernized GPS User Equipment (MGUE).

PE 1203614F JSPOC MISSION SYSTEM

Space Situational Awareness (SSA) and Space Command and Control (C2), formerly known as JSpOC Mission System (JMS), provides integrated SSA information and Battle Management Command and Control (BMC2) of space forces for the Joint Functional Component Commander for Space (JFCC-SPACE). It will allow JFCC-SPACE to plan, direct, coordinate, and control operations of assigned forces. The enterprise provides a common government infrastructure and standards for rapid prototyping and deployment of dynamic SSA and BMC2 applications. These applications will deliver capabilities that include but are not limited to the ability to create decision-relevant views of the space environment; rapidly detect, track and characterize objects of interest; identify / exploit traditional and non-traditional sources; perform space threat analysis; and enable efficient distribution of data across the Space Surveillance Network (SSN).

PE 0305912F SLBM RADAR WARNING SYSTEM

SEA-LAUNCHED BALLISTIC MISSILE (SLBM) DETECTION AND WARNING SYSTEM: The primary mission of the 474N SLBM Detection and Warning System is to provide United States Strategic Command (USSTRATCOM) with credible Integrated Tactical Warning/Attack Assessment (ITW/AA) data on all SLBMs penetrating the coverage area. This data includes an estimation of launch and predicted impact (L&PI) locations and times. The secondary mission is to provide the Cheyenne Mountain Air Force Station, CO (CMAFS) and other users with ITW/AA data on Intercontinental Ballistic Missiles (ICBMs) penetrating the coverage area. Additionally, Perimeter Acquisition Radar Attack Characterization System (PARCS) and PAVE Phased Array Warning Systems (PAVE PAWS) support the Space Situational Awareness (SSA) mission by providing near earth satellite surveillance, tracking and identification as required by the Space Control Center, Alternate Space Control Center, and the Joint Intelligence Center. The sensors have an operational availability requirement of 98 percent. The 474N SLBM Detection and Warning System currently consists of: a) the AN/FPQ-16 PARCS and b) the AN/FPS-123 PAVE PAWS System (Phased Array Radars for SLBM Detection and Warning System).

PE 1203710F EO/IR WEATHER SYSTEMS

ELECTRO-OPTICAL/INFRARED WEATHER SYSTEMS: Residual Geostationary Operational Environmental Satellite (GOES) Relocation is a Department of Defense's (DoD) weather mitigation plan to address Space-based Environmental Monitoring (SBEM) Weather Gaps 1 (Cloud Characterization) and Gap 2 (Theater Weather Imagery) requirements over the Indian Ocean region. The requirements have been validated by the Joint Requirements Oversight Council (JROC) Memo 092-14, dated September 3, 2014. The program will leverage a residual National Oceanic and Atmospheric Agency (NOAA) on-orbit geostationary asset for the DoD use, in order to provide timely and reliable high-quality electro-optical/infrared (EO/IR) remote sensing capability that will address the critical weather data needs over the Central Command (CENTCOM) Area of Responsibility (AoR).

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** SPCMOD / Space Mods

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: 1203165F, 1203699F, 1203710F	Other Related Program Elements: 0305614F, 1203710F

Line Item MDAP/MAIS Code: N/A

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-40a	Defense Meteorological Satellite Program (SPACE)				- / -	- / 1.079	- / 1.068	- / 1.086	- / -	- / 1.086
P-3a	1 / NAVSTAR GPS-OCS COTS UPGRADE (Reliability & Maintainability)		B		- / 21.136	- / 13.654	- / 13.481	- / 30.501	- / 0.000	- / 30.501
P-40a	JSpOC Mission System				- / -	- / 3.850	- / 20.366	- / 11.368	- / -	- / 11.368
P-40a	Shared Early Warning (SEW)				- / 0.000	- / 0.000	- / 0.348	- / 0.355	- / 0.000	- / 0.355
P-40a	EO/IR Weather Systems				- / 0.000	- / 18.620	- / 49.526	- / 0.000	- / 0.000	- / 0.000
P-40a	Ballistic Missile Defense Radars				- / -	- / 0.000	- / 7.935	- / 23.380	- / -	- / 23.380
P-40a	Ballistic Missile Early Warning System (BMEWS)				- / 0.000	- / 0.000	- / 1.500	- / 1.500	- / 0.000	- / 1.500
P-3a	1 / BPP Block 02 (Reliability & Maintainability)		A		- / -	- / -	- / 18.767	- / 6.272	- / 0.000	- / 6.272
P-40a	Ballistic Missile Early Warning System (BMEWS)				- / -	- / 0.000	- / 18.446	- / 23.703	- / -	- / 23.703
P-40a	Submarine-Launched Ballistic Missile (SLBM) Radar Warning System				- / 0.000	- / 0.000	- / 1.917	- / 0.000	- / 0.000	- / 0.000
P-3a	1 / PARCS Block 02 (Reliability & Maintainability)		A		- / -	- / -	- / 0.500	- / 8.165	- / 0.000	- / 8.165
P-40	**Total Gross/Weapon System Cost**				**- / 21.136**	**- / 37.203**	**- / 133.854**	**- / 106.330**	**- / -**	**- / 106.330**

Exhibits Schedule					FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-40a	Defense Meteorological Satellite Program (SPACE)				- / -	- / -	- / -	- / -	- / -	- / -
P-3a	1 / NAVSTAR GPS-OCS COTS UPGRADE (Reliability & Maintainability)		B		- / 13.902	- / 2.043	- / 5.457	- / 0.000	- / -	- / 100.174
P-40a	JSpOC Mission System				- / -	- / -	- / -	- / -	- / -	- / -
P-40a	Shared Early Warning (SEW)				- / 0.361	- / 0.367	- / 0.374	- / 0.381	- / 0.000	- / 2.186
P-40a	EO/IR Weather Systems				- / 0.000	- / 0.000	- / 0.000	- / 0.000	- / 0.000	- / 68.146
P-40a	Ballistic Missile Defense Radars				- / -	- / -	- / -	- / -	- / -	- / -
P-40a	Ballistic Missile Early Warning System (BMEWS)				- / 1.500	- / 0.000	- / 0.000	- / 0.000	- / 0.000	- / 4.500
P-3a	1 / BPP Block 02 (Reliability & Maintainability)		A		- / 6.800	- / 0.000	- / 0.000	- / 0.000	- / -	- / 31.839
P-40a	Ballistic Missile Early Warning System (BMEWS)				- / -	- / -	- / -	- / -	- / -	- / -
P-40a	Submarine-Launched Ballistic Missile (SLBM) Radar Warning System				- / 0.000	- / 0.000	- / 0.000	- / 0.000	- / 0.000	- / 1.917
P-3a	1 / PARCS Block 02 (Reliability & Maintainability)		A		- / 8.307	- / 8.456	- / 8.615	- / 8.770	- / -	- / 42.813
P-40	**Total Gross/Weapon System Cost**				**- / 113.614**	**- / 95.689**	**- / 67.915**	**- / 63.678**	**- / -**	**- / 639.419**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications. Title represents the P-40a Title when only the P-40a Summary/Total is shown.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: SPCMOD / Space Mods	
ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: 1203165F, 1203699F, 1203710F	Other Related Program Elements: 0305614F, 1203710F
Line Item MDAP/MAIS Code: N/A		

This program, Space Mods P-40A Category BPP Block 03 Update Item New Item, is a new start.

PE 1203160F Defense Meteorological Satellite Program (SPACE) - P-40A

FY 2020 funds DC3GS Engineering Change Proposals (ECP) to subsystems that include, but are not limited to, the phase 2 development and selective recapitalization of the Telemetry and Commanding System (TCS) and updates the communications system to improve supportability. 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, prototyping, etc.

PE 1203165F NAVSTAR GPS (SPACE AND CONTROL SEGMENTS)

FY 2020 GPS OCS Commercial Off The Shelf (COTS) Upgrade: FY 2020 funding procures GPS Architecture Evolution Plan (AEP), GPS Information Network (GIN), and Launch Anomaly Resolution and Disposal Operations (LADO) commercial equipment that has become obsolete/unsupportable or requires upgrades. Funding will procure equipment for the OCS ground sites including the Master Control Station (MCS), Alternate Master Control Station (AMCS), four Ground Antennas (GAs), six Monitor Stations (MSs), a contractor lab facility, and the Telecommunications Simulator Test Set (TSTS). Modifications include required procurement, nonrecurring engineering, installation, testing, configuration management, security, quality assurance and technical documentation. Funding also procures cybersecurity enhancements to mitigate shortfalls in the legacy system. Funding sustains OCS until OCX transitions to operations, to include support for GPS III and fielding of Modernized GPS User Equipment (MGUE). 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.

The GPS FY 2020 funding request was reduced by $3.375 million to account for the availability of prior year execution balances.

