

SPACE ACCESS PORTFOLIO

VISION & REQUIREMENTS

VOLUME 1:
EASTERN & WESTERN RANGES

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INTRODUCTION

Setting the Stage



This document is the first in a series that will articulate the Space Access Portfolio vision and requirements, ensuring our nation's access to space. It sets the stage by outlining priorities for modernizing our launch and range operations.

The United States Space Force's Eastern and Western Ranges form the foundation that enables our nation's assured access to space and the ability to test next-generation weapons systems. There is an inextricable link between the launch vehicles that deliver payloads to orbit, the test assets that utilize the ranges, and the specialized range infrastructure that supports these activities. As the demand for national security, civil, and commercial launch and test operations continues to grow at an unprecedented rate, our ranges must evolve in lockstep. Increasing the speed, agility, and throughput of our range operations is no longer merely a strategic objective, but an operational imperative required to maintain our competitive advantage.

However, accelerating launch and test tempos cannot be achieved through technology and hardware alone. The dedicated professionals who operate, maintain, and manage the Eastern and Western Ranges are the true catalysts for our operations. From range safety and telemetry to logistics, planning, and execution, it is the expertise and resilience of our workforce that keep these complex systems operational day in and day out. This document outlines the strategic vision, priorities, and requirements for the future of our Eastern and Western Ranges. Meeting these high-level requirements will be accomplished by lower-level requirements including system modernization, process enhancements, and personnel staffing and training. Materiel requirements may be satisfied through a flexible combination of dedicated government assets, commercial assets, or commercially procured services.

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WHO WE ARE



Col. Eric Zarybnisky
Acting Portfolio Acquisition Executive



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EASTERN & WESTERN RANGES

The United States is at a pivotal moment in the history of space operations. The convergence of national security imperatives and a burgeoning commercial space industry presents both unprecedented opportunities and significant challenges. Our Eastern and Western Spaceports and Test Ranges (ER and WR respectively), at Cape Canaveral Space Force Station and Vandenberg Space Force Base, are national strategic assets that serve the vital functions of national security space launch, Department of War (DoW) test and evaluation, Civil launch and commercial launch.

This national endeavor is powered by the seamless integration of two distinct yet inseparable components. First are the advanced range assets: the sophisticated instrumentation, data networks, and flight safety systems that enable the precise tracking, control, and analysis of launch and test missions. These are the technical instruments of space access. Equally vital, though often unseen, are the foundational base support functions and enabling infrastructure that make the entire enterprise possible. These functions carried out by the security forces who protect our high-value assets, the fire and emergency services who stand ready for any contingency, and the civil engineers who maintain critical infrastructure—the roads, utilities, and facilities, along with many others—form the bedrock of our operations. If our advanced range assets are the mind and nervous system of the spaceport, our base support enterprise is the powerful skeleton and circulatory system that enables all movement and ensures resilience.



The 2nd Range Operations Squadron exhibits sophisticated instrumentation at Vandenberg SFB. (DVIDS Photo by Airman 1st Class Olga Houtsma)



The 1st Range Operations Squadron manages operations inside the Morrell Operations Center. (DVIDS photo by Gwendolyn Kurzen)



Award-winning Vandenberg Fire Department provides prevention and protection to base facilities. (DVIDS Photo by Airman 1st Class Ian Hawkes)



The 45th Civil Engineer Squadron establishes necessary infrastructure, facilities, and support systems during exercise. (DVIDS Courtesy photo)

For years, we anticipated a wave of commercial space activity, and that moment has arrived. The demand for space access is increasing at a rate that will soon outpace our current capacity, placing stress on both our technical systems and our installation support and enabling infrastructure. This surge in tempo risks turning our ranges into a bottleneck rather than an enabler. To preserve the United States (U.S.) advantage and guarantee access to space for the nation and the warfighter, we must transform not just our range systems, but the very foundation that supports those systems. This vision and requirements document outlines our intent to evolve our ranges into an automated, responsive, resilient, and integrated system capable of meeting the demands of today and the challenges of tomorrow.

Our vision is to create a unified range enterprise that is consistent in process, function, and interface, providing fair and transparent access to all users, from national security missions to our innovative commercial partners. We will evolve to support all phases of launch and test for multiple users simultaneously, creating an environment that fosters innovation and drives down costs.



