NAWCAD AND ITS MISSION

The NAWCAD Patuxent River (“Pax River”) Complex spans 25 miles of shoreline at the mouth of the Patuxent River, overlooking Chesapeake Bay. Commissioned in 1943, Pax River supports naval aviation operations through research, development, acquisition, test, and evaluation (RDAT&E) of aircraft, aircraft components, and end-item support. The facilities are also used to support projects from private industry, academic institutions, and foreign governments. Pax River covers approximately 6,500 acres at the station itself with an additional 850 acres at the Webster Outlying Field (WOLF) located about 13 miles southwest of the station in St. Inigoes, Maryland.

NAWCAD is the principal RDAT&E and fleet support activity for manned and unmanned naval aircraft for the Navy and DoD. NAWCAD focus areas include air vehicles, propulsion systems, avionics, mission systems, human systems, aircraft launch and recovery equipment, landing systems, air traffic control, communications, ship/shore/air operations, and training systems.

NAWCAD’S ROLE IN UNMANNED AIRCRAFT SYSTEMS (UAS)

NAWCAD is the full spectrum engineering, RDT&E, and fleet support center for fixed and rotary wing UAS platforms. We are focused on the unmanned opportunity, collaborating closely with customers on UAS-related research, design, simulation, stimulation, development, test and evaluation. Our UAS activities encompass RDT&E of DoD Group 1 through 5 UAS capabilities including launch and recovery, control systems, data and communication links, mission sensor packages, airspace integration, weapon integration, interoperability and automation/autonomy.

Global Hawk conducts test over NAS Patuxent River

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NAWCAD - VALUE FOR OUR CUSTOMERS

**Workforce:** 13,000 engineers, flight test engineers, scientists, and RDAT&E professionals. The Navy’s intellectual capital works here and on the road.

**National Ranges and Labs:** Integrated, unique, MRTFB invested, joint facilities, not duplicated by industry.

**Customer:** Our primary customers are Navy PEO’s and PMA’s, but we have a strong history in Joint, Inter-Service, Inter-Agency, Foreign Military Sales, and collaborative work with industry.

**Business Model:** Navy Working Capital Fund (NWCF) supply and demand model incentivizes cost consciousness.

A FULL SPECTRUM OF UAS RDT&E SERVICES FOR A WIDE RANGE OF CUSTOMERS

- X-47B Navy Unmanned Combat Air System Demonstrator at Paxtuxent River for launch and recovery testing prior shipboard testing
- Army Gray eagle radar cross-section and infrared testing conducted at Paxtuxent River
- The Navy Broad Area Maritime Surveillance Demonstrator (BAMS-D) is based at Patuxent River
- The UAS Test Directorate conducts ongoing MQ-8B Fire Scout testing prior to Fleet introduction
- The UAS Test Directorate uses Aero Star to evaluate P-8 Poseidon sonobouy impact points and train Test Pilot School students
- NAWCAD serves as the Department of Homeland Security technical agent providing system assessments for emergency responders making procurement decisions

http://www.navair.navy.mil/nawcad/
### RDT&E SUPPORT TO UAS PROGRAMS OF RECORD

<table>
<thead>
<tr>
<th>Project Code</th>
<th>Program Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMA-262</td>
<td>Persistent Maritime UAS</td>
</tr>
<tr>
<td>PMA-263</td>
<td>Small Tactical UAS</td>
</tr>
<tr>
<td>PMA-266</td>
<td>Multi-Mission Tactical UAS</td>
</tr>
<tr>
<td>PMA-268</td>
<td>Unmanned Combat Air Systems</td>
</tr>
</tbody>
</table>