PE 1203614F JSpOC Mission System - P-40A

FY 2020 funds will procure common enterprise infrastructure and applications compliant with Open Mission System/Universal Control and Interface (OMS/UCI architecture enabling the interoperability of JMS and future Space Situational Awareness (SSA)/Battle Management Command and Control (BMC2) capabilities.

The JMS FY 2020 funding request was reduced by $5.586 million to account for the availability of prior year execution balances.

PE 1203873F Ballistic Missile Defense Radars - P-40A

Cobra Dane Block 00: FY 2020 will fund Cobra Dane modification efforts and Capital Equipment Replacement of unsupportable mission and support equipment and initial spares to include, but not limited to, Transmitter Group Replacement and associated components. In addition, we will fund ongoing program management administrative costs supporting these efforts.

Cobra Dane Block 01:FY 2020 will fund Cobra Dane modification efforts and Capital Equipment Replacement of unsupportable mission and support equipment and initial spares to include, but not limited to, Traveling Wave Tubes replacements and associated components. In addition, we will fund ongoing program management administrative costs supporting these efforts.

PE 1203909F Ballistic Missile Early Warning System (BMEWS) - P-40A

BPP Block 00 Update: This effort was formerly called BMEWS Block 00 Update and PAVE PAWS Block 00 Update was formerly funded in 3080F/03/8 BPAC 838010 Comm Elect Mods. Starting in FY 2019 it is combined and funded in SPAF Space Mods. FY 2020 will fund ongoing program management administrative costs supporting BMEWS/PAVE PAWS modification efforts and will fund Capital Equipment Replacement of unsupportable mission and support equipment and initial spares to include, but not limited to, sub-array power supplies (SAPS) and associated components. Due to the limited spares demand rates, and indefinite system lifespan, Life of Type buys may be required to support this weapon system.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** 1203165F, 1203699F, 1203710F	**Other Related Program Elements:** 0305614F, 1203710F
Line Item MDAP/MAIS Code: N/A		

BPP Block 01 Update: This effort was formerly called BMEWS Block 01 Update and PAVE PAWS Block 01 Update was formerly funded in 3080F/03/8 BPAC 838010 Comm Elect Mods. Starting in FY 2019 it is combined and funded in SPAF Space Mods. FY 2020 will fund ongoing program management administrative costs supporting BMEWS/PAVE PAWS modification efforts and will fund Capital Equipment Replacement of unsupportable mission and support equipment and initial spares to include, but not limited to, array group drivers (AGDs) and associated components. Due to the limited spares demand rates, and indefinite system lifespan, Life of Type buys may be required to support this weapon system.

EO/IR Weather Systems: No FY 2020 funding requested

Efforts with funding starting in FY 2021 through FY 2024 are summarized on the P-40. Not all details of this funding are included in this P-40 exhibit set. A summary of the excepted details is as follows:

(a) FY 2021 Cost Delta: 82.744 million
(b) FY 2022 Cost Delta: 84.823 million
(c) FY 2023 Cost Delta: 53.469 million
(d) FY 2024 Cost Delta: 54.527 million
(e) FY Total Cost Delta: 387.844 million

Exhibit P-40a, Budget Item Justification For Aggregated Items: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	**Aggregated Items Title:** Defense Meteorological Satellite Program (SPACE)

Item Number / Title [DODIC]	ID CD	MDAP/ MAIS Code	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Uncategorized																				
Communications	A		-	-	-	-	-	1.079	-	-	1.068	-	-	1.086	-	-	-	-	-	1.086
Subtotal: Uncategorized			**-**	**-**	**-**	**-**	**-**	***1.079***	**-**	**-**	***1.068***	**-**	**-**	***1.086***	**-**	**-**	**-**	**-**	**-**	***1.086***
Total			**-**	**-**	**-**	**-**	**-**	**1.079**	**-**	**-**	**1.068**	**-**	**-**	**1.086**	**-**	**-**	**-**	**-**	**-**	**1.086**

Note: Subtotals or Totals in this Exhibit P-40a may not be exact or sum exactly, due to rounding.

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	**Modification Number / Title:** 1 / NAVSTAR GPS-OCS COTS UPGRADE

ID Code (A=Service Ready, B=Not Service Ready) : B

MDAP/MAIS Code:

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	21.136	13.654	13.481	30.501	0.000	30.501	13.902	2.043	5.457	0.000	-	100.174
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	21.136	13.654	13.481	30.501	0.000	30.501	13.902	2.043	5.457	0.000	-	100.174
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**21.136**	**13.654**	**13.481**	**30.501**	**0.000**	**30.501**	**13.902**	**2.043**	**5.457**	**0.000**	**-**	**100.174**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Funding procures GPS Architecture Evolution Plan (AEP), GPS Information Network (GIN), and Launch Anomaly Resolution and Disposal Operations (LADO) commercial equipment that has become obsolete/ unsupportable or requires upgrades. Funding will procure equipment for the OCS ground sites including the Master Control Station (MCS), Alternate Master Control Station (AMCS), four Ground Antennas (GAs), six Monitor Control Stations (MCS), Contractor Lab Facility and Telecommunications Simulator Test Set (TSTS). Modifications include required procurement, non-recurring engineering, installation, testing, configuration management, security, quality assurance and technical documentation. Funding also procures cybersecurity enhancements to mitigate shortfalls in the legacy system. Funding sustains OCS until OCX transitions to operations, to include support for GPS III and fielding of Military GPS User Equipment (MGUE).

Milestone/Development Status

Development funding for the OCS is in PE 0305165F. Program complete in FY2013.

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	**Modification Number / Title:** 1 / NAVSTAR GPS-OCS COTS UPGRADE
ID Code (A=Service Ready, B=Not Service Ready) : B	**MDAP/MAIS Code:**	
Models of Systems Affected: GPS-OCS	**Modification Type:** Reliability & Maintainability	**Related RDT&E PEs:**

Financial Plan	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*
Procurement												
Modification Item 1 of 2: Cybersecurity												
A Kits												
Recurring												
Cybersecurity:INSTALL KITS Group A (Active)	- / -	- / -	- / -	1 / 19.420	- / -	1 / 19.420	- / -	- / -	- / -	- / -	- / -	1 / 19.420
Subtotal: Recurring	- / -	- / -	- / -	- / *19.420*	- / -	- / *19.420*	- / -	- / -	- / -	- / -	- / -	- / *19.420*
Subtotal: Cybersecurity	- / -	- / -	- / -	- / *19.420*	- / -	- / *19.420*	- / -	- / -	- / -	- / -	- / -	- / *19.420*
Modification Item 2 of 2: Install Kits												
A Kits												
Recurring												
Install Kits:INSTALL KITS Group A (Active)	28 / 7.640	14 / 6.820	14 / 6.820	14 / 4.764	- / -	14 / 4.764	14 / 6.820	- / -	- / -	- / -	- / -	84 / 32.864
Subtotal: Recurring	- / *7.640*	- / *6.820*	- / *6.820*	- / *4.764*	- / -	- / *4.764*	- / *6.820*	- / -	- / -	- / -	- / -	- / *32.864*
B Kits												
Recurring												
Install Kits:EQUIPMENT Group B (Active)	28 / 3.133	14 / 1.413	14 / 1.413	14 / 1.413	- / -	14 / 1.413	14 / 1.413	- / -	- / -	- / -	- / -	84 / 8.785
Subtotal: Recurring	- / *3.133*	- / *1.413*	- / *1.413*	- / *1.413*	- / -	- / *1.413*	- / *1.413*	- / -	- / -	- / -	- / -	- / *8.785*
Subtotal: Install Kits	- / *10.773*	- / *8.233*	- / *8.233*	- / *6.177*	- / -	- / *6.177*	- / *8.233*	- / -	- / -	- / -	- / -	- / *41.649*
Subtotal: Procurement, All Modification Items	- / *10.773*	- / *8.233*	- / *8.233*	- / *25.597*	- / -	- / *25.597*	- / *8.233*	- / -	- / -	- / -	- / -	- / *61.069*
Support *(All Modification Items)*												
GROUP A: TOTAL NONRECURRING	- / 3.474	- / 0.668	- / 0.640	- / 0.640	- / -	- / 0.640	- / 0.640	- / -	- / 3.375	- / -	- / -	- / 9.437
Data	- / 2.060	- / 2.344	- / 2.196	- / 1.319	- / -	- / 1.319	- / 2.629	- / 1.663	- / 1.702	- / 0.000	- / -	- / 13.913
SUPPORT-EQUIP	- / 0.794	- / 0.377	- / 0.380	- / 0.380	- / -	- / 0.380	- / 0.380	- / 0.380	- / 0.380	- / 0.000	- / -	- / 3.071
Subtotal: Support	- / *6.328*	- / *3.389*	- / *3.216*	- / *2.339*	- / -	- / *2.339*	- / *3.649*	- / *2.043*	- / *5.457*	- / *0.000*	- / -	- / *26.421*
Installation												
Modification Item 1 of 2: Cybersecurity	- / -	- / -	- / -	1 / 0.580	- / -	1 / 0.580	- / -	- / -	- / -	- / -	- / -	1 / 0.580
Modification Item 2 of 2: Install Kits	28 / 4.035	14 / 2.032	14 / 2.032	14 / 1.985	- / -	14 / 1.985	14 / 2.020	- / -	- / -	- / -	- / -	84 / 12.104
Subtotal: Installation	*28 / 4.035*	*14 / 2.032*	*14 / 2.032*	*15 / 2.565*	- / -	*15 / 2.565*	*14 / 2.020*	- / -	- / -	- / -	- / -	*85 / 12.684*
Total												
Total Cost (Procurement + Support + Installation)	**21.136**	**13.654**	**13.481**	**30.501**	**0.000**	**30.501**	**13.902**	**2.043**	**5.457**	**0.000**	**-**	**100.174**