LC – 39A, Cape Canaveral Space Force Station (Google Earth)



SLC – 6/8, Vandenberg Space Force Base (Google Earth)

PRIORITY 1:
Engineer the Automated, Agile & Responsive Range

The foundation of our future success lies in our ability to dramatically increase operational tempo and responsiveness. We must move beyond the days of serialized, single-mission operations. We will re-engineer our processes and systems to support a dynamic environment where multiple major operations—be they launch, test, or recovery—can occur concurrently.

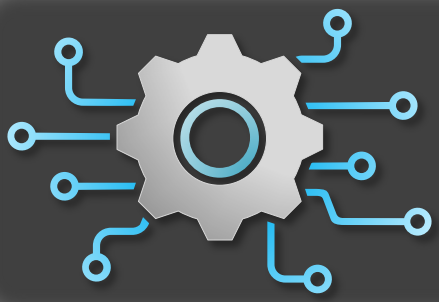
Each Spaceport will support up to three major operations concurrently. We will achieve this through aggressive automation, modernization and the full implementation of technologies like the Autonomous Flight Safety System (AFSS). Widespread use of AFSS will allow us to reconfigure the range in one hour or less for frequent launch service providers—a monumental leap in ability. To enable rapid testing of emerging technologies necessary for DoW priorities, we will support legacy Command Destruct as an option while establishing AFSS as primary or preferred means for flight safety. We will decouple Command Destruct from the other range systems to enable simultaneous AFSS and human-in-the loop Flight Termination System (FTS) operations.







RE-ENGINEERING FOR MISSION EXCELLENCE



RE-ENGINEERING PROCESSES & SYSTEMS

Modernizing systems through aggressive automation, integration, and intelligent workflows.

DECREASED TIMELINES FOR:

FLIGHT SAFETY OPERATIONS
- Faster Assessments
- Stronger Mission Assurance

ONBOARDING
- Streamlined Processing
- Accelerated Authorization

PRE-LAUNCH ANALYSIS
- Automated Data Fusion
- Quickly Obtained Key Insights

EFFICIENCIES THAT:

REMOVE BARRIERS
- Eliminate Manual Handoffs
- Break Down Organizational Silos

ACCELERATE MISSION COMPLETION
- Reduce Cycle Time
- Increase Mission Throughput

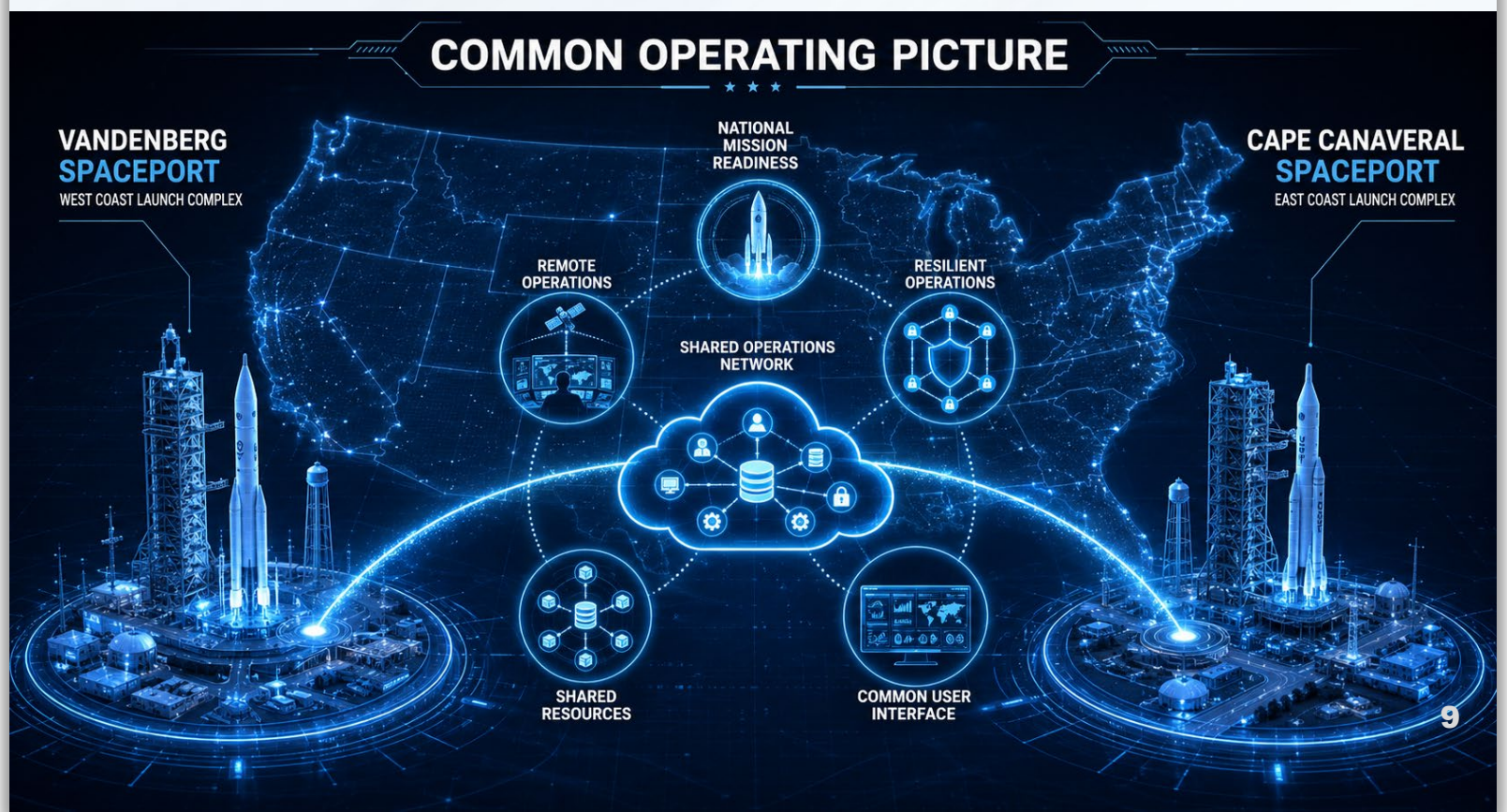
CREATE ON-DEMAND ENVIRONMENT
- Real-Time Data Analytics
- Enhanced Decision-Making Models

