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**Department of Defense  
Fiscal Year (FY) 2021 Budget Estimates**

February 2020



**Air Force**

*Justification Book Volume 1 of 1*

***Procurement, Space Force***

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Air Force • Budget Estimates FY 2021 • Procurement

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Appropriation Language  
Fiscal Year (FY) 2021 President's Budget  
Procurement, Space 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; \$2,446,064,000 to remain available for obligations until September 30, 2023.

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Department of the Air Force  
FY 2021 President's Budget  
Exhibit P-1 FY 2021 President's Budget  
Total Obligational Authority  
(Dollars in Thousands)

22 Jan 2020

Appropriation: Procurement, Space Force

Budget Activity -----	FY 2019 (Base + OCO) -----	FY 2020 Base Enacted -----	FY 2020 Emergency -----	FY 2020 OCO Enacted -----
01. Space Procurement, SF				
02. Spares				
Total Procurement, Space Force				

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Department of the Air Force  
FY 2021 President's Budget  
Exhibit P-1 FY 2021 President's Budget  
Total Obligational Authority  
(Dollars in Thousands)

22 Jan 2020

Appropriation: Procurement, Space Force

Budget Activity -----	FY 2020 Total Enacted (Base+Emerg+ OCO) -----	FY 2021 Base -----	FY 2021 OCO for Base Requirements -----	FY 2021 OCO for Direct War and Enduring Costs -----
01. Space Procurement, SF		2,444,792		
02. Spares		1,272		
Total Procurement, Space Force		2,446,064		

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Department of the Air Force  
FY 2021 President's Budget  
Exhibit P-1 FY 2021 President's Budget  
Total Obligational Authority  
(Dollars in Thousands)

22 Jan 2020

Appropriation: Procurement, Space Force

Budget Activity -----	FY 2021 Total OCO -----	FY 2021 Total (Base + OCO) -----
01. Space Procurement, SF		2,444,792
02. Spares		1,272
Total Procurement, Space Force		2,446,064

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Department of the Air Force  
 FY 2021 President's Budget  
 Exhibit P-1 FY 2021 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

22 Jan 2020

Appropriation: 3022F Procurement, Space Force

Line No	Item Nomenclature	Ident Code	FY 2019 (Base + OCO)		FY 2020 Base Enacted		FY 2020 Emergency		FY 2020 OCO Enacted		S e c
			Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	
Budget Activity 01: Space Procurement, SF											
Space Procurement, SF											
1	Advanced EHF	A									U
2	AF Satellite Comm System	A									U
3	Counterspace Systems	A									U
4	Family of Beyond Line-of-Sight Terminals	A									U
5	General Information Tech - Space	A									U
6	GPSIII Follow On	A									U
7	GPS III Space Segment	A									U
8	Global Positioning (Space)	A									U
9	Spaceborne Equip (Comsec)	A									U
10	MILSATCOM	A									U
11	SBIR High (Space)	A									U
12	Special Space Activities	A									U
13	National Security Space Launch	A									U
14	NUDET Detection System	A									U
15	Rocket Systems Launch Program	A									U
16	Space Fence	A									U
17	Space Mods	A									U

Department of the Air Force  
 FY 2021 President's Budget  
 Exhibit P-1 FY 2021 President's Budget  
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 (Dollars in Thousands)

22 Jan 2020

Appropriation: 3022F Procurement, Space Force

Line No	Item Nomenclature	Ident Code	FY 2020 Total Enacted (Base+Emerg+OCO)		FY 2021 Base		FY 2021 OCO for Base Requirements		FY 2021 OCO for Direct War and Enduring Costs		S e c
			Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	
Budget Activity 01: Space Procurement, SF											
-----											
Space Procurement, SF											
1	Advanced EHF	A				14,823					U
2	AF Satellite Comm System	A				48,326					U
3	Counterspace Systems	A				65,540					U
4	Family of Beyond Line-of-Sight Terminals	A				66,190					U
5	General Information Tech - Space	A				3,299					U
6	GPSIII Follow On	A			2	627,796					U
7	GPS III Space Segment	A				20,122					U
8	Global Positioning (Space)	A				2,256					U
9	Spaceborne Equip (Comsec)	A				35,495					U
10	MILSATCOM	A				15,795					U
11	SBIR High (Space)	A				160,891					U
12	Special Space Activities	A				78,387					U
13	National Security Space Launch	A			3	1,043,171					U
14	NUDET Detection System	A				6,638					U
15	Rocket Systems Launch Program	A				47,741					U
16	Space Fence	A				11,279					U
17	Space Mods	A				96,551					U

Department of the Air Force  
 FY 2021 President's Budget  
 Exhibit P-1 FY 2021 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

22 Jan 2020

Appropriation: 3022F Procurement, Space Force

Line No	Item Nomenclature	Ident Code	FY 2021 Total		FY 2021 Total		S e c
			Quantity	Cost	(Base + OCO) Quantity	Cost	
Budget Activity 01: Space Procurement, SF							
Space Procurement, SF							
1	Advanced EHF	A			14,823		U
2	AF Satellite Comm System	A			48,326		U
3	Counterspace Systems	A			65,540		U
4	Family of Beyond Line-of-Sight Terminals	A			66,190		U
5	General Information Tech - Space	A			3,299		U
6	GPSIII Follow On	A			2	627,796	U
7	GPS III Space Segment	A			20,122		U
8	Global Positioning (Space)	A			2,256		U
9	Spaceborne Equip (Comsec)	A			35,495		U
10	MILSATCOM	A			15,795		U
11	SBIR High (Space)	A			160,891		U
12	Special Space Activities	A			78,387		U
13	National Security Space Launch	A			3	1,043,171	U
14	NUDET Detection System	A			6,638		U
15	Rocket Systems Launch Program	A			47,741		U
16	Space Fence	A			11,279		U
17	Space Mods	A			96,551		U

Department of the Air Force  
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 (Dollars in Thousands)

22 Jan 2020

Appropriation: 3022F Procurement, Space Force

Line No	Item Nomenclature	Ident Code	FY 2019 (Base + OCO)		FY 2020 Base Enacted		FY 2020 Emergency		FY 2020 OCO Enacted		S e c
			Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	
18	Spacelift Range System Space	A	-----	-----	-----	-----	-----	-----	-----	-----	U
Total Space Procurement, SF											
Budget Activity 02: Spares											
-----											
Spares											
19	Spares and Repair Parts	A	-----	-----	-----	-----	-----	-----	-----	-----	U
Total Spares											
-----											
Total Procurement, Space Force											

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 (Dollars in Thousands)

22 Jan 2020

Appropriation: 3022F Procurement, Space Force

Line No	Item Nomenclature	Ident Code	FY 2020 Total Enacted (Base+Emerg+OCO)		FY 2021 Base		FY 2021 OCO for Base Requirements		FY 2021 OCO for Direct War and Enduring Costs		S e c
			Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	
18	Spacelift Range System Space	A				100,492					U
	Total Space Procurement, SF					2,444,792					
	Budget Activity 02: Spares										
	Spares										
19	Spares and Repair Parts	A				1,272					U
	Total Spares					1,272					
	Total Procurement, Space Force					2,446,064					

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22 Jan 2020

Appropriation: 3022F Procurement, Space Force

Line No	Item Nomenclature	Ident Code	FY 2021 Total		FY 2021 Total		S e c
			Quantity	Cost	(Base + OCO) Quantity	Cost	
18	Spacelift Range System Space	A			100,492		U
			-----		-----		
	Total Space Procurement, SF				2,444,792		
	Budget Activity 02: Spares						
	-----						
	Spares						
19	Spares and Repair Parts	A			1,272		U
			-----		-----		
	Total Spares				1,272		
			-----		-----		
	Total Procurement, Space Force				2,446,064		

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1	01	10	ADV555	Advanced EHF.....	Volume 1 - 1
2	01	10	AFSCOM	AF Satellite Comm System.....	Volume 1 - 7
3	01	10	CTRSPC	Counterspace Systems.....	Volume 1 - 17
4	01	10	FBLOST	Family of Beyond Line-of-Sight Terminals.....	Volume 1 - 23
5	01	10	GNRLIT	General Information Tech - Space.....	Volume 1 - 27
6	01	10	GPS03C	GPSIII Follow On.....	Volume 1 - 29
7	01	10	GPSIII	GPS III Space Segment.....	Volume 1 - 35
8	01	10	GPSSPC	Global Positioning (Space).....	Volume 1 - 41
9	01	10	MCOMSE	Spaceborne Equip (Comsec).....	Volume 1 - 43
10	01	10	MILSAT	MILSATCOM.....	Volume 1 - 47
11	01	10	MSSBIR	SBIR High (Space).....	Volume 1 - 53
13	01	10	NSSL00	National Security Space Launch.....	Volume 1 - 63
14	01	10	NUDETS	NUDET Detection System.....	Volume 1 - 71
15	01	10	RSLP00	Rocket Systems Launch Program.....	Volume 1 - 75
16	01	10	SPCFNC	Space Fence.....	Volume 1 - 79
17	01	10	SPCMOD	SPACE MODS SPACE.....	Volume 1 - 83

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***Appropriation 3022F: Procurement, Space Force***

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18	01	10	SPRNGE	Spacelift Range System Space.....	Volume 1 - 105

***Appropriation 3022F: Procurement, Space Force***

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19	02	20	SSPARE	Initial Spares/Repair Parts.....	Volume 1 - 115

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Advanced EHF	ADV555	1	01	10.....	Volume 1 - 1
Counterspace Systems	CTRSPC	3	01	10.....	Volume 1 - 17
Family of Beyond Line-of-Sight Terminals	FBLOST	4	01	10.....	Volume 1 - 23
GPS III Space Segment	GPSIII	7	01	10.....	Volume 1 - 35
GPSIII Follow On	GPS03C	6	01	10.....	Volume 1 - 29
General Information Tech - Space	GNRLIT	5	01	10.....	Volume 1 - 27
Global Positioning (Space)	GPSSPC	8	01	10.....	Volume 1 - 41
Initial Spares/Repair Parts	SSPARE	19	02	20.....	Volume 1 - 115
MILSATCOM	MILSAT	10	01	10.....	Volume 1 - 47
NUDET Detection System	NUDETS	14	01	10.....	Volume 1 - 71
National Security Space Launch	NSSL00	13	01	10.....	Volume 1 - 63
Rocket Systems Launch Program	RSLP00	15	01	10.....	Volume 1 - 75
SBIR High (Space)	MSSBIR	11	01	10.....	Volume 1 - 53
SPACE MODS SPACE	SPCMOD	17	01	10.....	Volume 1 - 83
Space Fence	SPCFNC	16	01	10.....	Volume 1 - 79
Spaceborne Equip (Comsec)	MCOMSE	9	01	10.....	Volume 1 - 43

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<b>Line Item Title</b>	<b>Line Item Number</b>	<b>Line #</b>	<b>BA</b>	<b>BSA</b>	<b>Page</b>
Spacelift Range System Space	SPRNGE	18	01	10.....	Volume 1 - 105

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Exhibit P-1M, Procurement Programs - Modification Summary  
(Listing by Model)

**Lookup Matrix by Model**

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

<b>Model:</b> CCS Meadowlands		
<b>P-3a Individual Modifications</b>		
Modification Number	Modification Title	Applies to Multiple Models
10.3	Counter Communications System (CCS) Meadowlands Production	No

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

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

<b>Model:</b> SEWS		
<b>Modification P-40a Aggregated Items Title:</b> Shared Early Warning (SEW)		
Item Number	Item Title	Applies to Multiple Models
<b>Uncategorized</b>		

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Exhibit P-1M, Procurement Programs - Modification Summary  
(Listing by Model)

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

<b>Model:</b>	NA		
<b>Modification P-40a Aggregated Items Title:</b>	Ballistic Missile Early Warning System (BMEWS)		
<b>Item Number</b>	<b>Item Title</b>	<b>Applies to Multiple Models</b>	
<b>Uncategorized</b>			
BMEWS	DP/SP	No	
<b>P-3a Individual Modifications</b>			
<b>Modification Number</b>	<b>Modification Title</b>	<b>Applies to Multiple Models</b>	
1	BPP Block 02	No	
1	PARCS Block 02	No	

<b>Model:</b>	Spacelift Range System Space		
<b>Modification P-40a Aggregated Items Title:</b>	Spacelift Range System (SPACE)		
<b>Item Number</b>	<b>Item Title</b>	<b>Applies to Multiple Models</b>	
<b>Uncategorized</b>			
02-WMN	Western Range Modernization of Network (WMN)	No	
03-RCDM	Range Command Destruct Modernization (RCDM)	No	
<b>P-3a Individual Modifications</b>			
<b>Modification Number</b>	<b>Modification Title</b>	<b>Applies to Multiple Models</b>	
1	Range Communications Facility (RCF)	No	

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Exhibit P-1M, Procurement Programs - Modification Summary  
(Funding for Modifications)

**Funding (\$ M)**

Modification P-40a Item Title P-3a Modification Title	PYS	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025
<b>Exhibit P-40a</b>										
SEW	-	-	-	0.361	-	0.361	0.367	0.374	0.381	0.388
DP/SP	-	-	-	1.500	-	1.500	0.000	0.000	0.000	0.000
Western Range Modernization of Network (WMN)	-	-	-	2.984	-	2.984	1.214	0.500	-	-
Range Command Destruct Modernization (RCDM)	-	-	-	1.338	-	1.338	1.121	-	-	-
<b>Exhibit P-3a</b>										
Remote Tracking Station Block Change (RBC)	-	-	-	9.000	-	9.000	-	-	-	-
Counter Communications System (CCS) Meadowlands Production	-	-	-	60.552	-	60.552	60.545	61.650	62.756	1.999
SBIRS Mobile System & Fixed Comm Electronics Upgrades	-	-	-	23.986	-	23.986	8.181	8.331	8.481	0.000
NAVSTAR GPS-OCS COTS UPGRADE	-	-	-	13.887	-	13.887	2.041	5.451	0.000	0.000
BPP Block 02	-	-	-	9.439	-	9.439	-	-	-	-
PARCS Block 02	-	-	-	8.297	-	8.297	-	-	-	-
Range Communications Facility (RCF)	-	-	-	34.600	-	34.600	4.100	4.300	-	-
<b>Totals (Total Obligation Authority)</b>										
<b>Total Obligation Authority</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>165.944</b>	<b>0.000</b>	<b>165.944</b>	<b>77.569</b>	<b>80.606</b>	<b>71.618</b>	<b>2.387</b>

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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
BES	- Budget Estimate Submission
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
EWAIISP	- Electronic Warfare Avionics Integration Support Facility
FLIR	- Forward Looking Infra Red

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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
IT	- Information Technology
JUON	- Joint Urgent Operational Need
MAIS	- Major Automated Information System Program
MDAP	- Major Defense Acquisition Program
METS	- Mobile Electronic Test Stations
MYP	- Multiyear Procurement
NAVWAR	- Navigation Warfare
NMC Rate	- Not Mission Capable Rate
OCO	- Overseas Contingency Operations
OT&E	- Operational Test and Evaluation
OWRM	- Other War Reserve Material
PAGEL	- Priced Aerospace Ground Equipment List
PB	- President's Budget
PBR	- Program Budget Review
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

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RAA	- Rapid Acquisition Authority
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 ACRONYMS***

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

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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

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### ***CONTRACT METHOD / TYPE ACRONYMS***

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 ACRONYMS***

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

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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

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> ADV555 / Advanced EHF
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1206431SF
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**Line Item MDAP/MAIS Code:** 261

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	0.000	0.000	0.000	14.823	-	14.823	0.000	0.000	0.000	0.000	-	14.823
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	0.000	0.000	0.000	14.823	-	14.823	0.000	0.000	0.000	0.000	-	14.823
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority (<i>\$ in Millions</i>)</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>14.823</b>	<b>-</b>	<b>14.823</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>-</b>	<b>14.823</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

In FY 2021, P-1 Line Item ADV555 / Advance EHF efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

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. Additionally, AEHF procurement program element funds the transfer to CCS-C Assurance and Capability Enhancement (CACE) mission unique software and databases for AEHF 6.

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 launched on 8 Aug 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.

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 FY 2016 and beyond. Total MPAF/SPAF procurement funding is \$5,690.089M. Total AEHF SV-3 and SV-4 MPAF/SPAF funds are \$3,100.404M. Total AEHF SV-5 and SV-6 MPAF/SPAF program funds are \$2,589.685M.

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> ADV555 / Advanced EHF
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1206431SF
<b>Line Item MDAP/MAIS Code:</b> 261		

Funding for this exhibit is contained in PE 1203604SF.



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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:**  
3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: 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:** 1206431SF

**Line Item MDAP/MAIS Code:** 261

Exhibits Schedule					Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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 SV5 SV6		A		- / 0.000	- / 0.000	- / 0.000	- / 14.823	- / -	- / 14.823
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				<b>- / 0.000</b>	<b>- / 0.000</b>	<b>- / 0.000</b>	<b>- / 14.823</b>	<b>- / -</b>	<b>- / 14.823</b>

\*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 2021 AEHF will continue funding efforts for SV-6 to include 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-6 Operational acceptance. 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.

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 contract ceiling is \$2.139B (includes \$227M in FY11 advanced procurement funds).

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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>													<b>Date:</b> February 2020					
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10						<b>P-1 Line Item Number / Title:</b> ADV555 / Advanced EHF						<b>Item Number / Title [DODIC]:</b> AEHF SV5 SV6						
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A									<b>MDAP/MAIS Code:</b>									
<b>Resource Summary</b>				<b>Prior Years</b>		<b>FY 2019</b>		<b>FY 2020</b>		<b>FY 2021 Base</b>		<b>FY 2021 OCO</b>		<b>FY 2021 Total</b>				
Procurement Quantity (Units in Each)				-		-		-		-		-		-				
Gross/Weapon System Cost (\$ in Millions)				0.000		0.000		0.000		14.823		-		14.823				
Less PY Advance Procurement (\$ in Millions)				-		-		-		-		-		-				
Net Procurement (P-1) (\$ in Millions)				0.000		0.000		0.000		14.823		-		14.823				
Plus CY Advance Procurement (\$ in Millions)				-		-		-		-		-		-				
<b>Total Obligation Authority (\$ in Millions)</b>				<b>0.000</b>		<b>0.000</b>		<b>0.000</b>		<b>14.823</b>		<b>-</b>		<b>14.823</b>				
<i>(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)</i>																		
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.																		
<b>Cost Elements</b>	<b>Prior Years</b>			<b>FY 2019</b>			<b>FY 2020</b>			<b>FY 2021 Base</b>			<b>FY 2021 OCO</b>			<b>FY 2021 Total</b>		
	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>
Space Vehicle - SV5 SV6 Cost																		
Recurring Cost																		
Enterprise SE&I	-	-	0.000	-	-	0.000	-	-	0.000	-	-	-	-	-	-	-	-	-
Technical Mission Analysis	-	-	0.000	-	-	0.000	-	-	0.000	-	-	7.447	-	-	-	-	-	7.447
ACF/IC2 Test Asset Support	-	-	0.000	-	-	0.000	-	-	0.000	-	-	3.029	-	-	-	-	-	3.029
<i>Subtotal: Recurring Cost</i>	-	-	<i>0.000</i>	-	-	<i>0.000</i>	-	-	<i>0.000</i>	-	-	<i>10.476</i>	-	-	-	-	-	<i>10.476</i>
<i>Subtotal: Space Vehicle - SV5 SV6 Cost</i>	-	-	<i>0.000</i>	-	-	<i>0.000</i>	-	-	<i>0.000</i>	-	-	<i>10.476</i>	-	-	-	-	-	<i>10.476</i>
Checkout and Launch - SV5 SV6 Cost																		
Launch Support Services	-	-	-	-	-	-	-	-	-	-	-	1.829	-	-	-	-	-	1.829
<i>Subtotal: Checkout and Launch - SV5 SV6 Cost</i>	-	-	<i>0.000</i>	-	-	<i>0.000</i>	-	-	<i>0.000</i>	-	-	<i>1.829</i>	-	-	-	-	-	<i>1.829</i>
Support - SV5 SV6 Cost																		
FFRDC	-	-	0.000	-	-	0.000	-	-	0.000	-	-	1.040	-	-	-	-	-	1.040
A&AS	-	-	0.000	-	-	0.000	-	-	0.000	-	-	1.478	-	-	-	-	-	1.478
<i>Subtotal: Support - SV5 SV6 Cost</i>	-	-	<i>0.000</i>	-	-	<i>0.000</i>	-	-	<i>0.000</i>	-	-	<i>2.518</i>	-	-	-	-	-	<i>2.518</i>
<b>Gross/Weapon System Cost</b>	-	-	<b>0.000</b>	-	-	<b>0.000</b>	-	-	<b>0.000</b>	-	-	<b>14.823</b>	-	-	-	-	-	<b>14.823</b>
<b>Remarks:</b> Total AEHF SV 5-6 program funds are \$2,589.685M.																		