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	**Modification Number / Title:** 1 / NAVSTAR GPS-OCS COTS UPGRADE

ID Code (A=Service Ready, B=Not Service Ready) : B | **MDAP/MAIS Code:**

Modification Item 1 of 2: Cybersecurity

Manufacturer Information

Manufacturer Name: Lockheed Martin	Manufacturer Location: Various
Administrative Leadtime *(in Months)*: 0	Production Leadtime *(in Months)*: 0

Dates	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Contract Dates							
Delivery Dates							

Installation Information

Method of Implementation: Contract Field Team

Installation Cost	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*
Prior Years	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2018	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2019	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2020	- / -	- / -	- / -	1 / 0.580	- / -	1 / 0.580	- / -	- / -	- / -	- / -	- / -	1 / 0.580
FY 2021	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2022	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2023	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2024	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
To Complete	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
Total	- / -	- / -	- / -	1 / 0.580	- / -	1 / 0.580	- / -	- / -	- / -	- / -	- / -	1 / 0.580

Installation Schedule

	PYS	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				TC	Tot
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
In	0	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1
Out	0	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	**Modification Number / Title:** 1 / NAVSTAR GPS-OCS COTS UPGRADE

ID Code (A=Service Ready, B=Not Service Ready) : B | **MDAP/MAIS Code:**

Modification Item 2 of 2: Install Kits

Manufacturer Information

Manufacturer Name: Lockheed Martin	Manufacturer Location: Various
Administrative Leadtime *(in Months)*: 7	Production Leadtime *(in Months)*: 2

Dates	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Contract Dates	May 2018	May 2019	May 2020	May 2021			
Delivery Dates	Jul 2018	Jul 2019	Jul 2020	Jul 2021			

Installation Information

Method of Implementation: Contract Field Team

Installation Cost	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*
Prior Years	28 / 4.035	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	28 / 4.035
FY 2018	- / -	14 / 2.032	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	14 / 2.032
FY 2019	- / -	- / -	14 / 2.032	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	14 / 2.032
FY 2020	- / -	- / -	- / -	14 / 1.985	- / -	14 / 1.985	- / -	- / -	- / -	- / -	- / -	14 / 1.985
FY 2021	- / -	- / -	- / -	- / -	- / -	- / -	14 / 2.020	- / -	- / -	- / -	- / -	14 / 2.020
FY 2022	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2023	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2024	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
To Complete	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
Total	28 / 4.035	14 / 2.032	14 / 2.032	14 / 1.985	- / -	14 / 1.985	14 / 2.020	- / -	- / -	- / -	- / -	84 / 12.104

Installation Schedule

	PYS	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				TC	Tot
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
In	28	-	-	14	-	-	-	14	-	-	-	14	-	-	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-	0	84
Out	28	-	-	-	14	-	-	-	14	-	-	-	14	-	-	-	14	-	-	-	-	-	-	-	-	-	-	-	-	0	84

Exhibit P-40a, Budget Item Justification For Aggregated Items: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: SPCMOD / Space Mods	Aggregated Items Title: JSpOC Mission System

Item Number / Title [DODIC]	ID CD	MDAP/ MAIS Code	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Uncategorized																				
Joint Space Operations Center Mission System	A		-	-	-	-	-	3.850	-	-	20.366	-	-	11.368	-	-	-	-	-	11.368
Subtotal: Uncategorized			**-**	**-**	**-**	**-**	**-**	***3.850***	**-**	**-**	***20.366***	**-**	**-**	***11.368***	**-**	**-**	**-**	**-**	**-**	***11.368***
Total			**-**	**-**	**-**	**-**	**-**	**3.850**	**-**	**-**	**20.366**	**-**	**-**	**11.368**	**-**	**-**	**-**	**-**	**-**	**11.368**

Note: Subtotals or Totals in this Exhibit P-40a may not be exact or sum exactly, due to rounding.

Remarks:
FY 2020 Funds will procure a common government infrastructure and applications based on the Enterprise backlog.

JMS FY 2020 funding request was reduced by $5.586 million to account for the availability of prior year execution balances.

Exhibit P-40a, Budget Item Justification For Aggregated Modification Items: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	**Aggregated Modification Items Title:** Shared Early Warning (SEW)

Item Number / Title	ID CD	MDAP/ MAIS Code	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
SEWS / SEWS			-	-	-	-	-	-	-	-	0.348	-	-	0.355	-	-	-	-	-	0.355
Total			**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**0.348**	**-**	**-**	**0.355**	**-**	**-**	**0.000**	**-**	**-**	**0.355**

Item Number / Title	ID CD	MDAP/ MAIS Code	FY 2021			FY 2022			FY 2023			FY 2024			To Complete			Total Cost		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
SEWS / SEWS			-	-	0.361	-	-	0.367	-	-	0.374	-	-	0.381	-	-	-	-	-	2.186
Total			**-**	**-**	**0.361**	**-**	**-**	**0.367**	**-**	**-**	**0.374**	**-**	**-**	**0.381**	**-**	**-**	**0.000**	**-**	**-**	**2.186**

Note: Subtotals or Totals in this Exhibit P-40a may not be exact or sum exactly, due to rounding.

Modification Information:

Item Number / Title	Models of Systems Affected	Modification Type
SEWS / SEWS	SEWS	Reliability & Maintainability

Exhibit P-40a, Budget Item Justification For Aggregated Modification Items: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: SPCMOD / Space Mods	Aggregated Modification Items Title: EO/IR Weather Systems

Item Number / Title	ID CD	MDAP/ MAIS Code	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
RGS01 / EO/IR Weather Systems			-	-	0.000	-	-	18.620	-	-	49.526	-	-	0.000	-	-	-	-	-	0.000
Total			**-**	**-**	**0.000**	**-**	**-**	**18.620**	**-**	**-**	**49.526**	**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**0.000**

Item Number / Title	ID CD	MDAP/ MAIS Code	FY 2021			FY 2022			FY 2023			FY 2024			To Complete			Total Cost		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
RGS01 / EO/IR Weather Systems			-	-	0.000	-	-	0.000	-	-	-	-	-	-	-	-	-	-	-	68.146
Total			**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**68.146**

Note: Subtotals or Totals in this Exhibit P-40a may not be exact or sum exactly, due to rounding.

Modification Information:

Item Number / Title	Models of Systems Affected	Modification Type
RGS01 / EO/IR Weather Systems	No text provided.	Other

Exhibit P-40a, Budget Item Justification For Aggregated Items: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	**Aggregated Items Title:** Ballistic Missile Defense Radars

Item Number / Title [DODIC]	ID CD	MDAP/ MAIS Code	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Block 00																				
New Item	A		-	-	-	-	-	0.000	7.935	1	7.935	22.341	1	22.341	-	-	-	22.341	1	22.341
Subtotal: Block 00			**-**	**-**	**-**	**-**	**-**	***0.000***	**-**	**-**	***7.935***	**-**	**-**	***22.341***	**-**	**-**	**-**	**-**	**-**	***22.341***
Block 01																				
New Item	A		-	-	-	-	-	-	-	-	-	1.039	1	1.039	-	-	-	1.039	1	1.039
Subtotal: Block 01			**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	***1.039***	**-**	**-**	**-**	**-**	**-**	***1.039***
Total			**-**	**-**	**-**	**-**	**-**	**0.000**	**-**	**-**	**7.935**	**-**	**-**	**23.380**	**-**	**-**	**-**	**-**	**-**	**23.380**

Note: Subtotals or Totals in this Exhibit P-40a may not be exact or sum exactly, due to rounding.

