



2025

# GLOBAL DEFENDER



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A GUIDE TO USASMDC



## COMMANDER'S MESSAGE

LTG SEAN A. GAINERY

**It's my privilege to welcome you to the 2025 edition of the *Global Defender*, your guide to the U.S. Army Space and Missile Defense Command (USASMDC) and the Joint Functional Component Command for Integrated Missile Defense (JFCC IMD).**

It's a true honor to command SMDC and JFCC IMD. In my first year of command, I was able to travel all over the world and meet the entire organization face-to-face. The "ONE TEAM" of Soldiers and civilians who make up USASMDC and JFCC IMD is truly exceptional. Every day, we demonstrate value to the Army, the joint force, and (most importantly) the warfighter by providing space, high altitude, and missile defense forces and capabilities – including essential homeland defense. USASMDC is Army Service Component Command to three Combatant Commands: U.S. Northern Command, U.S. Space Command, and U.S. Strategic Command. This is no small feat; our teammates, stationed across the globe, make it possible to keep those commitments and perform various missions with success.

A few months into my first year of command, I rolled out our vision for this organization: that we would be ONE TEAM! – that achieves our shared objectives via collaboration, feedback, assessment, and smart adaptation to continue demonstrating value. The capabilities demonstrated in this book illustrate exactly how each member of our ONE TEAM contributes to making that vision come true, whether a Soldier working on Ground-based Midcourse Defense in Fort Greely, Alaska, an engineer developing new technologies at the USASMDC Technical Center, or a specialist training up the next generation of space Soldiers at the Space and Missile Defense Center of Excellence.

Every piece of the puzzle at USASMDC and JFCC IMD is essential, as the threat environment we face in the realm of space and missile defense is rapidly evolving. Every day brings a new technology and a new challenge to face; every day, this team is one step ahead of the competition, dreaming up new solutions to our Army's most pertinent problems and then doing what it takes to field those solutions and support the warfighter in the process.

I am exceptionally proud to command USASMDC and JFCC IMD. I hope that, as you take in the

accomplishments chronicled in this *Global Defender*, you, too, will be able to understand what makes this organization so special.

Demonstrate Value		
ONE TEAM!	Provide Trained and Ready Forces	Create All-Domain Advantages
Improve All Things Kwajalein	Manage OPTEMPO	Champion Close Space Capabilities
Create Missile Defeat Effects	Build the Space Branch	Employ Emerging SMD <sup>+</sup> Capabilities
Improve Trans-Regional Missile Defense	Support Joint Force Commanders	Develop IAMD 2040
Incorporate Cyber-SOF-Space	Prioritize MDO-Capable Ranges and Training	Integrate Counter-UAS Efforts

***Secure the high ground! Vigilant for the world!***



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Chief Technology  
Officer



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THE 2025  
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The U.S. Army Space and Missile Defense Command is the Army's force modernization proponent and operational integrator for global space, missile defense and high-altitude capabilities. USASMDC serves as an Army Service Component Command to U.S. Space Command, to U.S. Northern Command for its ground-based midcourse defense mission and to U.S. Strategic Command. The command has a unique perspective on the convergence of space and missile defense in multidomain operations and the role it plays in integrated deterrence.

USASMDC provides trained and ready space and missile defense forces and capabilities to the warfighter and the nation. It builds space and missile defense forces for tomorrow by researching, testing and integrating space, missile defense, cyber, directed energy, hypersonic and related technologies for the future.

The common link uniting USASMDC's 2,300 Soldiers and civilians across 13 time zones and 11 countries is a commitment to defending the nation and its allies.

Along with the command's Technical Center and Space and Missile Defense Center of Excellence, it has two major subordinate military elements: the 100<sup>th</sup> Missile Defense Brigade (Ground-Based Midcourse Defense) and the 1<sup>st</sup> Space Brigade.

The missile defense brigade operates the Ground-based Midcourse Defense System and functions as the missile defense component of the missile

*A Black Dagger Zombie missile target, designed to fly a ballistic flight path and demonstrate defensive protection capability, launches from Fort Wingate, New Mexico, Nov. 2, 2024. The flight served as a search track to test the Lower Tier Air and Missile Defense Sensor system. (U.S. Army photo)*



defense enterprise of the command. The GMD mission is the ultimate defense of the homeland, conducted in support of the USNORTHCOM commander and manned by Army National Guard and active-component Soldiers in Colorado, Alaska, New York and California. The Soldiers of the brigade's 49<sup>th</sup> Missile Defense Battalion operate the GMD System and provide security for the Missile Defense Complex at Fort Greely, Alaska.

Leading the command in space operations is the 1<sup>st</sup> Space Brigade. The brigade consists of the 1<sup>st</sup> Space Battalion and 2<sup>nd</sup> Space Battalion, as well as the 117<sup>th</sup> Space Battalion under a direct support relationship. The 1<sup>st</sup> Space Brigade conducts continuous space force enhancement and space control planning and operations in support of combatant commanders, enabling and shaping decisive operations in high-intensity, multidomain conflicts against any adversary. The brigade also contains five missile defense batteries that operate the AN/TPY-2 radars in forward-based mode conducting ballistic missile search, track and discrimination operations in support of regional and homeland defense. Additionally, the forward-based mode radar can enable space operations and conduct data collection.

The Technical Center manages science and technology, oversees research and development, and conducts test programs for space, integrated air and missile defense, directed energy, hypersonic and related technologies. It provides critical technologies enabling

warfighter effectiveness in the core competencies of directed energy, space and high-altitude systems, and hypersonic and strategic weapons. The center also manages the Ronald Reagan Ballistic Missile Defense Test Site, part of the Department of Defense Major Range and Test Facility Base, located in the central Pacific Ocean on Kwajalein Atoll, Republic of the Marshall Islands.

The Space and Missile Defense Center of Excellence is the command's architect for future force design. The team is charged to design, build, modernize, train and educate Army space and missile defense forces and is the Army's force modernization proponent responsible for managing Army change to doctrine, organization, training, materiel, leadership and education, personnel, facilities and policy.

USASMDC is also the proponent for the Army astronaut program and provides support to NASA with an Army detachment assigned to Johnson Space Center in Houston, Texas.

The USASMDC commanding general also has several other responsibilities: he serves as the senior commander of both Fort Greely and U.S. Army Garrison – Kwajalein Atoll, where he is responsible for the care of service members, families and civilians, and for enabling unit readiness; he is the Army's air and missile defense enterprise integrator; and he serves as the commander of U.S. Space Command's Joint Functional Component Command for Integrated Missile Defense.

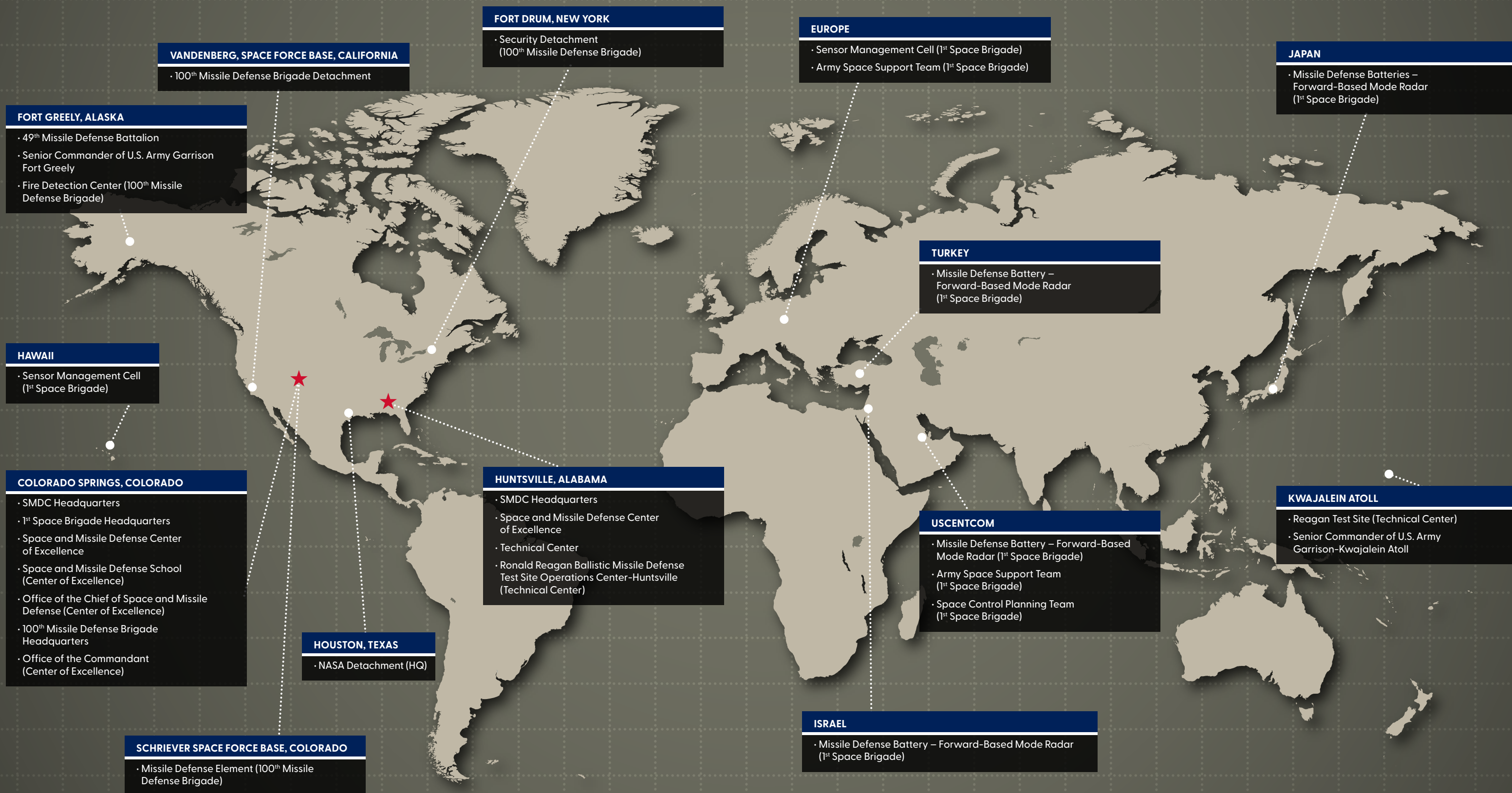




**USASMDC**

*A globally responsive command*

**2,300 DEDICATED EMPLOYEES WORLDWIDE WITH MORE THAN  
500 OPERATIONAL FORCES FORWARD STATIONED OR DEPLOYED**







# ARMY SPACE SUPPORTS MULTIDOMAIN OPERATIONS

This year, the U.S. Army Space and Missile Defense Command continued its implementation of the Army's Space Vision, released in 2023, and focused on planning how space capabilities can integrate with and support multidomain operations.

USASMDC and its subordinate organizations, including the 1<sup>st</sup> Space Brigade, Space and Missile Defense Center of Excellence and the Technical Center, play a considerable role in the Army achieving this vision's objectives.

"As we look out into 2030, we know from all the Army warfighting concepts that we have to grow space capability," said Lt. Gen. Sean Gainey, USASMDC commanding general, in August during a public engagement.

1<sup>st</sup> Space Brigade training events like Joint Readiness Training Center exercises and collaboration with special operations have enabled the brigade to evolve new capabilities such as providing spectrum awareness and direct space support to ground maneuver forces enhancing their ability to see, sense, strike and access across the spectrum.

"We've made incredible progress with our special operations and cyber partners," said Col. Mark Cobos, 1<sup>st</sup> Space Brigade commander.

In addition to the evolution of the 1<sup>st</sup> Space Brigade, the Army is progressing its space vision through modernizing its force structure concepts and capabilities with five multidomain task forces and the planned integration of additional space-enabled and space-capable formations such as the theater strike effects group.

In September, the SMDCoE introduced the TSEG concept to U.S. Army Europe-Africa during Avenger Triad 24. The exercise provided an opportunity to test interoperability and showcase how space capabilities can support a theater Army



commander's objectives in large-scale combat operations across the multidomain environment.

According to Col. Donald Brooks, SMDCoE commandant and the exercise TSEG commander, the formation added capacity with space control companies and brought new capabilities to the fight.

"We were able to facilitate deception and disruption of the adversary's use of space in support of operations and the tactical fight, exercising the concept of close space support," Brooks said. "The TSEG is the ideal solution to the integration and interdiction aspirations of the Army's Space Vision."