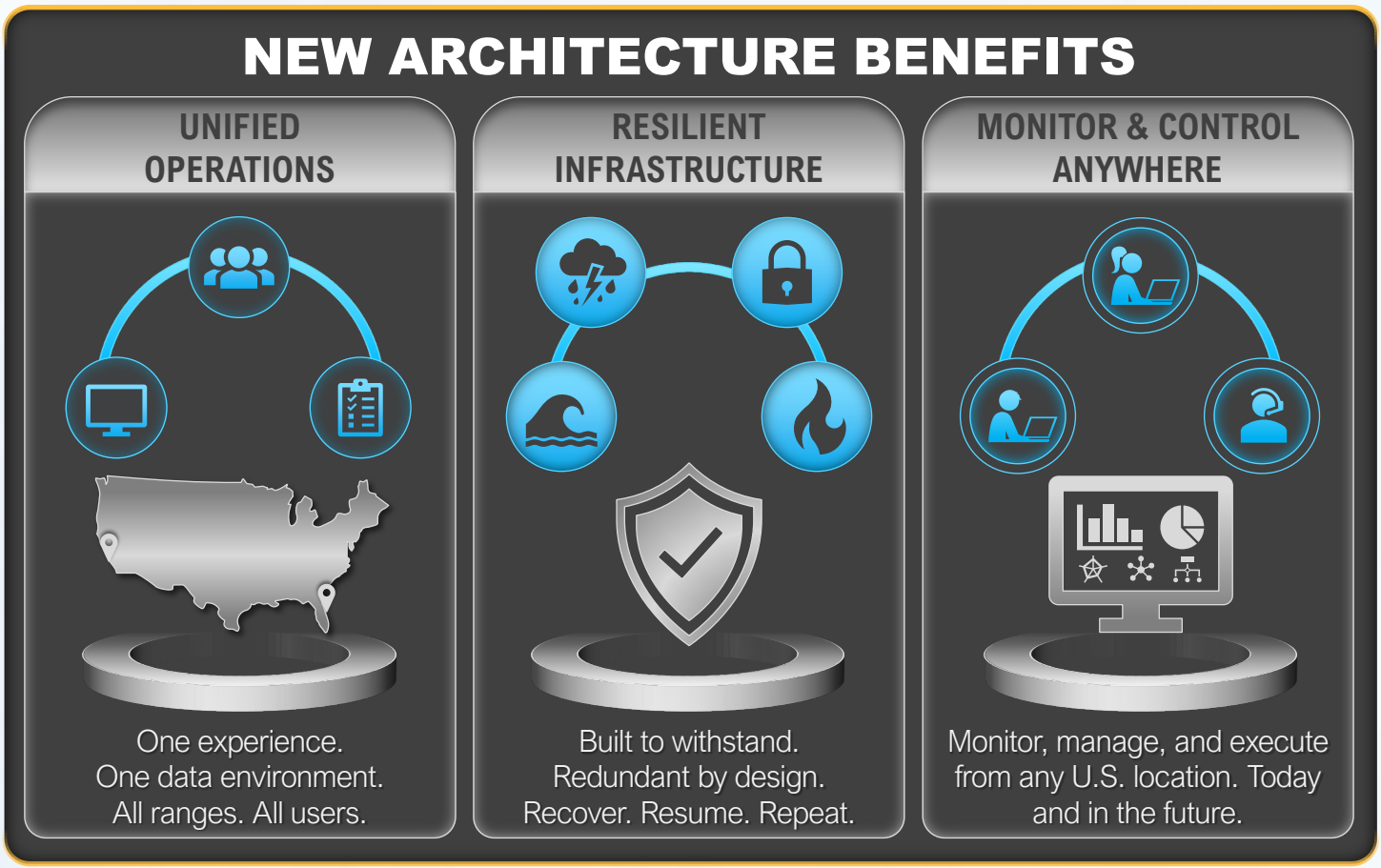
Our responsiveness will extend across the entire mission lifecycle. Partnering with commercial space industry to implement new automation and advanced software tools, we will slash the timelines for flight safety tailoring, new customer onboarding, and critical pre-launch analyses. We will onboard new customers in weeks or months, not years, accommodate changes to flight vehicle operations in hours instead of days, and deliver flight safety products to stakeholders within 72 hours of receiving a flight data package and collision avoidance (COLA) data within 24 hours of a requested T-0. Post-mission data will be available through secure portals and/or dashboards within 24 hours. These efficiencies will remove barriers, accelerate, and create a truly on-demand operational environment.

PRIORITY 2:
Build a Unified, Resilient & Interoperable Architecture

To support this new operational paradigm, we must evolve from a collection of disparate, coast-specific systems into a single, cohesive architecture. The range we present to any customer, at either coast, must be consistent in its interfaces and user experience. It must be resilient and redundant enough to recover quickly in the event of a vehicle mishap, climatic event or intentional disruption with the ability to resume operations once pad infrastructure and hardware is repaired or replaced.

Our core objective is to develop a single data architecture that provides a common interface for spaceport users to request services, receive real-time and post-processed data, and provide commanders with a common operating picture of the health and status of the spaceports to include the status of user requirements and demand on spaceport resources. The status of all range systems at the Eastern and Western Ranges will be mutually available, with the ability to control operations at one range from the other. This “monitor/control from anywhere” capability will eventually extend to include partners like Wallops and Kodiak, creating a truly national, interoperable, and resilient system where government teams and commercial customers can execute a mission from any U.S. location.





This new architecture will be built on modern, modular open systems approach (MOSA), with all systems featuring native Internet Protocol (IP) compliant interfaces. This approach will allow us to shed expensive, long-term sustainment costs and embrace a model of rapid tech-refresh that keeps pace with industry. It will also enable user self-provisioning, where commercial providers can plug their own capabilities and commercial services into our architecture to meet unique customer requirements, while the government maintains the essential baseline for national security missions.