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<b>Exhibit P-5, Cost Analysis:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> ADV555 / Advanced EHF	<b>Item Number / Title [DODIC]:</b> AEHF SV5 SV6
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>	

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> AFSCOM / AF Satellite Comm System
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): B	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1203110SF
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**Line Item MDAP/MAIS Code:** N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	48.326	-	48.326	49.317	50.231	51.136	52.075	-	251.085
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	48.326	-	48.326	49.317	50.231	51.136	52.075	-	251.085
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority (<i>\$ in Millions</i>)</b>	-	-	-	<b>48.326</b>	-	<b>48.326</b>	<b>49.317</b>	<b>50.231</b>	<b>51.136</b>	<b>52.075</b>	-	<b>251.085</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

In FY 2021, P-1 Line Item AFSCOM / AIR FORCE SATELLITE CONTROL NETWORK SPACE efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

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 Oakingham, 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 490 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 2019, the AFSCN supported 11 space vehicle emergencies resulting in the preservation of over \$4.1B 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 2019, 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, Multi-band & Phased Array and Cybersecurity Operations.

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

Principal efforts include:

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> AFSCOM / AF Satellite Comm System
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): B	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1203110SF
<b>Line Item MDAP/MAIS Code:</b> N/A		
<p>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.</p> <p>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 2021, funds may be used to address Diminishing Manufacturing Sources (DMS) issues, support Enterprise Ground Service (EGS), Commercial Augmentation, Multi-band &amp; Phased Array and cybersecurity operations, and are planned to be used for required radome replacements, Defensive Cyber Operations activities and other Cyber security related projects. Other projects include: Boundary Defense, Electronic Schedule Dissemination (ESD) obsolescence, AFSCN test bed (ATB) replacements, continued cyber defense work, network automation, and Range/Network/Communication obsolescence replacements.</p> <p>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 and the last antenna is scheduled at TCS in FY2022. 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 2026, 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.</p> <p>Funding for this exhibit contained in PE 1203110SF.</p>		

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:**  
3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: 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:** N/A **Other Related Program Elements:** 1203110SF

**Line Item MDAP/MAIS Code:** N/A

Exhibits Schedule					Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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		- / -	- / -	- / -	1 / 9.000	- / -	1 / 9.000
P-5	Satellite Control Network (SPACE)		B		- / -	- / -	- / -	- / 39.326	- / -	- / 39.326
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				- / -	- / -	- / -	- / 48.326	- / -	- / 48.326

Exhibits Schedule					FY 2022	FY 2023	FY 2024	FY 2025	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		- / -	- / -	- / -	- / -	- / -	1 / 9.000
P-5	Satellite Control Network (SPACE)		B		- / -	- / -	- / -	- / -	- / -	- / -
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				- / 49.317	- / 50.231	- / 51.136	- / 52.075	- / -	- / 251.085

\*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 2021 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, router switches, and firewalls, 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 2021 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 required radome replacements, Defensive Cyber Operations activities and other Cyber security related projects. Other FYDP projects include: Boundary Defense, ESD obsolescence, AFSCN test bed (ATB) replacements, continued cyber defense work, network automation, and Range/Network/Communication obsolescence replacements.

3) RBC (P3a): FY 2021 funding is for the last EHPA procurement and delivery provides spacecraft anomaly resolution by replacing obsolete parts and enables emergency satellite operations. Ensures telemetry, tracking, and commanding are provided for over 170 satellites and that satellite emergencies requiring high-power antennas can be supported.

4) FY 2021 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, etc.

**Efforts with funding starting in FY 2022 through FY 2025 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 2022 Cost Delta: 49.317 million

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> AFSCOM / AF Satellite Comm System
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): B	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1203110SF
<b>Line Item MDAP/MAIS Code:</b> N/A		

- (b) FY 2023 Cost Delta: 50.231 million
- (c) FY 2024 Cost Delta: 51.136 million
- (d) FY 2025 Cost Delta: 52.075 million
- (e) FY Total Cost Delta: 242.085 million



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<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> AFSCOM / AF Satellite Comm System	<b>Modification Number / Title:</b> 1 / Remote Tracking Station Block Change (RBC)

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B	<b>MDAP/MAIS Code:</b>
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Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	1	-	1	-	-	-	-	-	1
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	9.000	-	9.000	-	-	-	-	-	9.000
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	9.000	-	9.000	-	-	-	-	-	9.000
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	-	-	<b>9.000</b>	-	<b>9.000</b>	-	-	-	-	-	<b>9.000</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

Remote Tracking Station (RTS) Block Change (RBC): FY 2021 funding is for EHPA procurement and delivery. 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 NHS, FY 2017 to TCS and the last antenna is scheduled at TCS in FY2022.

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 2026, 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.

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

Milestone/Development Status

N/A

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<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> AFSCOM / AF Satellite Comm System	<b>Modification Number / Title:</b> 1 / Remote Tracking Station Block Change (RBC)

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B	<b>MDAP/MAIS Code:</b>
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<b>Models of Systems Affected:</b> AFSCN	<b>Modification Type:</b> Capability Improvement	<b>Related RDT&amp;E PEs:</b>
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Financial Plan	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	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)
<b>Procurement</b>												
<i>Modification Item 1 of 1:</i> Enhanced High Power Amplifier												
B Kits												
Non-Recurring												
	- / -	- / -	- / -	1 / 9.000	- / -	1 / 9.000	- / -	- / -	- / -	- / -	- / -	1 / 9.000
<i>Subtotal: Non-Recurring</i>	- / -	- / -	- / -	1 / 9.000	- / -	1 / 9.000	- / -	- / -	- / -	- / -	- / -	1 / 9.000
<i>Subtotal: Enhanced High Power Amplifier</i>	- / -	- / -	- / -	1 / 9.000	- / -	1 / 9.000	- / -	- / -	- / -	- / -	- / -	1 / 9.000
<i>Subtotal: Procurement, All Modification Items</i>	- / -	- / -	- / -	1 / 9.000	- / -	1 / 9.000	- / -	- / -	- / -	- / -	- / -	1 / 9.000
<b>Installation</b>												
<i>Modification Item 1 of 1:</i> Enhanced High Power Amplifier												
	- / -	- / -	- / -	1 / 0.000	- / -	1 / 0.000	- / -	- / -	- / -	- / -	- / -	1 / 0.000
<i>Subtotal: Installation</i>	- / -	- / -	- / -	1 / 0.000	- / -	1 / 0.000	- / -	- / -	- / -	- / -	- / -	1 / 0.000
<b>Total</b>												
<b>Total Cost (Procurement + Support + Installation)</b>	-	-	-	9.000	-	9.000	-	-	-	-	-	9.000

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<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> AFSCOM / AF Satellite Comm System	<b>Modification Number / Title:</b> 1 / Remote Tracking Station Block Change (RBC)

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B	<b>MDAP/MAIS Code:</b>
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**Modification Item 1 of 1:** Enhanced High Power Amplifier

**Manufacturer Information**

Manufacturer Name: KBR Wylie	Manufacturer Location: Colorado Springs, CO
Administrative Leadtime (in Months): 0	Production Leadtime (in Months): 0

Dates	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Contract Dates		Oct 2020					
Delivery Dates			Jul 2021				

**Installation Information**

**Method of Implementation:** Delivery on site

Installation Cost	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	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 2019	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2020	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2021	- / -	- / -	- / -	1 / 0.000	- / -	1 / 0.000	- / -	- / -	- / -	- / -	- / -	1 / 0.000
FY 2022	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2023	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2024	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2025	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
To Complete	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
Total	- / -	- / -	- / -	1 / 0.000	- / -	1 / 0.000	- / -	- / -	- / -	- / -	- / -	1 / 0.000

**Installation Schedule**

	PYS	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				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	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Out	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> AFSCOM / AF Satellite Comm System	<b>Item Number / Title [DODIC]:</b> Satellite Control Network (SPACE)

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B	<b>MDAP/MAIS Code:</b>
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Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Procurement Quantity (Units in Each)	-	-	-	-	-	-
Gross/Weapon System Cost (\$ in Millions)	-	-	-	39.326	-	39.326
Less PY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
Net Procurement (P-1) (\$ in Millions)	-	-	-	39.326	-	39.326
Plus CY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
<b>Total Obligation Authority (\$ in Millions)</b>	-	-	-	<b>39.326</b>	-	<b>39.326</b>

*(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 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)
<b>Hardware - AF Satellite Control Network Cost</b>																		
Non Recurring Cost																		
Commodities Procurement	-	-	-	-	-	-	-	-	-	-	-	9.964	-	-	-	-	-	9.964
<i>Subtotal: Non Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	9.964	-	-	-	-	-	9.964
<i>Subtotal: Hardware - AF Satellite Control Network Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>9.964</b>	-	-	-	-	-	<b>9.964</b>
<b>Logistics - AFSCNS Cost</b>																		
Recurring Cost																		
INTERIM SUPPLY SPT - Labor	-	-	-	-	-	-	-	-	-	-	-	0.450	-	-	-	-	-	0.450
INTERIM SUPPLY SPT -- Materiel	-	-	-	-	-	-	-	-	-	-	-	4.478	-	-	-	-	-	4.478
Technical Mission Analysis	-	-	-	-	-	-	-	-	-	-	-	6.189	-	-	-	-	-	6.189
Test & Evaluation	-	-	-	-	-	-	-	-	-	-	-	1.583	-	-	-	-	-	1.583
Enterprise Systems Engineering and Integration (SE&I)	-	-	-	-	-	-	-	-	-	-	-	10.564	-	-	-	-	-	10.564
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	23.264	-	-	-	-	-	23.264
<i>Subtotal: Logistics - AFSCNS Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>23.264</b>	-	-	-	-	-	<b>23.264</b>
<b>Support - Support End Item Cost</b>																		

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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>												<b>Date:</b> February 2020					
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10						<b>P-1 Line Item Number / Title:</b> AFSCOM / AF Satellite Comm System						<b>Item Number / Title [DODIC]:</b> Satellite Control Network (SPACE)					
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B												<b>MDAP/MAIS Code:</b>					

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

Cost Elements	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)
Advisory & Assistance Services (A&AS)	-	-	-	-	-	-	-	-	-	-	-	2.511	-	-	-	-	-	2.511
Other Support	-	-	-	-	-	-	-	-	-	-	-	1.626	-	-	-	-	-	1.626
FFRDC	-	-	-	-	-	-	-	-	-	-	-	1.961	-	-	-	-	-	1.961
<i>Subtotal: Support - Support End Item Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>6.098</b>	-	-	-	-	-	<b>6.098</b>
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	-	-	-	-	-	-	<b>39.326</b>	-	-	-	-	-	<b>39.326</b>

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> CTRSPC / Counterspace Systems
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): B	<b>Program Elements for Code B Items:</b> 1206421SF	<b>Other Related Program Elements:</b> N/A
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**Line Item MDAP/MAIS Code:** N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	65.540	-	65.540	65.623	66.819	62.756	1.999	-	262.737
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	65.540	-	65.540	65.623	66.819	62.756	1.999	-	262.737
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority (<i>\$ in Millions</i>)</b>	-	-	-	<b>65.540</b>	-	<b>65.540</b>	<b>65.623</b>	<b>66.819</b>	<b>62.756</b>	<b>1.999</b>	-	<b>262.737</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

In FY 2021, P-1 Line Item CTRSPC / Counterspace Systems efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

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.

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

Bounty Hunter (BH) supports the Defensive Space Control of US systems in several AORs 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. In March 2019 Bounty Hunter was designated as a Program of Record.

Developmental funding for BH is in PE 1206421SF, 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.

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:**  
3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: 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:** 1206421SF **Other Related Program Elements:** N/A

**Line Item MDAP/MAIS Code:** N/A

Exhibits Schedule					Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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	10.3 / Counter Communications System (CCS) Meadowlands Production (Capability Improvement)				- / -	- / -	- / -	- / 60.552	- / -	- / 60.552
P-5	Bounty Hunter				- / -	- / -	- / -	- / 4.988	- / -	- / 4.988
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				- / -	- / -	- / -	- / 65.540	- / -	- / 65.540

Exhibits Schedule					FY 2022	FY 2023	FY 2024	FY 2025	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	10.3 / Counter Communications System (CCS) Meadowlands Production (Capability Improvement)				- / 60.545	- / 61.650	- / 62.756	- / 1.999	- / -	- / 247.502
P-5	Bounty Hunter				- / -	- / -	- / -	- / -	- / -	- / -
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				- / 65.623	- / 66.819	- / 62.756	- / 1.999	- / -	- / 262.737

\*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:**  
Counter Communications System (CCS): FY2021 funding is for production of seven CCS Meadowlands systems (includes signal processing, radio frequency, photonic, and other communications equipment) and associated spares. Additional funded activities may include but are not limited to program office support, studies, and technical analysis.

Bounty Hunter (BH): FY 2021 funding procures one additional BH system.

**Efforts with funding starting in FY 2022 through FY 2025 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 2022 Cost Delta: 5.078 million
- (b) FY 2023 Cost Delta: 5.169 million
- (c) FY Total Cost Delta: 15.235 million



**UNCLASSIFIED**

<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> CTRSPC / Counterspace Systems	<b>Modification Number / Title:</b> 10.3 / Counter Communications System (CCS) Meadowlands Production

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) :	<b>MDAP/MAIS Code:</b>
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<b>Resource Summary</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>To Complete</b>	<b>Total</b>
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	60.552	-	60.552	60.545	61.650	62.756	1.999	-	247.502
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	60.552	-	60.552	60.545	61.650	62.756	1.999	-	247.502
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	-	-	<b>60.552</b>	-	<b>60.552</b>	<b>60.545</b>	<b>61.650</b>	<b>62.756</b>	<b>1.999</b>	-	<b>247.502</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**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.

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

**UNCLASSIFIED**

<b>Exhibit P-3a, Individual Modification: PB 2021 Air Force</b>											<b>Date:</b> February 2020		
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10				<b>P-1 Line Item Number / Title:</b> CTRSPC / Counterspace Systems							<b>Modification Number / Title:</b> 10.3 / Counter Communications System (CCS) Meadowlands Production		
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) :							<b>MDAP/MAIS Code:</b>						
<b>Models of Systems Affected:</b> CCS Meadowlands				<b>Modification Type:</b> Capability Improvement				<b>Related RDT&amp;E PEs:</b>					
Financial Plan	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	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)	
<b>Procurement</b>													
<i>Modification Item 1 of 1: Hardware - Hardware End Item Cost</i>													
<i>Subtotal: Hardware - Hardware End Item Cost</i>													
	- / -	- / -	- / -	7 / 59.433	- / -	7 / 59.433	- / 59.426	- / 60.511	- / 61.596	- / 1.226	- / -	7 / 242.192	
<i>Subtotal: Procurement, All Modification Items</i>													
	- / -	- / -	- / -	- / 59.433	- / -	- / 59.433	- / 59.426	- / 60.511	- / 61.596	- / 1.226	- / -	- / 242.192	
<b>Support (All Modification Items)</b>													
FFRDC													
	- / -	- / -	- / -	- / 0.432	- / -	- / 0.432	- / 0.432	- / 0.439	- / 0.448	- / -	- / -	- / 1.751	
A&AS													
	- / -	- / -	- / -	- / 0.687	- / -	- / 0.687	- / 0.687	- / 0.700	- / 0.712	- / 0.773	- / -	- / 3.559	
<i>Subtotal: Support</i>													
	- / -	- / -	- / -	- / 1.119	- / -	- / 1.119	- / 1.119	- / 1.139	- / 1.160	- / 0.773	- / -	- / 5.310	
<b>Installation</b>													
<i>Subtotal: Installation</i>													
	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	
<b>Total</b>													
<b>Total Cost (Procurement + Support + Installation)</b>													
	-	-	-	60.552	-	60.552	60.545	61.650	62.756	1.999	-	247.502	

**UNCLASSIFIED**

<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force					<b>Date:</b> February 2020		
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10			<b>P-1 Line Item Number / Title:</b> CTRSPC / Counterspace Systems			<b>Modification Number / Title:</b> 10.3 / Counter Communications System (CCS) Meadowlands Production	
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) :					<b>MDAP/MAIS Code:</b>		
<b>Modification Item 1 of 1:</b> Hardware - Hardware End Item Cost							
<b>Manufacturer Information</b>							
Manufacturer Name: TBD				Manufacturer Location: TBD			
Administrative Leadtime (in Months): 6				Production Leadtime (in Months): 20			
<b>Dates</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
Contract Dates			Jul 2021				
Delivery Dates			Apr 2023				
<b>Installation Information</b>							
<b>Method of Implementation (Organic):</b> Org/Intermediate					<b>Installation Quantity:</b> 0		

**UNCLASSIFIED**

<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> CTRSPC / Counterspace Systems	<b>Item Number / Title [DODIC]:</b> Bounty Hunter

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) :	<b>MDAP/MAIS Code:</b>
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<b>Resource Summary</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Procurement Quantity <i>(Units in Each)</i>	-	-	-	-	-	-
Gross/Weapon System Cost <i>(\$ in Millions)</i>	-	-	-	4.988	-	4.988
Less PY Advance Procurement <i>(\$ in Millions)</i>	-	-	-	-	-	-
Net Procurement (P-1) <i>(\$ in Millions)</i>	-	-	-	4.988	-	4.988
Plus CY Advance Procurement <i>(\$ in Millions)</i>	-	-	-	-	-	-
<b>Total Obligation Authority</b> <i>(\$ in Millions)</i>	-	-	-	<b>4.988</b>	-	<b>4.988</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares <i>(\$ in Millions)</i>	-	-	-	-	-	-
Gross/Weapon System Unit Cost <i>(\$ in Millions)</i>	-	-	-	-	-	-

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

<b>Cost Elements</b>	<b>Prior Years</b>			<b>FY 2019</b>			<b>FY 2020</b>			<b>FY 2021 Base</b>			<b>FY 2021 OCO</b>			<b>FY 2021 Total</b>		
	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>
Hardware - Hardware End Item Cost																		
Recurring Cost																		
Procure BH	-	-	-	-	-	-	-	-	-	4.988	1	4.988	-	-	-	4.988	1	4.988
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	4.988	-	-	-	-	-	4.988
<i>Subtotal: Hardware - Hardware End Item Cost</i>	-	-	-	-	-	-	-	-	-	-	-	4.988	-	-	-	-	-	4.988
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	-	-	-	-	-	-	4.988	-	-	-	-	-	4.988

**Remarks:**

Bounty Hunter (BH) supports the Defensive Space Control of US systems in several AORs 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. In March 2019 Bounty Hunter was designated as a Program of Record. Funds requested in FY 2021 are for Bounty Hunter.