As the Army's proponent for space and high altitude, USASMDC has the responsibility to man, train and equip the space operations elements within both MDTFs and TSEGs, and with the growth of these formations, the Army's need to build and maintain a stabilized, ready force of officers, noncommissioned

officers and warrant officers has increased, Gainey said. That growth has driven USASMDC to propose the creation of a dedicated space military occupation specialty for enlisted Soldiers.

The concept is to take space-related authorizations already provided to the military intelligence, air defense and signal branches and change those Soldiers to a space operations MOS, 40D.

"A dedicated space MOS will help the Army push that expertise into formations across the Army and lead to the eventual establishment of a Space Branch," Brooks said.

As of December, the proposal is in Department of the Army staffing and is awaiting a decision.

Supporting USASMDC's missile defense mission, the command named Fort Greely, Alaska, as a proof-of-principle site for counter-unmanned aircraft

systems with U.S. Northern Command, and the 100<sup>th</sup> Missile Defense Brigade's 49<sup>th</sup> Missile Defense Battalion Soldiers are at the tip of the spear for c-UAS defense testing and integration.

"We want to push the envelope on capability development that can be leveraged in the United States, including non-kinetic radars and low collateral effects interceptors," Gainey said.

The efforts at Fort Greely will inform the entire Department of Defense and help inform NORTHCOM on how they want to move forward with c-UAS throughout the United States.

The positive results of USASMDC's focus as a "People First" organization continued in 2024 as its Best Places to Work in the Federal Government score rose for the fourth year in a row, making it once again the best place to work in the Army.

USASMDC's overall engagement and satisfaction score rose 4.7 points to 80.8, an increase of 17.9 since it began to consistently rise from its 2018 score of 62.9. It is also the top-ranking Army organization on Redstone Arsenal and rated higher than any command across all branches of the U.S. military.

"SMDC was ranked the No. 1 best place to work in the Army for the second consecutive time," Gainey said. "I am proud of the team we have and grateful for your efforts in helping our command not only achieve this recognition but to genuinely be a great place to work."

Secretary of the Army Hon. Christine Wormuth recognized the top five commands in the Best Places to Work in the Federal Government survey during the Association of the U.S. Army's Civilian Showcase themed "Army Civilian Innovations and Changes that Keep Army Top 10 Best Places to Work" in Washington, D.C., in October. She presented USASMDC leadership with a first-place banner for being the Army's highest-ranking command.





## 100<sup>TH</sup> MISSILE DEFENSE BRIGADE

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The GMD mission is the ultimate defense of the homeland, conducted in support of the U.S. Northern Command commander and manned by Army National Guard and active-component Soldiers in Colorado, Alaska, New York and California.

”



Soldiers of the 49<sup>th</sup> Missile Defense Battalion man the ground based interceptors emplaced at Fort Greely, Alaska. (U.S. Army photo)

### PURPOSE

The 100<sup>th</sup> Missile Defense Brigade operates the Ground-based Midcourse Defense System and functions as a component of the missile defense enterprise of the U.S. Army Space and Missile Defense Command. The GMD mission is the ultimate defense of the homeland, conducted in support of the U.S. Northern Command commander and manned by Army National Guard and active-component Soldiers in Colorado, Alaska, New York and California.

The 100<sup>th</sup> Missile Defense Brigade is tasked with conducting the presidentially directed national security mission to defend the United States against the threat of intercontinental ballistic missile attack. It is a role the brigade has fulfilled for two decades since it began initial defensive operations on Oct. 1, 2004.

The brigade, headquartered in Colorado Springs, Colorado, includes brigade staff, Headquarters and Headquarters Battery and five Missile Defense Element crews operating at Schriever Space Force Base, Colorado. The 49<sup>th</sup> Missile Defense Battalion, the brigade's major subordinate element, is located at Fort Greely, Alaska. As part of a 2020 Colorado National Guard organizational realignment, the 100<sup>th</sup> Missile Defense Brigade was assigned administrative control of the 117<sup>th</sup> Space Battalion.

Missile Defense Element crews from the 100<sup>th</sup> Missile Defense Brigade stand watch, operating the GMD System 24/7/365. These Soldiers are responsible for the strategic-level execution of the GMD mission to protect the homeland. The five-Soldier crews provide both operational and tactical recommendations to the commander of USNORTHCOM while synchronizing operations and conducting fire distribution.

### IMPACT

Soldiers of the 100<sup>th</sup> Missile Defense Brigade are part of a unique multicomponent National Guard organization. The brigade headquarters consists mainly of full-time Colorado National Guard Soldiers along with a small contingent of active-component Soldiers.

To perform their national security mission, brigade Soldiers, to include the 49<sup>th</sup> Missile Defense Battalion, automatically transition between Title 10 federal active duty and Title 32 National Guard status. The brigade and battalion commanders are dual-status commanders and are uniquely authorized by the president to simultaneously command Soldiers in either status.

At Detachment 1 at Vandenberg Space Force Base, California, a small contingent of California National Guard Soldiers perform liaison and asset management of the ground-based interceptors located there. There is also a detachment





The 100<sup>th</sup> Missile Defense Brigade and the U.S. Northern Command Mobilization Element break ground on a new headquarters building on Peterson Space Force Base, Colorado, March 22, 2024. Construction is expected to be complete by summer 2025. (U.S. Army National Guard photo by Staff Sgt. Taylor Lakey-Tamacori)

### System

The GMD System utilizes leap-ahead

of active-component Soldiers and Department of the Army civilians located at Fort Drum, New York, that is responsible for the security of the In-Flight Interceptor Communications System Data Terminal. While GMD Army National Guard Soldiers are able to move between operational crew positions and staff, or between GMD units in the three states, the 100<sup>th</sup> Missile Defense Brigade does not rotate its forces like active-component Army units. This is because there are no other GMD units in the Army. The brigade and battalion have no sister units because they are truly one of a kind. As such, life-cycle management decisions are determined within the brigade and their respective National Guard states.

### Training

To be gunnery-table certified to operate the GMD Fire Control System, a Soldier is required to complete the seven-week GMD Fire Control Qualification Course at Schriever Space Force Base. The Soldier will then undergo positional and crew training directly with their newly assigned crew.

The Soldier will then be gunnery-table certified with the crew by the USASMDC Operational Readiness Evaluation team. This entire process of certification may take anywhere from three to six months to complete, depending on the Soldier's previous qualifications and school availability dates.

USASMDC oversees the rigorous GMD training and gunnery-table certification program. The minimum passing academic score for any GMD written examination or hands-on practical certification is 90% due to the critical no-fail nature of the GMD mission.

concepts and technologies through a spiral development acquisition process. The tip of the spear for the system is its ground-based interceptor equipped with an Exoatmospheric Kill Vehicle. Once the ground-based interceptor is outside the atmosphere, the boost vehicle releases the EKV on an intercept trajectory toward a hostile missile's warhead.

The GMD enterprise is a system of systems, involving shooters, sensors, and command, control and communication systems. GMD sensors consist of space-based infrared satellites, upgraded early warning radars, Cobra Dane radar, transportable X-band radars (AN/TPY-2), Aegis weapon system radars on select U.S. Navy warships, and the massive Sea-based X-band radar. These sensors provide information to the GMD Fire Control System to calculate precise intercept points for the ground-based interceptors and EKVs.

Most recently, the brigade's Soldiers at Vandenberg Space Force Base demonstrated their no-fail mission accomplishment through a successful ground-based interceptor launch during a flight test of the nation's GMD System for the Missile Defense Agency on Dec. 11, 2023.

"Seeing the system operate as designed in an operationally realistic test condition lets us all sleep better knowing that if needed, we are ready and prepared to defend the homeland against enemy threats," said Maj. Skye Robinson, 100<sup>th</sup> Missile Defense Brigade crew director for the test. "Everyone can rest better each night knowing we have a GMD System and crew operators ready to keep them safe."

## 49<sup>TH</sup> MISSILE DEFENSE BATTALION

### PURPOSE

Soldiers of the 49<sup>th</sup> Missile Defense Battalion operate and secure the Ground-based Midcourse Defense System at Fort Greely, Alaska, and are an integral piece of the homeland defense mission to protect the U.S. from intercontinental ballistic missiles using ground-based interceptors. The 49<sup>th</sup> Missile Defense Battalion shares the same presidentially directed national security mission to defend the United States against the threat of an ICBM attack as its higher headquarters, the 100<sup>th</sup> Missile Defense Brigade.

### IMPACT

The 49<sup>th</sup> Missile Defense Battalion's primary two missions are to operate the Fire Direction Center and secure the Missile Defense Complex. Fire Direction Center crews operate the GMD System 24/7/365 in conjunction with 100<sup>th</sup> Missile Defense Brigade personnel at Schriever Space Force Base, Colorado. They are responsible for the tactical-level execution of the GMD mission to protect the homeland – and are always ready, minuteman style, to "fight right now." These five-Soldier crews provide tactical recommendations to the commander of U.S. Northern Command while synchronizing and coordinating activities on the Missile Defense Complex.

Company A, the 49<sup>th</sup> Missile Defense Battalion's military police ground-based interceptor security company, is a one-of-a-kind MP company and is the only one in the U.S. Army Space and Missile Defense Command. The Soldiers of Company A conduct 24/7/365 site security operations at the MDC, a national defense critical site where 40 of the nation's ground-based interceptors are emplaced.



The 100<sup>th</sup> Missile Defense Brigade and 49<sup>th</sup> Missile Defense Battalion conduct Guardian Strike 24 at Fort Greely, Alaska, May 6-10, 2024. The 84-hour exercise tested the battalion's fire direction center and military police on a range of scenarios and performance measures within their two respective missions: defending the United States and designated areas from intercontinental ballistic missile attack and critical site security of the Missile Defense Complex at Fort Greely. (U.S. Army photo by Brooke Nevins)

These MPs perform their duties in some of the most austere conditions in the United States, with winter temperatures plummeting to 50 degrees below zero (60 below with wind chill) and with fewer than four hours of sunlight in the winter months.

Epitomizing diversity in support of the mission, Company A's Soldiers hail from all over the nation, including Puerto Rico, Illinois and Texas. This company is where the entire nation comes together to support the defense of the homeland.

The 49<sup>th</sup> Missile Defense Battalion is manned exclusively by active Alaska National guardsmen and a Military Police Augmentation Force from Illinois. The battalion consists of the battalion staff, Headquarters and Headquarters Battery, five Fire Direction Center crews and Company A.



## BRIGADE CONDUCTS SUCCESSFUL TEST LAUNCH OF GMD SYSTEM

Soldiers with the 100<sup>th</sup> Missile Defense Brigade's Detachment 1 pose for a photo at the entrance to an intercontinental ballistic missile launch tube on Vandenberg Space Force Base, California, Dec. 11, 2023. (U.S. Army National Guard photo)



On Dec. 11, 2023, the Soldiers of Detachment 1, 100<sup>th</sup> Missile Defense Brigade, demonstrated their capabilities by launching a ground-based interceptor from Vandenberg Space Force Base in California that intercepted and destroyed a simulated missile attack.

The test target was an intermediate range ballistic missile launched from a C-17 Globemaster III aircraft northwest of the Pacific Missile Range Facility, Hawaii. This successful “bullet hitting a bullet” intercept took place in space, mere moments after the missile was launched from more than 5,000 miles away.

The test employed an upgraded GBI with a Capability Enhanced-II Block 1 Exoatmospheric Kill Vehicle. This test was also the first test of a three-stage GBI operating in two-stage mode, which means the third stage was commanded not to ignite and allowed earlier release of the kill vehicle, providing closer range engagements.

The primary objective of the test was to demonstrate the ability of GMD to engage a target in the expanded engagement space made possible by the GBI in two-stage mode.

This test was also the first integrated GMD flight test using sensor data from the AN/TPY-2 Forward Based Mode and Sea-Based X-Band radar with upgrades.

This new capability, known as a 2-/3-stage selectable GBI, will be deployed in the next GMD capability delivery to the warfighter and will give them greater flexibility in executing the defense of the homeland by significantly expanding the battlespace for successful threat engagement.

“This successful intercept utilizing the 2-/3-stage selectable ground-based interceptor capability in two-stage mode provides the warfighter with increased battlespace that supports additional shot opportunities to negate an incoming threat missile,” said Lt. Gen. Heath Collins, Missile Defense Agency director. “The Ground-Based Midcourse Defense System is vitally important to the defense of our homeland, and this test demonstrates that we continue to provide enhanced capabilities for our existing ground-based interceptor fleet while we rapidly design and deliver the leap-ahead technology of the next generation interceptor.”

