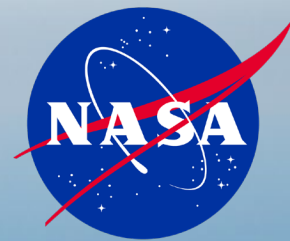


Wallops Range

2024 Annual Report



Wallops
— R A N G E —

DEDICATION



Edward “Ed” Sudendorf

NASA Airfield Manager

July 1999 – July 2024

Ed Sudendorf retired from NASA in July after dedicating 45 years to military and government service. For a quarter-century, Ed exemplified dedication, professionalism, and excellence as NASA Wallops Flight Facility’s Airport Manager. Through his unwavering commitment, Ed played a critical role in ensuring safe and efficient airfield operations for countless missions in support of the Department of Defense and the advancement of aviation and aerospace technology, research, development, testing, and evaluation.

Ed began his career in 1975 when he proudly enlisted in the United States Navy, embarking on a path defined by service, leadership, and dedication. After four years of service and a brief

two-year break, Ed re-enlisted and went on to complete a total of 20 years of distinguished service, retiring in 1998 as an Aviation Electrician’s Mate Senior Chief Petty Office (AE/E8). While on active duty, Ed deployed nine separate times for seven months or longer on aircraft carriers such as CV41, CV43, CV63, CV65, and CV67, and completed workups on several others. Throughout Ed’s Navy career, he was responsible for the maintenance and repair of complex aircraft electronics and electrical systems, including navigation, radar, and warfare systems.

Following retirement from his honorable career in the Navy, Ed brought to NASA his unparalleled expertise and steadfast leadership that proved to be integral to the success of Department of Defense programs of record, such as the U.S. Navy Patuxent River Joint Strike Fighter operational detachment and the U.S. Navy Field Carrier Landing Practice program from inception through the first ten years of operations. Additionally, he led the team in support of the Federal Aviation Administration’s (FAA) Water Ingestion Testing to demonstrate compliance with Federal Aviation Regulations (FAR) requirements that apply to turbine powered aircraft for both Gulfstream and HondaJet corporations. Ed’s contributions were instrumental in facilitating historic achievements and have left a lasting impact on the legacy of NASA’s Wallops Flight Facility.

As Ed embarks on his well-deserved retirement, we honor his remarkable career, profound contributions, and enduring dedication to NASA’s mission. His work has inspired colleagues and shaped the future of operations at the Wallops Airfield. With gratitude and admiration, we extend our heartfelt congratulations to Ed on this milestone and wish him every success in his next chapter.



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INTRODUCTION

Tucked away on Virginia's Eastern Shore, NASA's Wallops Flight Facility (WFF) plays an incredibly important role in our understanding of the earth and space science. Since its' beginnings, Wallops has launched over 16,000 rockets carrying science experiments, technology, and satellites.

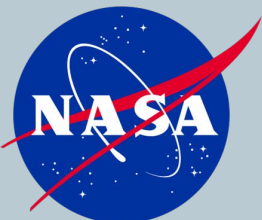
Wallops provides agile, low-cost flight and launch range services to meet government and commercial sector needs for accessing flight regimes worldwide from the Earth's surface to the moon and beyond. Flight assets at WFF range from research aircraft, unmanned aerial systems, and high-altitude balloons to orbital and suborbital rockets, providing a full scope of

capability, while operational launch range and airfield capabilities meet the ongoing and emerging needs of the science, aerospace, defense, and commercial industry sectors. WFF is a multi-user and multi-tenant facility located in a geographical location ideal for supporting satellite tracking and command, military operations and training, scientific investigations, technology development, and commercial aerospace. The facility's diverse mission sets along with our onsite partners including the United States Navy (USN), National Oceanic and Atmospheric Administration (NOAA), Federal Aviation Administration (FAA), Virginia Spaceport Authority (VSA), and the Mid-Atlantic Regional Spaceport (MARS), is a model for leveraging and optimizing multi-organizational capabilities and support services.

The Range and Mission Management Office (RMMO) is the principal source of project management support at NASA's Wallops Flight Facility (WFF). The RMMO collaborates with NASA in addition to other various government agencies, to include the Department of Defense (DoD) and the National Oceanic and Atmospheric Administration (NOAA), as well as commercial and private industry partners and academic institutions to achieve mission-specific data through fixed and mobile launch ranges with a variety of orbital and suborbital vehicles.

The Wallops Range is NASA's only owned and operated range, making it a national asset in supporting government and commercial customers. Under the management of NASA's Goddard Space Flight Center's (GSFC) Suborbital and Special Orbital Projects Directorate, Wallops has been an active launch range since 1945. Over the years, Wallops has become renown for delivering responsive, cost-effective, and safe launch and flight-test support, ensuring successful mission outcomes for a diverse set of programs within government agencies, academic institutions, commercial entities, and the world-wide scientific community.

The Wallops RMMO conducts launch operations from Wallops Island, Virginia, and, by means of mobile range capabilities, from many other locations around the world. The Range maintains the facilities, systems, and skilled personnel required to support a diverse set of missions to include precision tracking, telemetry, and command and control systems. Additionally, the Range manages an aeronautical research airport, controls Restricted Airspace, and leverages DoD-controlled warning areas over the Atlantic Ocean.



NASA's Wallops Flight Facility provides agile, low-cost flight and launch range services to meet government and commercial sector needs for accessing flight regimes worldwide from the Earth's surface to the moon and beyond.

A Message from the Chief

As Chief of the Range and Mission Management Office (RMMO) at NASA's Wallops Flight Facility, I am immensely proud to reflect on the remarkable accomplishments of our team throughout 2024. This year has been a testament of our unwavering commitment to advancing scientific discovery, supporting national defense, and fostering innovation in aerospace. The Wallops Range and its airfield have served as a dynamic hub for suborbital and orbital launches, aviation operations, and global mission support, delivering results that resonate across NASA, our partners, and the broader aerospace community.

One of our standout achievements in 2024 was the successful execution of diverse launch campaigns, underscoring the versatility of the Wallops Range. We supported multiple launches of Rocket Lab's Electron vehicle, deploying satellites and testing new advanced technologies. These missions underscore our expanding role in commercial and government partnerships and reinforce Wallops as a premier launch site. Our suborbital program also thrived with multiple sounding rocket missions advancing scientific frontiers. The Atmospheric Perturbations around Eclipse Path (APEP) mission deployed three rockets during a total solar eclipse and yielded critical data on atmospheric dynamics. The mission explified scientific innovation while captivating both the research community and general public alike. Additionally, the 2024 Solar Flare Campaign at Poker Flat Research Range in Fairbanks, Alaska deepened our understanding of high-energy aspects of solar flares, while launches and Navy Fleet training exercises in support of the Department of Defense showcased our ability to seamlessly integrate complex operations for varied stakeholders.

Beyond our Virginia shores, the Wallops Range team extended its expertise globally, reinforcing our reputation for mobile range excellence. In 2024, the Range not only supported the launch of multiple sounding rockets for the Solar Flare Campaign in Alaska, but our teams traveled across the globe to the Andøya Space Center in Andenes, Norway in support of the 2024 Vorticity Experiment. These mobile efforts, often in collaboration with scientific research and defense partners, leveraged our advanced radar, telemetry, and command systems to ensure mission success in even the most remote locations. Whether studying high-latitude atmospheric phenomena or enabling Department of Defense objectives, our team's adaptability and precision remained on full display, proving that the impact of the Wallops Range transcends geographic boundaries.

