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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 1206116F / <i>Space Test and Training Range Development</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	-	22.408	14.942	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
666156: <i>Space Test and Training Range Development</i>	-	22.408	14.942	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY 2021, PE 1206116F, Space Test and Training Range Development efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1206116SF Space Test and Training Range Development from Appropriation 3600, Budget Activity 06 due to the creation of a new Appropriation for Space Force.

Supports the development of Space Test and Training Range (STTR) capabilities critical for developmental and operational test, training, exercises and tactics development for Space Control systems and Joint National Space Architecture. Includes development, demonstration and delivery of test assets, special test equipment, capabilities and systems required to test, validate, and verify performance of integrated space control systems. Provides a safe, secure, controllable and repeatable environment for the testing of space control mission systems and training operators that in realistic and relevant environments. Additionally, using an agile incremental development approach for range capabilities, this program develops test range assets for both the fixed node Space Range Operation Center (SROC) at Schriever AFB and a deployable Signal Monitoring Unit capability to support complex Joint and AF exercises. The virtual range as part of the Family of Systems (FoS), called Advanced Threat Simulation Environment (ATSE) virtual range, is being developed to accomplish the STTR mission. ATSE integrates to a Distributed Mission Architecture, tying into cyber, air, and space ranges for increased realism and complexity required to prepare space operators for real-world threats. This technology will allow for the first-ever use of a realistic signal environment to increase the realism and efficiency of space control squadron training. Additionally, the STTR Next Space Orbital Engagement (OE) range risk reduction projects will analyze, prototype, and demonstrate potential range systems that is used to support the testing and training of new advanced development space systems, advanced training for space operator orbital engagement maneuvers advanced, and future exercises. These risk reduction activities will include on-orbit capabilities, ground components, communication between nodes, and other required infrastructure.

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

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

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This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

B. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	23.157	19.942	20.288	0.000	20.288
Current President's Budget	22.408	14.942	0.000	0.000	0.000
Total Adjustments	-0.749	-5.000	-20.288	0.000	-20.288
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-5.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.749	0.000			
• Other Adjustments	0.000	0.000	-20.288	0.000	-20.288

Change Summary Explanation

FY 2020: funding request was reduced by \$5.000 million to account for the availability of prior year execution balances.
 FY 2021: \$20.288M; funds starting in FY 2021 were transferred from RDT&E, Air Force to RDT&E, Space Force.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
Title: Range Control	22.408	14.942	0.000
Description: Development and acquisition of mobile, transportable, virtual, on-orbit, and fixed range monitoring, emulation, and communications capabilities for the space range.			
FY 2020 Plans: Continue development of virtual range integration with cyber and air ranges hosting precision emulators and other environments allowing tactics, techniques, and procedures (TTP) development and operational realistic testing, and enable more realistic exercises combining air, space, and cyber effects. Continue Interim Contractor Support (ICS) of virtual range 1.5. Complete development of final Deployable Signal Monitoring Unit variant, Big Ben last part of the mobile/ transportable range asset, and commence SROC technology refresh complete Linux migration. Continue risk reduction/mitigation efforts for Space Orbital Engagement Range Risk Reduction Projects which will analyze potential range systems that will be used to support the live and virtual testing of new advanced development space systems, space operator orbital engagement maneuvers (OEM) advanced training, and future SPACE FLAG exercises using live and virtual systems. Continue overhaul of fixed range capabilities, general obsolescence, outdated servers, and software upgrades. Provide significant enhancements to include the future integration			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
into virtual environment. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, etc. FY 2021 Plans: N/A FY 2020 to FY 2021 Increase/Decrease Statement: N/A			
Accomplishments/Planned Programs Subtotals	22.408	14.942	0.000

D. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

E. Acquisition Strategy
All contracts funded in this program element will be awarded using competitive procedures to the maximum extent possible.