## THE FACES of USASMDC







## 1<sup>ST</sup> SPACE BRIGADE

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Headquartered in Colorado Springs, Colorado, the brigade maintains a global presence across six locations in six countries and five time zones. The diverse multicomponent force, comprising Soldiers and civilians from various backgrounds and branches, supports combat operations worldwide 24/7/365.

”



4<sup>th</sup> Space Company, 1<sup>st</sup> Space Battalion, Soldiers load a Mobile Integrated Ground Suite onto a C-17 in Qatar in July 2024 demonstrating their ability to rapidly deploy systems in support of U.S. forces worldwide. (U.S. Army photo)

### PURPOSE

The 1<sup>st</sup> Space Brigade, the Army's sole space brigade, manages space capabilities and personnel to ensure the joint force can effectively deploy, engage and triumph in high-intensity, multidomain conflicts against any adversary. Headquartered in Colorado Springs, Colorado, the brigade maintains a global presence across six locations in six countries and five time zones. The diverse multicomponent force, comprising Soldiers and civilians from various backgrounds and branches, supports combat operations worldwide 24/7/365.

### IMPACT

Activated in 2005, the 1<sup>st</sup> Space Brigade filled a critical gap of incorporating space-based capabilities such as theater missile warning, GPS, and long-haul satellite communications into warfighter planning efforts and advising on ways to operate in and through a degraded space operating environment. Since then, they have added space control planning and space control mission areas to their portfolio. The brigade serves Army, joint and coalition warfighters worldwide through the activities of two subordinate battalions and two associated unit relationships.

The 1<sup>st</sup> Space Battalion, established in 1999, comprises a Headquarters and Headquarters Company, 2<sup>nd</sup> Space Company with seven space control planning teams, 4<sup>th</sup> and 18<sup>th</sup> Space Companies with space control platoons, and the 24<sup>th</sup> Missile Defense Service Battery.

The 2<sup>nd</sup> Space Battalion, a U.S. Army Reserve unit, consists of a Headquarters and Headquarters Company, and 3<sup>rd</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 8<sup>th</sup>, and 23<sup>rd</sup> Space Companies. These citizen-warriors form 15 Army space support teams and six space control platoons. Both battalions integrate and synchronize space technical operations and support to joint forces globally and contingency activities for Army, joint and combined forces, as well as civil authorities.

The 1<sup>st</sup> Space Brigade also supports five missile defense batteries stationed in U.S. Indo-Pacific, European, and Central Commands. These batteries operate AN/TPY-2 radars in forward-based mode, conducting ballistic missile search, track, and discrimination operations in support of regional and homeland defense. The Forward-Based Mode Radar also enables space operations by conducting data collection.





# 1<sup>ST</sup> SPACE BATTALION

## PURPOSE

The 1<sup>st</sup> Space Battalion, headquartered on Fort Carson, Colorado, plans, integrates, synchronizes and executes space control planning and space control in support of the Army, combined and joint forces.

The battalion generates and provides space combat power for Army and joint forces to conduct multidomain planning and operations. The battalion supports the nation's strategic land power to fight in, from and through space. It provides teams of expert Soldiers, trained as space professionals who understand how to plan, fight and win. The capabilities provided by the 1<sup>st</sup> Space Battalion play a critical role in the Army's strategy to conduct combined arms warfare across all domains.



18<sup>th</sup> Space Company commander Maj. Andrew Hicks, left, and officer-in-charge Capt. Anthony Portuesi conduct air assault training alongside the 4<sup>th</sup> Infantry Division Combat Aviation Brigade at Fort Carson, Colorado, on May 1, 2024, posturing their systems to provide close space support. UH-60 Black Hawk helicopters transported space Soldiers to a secondary location, where the Soldiers practiced clearing compound buildings and evacuating casualties. (U.S. Army photo by Brooke Nevins)

## IMPACT

The battalion postures to meet operational requirements with trained and ready space forces capable of meeting the demands of modern warfare and leading multidomain warfighting efforts across all levels of war. It consists of four companies and one battery, each with specific contributions to Army warfighting functions, conducting space operations globally 24/7/365.

Headquarters and Headquarters Company supports planning and deployments for all teams and platoons. It ensures the readiness of deploying units and continually plans for multiple, global contingencies.

The 2<sup>nd</sup> Space Control Support Company supports combatant commanders and joint task force commanders with space control planning teams. SCPTs remain the Army's only element designed to provide target development, planning and integration of space control. They focus on

supporting the commander's intent with subject matter expertise. SCPTs integrate space control capabilities to include coordinating effects, timing and tempo in support of operations.

The 4<sup>th</sup> and 18<sup>th</sup> Space Companies support Army and joint force commanders by deploying platoons and crews into positions of advantage to seize and retain key terrain in the electromagnetic spectrum. These platoons deploy globally on land to monitor friendly satellite communications and report on sources of electromagnetic interference.

The 24<sup>th</sup> Missile Defense Service Battery, activated in September 2024, deploys teams to conduct missile defense sensor augmentation support. This battery consists of multiple independently operating detachments capable of deploying globally to enhance missile defense sensors in support of combatant commander priorities.

1<sup>st</sup> Space Brigade Soldiers team up with the 7<sup>th</sup> Ordnance Group to take third place in the 4<sup>th</sup> Infantry Division's Utah Beach physical training event at Fort Carson, Colorado, on June 14, 2024. (U.S. Army photo by Brooke Nevins)

The 117<sup>th</sup> Space Battalion, activated in September 2001, currently has 12 ARSSTs in the 217<sup>th</sup> and 1158<sup>th</sup> Space Companies, providing a steady and reliable presence in support of the USCENTCOM and USEUCOM areas of responsibility. Over the past year, the 1<sup>st</sup> Space Brigade supported more than a dozen Army, joint, and multinational exercises worldwide, ensuring global readiness and interoperability.

Over the course of the past year, the 1<sup>st</sup> Space Brigade has demonstrated exceptional dedication and versatility, playing a pivotal role in supporting a wide array of exercises globally, with a total of more than a dozen notable engagements. One of the key highlights was its active participation in the recurring Warfighter series, a quarterly exercise specifically designed to hone corps- and division-level skills in a highly realistic, simulated large-scale combat environment. This immersive training platform enabled the

brigade to refine its tactics, test its operational readiness, and enhance its overall effectiveness in a dynamic and fast-paced setting.

In addition to its involvement in the Warfighter series, the brigade has also expanded its reach and influence through international collaborations. By engaging in multiple bilateral and multilateral exercises with joint forces and multinational partners, the brigade has fostered a spirit of cooperation and facilitated the development of seamless interoperability between different nations and military units. These collaborative efforts have not only promoted worldwide preparedness but also enabled the sharing of best practices, the exchange of ideas, and the cultivation of strong relationships with key allies and partners. Through its tireless efforts and commitment to excellence, the 1<sup>st</sup> Space Brigade has established itself as a highly respected and integral component of the global military community.



# 2<sup>ND</sup> SPACE BATTALION

## PURPOSE

The 2<sup>nd</sup> Space Battalion, the U.S. Army Reserve's only citizen-Soldier space battalion, is based at Fort Carson, Colorado, and represents citizen-Soldiers from 39 of the 50 states. As part of the 1<sup>st</sup> Space Brigade, the battalion's mission is to plan, integrate, synchronize and execute space situational awareness, space technical operations support, electronic reconnaissance and assigned contingency activities in support of the Army, joint and combined forces, and civil authorities.

## IMPACT

The 2<sup>nd</sup> Space Battalion comprises a Headquarters and Headquarters Company and the 3<sup>rd</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 8<sup>th</sup> and 23<sup>rd</sup> Space Companies. Every year, 2<sup>nd</sup> Space Battalion units deploy in support of operations in the U.S. Central Command, Indo-Pacific Command, European Command, and Space Command areas of operation. Additionally, two battalion teams and crews participate in numerous regional, Army and joint exercises, which regularly integrate operations with sister component commands such as Combined Space Operations Center, Combined Air Operations Center, U.S. Marine Corps Forces Space Command, Navy Space Command, and several U.S. Space Force Delta elements.

In 2024, the battalion's Army space support teams provided two trained and certified teams to support both Operation Atlantic Resolve and Operation Spartan Shield. Each team provided tailored training and expertise to each supported command. The 23<sup>rd</sup> Space Company uncased its colors in September 2023 and mobilized its first space control crew by June 2024. This process usually takes a year and a half to two years, so this was an accomplishment for the company. Additionally, 8<sup>th</sup> Space Company trained and



*A 2<sup>nd</sup> Space Battalion Army space support team provides space-based characterization of the operational environment during Table VIII training on Fort Carson, Colorado. ARSSTs nest with space support elements in division and corps staffs to incorporate space vertically and horizontally into the planning process for all joint and combined land warfare operations. (U.S. Army photo)*

certified the first Reserve space control crew to deploy and support a site in the U.S. European Command area of operation. Notably, 6<sup>th</sup> Space Company participated in a special operations forces exercise setting the stage for future space integration within deep space elements of the Army's large-scale combat operations.

The 3<sup>rd</sup>, 5<sup>th</sup> and 6<sup>th</sup> Space Companies each consist of five ARSSTs attached to staff elements at the division, corps and theater Army levels to provide situational awareness of space capabilities, space assets, space products and the impact of space on operations.

The 8<sup>th</sup> and 23<sup>rd</sup> Space Companies consist of six deployable space control detachments that provide monitoring and resolution of electromagnetic interference. Using Mobile Integrated Ground Suite capabilities, these detachments ensure space situational awareness while maintaining space and information superiority. These detachments have the ability to conduct emergency communications operations when directed.

# 117<sup>TH</sup> SPACE BATTALION

## PURPOSE

The 117<sup>th</sup> Space Battalion is the Army National Guard's only space battalion and one of only two Army space support team providers within all components of the U.S. Army. The battalion comprises 125 citizen-Soldiers of the Colorado National Guard and is organized into three companies: the 217<sup>th</sup> Space Company, the 1158<sup>th</sup> Space Company, and the Headquarters and Headquarters Company. Each space company is organized into six ARSSTs, with two commissioned space operations officers and four enlisted space cadre Soldiers in the military occupational specialties of 35F, 12Y, 25S and 25B.

In addition to the ARSSTs, the battalion provides space professionals to the space support element positions within Kansas National Guard's 35<sup>th</sup> Infantry Division and New York National Guard's 42<sup>nd</sup> Infantry Division's staff elements via long-standing memorandums of agreement.

In addition to their basic branch and MOS training, these Soldiers complete extensive space-related training pipelines side by side with their active duty and Army Reserve counterparts. The battalion is under the administrative and operational control of the Colorado National Guard's 100<sup>th</sup> Missile Defense Brigade and receives training/readiness oversight and certification support from the active component's 1<sup>st</sup> Space Brigade.



*Soldiers from the 117<sup>th</sup> Space Battalion's Headquarters and Headquarters Company fly in an Army CH-47 Chinook on Sept. 6, 2024, to a field training exercise near Shrine Pass in Vail, Colorado. They conducted several days of troop leading procedure and domestic operations-centric training in a high-altitude, mountainous-terrain training environment. (U.S. Army National Guard photo)*

## IMPACT

Since Sept. 11, 2001, the battalion has mobilized 42 ARSSTs, space support elements, and commercial imagery teams in support of Army and Marine Corps elements in Iraq, Afghanistan, Bahrain and Kuwait. These teams provide critical Army space-based capabilities awareness and integration to ground combat operations in support of combatant- and division-level commanders and staffs. The 117<sup>th</sup> Space Battalion stands out as a uniquely organized, resourced and heavily requested capability of the Colorado National Guard and the U.S. Army Space and Missile Defense Command. The battalion continues to develop and evolve its capabilities as the demand for Army space-based capabilities continues to grow within conventional and special operations commands.





# SPACE SOLDIERS DISPLAY RAPID DEPLOYMENT CAPABILITY AROUND THE GLOBE

Spc. Klay Walker and Spc. Alexander Best with the 4<sup>th</sup> Space Company, 1<sup>st</sup> Space Battalion, work on a Mobile Integrated Ground Suite at Fort Carson, Colorado, Sept. 20, 2023. The 1<sup>st</sup> Space Brigade conducted an expeditionary maneuver of transportable systems across combatant command areas of responsibility in 2024, demonstrating to allies and partners the readiness of the brigade and its subordinate units to deploy rapidly around the globe. (U.S. Army Photo by Dottie White)



The 1<sup>st</sup> Space Brigade this year conducted an expeditionary maneuver of transportable systems across combatant command areas of responsibility, demonstrating to allies and partners the readiness of the brigade and its subordinate units to deploy rapidly around the globe.