The Wallops Airfield played an equally vital role in 2024, serving as the cornerstone for aviation and range support. Our airfield team ensured safe and efficient operations during launch campaigns by conducting range surveillance flights to ensure clear airspace for launch operations such as APEP and Rocket Lab

Electron flights. Research aircraft based at the Wallops Airfield supported various atmospheric and Earth science studies including eclipse-related observations in conjunction with our mission campaigns. This year the airfield advanced NASA's leadership in unmanned aerial systems by hosting test flights for environmental monitoring and technology demonstrations.



These efforts not only contributed to immediate mission needs, but also laid the groundwork for future autonomous aviation innovations. Furthermore, the airfield's role in Defense training and transient aircraft operations underscored its strategic importance and vitality to our country's national security.

Our operational success over the year was reinforced through considered investments in our infrastructure and planning. The RMMO began laying the foundation for the Telemetry Modernization Program, an effort aimed to meet the growing demand for launches at Wallops. This initiative is a reflection of our forward-thinking approach to scalability and resilience. Meanwhile, our range instrumentation – radars, telemetry systems, and mobile assets – operated at peak performance, enabling real-time delivery for missions worldwide. These capabilities were critical to maintaining safety and precision across our diverse portfolio.

None of these achievements would have been possible without the dedication of our RMMO team and our collaborators. From engineers and range controllers to airfield staff and logistics experts, every individual played a pivotal role in executing complex operations with professionalism and precision. Our partnerships with NASA's Sounding Rocket Program Office, the Department of Defense, international space agencies, and commercial entities like Rocket Lab have amplified our impact, fostering a collaborative spirit that drives innovation.

As we look ahead to 2025, the RMMO is poised to build on this momentum. We will continue to push the boundaries of scientific exploration, support national priorities, and expand our capabilities to meet the evolving needs of the aerospace community. The successes of 2024 are not just milestones – they are steppingstones leading to an even brighter future for Wallops and NASA.

Thank you to our team, partners, and supporters for making 2024 a year of triumph. Together, we are shaping the future of space and aviation, one mission at a time.

- Jeffrey A. Reddish
Chief, Range and Mission Management Office

RANGE OPERATIONS CONTRACT (ROC) II



The purpose of the Range Operations Contract (ROC) II is to support the Range and Mission Management Office (RMMO) by providing Range support services, instrumentation operations and maintenance, training, command, control, communications, information, and computer systems services, testing, modifying, installing, and operating communications and electronic systems, ground support systems, and spacecraft and launch vehicle processing systems at launch facilities, spacecraft processing facilities, launch vehicle processing facilities, launch control centers, and test facilities, operations and maintenance of suborbital launch systems, and developing flight and ground systems technology. The RMMO provides real-time display and capture of mission-specific flight, payload, and science data as well as tracking, telemetry, meteorological, optical, and command and control services for flight vehicles such as orbital and suborbital rockets, aircraft satellites, balloons, and Unmanned Aircraft Systems (UAS).

Mission Planning

The Mission Planning Team, comprised of Range Service Managers (RSMs) and Mission Engineers (MEs), coordinates the implementation of all required documentation and testing leading up to mission operations on launch day. In 2024, Mission Planning played a key role in the successful execution of a triple sounding rocket launch during a rare total solar eclipse, the annual RockOn! and RockSat-X student-led launches, as well as other various flight tests, such as drone operations and radar support for debris tracking at Cape Canaveral, Florida. Additionally, the Mission Planning Team was instrumental in the success of multiple Rocket Lab Expendable Launch Vehicle (ELV) campaigns in addition to deployed sounding rocket campaigns at Poker Flat Research Range in Fairbanks, Alaska, and Andøya Space Center in Andenes, Norway.

Despite facing several challenges throughout the year on top of an increased operations tempo while also providing logistical assistance to ensure the availability of assets at multiple site locations such as Poker Flat Research Range (PFRR), Bermuda Tracking Station, Coquina, "PAX River" Dam Neck Annex, and Cape Canaveral Space Force Station (CCSFS), the Mission Planning Team's unreserved determination and hard work was on full display as their support and dedication ensured another year of safe and successful mission operations.

Overall, the Mission Planning Team successfully supported numerous RMMO operations throughout 2024 to include:

- Nine successful sounding rocket campaigns
- Three successful ELV Rocket Lab campaigns
- Two successful Poker campaign deployments
- One successful Norway campaign deployment
- Multiple STEM-based intern and student-led launches
- Five Mobile Radar CCSFS debris-tracking supports
- Rapid Coquina site setup and breakdown
- Multiple dual-launch missions



MISSION ENGINEER CHUCK GRANT AWARDED SILVER SNOOPY

On November 21, 2024, NASA astronaut Victor Glover presented Charles "Chuck" Grant with the Space Flight Awareness Silver Snoopy award at NASA Goddard's Wallops Flight Facility.

Grant earned the award for distinguished support as the lead Range Operations Contract (ROC) II Mission Engineer for every Antares launch at Wallops since 2015, with his admirable dedication a critical component of the 100% launch success rate.

Considered the astronauts' own award, the Silver Snoopy best symbolizes the intent and spirit of the agency's Space Flight Awareness Program. The award is reserved for less than 1% of NASA's workforce.



MetOps released radiosonde-equipped weather balloons to collect safety data supporting a demonstration flight

MetOps & Weather Office

METEOROLOGICAL OPERATIONS

MetOps services are provided at WFF, PFRR in Alaska, and other ranges and mobile deployments worldwide. These services are performed at the Wallops Range simultaneously for missions requiring support at remote locations. Meteorological services include weather forecasting, collection of upper air and surface weather data, collection of ozone data, and pre-launch collection of data for blast and toxic dispersion required for orbital launches. Daily local weather forecasts include two daily detailed 24-hour forecasts, one detailed three-day outlook, and one seven-day outlook. Special weather forecasts are provided as required for various project requirements and/or special weather events.

After a successful installation and site acceptance in late 2023, the Wallops Meteorological Team deployed an innovative upper air system to bolster mission support throughout all of Wallops' 2024 launch campaigns. The Atmospheric Profiling System (APS) 403 MHz Replacement Project proved to be a resounding success as the new system delivered critical meteorological data, contributing to the success of 12 missions. Looking ahead to 2025, mobile APS403 systems are slated for deployment to support campaigns at Poker Flat Research Range and Kwajalein Atoll. Additionally, the MetOps Team successfully upgraded mobile met tower electronics and hardware in preparation for the approaching 2025 Kwaj campaign.

WEATHER OFFICE

During normal daily operations, the ROC II Weather Office monitors weather conditions and provides scheduled updates throughout the day, issuing any required weather warnings or watches. During launch operations, the person designated as the Launch Weather Officer (LWO) monitors weather conditions in the days leading up to a scheduled launch and during the launch countdown itself. Additionally, the LWO presents any required weather briefings as determined by specific project requirements and another briefing at the beginning of the count with updates provided throughout, as needed.