#### UAS RESEARCH AND DEVELOPMENT HIGHLIGHTS

- Airborne Sense and Avoid Due Regard Radar and associated algorithms
- Autonomous Long Endurance UAS Research
- Developmental testing of the Herbranson engine ignition and throttle control systems for installation in the Tiger Shark UAS
- Developmental testing of the STUAS RQ-21A Integrator UAS engine to evaluate rain effects, life, altitude performance, and operability with the entire A/V installed in the test cell.
- Endurance testing of Firescout flight control actuators to determine expected life combining actuation and vibration spectrums.
- Engine Performance Modeling Capability for UAV Applications
- Future developmental testing of the RQ-21A with an alternative Cosworth engine. The testing will include altitude performance, operability, endurance, and full temperature extreme starting evaluations.
- Interoperability profile standardization
- Johns Hopkins University, Applied Physics Laboratory Intelligence Surveillance Reconnaissance (ISR) Cloud demonstrating autonomous interaction of 25 UxS operating and communicating with one another, from underwater, on the water, on the ground, and in the air
- Joint UAS Mission Environment Live Virtual Construct airspace integration use cases
- MQ-8B Fire Scout VTUAV Flight Termination System (FTS) developed by Atlantic Test Ranges
- The Unmanned Aircraft Systems Integration Lab (UASIL) supported USMC Cherry Point Ground Based Sense and Avoid testing and advanced crew concept training
- UAS Atom Interferometer Research related GPS denied navigation
- UAS Cargo Carriage and Release Systems Research
- UAV Mishap Taxonomy Research and Development

UAS TEST & EVALUATION HIGHLIGHTS

- Aerostar used to monitor and post evaluation of AH-1 Cobra 20mm gunfire impact points and P-8 sonobouy drops using real-time video at Atlantic Test Ranges
- E3 conducted a full E3 qualification on the Kaman KMAX unmanned heavy lift aircraft
- E3 conducted follow on E3 testing of the Global Hawk
- E3 conducted a full E3 qualification test on the Army Gray Eagle
- First FAA-authorized Global Hawk transcontinental flight from Patuxent River, MD to Point Mugu, CA to support Trident Warrior ‘08 and RIMPAC ‘08
- Global Hawk and Fire Scout testing at Atlantic Test Ranges (ATR)
- Maryland Army National Guard RQ-7 Shadow training conducted from Webster Outlying Field
- MQ-8B Fire Scout completed nine autonomous landings aboard USS Nashville (LPD-13), operating in Atlantic Test Ranges sea space
- MQ-8B Fire Scout interoperability testing and engineering for air vehicle to tactical control station in preparation for first deployment on USS McInerney at the Surface Aviation Interoperability Laboratory (SAIL)
- MQ-8B Fire Scout VTUAV Flight Termination System (FTS) developed by Atlantic Test Ranges
- Navy Unmanned Combat Air System Demonstration (UCAS-D), X-47B initial Launch, Recovery, and Carrier Controlled Airspace operations
- RQ-7 Shadow Wide Focal Plane Array Camera (WFPAC) by the UAS Test Directorate
- SAIL/MQ-8B Fire Scout interoperability testing and engineering support for all subsequent air vehicles to ship-based control station communications (USS Halyburton, USS Simpson, USS Klackring, USS Bradley)
- SAIL is the interoperability test bed for BAMS, directly supporting PMA 262 for all interoperability requirements including Tasking, Processing, Exploitation, and Dissemination (TPED)
- SAIL provided engineering and operational support for first ever manned/unmanned teaming demonstration between H-60S and MQ-8B Fire Scout
- SAIL provided engineering support for the integration of MQ-8B onto Guided Missile Destroyer (DDG)
- The Electromagnetic Environmental Effects (E3) Test Facility conducted External RF Environment test on the X-47B UCAS-D
- The Unmanned Aircraft Systems Integration Lab (UASIL) supported USMC Cherry Point Ground Based Sense and Avoid testing and advanced crew concept training
ATLANTIC TEST RANGES (ATR)

ATR designs, develops, integrates, installs, maintains, and operates test range instrumentation, communications and digital data gathering and handling equipment. Range instrumentation includes acquisition, surveillance, and tracking radars, special purpose electronic combat emitters, videographic and photographic instrumentation, laser tracking systems and optical tracking systems. ATR provides flight test control and range safety functions, Mid-Atlantic Area Frequency Coordinator services, and coordinates Patuxent River special-use airspace.