Exhibit P-40a, Budget Item Justification For Aggregated Modification Items: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	**Aggregated Modification Items Title:** Ballistic Missile Early Warning System (BMEWS)

Item Number / Title	ID CD	MDAP/ MAIS Code	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
BMEWS / DP/SP			-	-	-	-	-	-	-	-	1.500	-	-	1.500	-	-	0.000	-	-	1.500
Total			**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**1.500**	**-**	**-**	**1.500**	**-**	**-**	**0.000**	**-**	**-**	**1.500**

Item Number / Title	ID CD	MDAP/ MAIS Code	FY 2021			FY 2022			FY 2023			FY 2024			To Complete			Total Cost		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
BMEWS / DP/SP			-	-	1.500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.500
Total			**-**	**-**	**1.500**	**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**4.500**

Note: Subtotals or Totals in this Exhibit P-40a may not be exact or sum exactly, due to rounding.

Modification Information:

Item Number / Title	Models of Systems Affected	Modification Type
BMEWS / DP/SP	NA	Reliability & Maintainability

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: SPCMOD / Space Mods	Modification Number / Title: 1 / BPP Block 02
ID Code (A=Service Ready, B=Not Service Ready) : A		MDAP/MAIS Code:

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	-	18.767	6.272	0.000	6.272	6.800	0.000	0.000	0.000	-	31.839
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	-	18.767	6.272	0.000	6.272	6.800	0.000	0.000	0.000	-	31.839
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**-**	**18.767**	**6.272**	**0.000**	**6.272**	**6.800**	**0.000**	**0.000**	**0.000**	**-**	**31.839**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

The BALLISTIC MISSILE EARLY WARNING SYSTEM (BMEWS) and the PAVE PHASED ARRAY WARNING SYSTEM (PAVE PAWS) are ground based radar systems with missions to support the Missile Correlation, Space Surveillance, and Missile Defense Centers. The radar systems provide United States Strategic Command (USSTRATCOM) with credible Integrated Tactical Warning/Attack Assessment (ITW/AA) data on all Sea-Launched Ballistic Missiles (SLBMs) and Inter-Continental Ballistic Missiles (ICBMs) penetrating the coverage area including Launch and Predicted Impact (L&PI) data for attack assessment and response determination. The radar systems also supports the Space Situational Awareness (SSA) network providing near-earth satellite surveillance and tracking, reporting observational (metric), SOI on man-made satellites and maintenance of the space catalog as required by the Joint Space Operations Center, Alternate Space Operations Center, and the National Air and Space Intelligence Center mitigating the significantly increasing potential for collisions with national assets, including manned space platforms. The Upgraded Early Warning Radar (UEWR) site at Beale AFB also has a Missile Defense (MD) mission supporting the Missile Defense Agency. The BMEWS and PAVE PAWS shares a common baseline and mission with the difference that BMEWS deploys more array elements on its radar faces. BMEWS radars are located at Thule Air Base, Greenland; Clear Air Force Station, AK; and Royal Air Force (RAF) Fylingdales, UK. PAVE PAWS radars are located at Beale AFB, CA and Cape Cod AFS, MA. Additionally there is a site for testing (System Program Agency) located in the Centralized Integration Support Facility (CISF) at Peterson AFB, CO.
The BMEWS and PAVE PAWS mission equipment and associated sustainment suites consist of a mix of unique, custom-built components that are increasingly more difficult to maintain due to availability of replacement parts and obsolete COTS based subsystems that are no longer supported by the original equipment manufacturers. In addition, radar transmit & receive components, processing equipment, and power distribution elements, and other radar front-end equipment are 30+ years old, highly inefficient, and require replacement. Without these replacements there is a high risk that equipment failures will cause unacceptable mission downtime in order to troubleshoot and repair.

This effort was formerly called BMEWS Block 02 Update and PAVE PAWS Block 02 Update and was formerly funded in 3080F/03/8 BPAC 838010 Comm Elect Mods. Starting in FY19 it will be combined and funded in 3021 Space Mod.

FY19 will fund ongoing program management administrative costs supporting BMEWS/PAVE PAWS modification efforts and will fund replacement of unsupportable mission and support equipment, initial spares, and lifetime buys of spares to include, but not limited to, solid state modules (SSMs) and associated components. Due to the limited spares demand rates, and indefinite system lifespan, Life of Type buys may be required to support this weapon system.

Milestone/Development Status

N/A

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: SPCMOD / Space Mods	Modification Number / Title: 1 / BPP Block 02
ID Code (A=Service Ready, B=Not Service Ready) : A	MDAP/MAIS Code:	
Models of Systems Affected: NA	Modification Type: Reliability & Maintainability	Related RDT&E PEs:

Financial Plan	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*
Procurement												
Modification Item 1 of 1: Equipment												
B Kits												
Recurring												
Equipment:EQUIPMENT Group B (Active)	- / -	- / -	1 / 15.274	1 / 4.697	- / 0.000	1 / 4.697	1 / 6.800	- / 0.000	- / 0.000	- / 0.000	- / -	3 / 26.771
Subtotal: Recurring	- / -	- / -	- / *15.274*	- / *4.697*	- / *0.000*	- / *4.697*	- / *6.800*	- / *0.000*	- / *0.000*	- / *0.000*	- / -	- / *26.771*
Subtotal: Equipment	- / -	- / -	- / *15.274*	- / *4.697*	- / *0.000*	- / *4.697*	- / *6.800*	- / *0.000*	- / *0.000*	- / *0.000*	- / -	- / *26.771*
Subtotal: Procurement, All Modification Items	- / -	- / -	- / *15.274*	- / *4.697*	- / *0.000*	- / *4.697*	- / *6.800*	- / *0.000*	- / *0.000*	- / *0.000*	- / -	- / *26.771*
Support *(All Modification Items)*												
PMA - Contractor Services	- / -	- / -	- / 3.493	- / 1.575	- / -	- / 1.575	- / 0.000	- / 0.000	- / 0.000	- / 0.000	- / -	- / 5.068
Subtotal: Support	- / -	- / -	- / *3.493*	- / *1.575*	- / -	- / *1.575*	- / *0.000*	- / *0.000*	- / *0.000*	- / *0.000*	- / -	- / *5.068*
Installation												
Subtotal: Installation	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
Total												
Total Cost (Procurement + Support + Installation)	**-**	**-**	**18.767**	**6.272**	**0.000**	**6.272**	**6.800**	**0.000**	**0.000**	**0.000**	**-**	**31.839**

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	**Modification Number / Title:** 1 / BPP Block 02
ID Code (A=Service Ready, B=Not Service Ready) : A	**MDAP/MAIS Code:**	

Modification Item 1 of 1: Equipment

Manufacturer Information

Manufacturer Name: TBD	Manufacturer Location: TBD
Administrative Leadtime *(in Months)*: 3	Production Leadtime *(in Months)*: 15

Dates	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Contract Dates		Jun 2019	Jun 2020	Jun 2021			
Delivery Dates		Sep 2020	Sep 2021	Sep 2022			

Installation Information

Method of Implementation (Organic): Org/Intermediate	**Installation Quantity:** 3

Exhibit P-40a, Budget Item Justification For Aggregated Items: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	**Aggregated Items Title:** Ballistic Missile Early Warning System (BMEWS)

Item Number / Title [DODIC]	ID CD	MDAP/ MAIS Code	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
BPP Block 00 Update																				
New Item	A		-	-	-	-	-	0.000	8.521	1	8.521	15.232	1	15.232	-	-	-	15.232	1	15.232
Subtotal: BPP Block 00 Update			**-**	**-**	**-**	**-**	**-**	***0.000***	**-**	**-**	***8.521***	**-**	**-**	***15.232***	**-**	**-**	**-**	**-**	**-**	***15.232***
BPP Block 01 Update																				
New Item	A		-	-	-	-	-	0.000	9.925	1	9.925	5.751	1	5.751	-	-	-	5.751	1	5.751
Subtotal: BPP Block 01 Update			**-**	**-**	**-**	**-**	**-**	***0.000***	**-**	**-**	***9.925***	**-**	**-**	***5.751***	**-**	**-**	**-**	**-**	**-**	***5.751***
BPP Block 03 Update																				
New Item	A		-	-	-	-	-	-	-	-	0.000	2.720	1	2.720	-	-	-	2.720	1	2.720
Subtotal: BPP Block 03 Update			**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	***0.000***	**-**	**-**	***2.720***	**-**	**-**	**-**	**-**	**-**	***2.720***
Total			**-**	**-**	**-**	**-**	**-**	**0.000**	**-**	**-**	**18.446**	**-**	**-**	**23.703**	**-**	**-**	**-**	**-**	**-**	**23.703**

Note: Subtotals or Totals in this Exhibit P-40a may not be exact or sum exactly, due to rounding.