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

Bounty Hunter (BH): Funding in FY 2021 is for one additional BH system.

**UNCLASSIFIED**

**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> FBLOST / Family of Beyond Line-of-Sight Terminals
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 0303601F
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**Line Item MDAP/MAIS Code:** 199

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	66.190	-	66.190	39.943	23.760	20.692	15.426	-	166.011
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	66.190	-	66.190	39.943	23.760	20.692	15.426	-	166.011
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority (<i>\$ in Millions</i>)</b>	-	-	-	<b>66.190</b>	-	<b>66.190</b>	<b>39.943</b>	<b>23.760</b>	<b>20.692</b>	<b>15.426</b>	-	<b>166.011</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

In FY 2021, P-1 Line Item FBLOST / Family of Beyond Line-of-Sight Terminals Command Post Terminals efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

The Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) Command Post Terminals (CPT) 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 CPT 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 2019, FAB-T CPT completed the procurement of 61 Ground Terminals, satisfying the program's required procurement quantities for both Ground Fixed and Ground Transportable Terminals. In FY 2021, FAB-T CPT will continue to pursue activities that ensure FAB-T CPT terminal interoperability with the full AEHF satellite constellation.

The PNVC capability is a critical element of the Nuclear Command, Control, and Communications (NC3) system. PNVC is the Survivable Emergency Conferencing Network (SECN) replacement capability which provides anti-jam, anti-scintillation, survivable, and endurable voice communications through the AEHF satellite system for national and strategic users. Equipment upgrades required for this system include the development and production of several new components by other organizations, including the Baseband Interface Group (BIG) and Multi-Stream Summing Device (MSD-III) for airborne users and the Baseband Kit (BBK) enclosure for mobile users.

The PNVC Integrator is responsible for all program elements and funding, including those related to the Defense Information Systems Agency (DISA) and National Security Agency (NSA) components of the PNVC system, in accordance with the transfer directed in the FY 2018 National Defense Authorization Act, Sec. 1661. PNVC funds were transferred from DISA to the AF beginning in FY 2021, and the PNVC Integrator will continue to procure remaining PNVC equipment until all fielding is complete.

PNVC has procured 26 BIGs, these are reflected in previous PE Exhibits to include PE 0303601F Prior years through FY 2015; PE 0303001F - FY 2016 and 2017; and 1203001F - FY 2018 and out.

In the prior years through FY 2014, FAB-T CPT 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 1203001SF.

**UNCLASSIFIED**

**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:**  
3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: 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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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		A		- / -	- / -	- / -	- / 66.190	- / -	- / 66.190
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				- / -	- / -	- / -	- / 66.190	- / -	- / 66.190

\*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 2021 funding includes a \$52.447M increase that enables the planned ramp-up in the pace of FAB-T CPT installation and fielding activities across all CPT platforms. This increased fielding pace is necessary to reach IOC by the Acquisition Program Baseline milestone dates.

Additionally, FAB-T CPT will continue to pursue activities that ensure CPT terminal interoperability with the full AEHF satellite constellation, conduct site surveys, perform install activities, provide Interim Contractor Support for the existing fielded terminals, depot activation activities, and operator training. Activities may also include, but are not limited to, program office support, studies, technical analysis, prototyping, training, etc.

In FY 2021, PNVC will begin procuring Baseband Kit enclosures for mobile users, and any remaining PNVC equipment required for fielding activities.

**UNCLASSIFIED**

<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> FBLOST / Family of Beyond Line-of-Sight Terminals	<b>Item Number / Title [DODIC]:</b> Family of Beyond Line-of-Sight Terminals

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>
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Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Procurement Quantity (Units in Each)	-	-	-	-	-	-
Gross/Weapon System Cost (\$ in Millions)	-	-	-	66.190	-	66.190
Less PY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
Net Procurement (P-1) (\$ in Millions)	-	-	-	66.190	-	66.190
Plus CY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
<b>Total Obligation Authority (\$ in Millions)</b>	-	-	-	<b>66.190</b>	-	<b>66.190</b>

*(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 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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 - MILSATCOM Space; 1203001SF FBLOST Cost																		
Recurring Cost																		
FAB-T Terminals (PE 33601F/33001F)	-	-	-	-	-	-	-	-	-	-	-	40.154	-	-	-	-	-	40.154
Technical Mission Analysis	-	-	-	-	-	-	-	-	-	-	-	18.696	-	-	-	-	-	18.696
Enterprise SE&I	-	-	-	-	-	-	-	-	-	-	-	0.600	-	-	-	-	-	0.600
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	59.450	-	-	-	-	-	59.450
<i>Subtotal: Hardware - MILSATCOM Space; 1203001SF FBLOST Cost</i>	-	-	-	-	-	-	-	-	-	-	-	59.450	-	-	-	-	-	59.450
Hardware - PNVC Cost																		
Recurring Cost																		
BBKs	-	-	-	-	-	-	-	-	-	-	-	5.240	-	-	-	-	-	5.240
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	5.240	-	-	-	-	-	5.240
<i>Subtotal: Hardware - PNVC Cost</i>	-	-	-	-	-	-	-	-	-	-	-	5.240	-	-	-	-	-	5.240
Support - FBLOST Cost																		
FAB-T A&AS	-	-	-	-	-	-	-	-	-	-	-	1.000	-	-	-	-	-	1.000
FAB-T Other Support	-	-	-	-	-	-	-	-	-	-	-	0.500	-	-	-	-	-	0.500
<i>Subtotal: Support - FBLOST Cost</i>	-	-	-	-	-	-	-	-	-	-	-	1.500	-	-	-	-	-	1.500
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	-	-	-	-	-	-	<b>66.190</b>	-	-	-	-	-	<b>66.190</b>

**UNCLASSIFIED**

<b>Exhibit P-5, Cost Analysis:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> FBLOST / Family of Beyond Line-of-Sight Terminals	<b>Item Number / Title [DODIC]:</b> Family of Beyond Line-of-Sight Terminals
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A		<b>MDAP/MAIS Code:</b>
<b>Remarks:</b> This P-Doc incorporates three Program Elements for FAB-T/PNVC: PE 030601F Prior years through FY 2015; PE 0303001F - FY 2016 and FY 2017; and 1203001F - FY 2018 and out. Prior year numbers can be found in these Exhibits.		



**UNCLASSIFIED**

**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> GNRLIT / General Information Tech - Space
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1203173SF, 1203174SF
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**Line Item MDAP/MAIS Code:** N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	0.000	0.000	3.299	-	3.299	3.359	3.423	3.485	3.550	-	17.116
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	0.000	0.000	3.299	-	3.299	3.359	3.423	3.485	3.550	-	17.116
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	<b>0.000</b>	<b>0.000</b>	<b>3.299</b>	-	<b>3.299</b>	<b>3.359</b>	<b>3.423</b>	<b>3.485</b>	<b>3.550</b>	-	<b>17.116</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

In FY 2021, P-1 Line Item GNRLIT / General Information Technology efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

PE 1203173SF R&D Space and Missile Operations

The Research and Development Space and Missile Operations (RDSMO) program, executed by the Innovation and Prototyping 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 Facility (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. Funds in the General Information Technology (Space) line procures Information Technology products to support RDSMO.

Space acquisition must respond with speed and agility to emerging adversary threats. Space and 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 mechanism to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new, or repurpose capabilities.

PE 1203174SF 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.

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> GNRLIT / General Information Tech - Space
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1203173SF, 1203174SF
<b>Line Item MDAP/MAIS Code:</b> N/A		
<p>DISTRIBUTED COMMUNICATIONS ARCHITECTURE: Procures Information Technology (IT) hardware &amp; 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.</p> <p>SPACE ANALYSIS CENTER: Procures Information Technology (IT) hardware &amp; 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&amp;E,SF, PE 1203174SF, Space Innovation, Integration and Rapid Technology Development.</p>		
<p><b>Justification:</b> PE 1203173SF RDSMO</p> <p>Per FY 2016 National Defense Authorization Act, the Evolved Expendable Launch Vehicle (EELV) program was renamed National Security Space Launch (NSSL) program. In association with the NSSL name change direction, the Air Force has renamed the Long Duration Propulsive EELV Secondary Payload Adapter (ESPA) (LDPE) program to be the ROOSTER program. Pre-existing LDPE-1, LDPE-2 and LDPE-3A mission names will remain unchanged.</p> <p>FY 2021 funds (\$1.926M) will be used for critical recapitalization of RDSMO ground enterprise hardware to include: communication systems, telemetry, tracking, and commanding (TT&amp;C) hardware, antenna systems, and common user equipment to support the transition and implementation of prototype/experimental space missions at RSC and SAFB C2 environments. This recapitalization is essential to support continued integration and prototyping of missions including: ROOSTER (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 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 deliver and characterize experimental capabilities and transition operationally to the warfighter in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, etc.</p> <p>PE 1203174SF SIIRTD</p> <p>FY 2021 funding (\$1.373M) modifies modeling and simulation tools that U.S. 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 Space Force operations, thereby enabling service and joint warfighters to realized the full potential of existing and planned space capabilities.</p>		

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> GPS03C / GPSIII Follow On
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): B	<b>Program Elements for Code B Items:</b> 1203269SF	<b>Other Related Program Elements:</b> 1203265SF
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**Line Item MDAP/MAIS Code:** 590

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	2	-	2	2	2	3	2	8	19
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	627.796	-	627.796	634.821	640.782	920.657	750.853	3,232.896	6,807.805
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	627.796	-	627.796	634.821	640.782	920.657	750.853	3,232.896	6,807.805
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	-	-	<b>627.796</b>	-	<b>627.796</b>	<b>634.821</b>	<b>640.782</b>	<b>920.657</b>	<b>750.853</b>	<b>3,232.896</b>	<b>6,807.805</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	313.898	-	313.898	317.411	320.391	306.886	375.427	404.112	358.306

**Description:**

In FY 2021, P-1 Line Item GPS03C / GPS III Follow On (GPS IIIF) efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

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 and 1203164SF), Space (funded under PE 1203265F, 1203265SF, 1203269F and 1203269SF), and a Control Network (funded under PE 1206423F, 1206423SF, 1203165F and 1203165SF). RDT&E,AF funding for GPS IIIF 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. The user 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 including a redesigned USNDS payload, 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 an enduring, space-based distress alerting capability to detect, locate, and relay distress alerts to fulfill its responsibilities under international agreements for Search and Rescue. The 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.

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> GPS03C / GPSIII Follow On
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): B	<b>Program Elements for Code B Items:</b> 1203269SF	<b>Other Related Program Elements:</b> 1203265SF
<b>Line Item MDAP/MAIS Code:</b> 590		

In December 2017, The Principal Deputy Assistant Secretary of the Air Force (Acquisition & Logistics) declared the GPS IIIF program a new start beginning in Fiscal Year (FY) 2019 and consistent with the FY 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 (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 directed the Air Force 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, SF (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 1203269SF.

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:**  
3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs

**P-1 Line Item Number / Title:**  
GPS03C / GPSIII Follow On

**ID Code** (A=Service Ready, B=Not Service Ready): B **Program Elements for Code B Items:** 1203269SF **Other Related Program Elements:** 1203265SF

**Line Item MDAP/MAIS Code:** 590

Exhibits Schedule					Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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	GPSIII Follow On	P-5a	B		- / -	- / -	- / -	2 / 627.796	- / -	2 / 627.796
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				<b>- / -</b>	<b>- / -</b>	<b>- / -</b>	<b>2 / 627.796</b>	<b>- / -</b>	<b>2 / 627.796</b>

\*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 2021 funding procures two GPS IIIF production satellites (SV14-15) in addition to any recurring, SV specific support equipment and tooling. FY 2021 funding also procures independent technical, systems engineering, and integration support critical to managing production milestones, mission assurance activities, and technology refreshes. Additionally, FY 2021 funding allows the program to 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.

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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> GPS03C / GPSIII Follow On	<b>Item Number / Title [DODIC]:</b> GPSIII Follow On

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B	<b>MDAP/MAIS Code:</b>
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Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	2	-	2
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	627.796	-	627.796
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	627.796	-	627.796
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	-	-	<b>627.796</b>	-	<b>627.796</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	313.898	-	313.898

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

Cost Elements	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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 III F SPAF Cost																		
Recurring Cost																		
GPS III F <sup>(t)</sup>	-	-	-	-	-	-	-	-	-	295.692	2	591.384	-	-	-	295.692	2	591.384
GPS III F Enterprise SE&I	-	-	-	-	-	-	-	-	-	-	-	0.500	-	-	-	-	-	0.500
GPS III F Technical Mission Analysis	-	-	-	-	-	-	-	-	-	-	-	7.071	-	-	-	-	-	7.071
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	598.955	-	-	-	-	-	598.955
<i>Subtotal: Space Vehicle - GPS III F SPAF Cost</i>	-	-	-	-	-	-	-	-	-	-	-	598.955	-	-	-	-	-	598.955
Support - GPS III F SPAF Cost																		
GPS III F FFRDC	-	-	-	-	-	-	-	-	-	-	-	5.829	-	-	-	-	-	5.829
GPS III F A&AS	-	-	-	-	-	-	-	-	-	-	-	23.012	-	-	-	-	-	23.012
<i>Subtotal: Support - GPS III F SPAF Cost</i>	-	-	-	-	-	-	-	-	-	-	-	28.841	-	-	-	-	-	28.841
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	-	-	-	-	313.898	2	627.796	-	-	-	313.898	2	627.796

(t) indicates the presence of a P-5a

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**Exhibit P-5a, Procurement History and Planning:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> GPS03C / GPSIII Follow On	<b>Item Number / Title [DODIC]:</b> GPSIII Follow On
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Cost Elements	O C O	FY	Contractor and Location	Method/Type or Funding Vehicle	Location of PCO	Award Date	Date of First Delivery	Qty <i>(Each)</i>	Unit Cost <i>(\$ M)</i>	Specs Avail Now?	Date Revision Available	RFP Issue Date
GPS IIIF		2021	Lockheed Martin / Littleton, CO	C / FPIF	SMC, LA AFB, CA	Oct 2020	Nov 2026	2	313.898	N	Jan 2021	

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> GPSIII / GPS III Space Segment
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1203265SF
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**Line Item MDAP/MAIS Code:** 292

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	20.122	-	20.122	21.302	19.312	7.868	1.883	15.314	85.801
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	20.122	-	20.122	21.302	19.312	7.868	1.883	15.314	85.801
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	-	-	<b>20.122</b>	-	<b>20.122</b>	<b>21.302</b>	<b>19.312</b>	<b>7.868</b>	<b>1.883</b>	<b>15.314</b>	<b>85.801</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

In FY 2021, P-1 Line Item GPSIII / GPS III Space Segment efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

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 and 1203164SF), Space (funded under PE 1203265F, 1203265SF, 1203165F, 1203269F and 1203269SF), and a Control Network (funded under PE 1206423F, 1206423SF, 1203165F and 1203165SF). 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. The user 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 Space Procurement, AF (SPAF) regular procurement.

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> GPSIII / GPS III Space Segment
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1203265SF
<b>Line Item MDAP/MAIS Code:</b> 292		
<p>Space acquisition must respond with speed and agility to emerging adversary threats. Space &amp; 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.</p> <p>SV01 and SV02 were successfully launched on December 2018 and August 2019 respectively, SV03 has a projected Initial Launch Capability (ILC) of March 2020.</p> <p>Funding for this exhibit is contained in PE 1203265SF.</p>		

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:** 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: 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:** 1203265SF

**Line Item MDAP/MAIS Code:** 292

Exhibits Schedule					Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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		- / -	- / -	- / -	- / 20.122	- / -	- / 20.122
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				- / -	- / -	- / -	- / 20.122	- / -	- / 20.122

\*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 2021 funding will procure independent technical, systems engineering, and integration support critical to managing SVs 04-10 production milestones, on-orbit incentive fees, storage, mission readiness testing, mission assurance activities, and launch preparation events. Also funds, SV03 final on-orbit incentive fee. SV05 and SV06 have a planned ILC of FY2021. SV07 has a planned ILC for early FY2022. Additionally, FY 2021 funding will allow the program to rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities include, but are not limited to, program office support, studies, technical analysis, experimentation, prototyping, etc.