TELEMETRY DATA CENTER

The Telemetry Data Center provides real-time radio-link reception, translation, processing, and display of test data using the Real-time Telemetry Processing System. This widely-used system provides real-time test Time Space Position Information (TSPI) from radars and theodolites to nine separate in-flight aircraft to ground engineering personnel. Test teams operate the system from any of the nine Project Engineer Stations.

SURFACE TARGET AREAS

ATR controls an aerial firing range and three exclusive-use surface target areas in the Chesapeake Test Range restricted areas – Hooper Target, Hannibal Target, and Tangier Island Target. Surface target areas are available in restricted airspace for tests using inert ordnance. Target areas provide a safe, controlled location where air-to-surface firing and weapon separation testing can be conducted.

WALLOPS FLIGHT FACILITY

ATR maintains a partnership with NASA’s Wallops Flight Facility (WFF), located on Virginia’s Eastern Shore. The Wallops airfield provides target launch facilities, refueling capabilities, and a communications and telemetry relay back to the ATR Range control room for easy data exchange and test monitoring. By partnering with NASA Wallops, ATR effectively extends its range capabilities well out into the Mid-Atlantic operating areas. The WFF launch site provides supersonic target services for fleet training and T&E of weapons systems. ATR provides technical support and on-site program coordination for the scheduling and operation of East Coast aerial target presentations (VANDAL/ MQM-8G/X, BQM-34, BQM-74).

TEST AND TRAINING SUPPORT

Patuxent River is the Navy’s principal RDT&E fleet support activity for naval aircraft, engines, avionics, aircraft support systems, and ship/shore air operations. ATR supports test and evaluation and training exercises:

**RDT&E SUPPORT**
- Component Test
- Weapon Separation
- Electronic Warfare
- Carrier Suitability
- Systems Safety
- Sensors
- Flying Qualities
- Stability/Control
- Performance

**TRAINING SUPPORT**
- Joint Task Force Exercises
- Mining Exercises
- Missile Exercises
- Strike Exercises
- Aerial Target Support
- Carrier Strike Groups
- Expeditionary Strike Groups

http://www.navair.navy.mil/nawcad/
RESTRICTED AIRSPACE - INSTRUMENTED AND INTEGRATED

The Atlantic Test Ranges are fully-instrumented and integrated test ranges that provide full-service support for cradle-to-grave testing and training. This support includes RDT&E of aircraft, and training for aircrew and integrated avionics and mission systems. ATR manages over 2,700 square miles of restricted airspace from surface up to 85,000 feet in the Chesapeake Test Range operating areas, which host selected surface targets and consists of airspace covering regions over the Chesapeake Bay, Maryland, Delaware and Virginia. Additional air and sea space is available in the Atlantic Warning Areas, located east of the Delmarva Peninsula over the Atlantic Ocean. Scheduling these offshore warning areas, where support is typically provided, expands the flight operating area to over 50,000 square miles. The Atlantic Warning areas include warning areas W-72, W-105, W-106, W-107, W-386, and W-387.

INFRASTRUCTURE

10 Hangars, 5 Runways - Depending on UAS size NAWCAD offers UAS programs the ability to fly from its primary airfield, with three runways 11,807, 9,742, and 5,021 feet long and two 5,000 feet runways at Webster Outlying Field that can accommodate smaller Group 1 through 4, and most VTOL airframes.

NAWCAD can provide the full spectrum of range services to UAS projects, including runways, hangars, and range instrumentation systems. NAWCAD provides in-house fabrication of parts and instrumentation along with environmental testing facilities for full-up end-to-end UAS RDT&E services.

http://www.navair.navy.mil/nawcad/
NAVAL TEST WING ATLANTIC

Naval Test Wing Atlantic supports the development and acquisition of naval aeronautical and related technology systems. The predominance of the active duty military personnel in the T&E Group are assigned to the Wing, and see themselves as advocates for the fleet with a continual focus on their warfighting requirements.