Exhibit P-40a, Budget Item Justification For Aggregated Modification Items: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	**Aggregated Modification Items Title:** Submarine-Launched Ballistic Missile (SLBM) Radar Warning System

Item Number / Title	ID CD	MDAP/ MAIS Code	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
PARCSB1 / PARCS Block 01			-	-	-	-	-	-	-	-	1.917	-	-	-	-	-	-	-	-	-
Total			**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**1.917**	**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**0.000**

Item Number / Title	ID CD	MDAP/ MAIS Code	FY 2021			FY 2022			FY 2023			FY 2024			To Complete			Total Cost		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
PARCSB1 / PARCS Block 01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.917
Total			**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**1.917**

Note: Subtotals or Totals in this Exhibit P-40a may not be exact or sum exactly, due to rounding.

Modification Information:

Item Number / Title	Models of Systems Affected	Modification Type
PARCSB1 / PARCS Block 01	NA	Reliability & Maintainability

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: SPCMOD / Space Mods	Modification Number / Title: 1 / PARCS Block 02
ID Code (A=Service Ready, B=Not Service Ready) : A	MDAP/MAIS Code:	

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	-	0.500	8.165	0.000	8.165	8.307	8.456	8.615	8.770	-	42.813
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	-	0.500	8.165	0.000	8.165	8.307	8.456	8.615	8.770	-	42.813
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**-**	**0.500**	**8.165**	**0.000**	**8.165**	**8.307**	**8.456**	**8.615**	**8.770**	**-**	**42.813**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Formerly part of Space Mods Space mod BPAC 836790 in OPAF for FY15 and prior, appropriated in Space Procurement Air Force in FY16. Perimeter Acquisition Radar Attack Characterization System (PARCS) Program Office plans for and procures replacement components for unsupportable, unobtainable, and unreliable system components. PARCS equipment is composed of custom built components that became obsolete in the 1980s. Most spare parts for this system are no longer available and have no logistics tail. Without replacements there is a high risk of mission failure and/or unacceptable downtime for repair. To best ensure operational availability, replacement projects are performed in phases targeting the highest risk components of the subsystems.

In FY19, PE 1203912F, PARCS Block 02 efforts were transferred to Appropriation 3021, BPAC SPCMOD.

FY19 funds will be used to continue Block 01 by modifying the PARCS system for the replacement of unsupportable and unreliable components to include (with any required initial spares), but not limited to, the PARCS Mission Data Processor, Radar Transmitter, Antenna Group, Exciter Group, Radio Frequency Signal Processor Group, Performance Monitor Group, Radar Return Generator Group, Digital Data Group, and Radar Controller Group. Due to the limited spares demand rates, and indefinite system lifespan, Life of Type buys may be required to support this weapon system. Additionally, FY19 will fund PMA costs associated with support of the Block 02 program and, in FY20, continue Block 02 and fund PMA costs to initiate planning for Block 03.

Milestone/Development Status

N/A

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	**Modification Number / Title:** 1 / PARCS Block 02
ID Code (A=Service Ready, B=Not Service Ready) : A	**MDAP/MAIS Code:**	
Models of Systems Affected: NA	**Modification Type:** Reliability & Maintainability	**Related RDT&E PEs:**

Financial Plan	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*
Procurement												
Modification Item 1 of 2: COMMON: Install Kits (2)												
A Kits												
Recurring												
COMMON: Install Kits:INSTALL KITS Group A (Active)	- / -	- / -	- / -	- / 0.100	- / -	- / 0.100	- / 0.100	- / 0.100	- / 0.100	- / 0.100	- / -	- / 0.500
Subtotal: Recurring	- / -	- / -	- / -	- / *0.100*	- / -	- / *0.100*	- / *0.100*	- / *0.100*	- / *0.100*	- / *0.100*	- / -	- / *0.500*
Subtotal: COMMON: Install Kits (2)	- / -	- / -	- / -	- / *0.100*	- / -	- / *0.100*	- / *0.100*	- / *0.100*	- / *0.100*	- / *0.100*	- / -	- / *0.500*
Modification Item 2 of 2: PARCS: EQUIPMENT (2)												
B Kits												
Recurring												
PARCS: EQUIPMENT:EQUIPMENT Group B (Active)	- / -	- / -	- / -	1 / 7.315	- / -	1 / 7.315	1 / 7.457	1 / 7.606	1 / 7.765	1 / 7.920	- / -	5 / 38.063
Subtotal: Recurring	- / -	- / -	- / -	- / *7.315*	- / -	- / *7.315*	- / *7.457*	- / *7.606*	- / *7.765*	- / *7.920*	- / -	- / *38.063*
Subtotal: PARCS: EQUIPMENT (2)	- / -	- / -	- / -	- / *7.315*	- / -	- / *7.315*	- / *7.457*	- / *7.606*	- / *7.765*	- / *7.920*	- / -	- / *38.063*
Subtotal: Procurement, All Modification Items	- / -	- / -	- / -	- / *7.415*	- / -	- / *7.415*	- / *7.557*	- / *7.706*	- / *7.865*	- / *8.020*	- / -	- / *38.563*
Support *(All Modification Items)*												
PMA - Contractor Services	- / -	- / -	- / 0.500	- / 0.750	- / -	- / 0.750	- / 0.750	- / 0.750	- / 0.750	- / 0.750	- / -	- / 4.250
Subtotal: Support	- / -	- / -	- / *0.500*	- / *0.750*	- / -	- / *0.750*	- / *0.750*	- / *0.750*	- / *0.750*	- / *0.750*	- / -	- / *4.250*
Installation												
Subtotal: Installation	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
Total												
Total Cost (Procurement + Support + Installation)	**-**	**-**	**0.500**	**8.165**	**0.000**	**8.165**	**8.307**	**8.456**	**8.615**	**8.770**	**-**	**42.813**

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	**Modification Number / Title:** 1 / PARCS Block 02
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**

Modification Item 1 of 2: COMMON: Install Kits (2)

Manufacturer Information

Manufacturer Name: N/A	Manufacturer Location: N/A
Administrative Leadtime *(in Months)*:	Production Leadtime *(in Months)*:

Dates	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Contract Dates							
Delivery Dates							

Installation Information

Method of Implementation (Organic): Org/Intermediate	**Installation Quantity:** 0

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPCMOD / Space Mods	**Modification Number / Title:** 1 / PARCS Block 02
ID Code (A=Service Ready, B=Not Service Ready) : A		**MDAP/MAIS Code:**
Modification Item 2 of 2: PARCS: EQUIPMENT (2)		

Manufacturer Information

Manufacturer Name: TBD	Manufacturer Location: TBD
Administrative Leadtime *(in Months)*: 3	Production Leadtime *(in Months)*: 15

Dates	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Contract Dates			May 2020	May 2021	May 2022	May 2023	May 2024
Delivery Dates			Aug 2021	Aug 2022	Aug 2023	Aug 2024	Aug 2025

Installation Information

Method of Implementation (Organic): Org/Intermediate	**Installation Quantity:** 5

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Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** SPRNGE / Spacelift Range System Space

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: 1203182F	Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	77.143	113.222	117.637	118.140	-	118.140	100.598	95.041	75.866	110.014	-	807.661
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	77.143	113.222	117.637	118.140	-	118.140	100.598	95.041	75.866	110.014	-	807.661
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**77.143**	**113.222**	**117.637**	**118.140**	**-**	**118.140**	**100.598**	**95.041**	**75.866**	**110.014**	**-**	**807.661**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

The Spacelift Range System (SLRS), also known as the Launch and Test Range System (LTRS), provides public safety and assured access to space. LTRS operates at the Eastern Range (ER) at Patrick AFB/ Cape Canaveral AFS, FL and the Western Range (WR) at Vandenberg AFB, CA. LTRS provides tracking, telemetry, communications, flight safety, and other capabilities to support launch of national security space (NSS), civil and commercial space payloads, Intercontinental and Sea Launched ballistic missile and missile defense evaluations, and aeronautical and guided weapon tests. LTRS enables national security, civil, and commercial spacelift operations to be conducted safely. Together with national security space launch capability, LTRS provides assured access to space for the nation. The ER and WR are designated as Department of Defense Major Range and Test Facility Bases (MRTFB). LTRS is comprised of twelve subsystems that together provide this capability to the ranges. The Range Safety and Command Destruct subsystems provide the capability to destroy an errant rocket, if necessary to protect public safety. These subsystems rely on the Telemetry, Radar, and Optics subsystems to provide tracking data. The Weather and Surveillance subsystems allow range operators and customers to determine if conditions are safe for launch. The Communications, Data Handling, and Timing & Sequencing subsystems ensure critical data is expeditiously routed from remote sensors (e.g., radars, optics) to range operators and customers. Finally, the Planning and Scheduling subsystem ensures all assets are available when needed for a launch or test operation. The Air Force prioritizes procurement funds to ensure aging range equipment is modernized to support mission requirements. Sustainment trends are continuously analyzed and assessed across all twelve subsystems and procurement funds are used to modernize the most critical mission equipment and procure replacement components.