The APS403 Replacement Project also offered new capabilities for the Wallops Weather Office. With the introduction of the new upper air system, LWOs gained the ability to monitor upper air balloon data in real-time. This vital information empowered LWOs to swiftly analyze weather patterns and seamlessly integrate their findings into launch weather briefings. Replacing the previous process of awaiting post-termination email updates, this cutting-edge feature delivered minute by minute trend data to launch customers, significantly enhancing launch availability across the Wallops Range.

Surveillance

Throughout 2024, the ROC II Surveillance Team provided the RMMO with support for eight sounding rocket missions, three Rocket Lab ELV missions, one remote campaign at PFRR in Alaska, and 14 UAS missions. Additionally, the Surveillance Team:

- Designed and presented an aircraft surveillance solution for PFRR that enabled the mission to happen
- Bought Nexus, a new aircraft ground station
- Supported multiple tower-climbs
- Assisted airborne Telemetry efforts for several missions
- Received the 2024 Mission and Enabling Support Award
- In collaboration with the ROC II Procurement Team, a new commercial aircraft service was quickly vetted and approved after losing priority with a past vendor
- Located downed rocket using IR camera sensor
- Captured a UAS incursion during a launch on video
- Implemented a new video wall in the surveillance room
- Aided Range Control Center (RCC) modernization efforts
- Participated in Part 107 UAS Pilots Program
- Added livestream capabilities and IR from participating aircraft to the RCC
- Added ADS-B detection capability to Ranges at both WFF and PFRR



Tracking Operations

TELEMETRY

The Wallops Range provides Telemetry (TM) services and maintains capabilities enabling telemetry of data in support of mission requirements. Both fixed- and down-range TM services, simultaneously with a remote mission, utilize deployed mobile TM services. These services include receiving, decoding, recording, relay, and display of telemetered data from aircraft, Unmanned Aerial Systems, Sounding Rockets, Expendable Launch Vehicles, balloon payloads, ground test articles, and satellites. The Inertial Navigation System (INS) and Global Positioning System (GPS) on-board flight system data can be received at Wallops by TM and converted to Launch Trajectory Acquisition System (LTAS) format for trajectory display and antenna slave source.

The two primary functions of Telemetry include tracking the vehicle and retrieving data from the payload. While tracking tells the operators the vehicle's location, the data received from the payload is highly anticipated by the Range customer. This data may include information about the health and status of the vehicle payload, or, for sounding rocket missions, scientific data sought after by the mission's principal investigator.

RADAR

Radar systems are used to track the vehicle in either "beacon" or "skin" mode. When pinged by the radar, the "beacon", aka transponder, will send a response to the radar. "Skin" track consists of the radar signal bouncing off the vehicle, but the vehicle itself does not send back a response. "Beacon" is the preferred tracking mode over the latter. Personnel operate the air and sea surveillance radars and work with the Surveillance Coordinator to ensure the launch hazard area is clear of ships and aircraft.

RF COMMUNICATIONS

RF Monitoring and Communication teams are responsible for monitoring frequency throughout the count and ensure proper functioning of LMR Radios. Personnel also provide support to deployed locations requiring command and are tasked with the operation and maintenance of all mobile command equipment.

OPTICAL SYSTEMS GROUP

During day-to-day operations, optics personnel support NASA's Public Affairs and maintains the optics site and other equipment utilized for launches. During mission count, optics takes photos of the vehicle during the Mission Dress Rehearsal and are responsible for the proper positioning and alignment of cameras prior to and during the count.

Ground Operations

The ROC II Ground Operations Team is responsible for supporting ELV and Sounding Rocket processing at the launch pad. In their day-to-day operations, personnel are heavily involved in ELV processing once the motors arrive at Wallops. Ground Ops provided their support for Sounding Rocket, ELV, DoD, and STEM missions throughout 2024 in addition to numerous Crane Lifts and other customer support, e.g., Field Carrier Landing Practice, TOMEX, Coquina Site Setup, and more. Adding to the team's success in 2024, Ground Ops fully refurbished, rebuilt, repaired, and certified all existing Sounding Rocket Motor Carts, supported the Payload Assembly and Rocket Integration System (PARIS) Upgrade Project design and installation, developed a new capability to support ordnance as Operations Safety Supervisor (OSS) to assist the Safety Office with personnel shortages, conducted a complete overhaul of the X-35 Shop, assisted with installation of a DoD Vehicle Launcher, identified, designed, fabricated, and installed Trolley Stop in the Mobile Payload Processing Facility (MPPF) Overhead Crane to prevent major scheduling issues, developed a novel payload recovery process, and developed a novel work tracking system and resource/planning tool being utilized by multiple organizations and service areas across WFF. The countless efforts of the Ground Operations Team led to their winning of the Robert L. Krieger Award and the Individual Safety and Customer Service Awards.

OPERATIONAL MISSIONS & ACCOMPLISHMENTS

The Wallops Range supports a variety of NASA missions by providing Range support services using the funding received from our core budget as well as supplemental funding from within the Agency. The Range constantly strives to ensure it is prepared to accommodate the current and future needs of customers and has consistently operated in a dynamic, high-pressure environment that requires innovative solutions to guarantee mission readiness. All components of the Wallops Range work with Wallops Flight Facility in cooperation with other NASA centers to conduct Range support services to meet NASA's mission needs.



Airfield Operations

NASA's Wallops Flight Facility Airfield (KWAL) is NASA owned and operated and provides for UAS RDT&E Operations for NASA, Department of Defense (DoD), and commercial partners. KWAL consists of two 8,000-foot and one 5,000-foot runways, Federal Aviation Authority (FAA) Certified ATC services, range radar surveillance, two hangars with one designated to customer support, full Aircraft Rescue & Fire Fighting (ARFF) services, and over 400 square nautical miles of Restricted Airspace.





The VAW-120 Squadron commemorated the 10-year partnership with the Range and Mission Management Office Airfield. To date, FCLP has conducted over 163,000 passes on the airfield.

FIELD CARRIER LANDING PRACTICE (FCLP)

Field Carrier Landing Practice (FCLP) is the phase of required flight training for U.S. Naval Aviators that precedes any aircraft carrier landing operations. It should simulate, as nearly as practicable, the real-life conditions encountered during actual carrier landing operations. FCLP is the foundation of carrier aviation, offering the most realistic training a pilot can receive as they prepare for the landing of a plane on the moving flight deck of an aircraft carrier. Regardless of experience, before a fixed-wing pilot can attempt an aircraft carrier landing, they must first successfully complete multiple FCLP Detachment exercises at a properly equipped airfield ashore. The U.S. Navy's FCLP operations conducted at Wallops provides naval aviators the ability to complete this critical and mandatory training at a properly configured coastal airfield that simulates conditions at sea for day and night flight operations aboard a moving aircraft carrier.

NASA's Wallops Flight Facility, through an Inter-Agency Agreement (IAA) with the United States Navy Fleet Forces, proudly supports FCLP exercises aboard the Wallops Airfield. This support is comprised of project management, schedule deconfliction, airfield services such as hangar use, fueling, and air traffic control provided by the RMMO, wildlife management (BASH) by USDA Wildlife Biologists, and lodging and food services provided by WEMA. Additionally, security and other emergency services are provided by the Protective Services Division and Aircraft Rescue and Fire Fighting (ARFF) Department.