UAS TEST DIRECTORATE (UAS TD)
The UAS TD provides operators, unmanned aircraft test assets, maintenance, test operations, facilities, and safety oversight to conduct RDT&E and experimentation across a broad range of UAS complexities including autonomous, semi-autonomous, and remotely piloted fixed and rotary wing aircraft. The UAS TD also serves as the governing body for UAS specific processes and policies:

- UAS unique airworthiness considerations
- “Autonomy” & “See / Sense and Avoid”
- Ground Control Station (GCS) Human-Machine Interface
- Data Link Robustness, Anti-Jam / Anti-Spoof, Failsafe
- Air Vehicle Operator Pipeline / Unique Training Requirements
- Squadron / Unit Composition (PAA / Manning)
- NAS / ICAO Airspace Integration
- NATOPS / NATIP Development
- Interoperability

Available UAS assets crewed, ready for mission payload testing

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>Wingspan</th>
<th>MTOW lbs</th>
<th>Payload Weight</th>
<th>Data Link Range</th>
<th>Endurance</th>
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<tr>
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<td>440</td>
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<tr>
<td>AeroSky</td>
<td>15’</td>
<td>160</td>
<td>40 pounds</td>
<td>45 Km</td>
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<td>AeroLight</td>
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<td>96.7</td>
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<td>45 Km</td>
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<tr>
<td>ExDrone</td>
<td>8’ 3”</td>
<td>87</td>
<td>15 lbs</td>
<td>50 Km</td>
<td>2.5 hours</td>
</tr>
</tbody>
</table>

US NAVAL TEST PILOT SCHOOL (USNTPS)
USNTPS provides instruction to experienced pilots, flight officers, and engineers in the processes and techniques of aircraft and systems test and evaluation. The school conducts a UAS flight test course consisting of three training phases designed to introduce and expose students to UAS flight test methods and techniques culminating in a “hands-on” evaluation with UAS platforms.

http://www.navair.navy.mil/nawcad/
FLIGHT DYNAMICS LAB

Engineering support for flying qualities and flight controls research. The lab consists of real-time simulation and engineering workstations for model development and evaluation and an extension of the engineer’s desktop in order to support a “design-fly-redesign” cycle.

NAVAL AERODYNAMICS TEST FACILITY (NATF)

The NATF specializes in Aerodynamics testing of scaled and full-sized models, air flow physics found on aircraft and ships, validation testing for computational fluid dynamic predictions, and Aerodynamic and wind tunnel testing consultation.

AIR COMBAT ENVIRONMENT TEST AND EVALUATION FACILITY (ACETEF)

The ACETEF is a combination of integrated facilities and capabilities that can stand alone or work collaboratively to perform test and evaluation of installed avionics and weapons systems. This unique integration of labs allows the system to undergo testing while all of its avionics are immersed in a virtual flight environment. The system under test acts and reacts as if it were in flight.

ACETEF provides full–spectrum synthetic environment and robust ground test support. The integrated assets, distributed capability, and the synthetic battlespace are powerful tools for all phases of system development. Teams that comprise ACETEF are; the Electronic Combat Stimulation Branch, the Battlespace Modeling and Simulation Division, and Instrumentation. These laboratories provide signal generation, high–performance computing, data capture and warfare environments.

ANECHOIC CHAMBERS

NAWCAD’s suite of tools include five fully operational anechoic chambers, a mode-stir chamber, an RF shielded hangar, multiple high level Electromagnetic Vulnerability, Electromagnetic Pulse, and Lightning facilities. The Anechoic chambers and Shielded Hangar are surrounded by labs that provide simulation and stimulation capabilities to the system under test. These facilities provide a secure and sanitized RF environment to perform testing on installed avionics and handheld equipment. They are capable of testing items that range in size from microchips to Boeing 747’s.

SURFACE / AVIATION INTEROPERABILITY LAB (SAIL)

The SAIL is a unique, world-class facility offering hardware-in-the-loop and operator-in-the-loop test capabilities. Live or virtual evaluations and exercises are conducted with the Atlantic Test Range, through live and local ATR feeds or distributed synthetic warfare environments, enabled by integrating aircraft in-flight, on the deck, and in the NAVAIR chambers. The SAIL facility includes FFG, DDG, CVN, and LCS shipboard combat system suites. The SAIL is currently engaged in supporting developmental airborne platforms such as the MH–60R, EA–18G, Joint Strike Fighter as well as Unmanned Vehicles with tactical data links, voice communications, and imagery testing. Among other data link waveforms and data capture capabilities, SAIL provides integration and interoperability flight test support between UAS and various surface combatants, including LCS.
AVIONICS RDT&E

NAWCAD provides the engineering personnel, processes, facilities, and equipment to accomplish the technology research, systems development, acquisition, and in-service support of naval avionics systems, equipment, and associated operating software.