In the FY 2019 budget, SLRS received a Congressional rescission of $10.000 million. The correct total for FY 2018 is $103.222 million.

1) LTRS Interim Supply Support: Provides peculiar and common support material, required re-procurement data, and interim supply support management.

2) LTRS Support Services: FFRDC mission assurance activities ensure all twelve subsystems are compatible with mission rules and do not pose a risk to safe and cost-effective satellite launches. Funds are also used for Systems Engineering and Integration (SE&I) to ensure baseline documentation and modernization activities remain synchronized with the sustainment baseline.

3) LTRS Commodity Procurement: The Air Force will use various contract vehicles to procure, configure, install and checkout replacement commercial-off-the-shelf (COTS) commodity equipment to address the highest priority requirements. Obsolescence and sustainment "worst actors" in all twelve subsystems are prioritized annually in order of their criticality to the mission; priority is driven by likelihood of causing a launch delay/scrub.

4) Range Communications Facility (RCF): Relocate communications capabilities from the Eastern Range XY building to a new RCF, resolving building degradation, code non-compliance, and high risk off loading. The Air Force will either move existing equipment or procure new COTS equipment if necessary, to meet system requirements and minimize impacts to scheduled launches.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: SPRNGE / Spacelift Range System Space	
ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: 1203182F	Other Related Program Elements: N/A
Line Item MDAP/MAIS Code: N/A		

5) Range Command Destruct Modernization (RCDM): Modernizes the Eastern Range Command Destruct Systems. The Range Command Destruct modernization will provide the capability to use a new secure Command Destruct code, the Enhanced Flight Termination System (EFTS), mandated by the NSA for cyber security on the Eastern Range. The Eastern Range Command Destruct system will replace a sustainment "worst actor" that has been the cause of an expensive launch scrub as well as several near scrubs.

6) Modernization of Eastern Range Network (MEN): Upgrades the communications subsystem on the Eastern Range from outdated Asynchronous Transfer Mode (ATM) technology to Internet Protocol (IP) version 4/6 (IPV4/IPV6). MEN resolves obsolescence issues facing the program. Starting in FY 2020, addresses high-priority sustainment issues, and provides improved cyber security for range operations. The contract was awarded as a small business set aside.

7) Western Range Modernization of Network (WMN): Upgrades the communications subsystem on Western Range from Asynchronous Transfer Mode (ATM) technology to an IPv6 based/IPv4 compatible network, resolving obsolescence issues, numerous high-priority sustainment issues, and providing improved cyber security for range operations. The WMN contract was awarded as a small business set aside.

Reduce Spacelift Range Recapitalization saves $13.000M in FY 2020. Reduce Spacelift Range Recapitalization description: Spacelift Range Reduction divests funds from the current Spacelift Range System (SLRS) budgeted for future upgrades now made unnecessary by Autonomous Flight Safety System (AFSS) implementation.

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.

Recapitalization Projects are classified as commodity buys instead of modifications, because they do not change form, fit, function of a fielded system or subsystem. Therefore, associated funding for these commodities is described on a P-5 exhibit.

Funding for this exhibit is contained in PE 1203182F.

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	**P-1 Line Item Number / Title:** SPRNGE / Spacelift Range System Space
ID Code (A=Service Ready, B=Not Service Ready): A	**Program Elements for Code B Items:** 1203182F / **Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A	

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-5	Spacelift Range System (SPACE)		A		- / -	1 / 80.844	1 / 78.965	1 / 61.244	- / -	1 / 61.244
P-40a	Spacelift Range System (SPACE)				- / 60.042	- / 10.279	- / 6.472	- / 5.596	- / 0.000	- / 5.596
P-3a	1 / Modernization of Eastern Range Network (MEN) (Capability Improvement)		B		- / 8.394	- / 3.000	- / 3.000	- / 5.500	- / 0.000	- / 5.500
P-3a	2 / Range Communications Facility (RCF) (Capability Improvement)		B		- / 8.707	- / 19.099	- / 29.200	- / 45.800	- / 0.000	- / 45.800
P-40	**Total Gross/Weapon System Cost**				**- / 77.143**	**- / 113.222**	**- / 117.637**	**- / 118.140**	**- / -**	**- / 118.140**

Exhibits Schedule					FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-5	Spacelift Range System (SPACE)		A		- / -	- / -	- / -	- / -	- / -	- / -
P-40a	Spacelift Range System (SPACE)				- / 3.722	- / 2.135	- / 0.000	- / 0.000	- / 0.000	- / 88.246
P-3a	1 / Modernization of Eastern Range Network (MEN) (Capability Improvement)		B		- / 0.000	- / 0.000	- / -	- / -	- / -	- / 19.894
P-3a	2 / Range Communications Facility (RCF) (Capability Improvement)		B		- / 34.600	- / 4.100	- / 4.300	- / 0.000	- / -	- / 145.806
P-40	**Total Gross/Weapon System Cost**				**- / 100.598**	**- / 95.041**	**- / 75.866**	**- / 110.014**	**- / -**	**- / 807.661**

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications. Title represents the P-40a Title when only the P-40a Summary/Total is shown.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
Spacelift Range System Space: For LTRS Interim Supply Support, FY 2020 funds will pay for interim supply support, to include supplies and associated interim supply support management. For LTRS SUPPORT SERVICES, FY 2020 funds pay for FFRDC mission assurance activities to ensure all twelve subsystems are compatible with mission rules and do not pose a risk to safe and cost-effective satellite launches. Funds are also used for Enterprise SE&I to ensure baseline documentation and modernization activities remain synchronized with the sustainment baseline. LTRS Commodity Procurement (P40a) FY 2020 funds procure the most urgently needed capital equipment replacements for items that exceed the O&M dollar threshold.

MEN, WMN, RCDM, and RCF (P-3As): FY 2020 funds for these modifications are required to enable the safe conduct of national security, civil, and commercial launches at the Eastern and Western Ranges. Further, they ensure continued support to test range customers.

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.

Efforts with funding starting in FY 2021 through FY 2024 are summarized on the P-40. Not all details of this funding are included in this P-40 exhibit set. A summary of the excepted details is as follows:

(a) FY 2021 Cost Delta: 62.276 million
(b) FY 2022 Cost Delta: 88.806 million

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 01: Space Procurement, Air Force / BSA 1: Space Programs	P-1 Line Item Number / Title: SPRNGE / Spacelift Range System Space	
ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: 1203182F	Other Related Program Elements: N/A
Line Item MDAP/MAIS Code: N/A		

(c) FY 2023 Cost Delta: 71.566 million

(d) FY 2024 Cost Delta: 110.014 million

(e) FY Total Cost Delta: 553.715 million

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPRNGE / Spacelift Range System Space	**Item Number / Title [DODIC]:** Spacelift Range System (SPACE)
ID Code (A=Service Ready, B=Not Service Ready) : A	**MDAP/MAIS Code:**	

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity *(Units in Each)*	-	1	1	1	-	1
Gross/Weapon System Cost *($ in Millions)*	-	80.844	78.965	61.244	-	61.244
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	80.844	78.965	61.244	-	61.244
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**80.844**	**78.965**	**61.244**	**-**	**61.244**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)						
Initial Spares *($ in Millions)*	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	80.844	78.965	61.244	-	61.244

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*	Unit Cost *($ M)*	Qty *(Each)*	Total Cost *($ M)*
Hardware - 1203182F SPRNGE Cost																		
Non Recurring Cost																		
Commodities Procurement	-	-	-	33.099	1	33.099	39.842	1	39.842	21.594	1	21.594	-	-	-	21.594	1	21.594
Undocumented Congressional Rescission	-	-	-	-	-	10.000	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal: Non Recurring Cost	-	-	-	-	-	*43.099*	-	-	*39.842*	-	-	*21.594*	-	-	-	-	-	*21.594*
Subtotal: Hardware - 1203182F SPRNGE Cost	**-**	**-**	**-**	**-**	**-**	***43.099***	**-**	**-**	***39.842***	**-**	**-**	***21.594***	**-**	**-**	**-**	**-**	**-**	***21.594***
Logistics - Logistics End Item Cost																		
Recurring Cost																		
INTERIM SUPPLY SUPPORT MATERIAL (PARTS/SUPPLIES)	-	-	-	4.121	1	4.121	4.596	1	4.596	4.670	1	4.670	-	-	-	4.670	1	4.670
INTERIM SUPPLY SUPPORT SERVICES/LABOR	-	-	-	1.725	1	1.725	1.777	1	1.777	1.830	1	1.830	-	-	-	1.830	1	1.830
TECHNICAL MISSION ANALYSIS	-	-	-	9.252	1	9.252	9.529	1	9.529	9.815	1	9.815	-	-	-	9.815	1	9.815
TEST & EVALUATION (WS)	-	-	-	0.534	1	0.534	-	-	-	-	-	-	-	-	-	-	-	-
ENTERPRISE SYSTEMS ENGINEERING AND INTEGRATION	-	-	-	12.794	1	12.794	14.779	1	14.779	14.225	1	14.225	-	-	-	14.225	1	14.225