Since its inception in 2013, Wallops has supported 35 Detachments, with the most recent concluding on November 22, 2024. Throughout the year, Wallops hosted four FCLP detachment exercises, continuing its critical role in Navy aviator training. Wallops also supports in/out operations year-round with the Fleet Replacement Squadron (FRS) VAW-120 in addition to four other fleet squadrons.



In 2024, the U.S. Navy completed 11,904 passes on our simulated carrier decks and Improved Fresnel Optical System (IFOLS) located on Runways 10 and 28, all within 250 training hours. Since the partnership agreement began at the end of 2013, the Wallops Airfield has supported 163,296 FCLP training passes. These trainings are vital for national security and wartime readiness, with the primary mission of VAW-120 is to train Naval Aviators, Flight Officers, and Aircrewmembers in the safe and effective operation of the E-2C and E-2D Hawkeye and C-2 Greyhound carrier-based aircraft, preparing them for fleet integration. The Navy's FCLP trainings are critical in the assurance of national security and wartime readiness.

Looking ahead, the Range and Mission Management Office, in close collaboration with the Advanced Projects Office and our U.S. Navy partners, signed a follow-on Inter-Agency Agreement, extending the partnership through 2034. Along with revenue from fuel sales, the operational and maintenance funding provided through the IAA is essential for the sustainment and operation of Wallops research airfield.





OCEAN CITY AIR SHOW (OCAS)

NASA's Wallops Flight Facility Airfield (KWAL) supported the 2024 Ocean City Air Show, featuring the Maryland ANG A-10s, U.S. Air Force (USAF) C-17 and F-22, and the U.S. Navy (USN) FA-18 demo teams. Additionally, KWAL teams supported the "Wallops Tailgate Party" event that provides WFF personnel, friends, and family an up-close, live look at aircraft operations. WFF has supported U.S. military and international civilian demonstration teams at its airfield since 2008 and plays a vital role in staging aircraft and facility operations, ensuring the show's success year after year.

The Wallops Airfield Team provides extensive coordination and support through the Range and Mission Management Office, including Federal Aviation Administration (FAA) Special Use Airspace reservations, airfield operations

management, air traffic control, aviation safety oversight, and ramp and perimeter security 24/7 while performance aircraft are staged at KWAL. Furthermore, an Airfield Engineering review of all runways, taxiways, and ramps ensures the implementation of a taxi and parking plan that ensures safety as well as no impact to the integrity of our airfield surfaces. The team also provides its own Ground Support Equipment (GSE) and coordinates shipping required GSE from DoD facilities on the East Coast for the staging at KWAL in support of the performance teams. Throughout the week of the Air Show, KWAL procures and pumps over 60,000 gallons of jet fuel for each show.

The Wallops Airfield prioritizes environmental and wildlife management, ensuring that operations do not disrupt local wildlife or the surrounding ecosystem. In coordination with USDA Wildlife Biologists, the Airfield Team monitors and manages wildlife around the airfield in accordance with the WFF Wildlife Management Plan, ensuring no hazardous interactions occur among wildlife and aircraft.

Over the years, Wallops Airfield has supported several different types of aircraft during the Ocean City Air Show, including the A-10, AV-8, F-18, F-16, F-22, and F-35 demo teams, USAF Thunderbirds, USN Blue Angels, US Army Golden Knights, Royal Canadian Air Force Snowbirds (CT-114 Tutor), and the Breitling Jet Team (L39s), in addition to C-17 and C-130 support aircraft delivering essential personnel and ground support equipment.



The Wallops Airfield's ongoing commitment to safety, operational excellence, and support for military and civilian aviation will remain a cornerstone of its mission, establishing its role as a critical asset for years to come.

Unmanned Aerial Systems (UAS)

Wallops Flight Facility works strategically with corporate partners to support Unmanned Aerial System (UAS) operations and to exploit the growing UAS capabilities for NASA science and research, as well as Department of Defense and commercial UAS utilization. UAS teams at Wallops back major airborne science missions by:

- Providing mission support to NASA, DoD, Commercial UAS, and manned aircraft for quick access to operate at WFF Airfield and UAS Runway for aeronautics research,
- Supporting UAS flight testing of NASA instruments and technology on other UAS missions from Wallops,
- Delivering value-added commercial (CAS) and other Center UAS platform services, and
- Provide Range flight clearance, schedule offshore warning areas, flight management, and UAS airworthiness.



In 2024, WFF supported 28 different UAS test events for a total of 142 UAS flight days. Throughout the course of the year, WFF supported the Maritime Vision, Ghost, RangeHawk, ODU VISA, Reveal Farsight, and Maritime Fly-Off tests. All test events were successful in achieving their purpose and established objectives. Collectively, there were 12 different Unmanned Aerial Vehicles (UAVs) that flew from Wallops in 2024. These UAVs included:

- | | | |
|---------------------|------------------|----------------|
| • TigerShark RQ-23A | • Black Hornet 3 | • FVR-90 |
| • Puma II | • Skydio X2D | • Swoop Kite-B |
| • R80D SkyRaider | • V-BAT AM5.3 | • Alta-8 |
| • Stalker XE25 | • Jump-20 | • RangeHawk |

Furthermore, Wallops hosted the first annual UAS Symposium consisting of Goddard Space Flight Center, Wallops Flight Facility, and Langley Research Center (GSFC-WFF-LaRC) in order for the LaRC UAS Operations Office to conduct an Alta-8 demonstration flight with a Pilot operating the UAS from Langley Research Center located in Hampton, Virginia – roughly 113 miles from the Wallops Main Base on the other side of the Chesapeake Bay.

Rocket Lab

Rocket Lab's Launch Complex 2, the dedicated launch site for the company's Electron rocket, is located at the Mid-Atlantic Regional Spaceport within NASA's Wallops Flight Facility. As Rocket Lab's first launch complex on U.S. soil, the site enables frequent, reliable, and responsive access to Space. Capable of supporting up to 12 launches each year, Launch Complex 2 is tailored primarily for small satellite government missions, but can also support commercial launches as needed.

Looking ahead, construction of Rocket Lab's Launch Complex 3, the dedicated launch site for the company's Neutron rocket, is expected to conclude in the second half of 2025. The new site is anticipated to bring in a new era of support needs for civil, commercial, and national security missions with the Range and Mission Management Office at Wallops.



NROL-123/RASR-5: “LIVE & LET FLY”

The NROL-123/RASR-5 mission “Live & Let Fly” successfully launched three small satellites aboard Rocket Lab’s Electron launch vehicle to a mid-inclination low earth orbit (LEO). The Electron rocket took off in the early morning hours of March 21, 2024, from Rocket Lab’s Launch Complex 2 at Virginia Spaceport Authority’s (VSA) Mid-Atlantic Regional Spaceport (MARS) located at NASA’s Wallops Flight Facility.

This was Rocket Lab’s fourth launch of the Electron vehicle from Wallops and the first from U.S. soil for the National Reconnaissance Office (NRO). The mission was acquired under the Rapid Acquisition of a Small Rocket (RASR) contract, which enables the NRO to explore commercial launch services for launching small satellites. It was the fifth and final mission under the RASR contract after successfully launching the previous four from New Zealand’s Mahia Peninsula.