ATOMIC PHYSICS & OPTICAL RESEARCH (AMOT) LABS

AMOT specialties include; nonlinear optical properties, refractive indices, thermal stability capacities also applicable to improved gravity gradient sensing and atomic clocks, and other sensor applications based on atomic vapors.

- Long term navigation in GPS denied environments
- Support for battlespace awareness and surveillance

AVX-1 EO SENSOR LAB

The lab is a long range electro-optical surveillance system engineering and support facility, capable of assembly, test, alignment, and calibration of electro-optical sensors and systems. Lab capabilities include computer support, software development, circuit board testing, and computer-aided design.

ELECTROMAGNETIC ENVIRONMENTAL EFFECTS FACILITY

NAWCAD is the center of excellence in aircraft Electromagnetic Environmental Effects (E3) RDT&E. The E3 facility specializes in a variety of capabilities, ranging from box level to complete system level testing. All E3 testing is supported at one site, maximizing efficiency and reducing the time and cost of E3 test programs.

The E3 test facilities at Patuxent River provide test and evaluation of aircraft, weapons systems, and components. The primary function of the E3 facility is to provide MIL-STD-461/464 evaluation capabilities to the Navy and DoD. The testing conducted by this facility includes:

- Intersystem Electromagnetic Compatibility
- Electromagnetic Pulse
- Atmospheric Effects Testing
- Electromagnetic Interference
- Emission Control
- Safety-of-Flight Test
- HERO | HERP | HERF
- TEMPEST

The Electromagnetic Interference Test Facility provides MIL-STD-461 component level testing as a low-risk acceptance criterion that identifies potential E3 problems before they occur at the platform level. It additionally provides Fleet support in areas of: EMC engineering analysis, component troubleshooting and correction, EMI consultation, document review, site surveys, EMCON assessments, measurement uncertainties, and correlation of specifications and limits to continuously changing E3 environments. Facilities include three anechoic chambers (20’x 15’x 10’, 24’x20’x 10’, 24’x 15’x 10’) and one reverberant chamber (20’x 16’x10’), a 200 HP - 30,000 rpm drive, and access to the Aircraft Anechoic Test Facility and Advanced Systems Integration Laboratory.
ELECTRO-OPTIC SYSTEM DEVELOPMENT LAB
The lab serves as a development facility for electro-optical systems ranging from visible through long wave infrared. Capabilities include designing and characterizing sensors detectors, optics and stability systems. In addition, the staff has the capability to fully integrate systems on aircraft by designing, fabricating and installing both electrical and mechanical interfaces.

ENVIRONMENTAL TESTING
NAWCAD conducts box level environmental testing with the following parameters:

- -70ºC to +177ºC
- Sea Level to 100,000 Feet
- 20 to 95 Percent RH
- Sand and Dust
- Salt Fog/Spray
- 5 Types of Fungus
- Conditioned Air

Unique features include:

- Portable Chambers
- Any Drive can be Environmental
- Temperature range: -73ºC to +120ºC
- Celsius Altitude Range: 0-100,000 ft
- Walk-in Chamber with Drive used primarily to test aircraft generators and constant speed drives to simulate flight conditions of temperature and altitude with conditioned air and drive capabilities.

Snowgoose undergoing test at ACETEF

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PROPULSION SYSTEMS EVALUATION FACILITY (PSEF)

The PSEF is capable of testing every aspect of propulsion systems and components on many diverse platforms. The PSEF contains 55 test and support areas including: Fuels and Lubricants Test and Laboratory areas, Rotor Spin Facility for Compressors and Turbines, Altitude Environmental Chamber, Helicopter Drive System Facility, Small Engine and Accessory Test Area, and Central Computer Facility. The facility also conducts uninstalled propulsion testing, Night Vision, Weight and Balance and other specialized testing activities.