Exhibit P-5, Cost Analysis: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: SPRNGE / Spacelift Range System Space	Item Number / Title [DODIC]: Spacelift Range System (SPACE)
ID Code (A=Service Ready, B=Not Service Ready) : A	MDAP/MAIS Code:	

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
Subtotal: Recurring Cost	-	-	-	-	-	*28.426*	-	-	*30.681*	-	-	*30.540*	-	-	-	-	-	*30.540*
Subtotal: Logistics - Logistics End Item Cost	**-**	**-**	**-**	**-**	**-**	***28.426***	**-**	**-**	***30.681***	**-**	**-**	***30.540***	**-**	**-**	**-**	**-**	**-**	***30.540***
Support - Support End Item Cost																		
FFRDC	-	-	-	2.995	1	2.995	3.085	1	3.085	3.178	1	3.178	-	-	-	3.178	1	3.178
ADVISORY AND ASSISTANCE SERVICES (A&AS)	-	-	-	2.692	1	2.692	2.297	1	2.297	2.519	1	2.519	-	-	-	2.519	1	2.519
OTHER SUPPORT	-	-	-	3.632	1	3.632	3.060	1	3.060	3.413	1	3.413	-	-	-	3.413	1	3.413
Subtotal: Support - Support End Item Cost	**-**	**-**	**-**	**-**	**-**	***9.319***	**-**	**-**	***8.442***	**-**	**-**	***9.110***	**-**	**-**	**-**	**-**	**-**	***9.110***
Gross/Weapon System Cost	**-**	**-**	**-**	**80.844**	**1**	**80.844**	**78.965**	**1**	**78.965**	**61.244**	**1**	**61.244**	**-**	**-**	**-**	**61.244**	**1**	**61.244**

Remarks:

- Unit quantities and costs vary widely for multiple types and configurations of equipment being procured under modernization and sustainment project cost elements each fiscal year.

Exhibit P-40a, Budget Item Justification For Aggregated Modification Items: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	P-1 Line Item Number / Title: SPRNGE / Spacelift Range System Space	Aggregated Modification Items Title: Spacelift Range System (SPACE)

Item Number / Title	ID CD	MDAP/ MAIS Code	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
02-WMN / Western Range Modernization of Network (WMN)			-	-	52.506	-	-	7.892	-	-	3.472	-	-	3.251	-	-	-	-	-	3.251
03-RCDM / Range Command Destruct Modernization (RCDM)			-	-	7.536	-	-	2.387	-	-	3.000	-	-	2.345	-	-	-	-	-	2.345
Total			**-**	**-**	**60.042**	**-**	**-**	**10.279**	**-**	**-**	**6.472**	**-**	**-**	**5.596**	**-**	**-**	**0.000**	**-**	**-**	**5.596**

Item Number / Title	ID CD	MDAP/ MAIS Code	FY 2021			FY 2022			FY 2023			FY 2024			To Complete			Total Cost		
			Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)	Unit Cost ($ M)	Qty (Each)	Total Cost ($ M)
02-WMN / Western Range Modernization of Network (WMN)			-	-	2.384	-	-	1.014	-	-	-	-	-	-	-	-	-	-	-	70.519
03-RCDM / Range Command Destruct Modernization (RCDM)			-	-	1.338	-	-	1.121	-	-	-	-	-	-	-	-	-	-	-	17.727
Total			**-**	**-**	**3.722**	**-**	**-**	**2.135**	**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**0.000**	**-**	**-**	**88.246**

Note: Subtotals or Totals in this Exhibit P-40a may not be exact or sum exactly, due to rounding.

Modification Information:

Item Number / Title	Models of Systems Affected	Modification Type
02-WMN / Western Range Modernization of Network (WMN)	Spacelift Range System Space	Capability Improvement
03-RCDM / Range Command Destruct Modernization (RCDM)	Spacelift Range System Space	Reliability & Maintainability

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPRNGE / Spacelift Range System Space	**Modification Number / Title:** 1 / Modernization of Eastern Range Network (MEN)
ID Code (A=Service Ready, B=Not Service Ready) : B		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	8.394	3.000	3.000	5.500	0.000	5.500	0.000	0.000	-	-	-	19.894
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	8.394	3.000	3.000	5.500	0.000	5.500	0.000	0.000	-	-	-	19.894
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**8.394**	**3.000**	**3.000**	**5.500**	**0.000**	**5.500**	**0.000**	**0.000**	**-**	**-**	**-**	**19.894**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Modernized Eastern Network (MEN): upgrade the communications subsystem on the Eastern range from Asynchronous Transfer Mode (ATM) technology to today's standard of IPV4/IPV6, resolving obsolescence issues, numerous sustainment issues, and providing improved cyber security for range operations. The contract was awarded as a small business set aside.

Milestone/Development Status

Post Milestone B - Engineering and Manufacturing Development

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPRNGE / Spacelift Range System Space	**Modification Number / Title:** 1 / Modernization of Eastern Range Network (MEN)
ID Code (A=Service Ready, B=Not Service Ready) : B	**MDAP/MAIS Code:**	
Models of Systems Affected: MEN	**Modification Type:** Capability Improvement	**Related RDT&E PEs:**

Financial Plan	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*
Procurement												
Modification Item 1 of 1: Modernization of Eastern Range Network (MEN)												
B Kits												
Recurring												
Modernization of Eastern Range Network (MEN):EQUIPMENT Group B (Active)	- / 8.394	- / 3.000	- / 3.000	- / 5.500	- / -	- / 5.500	- / -	- / -	- / -	- / -	- / -	- / 19.894
Subtotal: Recurring	*- / 8.394*	*- / 3.000*	*- / 3.000*	*- / 5.500*	*- / -*	*- / 5.500*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / 19.894*
Subtotal: Modernization of Eastern Range Network (MEN)	*- / 8.394*	*- / 3.000*	*- / 3.000*	*- / 5.500*	*- / -*	*- / 5.500*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / 19.894*
Subtotal: Procurement, All Modification Items	*- / 8.394*	*- / 3.000*	*- / 3.000*	*- / 5.500*	*- / -*	*- / 5.500*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / 19.894*
Installation												
Modification Item 1 of 1: Modernization of Eastern Range Network (MEN)	2 / 0.000	1 / 0.000	1 / 0.000	1 / 0.000	- / -	1 / 0.000	- / -	- / -	- / -	- / -	- / -	5 / 0.000
Subtotal: Installation	*2 / -*	*1 / -*	*1 / -*	*1 / -*	*- / -*	*1 / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*5 / -*
Total												
Total Cost (Procurement + Support + Installation)	**8.394**	**3.000**	**3.000**	**5.500**	**0.000**	**5.500**	**0.000**	**0.000**	**-**	**-**	**-**	**19.894**

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPRNGE / Spacelift Range System Space	**Modification Number / Title:** 1 / Modernization of Eastern Range Network (MEN)

ID Code (A=Service Ready, B=Not Service Ready) : B | **MDAP/MAIS Code:**

Modification Item 1 of 1: Modernization of Eastern Range Network (MEN)

Manufacturer Information

Manufacturer Name: Phacil, Inc.	Manufacturer Location: Alexandria, VA
Administrative Leadtime *(in Months)*: 0	Production Leadtime *(in Months)*: 0

Dates	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Contract Dates							
Delivery Dates							

Installation Information

Method of Implementation: Contract Field Team

Installation Cost	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*
Prior Years	2 / 0.000	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	2 / 0.000
FY 2018	- / -	1 / 0.000	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	1 / 0.000
FY 2019	- / -	- / -	1 / 0.000	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	1 / 0.000
FY 2020	- / -	- / -	- / -	1 / 0.000	- / -	1 / 0.000	- / -	- / -	- / -	- / -	- / -	1 / 0.000
FY 2021	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2022	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2023	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2024	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
To Complete	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
Total	2 / 0.000	1 / 0.000	1 / 0.000	1 / 0.000	- / -	1 / 0.000	- / -	- / -	- / -	- / -	- / -	5 / 0.000

Installation Schedule

	PYS	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				TC	Tot
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
In	2	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	5
Out	2	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	5

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPRNGE / Spacelift Range System Space	**Modification Number / Title:** 2 / Range Communications Facility (RCF)
ID Code (A=Service Ready, B=Not Service Ready) : B		**MDAP/MAIS Code:**

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	8.707	19.099	29.200	45.800	0.000	45.800	34.600	4.100	4.300	0.000	-	145.806
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	8.707	19.099	29.200	45.800	0.000	45.800	34.600	4.100	4.300	0.000	-	145.806
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**8.707**	**19.099**	**29.200**	**45.800**	**0.000**	**45.800**	**34.600**	**4.100**	**4.300**	**0.000**	**-**	**145.806**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Range Communications Facility (RCF): Relocate communications capabilities from the Eastern Range XY Building to a new RCF, resolving building degradation, code non-compliance, and high risk of flooding.