After many months of planning, the 1<sup>st</sup> Space Battalion executed a rapid displacement of a Mobile Integrated Ground Suite system belonging to 4<sup>th</sup> Space Company in the summer of 2024. Upon receipt of the go-order, space control crews transported their equipment on aircraft provided by Air Mobility Command, a major U.S. Air Force command, to a second key location.

Fighting the weather and fatigue, the Soldiers off-loaded, maneuvered and began emplacement of the equipment immediately upon landing, said Maj. Kyle Santarelli, 1<sup>st</sup> Space Battalion operations officer.

“The team performed exceptionally; they established faster than anyone predicted, shocking a lot of us who have worked with the equipment in the past,” Santarelli said. “4<sup>th</sup> Space Company went above and beyond what we expected, and despite the hours without sleep, they did everything to standard and really showed just how quickly we are prepared to execute our global mission.”

Soldiers with the 1<sup>st</sup> Space Battalion held constant communication with the brigade to track progress and report critical milestones, then quickly declared readiness to operate. The Soldiers established a new footprint within an “unprecedentedly short” timeframe, Santarelli said, showing how space Soldiers can project capabilities within a matter of hours – not just days or weeks.

“The two biggest contributing factors to the mission’s successes were the Soldiers’ readiness to execute at a moment’s notice and the Air Operations Center’s logistical support for efficiently staging the asset and excellent communication,” said Capt. Abigail deBlanc, the mission’s officer-in-charge. “This movement highlighted 1<sup>st</sup> Space Brigade’s ability to relocate and employ a critical system in an expeditious manner.” This rapid establishment displayed the brigade’s current ability to relocate a larger system, but also highlights the brigade’s and Army space’s potential for employing future capabilities and the significant role in the future of joint space operations around the globe.

# SMDC BY THE NUMBERS

A **global command** with personnel assigned to **13 time zones** in **11 countries**

- [ **\$1 billion** executed in fiscal year 2024, in support of USASMDC and customer missions ]
- [ **34 million** force tracking reports distributed daily by Force Tracking Mission Management Center ]
- [ **320,000** devices managed by the Force Tracking Mission Management Center ]
- [ **15,243** Army personnel trained annually ]
- [ **2,300** dedicated USASMDC employees worldwide ]
- [ **500** operational forces deployed worldwide ]
- [ **108** space and missile defense courses completed in fiscal year 2024 ]
- [ **27** Army Space Support Teams ]
- [ **7** Space Control Planning Teams ]
- [ **5** Forward-Based Mode AN/TPY-2 Radar Missile Defense Batteries ]
- [ **4** Space Control Companies ]
- [ **3** active duty Army Astronauts ]

The mission of USASMDC is complex: develop and provide current and future global space, missile defense and high altitude capabilities to the Army, joint force, our allies and partners to enable multidomain combat effects; enhance deterrence, assurance and detection of strategic attacks; and protect the nation.





## TECHNICAL CENTER

“

As part of the Army Science and Technology enterprise, the Technical Center contributes to operational readiness, enabling the uniformed services to prevail in conflicts.

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*The U.S. Army Space and Missile Defense Command Technical Center's Test Directorate rapidly deploys the 25,000 pounds-capacity Transportable Target Launcher to support developmental test and operational test launches of theater-class tactical ballistic missile targets. The 25K TTL was designed, built, and tested using a modified commercial off-the-shelf semi-trailer and hydraulic crane as a portable launch platform. (U.S. Army photo)*

### PURPOSE

The U.S. Army Space and Missile Defense Command Technical Center provides science, technology, and test and evaluation expertise to enable warfighter dominance today and in the future. As part of the Army Science and Technology enterprise, the Technical Center contributes to operational readiness, enabling the uniformed services to prevail in conflicts. The Technical Center focuses on the following essential tasks:

- Research, development, test and evaluation within core competencies
- Execute systems engineering, end-to-end test planning and support to Technical Center Department of Defense stakeholders
- Research and develop critical technologies for transition
- Manage and operate the Ronald Reagan Ballistic Missile Defense Test Site
- Conduct space operations and space surveillance to support U.S. Space Command
- Execute hiring, recruitment, and personnel management
- Budget/financial management
- Acquisition/contract management
- Manage strategy, plans and programs

The Director for Research and Technology executes science and technology, and research and development through the Space and High Altitude Directorate, Missile

Defeat Directorate and Research Directorate.

The Director for Engineering and Test serves as the center's chief engineer and manages systems engineering and test execution through the Systems Engineering Directorate and Test Directorate. The Director for Engineering and Test also oversees three systems integration labs for directed energy, long-range hypersonic and tactical space systems.

The Regan Test Site Directorate manages the Ronald Reagan Ballistic Missile Defense Test Site, part of the Department of Defense Major Range and Test Facility Base, located in the central Pacific Ocean on Kwajalein Atoll, Republic of the Marshall Islands.

### IMPACT

#### Directed Energy

The Technical Center is the Army lead for high-energy laser technology development, providing advanced defense capabilities against rocket, artillery, and mortar threats; unmanned aerial systems; and cruise missiles to complement kinetic defense solutions. Additionally, the Technical Center is exploring high-power microwave effects and advanced technology necessary to defend against a multitude of improvised threats.

#### Space and High Altitude

As the Army's premier science and technology organization for space-enabled science and



technology, the Technical Center's Space and High Altitude Directorate develops, matures and transitions capabilities in support of Army and joint warfighter multidomain operations. Working with the Army, Department of Defense and industry partners, the Space and High Altitude Directorate focuses on counter-surveillance and reconnaissance; navigation warfare electronic attack; radio frequency sensing; solutions for assured position, navigation and timing/alternative navigation; and strategic capabilities.

### Test and Evaluation

In the Army Test and Evaluation Enterprise, the Technical Center supports developmental and operational air and missile defense testing with a suite of low-cost ballistic missile targets, fixed and transportable launchers, and precision tracking services. The Technical Center provides test support to the Missile Defense Agency, Program Executive Office Missiles and Space, the U.S. Navy, the U.S. Air Force, NASA and other defense partners.

### Hypersonic and Strategic Weapons

Since completing the nation's first successful hypersonic weapon test in 2011, the Technical Center continues to support hypersonic testing for the Army, Navy and Air Force by conducting test planning and design, mission execution, and post-flight analysis. The Technical Center supports the capability for rapid systems development and fielding through integration and interoperability testing, sensor and command and control design, flight test analysis, verification/validation, and warfighter training within an independent laboratory infrastructure.

### Technology Complex

To prepare for the evolving mission requirements with the increased expectation of providing global space, missile defense, high-altitude and hypersonic capabilities, the maturation of the Technology Complex is vital to the Technical Center's mission. Located on the west side of Redstone Arsenal, the Technology Complex will include an expansion of the existing Directed Energy Systems Integration Laboratory and new laboratory facilities for digital simulation and analysis, directed energy, space, hypersonic, and integrated air and missile defense. The Technology Complex is poised to



Kevin Land, test operations manager, Ronald Reagan Ballistic Missile Defense Test Site Operations Center in Huntsville, Alabama, mans his station in the Huntsville Mission Control Center, Sept. 10, 2024. ROC-H personnel remotely operate key instrumentation systems and the RTS range located on Kwajalein Atoll, Republic of the Marshall Islands. (U.S. Army photo by Carrie David Campbell)

establish laboratories for world-class science and technology research to enable warfighter dominance both today and in the future.

### Where We Work

Although the Technical Center's primary location is Redstone Arsenal, the center is geographically distributed in many sites. Other locations are the Reagan Test Site located in the Marshall Islands; the Reagan Test Site Operations Center located in Huntsville, Alabama; and the Solid State Laser Testbed located at White Sands Missile Range, New Mexico.

### An Agile, Innovative Organization

The Technical Center is a lean organization with 215 Department of the Army civilians, five military personnel and a budget of approximately \$414 million per year, split between about 63% direct funding and 37% reimbursable funding. Budget, personnel, contract, strategy, plans, programs and other recurring management activities are coordinated and executed by the Technical Center staff.

The civilians, Soldiers and contractors of the Technical Center focus on achieving their vision of "an integrated team demonstrating value to the warfighter by providing scientific/engineering expertise, space surveillance, and test support to continuously transform space-enabled, missile defeat, and related technologies, resulting in capability overmatch."

## TEST DIRECTORATE

### PURPOSE

The Test Directorate provides test execution and mission resource support for advanced hypersonic testing as well as target development and testing execution for missile defense. This support includes test planning and resource definition needed to provide comprehensive and operationally realistic scenarios to test the effectiveness of advanced warfighter capability.

The Test Directorate consists of two divisions: the Targets Division and the Mission Execution and Test Resources Division. The directorate represents the command as a member of the Targets Reliance Panel and at other Army and Department of Defense test and evaluation forums.

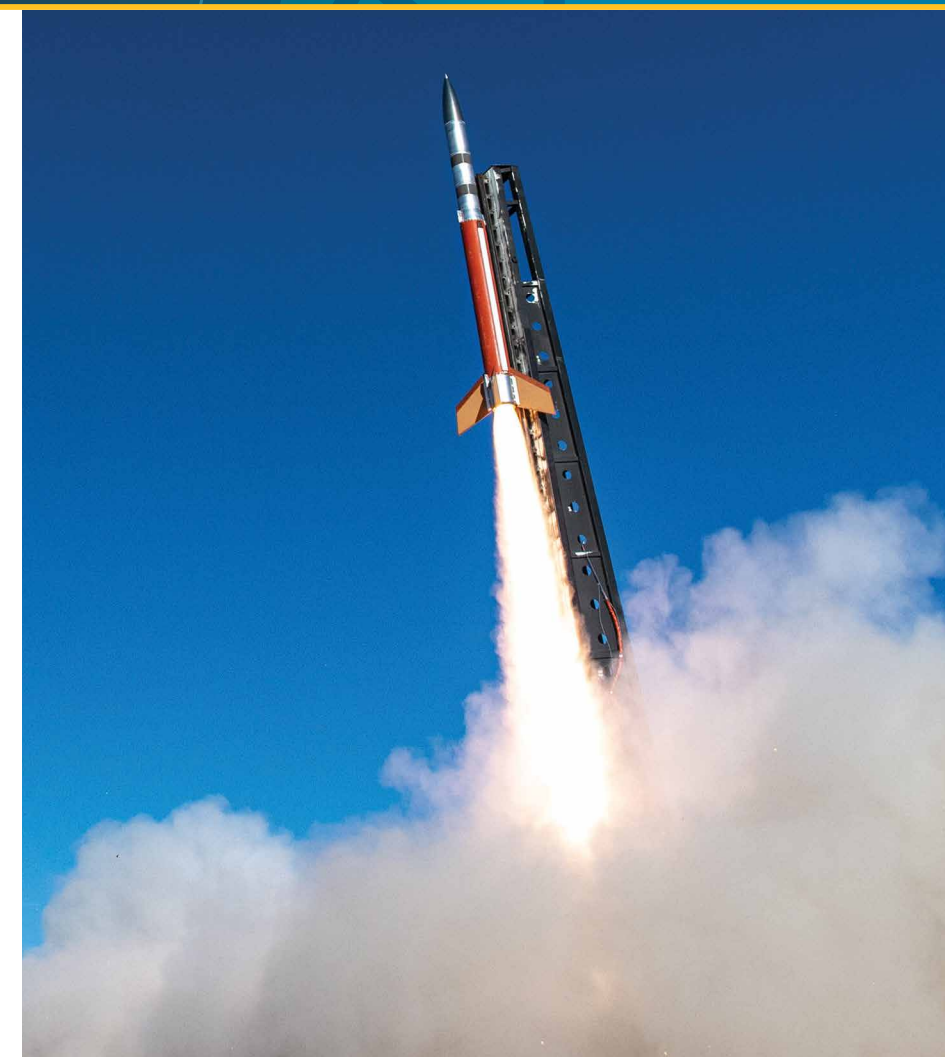
### IMPACT

The Targets Division designs, fabricates and demonstrates a suite of low-cost, threat representative targets for use in Army and other government agency flight test programs. These targets utilize excess Army motors that are near the end of their operational life, but can be repurposed for flight testing. To reduce development time and cost, the targets use state-of-the-art, proven flight-qualified components. The Targets Division also provides high-fidelity, threat-representative targets, and interceptor mass surrogate sled vehicles to support live fire test and evaluation as required by law and provides data and analysis to support the director of Operational Test and Evaluation.

The Mission Execution and Test Resources Division develops and executes plans for data collection, execution and training for large-scale flight tests. The division provides command, control and communication; manages sensors, communications, telemetry and data collection assets for

execution of flight tests; and is responsible for test architecture design and risk management.