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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>													<b>Date:</b> February 2020					
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10						<b>P-1 Line Item Number / Title:</b> GPSIII / GPS III Space Segment						<b>Item Number / Title [DODIC]:</b> GPS III Space Segment						
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A									<b>MDAP/MAIS Code:</b>									
<b>Resource Summary</b>				<b>Prior Years</b>		<b>FY 2019</b>		<b>FY 2020</b>		<b>FY 2021 Base</b>		<b>FY 2021 OCO</b>		<b>FY 2021 Total</b>				
Procurement Quantity ( <i>Units in Each</i> )				-		-		-		-		-		-				
Gross/Weapon System Cost ( <i>\$ in Millions</i> )				-		-		-		20.122		-		20.122				
Less PY Advance Procurement ( <i>\$ in Millions</i> )				-		-		-		-		-		-				
Net Procurement (P-1) ( <i>\$ in Millions</i> )				-		-		-		20.122		-		20.122				
Plus CY Advance Procurement ( <i>\$ in Millions</i> )				-		-		-		-		-		-				
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )				-		-		-		<b>20.122</b>		-		<b>20.122</b>				
<i>(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)</i>																		
Initial Spares ( <i>\$ in Millions</i> )				-		-		-		-		-		-		-		
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )				-		-		-		-		-		-		-		
Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.																		
<b>Cost Elements</b>	<b>Prior Years</b>			<b>FY 2019</b>			<b>FY 2020</b>			<b>FY 2021 Base</b>			<b>FY 2021 OCO</b>			<b>FY 2021 Total</b>		
	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>
Space Vehicle - Space Vehicle End Item Cost																		
Recurring Cost																		
GPS III SV 03-10	-	-	-	-	-	-	-	-	-	-	-	0.403	-	-	-	-	-	0.403
GPS III SV 03-10 Enterprise SE&I	-	-	-	-	-	-	-	-	-	-	-	0.594	-	-	-	-	-	0.594
GPS III SV 03-10 Technical Mission Analysis	-	-	-	-	-	-	-	-	-	-	-	2.600	-	-	-	-	-	2.600
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	3.597	-	-	-	-	-	3.597
<i>Subtotal: Space Vehicle - Space Vehicle End Item Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>3.597</b>	-	-	-	-	-	<b>3.597</b>
Checkout and Launch - Checkout And Launch End Item Cost																		
GPS III SV 03-10 Launch Services	-	-	-	-	-	-	-	-	-	-	-	10.998	-	-	-	-	-	10.998
GPS III SV 03-10 On-Orbit Incentive	-	-	-	-	-	-	-	-	-	-	-	3.000	-	-	-	-	-	3.000
GPS III SV 03-10 Storage and MRT	-	-	-	-	-	-	-	-	-	-	-	0.800	-	-	-	-	-	0.800
<i>Subtotal: Checkout and Launch - Checkout And Launch End Item Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>14.798</b>	-	-	-	-	-	<b>14.798</b>
Support - Support End Item Cost																		
GPS III SV 03-10 FFRDC	-	-	-	-	-	-	-	-	-	-	-	1.064	-	-	-	-	-	1.064
GPS III SV 03-10 A&AS	-	-	-	-	-	-	-	-	-	-	-	0.403	-	-	-	-	-	0.403

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<b>Exhibit P-5, Cost Analysis:</b> PB 2021 Air Force												<b>Date:</b> February 2020					
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10						<b>P-1 Line Item Number / Title:</b> GPSIII / GPS III Space Segment						<b>Item Number / Title [DODIC]:</b> GPS III Space Segment					
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A												<b>MDAP/MAIS Code:</b>					

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

Cost Elements	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)
GPS III SV 03-10 Other Support	-	-	-	-	-	-	-	-	-	-	-	0.260	-	-	-	-	-	0.260
<i>Subtotal: Support - Support End Item Cost</i>	-	-	-	-	-	-	-	-	-	-	-	1.727	-	-	-	-	-	1.727
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	-	-	-	-	-	-	20.122	-	-	-	-	-	20.122

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> GPSSPC / Global Positioning (Space)
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1203164SF
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**Line Item MDAP/MAIS Code:** N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	0.000	0.000	2.256	-	2.256	2.303	2.346	2.405	2.450	-	11.760
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	0.000	0.000	2.256	-	2.256	2.303	2.346	2.405	2.450	-	11.760
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority (<i>\$ in Millions</i>)</b>	-	<b>0.000</b>	<b>0.000</b>	<b>2.256</b>	-	<b>2.256</b>	<b>2.303</b>	<b>2.346</b>	<b>2.405</b>	<b>2.450</b>	-	<b>11.760</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

In FY 2021, P-1 Line Item GPSSPC / Global Positioning (Space) efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

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 is contained in 1203164SF.

**Justification:**

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

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> GPSSPC / Global Positioning (Space)
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1203164SF
<b>Line Item MDAP/MAIS Code:</b> N/A		
KEY DATA LOADING INSTALLATION FACILITY (KLIF)/GPS SECURITY DEVICE: FY 2021 funding provides for the programming of black key (cryptographic) algorithms into the SAASM, providing an accurate positioning solution for GPS users using secure equipment. Funding will procure support for Key Data Processors (KDP), ensuring uninterrupted support to SAASM vendors. SAASM vendors are required to use government-provided KDP as part of the security architecture of GPS User Equipment.		
FY 2020 and Prior Years funding for this exhibit is contained in PE 1203164F. Beginning in FY 2021, funding is transferred to PE 1203164SF.		



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**Exhibit P-40, Budget Line Item Justification: PB 2021 Air Force** **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> MC0MSE / Spaceborne Equip (Comsec)
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ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: N/A
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**Line Item MDAP/MAIS Code:** N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	35.495	-	35.495	27.567	28.906	27.319	27.811	-	147.098
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	35.495	-	35.495	27.567	28.906	27.319	27.811	-	147.098
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority (<i>\$ in Millions</i>)</b>	-	-	-	<b>35.495</b>	-	<b>35.495</b>	<b>27.567</b>	<b>28.906</b>	<b>27.319</b>	<b>27.811</b>	-	<b>147.098</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**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. The High Trust Partner Cryptography (HTPC) Program will procure a common solution that integrates TT&C functions for the United States' High Trust Partners to allow the hosting of US payloads on foreign partner satellites. HTPC uses the SMCC architecture leveraging existing technologies, and allowed this technology to be designed from the scalable, upgradeable, and reconfigurable SMCC Medium/Large Crypto Solution (MLCS) baseline.

Funding for this exhibit contained in program element (PE) 1203140F. Starting in FY21, all Space Procurement funding moved from APPN 3021 to APPN 3022 (Space Force). SPACE PROCUREMENT AF BSA 1 is now SPACE FORCE BSA 10.

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:**  
3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs

**P-1 Line Item Number / Title:**  
MCOMSE / 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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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	Spaceborne Equip (Comsec)	P-5a	A		- / -	- / -	- / -	- / 35.495	- / -	- / 35.495
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				<b>- / -</b>	<b>- / -</b>	<b>- / -</b>	<b>- / 35.495</b>	<b>- / -</b>	<b>- / 35.495</b>

\*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. 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.

a. Logistics: FY21 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.

b. Aerospace Vehicle Equipment (AVE) Products: FY21 funding provides Telemetry, Tracking, and Command (TT&C) 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).

c. Ground Operating Equipment (GOE) Products: FY21 funding provides cryptographic products for ground nodes that link to space assets. GOE provide the procurement of ground equipment with space qualified command encryption/decryption ground equipment used for operational and developmental space systems (Telemetry, Tracking, and Command (TT&C) Mission Data 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 Common Crypto Solutions in FY21 for Air Force, Space Force, DOD, and Intelligence Community Space Programs. FY21 funding provides for the production of SMCC for satellite programs such as GPS III. SMCC meets NSA mandated space algorithm transition/modernization guidance to mitigate evolving threats/vulnerabilities and will provide modernized cryptographic capabilities

3. High Trust Partner Cryptography (HTPC): Follows the SMCC architecture for a common, modular, and upgradable cryptographic solution for our High Trust Partners. HTPC will award an LRIP Production CLIN as part of the HTPC development contract to meet the currently identified initial requirements for the Protected Tactical SATCOM (PTS) system. All other Air Force, DOD, and Intelligence Community Space Programs will identify their needs to HNCS for inclusion in the Space COMSEC Procurement line. HTPC meets NSA mandated space algorithm transition/modernization guidance to mitigate evolving threats/vulnerabilities and will provide modernized cryptographic capabilities.

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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> MCOMSE / Spaceborne Equip (Comsec)	<b>Item Number / Title [DODIC]:</b> Spaceborne Equip (Comsec)

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>
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Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Procurement Quantity (Units in Each)	-	-	-	-	-	-
Gross/Weapon System Cost (\$ in Millions)	-	-	-	35.495	-	35.495
Less PY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
Net Procurement (P-1) (\$ in Millions)	-	-	-	35.495	-	35.495
Plus CY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
<b>Total Obligation Authority (\$ in Millions)</b>	-	-	-	<b>35.495</b>	-	<b>35.495</b>

*(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 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)
<b>Hardware - 1. Space Communications Security (COMSEC) (PE 1203140F) Cost</b>																		
Recurring Cost																		
a. Logistics	-	-	-	-	-	-	-	-	-	-	-	2.971	-	-	-	-	-	2.971
b. AVE	-	-	-	-	-	-	-	-	-	0.116	46	5.343	-	-	-	0.116	46	5.343
c. GOE <sup>(†)</sup>	-	-	-	-	-	-	-	-	-	0.052	222	11.598	-	-	-	0.052	222	11.598
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>19.911</b>	-	-	-	-	-	<b>19.911</b>
<i>Subtotal: Hardware - 1. Space Communications Security (COMSEC) (PE 1203140F) Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>19.911</b>	-	-	-	-	-	<b>19.911</b>
<b>Hardware - 2. Space Modular Common Crypto (SMCC) (PE 1203140F) Cost</b>																		
Recurring Cost																		
SMCC <sup>(†)</sup>	-	-	-	-	-	-	-	-	-	1.417	11	15.584	-	-	-	1.417	11	15.584
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>15.584</b>	-	-	-	-	-	<b>15.584</b>
<i>Subtotal: Hardware - 2. Space Modular Common Crypto (SMCC) (PE 1203140F) Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>15.584</b>	-	-	-	-	-	<b>15.584</b>
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	-	-	-	-	-	-	<b>35.495</b>	-	-	-	-	-	<b>35.495</b>

<sup>(†)</sup> indicates the presence of a P-5a

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<b>Exhibit P-5a, Procurement History and Planning:</b> PB 2021 Air Force								<b>Date:</b> February 2020				
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10			<b>P-1 Line Item Number / Title:</b> MCOMSE / Spaceborne Equip (Comsec)					<b>Item Number / Title [DODIC]:</b> Spaceborne Equip (Comsec)				
<b>Cost Elements</b>	<b>O C O</b>	<b>FY</b>	<b>Contractor and Location</b>	<b>Method/Type or Funding Vehicle</b>	<b>Location of PCO</b>	<b>Award Date</b>	<b>Date of First Delivery</b>	<b>Qty (Each)</b>	<b>Unit Cost (\$ M)</b>	<b>Specs Avail Now?</b>	<b>Date Revision Available</b>	<b>RFP Issue Date</b>
c. GOE		2021	MULTIPLE / MULTIPLE	Various	AFMC	May 2021	Apr 2022	222	0.052	Y		
SMCC		2021	Multiple / Multiple	Various	AFMC	Apr 2021	Jan 2023	11	1.417	Y		

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:**  
3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: 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:** 1203601SF

**Line Item MDAP/MAIS Code:** 199

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	15.795	-	15.795	28.511	20.713	11.935	12.154	172.204	261.312
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	15.795	-	15.795	28.511	20.713	11.935	12.154	172.204	261.312
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	-	-	<b>15.795</b>	-	<b>15.795</b>	<b>28.511</b>	<b>20.713</b>	<b>11.935</b>	<b>12.154</b>	<b>172.204</b>	<b>261.312</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

In FY 2021, P-1 Line Item MILSAT / MILSATCOM efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

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 1203601SF, 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.

Space and Missile Systems Center (SMC) is procuring and fielding Protected Tactical Waveform (PTW) capable modems to meet the Ground Multiband Terminal (GMT) mission requirements. The Air Force / Army Anti-jam Modem (A3M) is the program of record for development, procurement, and fielding of the PTW capability. A3M is teamed with the Army to expand the competitive industry base and gain volume cost savings of a common modem. The A3M modem will provide high throughput and enhanced anti-jam capability in benign and contested environments to prevent the disruption of communications from electronic jamming at identified threat levels of the Wideband Global SATCOM (WGS) Operational Requirements Document (ORD). The A3M modem meets the Internet Protocol (IP) mandate, is forward compatible with the future Protected Tactical SATCOM (PTS), and will contain a National Security Agency (NSA) certified End Cryptographic Unit (ECU).

A3M Procurement funding includes depot tooling, establishment of the Key Loading and Initialization Facility (KLIF), purchase of Protected Tactical Enterprise Service (PTES) KLIF Host equipment, A3M warehousing equipment, shipping containers, and A3M test equipment and repair work spaces. Will purchase GMT modification kits, including cable sets to install the modem into the GMT transit cases; a new commercial off the shelf (COTS) Data Collection Unit (DCU) to support A3M data through put; and GMT modification labor to remove and process obsolete hardware, repair and label GMT modified case, and install A3M. Also required is shipping of modified GMT cases to field units and return shipping of un-modified GMT equipment cases and fielding support, purchase and delivery of technical data, and initial spares in a combination of spare modems and subassembly parts equivalent to 10% sparing. A3M's Indefinite Quantity Indefinite Delivery (IDIQ) contract will enable future fielding for additional WGS users.

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> MILSAT / MILSATCOM
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1203601SF

**Line Item MDAP/MAIS Code:** 199

Funding for this exhibit is contained in Program Element (PE) 1203601SF MILSATCOM TERMINALS

**UNCLASSIFIED**

**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:**  
3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: 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:** 1203601SF

**Line Item MDAP/MAIS Code:** 199

Exhibits Schedule					Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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		- / -	- / -	- / -	- / 11.277	- / -	- / 11.277
P-5	PTW Modems		A		- / -	- / -	- / -	- / 4.518	- / -	- / 4.518
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				- / -	- / -	- / -	- / 15.795	- / -	- / 15.795

\*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:**

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 2021, funding will extend the life of the system, modernize operational suitability, safety and effectiveness, and maintain high interoperability with other DoD, Army, Navy, and Air Force strategic and tactical 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.

For 10 of 31\* 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 21 of 31\* 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.

\*Note: Total terminals reduced from 32 to 31 due to the Modernization of Enterprise Terminals (MET) terminal at the New Boston Air Force Site being re-allocated.

PROTECTED TACTICAL WAVEFORM (PTW), AIR FORCE - ARMY ANTI-JAM MODEM (A3M): Preparation for fielding of Protective Tactical Waveforms (PTW) capable modems. FY 2021 effort includes depot tooling at Tobyhanna Army Depot and purchase of 60 GMT Terminal modification kits. Without the modification kits, the new modem cannot be installed. The modem needs cables and a new DCU to work with the GMT. Army fielding also includes cable sets to connect the modem to the STT. If the modification is being completed by a field unit instead of the depot, the unit will receive the modem and detailed instructions as part of the kit to install A3M.

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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> MILSAT / MILSATCOM	<b>Item Number / Title [DODIC]:</b> AFWET

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>
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Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Procurement Quantity <i>(Units in Each)</i>	-	-	-	-	-	-
Gross/Weapon System Cost <i>(\$ in Millions)</i>	-	-	-	11.277	-	11.277
Less PY Advance Procurement <i>(\$ in Millions)</i>	-	-	-	-	-	-
Net Procurement (P-1) <i>(\$ in Millions)</i>	-	-	-	11.277	-	11.277
Plus CY Advance Procurement <i>(\$ in Millions)</i>	-	-	-	-	-	-
<b>Total Obligation Authority</b> <i>(\$ in Millions)</i>	-	-	-	<b>11.277</b>	-	<b>11.277</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares <i>(\$ in Millions)</i>	-	-	-	-	-	-
Gross/Weapon System Unit Cost <i>(\$ in Millions)</i>	-	-	-	-	-	-

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

Cost Elements	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)
<b>Hardware - AFWET Cost</b>																		
Recurring Cost																		
Terminal Modernization	-	-	-	-	-	-	-	-	-	-	-	3.768	-	-	-	-	-	3.768
Maintenance Upgrades/ Sustainment	-	-	-	-	-	-	-	-	-	-	-	4.354	-	-	-	-	-	4.354
Product Support	-	-	-	-	-	-	-	-	-	-	-	1.586	-	-	-	-	-	1.586
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	9.708	-	-	-	-	-	9.708
<i>Subtotal: Hardware - AFWET Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>9.708</b>	-	-	-	-	-	<b>9.708</b>
<b>Support - AFWET Cost</b>																		
Advisory and Assistance Services (A&AS)	-	-	-	-	-	-	-	-	-	-	-	0.736	-	-	-	-	-	0.736
OTHER SUPPORT	-	-	-	-	-	-	-	-	-	-	-	0.833	-	-	-	-	-	0.833
<i>Subtotal: Support - AFWET Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>1.569</b>	-	-	-	-	-	<b>1.569</b>
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	-	-	-	-	-	-	<b>11.277</b>	-	-	-	-	-	<b>11.277</b>



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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> MILSAT / MILSATCOM	<b>Item Number / Title [DODIC]:</b> PTW Modems

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>
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<b>Resource Summary</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	4.518	-	4.518
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	4.518	-	4.518
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	-	-	<b>4.518</b>	-	<b>4.518</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-

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

<b>Cost Elements</b>	<b>Prior Years</b>			<b>FY 2019</b>			<b>FY 2020</b>			<b>FY 2021 Base</b>			<b>FY 2021 OCO</b>			<b>FY 2021 Total</b>		
	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>	<b>Unit Cost</b> <i>(\$ M)</i>	<b>Qty</b> <i>(Each)</i>	<b>Total Cost</b> <i>(\$ M)</i>
<b>Hardware - A3M Cost</b>																		
<b>Recurring Cost</b>																		
Depot Tooling	-	-	-	-	-	-	-	-	-	-	-	1.669	-	-	-	-	-	1.669
GMT Modification Kit	-	-	-	-	-	-	-	-	-	0.020	60	1.200	-	-	-	0.020	60	1.200
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	2.869	-	-	-	-	-	2.869
<i>Subtotal: Hardware - A3M Cost</i>	-	-	-	-	-	-	-	-	-	-	-	2.869	-	-	-	-	-	2.869
<b>Support - A3M Cost</b>																		
Advisory and Assistance Services (A&AS)	-	-	-	-	-	-	-	-	-	-	-	1.200	-	-	-	-	-	1.200
OTHER SUPPORT	-	-	-	-	-	-	-	-	-	-	-	0.449	-	-	-	-	-	0.449
<i>Subtotal: Support - A3M Cost</i>	-	-	-	-	-	-	-	-	-	-	-	1.649	-	-	-	-	-	1.649
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	-	-	-	-	-	-	4.518	-	-	-	-	-	4.518

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> MSSBIR / SBIR High (Space)
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> 1206441F	<b>Other Related Program Elements:</b> 1206441F, 1203915SF
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**Line Item MDAP/MAIS Code:** 210

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	160.891	-	160.891	8.181	8.331	8.481	0.000	0.000	185.884
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	160.891	-	160.891	8.181	8.331	8.481	0.000	0.000	185.884
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority (<i>\$ in Millions</i>)</b>	-	-	-	<b>160.891</b>	-	<b>160.891</b>	<b>8.181</b>	<b>8.331</b>	<b>8.481</b>	<b>0.000</b>	<b>0.000</b>	<b>185.884</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

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

In FY 2021, P-1 Line Item MSSBIR / SBIR High (Space) efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

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. GEO-3 and 4 are fully mission capable, having completed AFSPC and USSTRATCOM operational acceptance and are certified for Integrated Tactical Warning/Attack Assessment (ITW/AA) missile warning operations and technical intelligence operations.

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.