PRIORITY 3:
Transform the Business Model & Base Support Enterprise

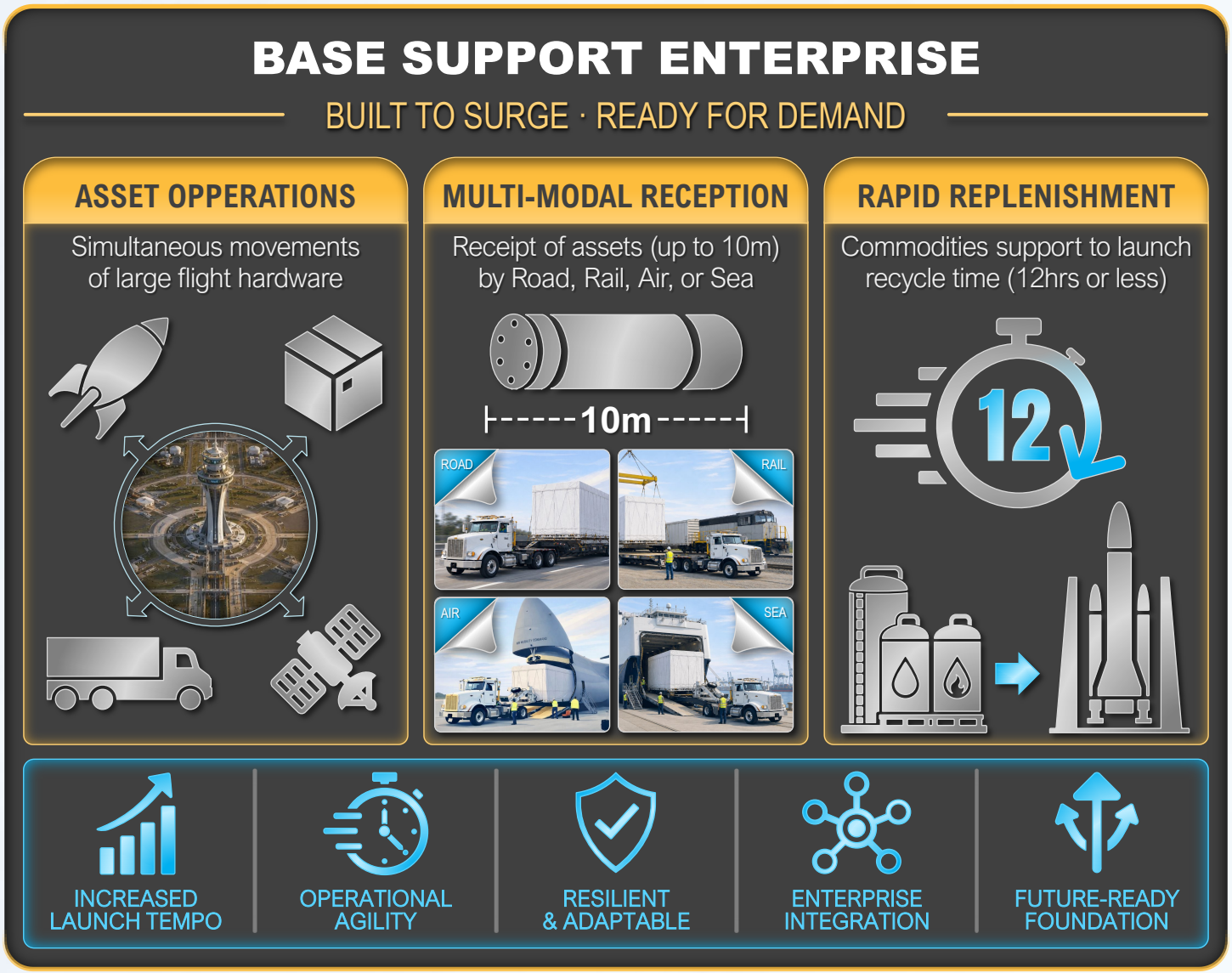
A modern range requires a modern business model. We will transform our practices to be agile, transparent, and responsive to the commercial space industry while preserving the critical needs of the Major Range and Test Facility Base (MRTFB) and other warfighter interests. A key goal is to accurately capture all direct costs, identify and fairly allocate indirect costs, and provide range customers with fully transparent and auditable invoices, fostering trust and enabling better financial planning for all users. Reimbursable billing will be clear, accurate, and with minimal variances from initial estimates or comparable services. The ranges will implement cost controls and pursue continuous improvement in systems and processes to limit the growth of the fixed costs of spaceport operations to the rate of inflation. Through these efficiencies, we project a 10% to 25% reduction in the average Operations and Maintenance (O&M) cost per operation.