SMALL ENGINE & ACCESSORY TEST AREA (SEATA)

The SEATA facilitates testing aircraft starting mechanisms and auxiliary power systems, small engines and accessories. It consists of six test rooms with mounting provisions for at least two concurrent test setups and a supply of high-pressure/high-temperature compressed air, hydraulic and electrical power and cooling water for heat and power absorption. The rooms can be used for testing:

- Air turbine starters
- Air turbine starter/accessory drives
- Air turbine starter control valves
- Hydraulic starters
- Electric starters
- Piston engines with horsepower ranges to 8000 HP
- Auxiliary power units
- Gas turbine starter/auxiliary power units
- Gas turbine starters
- Small turboshaft engines

MOBILE ELECTRICAL POWER TEST LABS

Aircraft electrical power quality ground testing can be conducted in any required location, and help to minimize aircraft down time between test events. Mobile lab operators can vary power quality, per the Military Specification, and evaluate the aircraft’s ability to operate under extreme and non-optimal power quality conditions. This capability compliments the MIL-STD-704 lab located in the Electrical Systems Lab. Primary Mobile Lab test features are:

- Portable System for flight line testing
- Modular Components for multiple configurations
- Acquisition parameters up to 70 voltage readings, 20 temperature channels
- Test up to 4 generating systems simultaneously

HUSH HOUSE

The Hush House, is a noise-abated ground test facility. It has a controlled environment that provides 24-hour indoor, full-scale, aircraft-installed, engine and mechanical system testing. It has the capability to create a full-range of conditions and the capacity to house and test everything from UAS to carrier aircraft, and provides the capability to ground test installed aircraft propulsion, mechanical, electrical and pneumatic subsystems in a controlled environment, during static and engine operating conditions. The facility also provides weight and balance capabilities, night vision and low lighting capability testing, water intrusion, heat soaking and wind evaluation capabilities and uninstalled engine testing using simulated mission operational profiles.

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HUMAN MACHINE INTEGRATION (HMI)

NAWCAD provides resources, products, and RDT&E services to optimize human performance in the total system, including the entire compliment of aviation support facilities and equipment on aviation capable ships. NAWCAD integrates Human Factors Engineering; Manpower, Personnel, and Training; health hazards; safety factors; medical factors; personnel survivability factors; and habitability considerations into the system acquisition process. It includes a Crewstation Technology Lab to support the integration of advanced technologies into crewstation designs and assess human performance and a Cognitive and Automation Research lab that provides a test bed environment to empirically assess asynchronous, distributed team collaboration tools and prototype team collaboration technology.

NATIONAL IMAGERY INTERPRETABILITY RATING CAPABILITY (NIIRS)

The NIIRS is a qualitative scale used for rating imagery quality. NAWCAD has the capability to conduct NIIRS evaluations. This capability allows projects to evaluate whether intelligence, surveillance, and reconnaissance requirements have been met to ensure their Image Quality Capabilities meet DoD user needs.

UNMANNED AIRCRAFT SYSTEMS INTEGRATION LAB (UASIL)

The UA SIL provides a facility for systems integration, control station R&D, air vehicle control and mission payload interoperability testing, and workload assessment. Control stations can be integrated into a virtual warfare environment with other manned and unmanned test stimulation assets to facilitate R&E, test, training, and experimentation events with UAS, USV, UUV, and UGV’s.

- Accommodates full spectrum of component level to integrated System of Systems testing in a simulated mission environment
- Supports the integration of manned and unmanned operations, and networking and interoperability in the context of a UAS-relevant mission environment
- Enables the integration of Control Station operations within a system of systems environment
- Supports representation and replication of safety case aspects of FAA Certificate of Authorization
- Hosts ground and flight testing in an controlled and operationally representative environment

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LEAD SYSTEMS INTEGRATION - RAPID PROTOTYPING

NAWCAD has as a proven ability to provide rapid prototyping capabilities to the Joint DoD Warfighter. Some recent examples of prototyping efforts include Digital Flight Control System, Fire Scout APKWS and AIS integration, Harpoon Block III, and UCAS-D carrier airspace integration. NAWCAD has the capability and capacity for aircraft prototyping. Prototypes are rapidly produced in government-owned, government-operated facilities, engineered, and fabricated on an accelerated schedule using tailored processes.