NRO missions provide critical information to more than 500,000 government users, to include every Intelligence Community member, two dozen domestic agencies, lawmakers, decision makers, and the military. NRO’s satellites provide global coverage, conduct research and development, and provide emergency and disaster relief assistance in the U.S. and around the world.

WFF’s Range and Mission Management Office provided the requested Range services, assets, and support to include Telemetry, Radar, Optics, Timing, Weather Office and Meteorological Operations, Communications, Range Control Center (RCC) Operations, Data Processing, Air and Sea Surveillance, Ground Operations, Scheduling Services, and Project Management.

The Mid-Atlantic Regional Spaceport (MARS) is owned and operated by the Virginia Spaceport Authority at Wallops Island, Virginia. The spaceport offers three launch pads, an Unmanned Aerial Systems (UAS) Airfield, a Payload Processing Facility (PPF), and an Integration and Control Facility (ICF). MARS is licensed by the Federal Aviation Administration (FAA) for vertical launches to orbit and conducts business with NASA via government contracts and agreements.



Rocket Lab Photo

RL: NROL-123/RASR-5 FACTS “Live and Let Fly”



LAUNCH VEHICLE:
Electron

WALLOPS ID:
CRW-6333

LOCATION:
RL LC 2; WFF Pad 0C

LAUNCH DATE:
March 21, 2024



HIPPO: “HASTE A LA VISTA”

On Sunday, November 24, 2024, Hippo, or “HASTE A La Vista”, successfully launched Rocket Lab’s Hypersonic Accelerator Suborbital Test Electron (HASTE) vehicle from its dedicated MARS launch site at Wallops Flight Facility in order to test hypersonic technology for the Department of Defense. Wallops Range Teams provided all required instrumentation and the qualified personnel necessary to conduct successful launch operations, including pre- and post-launch activities.

The mission provided hypersonic testing launch capabilities under the Multi-Service Advanced Capability Hypersonics-Test Bed project (MACH-TB), which aims to advance technology in the U.S. by increasing hypersonic flight tests. The HASTE vehicle highlights a new set of cutting-edge technologies optimized for hypersonic technology testing with significantly increased payloads. Rocket Lab completed the design, manufacturing, assembly, and integration of the mission’s experimental hypersonic instrumentation on an extremely accelerated timeline.



Rocket Lab Photo

ROCKET LAB: HIPPO FACTS
“HASTE A La Vista”

LAUNCH VEHICLE:
HASTE

WALLOPS ID:
CRW-6414

LOCATION:
RL LC 2; WFF Pad 0c

LAUNCH DATE:
November 24, 2024



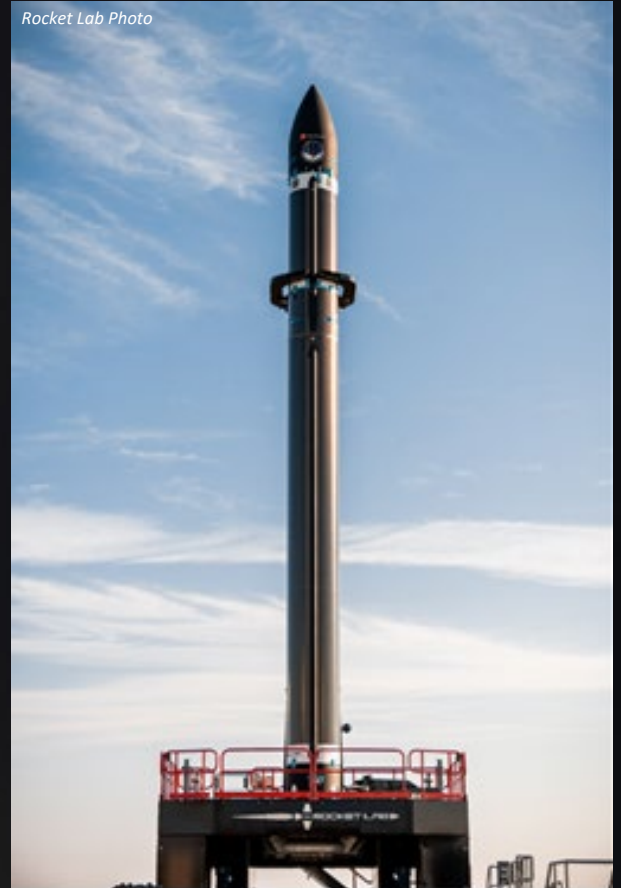
STONEHENGE

Stonehenge was Rocket Lab's final launch of 2024 from Virginia Spaceport Authority's MARS Launch Complex 2 at Wallops Flight Facility and marked the third successful launch of the company's Hypersonic Accelerator Suborbital Test Electron (HASTE) vehicle since its debut in 2023. The vehicle left Pad 0C at 8:00 p.m. EST on December 13, 2024, with the goal of launching the vehicle into a suborbital trajectory. Wallops Range personnel handled launch preparations at WFF while vehicle processing and payload preparations occurred at the Wallops Research Park Integration and Control Facility (ICF).

About the Vehicle:

Rocket Lab's HASTE is a suborbital testbed launch vehicle derived from the company's Electron rocket that provides reliable, high-cadence flight test opportunities needed to advance hypersonic and suborbital system technology development. The rocket is a liquid launch vehicle with deep-throttle capability and a third stage with altitude control that provides flight trajectories with payload release conditions designed according to mission needs. The dedicated launch site for Rocket Lab's Electron and HASTE vehicle is located at the Mid-Atlantic Regional Spaceport at NASA's Wallops Flight Facility where launches are designed specifically for technology demonstration missions, aligning with WFF's history as a primary launch site for suborbital rockets.

- Designed to accelerate hypersonic research and development, reduce costs, and increase cadence.
- Proven advanced technology including carbon composite structure and 3D-printed Rutherford engines.
- Able to deploy suborbital payloads from low hypersonic, high hypersonic, and orbital re-entry velocities.
- Fully operationalized to meet high-cadence flight test demands.
- From idea to launch in 12 months



ROCKET LAB: STONEHENGE FACTS

LAUNCH VEHICLE:

Hypersonic Accelerator Suborbital Test Electron (HASTE)

WALLOPS ID:

CRW-6355

LOCATION:

RL LC 2; WFF Pad 0C

LAUNCH DATE:

December 13, 2024



Atmospheric Perturbations around Eclipse Path (APEP) II

The Range and Mission Management Office (RMMO), Sounding Rocket Program Office (SRPO), and Dr. Barjatya/Embry-Riddle University partnered to launch the Atmospheric Perturbations around Eclipse Path (APEP) II mission. Three identical Black Brant IX solid-fueled sounding rockets were successfully launched from Wallops Flight Facility during the Total Solar Eclipse on April 8, 2024. The APEP II mission looked to study the disturbances in the electrified region of Earth's atmosphere (the ionosphere) that are created when the Moon eclipses the Sun (in other words, how Earth's upper atmosphere is affected when sunlight momentarily dims over a portion of the planet). In an effort to investigate eclipse-induced ionosphere electrodynamics, scientists looked to answer the following questions:

1. *Does the eclipse shadow directly seed discernable irregularities in the mid-latitude ionosphere, and what are the associated vertical length and time scales of these irregularities?*
2. *What are the impacts of the Temperature Gradient Instability (TGI) and Gradient Drift Instability (GDI) in seeding small-scale (10s to 100s of meters) ionospheric irregularities in the presence of a solar eclipse? And, finally,*
3. *How do the various regions of the ionosphere behave differently at small scales in response to the overall cooling effect of the thermosphere?*

Three similar payloads were launched from White Sands Missile Range, New Mexico on October 14, 2023, during the Annular Eclipse. These flights facilitate simultaneous multipoint spatio-temporal in-situ observations of electrodynamics and neutral dynamics associated with solar eclipses. The main payload includes Langmuir probes, electric field probes, magnetometers, ionization gauges, and accelerometers. The simultaneous multipoint measurements are facilitated by four SWARM deployables ejected from each payload that are instrumented with Langmuir probe, magnetometer, and accelerometer.

