AMRDEC Overview

Presented by:

Dr. Juanita Harris(SES)

Director

U.S. Army Aviation and Missile Research,
Development, and Engineering Center, Weapon Development &Integration

Our Mission

Deliver collaborative and innovative technical capabilities for responsive and cost-effective research, product development and life-cycle systems engineering solutions.

We Utilize

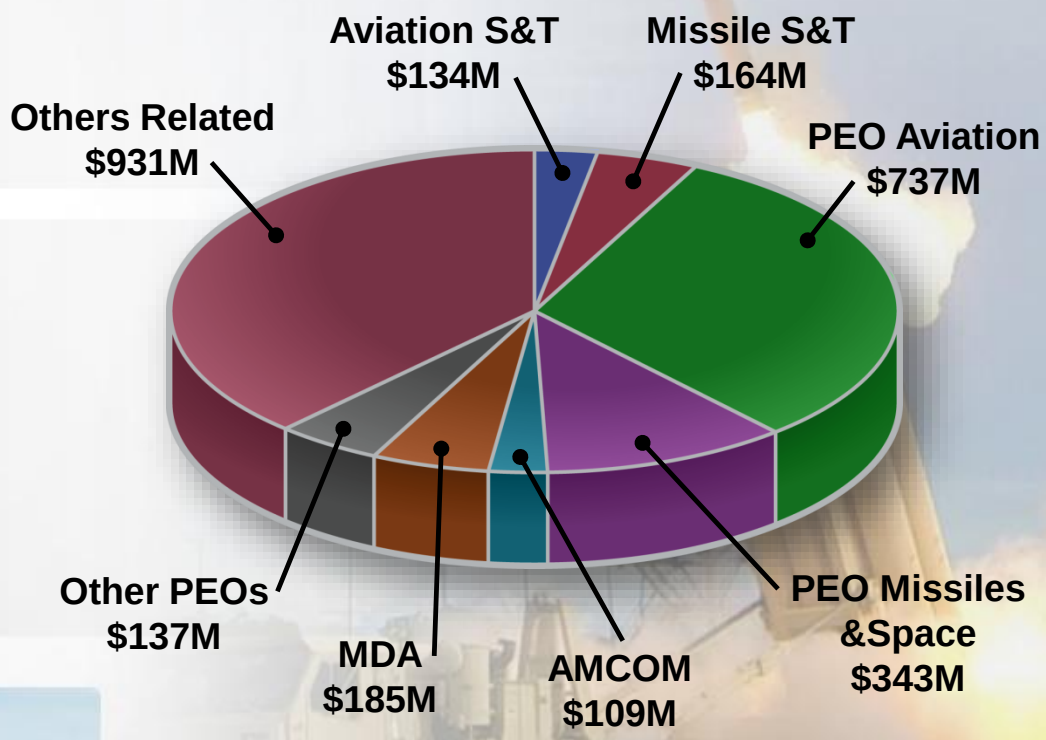
Expert engineering and laboratory capabilities to develop, transition, and sustain technology solutions for a wide variety of Government customers.

What We Do

- Basic and Applied Research
- Technology Development
- Future Systems Development
- Fielded Systems Support
- Rapid Prototyping
- Obsolescence Management
- Technology Refresh

Who We Support

FY14 ($2,740M)



What We Manage

- FY15 Projected Funding > $2.6B
- Over 2.6M square feet in RDTE space
- 266 Facilities – Redstone and Offsite
- Additional unique test facilities and wind tunnels across the US