We must identify and work to reform statutory, regulatory and DoW policy limitations to drive increasing flexibility. Areas of focus include cost reimbursement, cost sharing, and spaceport financing for infrastructure upgrades and continuous improvement. This could include authorities such as uniting private money with public funds, establishing authorities to make spaceport revenue "timeless" and "colorless" from an execution standpoint, and other financial techniques employed by airports or seaports to execute and sustain spaceport operations.

MODERN BUSINESS MODEL. SUSTAINABLE GROWTH. LOWER COST OPERATIONS.



Simultaneously, we must bolster the foundational base support that enables the mission. The future tempo requires a logistics and infrastructure enterprise capable of surging to meet demand. Each Spaceport will be able to handle simultaneous movements of large flight hardware, receive assets up to 10 meters in size via road, rail, air, or sea, and replenish critical commodities to support a launch recycle time of 12 hours or less.



Resilience is paramount. Our installations must be hardened against disruption, whether from a non-nominal launch event, a natural disaster, enemy actions, or the loss of commercial utilities. We will develop the capability to return the range to an operational status within hours following an on-base incident and continue major operations for an extended period without external power or water. Furthermore, we will secure the domains (land, air, sea, and cyber) necessary to execute the launch and test missions. For airspace in particular, we will implement systems to detect, identify, and disable unauthorized aerial vehicles to protect our high-value assets. Finally, we will harden our infrastructure to make it resistant and resilient to cyber or other attack vectors and ensure continuity of operations across the full spectrum of conflict.

A VISION FOR UNFETTERED SPACE ACCESS

The vision outlined here represents a fundamental transformation of our launch and test enterprise. It is a necessary evolution to meet the converging demands of national security in the midst of a second space race. By focusing on operational agility and responsiveness; creating a unified, resilient, and interoperable architecture; and modernizing our business and support functions, we will move from being a limiting factor to a leading enabler of space power.

This planning cannot be pursued in a vacuum and solely conducted by the Eastern and Western Ranges. We must work together, with the Federal Aviation Administration, the National Aeronautics and Space Administration (NASA) and other Department of War test ranges to ensure we have a clear understanding amongst national priorities to achieve the desired tempo required of our spaceports. We must strive together to achieve concurrent operations within shared airspace and sea lanes while maintaining an appropriate level of risk mitigation for the public and the mission.

We will create a system where the adjudication between launch and test priorities is managed through a balanced, transparent framework and where a surge of five to eight major operations per day is not an aspiration, but a planned capability. By investing in this future, we will preserve and advance our national security interests, guarantee unfettered access to space for the warfighter, and solidify our nation's position as the world's premier gateway to space.



DVIDS -- An ATLAS V rocket carrying the Kuiper 3 mission successfully launches from Space Launch Complex 41 at Cape Canaveral Space Force Station, Florida, on September 25, 2025. (U.S. Space Force photo by Gwendolyn Kurzen)

REQUIREMENTS

Operational Tempo & Responsiveness

I. Mission Configuration: Reduce or eliminate turn time for AFSS-enabled launches by FY2029.
II. Concurrent Operations: Support concurrent major operations by FY2031.
III. Daily Operations: Increase the number of daily operations that can be supported and support surge operations for limited time periods by FY2034.
IV. Overlapping Windows: Accommodate concurrent operations with overlapping windows by FY2031.
V. Asset Turn-Time: Dramatically reduce the turn-time between operations using the same asset(s) by FY2031.
VI. Flight Safety Analysis: Accelerate full flight safety analysis for a frequent launch service provider to meet launch service provider timeframes by FY2031.
VII. COLA Analysis: Accelerate COLA analysis for national security missions to meet launch service provider timeframes by FY2031.
VIII. Customer Onboarding: Onboard new customers within six months after program introduction by FY2031. (NOTE: Onboarding begins with a Program Introduction and ends with a Range Support Plan).
IX. Post-Mission Data: Accelerate customer-requested post-mission data availability via secure portals and/or dashboards by FY2031.
X. Instrument Assessment: Provide initial, quick-look post-operation instrument performance assessments in near real-time by FY2031.