About the Vehicle:

The Black Brant IX is a two-stage sounding rocket with a Terrier first stage and Black Brant second stage. The Black Brant IX can reach altitudes of about 600km. Payloads weighing from 400-1200 pounds can be flown.

APEP II FACTS

LAUNCH VEHICLE:

Terrier Mk-70 Black Brant IX
(36.392; 36.393; & 36.394)

WALLOPS ID:

NRW-6294; 6295; & 6296

LOCATION:

WFF Pad 2, MRL, ARC, & 50K Launchers

LAUNCH DATE:

April 8, 2024



Hypersonic Test Bed (HTB)-1

On June 12, 2024, the Missile Defense Agency (MDA) and partners at Wallops successfully conducted the first flight of the Hypersonic Test Bed (HTB) designed to provide a common platform for hypersonic experiments. During the test, the vehicle was propelled into hypersonic flight and permitted collection on numerous internal and external experiments, allowing relevant testing in a hypersonic environment.

The HTB concept will continue to serve as a key component in increasing the overall testing capacity and cadence of the U.S. in efforts to enable rapid technology development and delivery. Additionally, HTB provides the U.S. the ability to pursue a variety of state-of-the-art technologies that are able to operate reliably in hypersonic flight environments.

HTB-1 provided a viewing opportunity for MDA's Hypersonic and Ballistic Tracking Space Sensor (HBTSS) with preliminary reports showing these sensors were successful in collecting post-flight data.

"MDA is working closely with many partners to share data informing the development of enhanced capabilities for a layered hypersonic defense to support warfighter needs and outpace the adversary threat."

HYPersonic TEST BED-1 FACTS

LAUNCH VEHICLE:

Terrier Mk-70, Oriole

WALLOPS ID:

NRW-6335

LOCATION:

WFF Pad 2, 50k

LAUNCH DATE:

June 12, 2024



Naval Surface Warfare Center, Port Hueneme Division, Detachment White Sand Division (NSWC PHD DET WSD) is the United States Government flight vehicle lead in the execution of the Hypersonic Test Bed-1 (HTB-1) mission as a flight test in hypersonic research. The mission leveraged on prior NSWC PHD WSD vehicle configurations to deliver hypersonic experiments into the desired flight regime.

The mission objective for HTB-1 was to provide the U.S. and Foreign Allies the capabilities to rapidly test technologies in representative component/subsystem form factor in hypersonic environments for long durations ("Technology Bus" or "Flying Wind-Tunnel") for technology maturation and to burn down technical/program risks.

GQM-163A Coyote – July & November

NASA’s Wallops Flight Facility successfully launched two sets of GQM-163A (Coyote) targets to support the training objectives of U.S. Fleet Forces. The first set of Coyote targets were launched in July, and the second set launched in November. These missions are critical in preparing naval warfighters for upcoming deployments, providing them with realistic training scenarios to enhance their readiness for complex operational challenges. The GQM-163A targets simulated high-speed threats, allowing Navy sailors to develop and refine their skills in detection and engagement. Overall, the launch played a vital role in ensuring that naval forces are well-equipped and prepared for future missions.

NOVEMBER – COYOTE FACTS

LAUNCH VEHICLE:

GQM-163A

WALLOPS ID:

DOW-6356 (Port) & DOW-6357 (STBD)

LOCATION:

WFF Pad 3B, Coyote Launcher

LAUNCH DATE:

November 7, 2024

Wallops Flight Facility conducted operations of supersonic sea skimming targets (SSST) for the United States Navy from 1985 through 2001. During that time, U.S. Navy ships relied on the Vandal MQM-8G target at WFF and other ranges to replicate the threat posed by Anti-Ship Cruise Missiles (ASCM) in support of shipboard combat system testing and crew qualifications programs. In 2004, the Navy’s supply of Vandal targets was depleted, and the U.S. Navy began Engineering, Manufacturing, and Development (EMD) of the replacement for Vandal – the GQM-163A “Coyote”. In the mid-2000s, the U.S. Navy nearly activated WFF to continue SSST operations with the Coyote but was cut short of program funding. Since then, the Coyote target has flown successfully numerous times between the Pt. Mugu Sea Test Range, Pacific Missile Range Facility, White Sands Missile Range, and the Isle du Levant. In 2019, WFF established an east coast launch capability for the Coyote target to support fleet training requirements.

JULY – COYOTE FACTS

LAUNCH VEHICLE:

GQM-163A

WALLOPS ID:

DOW-6208 (Port) & DOW-6209 (STBD)

LOCATION:

WFF Pad 3B, Coyote Launcher

LAUNCH DATE:

July 27 & 28, 2024



Zeus 1 & 2 Demo

The Zeus 1 Demo Mission, a Risk Reduction Flight for the newly developed Kratos Defense & Security Solutions Zeus 1 & 2 Solid Rocket Motors (SRMs), launched out of NASA’s Wallops Flight Facility on October 24, 2024. This was the first successful flight of the Zeus 1 and 2 SRMs, satisfying the requirements necessary to begin the utilization of the Zeus SRMs to test programs supporting the Department of Defense, Foreign Allies, NASA, and other commercial launch sponsors.

The mission, an effort by the Missile Defense Agency (MDA) led by Navy Surface Warfare Center Port Hueneme Division White Sands Detachment (NSWC PHD WSD), featured a two-stage suborbital launch vehicle built by Kratos that provided substantial data to support rocket motor evaluation for future use. The mission aimed to demonstrate the design, performance, and functionality of the two Zeus motors while also collecting payload data. This was the first flight of the Zeus motors launching off Pad 2 from the 50K launcher with the purpose of proving the effectiveness of both motors.

Support teams ensured a safe and successful launch despite facing numerous challenges such as communication issues, electrical failures, a faulty spin motor cable, an aerostat leak, downed phone lines, spotty internet connection, a brush fire, a responding fire truck breaking down in the hazard area, a pilot who briefly flew into the hazard area after failing to turn as instructed by surveillance, and high upper-level winds prompting a hold at T-20 minutes, before successfully launching the Zeus test vehicle.

ZEUS DEMO 1 & 2 FACTS

LAUNCH VEHICLE:

Zeus 1 & 2 Solid Rocket Motors (SRMs)

WALLOPS ID:

DRW-6405

LOCATION:

WFF Pad 2, 50K

LAUNCH DATE:

October 24, 2024

The Zeus family of SRMs were developed by Kratos in direct response to the need for affordable commercial launch vehicle stages for hypersonic tests, ballistic missile targets, scientific research, and sounding rocket and other special customer missions. Zeus 1 & 2 are high-performance, 32.5-inch diameter SRMs with substantial performance improvements, intentionally designed to be fully compatible with existing payloads and launch infrastructure to enable rapid integration of new technologies and advanced payloads. These improvements provide the opportunity for faster, farther, and more frequent flights using fewer stages at a substantially reduced cost.