AMRDEC Personnel & Locations

FY14 Strength = 10138

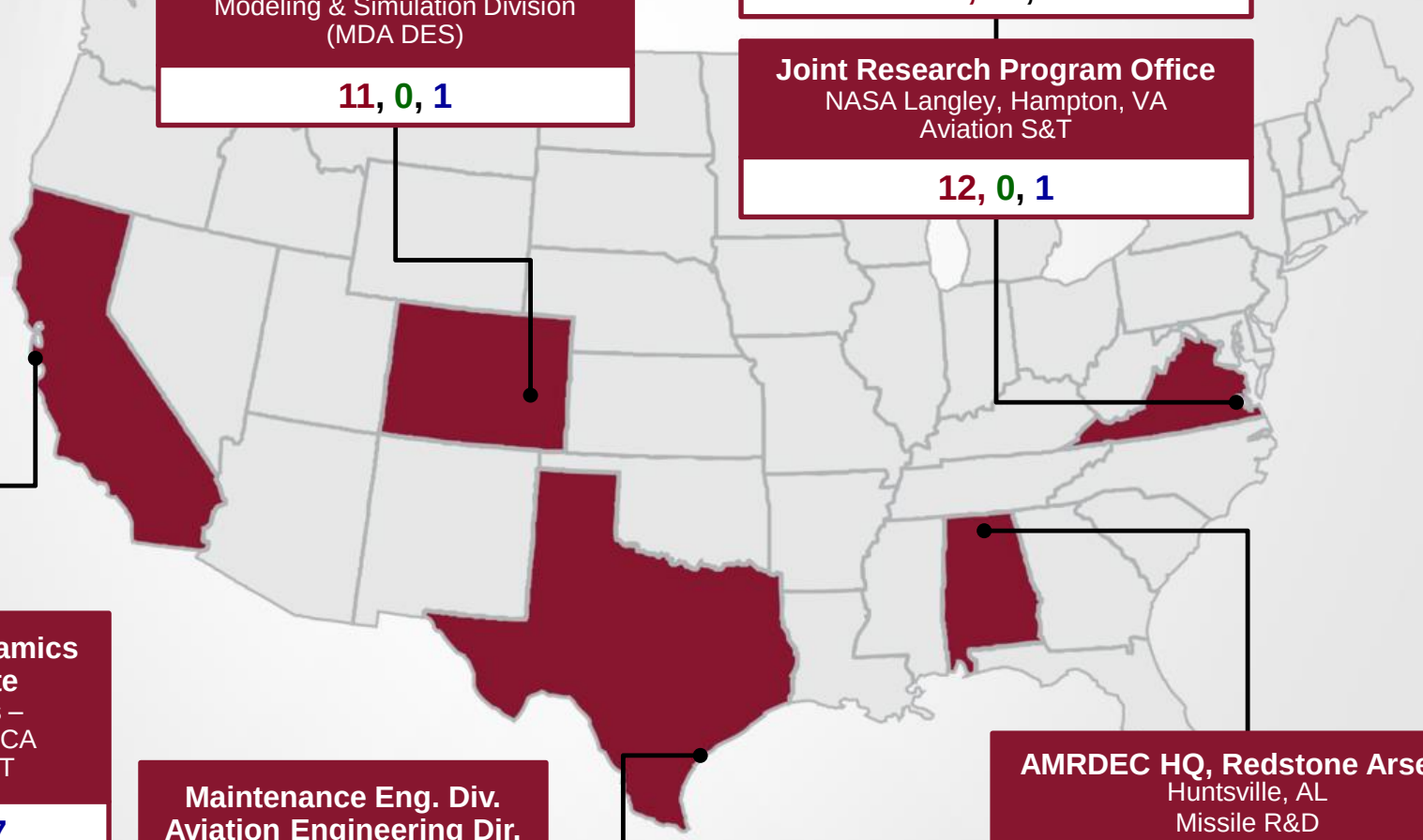
81.0% S&E

Civilian	3028
Military	20
Contractor	7090

Current S&E Personnel

PhD	4%
MS	38%
BS	100%

Average Age: 46.5 yrs



System Simulation and Development Dir.
Colorado Springs, CO Operations –
All Digital Simulation Support to MDA Modeling & Simulation Division (MDA DES)

11, 0, 1

Aviation Applied Technology Dir.
Ft. Eustis, VA –
Aviation R&D, Systems Eng / Special Operations Forces Support

149, 13, 47

Joint Research Program Office
NASA Langley, Hampton, VA
Aviation S&T

12, 0, 1

Aeroflightdynamics Directorate
NASA Ames –
Moffett Field, CA
Aviation S&T

73, 2, 57

Maintenance Eng. Div. Aviation Engineering Dir.
Corpus Christi, TX
Aviation Sustainment Engineering

52, 0, 56

AMRDEC HQ, Redstone Arsenal
Huntsville, AL
Missile R&D
Aviation & Missile Systems Eng.
Aviation & Missile Sustainment Eng. & Field Support

2731, 5, 6928

AMRDEC's Role in the Army Enterprise

ASA(ALT) and AMC

Under Secretary Of the Army
Mr. Brad R. Carson

Ms. Heidi Shyu
Acting ASA(ALT)