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> MSSBIR / SBIR High (Space)
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> 1206441F	<b>Other Related Program Elements:</b> 1206441F, 1203915SF
<b>Line Item MDAP/MAIS Code:</b> 210		
<p>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.</p> <p>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&amp;E funded). The HEO-3 and 4 payloads are on-orbit and certified for Integrated Tactical Warning/Attack Assessment (ITW/AA) missile warning operations and certified for technical intelligence operations. HEO-1 and HEO-2 are in a storage/residual operational mode.</p> <p>Total GEO 3-4 3020/3021 funds are \$2,795.912M. Total GEO 5-6 3020/3021/3022 funds are \$3,258.940M. Total HEO 3-4 3020/3021 funds are \$1,146.672M. Total S2E2 3080/3020/3021/3022 funds are \$561.275M.</p> <p>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 U.S. Space Command's 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. This effort includes critical operational modifications to the fixed survivable ground and S2E2 mobile system that addresses operational shortfalls and obsolescence updates up to IOC acceptance. Post IOC, the effort associated with critical operational modifications and obsolescence updates is called the SBIRS survivable and Endurable Service Life Extension (S3LE).</p> <p>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 unsupported data processing subsystem components. This effort includes the recurring hardware/software antenna obsolescence updates to the peacetime survivable ground effort called Rapid Adaption GEO Relay Station (RANGERS), recurring hardware/software antenna obsolescence updates to the fixed survivable ground and S2E2, called the SBIRS survivable and Endurable Service Life Extension (S3LE).</p> <p>Space acquisition must respond with speed and agility to emerging adversary threats. Space &amp; 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.</p> <p>Funding for this exhibit contained in (PE) 1203915SF</p>		

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:** 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: 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:** 1206441F **Other Related Program Elements:** 1206441F, 1203915SF

**Line Item MDAP/MAIS Code:** 210

Exhibits Schedule					Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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 5-6		A		- / -	- / -	- / -	- / 104.928	- / -	- / 104.928
P-5	SBIRS Survivable Endurable Evolution (S2E2)		A		- / -	- / -	- / -	- / 31.977	- / -	- / 31.977
P-3a	1 / SBIRS Mobile System & Fixed Comm Electronics Upgrades (Reliability & Maintainability)		B		- / -	- / -	- / -	- / 23.986	- / -	- / 23.986
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				- / -	- / -	- / -	- / 160.891	- / -	- / 160.891

Exhibits Schedule					FY 2022	FY 2023	FY 2024	FY 2025	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 5-6		A		- / -	- / -	- / -	- / -	- / -	- / -
P-5	SBIRS Survivable Endurable Evolution (S2E2)		A		- / -	- / -	- / -	- / -	- / -	- / -
P-3a	1 / SBIRS Mobile System & Fixed Comm Electronics Upgrades (Reliability & Maintainability)		B		- / 8.181	- / 8.331	- / 8.481	- / 0.000	- / -	- / 48.979
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				- / 8.181	- / 8.331	- / 8.481	- / 0.000	- / 0.000	- / 185.884

\*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 2021 funding provides for storage, launch integration and early on orbit test for GEO-5 and 6 satellites, resilience efforts, and continued program/product support.

FY 2021 funding procures SBIRS mobiles hardware and software. FY 2021 funding Procures SBIRS mobile system and fixed site communications/electronics upgrades. FY 2021 funding procures the RANGERS upgrade to the Survivable Mission Control Station (SMCS) and Survivable Remote Ground Station (SRGS) antennas. This effort enables common GEO capable antennas required to provide Survivable Geosynchronous Earth Orbit (GEO) downlink capability and reduces SRGS sustainment posture risk.

FY 2021: The updated program baseline will deliver S2E2 through Initial Operating Capability (IOC) and bring SBIRS GEO and Global Positioning System Nuclear Detection into the USSTRATCOM Nuclear Command, Control, and Communication enduring 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.

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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> MSSBIR / SBIR High (Space)	<b>Item Number / Title [DODIC]:</b> GEO 5-6

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>
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Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	104.928	-	104.928
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	104.928	-	104.928
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	-	-	<b>104.928</b>	-	<b>104.928</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-

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

Cost Elements	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)
<b>Space Vehicle - GEO 5-6 Cost</b>																		
Recurring Cost																		
GEO 5-6 Hardware	-	-	-	-	-	-	-	-	-	-	-	1.882	-	-	-	-	-	1.882
GEO 5-6 Integration and Assembly	-	-	-	-	-	-	-	-	-	-	-	10.666	-	-	-	-	-	10.666
GEO 5-6 Enterprise Systems Engineering & Integration (SE&I)	-	-	-	-	-	-	-	-	-	-	-	2.717	-	-	-	-	-	2.717
Technical Mission Analysis	-	-	-	-	-	-	-	-	-	-	-	2.155	-	-	-	-	-	2.155
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	17.420	-	-	-	-	-	17.420
Non Recurring Cost																		
GEO 5-6 Obsolescence Non-Recurring	-	-	-	-	-	-	-	-	-	-	-	20.311	-	-	-	-	-	20.311
GEO 5-6 Launch Vehicle and Range Integration	-	-	-	-	-	-	-	-	-	-	-	12.917	-	-	-	-	-	12.917
<i>Subtotal: Non Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	33.228	-	-	-	-	-	33.228
<i>Subtotal: Space Vehicle - GEO 5-6 Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>50.648</b>	-	-	-	-	-	<b>50.648</b>
<b>Checkout and Launch - GEO 5-6 Cost</b>																		
GEO 5-6 Launch Ops & Checkout	-	-	-	-	-	-	-	-	-	-	-	16.685	-	-	-	-	-	16.685

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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>												<b>Date:</b> February 2020					
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10						<b>P-1 Line Item Number / Title:</b> MSSBIR / SBIR High (Space)						<b>Item Number / Title [DODIC]:</b> GEO 5-6					
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A										<b>MDAP/MAIS Code:</b>							

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

Cost Elements	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)	-	-	-	-	-	-	-	-	-	-	-	25.100	-	-	-	-	-	25.100
<i>Subtotal: Checkout and Launch - GEO 5-6 Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>41.785</b>	-	-	-	-	-	<b>41.785</b>
Support - GEO 5-6 Cost																		
Other Support	-	-	-	-	-	-	-	-	-	-	-	3.225	-	-	-	-	-	3.225
FFRDC	-	-	-	-	-	-	-	-	-	-	-	4.309	-	-	-	-	-	4.309
A&AS	-	-	-	-	-	-	-	-	-	-	-	4.961	-	-	-	-	-	4.961
<i>Subtotal: Support - GEO 5-6 Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>12.495</b>	-	-	-	-	-	<b>12.495</b>
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	-	-	-	-	-	-	<b>104.928</b>	-	-	-	-	-	<b>104.928</b>

**Remarks:**

The incrementally funded amount includes the above total Space Vehicle cost (less: SE&I, Launch Vehicle and Range Integration, and Interim Contractor Support) and launch operations and checkout cost. Total incrementally funded amount of \$2,729.420M 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 3020/3021/3022 funds are \$3,258.940.

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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> MSSBIR / SBIR High (Space)	<b>Item Number / Title [DODIC]:</b> SBIRS Survivable Endurable Evolution (S2E2)

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>
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<b>Resource Summary</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Procurement Quantity (Units in Each)	-	-	-	-	-	-
Gross/Weapon System Cost (\$ in Millions)	-	-	-	31.977	-	31.977
Less PY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
Net Procurement (P-1) (\$ in Millions)	-	-	-	31.977	-	31.977
Plus CY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
<b>Total Obligation Authority (\$ in Millions)</b>	-	-	-	<b>31.977</b>	-	<b>31.977</b>

*(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.

<b>Cost Elements</b>	<b>Prior Years</b>			<b>FY 2019</b>			<b>FY 2020</b>			<b>FY 2021 Base</b>			<b>FY 2021 OCO</b>			<b>FY 2021 Total</b>		
	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)
<b>Hardware - SBIRS Survivable Endurable Evolution (S2E2) Cost</b>																		
Recurring Cost																		
S2E2 SMGT 4-5	-	-	-	-	-	-	-	-	-	-	-	1.000	-	-	-	-	-	1.000
Systems Engineering & Integration (SE&I)	-	-	-	-	-	-	-	-	-	-	-	0.371	-	-	-	-	-	0.371
Technical Mission Analysis	-	-	-	-	-	-	-	-	-	-	-	3.465	-	-	-	-	-	3.465
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>4.836</b>	-	-	-	-	-	<b>4.836</b>
Non Recurring Cost																		
S2E2 SMGT 1-3 DSP/ GEO Stereo Capability Modification	-	-	-	-	-	-	-	-	-	-	-	0.940	-	-	-	-	-	0.940
Interim Contractor Support (ICS)	-	-	-	-	-	-	-	-	-	-	-	12.641	-	-	-	-	-	12.641
<i>Subtotal: Non Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>13.581</b>	-	-	-	-	-	<b>13.581</b>
<i>Subtotal: Hardware - SBIRS Survivable Endurable Evolution (S2E2) Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>18.417</b>	-	-	-	-	-	<b>18.417</b>
<b>Software - SBIRS Survivable Endurable Evolution (S2E2) Cost</b>																		
Non Recurring Cost																		
S2E2 Software	-	-	-	-	-	-	-	-	-	-	-	10.443	-	-	-	-	-	10.443
<i>Subtotal: Non Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>10.443</b>	-	-	-	-	-	<b>10.443</b>



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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> MSSBIR / SBIR High (Space)	<b>Item Number / Title [DODIC]:</b> SBIRS Survivable Endurable Evolution (S2E2)
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A		<b>MDAP/MAIS Code:</b>

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

Cost Elements	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)
<i>Subtotal: Software - SBIRS Survivable Endurable Evolution (S2E2) Cost</i>	-	-	-	-	-	-	-	-	-	-	-	10.443	-	-	-	-	-	10.443
<b>Support - SBIRS Survivable Endurable Evolution (S2E2) Cost</b>																		
Other Support	-	-	-	-	-	-	-	-	-	-	-	1.442	-	-	-	-	-	1.442
FFRDC	-	-	-	-	-	-	-	-	-	-	-	0.742	-	-	-	-	-	0.742
A&AS	-	-	-	-	-	-	-	-	-	-	-	0.933	-	-	-	-	-	0.933
<i>Subtotal: Support - SBIRS Survivable Endurable Evolution (S2E2) Cost</i>	-	-	-	-	-	-	-	-	-	-	-	3.117	-	-	-	-	-	3.117
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	-	-	-	-	-	-	31.977	-	-	-	-	-	31.977

**Remarks:**

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

Total S2E2 Funding for FY 2011-2021 = \$561.275M

Quantity = 5

Gross Unit Cost = \$112.255M

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<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> MSSBIR / SBIR High (Space)	<b>Modification Number / Title:</b> 1 / SBIRS Mobile System & Fixed Comm Electronics Upgrades

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B	<b>MDAP/MAIS Code:</b>
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Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	23.986	-	23.986	8.181	8.331	8.481	0.000	-	48.979
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	23.986	-	23.986	8.181	8.331	8.481	0.000	-	48.979
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	-	-	<b>23.986</b>	-	<b>23.986</b>	<b>8.181</b>	<b>8.331</b>	<b>8.481</b>	<b>0.000</b>	-	<b>48.979</b>
<i>(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)</i>												
Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

SBIRS MOBILE AND FIXED SITE COMMUNICATIONS/ELECTRONIC REPLACEMENT: This effort procures Defense Support Program (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 Radio Frequency (RF) simulator, Mission Control Station (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 and 1203915SF.

This effort includes the recurring hardware/software antenna obsolescence updates to the fixed survivable ground and S2E2, called the SBIRS survivable and Endurable Service Life Extension (S3LE). S3LE is required to address know operational shortfalls at S2E2 Initial Operational Capability (IOC) for the mobile endurable mission and SBIRS Full Operational Capability (FOC), to include, but not limited to: crypto updates, hardware replacements, and cybersecurity. It also includes the Rapid Adaptation Geosynchronous Earth Orbit (GEO) Relay Station (RANGERS) and modifications to integrate a new OCONUS Survivable Remote Ground Station (SRGS) into the fixed survivable system.

**Milestone/Development Status**

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

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<b>Exhibit P-3a, Individual Modification: PB 2021 Air Force</b>										<b>Date:</b> February 2020			
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10					<b>P-1 Line Item Number / Title:</b> MSSBIR / SBIR High (Space)					<b>Modification Number / Title:</b> 1 / SBIRS Mobile System & Fixed Comm Electronics Upgrades			
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B							<b>MDAP/MAIS Code:</b>						
<b>Models of Systems Affected:</b> SBIRS			<b>Modification Type:</b> Reliability & Maintainability				<b>Related RDT&amp;E PEs:</b>						
Financial Plan	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	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)	
<b>Procurement</b>													
<i>Modification Item 1 of 1:</i> SBIRS Mobiles Sys & Fixed Comm Elect Upgrades + S3LE													
B Kits													
Recurring													
SBIRS Mobiles Sys & Fixed Comm Elect Upgrades + S3LE:EQUIPMENT Group B (Active)	- / -	- / -	- / -	1 / 23.468	- / -	1 / 23.468	1 / 8.051	1 / 8.209	- / 8.370	- / -	- / -	3 / 48.098	
<i>Subtotal: Recurring</i>	- / -	- / -	- / -	- / 23.468	- / -	- / 23.468	- / 8.051	- / 8.209	- / 8.370	- / -	- / -	- / 48.098	
<i>Subtotal: SBIRS Mobiles Sys &amp; Fixed Comm Elect Upgrades + S3LE</i>	- / -	- / -	- / -	- / 23.468	- / -	- / 23.468	- / 8.051	- / 8.209	- / 8.370	- / -	- / -	- / 48.098	
<i>Subtotal: Procurement, All Modification Items</i>	- / -	- / -	- / -	- / 23.468	- / -	- / 23.468	- / 8.051	- / 8.209	- / 8.370	- / -	- / -	- / 48.098	
<b>Support (All Modification Items)</b>													
A&AS	- / -	- / -	- / -	- / 0.518	- / -	- / 0.518	- / 0.130	- / 0.122	- / 0.111	- / -	- / -	- / 0.881	
<i>Subtotal: Support</i>	- / -	- / -	- / -	- / 0.518	- / -	- / 0.518	- / 0.130	- / 0.122	- / 0.111	- / -	- / -	- / 0.881	
<b>Installation</b>													
<i>Subtotal: Installation</i>	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	
<b>Total</b>													
<b>Total Cost (Procurement + Support + Installation)</b>	-	-	-	23.986	-	23.986	8.181	8.331	8.481	0.000	-	48.979	

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<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force					<b>Date:</b> February 2020		
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10			<b>P-1 Line Item Number / Title:</b> MSSBIR / SBIR High (Space)			<b>Modification Number / Title:</b> 1 / SBIRS Mobile System & Fixed Comm Electronics Upgrades	
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B				<b>MDAP/MAIS Code:</b>			
<b>Modification Item 1 of 1:</b> SBIRS Mobiles Sys & Fixed Comm Elect Upgrades + S3LE							
<b>Manufacturer Information</b>							
Manufacturer Name: Lockheed Martin Space Systems				Manufacturer Location: Colorado Springs, CO			
Administrative Leadtime ( <i>in Months</i> ): 8				Production Leadtime ( <i>in Months</i> ): 12			
<b>Dates</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
Contract Dates			Jun 2021	Jun 2022	Jun 2023	Jun 2024	Jun 2025
Delivery Dates			Jun 2022	Jun 2023	Jun 2024	Jun 2025	Jun 2026
<b>Installation Information</b>							
<b>Method of Implementation (Organic):</b> Org/Intermediate					<b>Installation Quantity:</b> 6		

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> NSSL00 / National Security Space Launch
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 0604853F
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**Line Item MDAP/MAIS Code:** 176

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	3	-	3	5	5	6	7	33	59
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	0.000	0.000	1,043.171	-	1,043.171	1,394.270	1,436.978	1,688.279	1,898.687	10,874.665	18,336.050
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	0.000	0.000	1,043.171	-	1,043.171	1,394.270	1,436.978	1,688.279	1,898.687	10,874.665	18,336.050
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	<b>0.000</b>	<b>0.000</b>	<b>1,043.171</b>	-	<b>1,043.171</b>	<b>1,394.270</b>	<b>1,436.978</b>	<b>1,688.279</b>	<b>1,898.687</b>	<b>10,874.665</b>	<b>18,336.050</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	329.535	310.780

**Description:**

In FY 2021, P-1 Line Item NSSL00 / National Security Space Launch efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

FY 2020 and Prior Years funding for this exhibit is contained in PE1203953F. Beginning in FY 2021, funding is transferred to PE1203953SF.

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.

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 of vehicles in the program. The requirements for NSSL launch services are derived from multiple spacecraft requirements. The Space 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 Space 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 Space 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 Space 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.

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:**  
3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs

**P-1 Line Item Number / Title:**  
NSSL00 / National Security Space Launch

**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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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	National Security Space Launch	P-5a, P-21	A		- / -	- / 0.000	- / 0.000	3 / 1,043.171	- / -	3 / 1,043.171
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				<b>- / -</b>	<b>- / 0.000</b>	<b>- / 0.000</b>	<b>3 / 1,043.171</b>	<b>- / -</b>	<b>3 / 1,043.171</b>

\*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 2021 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 leveraging commercial innovation. Launch services include, but are not limited to, launch vehicle manufacturing, launch operations (tasks such as systems and factory engineering, program management, launch and range activities, and infrastructure), 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, studies and analysis, program office support and any other related activities to support mission requirements.

Launch services will be ordered under Phase 1A and/or Phase 2 contracts. Launch Service Support (LSS) is part of the Phase 2 contracts and will include NSS readiness, fleet surveillance, fleet mission assurance, and unique NSS infrastructure requirements (vertical integration, classified facilities, etc).

The Space Force is responsible for funding its own missions. Generally, non-Space 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 including hardware, integration and testing.