DEPLOYED MISSIONS



Poker Flat Research Range

Fairbanks, Alaska

On February 23, 2024, the first group of the 2024 Poker team deployed from Wallops and arrived at the Poker Flat Research Range (PFRR) in Fairbanks, Alaska to kick-off the Solar Flare Campaign. The group departed early for the mission in order to address system readiness issues and other known concerns, with the remainder of the team arriving a little more than a month later on March 25, 2024.

The team overcame several obstacles throughout the 2024 Solar Flare Campaign and successfully launched FOXSI-4 (36.370) and Hi-C Flare (36.371) one hour apart on April 17, 2024, before returning to Wallops about one week later.

2024 SOLAR FLARE CAMPAIGN

Two Terrier Black Brant IX sounding rockets were successfully launched from the Poker Flat Research Range (PFRR) in Fairbanks, Alaska on Wednesday, April 17, 2024. The FOXSI-4 and Hi-C Flare missions were part of the 2024 Solar Flare Campaign. The 2024 Solar Flare Campaign was comprised of the Focusing Optics X-ray Solar Imager (FOXSI) launching out of Poker Flat Research Range (PFRR) in Fairbanks, Alaska.

HI-C FLARE: SAVAGE FACTS

LAUNCH VEHICLE:

Terrier Black Brant IX

WALLOPS ID:

NRO-6292

LOCATION:

Poker Flat Research Range

LAUNCH DATE:

April 17, 2024



FOXSI-4: GLESENER FACTS

LAUNCH VEHICLE:

Terrier Black Brant IX

WALLOPS ID:

NRO-6293

LOCATION:

Poker Flat Research Range

LAUNCH DATE:

April 17, 2024

FOXSI-4 (GLESENER 36.370)

The purpose of the Focusing Optics X-ray Solar Imager (FOXSI) experiment was to advance our understanding of the high-energy aspects of solar flares and to develop an instrument that has the ability to study hard and soft x-rays using direct focusing optics. Although there were three previous flights of the FOXSI payload, FOXSI-4 was the first to fly out of PFRR.

HI-C FLARE (SAVAGE 36.371)

The Hi-C Flare experiment was part of the 2024 Solar Flare Campaign comprised of three solar physics payloads launching from Poker Flat Research Range (PFRR) in Fairbanks, Alaska. The goals of the experiment were to determine: 1) the mechanisms that drive continual heating of flares into the decay phase, 2) how energy is transferred from the corona to the chromosphere during flares, and 3) the morphology of the source regions associated with particles that are accelerated into the heliosphere. The Savage 36.371 was a re-fly of the 36.342 Winebarger with some new hardware and component-level modifications and was the fourth flight of the High-resolution Coronal imager solar Flare (Hi-C Flare) instrument. Savage 36.371 instrument was optimized to be more sensitive to flaring plasma with its detector modified to improve the image cadence commensurate with rapid flare dynamics.

During the launch window in April 2024, solar activity was monitored by scientists using data from the NOAA operated Geostationary Operational Environmental Satellite (GOES). When data from GOES indicated a solar flare occurring, payloads were launched to study the event. By analyzing previous solar cycles, scientists were able to estimate the chance of capturing a flare in progress within the selected launch window.

Andøya Space Center

Andenes, Norway

VORTICITY EXPERIMENT: SALVO 36.362 & 41.128

The scientific objective of the Vorticity Experiment (VortEx) is to characterize mesoscale dynamics (10-500km) in the upper mesosphere and lower thermosphere (90-120km) a region which also contains the Earth’s turbopause. Rocket and ground-based measurements will be combined to distinguish between divergence in the horizontal flow field and divergent motions, such as gravity waves, as well as vorticity in the horizontal flow field and vertical motions, such as expected to occur in quasi-stratified mesoscale turbulence. These processes are crucial for a better description of subgrid processes and eddy diffusion in global atmospheric models.

VortEx was comprised of four missions: Salvo 1 – 36.361 and 41.127, which launched on March 23, 2023, and Salvo 2 – 36.362 and 41.128, which launched on November 10, 2024. The 36.361 and 36.362 were identical payloads carrying rocket-powered ampules and canisters that released trimethyl aluminum (TMA) for wind observations. Each TMA payload launched with an instrumented payload, 41.127 and 41.128, with instruments from Clemson University and Embry-Riddle Aeronautical University. The two Terrier-Improved Orion payloads (41.127 and 41.128) carried instrumentation while the two Black Brant IX payloads dispersed vapor trails.

About the Vehicles: The Black Brant IX is a two-stage sounding rocket with a Terrier first stage and Black Brant second stage. The Black Brant IX has the ability to reach altitudes of approximately 600 km. Payloads weighing from 400-1200lbs can be flown.

The Terrier-Improved Orion is also a two-stage sounding rocket with a Terrier first stage and Improved Orion second stage. The Terrier-Improved Orion is capable of reaching altitudes of approximately 350 km depending on payload mass and can carry payloads ranging in weight from 200-800lbs.

VORTEX 36.362 FACTS

LAUNCH VEHICLE:
Black Brant IX

WALLOPS ID:
NRO-6406

LOCATION:
Andøya Space Center, Andenes, Norway

LAUNCH DATE:
November 10, 2024

VORTEX 41.128 FACTS

LAUNCH VEHICLE:
Terrier-Orion

WALLOPS ID:
NRO-6407

LOCATION:
Andøya Space Center, Andenes, Norway

LAUNCH DATE:
November 10, 2024



STEM ENGAGEMENT & PUBLIC OUTREACH

Every year, the Range and Mission Management Office supports the NASA Sounding Rockets Program Office (SRPO) STEM Engagement and Public Outreach by providing Range services for multiple student-driven launches. RMMO supports SRPO and its students in STEM programs – Science, Technology, Engineering, and Math – with the idea that fostering this coursework and allowing them to launch their team-developed payloads into the near-space environment will give them insight into practical space science and perhaps inspire them to someday bring their talents to NASA.



2024 RockOn! & RockSat-X

The 2024 RockOn! and RockSat-X missions were a continuation of the successful Sounding Rocket Workshops held at Wallops Flight Facility every summer. These workshops represent the collaborative efforts between the Colorado Space Grant Consortium, Virginia Space Grant Consortium, and Wallops Flight Facility while exposing the next generation of scientists and engineers to the world of rocketry and space experimentation.

Participating students are presented with a rare and exciting opportunity to conduct work on a payload, then launch the payload into space. These student-based workshops aim to inspire young learners to one day become part of the NASA workforce.

RockOn! is a hands-on team experience that teaches participants how to create a sounding rocket experiment from scratch over the course of five days that will be launched into space on day six. The purpose of the workshop is to present collegiate educators and students with an introductory-level space flight opportunity. Meanwhile, RockSat-X, a follow-up experience to RockOn!, allows for a space flight opportunity of increased complexity and exposes the students to the design and mission project lifecycle.