+ "the AAE"

Mr. Gabriell Camarillo
Principal Deputy ASA(ALT)

LTG Michael E. Williamson
Military Deputy ASA(ALT)

Ms. Mary Miller
Deputy Assistant Sec
For Research and Tech

SES

Dr. Scott Fish
Chief Scientist

Executive Director
Programs & Tech Trnstn

SES

Executive Director
Strat Pln & Pgm Plng

SES

Aviation
BG Bob Marion

Missiles & Space
BG Neil Thurgood

Combat Supt /
Combat Service Supt

Intel Electronic Warfare & Sensors

Command, Control & Comm-Tactical

PEOs

AMCOM
MG Jim Richardson

Reimbursable Funding

CSA
GEN Raymond Odierno

AMC
GEN Dennis Via

RDECOM
MG John F. Wharton

AMRDEC
Mr. James B. Lackey

SES

SES

Director for Aviation Development

SES

Weapons Development and Integration

S&T Funding

AMRDEC Leadership

MILDEP

Director
Mr. James Lackey
(SES)

Scientific & Technical Positions (STs)

Group Leader /
Flight Control Technology

Optical Sciences

Micro-Sensors & Systems - Vacant
Radio Frequency Sensors - Vacant
Computational Fluid Dynamics - Vacant
Aviation Advanced Design - Vacant

Aviation Engineering (SES)

Weapons Development & Integration (SES)

Aviation Development (SES)

Systems Simulation, Software, & Integration (SES)

Engineering (SES)

Aeroflightdynamics

Aviation Applied Technology

Center Support & G-Staff

Technical Management

Software Engineering

System Simulation & Development

Weapons Development & Integration Directorate (WDI)

WDI Mission & Vision

Our **MISSION** is to provide our soldiers with the **HIGHEST** performance, **GREATEST** reliability weapons possible. Our products and technologies for these weapons are **VITAL** to the **STRENGTH**, the **IMAGE**, and the **SAFETY** of our Nation. We are enablers of full spectrum dominance for the United States

Our **VISION** is to become the **WORLD LEADER** for Weapon Systems Development which allows our Warfighters to accomplish their mission with the **HIGHEST EFFICIENCY**, the **GREATEST SAFETY**, and the **MAXIMUM LETHALITY**

WDI Leadership

Optical Sciences (ST)

Director, MML

Director

Deputy Director

Sr Research Scientist (ST)

Chief Scientist for Energetics

Program Director Advanced Programs

Executive Assistant

Executive Officer

Business Office

Sr Research Scientist (ST)

Associate Director Missile Development

- Protective Technologies
- Missile Technology
- Missile Support & Operations
- Protection Capability Area Lead
- Advanced Technology
- Fire Support Capability Area Lead
- System Design & Integration Tech
- Ground Tactical Capability Area Lead
- Optical Sciences
- Aviation Capability Area Lead
- DARPA Programs
- Program Analysis & Evaluation

Associate Director Propulsion & Structures Division

- Systems & Warheads
- Energetic Materials
- Aerospace Materials
- Platform Integration
- Missile Sustainment
- Controls & Electronics
- Propulsion Technology

(Acting) Associate Director Sensors, Guidance,& Electronics Div.

- Infrared & Optical Tech
- Electronics & Computer Tech
- Image & Signal Processing Tech
- Navigation Technology
- Radio Frequency Technology

Work Across the Acquisition Life Cycle

Science & Technology Programs

- Missile Seekers
- Rocket and Turbine Propulsion
- Counter RAM (Future)
- Vehicle Active Protection
- Target Acquisition Systems
- Precision Guidance Systems
- Aerodynamics and Structures
- Rotorcraft Drives and Controls
- Platform and Weapons Systems Integration
- Aviation and Missile Condition Based Maintenance
- Manufacturing Technology

- Technologies
- Smart Buyers
- Skilled Personnel
- Leveraged Facilities

- Real World Needs
- Unforeseeable requirements
- Transition opportunities

85% of All Revenues

Engineering Talent

- Life Cycle Systems Engineering
- Software Engineering - *Accredited Level 4 CMM*
- High-Fidelity System Level Simulations
- Independent Product / Process Assessment
- Airworthiness Qualification and Release Authority
- Sustainment Engineering Support
- Rapid Prototype Engineering / Integration
- Production / Quality / Reliability Engineering
- Technical / Acquisition Management

AMRDEC's S&T Programs build the base for Engineering Services.