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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10		<b>P-1 Line Item Number / Title:</b> NSSL00 / National Security Space Launch
		<b>Item Number / Title [DODIC]:</b> National Security Space Launch

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>
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Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Procurement Quantity (Units in Each)	-	-	-	3	-	3
Gross/Weapon System Cost (\$ in Millions)	-	0.000	0.000	1,043.171	-	1,043.171
Less PY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
Net Procurement (P-1) (\$ in Millions)	-	0.000	0.000	1,043.171	-	1,043.171
Plus CY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
<b>Total Obligation Authority (\$ in Millions)</b>	-	<b>0.000</b>	<b>0.000</b>	<b>1,043.171</b>	-	<b>1,043.171</b>

*(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 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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 <sup>(†)</sup>	-	-	-	-	-	-	-	-	-	205.994	3	617.983	-	-	-	205.994	3	617.983
Enterprise Systems Engineering & Integration	-	-	-	-	-	-	-	-	-	-	-	73.931	-	-	-	-	-	73.931
Mission Assurance	-	-	-	-	-	-	-	-	-	-	-	105.304	-	-	-	-	-	105.304
Launch Services Support <sup>(†)</sup>	-	-	-	-	-	-	-	-	-	203.000	1	203.000	-	-	-	203.000	1	203.000
Phase 1 Atlas V completion	-	-	-	-	-	-	-	-	-	-	-	0.000	-	-	-	-	-	0.000
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	1,000.218	-	-	-	-	-	1,000.218
<i>Subtotal: Launch - Launch End Item Cost</i>	-	-	-	-	-	-	-	-	-	-	-	1,000.218	-	-	-	-	-	1,000.218
Support - Support End Item Cost																		
Other Support	-	-	-	-	-	-	-	-	-	-	-	2.680	-	-	-	-	-	2.680
A&AS	-	-	-	-	-	-	-	-	-	-	-	13.802	-	-	-	-	-	13.802
FFRDC	-	-	-	-	-	-	-	-	-	-	-	26.471	-	-	-	-	-	26.471
<i>Subtotal: Support - Support End Item Cost</i>	-	-	-	-	-	-	-	-	-	-	-	42.953	-	-	-	-	-	42.953
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	0.000	-	-	0.000	-	3	1,043.171	-	-	-	-	3	1,043.171

**Remarks:**

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<b>Exhibit P-5, Cost Analysis:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> NSSL00 / National Security Space Launch	<b>Item Number / Title [DODIC]:</b> National Security Space Launch
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>	
<p>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. The NRO and the Space Force will share the costs for the Launch Service Support (LSS).</p> <p>(t) indicates the presence of a P-5a</p>		



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**Exhibit P-5a, Procurement History and Planning:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> NSSL00 / National Security Space Launch	<b>Item Number / Title [DODIC]:</b> National Security Space Launch
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Cost Elements	O C O	FY	Contractor and Location	Method/Type or Funding Vehicle	Location of PCO	Award Date	Date of First Delivery	Qty <i>(Each)</i>	Unit Cost <i>(\$ M)</i>	Specs Avail Now?	Date Revision Available	RFP Issue Date
Launch Services <sup>(†)</sup>		2021	TBD/TBD / TBD/TBD	Various	SMC, LA AFB, CA	May 2021	May 2023	3	205.994	Y		May 2019
Launch Services Support		2021	TBD/TBD / TBD/TBD	Various	SMC, LA AFB, CA	May 2021	May 2022	1	203.000	Y		May 2019

<sup>(†)</sup> indicates the presence of a P-21

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**Exhibit P-21, Production Schedule:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> NSSL00 / National Security Space Launch	<b>Item Number / Title [DODIC]:</b> National Security Space Launch
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Cost Elements <i>(Units in Each)</i>						Fiscal Year 2021												Fiscal Year 2022												BALANCE	
O C C O	M F R #	FY	SERVICE	PROC QTY	ACCEPT PRIOR TO 1 OCT 2020	BAL DUE AS OF 1 OCT	Calendar Year 2021												Calendar Year 2022												
							O C T	N O V	D E C	J A N	F E B	M A R	A P R	M A Y	J U N	J U L	A U G	S E P	O C T	N O V	D E C	J A N	F E B	M A R	A P R	M A Y	J U N	J U L	A U G		S E P
Launch Services																															
	1	2021	AF	3	0	3																									

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**Exhibit P-21, Production Schedule:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> NSSL00 / National Security Space Launch	<b>Item Number / Title [DODIC]:</b> National Security Space Launch
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Cost Elements <i>(Units in Each)</i>						Fiscal Year 2023												Fiscal Year 2024												BALANCE	
O C C O	M F R #	FY	SERVICE	PROC QTY	ACCEPT PRIOR TO 1 OCT 2022	BAL DUE AS OF 1 OCT	Calendar Year 2023												Calendar Year 2024												
							O C T	N O V	D E C	J A N	F E B	M A R	A P R	M A Y	J U N	J U L	A U G	S E P	O C T	N O V	D E C	J A N	F E B	M A R	A P R	M A Y	J U N	J U L	A U G		S E P
Launch Services																															
	1	2021	AF		3	0	3	-	-	-	-	-	-	-	-	3														0	
								O C T	N O V	D E C	J A N	F E B	M A R	A P R	M A Y	J U N	J U L	A U G	S E P	O C T	N O V	D E C	J A N	F E B	M A R	A P R	M A Y	J U N	J U L	A U G	S E P

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<b>Exhibit P-21, Production Schedule:</b> PB 2021 Air Force								<b>Date:</b> February 2020				
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10				<b>P-1 Line Item Number / Title:</b> NSSL00 / National Security Space Launch				<b>Item Number / Title [DODIC]:</b> National Security Space Launch				
MFR Ref #	Manufacturer Name - Location	Production Rates (Each / Month)			Procurement Leadtime (Months)							
		MSR For 2021	1-8-5 For 2021	MAX For 2021	Initial				Reorder			
					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	TBD/TBD - TBD/TBD			10	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 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> NUDETS / NUDET Detection System
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1203913SF
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**Line Item MDAP/MAIS Code:** N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	0.000	0.000	6.638	-	6.638	6.774	6.900	-	-	-	20.312
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	0.000	0.000	6.638	-	6.638	6.774	6.900	-	-	-	20.312
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	<b>0.000</b>	<b>0.000</b>	<b>6.638</b>	-	<b>6.638</b>	<b>6.774</b>	<b>6.900</b>	-	-	-	<b>20.312</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

In FY 2021, P-1 Line Item NUDETS / NUDET Detection System efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

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 (PL) 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) 1203913SF with Research Development, Test and Evaluation (RDT&E), Procurement, Space Force (PSF), and Operations and Maintenance (O&M) dollars. USNDS payload integration onto GPS satellites was funded in the GPS III Space Segment PE 1203265F for GPS III SVs, and in the GPS IIIF Space Segment PEs 1203269F and 1203269SF for GPS IIIF 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.

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> NUDETS / NUDET Detection System
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1203913SF
<b>Line Item MDAP/MAIS Code:</b> N/A		

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.

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 1203913SF, NUDET Detection System (SPACE).

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:** 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: 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:** 1203913SF

**Line Item MDAP/MAIS Code:** N/A

Exhibits Schedule					Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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		- / -	- / -	- / -	- / 6.638	- / -	- / 6.638
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				- / -	- / 0.000	- / 0.000	- / 6.638	- / -	- / 6.638

\*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 2021 funding includes, but is not limited to, tech refresh on NUDET Detection System Analysis Package Ground Station (NAPGS) and Laser Applications (LAZAP), and Oracle Database and File Servers in support of Sandia Data Acquisition & Display Systems (SDADS). These upgrades will result in improved reliability and ensure 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. Rapid response 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.

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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>	<b>Date:</b> February 2020
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<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> NUDETS / NUDET Detection System	<b>Item Number / Title [DODIC]:</b> NUDET Detection System
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>
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<b>Resource Summary</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Procurement Quantity <i>(Units in Each)</i>	-	-	-	-	-	-
Gross/Weapon System Cost <i>(\$ in Millions)</i>	-	-	-	6.638	-	6.638
Less PY Advance Procurement <i>(\$ in Millions)</i>	-	-	-	-	-	-
Net Procurement (P-1) <i>(\$ in Millions)</i>	-	-	-	6.638	-	6.638
Plus CY Advance Procurement <i>(\$ in Millions)</i>	-	-	-	-	-	-
<b>Total Obligation Authority</b> <i>(\$ in Millions)</i>	-	-	-	<b>6.638</b>	-	<b>6.638</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares <i>(\$ in Millions)</i>	-	-	-	-	-	-
Gross/Weapon System Unit Cost <i>(\$ in Millions)</i>	-	-	-	-	-	-

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

Cost Elements	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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																		
USNDS Ops Strings and Modern Platform Delivery	-	-	-	-	-	-	-	-	-	6.638	1	6.638	-	-	-	6.638	1	6.638
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	6.638	-	-	-	-	-	6.638
<i>Subtotal: Hardware - Hardware End Item Cost</i>	-	-	-	-	-	-	-	-	-	-	-	6.638	-	-	-	-	-	6.638
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	-	-	-	-	-	-	6.638	-	-	-	-	-	6.638

**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.



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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> RSLP00 / Rocket Systems Launch Program
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1206860SF
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**Line Item MDAP/MAIS Code:** N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	1	-	1	-	1	1	1	-	4
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	0.000	0.000	47.741	-	47.741	11.126	54.447	64.357	65.708	-	243.379
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	0.000	0.000	47.741	-	47.741	11.126	54.447	64.357	65.708	-	243.379
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority (<i>\$ in Millions</i>)</b>	-	<b>0.000</b>	<b>0.000</b>	<b>47.741</b>	-	<b>47.741</b>	<b>11.126</b>	<b>54.447</b>	<b>64.357</b>	<b>65.708</b>	-	<b>243.379</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

In FY 2021, P-1 Line Item RSLP00 / Rocket System Launch Program (SPACE) efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

FY 2020 and Prior Years funding for this exhibit is contained in PE1206860F. Beginning in FY 2021, funding is transferred to PE1206860SF.

The Rocket Systems Launch Program (RSLP) procures 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).

In FY 2019, the Air Force started using this procurement line for small launch services procurement requirements. Previously, small launch funding resided in the satellite program budgets. This change aligned launch service procurement activities with the necessary funding under Space and Missile Systems Center (SMC) Launch Enterprise. This approach is now consistent across Space Force procured launch services and allows the Space 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. 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 1206860SF.

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:**  
3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: 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:** 1206860SF

**Line Item MDAP/MAIS Code:** N/A

Exhibits Schedule					Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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	- / 0.000	- / 47.741	- / -	- / 47.741
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				<b>- / -</b>	<b>- / 0.000</b>	<b>- / 0.000</b>	<b>1 / 47.741</b>	<b>- / -</b>	<b>1 / 47.741</b>

\*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:**

FY 2021 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. 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.

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**Exhibit P-40a, Budget Item Justification For Aggregated Items:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> RSLP00 / Rocket Systems Launch Program	<b>Aggregated Items Title:</b> Rocket Systems Launch Program
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Item Number / Title [DODIC]	ID CD	MDAP/MAIS Code	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)
<b>Small Launch Service</b>																				
Small Launch Service	A		-	-	-	-	-	-	-	-	47.741	1	47.741	-	-	-	47.741	1	47.741	
<b>Subtotal: Small Launch Service</b>			-	-	-	-	-	-	-	-	-	-	47.741	-	-	-	-	-	47.741	
<b>Total</b>			-	-	-	-	-	0.000	-	-	0.000	-	-	47.741	-	-	-	-	47.741	

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 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> SPCFNC / Space Fence
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 0604426F
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**Line Item MDAP/MAIS Code:** 438

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	0.000	0.000	11.279	-	11.279	0.000	0.000	0.000	0.000	-	11.279
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	0.000	0.000	11.279	-	11.279	0.000	0.000	0.000	0.000	-	11.279
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	<b>0.000</b>	<b>0.000</b>	<b>11.279</b>	-	<b>11.279</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	-	<b>11.279</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

In FY 2021, P-1 Line Item SPCFNC / Space Fence efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

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 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. Conduct Test and Evaluation of software patches to resolve documented deficiencies. Conduct cybersecurity test activities necessary to maintain required authorizations (e.g., Authorization to Operate; Authorization to Connect).

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.

Funding for this exhibit is contained in PE 1206426SF.

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:** 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: 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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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	- / 0.000	- / 11.279	- / -	- / 11.279
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				<b>- / -</b>	<b>- / 0.000</b>	<b>- / 0.000</b>	<b>- / 11.279</b>	<b>- / -</b>	<b>- / 11.279</b>

\*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 2021, Space Fence requires funding to continue Depot Activation activities to develop organic depot capabilities in support of the Space Fence radar and pay for energy costs associated with operating the radar. In addition, this funding will be used to Conduct Test and Evaluation of software patches to resolve documented deficiencies. Conduct cybersecurity test activities necessary to maintain required authorizations (e.g., Authorization to Operate; Authorization to Connect).

Depot Activation activities include, but are not limited to, Technical Order management, depot-level repair funding reporting, Diminishing Manufacturing Sources Material Shortages (DMSMS), 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.

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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>	<b>Date:</b> February 2020
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<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> SPCFNC / Space Fence	<b>Item Number / Title [DODIC]:</b> Space Fence
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>
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<b>Resource Summary</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Procurement Quantity <i>(Units in Each)</i>	-	-	-	-	-	-
Gross/Weapon System Cost <i>(\$ in Millions)</i>	-	0.000	0.000	11.279	-	11.279
Less PY Advance Procurement <i>(\$ in Millions)</i>	-	-	-	-	-	-
Net Procurement (P-1) <i>(\$ in Millions)</i>	-	0.000	0.000	11.279	-	11.279
Plus CY Advance Procurement <i>(\$ in Millions)</i>	-	-	-	-	-	-
<b>Total Obligation Authority</b> <i>(\$ in Millions)</i>	-	<b>0.000</b>	<b>0.000</b>	<b>11.279</b>	-	<b>11.279</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares <i>(\$ in Millions)</i>	-	-	-	-	-	-
Gross/Weapon System Unit Cost <i>(\$ in Millions)</i>	-	-	-	-	-	-

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

<b>Cost Elements</b>	<b>Prior Years</b>			<b>FY 2019</b>			<b>FY 2020</b>			<b>FY 2021 Base</b>			<b>FY 2021 OCO</b>			<b>FY 2021 Total</b>		
	Unit Cost <i>(\$ M)</i>	Qty <i>(Each)</i>	Total Cost <i>(\$ M)</i>	Unit Cost <i>(\$ M)</i>	Qty <i>(Each)</i>	Total Cost <i>(\$ M)</i>	Unit Cost <i>(\$ M)</i>	Qty <i>(Each)</i>	Total Cost <i>(\$ M)</i>	Unit Cost <i>(\$ M)</i>	Qty <i>(Each)</i>	Total Cost <i>(\$ M)</i>	Unit Cost <i>(\$ M)</i>	Qty <i>(Each)</i>	Total Cost <i>(\$ M)</i>	Unit Cost <i>(\$ M)</i>	Qty <i>(Each)</i>	Total Cost <i>(\$ M)</i>
<b>Logistics - Space Fence Cost</b>																		
Recurring Cost																		
Depot Activation	-	-	-	-	-	0.000	-	-	0.000	-	-	10.279	-	-	-	-	-	10.279
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	0.000	-	-	0.000	-	-	10.279	-	-	-	-	-	10.279
<i>Subtotal: Logistics - Space Fence Cost</i>	-	-	-	-	-	0.000	-	-	0.000	-	-	10.279	-	-	-	-	-	10.279
<b>Support - Space Fence Cost</b>																		
A&AS	-	-	-	-	-	0.000	-	-	0.000	-	-	1.000	-	-	-	-	-	1.000
<i>Subtotal: Support - Space Fence Cost</i>	-	-	-	-	-	0.000	-	-	0.000	-	-	1.000	-	-	-	-	-	1.000
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	0.000	-	-	0.000	-	-	11.279	-	-	-	-	-	11.279

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> 1203699SF, 1203165SF	<b>Other Related Program Elements:</b> N/A
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**Line Item MDAP/MAIS Code:** N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	96.551	-	96.551	77.252	52.557	42.914	43.703	0.000	312.977
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	96.551	-	96.551	77.252	52.557	42.914	43.703	0.000	312.977
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority (<i>\$ in Millions</i>)</b>	-	-	-	<b>96.551</b>	-	<b>96.551</b>	<b>77.252</b>	<b>52.557</b>	<b>42.914</b>	<b>43.703</b>	<b>0.000</b>	<b>312.977</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

In FY 2021, P-1 Line Item SPCMOD/SPACE MODS SPACE efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021, Space Procurement, Air Force, due to the creation of a new appropriation for Space Force.

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

The following Program Elements are represented in this Budget Line Item:

PE 1203160SF DEFENSE METEOROLOGICAL SATELLITE PROGRAM (DMSP):

The Defense Meteorological Satellite Program (DMSP), Command, Control, and Communications (C3) Ground System (DC3GS) is the ground system that supports DMSP, a fully operational program supporting a broad range of national security users who require timely and accurate global weather information. DMSP is DoD's 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). DC3GS key elements 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 a procurement funding line beginning in FY 2015 to enable continued DC3GS sustainment through a selective recapitalization effort. DC3GS subsystems to be addressed include, but are not limited to the Link/2 Communication System, and Mission Planning and Scheduling System. Current DMSP planned fly-out date is FY 2027; recent guidance has been that if the system is capable, it may continue to fly past that date. This selective re-capitalization effort is intended to ensure the DC3GS remains viable and serviceable to support DMSP while it remains in flight.

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> 1203699SF, 1203165SF	<b>Other Related Program Elements:</b> N/A
<b>Line Item MDAP/MAIS Code:</b> N/A		
<p>PE 1203165SF NAVSTAR GPS (SPACE AND CONTROL SEGMENTS):</p> <p>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 current 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 Military GPS User Equipment (MGUE).</p> <p>PE 1203699SF Shared Early Warning System (SEWS):</p> <p>The Shared Early Warning System (SEWS) provides accurate and timely ballistic missile warning information generated by space-based infrared sensors. This information is distributed to three combatant commanders (USEUCOM, USCENTCOM, USINDOPACOM), NATO, and multiple foreign partner nations located within each of the serviced Combatant Commands. U.S. forces and foreign partner nations receive missile warning data via a dedicated communications network flowing from the Centralized Distribution Facility (CDF) at Peterson AFB, CO to secondary distribution facilities located with the Combatant Commands and distribution hubs located in foreign partner nation operations centers. Data segregation for the foreign nation partners is maintained through the use of approved cross domain solutions with unique rule sets that reflect Office of the Secretary of Defense policy regarding the dissemination of missile warning data to foreign nations. SEWS utilizes Defense Information Systems Agency (DISA) mandated data processing capabilities, new missile warning message formats, and cyber security requirements set forth in Department of Defense Instruction 8500.1 (DODI 8500.1).</p> <p>PE 1203873SF Ballistic Missile Defense Radars (BMD Radars):</p> <p>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 Domain Awareness (SDA) 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 (NFLs). It operates as part of the larger Space Surveillance Network (SSN) and provides metric observation data to its command and control nodes: the Combined Space Operations Center (CSPOC) 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 manmade 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. 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.</p> <p>PE 1203909SF Ballistic Missile Early Warning System (BMEWS):</p> <p>The BALLISTIC MISSILE EARLY WARNING SYSTEM (BMEWS) is a ground based radar system with missions to support the Missile Correlation, Space Surveillance, and Missile Defense Centers. The radar system provides United States Strategic Command (USSTRATCOM) with credible Integrated Tactical Warning/Attack Assessment (ITW/AA) data on all Inter-Continental Ballistic Missiles (ICBMs) penetrating the coverage area including Launch and Predicted Impact (L&amp;PI) data for attack assessment and response determination. The radar system 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</p>		

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> 1203699SF, 1203165SF	<b>Other Related Program Elements:</b> N/A
<b>Line Item MDAP/MAIS Code:</b> N/A		
<p>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 BMEWS and PAVE Phased Array Warning Systems (PAVE PAWS) radars share 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. 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 &amp; 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.</p> <p>PE 1205912SF SEA-LAUNCHED BALLISTIC MISSILE (SLBM) RADAR WARNING SYSTEM:</p> <p>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&amp;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). The PARCS Radar System is located at Cavalier AFB ND. The BMEWS and PAVE Phased Array Warning Systems (PAVE PAWS) radars share a common baseline and mission with the difference that BMEWS deploys more array elements on its radar faces. PAVE PAWS radars are located at Beale AFB, CA and Cape Cod AFS, MA. The Upgraded Early Warning Radar (UEWR) site at Beale AFB also has a Missile Defense (MD) mission supporting the Missile Defense Agency. 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 &amp; 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.</p>		

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:** 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs **P-1 Line Item Number / Title:** SPCMOD / SPACE MODS SPACE