Architecture & Interoperability

I. Common Operating Picture: Status of all range systems for both ER and WR shall be available at both locations, with the ability to add additional spaceports as required, by FY2031.
II. Remote Control: Control launch and test operations for either ER or WR from either location, with the ability to conduct remote control for additional spaceports from the ER or WR by FY2034.
III. Remote Support: Government launch and space vehicle teams can support a launch and test from either ER or WR with the ability to remotely support additional spaceports from the ER or WR by FY2034.
IV. Customer Location: Range customers can execute a launch or test operation from their operations center in any U.S. location by FY2031.
V. IP Interfaces: All Spaceport systems shall have native IP-compliant interfaces by FY2036.
VI. Single Data Architecture: There shall be a single data architecture for operational and administrative data to facilitate a COP and integrate into broader DoW systems by FY2031.
VII. FTS Decoupling: Ground-Based FTS will be decoupled from other baseline range instrumentation systems to the maximum extent possible, or completely, while maintaining MRTFB support by FY2031.

REQUIREMENTS

Business & Cost

I. Transparent Charges: Direct and indirect charges to range customers shall be fully auditable and transparent by FY2029.

II. Cost Reduction: O&M cost per operation (on average) will decrease by at least 10% by FY2031.

Base Support, Logistics, & Resilience

I. Hardware Movement: Maximize multiple hardware transportation pathways to enable simultaneous movements of flight hardware across the Spaceports by FY2036.

II. Commodity Replenishment: Enable government- and contractor-supplied commodities to meet launch service provider recycle times by FY2034.

III. Incident Recovery: Rapidly return the range to mission capable status following a non-nominal test or launch event, assuming no mission critical infrastructure damage, to meet schedule requirements by FY2031.

IV. Natural Disaster Recovery: Rapidly return the range to mission capable status following a full base evacuation for a natural disaster, assuming no mission critical infrastructure is damaged, to meet schedule requirements by FY2031.

V. Utility Independence: Support multiple major operations in the absence of commercially available utilities by FY2036.

VI. Hardware Reception: Be able to receive flight hardware via road, rail, aircraft, and ship up to 10 meters by FY2036.

VII. Airspace Control: Maintain and enhance USSF control of the airspace above the spaceport, including detection, identification, and disablement of air vehicles by FY2031.

VIII. Facility Protection: Protect critical facilities for National Security Space Launch missions in accordance with guidance and posture to rapidly adapt protection levels based on real-world events by FY2031.

DEFINITIONS

Spaceport: The geographic area of land, water, and associated airspace designated for launch and reentry of launch and space vehicles, to include shared supporting infrastructure and services such as launch or reentry support facilities, control centers, safety, security, emergency response, instrumentation, commodities, and associated equipment. A spaceport hosts one or more launch or reentry sites and processing facilities. Spaceports may support either vertical or horizontal launches and are classified as either federal, commercial, or private. Federal spaceports are owned by the federal government and do not require FAA licensing. Commercial spaceports hold an FAA-AST spaceport operator's license and can service multiple launch customers. A private spaceport (launch site) operates under an FAA-AST launch vehicle license and is used exclusively by a single operator.

Spaceport Services: The activities provided, or coordinated with external or institutional organizations to provide, for the needs of spaceport operations.

Spaceport Commodities: The consumable material provided, or coordinated with external or institutional organizations to provide, for the needs of Spaceport operations.

Concurrently: Personnel and systems delivering Spaceport services for different missions at the same time.

Major Operation: A launch, attempted launch, pre-launch test, aeronautical test flight or other DoW weapon system test, return to launch site, or anomaly investigation event that uses Spaceport assets.

Modular Open Systems Approach (MOSA): U.S. DoW strategy using modular designs and open standards to create affordable, flexible, and rapidly upgradable defense systems.

Predefined Mission Configuration: Templated missions having destruct lines, chevrons, green numbers (duration of acceptable data loss), etc. previously established which could be utilized for multiple missions, trajectories, and pads.

Recurring launch service provider: A launch service provider which frequently employs common flight trajectories and provides mature and consistent data products for flight safety analysis.

Major Range and Test Facility Base; also called Ranges: Designated core set of DoW Test and Evaluation infrastructure and associated workforce that must be preserved as a national asset to provide Test and Evaluation capabilities to support the DoW acquisition system in accordance with 3200.11.

Fully Mission Capable: Range is able to execute three simultaneous operations.

Partially Mission Capable: Range is able to execute a single operation.