WEAPONS INTEGRATION TESTING

NAWCAD performs a wide variety of aircraft weapons testing including captive carry, safe separation, release, carrier suitability, aircraft integration, and mission planning.

WARFARE ANALYSIS

NAWCAD provides resources to support research and analyses to aid key decision makers in assessing Navy needs and operational requirements. NAWCAD conducts aviation analysis to support early conceptual design and trade studies, requirements generation, acquisition decisions (including analyses of alternatives), general naval aviation related analysis and source selection. Our analytical tools include databases and a wide variety of computer-based models and simulations. Personnel skills include the ability to understand and portray naval warfare operations (including joint operations), provide threat and scenario definitions and generate appropriate operational concepts in defined mission areas.

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**UAS FACILITIES & NEW CONSTRUCTION**

**KEY RESOURCES**

**UAS AND WEAPON SYSTEMS INTEGRATION LABS (SILS)**

- STUAS RQ-21A Integrator SIL
- VTUAV MQ-8B Fire Scout and Tactical Control System hardware-in-the-loop SIL
- VTUAV MQ-8B Fire Scout Hardware-in-the-loop Mission Training System
- BAMS MQ-4C Hardware-in-the-loop SIL
- Navy UCAS Aviation/Ship Integration Facility (NASIF)

**PAX RIVER**

**BAMS TEST AND EVALUATION FACILITY**

The Broad Area Maritime Surveillance (BAMS) T&E facility will seat the BAMS UAS Integrated Test Team composed of 450 engineering and test personnel and provide hangar space and facilities for three BAMS test aircraft. Across the base a BAMS Systems Integration Lab connected by fiber will be ready to support developmental testing in 2012.

**NAVY UCAS AVIATION/SHIP INTEGRATION FACILITY (NASIF)**

The Navy UCAS-D uses the Navy UCAS Aviation/Ship Integration Facility (NASIF) to prototype, integrate, and conduct testing on the X-47B auto-land capability, Air Traffic Control interface, and Air to Air Refueling function with Navy aircraft carriers.

**UAS INTEGRATED PRODUCT TEAM SPACE**

The UAS IPT space will provide space for 45 engineers and logisticians supporting Navy UAS Programs of Record.

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WEBSTER OUTLYING FIELD

UAS OPERATIONS CENTER AT WEBSTER OUTLYING FIELD
This facility will provide a 2,500 sq ft centerfield facility to provide additional situational awareness while promoting integration of manned and unmanned flight operations. The center will be equipped with range safety displays, UAS control displays, and radios for communications with ATC. It will also include an elevated viewing platform for test observers to control UAS operations at the field, two UAS Control Station rooms, a flight briefing room, and a UAS preparation bay.

MARYLAND ARMY NATIONAL GUARD UAS HANGAR AND TRAINING FACILITY
The Maryland Army National Guard (MDANG) regularly conducts RQ-7 Shadow ground and flight training operations from WOLF using the NAS Patuxent River restricted areas. The MDANG is starting construction of a facility to train operators and hangar four Shadows. It is planned to be completed in FY13.

http://www.navair.navy.mil/nawcad/
NAWCAD UAS STRATEGIC VISION

NAWCAD is the country’s Center of Excellence for Naval Aviation. We are the full spectrum RDT&E, and fleet support center for fixed, rotary wing, and unmanned air platforms. We are well positioned with the skills, experience, infrastructure, and facilities necessary to overcome the challenges and take full advantage of the opportunities UAS provide in the 21st century. Our vision is to be the Navy’s Unmanned Air System Center of Excellence by seamlessly integrating UAS-related S&T, RDT&E, and program efforts to provide our customers with capable, reliable, and sustainable weapon systems, on time and within budget.

K-MAX lands at NAS Patuxent River for Electromagnetic Environmental Effects (E3) testing

http://www.navair.navy.mil/nawcad/