**ID Code** (A=Service Ready, B=Not Service Ready): A **Program Elements for Code B Items:** 1203699SF, 1203165SF **Other Related Program Elements:** N/A

**Line Item MDAP/MAIS Code:** N/A

Exhibits Schedule					Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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)				- / -	- / -	- / -	- / 1.105	- / -	- / 1.105
P-3a	1 / NAVSTAR GPS-OCS COTS UPGRADE (Reliability & Maintainability)		B		- / -	- / -	- / -	- / 13.887	- / -	- / 13.887
P-40a	Shared Early Warning (SEW)				- / -	- / -	- / -	- / 0.361	- / -	- / 0.361
P-40a	Ballistic Missile Defense Radars				- / -	- / -	- / -	- / 40.913	- / -	- / 40.913
P-40a	Ballistic Missile Early Warning System (BMEWS)				- / -	- / -	- / -	- / 1.500	- / -	- / 1.500
P-3a	1 / BPP Block 02 (Reliability & Maintainability)		A		- / -	- / -	- / -	- / 9.439	- / -	- / 9.439
P-40a	Ballistic Missile Early Warning System (BMEWS)				- / -	- / -	- / -	- / 21.049	- / -	- / 21.049
P-3a	1 / PARCS Block 02 (Reliability & Maintainability)		A		- / -	- / -	- / -	- / 8.297	- / -	- / 8.297
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				- / -	- / -	- / -	- / 96.551	- / -	- / 96.551

Exhibits Schedule					FY 2022	FY 2023	FY 2024	FY 2025	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		- / 2.041	- / 5.451	- / 0.000	- / 0.000	- / -	- / 21.379
P-40a	Shared Early Warning (SEW)				- / 0.367	- / 0.374	- / 0.381	- / 0.388	- / -	- / 1.871
P-40a	Ballistic Missile Defense Radars				- / -	- / -	- / -	- / -	- / -	- / -
P-40a	Ballistic Missile Early Warning System (BMEWS)				- / -	- / -	- / -	- / -	- / -	- / 1.500
P-3a	1 / BPP Block 02 (Reliability & Maintainability)		A		- / -	- / -	- / -	- / -	- / -	- / 9.439
P-40a	Ballistic Missile Early Warning System (BMEWS)				- / -	- / -	- / -	- / -	- / -	- / -
P-3a	1 / PARCS Block 02 (Reliability & Maintainability)		A		- / -	- / -	- / -	- / -	- / -	- / 8.297
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				- / 77.252	- / 52.557	- / 42.914	- / 43.703	- / 0.000	- / 312.977

\*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:**  
 Defense Meteorological Satellite Program (SPACE) (P-40a)

FY 2021 funding required for DC3GS Engineering Change Proposals (ECP) to subsystems that include, but are not limited to Communication Architecture upgrades and Consolidating Work Stations (CWS) that will improve form, fit and function allowing the DC3GS improved ability to inter-face with modern state-of-the-art equipment and provide clear, reliable data to U.S. Space Command and the 557th Weather Wing and Fleet Meteorology and Oceanography Center allowing system resiliency and transfer of critical mission data to warfighters. DC3GS will 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.

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> 1203699SF, 1203165SF	<b>Other Related Program Elements:</b> N/A
<b>Line Item MDAP/MAIS Code:</b> N/A		
<p>This effort is funded in PE 1203160SF Defense Meteorological Satellite Program (DMSP).</p> <p>NAVSTAR GPS-OCS COTS UPGRADE (P-3a)</p> <p>FY 2021 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 Military 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.</p> <p>This effort is funded in PE 1203165SF NAVSTAR GPS (Space and Control Segments)</p> <p>Shared Early Warning (SEW) (P40-A)</p> <p>FY 2021 funding will provide modification efforts and capital equipment replacement to replace outdated components such as, but not limited to, virtual processors, routers, intrusion detection software, network logging software and other material solutions required for operational and cyber security continuity. Due to the limited spares demand rates, and indefinite system lifespan, Life of Type buys may be required to support this weapon system. SEWS utilizes both Commercial-Off-the-Shelf (COTS) and Government-Off-the-Shelf (GOTS) equipment to comply with emerging threat capability requirements.</p> <p>This effort is funded in PE 1203699SF Shared Early Warning System (SEWS)</p> <p>Ballistic Missile Early Warning System (BMEWS)/PAVE PHASED ARRAY WARNING SYSTEM (PAVE PAWS) (BPP) DP/SP (P-3A)</p> <p>FY 2021 will fund ongoing program support to the BMEWS/PAVE PAWS Data Processor/Signal Processor suite replacement.</p> <p>The effort is funded in PE 1203909SF Ballistic Missile Early Warning System (BMEWS).</p> <p>Ballistic Missile Defense Radars (P-40A)</p> <p>Cobra Dane Block 00: FY 2021 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, Traveling Wave Tubes, Time Delay Units and associated components. Due to limited spares demand rates and indefinite system lifespan, life of type buys may be required to support this weapon system. Funding provides ongoing Program Management Administrative costs supporting these efforts.</p> <p>This effort is funded in PE 1203873SF Ballistic Missile Defense Radars.</p> <p>Ballistic Missile Early Warning System (BMEWS)/PAVE PHASED ARRAY WARNING SYSTEM (PAVE PAWS) (BPP) Block 02 (P-3A)</p> <p>BPP Block 02 Update: FY 2021 funding is required for ongoing program support for BMEWS/PAVE PAWS Block 02 modification efforts for replacement of unsupportable mission and support equipment, initial spares, and lifetime buys of spares to include, but not limited to, Solid State Modules (SSMs), Beam Steering Units (BSUs), 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.</p> <p>This effort is funded in PE 1203909SF Ballistic Missile Early Warning System (BMEWS) and PE 1203912SF Sea Launched Ballistic Missile (SLBM) Detection and Warning System.</p>		

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> 1203699SF, 1203165SF	<b>Other Related Program Elements:</b> N/A
<b>Line Item MDAP/MAIS Code:</b> N/A		
<p>Ballistic Missile Early Warning System (BMEWS)/PAVE PHASED ARRAY WARNING SYSTEM (PAVE PAWS) (BPP) Block 00 &amp; Block 03 (P-40a)</p> <p>BPP Block 00 Update: FY 2021 will fund ongoing program support costs for BMEWS/PAVE PAWS modification efforts and will fund Capital Equipment Replacement of unsupportable mission and support equipment, initial spares, and lifetime buys of 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.</p> <p>BPP Block 03 Update: FY 2021 will fund ongoing program support costs for BMEWS/PAVE PAWS modification efforts.</p> <p>This effort is funded in PE 1203909SF Ballistic Missile Early Warning System (BMEWS) and PE 1203912SF Sea Launched Ballistic Missile (SLBM) Detection and Warning System.</p> <p>Perimeter Acquisition Radar Attack Characterization System (PARCS) Block 02 (P-3a)</p> <p>FY 2021 will fund Block 02 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, FY 2021 will fund support of the Block 02 program. PARCS funding 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.</p> <p>The effort is funded in PE 1203912SF Sea Launched Ballistic Missile (SLBM) Detection and Warning System.</p> <p><b>Efforts with funding starting in FY 2022 through FY 2025 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:</b></p> <ul style="list-style-type: none"> <li>(a) FY 2022 Cost Delta: 74.844 million</li> <li>(b) FY 2023 Cost Delta: 46.732 million</li> <li>(c) FY 2024 Cost Delta: 42.533 million</li> <li>(d) FY 2025 Cost Delta: 43.315 million</li> <li>(e) FY Total Cost Delta: 270.511 million</li> </ul>		

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<b>Exhibit P-40a, Budget Item Justification For Aggregated Items:</b> PB 2021 Air Force														<b>Date:</b> February 2020					
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10						<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE						<b>Aggregated Items Title:</b> Defense Meteorological Satellite Program (SPACE)							

Item Number / Title [DODIC]	ID CD	MDAP/MAIS Code	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)
<b>Uncategorized</b>																				
Communications Engineering Change Proposals	A		-	-	-	-	-	-	-	-	-	1.105	1	1.105	-	-	-	1.105	1	1.105
<b>Subtotal: Uncategorized</b>			-	-	-	-	-	-	-	-	-	-	-	1.105	-	-	-	-	-	1.105
<b>Total</b>			-	-	-	-	-	-	-	-	-	-	-	1.105	-	-	-	-	-	1.105

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

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<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE	<b>Modification Number / Title:</b> 1 / NAVSTAR GPS-OCS COTS UPGRADE

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B	<b>MDAP/MAIS Code:</b>
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<b>Resource Summary</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>To Complete</b>	<b>Total</b>
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	13.887	-	13.887	2.041	5.451	0.000	0.000	-	21.379
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	13.887	-	13.887	2.041	5.451	0.000	0.000	-	21.379
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	-	-	<b>13.887</b>	-	<b>13.887</b>	<b>2.041</b>	<b>5.451</b>	<b>0.000</b>	<b>0.000</b>	-	<b>21.379</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**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).



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<b>Exhibit P-3a, Individual Modification: PB 2021 Air Force</b>											<b>Date:</b> February 2020		
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10				<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE				<b>Modification Number / Title:</b> 1 / NAVSTAR GPS-OCS COTS UPGRADE					
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B							<b>MDAP/MAIS Code:</b>						
<b>Models of Systems Affected:</b> GPS-OCS				<b>Modification Type:</b> Reliability & Maintainability				<b>Related RDT&amp;E PEs:</b>					
Financial Plan	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	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)	
<b>Procurement</b>													
<i>Modification Item 1 of 1: Install Kits</i>													
A Kits													
Recurring													
Install Kits:INSTALL KITS Group A (Active)	- / -	- / -	- / -	14 / 6.820	- / -	14 / 6.820	- / -	- / -	- / -	- / -	- / -	14 / 6.820	
<i>Subtotal: Recurring</i>	- / -	- / -	- / -	- / 6.820	- / -	- / 6.820	- / -	- / -	- / -	- / -	- / -	- / 6.820	
B Kits													
Recurring													
Install Kits:EQUIPMENT Group B (Active)	- / -	- / -	- / -	14 / 1.413	- / -	14 / 1.413	- / -	- / -	- / -	- / -	- / -	14 / 1.413	
<i>Subtotal: Recurring</i>	- / -	- / -	- / -	- / 1.413	- / -	- / 1.413	- / -	- / -	- / -	- / -	- / -	- / 1.413	
<i>Subtotal: Install Kits</i>	- / -	- / -	- / -	- / 8.233	- / -	- / 8.233	- / -	- / -	- / -	- / -	- / -	- / 8.233	
<i>Subtotal: Procurement, All Modification Items</i>	- / -	- / -	- / -	- / 8.233	- / -	- / 8.233	- / -	- / -	- / -	- / -	- / -	- / 8.233	
<b>Support (All Modification Items)</b>													
GROUP A: TOTAL NONRECURRING	- / -	- / -	- / -	- / 0.640	- / -	- / 0.640	- / -	- / 3.375	- / -	- / -	- / -	- / 4.015	
Data	- / -	- / -	- / -	- / 2.614	- / -	- / 2.614	- / 1.661	- / 1.696	- / -	- / -	- / -	- / 5.971	
SUPPORT-EQUIP	- / -	- / -	- / -	- / 0.380	- / -	- / 0.380	- / 0.380	- / 0.380	- / -	- / -	- / -	- / 1.140	
<i>Subtotal: Support</i>	- / -	- / -	- / -	- / 3.634	- / -	- / 3.634	- / 2.041	- / 5.451	- / -	- / -	- / -	- / 11.126	
<b>Installation</b>													
<i>Modification Item 1 of 1: Install Kits</i>													
<i>Subtotal: Installation</i>	- / -	- / -	- / -	14 / 2.020	- / -	14 / 2.020	- / -	- / -	- / -	- / -	- / -	14 / 2.020	
<i>Subtotal: Installation</i>	- / -	- / -	- / -	14 / 2.020	- / -	14 / 2.020	- / -	- / -	- / -	- / -	- / -	14 / 2.020	
<b>Total</b>													
<b>Total Cost (Procurement + Support + Installation)</b>	-	-	-	13.887	-	13.887	2.041	5.451	0.000	0.000	-	21.379	

**UNCLASSIFIED**

<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE	<b>Modification Number / Title:</b> 1 / NAVSTAR GPS-OCS COTS UPGRADE

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B	<b>MDAP/MAIS Code:</b>
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**Modification Item 1 of 1:** Install Kits

**Manufacturer Information**

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

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

**Installation Information**

**Method of Implementation:** Contract Field Team

Installation Cost	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	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 2019	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2020	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2021	- / -	- / -	- / -	14 / 2.020	- / -	14 / 2.020	- / -	- / -	- / -	- / -	- / -	14 / 2.020
FY 2022	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2023	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2024	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
FY 2025	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
To Complete	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
Total	- / -	- / -	- / -	14 / 2.020	- / -	14 / 2.020	- / -	- / -	- / -	- / -	- / -	14 / 2.020

**Installation Schedule**

	PYS	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				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	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	14
Out	-	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	14

**UNCLASSIFIED**

**Exhibit P-40a, Budget Item Justification For Aggregated Modification Items: PB 2021 Air Force** **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE	<b>Aggregated Modification Items Title:</b> Shared Early Warning (SEW)
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Item Number / Title	ID CD	MDAP/MAIS Code	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)
SEW / SEW			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.361
<b>Total</b>			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.361</b>

  

Item Number / Title	ID CD	MDAP/MAIS Code	FY 2022			FY 2023			FY 2024			FY 2025			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)
SEW / SEW			-	-	0.367	-	-	0.374	-	-	0.381	-	-	0.388	-	-	0.000	-	-	1.871
<b>Total</b>			-	-	<b>0.367</b>	-	-	<b>0.374</b>	-	-	<b>0.381</b>	-	-	<b>0.388</b>	-	-	-	-	-	<b>1.871</b>

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
SEW / SEW	SEWS	Reliability & Maintainability

**UNCLASSIFIED**

**Exhibit P-40a, Budget Item Justification For Aggregated Items:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE	<b>Aggregated Items Title:</b> Ballistic Missile Defense Radars
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Item Number / Title [DODIC]	ID CD	MDAP/MAIS Code	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)
<b>Block 00</b>																				
New Item	A		-	-	-	-	-	-	-	-	-	40.913	1	40.913	-	-	-	40.913	1	40.913
<b>Subtotal: Block 00</b>			-	-	-	-	-	-	-	-	-	-	-	<b>40.913</b>	-	-	-	-	-	<b>40.913</b>
<b>Total</b>			-	-	-	-	-	-	-	-	-	-	-	<b>40.913</b>	-	-	-	-	-	<b>40.913</b>

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

**UNCLASSIFIED**

<b>Exhibit P-40a, Budget Item Justification For Aggregated Modification Items:</b> PB 2021 Air Force														<b>Date:</b> February 2020					
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10							<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE							<b>Aggregated Modification Items Title:</b> Ballistic Missile Early Warning System (BMEWS)					

Item Number / Title	ID CD	MDAP/MAIS Code	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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	
<b>Total</b>			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.500	

  

Item Number / Title	ID CD	MDAP/MAIS Code	FY 2022			FY 2023			FY 2024			FY 2025			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			-	-	0.000	-	-	0.000	-	-	0.000	-	-	0.000	-	-	-	-	-	1.500
<b>Total</b>			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.500

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

**UNCLASSIFIED**

<b>Exhibit P-3a, Individual Modification: PB 2021 Air Force</b>		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE	<b>Modification Number / Title:</b> 1 / BPP Block 02

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>
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<b>Resource Summary</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>To Complete</b>	<b>Total</b>
Procurement Quantity (Units in Each)	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost (\$ in Millions)	-	-	-	9.439	-	9.439	-	-	-	-	-	9.439
Less PY Advance Procurement (\$ in Millions)	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) (\$ in Millions)	-	-	-	9.439	-	9.439	-	-	-	-	-	9.439
Plus CY Advance Procurement (\$ in Millions)	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority (\$ in Millions)</b>	-	-	-	<b>9.439</b>	-	<b>9.439</b>	-	-	-	-	-	<b>9.439</b>

*(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.

BPP Block 02 Update: FY 2021 funding is required for ongoing program support for BMEWS/PAVE PAWS Block 02 modification efforts for replacement of unsupportable mission and support equipment, initial spares, and lifetime buys of spares to include, but not limited to, Solid State Modules (SSMs), Beam Steering Units (BSUs), 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.

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<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE	<b>Modification Number / Title:</b> 1 / BPP Block 02

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>
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<b>Models of Systems Affected:</b> NA	<b>Modification Type:</b> Reliability & Maintainability	<b>Related RDT&amp;E PEs:</b>
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Financial Plan	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	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**

<i>Modification Item 1 of 1:</i> Equipment												
B Kits												
Recurring												
Equipment:EQUIPMENT Group B (Active)	- / -	- / -	- / -	1 / 7.229	- / -	1 / 7.229	- / -	- / -	- / -	- / -	- / -	1 / 7.229
<i>Subtotal: Recurring</i>	- / -	- / -	- / -	- / 7.229	- / -	- / 7.229	- / -	- / -	- / -	- / -	- / -	- / 7.229
<i>Subtotal: Equipment</i>	- / -	- / -	- / -	- / 7.229	- / -	- / 7.229	- / -	- / -	- / -	- / -	- / -	- / 7.229
<i>Subtotal: Procurement, All Modification Items</i>	- / -	- / -	- / -	- / 7.229	- / -	- / 7.229	- / -	- / -	- / -	- / -	- / -	- / 7.229

**Support (All Modification Items)**

PMA - Contractor Services	- / -	- / -	- / -	- / 2.210	- / -	- / 2.210	- / -	- / -	- / -	- / -	- / -	- / 2.210
<i>Subtotal: Support</i>	- / -	- / -	- / -	- / 2.210	- / -	- / 2.210	- / -	- / -	- / -	- / -	- / -	- / 2.210

**Installation**

<i>Subtotal: Installation</i>	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
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**Total**

<b>Total Cost (Procurement + Support + Installation)</b>	-	-	-	9.439	-	9.439	-	-	-	-	-	9.439
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**UNCLASSIFIED**

<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force					<b>Date:</b> February 2020		
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10			<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE			<b>Modification Number / Title:</b> 1 / BPP Block 02	
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A					<b>MDAP/MAIS Code:</b>		
<b>Modification Item 1 of 1:</b> Equipment							
<b>Manufacturer Information</b>							
Manufacturer Name: TBD				Manufacturer Location: TBD			
Administrative Leadtime (in Months): 3				Production Leadtime (in Months): 15			
<b>Dates</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
Contract Dates			Jun 2021				
Delivery Dates			Sep 2022				
<b>Installation Information</b>							
<b>Method of Implementation (Organic):</b> Org/Intermediate					<b>Installation Quantity:</b> 3		



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<b>Exhibit P-40a, Budget Item Justification For Aggregated Items:</b> PB 2021 Air Force														<b>Date:</b> February 2020					
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10							<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE							<b>Aggregated Items Title:</b> Ballistic Missile Early Warning System (BMEWS)					

Item Number / Title [DODIC]	ID CD	MDAP/MAIS Code	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)
<b>BPP Block 00 Update</b>																				
BPP Block 00 Update			-	-	-	-	-	-	-	-	-	-	-	20.589	-	-	-	-	-	20.589
<b>Subtotal: BPP Block 00 Update</b>			-	-	-	-	-	-	-	-	-	-	-	<b>20.589</b>	-	-	-	-	-	<b>20.589</b>
<b>BPP Block 03 Update</b>																				
New Item	A		-	-	-	-	-	-	-	-	-	0.460	1	0.460	-	-	-	0.460	1	0.460
<b>Subtotal: BPP Block 03 Update</b>			-	-	-	-	-	-	-	-	-	-	-	<b>0.460</b>	-	-	-	-	-	<b>0.460</b>
<b>Total</b>			-	-	-	-	-	-	-	-	-	-	-	<b>21.049</b>	-	-	-	-	-	<b>21.049</b>

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

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<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE	<b>Modification Number / Title:</b> 1 / PARCS Block 02

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

<b>Resource Summary</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>To Complete</b>	<b>Total</b>
Procurement Quantity <i>(Units in Each)</i>	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost <i>(\$ in Millions)</i>	-	-	-	8.297	-	8.297	-	-	-	-	-	8.297
Less PY Advance Procurement <i>(\$ in Millions)</i>	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) <i>(\$ in Millions)</i>	-	-	-	8.297	-	8.297	-	-	-	-	-	8.297
Plus CY Advance Procurement <i>(\$ in Millions)</i>	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> <i>(\$ in Millions)</i>	-	-	-	<b>8.297</b>	-	<b>8.297</b>	-	-	-	-	-	<b>8.297</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares <i>(\$ in Millions)</i>	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost <i>(\$ in Millions)</i>	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

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.