These two sides work hand-in-hand to build Knowledge and Expertise.

What We Do

- WDI serves a Life Cycle Management for DoD missile technology
- Conducts research, exploratory and advanced development, technology demonstration and provide engineering and scientific expertise in all aspects of weapon system design, development, improvement and integration for the Army
- Specific areas include:
  - Sensors
  - Terminal Guidance
  - Advanced Materials
  - Lethal Mechanisms
  - Navigation & Control
  - Data Links
  - Fire Control
  - Propulsion
  - System Design, Demonstration & Integration
- Lead Army agent in the execution of the Missile Science and Technology Enterprise

WDI Demographics

PERSONNEL

Government: 461
Contractor: 458

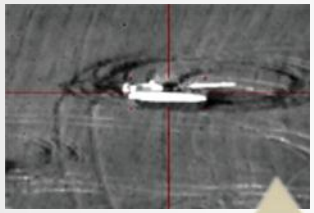
EDUCATION

Master's Degrees: 125
Doctorate Degrees: 39

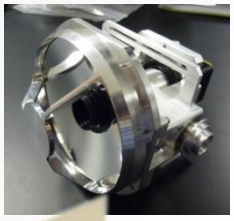
Facilities: 155

WDI Core Capabilities:
Missile Support

Datalink & Communication

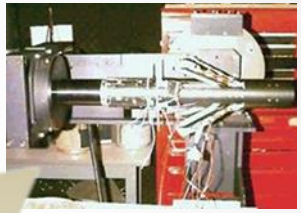


Sensors / Seekers (RF, IR / EO, SAL)

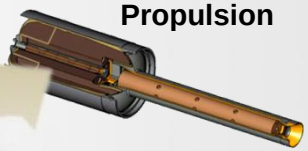


Missile Electronics

Guidance



Propulsion

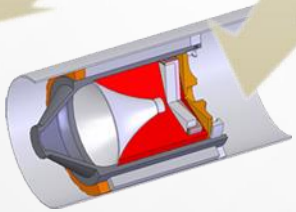


Launcher Electronics

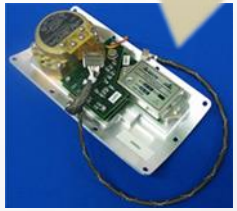
Fire Control Radar

Materials & Structures

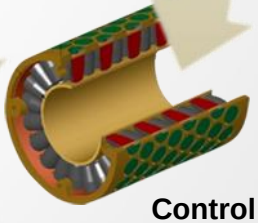
Power



Warhead / Fuze



Navigation Systems



Control Systems

Army Rocket Propulsion Technology & Capability

Design, Analysis, and Fabrication of Composite Structures

- Design: Rocket Motor Cases, Nozzles & Pintles, Launch Tubes, Missile Airframes
- Fabrication: Filament Winding, Fiber Placement, Hand Layup, Autoclave Curing, Compression Molding

Propellant, Explosives & Energetic Materials Research, Development and Characterization

- Propellant and explosive formulation and processing
- New ingredient synthesis and characterization

Propulsion Test and Data Analysis Capabilities

- Explosives Characterization and Testing
- Open Burn / Open Detonation

Design and Integration of New Technologies on to Existing Platforms

- Explosives Characterization and Testing
- Open Burn / Open Detonation

Warhead & Fuze Integration on Both Current Missile Programs and Missile System Technology