Mission execution support includes mission architecture planning and management; execution document development; mission execution team identification and training, deployment and retrograde support; and post-mission data analysis. Test resource support includes test range requirements definition and selection, capability augmentation, asset identification and schedule deconfliction, link margin analysis, and real-time asset coordination during the mission execution.



Economical Target-2 launches at White Sands Missile Range in New Mexico in August 2024. The ET-2 target is an affordable, spin stabilized, unguided target vehicle representative of tactical ballistic missile threats used in testing missile defense systems. (U.S. Army photo)



PURPOSE

The Research Directorate performs in-house basic and early applied research for key enabling technologies with applications across space, integrated air and missile defense, high-power microwaves, hypersonic defeat, strategic weapons, and related areas.

The Research Directorate consists of three divisions: the Weapons and Protective Technologies Division, the Multidomain Technology Division and the Concepts and Analysis Division. The directorate collaborates across government, industry and academia on innovative research opportunities and represents the Technical Center as a member of communities of interest and at other Army and Department of Defense science and technology forums.

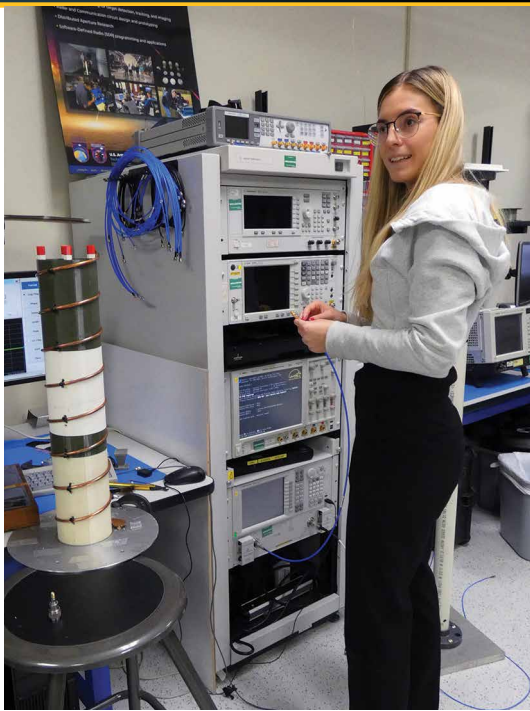
IMPACT

The Weapons and Protective Technologies Division and the Multidomain Technology Division provide basic and applied research for key enabling technologies with applications across multiple mission areas. They explore technologies related to reducing size, weight and power; hypersonic defeat; high-power microwave weapons; communications; electrooptical/infrared/radio frequency; sensors; material properties; signatures; and more.

The divisions also manage the Small Business Innovation Research and Small Business Technology Transfer program for the command as well as Rapid Innovation Fund opportunities.

The divisions operate key research laboratories, such as the Aerophysics and Impact Mechanics Laboratory, which enables both experimental analysis, and modeling and simulations supporting research in aerospace, photonics, quantum, high-power microwave and space. Through this, they develop and refine unique,

*Rachel Swan, a Science, Mathematics, and Research for Transformation Scholarship-for-Service Program summer 2024 intern with the Concepts Analysis Division, calibrates a long-range helical antenna using a precision network analyzer she designed and built for her long-range project while working in the Concepts and Analysis Laboratory, July 29, 2024. (U.S. Army photo)*



high-payoff applications and concepts for technologies enabling warfighter dominance.

The Concepts and Analysis Division performs research exploration; advances new technologies; performs simulation and analysis on conceptual systems and emerging technologies; and develops future science and technology leaders and workforce hired through the Department of Defense Science, Mathematics and Research for Transformation program and other internship programs.

The division operates the Concepts and Analysis Laboratory, which includes a hardware lab area with laboratory benches, 3D printers, circuit board mill and pick-and-place machine, cleanroom, satellite software-in-the-loop and hardware-in-the-loop testbed, collaborative office area and a classroom for collaboration and multiscreen display and interaction. With its unique mission and facilities, the laboratory is a must-visit location for high-profile visitors including military leaders from across the Department of Defense.

PURPOSE

The Space and High Altitude Directorate provides a customer-focused approach to develop, integrate, demonstrate and transition space-enabled, counter-surveillance and reconnaissance, and high-altitude technologies used in tactical systems that are responsive to user requirements providing current and future warfighter capabilities.

The Space and High Altitude Directorate consists of three divisions: Technology Development and Maturation Division; Experimentation and Demonstration Division; and the Strategic Capability Division. The directorate also represents the U.S. Army Space and Missile Defense Command Technical Center as a voting member on the Department of Defense Space Experiments Review Board.

IMPACT

The Technology Development and Maturation Division develops, demonstrates and transitions relevant space and high-altitude technologies that are aligned with Army and joint warfighter capability requirements to improve ground force capabilities across joint multidomain operations. Recent initiatives within this division include the development of a ground-based system that supports space and autonomy modernization priorities by fusing protection technologies, artificial intelligence and machine learning, and legacy systems intended to enable freedom of maneuvering in support of multidomain operations.

The Experimentation and Demonstration Division provides research and development of ground-based enablers, novel concepts and cyber capabilities for space and high-altitude data exploitation and integration. The division identifies, develops, demonstrates, integrates and transitions cyberspace, space, and high-altitude data exploitation and integration technologies to enhance operational capabilities across joint multidomain operations. The



*The U.S. Army Space and Missile Defense Command's Technical Center deploys the Spatially Enhanced Communications Tracking Reconnaissance and Engagements, a transportable distributed aperture research portfolio system, to White Sands Missile Range, New Mexico, in August 2024 to support a science and technology experiment. This transportable multifunction, multimission research system is presented in the trailer configuration. (U.S. Army photo)*

division has two labs: the Position, Navigation and Timing Resiliency Laboratory and the Payload Demonstration Laboratory.

The Position, Navigation and Timing Resiliency Laboratory is a world-class science and technology center committed to developing and evaluating innovative technologies, techniques and simulation to advance the competitive technological advantage in a rapidly evolving battlespace. This lab can detect, test, characterize and assess mitigation techniques that environmental and manmade effects have on assured position, navigation and timing resiliency.

The Payload Demonstration Laboratory is a satellite ground station capability available to support government space payloads to demonstrate advanced capabilities. The lab offers a government-owned and -operated ground station for research and development vice using industry proprietary systems.

The Strategic Capability Division provides customers with dependable, unique space- and ground-based technologies to enable warfighter superiority and support tactical warfighter capability requirements across joint multidomain operations.



PURPOSE

The Systems Engineering Directorate manages and executes systems engineering efforts on behalf of the Technical Center chief engineer. The directorate consists of three divisions: the Program Integration and Assurance Division, the Systems Integration Division, and the Cybersecurity and Information Technologies Division.

**IMPACT**

The Program Integration and Assurance Division, through the horizontal integration of mission assurance, risk management, reliability, availability, and maintainability, instills technical rigor across the Technical Center science and technology portfolio. The division provides engineering support to external organizations. Mission assurance provides a framework to introduce and execute systems engineering processes for advanced science and technology demonstrators. Mission assurance engineers guide the development of projects’ mission assurance and risk management plans commensurate with each project’s technical maturity, budget and schedule.

The Systems Integration Division provides a virtual and distributed environment for the integration, demonstration and spiral development of weapons systems in space, integrated air and missile defense, directed energy, hypersonic and related technologies. The division comprises the Directed Energy Systems Integration Lab, the Space Systems Integration Lab, the Air and Missile Systems Integration Lab, and the Digital Simulation and Analysis Center. The systems integration labs apply subject matter expertise, hardware-in-the-loop, and state-of-the-art



Cody Eberly, lab manager, Directed Energy Systems Integration Lab, teaches Steven Cephus about the Fresnel lens used in Big Aperture Shack-Hartmann – High Power, and explains plans to improve the system and mitigate light losses with the lens. (U.S. Army photo)

modeling and simulation technologies for research, development, and test and evaluation applications supporting the development of prototype systems to mature technology, reduce risks, and lower development and test costs.

The Cybersecurity and Information Technologies Division integrates risk management framework to obtain the proper accreditation and authorization for each Technical Center system, while managing information system-related security risks. Additionally, software assurance integrates Department of Defense best practices to perform static code analysis on binary executables and source code with a focus on code quality and risk vulnerability. The division also performs network management for the Technical Center. Appointed by the Joint Federated Assurance Center, the Technical Center is one of seven software assurance service providers within the Army.

PURPOSE

The Missile Defeat Directorate provides directed energy technology to enable warfighter dominance in a variety of mission areas. Missile Defeat Directorate’s research and development of high-energy laser weapon technologies evaluate and demonstrate the defensive and offensive application of directed energy.

The Missile Defeat Directorate director functions as the Technical Center adviser for directed energy science and technology development. The directorate includes three divisions: the Directed Energy Research Division, Directed Energy Technologies Division, and the Lethality Division.

The Directed Energy Research Division conducts basic and applied research and early technology development to advance, evaluate, assess and leverage relevant emerging high-energy laser weapon technologies. The Directed Energy Research Division also manages the High Energy Laser Enabling Technologies Lab and is responsible for developing the next generation of directed energy scientists and engineers.

The Directed Energy Technologies Division designs, develops and conducts experiments on high-energy laser technologies, components and subsystems, and focuses on transitioning capabilities to the warfighter.

The Lethality Division conducts applied research and develops and evaluates high-energy laser weapon system effectiveness against targets of interest to the Army. Information from the Lethality Division is supplied to prototype weapon systems deployed for operational experimentation against real-world threats. This division also conducts research, experiments and evaluations of high-energy laser system effectiveness against a wide variety of threats. The division manages the Solid-State Laser Test Bed at White Sands

Wesley Barnes, physicist, Directed Energy Research, Missile Defeat Directorate, Technical Center, optically aligns a deformable mirror at the U.S. Army Space and Missile Defense Command Beam Control Laboratory in Huntsville, Alabama, July 2024. (U.S. Army photo)



Missile Range, New Mexico, and collects data and develops vulnerability modules for integration into the fire control systems, using results from laser/material interaction experiments and effectiveness studies.

IMPACT

The Missile Defeat Directorate supports the Army’s Critical Requirements Capabilities for Directed Energy, the Air and Missile Defense Cross Functional Team science and technology priorities, and the Fires Center of Excellence electric fires capability needs. The directorate explores high-power laser technology for use in interdicting and countering unmanned aerial systems and cruise missiles.

Additionally, the directorate develops, integrates, demonstrates, and transitions high-energy laser technology and systems to the Rapid Capabilities and Critical Technologies Office, program executive offices, program managers, and users to provide current and future Army and joint warfighter capabilities. Directed energy technologies offer unique performance attributes that contribute to addressing existing operational capability gaps.



# RONALD REAGAN BALLISTIC MISSILE DEFENSE TEST SITE

## PURPOSE

The Ronald Reagan Ballistic Missile Defense Test Site is a vital national asset providing live-fire developmental and operational flight testing of offensive and defensive missile systems, hypersonic systems and space systems; equatorial satellite launch capability; space object tracking and characterization; and atmospheric science research. The unique range and test facility is located 2,300 miles west-southwest of Hawaii on U.S. Army Garrison – Kwajalein Atoll, Republic of the Marshall Islands.

## IMPACT

RTS maintains, operates, improves and modernizes a diverse, world-class instrumentation suite, including radar, telemetry radio frequency systems, electro-optical systems, command and control systems, flight safety command-destruct systems, and mission data networks and communication systems. The range and key instrumentation systems can be operated remotely from the RTS Operations Center in Huntsville, Alabama.

The cornerstone of the RTS instrumentation capability is a suite of four of the world’s most sophisticated radar systems, spanning the radio frequency spectrum, enabling support of a broad range of missions. Combining long-range tracking radars able to detect objects in all orbits with high-resolution imaging radars, RTS maintains a highly effective balance of tracking and radar imaging capability.

RTS provides strategic and tactical space surveillance support to U.S. Space Command, tracking satellites in all orbits and providing first visibility of new foreign launches from Europe and



*The Ronald Reagan Ballistic Missile Defense Test Site tracks an unarmed Minuteman III intercontinental ballistic missile launch, Nov. 5, 2024, from Vandenberg Space Force Base, California, during Air Force Global Strike Command’s Glory Trip-251 operational test. Sensors at RTS at Kwajalein Atoll, Republic of the Marshall Islands, located 2,300 miles southwest of Hawaii, are controlled at the RTS Operations Center-Huntsville in Alabama, 6,500 miles from Kwajalein. (U.S. Army photo)*

Asia. In addition, RTS provides unique capabilities to the Space Surveillance Network, such as wideband radar imagery and space object identification data, which is used to identify orbital payloads. Because of the growing concern about U.S. satellite survivability, U.S. Space Command works directly with the U.S. Army Space and Missile Defense Command and RTS to maximize availability of range assets to support this critical mission area.