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<b>Exhibit P-3a, Individual Modification: PB 2021 Air Force</b>										<b>Date: February 2020</b>			
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10					<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE					<b>Modification Number / Title:</b> 1 / PARCS Block 02			
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A							<b>MDAP/MAIS Code:</b>						
<b>Models of Systems Affected: NA</b>				<b>Modification Type: Reliability &amp; Maintainability</b>				<b>Related RDT&amp;E PEs:</b>					
Financial Plan	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	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)	
<b>Procurement</b>													
<i>Modification Item 1 of 2: COMMON: Install Kits (2)</i>													
A Kits													
Recurring													
COMMON: Install Kits:INSTALL KITS Group A (Active)													
	- / -	- / -	- / -	- / 0.100	- / -	- / 0.100	- / -	- / -	- / -	- / -	- / -	- / 0.100	
<i>Subtotal: Recurring</i>													
	- / -	- / -	- / -	- / 0.100	- / -	- / 0.100	- / -	- / -	- / -	- / -	- / -	- / 0.100	
<i>Subtotal: COMMON: Install Kits (2)</i>													
	- / -	- / -	- / -	- / 0.100	- / -	- / 0.100	- / -	- / -	- / -	- / -	- / -	- / 0.100	
<i>Modification Item 2 of 2: PARCS: EQUIPMENT (2)</i>													
B Kits													
Recurring													
PARCS: EQUIPMENT:EQUIPMENT Group B (Active)													
	- / -	- / -	- / -	1 / 6.704	- / -	1 / 6.704	- / -	- / -	- / -	- / -	- / -	1 / 6.704	
<i>Subtotal: Recurring</i>													
	- / -	- / -	- / -	- / 6.704	- / -	- / 6.704	- / -	- / -	- / -	- / -	- / -	- / 6.704	
<i>Subtotal: PARCS: EQUIPMENT (2)</i>													
	- / -	- / -	- / -	- / 6.704	- / -	- / 6.704	- / -	- / -	- / -	- / -	- / -	- / 6.704	
<i>Subtotal: Procurement, All Modification Items</i>													
	- / -	- / -	- / -	- / 6.804	- / -	- / 6.804	- / -	- / -	- / -	- / -	- / -	- / 6.804	
<b>Support (All Modification Items)</b>													
PMA - Contractor Services													
	- / -	- / -	- / -	- / 1.493	- / -	- / 1.493	- / -	- / -	- / -	- / -	- / -	- / 1.493	
<i>Subtotal: Support</i>													
	- / -	- / -	- / -	- / 1.493	- / -	- / 1.493	- / -	- / -	- / -	- / -	- / -	- / 1.493	
<b>Installation</b>													
<i>Subtotal: Installation</i>													
	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	
<b>Total</b>													
<b>Total Cost (Procurement + Support + Installation)</b>													
	-	-	-	8.297	-	8.297	-	-	-	-	-	8.297	

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<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force					<b>Date:</b> February 2020		
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10			<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE			<b>Modification Number / Title:</b> 1 / PARCS Block 02	
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A				<b>MDAP/MAIS Code:</b>			
<b>Modification Item 1 of 2:</b> COMMON: Install Kits (2)							
<b>Manufacturer Information</b>							
Manufacturer Name: N/A				Manufacturer Location: N/A			
Administrative Leadtime (in Months):				Production Leadtime (in Months):			
<b>Dates</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
Contract Dates							
Delivery Dates							
<b>Installation Information</b>							
<b>Method of Implementation (Organic):</b> Org/Intermediate					<b>Installation Quantity:</b> 0		

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<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force					<b>Date:</b> February 2020		
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10			<b>P-1 Line Item Number / Title:</b> SPCMOD / SPACE MODS SPACE			<b>Modification Number / Title:</b> 1 / PARCS Block 02	
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A				<b>MDAP/MAIS Code:</b>			
<b>Modification Item 2 of 2:</b> PARCS: EQUIPMENT (2)							
<b>Manufacturer Information</b>							
Manufacturer Name: TBD				Manufacturer Location: TBD			
Administrative Leadtime (in Months): 3				Production Leadtime (in Months): 15			
<b>Dates</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
Contract Dates			Mar 2021				
Delivery Dates			Jun 2022				
<b>Installation Information</b>							
<b>Method of Implementation (Organic):</b> Org/Intermediate					<b>Installation Quantity:</b> 5		

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs	<b>P-1 Line Item Number / Title:</b> SPRNGE / Spacelift Range System Space
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<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1203182SF
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**Line Item MDAP/MAIS Code:** N/A

Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	100.492	-	100.492	94.962	75.786	109.903	105.458	-	486.601
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	100.492	-	100.492	94.962	75.786	109.903	105.458	-	486.601
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	-	-	<b>100.492</b>	-	<b>100.492</b>	<b>94.962</b>	<b>75.786</b>	<b>109.903</b>	<b>105.458</b>	-	<b>486.601</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

In FY 2021, P-1 Line Item SPRNGE / Spacelift Range System Space efforts were transferred to Appropriation 3022, Procurement, Space Force, from Appropriation 3021 due to the creation of a new Appropriation for Space Force.

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 ensures ability to meet the national launch requirement, safely support the launch cadence of ER/EW launch requirement holders, and provide 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.

- 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 Range of the Future (ROTF) Procurement: ROTF procurement will meet Air Force Space Command Commander's direction to : (1) ensure LTRS meets increasing launch capacity demand on the ER and WR; and (2) provide user support to launch and test requirement holders. The Commander's intent is that LTRS capability will not constrain the national space launch cadence. The Air Force will use various contract vehicles to procure, configure, install and integrate ROTF system architecture modifications to support the requirement for 80 launches per year and achieve vehicle performance assessment rates of up to 30 megabytes (Mb) per second. These modifications will include advanced digital data receive, transport and processing capability and modernized telemetry formats leveraging dispersed and disaggregated deployment concepts.

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: Space Programs		<b>P-1 Line Item Number / Title:</b> SPRNGE / Spacelift Range System Space
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> N/A	<b>Other Related Program Elements:</b> 1203182SF
<b>Line Item MDAP/MAIS Code:</b> N/A		
<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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. ROTF Projects will enable agile and resilient LTRS operations following full AFSS implementation.</p> <p>Space acquisition must respond with speed and agility to emerging adversary threats. Space &amp; 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.</p> <p>Funding for this exhibit is contained in PE 1203182SF.</p>		



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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:** 3022F: Procurement, Space Force / BA 01: Space Procurement, SF / BSA 10: 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:** N/A **Other Related Program Elements:** 1203182SF

**Line Item MDAP/MAIS Code:** N/A

Exhibits Schedule					Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 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		- / -	- / -	- / -	- / 61.570	- / -	- / 61.570
P-40a	Spacelift Range System (SPACE)				- / -	- / -	- / -	- / 4.322	- / -	- / 4.322
P-3a	1 / Range Communications Facility (RCF) (Capability Improvement)		B		- / -	- / -	- / -	- / 34.600	- / -	- / 34.600
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				<b>- / -</b>	<b>- / -</b>	<b>- / -</b>	<b>- / 100.492</b>	<b>- / -</b>	<b>- / 100.492</b>

Exhibits Schedule					FY 2022	FY 2023	FY 2024	FY 2025	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)				- / 2.335	- / 0.500	- / -	- / -	- / -	- / 7.157
P-3a	1 / Range Communications Facility (RCF) (Capability Improvement)		B		- / 4.100	- / 4.300	- / -	- / -	- / -	- / 43.000
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				<b>- / 94.962</b>	<b>- / 75.786</b>	<b>- / 109.903</b>	<b>- / 105.458</b>	<b>- / -</b>	<b>- / 486.601</b>

\*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 2021 funds will pay for interim supply support, to include supplies and associated interim supply support management. For LTRS SUPPORT SERVICES, FY 2021 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 ROTF Procurement (P40a) FY 2021 funds procure ROTF capital equipment required to meet requirements for capacity and data collection.

MEN, WMN, RCDM, and RCF (P-3As): FY 2021 funds for these modifications are required to enable ROTF equipment, modifications, and 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 2022 through FY 2025 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 2022 Cost Delta: 88.527 million
- (b) FY 2023 Cost Delta: 70.985 million
- (c) FY 2024 Cost Delta: 109.903 million
- (d) FY 2025 Cost Delta: 105.458 million
- (e) FY Total Cost Delta: 436.444 million

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<b>Exhibit P-5, Cost Analysis: PB 2021 Air Force</b>		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> SPRNGE / Spacelift Range System Space	<b>Item Number / Title [DODIC]:</b> Spacelift Range System (SPACE)

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>
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Resource Summary	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Procurement Quantity (Units in Each)	-	-	-	-	-	-
Gross/Weapon System Cost (\$ in Millions)	-	-	-	61.570	-	61.570
Less PY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
Net Procurement (P-1) (\$ in Millions)	-	-	-	61.570	-	61.570
Plus CY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
<b>Total Obligation Authority (\$ in Millions)</b>	-	-	-	<b>61.570</b>	-	<b>61.570</b>

*(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 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)
<b>Hardware - 1203182F SPRNGE Cost</b>																		
Non Recurring Cost																		
Commodities Procurement	-	-	-	-	-	-	-	-	-	-	-	19.913	-	-	-	-	-	19.913
<i>Subtotal: Non Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	19.913	-	-	-	-	-	19.913
<i>Subtotal: Hardware - 1203182F SPRNGE Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>19.913</b>	-	-	-	-	-	<b>19.913</b>
<b>Logistics - Logistics End Item Cost</b>																		
Recurring Cost																		
INTERIM SUPPLY SUPPORT MATERIAL (PARTS/SUPPLIES)	-	-	-	-	-	-	-	-	-	-	-	4.763	-	-	-	-	-	4.763
INTERIM SUPPLY SUPPORT SERVICES/LABOR	-	-	-	-	-	-	-	-	-	-	-	1.867	-	-	-	-	-	1.867
TECHNICAL MISSION ANALYSIS	-	-	-	-	-	-	-	-	-	-	-	10.110	-	-	-	-	-	10.110
ENTERPRISE SYSTEMS ENGINEERING AND INTEGRATION	-	-	-	-	-	-	-	-	-	-	-	13.999	-	-	-	-	-	13.999
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	30.739	-	-	-	-	-	30.739
<i>Subtotal: Logistics - Logistics End Item Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>30.739</b>	-	-	-	-	-	<b>30.739</b>
<b>Support - Support End Item Cost</b>																		

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<b>Exhibit P-5, Cost Analysis:</b> PB 2021 Air Force												<b>Date:</b> February 2020					
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10						<b>P-1 Line Item Number / Title:</b> SPRNGE / Spacelift Range System Space						<b>Item Number / Title [DODIC]:</b> Spacelift Range System (SPACE)					
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A												<b>MDAP/MAIS Code:</b>					

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

Cost Elements	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)
FFRDC	-	-	-	-	-	-	-	-	-	-	-	3.273	-	-	-	-	-	3.273
ADVISORY AND ASSISTANCE SERVICES (A&AS)	-	-	-	-	-	-	-	-	-	-	-	4.831	-	-	-	-	-	4.831
OTHER SUPPORT	-	-	-	-	-	-	-	-	-	-	-	2.814	-	-	-	-	-	2.814
<i>Subtotal: Support - Support End Item Cost</i>	-	-	-	-	-	-	-	-	-	-	-	<b>10.918</b>	-	-	-	-	-	<b>10.918</b>
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	-	-	-	-	-	-	<b>61.570</b>	-	-	-	-	-	<b>61.570</b>

**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.

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<b>Exhibit P-40a, Budget Item Justification For Aggregated Modification Items: PB 2021 Air Force</b>															<b>Date:</b> February 2020				
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10					<b>P-1 Line Item Number / Title:</b> SPRNGE / Spacelift Range System Space										<b>Aggregated Modification Items Title:</b> Spacelift Range System (SPACE)				

Item Number / Title	ID CD	MDAP/MAIS Code	Prior Years			FY 2019			FY 2020			FY 2021 Base			FY 2021 OCO			FY 2021 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)			-	-	-	-	-	-	-	-	-	-	-	2.984	-	-	-	-	-	2.984
03-RCDM / Range Command Destruct Modernization (RCDM)			-	-	-	-	-	-	-	-	-	-	-	1.338	-	-	-	-	-	1.338
<b>Total</b>			-	-	-	-	-	-	-	-	-	-	-	<b>4.322</b>	-	-	-	-	-	<b>4.322</b>

  

Item Number / Title	ID CD	MDAP/MAIS Code	FY 2022			FY 2023			FY 2024			FY 2025			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)			-	-	1.214	-	-	0.500	-	-	-	-	-	-	-	-	-	-	-	4.698
03-RCDM / Range Command Destruct Modernization (RCDM)			-	-	1.121	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.459
<b>Total</b>			-	-	<b>2.335</b>	-	-	<b>0.500</b>	-	-	-	-	-	-	-	-	-	-	-	<b>7.157</b>

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

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<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10	<b>P-1 Line Item Number / Title:</b> SPRNGE / Spacelift Range System Space	<b>Modification Number / Title:</b> 1 / Range Communications Facility (RCF)

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

<b>Resource Summary</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>To Complete</b>	<b>Total</b>
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	-	-	-	34.600	-	34.600	4.100	4.300	-	-	-	43.000
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	-	-	-	34.600	-	34.600	4.100	4.300	-	-	-	43.000
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	-	-	-	<b>34.600</b>	-	<b>34.600</b>	<b>4.100</b>	<b>4.300</b>	-	-	-	<b>43.000</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**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.

Predecessor to enable ROTF launch capacity data collection equipment and modifications.

Milestone/Development Status

Post Milestone C - Production and Development Phase

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**Exhibit P-3a, Individual Modification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:** 3022F / 01 / 10 **P-1 Line Item Number / Title:** SPRNGE / Spacelift Range System Space **Modification Number / Title:** 1 / 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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	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)
<b>Procurement</b>												
<i>Modification Item 1 of 1:</i> Range Communication Facility (RCF)												
B Kits												
Recurring												
Range Communication Facility (RCF):EQUIPMENT Group B (Active)	- / -	- / 0.000	- / 0.000	1 / 34.600	- / -	1 / 34.600	1 / 4.100	1 / 4.300	- / -	- / -	- / -	3 / 43.000
<i>Subtotal: Recurring</i>	- / -	- / 0.000	- / 0.000	- / 34.600	- / -	- / 34.600	- / 4.100	- / 4.300	- / -	- / -	- / -	- / 43.000
<i>Subtotal: Range Communication Facility (RCF)</i>	- / -	- / -	- / -	- / 34.600	- / -	- / 34.600	- / 4.100	- / 4.300	- / -	- / -	- / -	- / 43.000
<i>Subtotal: Procurement, All Modification Items</i>	- / -	- / -	- / -	- / 34.600	- / -	- / 34.600	- / 4.100	- / 4.300	- / -	- / -	- / -	- / 43.000
<b>Installation</b>												
<i>Subtotal: Installation</i>	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -	- / -
<b>Total</b>												
<b>Total Cost (Procurement + Support + Installation)</b>	-	-	-	34.600	-	34.600	4.100	4.300	-	-	-	43.000

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<b>Exhibit P-3a, Individual Modification:</b> PB 2021 Air Force						<b>Date:</b> February 2020	
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3022F / 01 / 10			<b>P-1 Line Item Number / Title:</b> SPRNGE / Spacelift Range System Space			<b>Modification Number / Title:</b> 1 / Range Communications Facility (RCF)	
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B				<b>MDAP/MAIS Code:</b>			
<b>Modification Item 1 of 1:</b> Range Communication Facility (RCF)							
<b>Manufacturer Information</b>							
Manufacturer Name: Range Generation Next LLC				Manufacturer Location: Sterling, VA			
Administrative Leadtime (in Months): 0				Production Leadtime (in Months): 0			
<b>Dates</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
Contract Dates			Mar 2021	Apr 2022	Mar 2023		
Delivery Dates			Mar 2021	Apr 2022	Mar 2023		
<b>Installation Information</b>							
<b>Method of Implementation (Organic):</b> Org/Intermediate					<b>Installation Quantity:</b> 0		

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**Exhibit P-40, Budget Line Item Justification:** PB 2021 Air Force **Date:** February 2020

**Appropriation / Budget Activity / Budget Sub Activity:** 3022F: Procurement, Space Force / BA 02: Spares / BSA 20: Spares **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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	0.000	0.000	0.000	1.272	-	1.272	1.298	1.321	0.884	0.900	0.000	5.675
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	0.000	0.000	0.000	1.272	-	1.272	1.298	1.321	0.884	0.900	0.000	5.675
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>1.272</b>	<b>-</b>	<b>1.272</b>	<b>1.298</b>	<b>1.321</b>	<b>0.884</b>	<b>0.900</b>	<b>0.000</b>	<b>5.675</b>
<i>(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)</i>												
Initial Spares ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**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 programs:  
 Information Systems Security Program  
 NAVSTAR Global Positioning System (Control Segment)

**Justification:**

The FY 2021 budget supports initial spares for the following programs: Information Systems Security Program, NAVSTAR Global Positioning System (Space and Control Segments).

PE 1203140SF Information Systems Security Programs: FY 2021 funding (\$0.836M) is required to supply crypto devices for space and ground nodes, used by all Services/Agencies, to meet an NSA cybersecurity mandates

PE 1203165SF NAVSTAR GPS: FY 2021 funding (\$0.436M) 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 GPS OCX era.

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