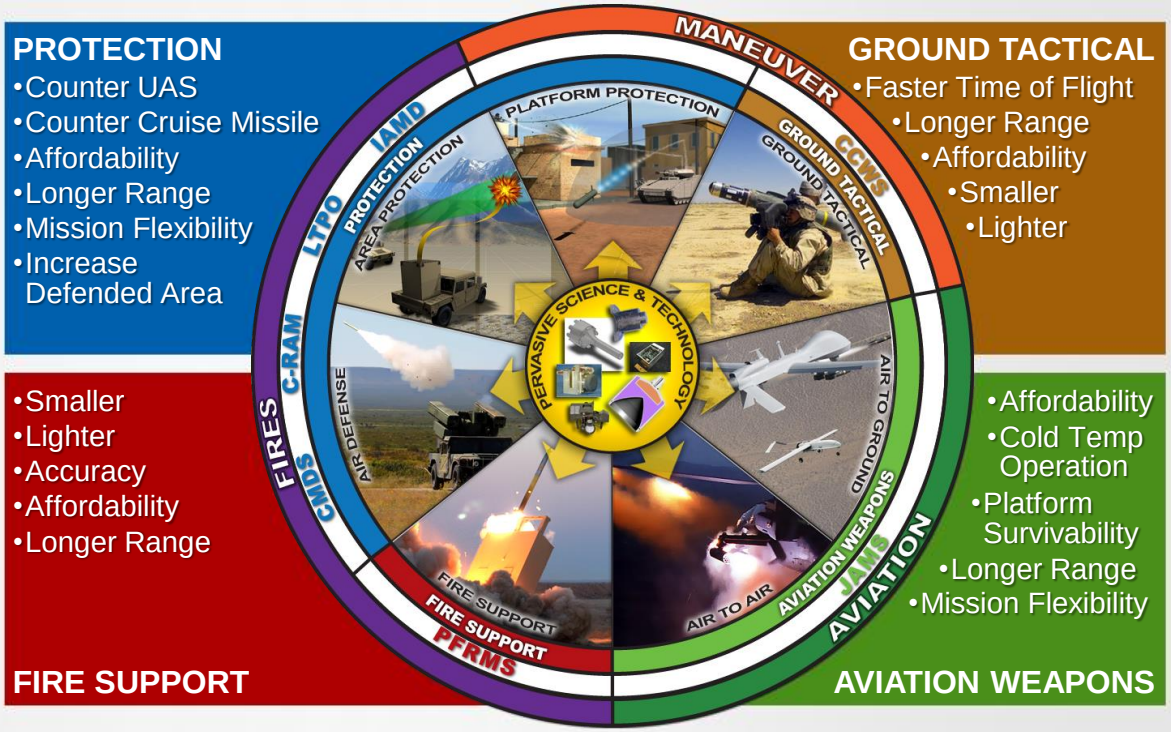
Capabilities in Controls and Electronics Technology Development

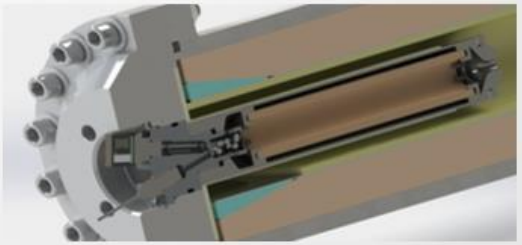
Executes AMCOM Corrosion Program Office

Support to Current Weapon Systems

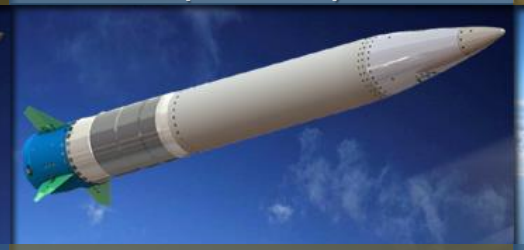
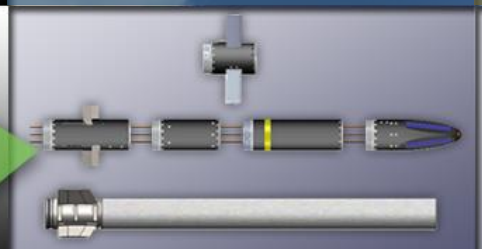
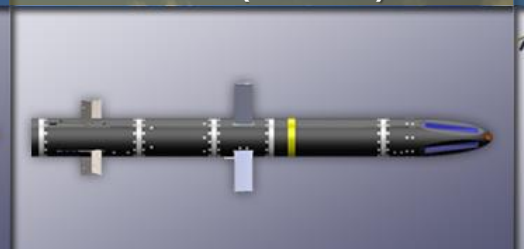
Solid Rocket Motor (SRM) Structural Integrity Analysis, Service Life