As with similar sounding rocket campaigns out of Wallops, the Range and Mission Management Office supplies the pad launcher, operative communications, data processing, radar, telemetry, timing, optical tracking, payload recovery, surveillance, crane services, weather services, project management, and more.

RockOn! 2024

As dawn emerged along the coastline of NASA’s Wallops Island, the 16th sounding rocket flight from the hands-on, university-level rocket flight training workshop known as RockOn! successfully launched from Wallops Flight Facility’s Pad 2 50K Launcher. The two-stage Terrier MK12 Improved Orion sounding rocket took off at 5:30 a.m. on June 20, 2024.

The mission payload carried two types of student experiments: five canisters of RockOn! workshop experiments and three canisters of RockSAT-C experiments. The RockOn! experiments were provided by students and faculty from Minority Serving Institutions (MSI). More advanced RockSAT-C experiments were built by teams of university students prior to their arrival at Wallops. The payload nosecone exclusively housed Cubes-in-Space, a nationwide program for middle school students sending small cubes containing experiments into Space.

The Range Mission and Management Office and the Range Operations Contract team supported the mission with launch range operations support to include communications services, radar, command and control, logistics, optical tracking, surveillance, payload recovery, and other elements required for the safe and efficient launch of a sounding rocket and experiment data retrieval.

The mission was a continuation of the RockOn! Sounding Rocket Workshop, representing the collaborative effort of the Colorado Space Grant Consortium, Virginia Space Grant Consortium, and Wallops Flight Facility – the primary lead for this mission. The student participation was a record-high for the program with over 150 students, all watching the launch on-site at Wallops with many other viewers on the live social media feed.

Participating Universities:

- *Temple University*
- *Southeastern Louisiana University*
- *Old Dominion University*
- *University of Delaware*
- *Stevens Institute of Technology*
- *Cubes-in-Space*

RockOn! 2024 FACTS

LAUNCH VEHICLE:

Terrier Improved Orion

WALLOPS ID:

NRW-6381

LOCATION:

WFF, Pad 2 MRL

LAUNCH DATE:

June 20, 2024

ROCKSAT-X 2024

The RockSat-X student-based projects are developed with the goal of providing an enhanced opportunity to fly an experiment that is exposed to the space environment. Students obtain meaningful, hands-on experience through the design, build, test, and flight of their experiments on a suborbital space flight, while also gaining exposure to the design and mission project lifecycle. The RockSat-X mission supplied a fixed experiment interface for power and telemetry resources as well as physical allotment, enabling a cost-effective, low program impact means to deliver a high-quality mission lifecycle experience to participants.

The primary objective of this mission is to offer teams of undergraduate students from participating universities the exclusive opportunity to design and build unique experiments to be flown aboard a rocket-borne carrier that provides full exposure to the space environment. The 2024 RockSat-X launch opportunity offers an enhanced launch vehicle and a standard payload carrier with predefined mechanical, telemetry, power, and altitude control capabilities that these students can utilize to

meet their individual experiment objectives. RockSat-X is an extension of the RockOn! and RockSat-C programs, which have previously flown on many successful sounding rocket missions in sealed, dry payload sections. Exposing student experiments to the space environment provides an assortment of investigations that can be conducted and is a logical step toward fostering the development of future space scientists and engineers.

In August 2024, NASA's Wallops Flight Facility successfully launched a Terrier Mk12-Improved Malemute in support of the annual SRPO RockSat-X mission. The 46.042 Koehler will be the fourteenth flight of the hands-on, university-level, rocket flight training workshop known as RockSat-X. The RockSat-X mission is primarily run by WFF in collaboration with WFF Directorate Education Team and the Sounding Rocket Program Office (SRPO). Overall, the launch played a continuous role in providing valuable and practical education and training mission experience for college students across the country.

ROCKSAT-X 2024 FACTS

LAUNCH VEHICLE:

Terrier MK12 Improved Malemute

WALLOPS ID:

NRW-6354

LOCATION:

WFF Pad 2, 50K

LAUNCH DATE:

August 13, 2024



IC4RUS

Each year, Wallops’ RMMO hosts student interns from high schools and universities across the country, allowing them the opportunity to contribute to NASA’s mission of advancing science, technology, aeronautics, and space exploration. NASA internships at Wallops provide students with training, mentoring, and career development opportunities while getting to work side-by-side with a NASA mentor.

On August 1, 2024, NASA’s Wallops Flight Facility witnessed an exciting event as a team of interns led the launch of four test rockets. These rockets, modified from Apache helicopter models, were used to test new radar systems for training purposes. This unique mission provided an invaluable opportunity for the interns to gain hands-on experience in mission control operations, demonstrating their capability and precision under real-world conditions.

The day’s operations were managed by project manager interns Alexis Bultman, Veronica Fabiano, Quentin Millar, and Kylen Wharton, who helped monitor the test rockets from the Range Control Center (RCC). Their task involved ensuring the rockets, designed to enhance radar training protocols, were launched successfully and tracked accurately.

Despite a few minor setbacks, the mission was ultimately a success. Rocket 2 experienced a last-minute hold with only two seconds left on the countdown, a situation that tested the team’s ability to handle unexpected issues. Additionally, Rocket 4 ignited a small fire on the launch pad, presenting another challenge for the mission crew. Nonetheless, the interns and support staff managed these obstacles with

professionalism and efficiency, ensuring the mission proceeded smoothly despite these incidents.

The successful launch and tracking of all four rockets illustrate mission effectiveness and a skilled group of interns. The event was a big achievement for the team and highlighted the promise of young professionals in space exploration. Additionally, it reflects the high standards and thorough training provided at NASA’s Wallops Flight Facility, paving the way for future intern-led projects and advancing radar technology.



IC4RUS FACTS

LAUNCH VEHICLE:
2.75” Test Rocket, MK40 Mod 3

WALLOPS ID:
NRW-6392; 6393; 6394; 6395

LOCATION:
WFF Pad 2

LAUNCH DATE:
August 1, 2024

Virginia Space Coast Scholars (VSCS)



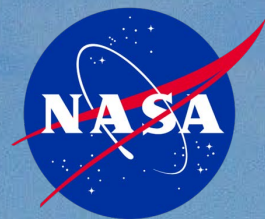
The Virginia Space Coast Scholars (VSCS) program is a partnership between the Virginia Space Grant Consortium, Wallops Flight Facility, and the Commonwealth of Virginia and features a two-part, STEM-focused program for high school sophomores that is integral to current missions at Wallops and the Mid-Atlantic Regional Spaceport (MARS). Throughout the school year, scholars complete five interactive online modules consisting of curriculum connecting STEM topics relating to orbital and suborbital science missions. Upon completion of the online program, top-performing scholars may be invited to attend one of three residential summer academies at Wallops where they will learn firsthand from NASA professionals and their partners about the latest, cutting-edge technologies and missions.

In 2024, over 300 students at Wallops designed an Expendable Mission Vehicle (ELV) Mission based on a

known WFF platform. RMMO Project Managers and Project Support Managers shared subject-matter expert knowledge with each ELV team to answer the scholars' questions, discuss the feasibility of their ideas, and help them develop a mission plan. Each team presented their ELV mission to the Wallops community on the last day of their visit.

RMMO's participation and support of the VSCS every summer continues to be a valuable opportunity to inspire our future workforce.





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