Geographically located in the middle of the Pacific Ocean, RTS provides unique testing and data collection capabilities. The instrumentation managed and operated at RTS provides weapon system developers accurate data to continue refinement of the world’s most accurate strategic and tactical offensive and defensive missile systems to protect and defend Soldiers and the homeland. The unmatched sensitivity and range provide unparalleled space domain awareness support to protect and defend orbiting U.S. and allied space systems.

## SMDC MISSION IMPACT

# DISTRIBUTED APERTURE RESEARCH SYSTEM SUPPORTS ARMY, DOD

To satisfy unique Army and joint force requirements, the U.S. Army Space and Missile Defense Command Technical Center’s Spatially Enhanced Communication Tracking Reconnaissance and Engagements project developed a series of science and technology platforms to enhance the Department of Defense’s radio frequency capabilities. The transportable distributed aperture research system provides support for Department of the Army mission research involving deep reach experimentation.

The distributed aperture research team built a site designed by the Technical Center from the ground up, and they will host a series of multidiameter distributed architectures for multidomain, multimission research. The technology has been architected into multiple platform configurations enabling a wide range of research activities.

“The Army became interested in the technology to provide a resilient and cost-effective way to enable radio frequency technologies for the warfighter,” said Russell Vela, division chief, Multidomain Technologies Division, Research Directorate. “The Army is also interested in these technologies for its potential to enable multimission applications from single multifunction RF architectures that can scale as needed.”

The mobile platform enables the science and technology team to rapidly respond to localized opportunities through a persistent experimentation campaign. These in-house



*The U.S. Army Space and Missile Defense Command Technical Center’s Spatially Enhanced Communication Tracking Reconnaissance and Engagements system provides distributed aperture research for application to varying Army missions. (U.S. Army photo)*

developed multifunction architectures enable the Technical Center to explore the benefits of distributed antenna technologies across a wide range of Army RF missions.

Vela said distributed aperture technologies provide the unique capability to time and phase align transmitted and received signals so that many smaller apertures perform as a single larger aperture.

“These smaller antennas can be more rapidly deployed, set up and operated,” he added. “They will also be more cost effective, easier to maintain, and have simpler logistics than a single larger aperture antenna.”

Vela said the expertise developed under the project’s SPECTRE science and technology portfolio has set the stage for USASMDC to be the hub for distributed aperture research throughout the DOD.

“Under Project SPECTRE, USASMDC has developed flexible RF hardware and software that follows an open systems architecture, enabling partnerships for experimentation campaigns throughout the Army,” Vela said.





## SPACE & MISSILE DEFENSE CENTER OF EXCELLENCE

“

The center contributes to developing superior space, missile defense, and high-altitude capabilities that enable multidomain effects to protect the homeland and support tactical-to-strategic success whenever and wherever required.

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Shawn Herlihy, operations manager, Army Space Training Division, Space and Missile Defense Center of Excellence, right, provides observer controller/trainer support to 2<sup>nd</sup> Brigade, 1<sup>st</sup> Cavalry's rotation at the National Training Center at Fort Irwin, California, in March 2022. ASTD provided training and instruction on recognizing navigation warfare effects and best practices when operating in a denied, degraded, and disrupted space operational environment. (U.S. Army photo)

### PURPOSE

The Space and Missile Defense Center of Excellence was established in August 2019 from the U.S. Army Space and Missile Defense Command's former Future Warfare Center. This change in organizational structure, design and designation creates a functional alignment with authority equivalent to other Army proponent organizations and U.S. Army Training and Doctrine Command centers of excellence.

The Space and Missile Defense Center of Excellence is the Army's force modernization proponent responsible for managing Army change to doctrine, organization, training, materiel, leadership and education, personnel, facilities and policy requirements for space, strategic missile defense and high-altitude capabilities.

It represents Army equities across the joint community. Within the capabilities of Army and joint space, missile defense and high altitude, the Space and Missile Defense Center of Excellence trains and educates agile, adaptive and ready Soldiers and leaders; executes life-cycle management for U.S. Army space operations officers; develops the Army space cadre; and enables informed decision-making.

To carry out its mission, the Space and Missile Defense Center of Excellence executes TRADOC-established practices to meet force management responsibilities. This includes performing concept development and capabilities determination and integration relative to DOTMLPF-P for materiel development. Additionally, the organization executes the Army's institutional training and education for space and global ballistic missile defense mission areas. It is uniquely organized and geographically well-positioned to meet future Army needs.

### IMPACT

The Space and Missile Defense Center of Excellence is USASMDC's architect for future force design. Its specialized and geographically dispersed team designs, builds, modernizes, trains and educates Army space and missile defense forces. The center contributes to developing superior space, missile defense, and high-altitude capabilities that enable multidomain effects to protect the homeland and support tactical-to-strategic success whenever and wherever required.

It is laser-focused on delivering combat-ready forces and capabilities – today and in the future. Through critical



## AIR & MISSILE DEFENSE INTEGRATION DIVISION

### PURPOSE

The Air and Missile Defense Enterprise Integration Division is responsible for supporting the U.S. Army Space and Missile Defense Command commanding general in his role as the Army's AMD enterprise integrator. The AMD enterprise integrator integrates and synchronizes the Army AMD mission at the senior leader level, aligning the Army AMD enterprise with joint and Army current and future requirements and provides oversight and direction to the implementation of a holistic Army AMD strategy. This strategy includes force planning requirements, capability and materiel development, and acquisition and life-cycle management. These efforts support consistent strategic communication messaging themes among stakeholders who organize, develop, maintain, sustain, train and employ Army AMD assets globally.

### IMPACT

The AMD strategic environment continues to evolve in terms of threats, operational demands, strategic guidance, and fiscal realities, and it is one of the top five modernization priorities for the chief of staff of the Army. As such, the CSA routinely requests the USASMDC commanding general's advice, analysis and recommendations on Army AMD operational and modernization initiatives to shape the direction of critical AMD capabilities.

The division is part of the Space and Missile Defense Center of Excellence to increase the synchronization and synergy with the Army AMD enterprise.



A reload crew with Delta Battery, 1<sup>st</sup> Battalion, 1<sup>st</sup> Air Defense Artillery Regiment, 38<sup>th</sup> Air Defense Artillery Brigade, performs reload operations on their Patriot air defense system on Oct. 29, 2024, during the battery's deployment in support of Keen Sword 2025. Rapidly reloading cannisters, as well as off-loading expended cannisters, is important to keep the Patriot Launching System prepared to defend against threats. (U.S. Army photo by Staff Sgt. Connor Davis)

AMD forces must be ready to deploy, fight, and win decisively anywhere. To balance today's operational requirements, the division led efforts to develop and publish AMD 2028. This is a comprehensive strategy articulating the Army's vision to provide combatant commanders with a flexible, agile and integrated AMD force capable of executing multidomain operations and defending the homeland, regional, joint and coalition forces, and critical assets in support of unified land operations.

The division provides a comprehensive analytical perspective to keep the commanding general informed on Army AMD equities so he can make informed recommendations to senior Army leaders.



Caliethsa Vann, government program manager, Simulation Center, explains server functions in the Simulation Center's High Performance Computing computer room, Oct. 8, 2024, to Marshall McBride, program manager, Cyber Hardening Integration Lab; Kevin Gentry, chief, Information and Computational Engineering Division; and Paul Choe, cybersecurity engineer. (U.S. Army photo by Carrie David Campbell)

analysis of the future operating environment, it prepares and adapts leap-ahead concepts and technologies to provide innovative and effective solutions to the warfighter.

Components include the Capability Development Integration Directorate, Office of the Chief of Space and Missile Defense, and the Air and Missile Defense Integration Division. These organizations support the overall mission through steady accomplishment of operations that include:

- Developing capabilities for Army space, missile defense and high-altitude mission areas;
- Designing and documenting future space and missile defense organizations;
- Designing, performing and executing wargames, experiments and studies;
- Providing modeling and simulations for Army space, missile defense and cyber technologies from concept to fielding and life-cycle management;
- Training Army Soldiers, space cadre and missile defense operators through 170 formal course offerings with more than 12,000 students annually;
- Providing Functional Area 40 life-cycle management and space cadre sustainment and serving as the single point of contact for all Army space personnel matters.

Timothy F. Bishop was appointed as the new Center of Excellence director in 2023. He began his senior executive service in January 2019. His career includes professional leadership experience in a variety of government acquisition positions involving the development, testing, production, fielding, sustainment, and life-cycle support of major simulation, training and instrumentation systems. Bishop is a graduate of the University of Alabama in Huntsville with a Bachelor of Science in electrical and computer engineering. He holds a Master of Science in strategic studies from the U.S. Army War College in Carlisle, Pennsylvania.

The Space Operations Training Division trained and educated 1,876 Soldiers across eight courses. The Missile Defense Training Division trained and educated 174 Soldiers across seven courses. The Army Space Training Division trained and educated 13,156 Soldiers across the Army including support to combat training center rotations and warfighter exercises for 20 Combat Training Center rotations, five Warfighter exercises, and 16 field training exercises. The Institutional Training Division trained and educated 28 Soldiers and staff as part of the U.S. Army Training and Doctrine Command-required staff and faculty training and certification program.



PURPOSE

The U.S. Army Space and Missile Defense School serves as the proponent for a cadre of skilled military and civilian space professionals and educates and trains space and global ballistic missile defense operations and Army, joint and allied forces at echelon to support the warfighter in Army and joint operations.

Responsibilities and core functions of the school include conducting qualification training and leader development for the Army’s global space operations, missile defense, and high-altitude mission areas; educating Soldiers and developing Army leaders in space capabilities and operations across Army centers of excellence; developing Army doctrine for space operations, global ballistic missile defense and high-altitude operations; developing individual and unit training for the Army’s space and global ballistic missile defense operations in support of the Army Space Training Strategy; and executing the Army Quality Assurance Program across the school to ensure Army Enterprise Accreditation Standards are achieved.

IMPACT

Every three years, the U.S. Army Training and Doctrine Command Quality Assurance Office, the lead agent for Army accreditation, reviews all aspects of training management and execution to include how the school analyzes, designs, develops, implements and evaluates space and global ballistic missile defense training and education against the Army enterprise accreditation standards. The Space and Missile Defense School is accredited, with the next review occurring in September 2026.

The Army Space Training Division provides training support, subject matter expertise, and knowledge and resources in accordance with the Army Space Training Strategy to prepare



J.K. Chesney, Army Space Training Division, Space and Missile Defense School, teaches about operating in a denied or degraded space environment to students attending the Signal Basic Officer Leader Course at the Cyber Center of Excellence. (U.S. Army photo)

warfighters and organizations across the total Army to operate in a denied, degraded and disrupted space operational environment.

The Space Operations Training Division supports the commander’s mission by providing trained and ready space professionals in support of combatant commanders, space cadre, 1<sup>st</sup> Space Brigade and multidomain task force missions.

The Missile Defense Training Division executes the Army’s institutional qualification training and education for global missile defense supporting the command’s missile defense mission for homeland and regional defense. The division offers nine resident courses to provide trained and ready forces in support of all regional combatant commands, the Joint Functional Component Command for Integrated Missile Defense, and the 100<sup>th</sup> Missile Defense Brigade.

The Division of Training and Doctrine develops, manages and synchronizes proponent-specific doctrine, training and leader development, faculty development, and registrar services. These core functions enable its divisions and operational units to successfully execute their missions.

PURPOSE

The Space and Missile Defense Center of Excellence Capability Development Integration Directorate conducts concept-to-capability development in support of current and emerging U.S. Army Space and Missile Defense Command efforts.

The directorate conducts space, high altitude and missile defense concept development; wargaming and experimentation; studies and analysis; and modeling and simulations. Additionally, it develops or adopts leap-ahead concepts and technology, provides requirements determination and life-cycle management, and manages force modernization organizational design. The directorate integrates doctrine, organization, training, materiel, leadership and education, personnel, facilities and policy solutions for multidomain operations. It performs these responsibilities integrated with the U.S. Army Training and Doctrine Command Combined Arms Center and the Army Futures Command, Futures and Concepts Center as part of the Army Modernization Enterprise. The directorate supports the Army’s continuous transformation framework that focuses on transforming in contact, deliberate transformation and concept-driven development.