Prediction, & Inspection Capabilities





AMRDEC Missile S&T Enterprise

CAPABILITY AREA	NEAR-TERM	MID-TERM	FAR-TERM
GROUND TACTICAL	 LIGHT-WEIGHT COMMAND LAUNCH UNIT (LW CLU)	 NEXT GENERATION CLOSE COMBAT MISSILE(S)	 NEXT GEN PRECISION SHOULDER-LAUNCHED MUNITION (SLM)
PROTECTION	 CUAS AT THE TACTICAL EDGE	 DIGITAL RADAR TEST BED / LOW-COST EXTENDED-RANGE AIR DEFENSE (LOWER AD)	 NEXT GEN LOWER TIER (EXPEDITIONARY INTERCEPTOR, LAUNCHER, FCS)
FIRE SUPPORT	 TAIL CONTROLLED GMLRS (TCG) TECHNOLOGY INSERTION	 LOW-COST TACTICAL EXTENDED RANGE MISSILE (LC-TERM)	 LONG RANGE MANEUVERABLE FIRES
AVIATION WEAPONS	 MMT OPEN ARCHITECTURE COMPONENT DEVELOPMENT	 MODULAR MISSILE TECHNOLOGY (MMT) DROP/GLIDE DEMO	 NEXT GENERATION AIR-TO-GROUND MISSILE

Partnerships

- **Industry**
  - Industry Days
  - Technology Forums
  - Technical Networking
- **Academia, including HBCUs**
- **Open Campus**

U.S. ARMY RDECOM

AMRDEC

AMRDEC Public Site
www.amrdec.army.mil

Facebook
www.facebook.com/rdecom.amrdec

YouTube
www.youtube.com/user/AMRDEC

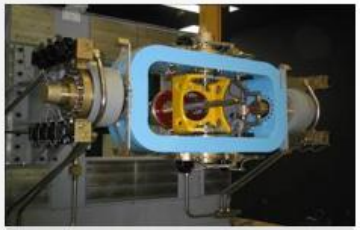
Public Affairs
AMRDEC-PAO@amrdec.army.mil

Unique Facilities at Redstone

Regionally Managed – Globally Executed

Over 2.6 Million Square Feet of RDTE Space

Software Engineering
Accredited Level 4 SEI, Software and Systems Development and Sustainment Organization



Guidance Integration Facility
Systems Functional Integration, Flight Hardware Component Verification

Prototype Integration Facility
Rapid Response for Warfighter Solutions

Weapon Sciences
Basic and Applied Research in Microfabrication and Nanotechnology

Russell Tower
300-foot Tall Facility for Sensor/Seeker Development and Signature Measurements

Automatic Test Equipment
Engineering and Sustainment Support of Fielded Automated Test & Diagnostic Systems

Component Development
Sensors, Seekers, Guidance, Navigation, and Control Development, Measurement and Processing

Advanced Prototype Experimentation
Warfighter-in-the-Loop Simulation Facilities for Missile, Aviation and Unmanned Systems

Hardware-in-the-Loop
Missile Component Simulation in Real-World EM Environments – Infrared, Millimeter Wave and Multi-Spectral

Propulsion & Structures
Energetics Development and Enhanced Lethality

Other Unique Facilities

Regionally Managed – Globally Executed

Test Facilities and Wind Tunnels

Ft. Eustis, VA | Hampton, VA | Moffett Field, CA

Ballistics Test Facility

Ft. Eustis, VA

Fuel Tank Testing to up 30mm Ammunition

National Full Scale Aerodynamics Complex

Moffett Field, CA

Advanced Testing of Full Scale Rotorcraft

Countermeasures Test Facility

Ft. Eustis, VA

Acoustic/Infrared Radiation Testing of Turbine Engines

Large Rotor Test Apparatus

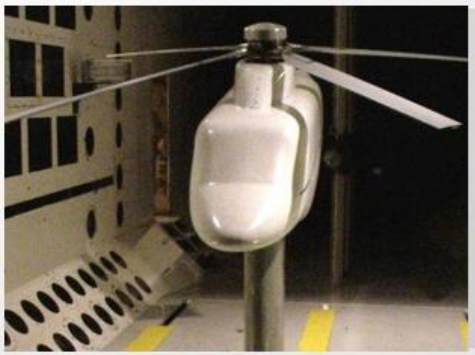
Moffett Field, CA

Full Scale Rotorcraft Component Testing

Structural Test Facility

Ft. Eustis, VA

Rotor Blade Test Fixture for Loads and Fatigue Testing



Transonic Dynamics Tunnel

Hampton, VA

Helicopter Performance, Loads, and Stability Testing