NOTE: Procurement totals include all kits and installation costs.

Milestone/Development Status

Post Milestone C - Production and Development Phase

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPRNGE / Spacelift Range System Space	**Modification Number / Title:** 2 / Range Communications Facility (RCF)
ID Code (A=Service Ready, B=Not Service Ready) : B	**MDAP/MAIS Code:**	
Models of Systems Affected: Spacelift Range System Space	**Modification Type:** Capability Improvement	**Related RDT&E PEs:**

Financial Plan	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*	Qty *(Each)* / Total Cost *($ M)*
Procurement												
Modification Item 1 of 1: Range Communication Facility (RCF)												
B Kits												
Recurring												
Range Communication Facility (RCF):EQUIPMENT Group B (Active)	1 / 8.707	1 / 19.099	1 / 29.200	1 / 45.800	- / -	1 / 45.800	1 / 34.600	1 / 4.100	1 / 4.300	- / -	- / -	7 / 145.806
Subtotal: Recurring	*- / 8.707*	*- / 19.099*	*- / 29.200*	*- / 45.800*	*- / -*	*- / 45.800*	*- / 34.600*	*- / 4.100*	*- / 4.300*	*- / -*	*- / -*	*- / 145.806*
Subtotal: Range Communication Facility (RCF)	*- / 8.707*	*- / 19.099*	*- / 29.200*	*- / 45.800*	*- / -*	*- / 45.800*	*- / 34.600*	*- / 4.100*	*- / 4.300*	*- / -*	*- / -*	*- / 145.806*
Subtotal: Procurement, All Modification Items	*- / 8.707*	*- / 19.099*	*- / 29.200*	*- / 45.800*	*- / -*	*- / 45.800*	*- / 34.600*	*- / 4.100*	*- / 4.300*	*- / -*	*- / -*	*- / 145.806*
Installation												
Subtotal: Installation	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*	*- / -*
Total												
Total Cost (Procurement + Support + Installation)	**8.707**	**19.099**	**29.200**	**45.800**	**0.000**	**45.800**	**34.600**	**4.100**	**4.300**	**0.000**	**-**	**145.806**

Exhibit P-3a, Individual Modification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 01 / 1	**P-1 Line Item Number / Title:** SPRNGE / Spacelift Range System Space	**Modification Number / Title:** 2 / Range Communications Facility (RCF)
ID Code (A=Service Ready, B=Not Service Ready) : B		**MDAP/MAIS Code:**

Modification Item 1 of 1: Range Communication Facility (RCF)

Manufacturer Information

Manufacturer Name: Range Generation Next LLC	Manufacturer Location: Sterling, VA
Administrative Leadtime *(in Months)*: 0	Production Leadtime *(in Months)*: 0

Dates	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Contract Dates							
Delivery Dates							

Installation Information

Method of Implementation (Organic): Org/Intermediate	**Installation Quantity:** 0

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Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 02: Spares / BSA 2: SSpares	**P-1 Line Item Number / Title:** SSPARE / Initial Spares/Repair Parts
ID Code (A=Service Ready, B=Not Service Ready):	**Program Elements for Code B Items:** N/A — **Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A	

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity *(Units in Each)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost *($ in Millions)*	-	8.579	16.812	7.263	-	7.263	1.273	1.299	1.322	0.885	-	37.433
Less PY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) *($ in Millions)*	-	8.579	16.812	7.263	-	7.263	1.273	1.299	1.322	0.885	-	37.433
Plus CY Advance Procurement *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority *($ in Millions)*	**-**	**8.579**	**16.812**	**7.263**	**-**	**7.263**	**1.273**	**1.299**	**1.322**	**0.885**	**-**	**37.433**
(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)												
Initial Spares *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost *($ in Millions)*	-	-	-	-	-	-	-	-	-	-	-	-

Description:

Initial Spares consist of reparable components, assemblies, subassemblies, and consumable items required as initial stock (including readiness spares package requirements) in support of space acquisition programs. Requirements are determined by applying established factors against the acquisition cost of the end items. The factors are based on historical data of similar equipment, employment/deployment concepts, production schedules, and other related information.

This line contains funding for the following Major Defense Acquisition Programs (MDAP):
Family of Advanced BLoS Terminals (FAB-T), 199
Space-Based Infrared System (SBIRS), 399

The funding for the following programs was transferred from the Other Procurement, Air Force appropriation to the Space Procurement, Air Force appropriation beginning in FY 2017:

FAB-T Inc 1
Information Systems Security Program
NAVSTAR Global Positioning System (Control Segment)
Space Situation Awareness Operations
SBIRS

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.

Exhibit P-40, Budget Line Item Justification: PB 2020 Air Force	Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F: Space Procurement, Air Force / BA 02: Spares / BSA 2: SSpares	**P-1 Line Item Number / Title:** SSPARE / Initial Spares/Repair Parts
ID Code (A=Service Ready, B=Not Service Ready):	**Program Elements for Code B Items:** N/A — **Other Related Program Elements:** N/A
Line Item MDAP/MAIS Code: N/A	

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/ MAIS Code	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*	Quantity / Total Cost *(Each) / ($ M)*
P-18	Initial Spares/Repair Parts				- / -	- / 8.579	- / 16.812	- / 7.263	- / 0.000	- / 7.263
P-40	**Total Gross/Weapon System Cost**				**- / -**	**- / 8.579**	**- / 16.812**	**- / 7.263**	**- / -**	**- / 7.263**

Title represents the P-18 Title for Spares.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
The FY 2020 budget supports initial spares for the following programs: Information Systems Security Program, NAVSTAR Global Positioning System (Space and Control Segments), and SBIRS.

FAB-T: No FY 2020 funding is requested.

Spaceborne Equipment (COMSEC): FY20 funding ($0.824M) is required to supply crypto devices for space and ground nodes, used by all Services/Agencies, to meet an NSA cybersecurity mandates

NAVSTAR GPS: FY 2020 funding provides initial operational equipment spares for GPS ground sites and laboratories, replacing equipment that is primarily obsolete and requires technical refresh or modifications. Projects include the technical refresh of the GPS Information Network (GIN), deployed in 2012, and the technical refresh of the GPS Ground Antenna Infrastructure, deployed in 2009. Both systems are beyond design life and require reconstitution. Spares are needed to support the systems through their remaining life cycles. Both systems will continue to be required for operations into the OCX era.

SSA Operations: No FY 2020 funding is requested.

SBIRS: FY 2020 funding provides operational spares kits for SBIRS Survivable & Endurable Evolution (S2E2). Spares are required to meet system-level dependability and reliability necessary to meet Chairman of the Joint Chiefs of Staff (CJCS) standards for the Nuclear Command and Control (NC3) System through the required range of military operations. As an endurable system, there must be sufficient critical and non-critical spares to sustain operations through the endurable period. Planned Operations Acceptance is targeted for 1Q FY 2021 and is dependent on the FY 2020 procurement of requisite spares for integration into the Field Spares Vehicle prior to entering the Trial Period.

Exhibit P-18, Initial and Replenishment Spare and Repair Parts Justification: PB 2020 Air Force		Date: February 2019
Appropriation / Budget Activity / Budget Sub Activity: 3021F / 02 / 2	**P-1 Line Item Number / Title:** SSPARE / Initial Spares/Repair Parts	**Title:** Initial Spares/Repair Parts

End Item Line Item Number / Name [MDAP/MAIS]	Prior Years ($ M)	FY 2018 ($ M)	FY 2019 ($ M)	FY 2020 Base ($ M)	FY 2020 OCO ($ M)	FY 2020 Total ($ M)
Initial						
BA 02 - Spares						
FBLOST / Family of Advanced BLoS Terminals (FAB-T)	-	1.545	15.583	0.000	0.000	0.000
MC0MSE / Spaceborne Equipment (COMSEC)	-	0.802	0.808	0.824	0.000	0.824
MC0MSE / NAVSTAR Global Positioning System (Space and Control Segments)	-	0.194	0.421	0.429	0.000	0.429
SPCMOD / Space Situation Awareness Operations	-	2.268	0.000	0.000	0.000	0.000
SPCMOD / Space Based Infrared System (SBIR)	-	3.770	0.000	6.010	0.000	6.010
Subtotal: Initial	**-**	***8.579***	***16.812***	***7.263***	***0.000***	***7.263***
Total Cost (Initial + Replenishment)	**-**	**8.579**	**16.812**	**7.263**	**0.000**	**7.263**

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