IMPACT

The Army Capability Managers for Space and High Altitude and Strategic Missile Defense, or ACM SHA and ACM SMD, represent the Army Futures Command commanding general and report to the USASMDC commanding general. The ACM SHA is the Army’s centralized fielded force integrator for space and high-altitude capabilities and synchronizes all DOTMLPF-P solutions. The ACM SMD is the Army’s user representative and integrator for all DOTMLPF-P considerations for strategic missile defense.

The Concept Development Division establishes the conceptual foundation for emerging and future USASDC mission areas. Working with



Caliethsa Vann, government program manager, Simulation Center, and Marshall McBride, program manager, Cyber Hardening Integration Lab, discuss capabilities in the Simulation Center’s High Performance Computing computer room, Oct. 8, 2024. The Simulation Center provides High Performance Computing capabilities to support the Capability Development Integration Directorate, the Army, and Department of Defense requirements. (U.S. Army photo by Carrie David Campbell)

partners, the division conducts concept and technology exploration and assessment; integrates USASDC force modernization proponenty equities in wargames, experimentation and studies; and develops and integrates concepts and future force organizational design. Concept development efforts drive Army institutional decision-making processes such as the Total Army Analysis and program objective memorandums and directly contribute to developing the Army’s latest warfighting concept.

The Decision Support Division provides computational and network resources, cyber vulnerability testing, modeling and simulation, and operational analysis. These activities support the development of the concept of operations, system acquisition decisions and ensure joint and Army warfighters have the best space, missile defense, high-altitude and directed energy capabilities today and in the future.

The Integration and Synchronization Cell facilitates the integration of DOTMLPF-P solutions across space, high-altitude and strategic missile defense mission areas to meet current and future force requirements.



# OFFICE OF THE CHIEF OF SPACE AND MISSILE DEFENSE/SPACE OFFICERS

## PURPOSE

The Office of the Chief of Space and Missile Defense executes the life-cycle management of Functional Area 40 (FA40) space operations officers; ensures officers' knowledge, skills, behaviors, experience, and education meet operational requirements; and ensures career growth aligns training and educational requirements to operational needs and career professional development.

The office conducts strategic planning, ensuring FA40 and non-FA40 Army space cadre billets are identified and tracked to support space-related missions and functions. Additionally, it manages the processing and awarding of the Space Badge and 3Y skill identifier, and SIA personnel development skill identifier, and manages allocations for attendance at the Space Operations Officer Qualification Course, Space 200, and Space 300.

## IMPACT

FA40s and non-FA40 Army space cadre have documented training and experience in the space domain and conduct daily missions in the eight codified joint space capabilities in support of all Army warfighting functions.

FA40s are the Army's subject matter experts on the space domain, providing timely, relevant, and feasible options to staff and commanders for targeting, fires, collection, operations, and sustainment of the force.

The office manages the Training with Industry and Advanced Civil Schooling programs for FA40s that help develop space officers' experience and skills that augment Army



Col. Donald Brooks, commandant, Space and Missile Defense Center of Excellence, U.S. Army Space and Missile Defense Command, speaks to U.S. Military Academy students and visits USMA's Space and High-Altitude Research Center during West Point's Branch Week, Aug. 28, 2024. (U.S. Army photo by Jason Cutshaw)

space initiatives and performs FA40 force management to ensure the Army has FA40s with the right skill sets and expertise.

The office pilots the annual Assured Functional Area Transfer program, which gives 10-20 U.S. Military Academy and ROTC cadets with space-oriented science, technology, engineering, and mathematics degrees the opportunity to branch detail to FA40. It also participates in the direct commissioning and talent-based career alignment programs. These talent initiatives allow FA40 to continue to acquire the necessary talent to maintain a human capital advantage.

Over the last year, they developed and submitted a proposal to establish an enlisted Space Operations Career Management Field with MOS 40D. If approved, it will execute the life-cycle management functions for the cohort much like they currently do for FA40s.

# CENTER OF EXCELLENCE LABORATORIES

## PURPOSE

The Space and Missile Defense Center of Excellence operates three major laboratories that support mission accomplishment and provide a test bed for future operations. They are the Simulation Center, the Cyber Hardening Integration Lab and the Joint Air Defense Operations Center Developmental Laboratory.

## IMPACT

The Simulation Center serves as one of the U.S. Army Space and Missile Defense Command's major research and development facilities for space and missile defense research, design and analysis of complex missile defense systems with state-of-the-art computational, modeling and simulation resources. The center provides services to the U.S. Army, Department of Defense agencies and their contractors, the Missile Defense Agency, the High Performance Computing Modernization Program and other joint activities. The Simulation Center also offers local and remote organizations large-scale computational assets and access to high-performance DOD networks to meet customer mission requirements. The Simulation Center provides the hardware, software, network and communications tools, and environments for each user program; the engineering services required to acquire and integrate cost- and mission-effective computer architectures for user programs; and a secure, cost-effective computing environment that optimizes resources for analysis tasks common to the USASMDC community.

The Cyber Hardening Integration Lab provides an environment in which systems can be replicated in a secure enclave and assessed against a comprehensive suite of cyberthreats to determine mission resiliency against such threats. The team can determine if vulnerabilities exist; how those vulnerabilities impact a system's mission; and what can be done to mitigate, or even negate, the impact. Accordingly, the process provides for solutions



The Simulation Center's High Performance Computing computer room is one of the Space and Missile Defense Center of Excellence's three major labs that support mission accomplishment and provide a test bed for future operations for space and missile defense research, design and analysis of complex missile defense systems with state-of-the-art computational, modeling and simulation resources. Pictured on Oct. 8, 2024, are the Simulation Center's contractor and civilian leadership. (U.S. Army photo by Carrie David Campbell)

to vulnerabilities before they ever show up in the "real" system. Although systems under assessment in the lab are operating in a virtual environment, the system components are not virtual but replicated hardware versions of the operational systems. As such, they are mirror images and respond exactly the same. This has the advantage over simulations, in that vulnerabilities in the assessments are the same as would happen in the operational systems, and, most importantly, solutions in the lab work exactly the same in the actual systems.

The Joint Air Defense Operations Center Developmental Laboratory provides a live-test environment for the battle-management systems employed by the National Capital Region Integrated Air Defense System. The purpose is to enable effective integration of U.S. Army ground-based air defense capabilities into the North American Aerospace Defense Command air sovereignty systems that control the air defense of the homeland mission. The lab communications systems enable connectivity with distributed test assets across the continental U.S. so that Army and Air Force system program offices can assess the capabilities of all new systems or component upgrades to operate effectively as a system of systems.



## ADVANCING SPACE-BASED CAPABILITIES THROUGH HIGH-ALTITUDE INNOVATION

*The micro-High Altitude Balloon Curtain Launch synchronizes six balloons, extending the network across 400 miles during exercise Vanguard that began at Fort Huachuca and ended at Yuma Proving Ground in Arizona, Sept. 18, 2024. (U.S. Army photo)*

**T**he U.S. Army Space and Missile Defense Command has made significant progress supporting the cyber-space-special operations forces Triad since its inception in 2022.

Dr. Mark Lukens, senior operations research analyst, Army Capability Manager for Space and High Altitude, Space Prototyping and Experimentation branch, has played a crucial role in developing capabilities for the Triad. By collaborating with operational units and responding to user feedback, the branch has concentrated its efforts over the past two years on the tactical applications of space and high-altitude capabilities.

One of the main objectives has been to reduce the size, weight and power requirements of space and high-altitude assets. This reduction enhances mobility, which recent near-peer conflicts in Europe have shown is vital for survivability.

Triad operational units are currently testing reduced size, weight and power prototypes to understand their limitations and provide feedback for the development process. This testing includes exercises like Vanguard, which began at Fort Huachuca and ended at Yuma Proving Ground – in Arizona – in September 2024.

One development area is high-altitude platforms, which can vary in size, fuel source and payload.

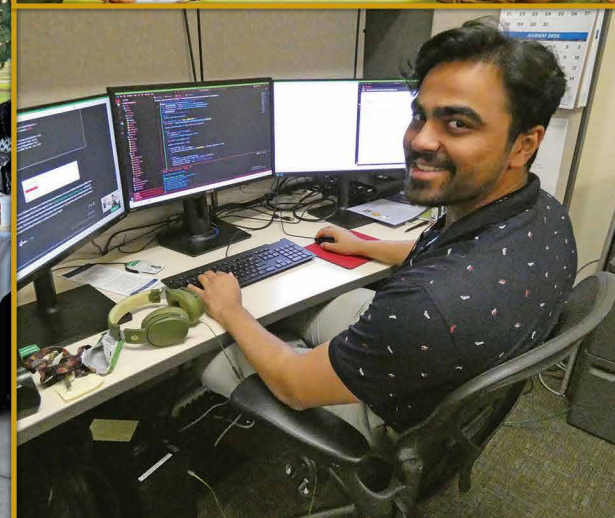


This versatility makes these platforms a valuable option for future multidomain operations, enhancing commanders' capabilities to utilize and strengthen layered effects. For example, a recent experiment demonstrated the ability to extend network coverage over a larger area than was previously achievable without relying on orbital support or fixed-ground relays.

These capabilities enhance existing space-based systems by extending their range and improving communication for ground-based systems, especially in challenging environments. The success of these demonstrations led to a formal directive, signed by Gen. James Rainey, commanding general of U.S. Army Futures Command, to expedite the acquisition process for this capability.

"Through continuous collaboration, prototyping, and experimentation, the Triad partners will advance the development and refinement of new capabilities," said Lt. Col. John (Tosh) Lancaster, branch chief. "By combining the strengths of each component of the Triad, we aim to achieve results greater than the sum of their parts."

## THE FACES of USASMDC





PURPOSE

The U.S. Army Space and Missile Defense Command NASA Detachment provides support to NASA with Army astronauts and space operations officers detailed to the Johnson Space Center in Houston, Texas. They deliver expertise and leadership to NASA’s human spaceflight programs, including low-earth orbit spaceflight and deep space exploration initiatives.



Army astronaut, Col. (Dr.) Frank Rubio, serves as a flight engineer for Expeditions 68 and 69 aboard the International Space Station, Sept. 22, 2022, to Sept. 27, 2023. He broke the record for the longest stay in space for a U.S. astronaut when he returned to Earth, after 371 days on the ISS, beating the 2022 record of 355 days set by astronaut Mark Vande Hei, a retired U.S. Army colonel. (NASA photo)

There are currently three active duty astronauts: Col. Anne McClain, detachment commander, served aboard the International Space Station, December 2018 – June 2019; Col. Andrew Morgan, commander, U.S. Army Garrison-Kwajalein Atoll, served aboard the ISS, July 2019 – April 2020; and Col. (Dr.) Frank Rubio served aboard the ISS, September 2022 – September 2023.

As their primary responsibility, USASMDC astronauts serve as flight crew on NASA space missions providing engineering expertise for the exploration of space and space-based research as well as support public outreach and education. Their training includes flying as T-38 crew members, learning the Russian language, robotics, spacewalks, and ISS emergency procedures. While on-orbit, they fly and maintain the ISS as well as perform research in technology development, Earth science, biology and more. As members of the Artemis generation, they also provide invaluable design and operational input to assist with the development of the spacecraft,

spacesuits, training programs, and ground support architecture that will land the first woman and next man on the moon as part of the Artemis program.

Each astronaut is assigned additional duties that can include providing technical expertise in spacecraft design and habitability, functioning as members of the flight control team in the Mission Control Center, or leading people and training events in the astronaut corps.

In addition to the active-duty Army astronauts, two Army space operations officers are assigned to the detachment as assistant program managers.

Assistant program managers can fulfill a wide range of roles such as members of the Mission Control Center’s flight control team; leading missions to coordinate the launch and recovery of astronauts; and serving on teams designing future spacecraft with government and commercial space partners.

PURPOSE

The Chief Technology Office and staff serve as the scouts for the U.S. Army Space and Missile Defense Command’s leadership to uncover potentially game-changing innovations, concepts and technologies to support the command’s missions and enable multidomain operations.

The CTO, as the principal adviser to the commanding general and the deputy to the commanding general for science and technology matters, provides timely and relevant near-, mid- and long-term information, and planning and resourcing recommendations on science and technology matters.

The CTO accomplishes this by focusing outwardly to the science and technology elements of the Army, other services, combatant commands, joint organizations, other government agencies, industry, and academia, looking for the most promising conceptual and technological breakthroughs. The CTO also identifies previously infeasible concepts and technologies that are now feasible due to the improvement of enabling technologies.

With this view toward the future, the CTO provides guidance and oversight of the Space and High-Altitude Research Center, the command’s support organization to the U.S. Military Academy at West Point, New York.

IMPACT

The CTO’s efforts saw a string of successes that centered on the command’s key areas of interest, including the new triad: space, special operations forces and cyber.



U.S. Military Academy cadets graduate from the Army Space Cadre Basic Course hosted by the Space and High-Altitude Research Center during summer 2024 at West Point, New York. (U.S. Army photo)

The Space High-Altitude Research Center orchestrated USASMDC support of the space curriculum, which has more integration across more academic departments at the academy and other universities than ever before and had more participation from cadets than in previous years.

The office represented the command at numerous external science, technology, and innovation organizations, including: U.S. Army Futures Command Science and Technology community of interest sessions; U.S. Army Training and Doctrine Command Mad Scientist program; and National Reconnaissance Office Joint Space Team meetings.

The CTO proactively worked with the Joint Chief Digital and Artificial Intelligence Office and the Army Artificial Intelligence Integration Center to develop a strategy and way ahead for incorporating artificial intelligence into USASMDC missions.

The office leads the Redstone Arsenal CTO Roundup, leveraging the core competencies that reside at Team Redstone and collaborating on efforts that will interject advanced science, technology and innovations into multidomain operations.



DOING BUSINESS WITH THE COMMAND

The U.S. Army Space and Missile Defense Command has a robust Small Business Program utilizing small businesses of all types in its acquisitions that include small business, disadvantaged small business, service-disabled veteran-owned small business, women-owned small business, and historically underutilized business zone small business concerns.

The USASMDC Office of Small Business Programs ensures small businesses are provided the maximum opportunity to be included in USASMDC’s complex procurements in the areas of space and high altitude, missile defense/missile defeat, directed energy, hypersonic defeat, quantum sensing, and other related research and development technologies. Support of the Small Business Program is good for the nation and helps build a strong industrial base necessary to provide warfighters the defense products and services they need. Supporting the Department of the Army’s commitment to small business is a team effort throughout the command.

DOING BUSINESS WITH THE FEDERAL GOVERNMENT

A newly formed business can access the Small Business Administration and various U.S. Army websites for information about the basic requirements that must be in place before competing for government contracts. Another valuable resource for new and existing small businesses is the local APEX Accelerators (formerly the Procurement Technical Assistance Centers): [www.apexaccelerators.us](http://www.apexaccelerators.us).

The following information can be used as a guide to doing business with USASMDC:

Research USASMDC before making contact. The command maintains its own website: [www.smdc.army.mil](http://www.smdc.army.mil). Information for the USASMDC Small Business Program can be found under the Resources tab. Additionally, the command’s

Virtual Industry Exchange Forecast Industry Report containing the most recent forecasting information on upcoming USASMDC opportunities can be found under the same Resources tab.

Ensure entity registration information is current and accurate in the System for Award Management <https://sam.gov> and verify registration has not expired. Registration and certification are required to be eligible to compete and win prime government contracts. Verify all relevant North American Industry Classification System, commonly referred to as NAICS, codes; business size, number of employees and revenue representation; and socioeconomic status are correct.

Review the business profile in the Small Business Administration Dynamic Small Business Search: [https://dsbs.sba.gov/search/dsp\\_dsbs.cfm](https://dsbs.sba.gov/search/dsp_dsbs.cfm). Ensure this information is consistent with what is in the System for Award Management <https://sam.gov>. Fields in this database that assist in market research include keywords, capabilities narrative, special equipment/materials and performance history. This information is particularly helpful in identifying potential sources for set-aside considerations.

Confirm the business website for public access is accessible and consistent with information posted in System for Award Management <https://sam.gov> and the Small Business Administration Dynamic Small Business Search [https://dsbs.sba.gov/search/dsp\\_dsbs.cfm](https://dsbs.sba.gov/search/dsp_dsbs.cfm).

Prepare to meet with the USASMDC Small Business Office. Meetings can be either in person, by phone, or virtual. Have business capabilities that are in line with USASMDC requirements ready for discussion. Be prepared with business history, prime or subcontractor interests, and any unique capabilities. Ask about current contracting vehicles and how to locate upcoming opportunities. To schedule a meeting, see our contact information below.



Ethan Bruton and Bryan Wheelock, both range control officers with the Ronald Reagan Ballistic Missile Defense Test Site Operations Center in Huntsville, Alabama, man their stations in the Huntsville Mission Control Center, Sept. 10, 2024. USASMDC utilizes small business concerns as both prime contractors and subcontractors supporting key mission areas, such as technical support at ROC-H, range safety support, meteorological support, environmental planning, compliance, and remediation. (U.S. Army photo by Carrie David Campbell)

Monitor federal business opportunities. Use the website <https://sam.gov/content/opportunities> to monitor sources sought, request for information, and synopsis for upcoming requirements and solicitation notices. This is the single point of entry for the federal government and should be monitored daily. This website is used to publish other events, such as industry day briefings, Advance Planning Briefings to Industry and APEX Accelerators events.

Seek additional assistance in the defense marketplace. APEX Accelerators are located in most states and are partially funded by the Department of Defense to provide small businesses with information on how to do business with DOD. They provide in-depth training and counseling on marketing, financial and contracting issues to small business concerns at minimal cost.

The Small Business Administration offers assistance through their Small Business Development Centers, [www.sba.gov/tools/local-assistance/sbdc](http://www.sba.gov/tools/local-assistance/sbdc), which can provide aspiring and current small business owners a variety of free business consulting and low-cost training services including: business plan development, manufacturing assistance, financial packaging and lending assistance, exporting and importing support, disaster recovery assistance,

procurement and contracting aid, market research help, 8(a) program support and healthcare guidance. Also, get to know the local SBA Procurement Center representative, who can be a valuable resource for staying on top of regulatory updates/changes, such as limitations on subcontracting, program guidance, and the SBA Mentor-Protégé Program.

Prepare a proposal. Read the solicitation and the performance statement of work carefully. Pay particular attention to sections L and M of the solicitation. Section L provides instructions, conditions and notices to offerors or respondents. Section M lists the evaluation factors for award. Ensure the submitted proposal meets all of the requirements of the solicitation.

Lastly, win a contract...PERFORM...and earn excellent experience.

For more information, contact the USASMDC Office of Small Business Programs:  
ATTN: SMDC-SB  
P.O. Box 1500  
Huntsville, AL 35807-3801  
Phone: (256) 955-3412  
Email: [usarmy.redstone.smdc.mbx.small-business-office@army.mil](mailto:usarmy.redstone.smdc.mbx.small-business-office@army.mil)





# JOINT FUNCTIONAL COMPONENT COMMAND FOR INTEGRATED MISSILE DEFENSE

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JFCC IMD performs transregional missile defense responsibilities that support U.S. and coalition operations across multiple regions.

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## PURPOSE

**L**t. Gen. Sean Gainey is the commander of U.S. Space Command's Joint Functional Component Command for Integrated Missile Defense, in addition to his role as the commander of U.S. Army Space and Missile Defense Command and the Army's service component commander to U.S. Strategic Command, U.S. Northern Command and USSPACECOM.

The president has assigned USSPACECOM with primary responsibility for transregional missile defense; operational-level responsibilities have been delegated to JFCC IMD.

JFCC IMD began operations in January 2005 and includes Army, Navy, Marine Corps, Space Force and Air Force personnel, as well as U.S. government civilians and contractors. The headquarters is located at the Missile Defense Agency's Missile Defense Integration and Operations Center at Schriever Space Force Base, Colorado. The command's location allows JFCC IMD to leverage MDA's existing infrastructure and ensures a strong partnership with the materiel developer in the execution of its assigned responsibilities.

In coordination with other combatant commands, the services, and as directed, appropriate U.S. government agencies, JFCC IMD conducts transregional missile defense planning and operations support. JFCC IMD assesses and recommends acceptance of new missile defense capabilities and executes joint and combined missile defense training and education for the USSPACECOM commander.

Objectives for these efforts are to deter adversaries, assure allies, and defend U.S. deployed forces, allies and partners against missile attacks.

JFCC IMD translates this responsibility into several lines of effort:

- Conduct transregional missile defense planning and security cooperation activities
- Conduct missile defense operations support, cyberoperations/security, and provide coordinated intelligence
- Execute joint and combined global integrated air and missile defense training and education
- Assess warfighter missile defense needs in support of capability development, testing and fielding



Senior leaders and representatives from 20 participating nations and international organizations, totaling more than 140 individuals, meet for the Nimble Titan 24 Senior Leader Event in Ramstein, Germany, May 30-31, 2024. This culminating event brought Nimble Titan's 10<sup>th</sup> campaign to a close, and with it a renewed emphasis on the value of the campaign and opportunities in the future to make it even better. (U.S. Army photo by Dottie White)

## IMPACT

Missile defense is a key part of America's ability to deter threats; assure allies and partners of its commitment to established security frameworks; and to defend the homeland, deployed forces, friends and allies. Missile defense becomes even more important in an environment in which missile threats from both state and non-state actors continue to proliferate and expand in scope, scale and complexity.

JFCC IMD performs transregional missile defense responsibilities that support U.S. and coalition operations across multiple regions. This requires synchronization between affected commands to maximize integration of the capabilities necessary to deter, prevent or respond to attacks and to nullify or reduce the effectiveness of a threat. Combatant commands designated with responsibility for an adversary problem set must approach missile defense from a global perspective given the transregional nature of the threat; the low-density, high demand nature of missile defense platforms;

and complex architecture of sensors, shooters, and command and control nodes spanning multiple geographic areas of responsibility. JFCC IMD provides direct support to these efforts.

JFCC IMD is the subject matter expert that synchronizes missile defense functions to support combatant command plans and operations, capability assessment, and missile defense training and exercises, enhancing the resilience and effectiveness of the joint and combined missile defense force.

A strong partnership with the services and the materiel developers ensures a warfighter voice in development, testing and delivery of new capabilities and informs decision-makers during operational acceptance of those capabilities into the enterprise. In partnership with combatant commands, JFCC IMD provides expertise to support planning, joint and combined training, and asset management. All of these key functions are essential to ensure U.S. missile defenses are postured to support national defense objectives.



## JAPANESE PARTICIPATE IN US MISSILE DEFENSE CLASSES

Col. Timothy Shaffer, deputy commander, Joint Functional Component Command for Integrated Missile Defense, briefs seven Japanese delegates and JFCC IMD J7 personnel at the Missile Defense Agency on Schriever Space Force Base, Colorado, in March 2024. (Photo by Tim Sughrue)



Seven members of the Japan Air Self-Defense Force and Japan Ground Self-Defense Force attended two weeks of integrated air and missile defense training hosted by the Joint Ballistic Missile Defense Training and Education Center of Excellence in Colorado Springs, Colorado, in March 2024. Japanese delegations have been attending this training and information event since 2006 as part of a foreign military sales agreement.

In addition to attending the Joint Integrated Air and Missile Defense Course and Joint Planning and Staff Integration Course during their visit, the delegates visited and received briefings from the Joint Functional Component Command for Integrated Missile Defense and Missile Defense Agency at Schriever Space Force Base, as well as from the U.S. Army Space and Missile Defense Command, U.S. Northern Command/North American Aerospace Defense, and U.S. Space Command at Peterson Space Force Base.

The Joint IAMD Course, taught in the first week of the visit, developed a basic understanding of adversary air capabilities, friendly IAMD capabilities, operational concepts and doctrine, improving execution, staff analysis and problem solving skills in a multidomain operation. Targeting mid-level military and civilian personnel, the Joint IAMD Planning and

Staff Integration Course, taught in the second week, focused on IAMD planning at the operational level of war and develops a student who may participate in staff and planning activities supporting the IAMD mission. It required analysis and creative thought as well as work done outside the classroom.

“Since Japan is one of our closest allies in the Western Pacific, JBTEC training greatly enhances Japan’s operational and strategic understanding of global IAMD as well as the bilateral and multilateral situation in their region,” said Sancho D. Scott, JFCC IMD J7 Training and Development specialist. “JBTEC learns a lot about how Japan sees IAMD thru their lens, making us better at what we do.”

JBTEC provides similar training events under the Foreign Military Sales program to the Republic of Korea and Australia, however, Japan is the only country that attends the training in the United States. Additional training is provided in Japan to both military and Japanese Ministry of Defense civilian students as requested by U.S. Indo-Pacific Command. Other nations receive JBTEC training through military-to-military channels as well as NATO through voluntary national contribution, however, the Foreign Military Sales cases are the most comprehensive.

## U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND



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