U.S. ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND

AMRDEC OVERVIEW

Dr. Juanita M. Christensen
Director
U.S. Army Aviation and Missile Research, Development, and Engineering Center
Deliver collaborative and innovative aviation and missile capabilities for responsive and cost-effective research, development and life cycle engineering solutions.
BY THE NUMBERS

Core Competencies

- Life Cycle Engineering
- Research, Technology Development and Demonstration
- Design and Modification
- Software Engineering
- Systems Integration
- Test and Evaluation
- Qualification
- Aerodynamics/ Aeromechanics
- Structures
- Propulsion
- Guidance/Navigation
- Autonomy and Teaming
- Radio Frequency (RF) Technology
- Fire Control Radar Technology
- Image Processing
- Models and Simulation
- Cyber Security

FY18 Funding

$3.4B

7%
Aviation S&T

8%
Missile S&T

58%
Army

27%
Other

~9,553
FY18 Strength

2,943
Civilian

23
Military

6,587
Contractor

7%
NASA Ames - Moffett Field, CA

58%
Corpus Christi, TX

27%
Honolulu, Hi

8%
Colorado Springs, CO

AMRDEC HQ
Redstone Arsenal, AL

Joint Base Langley - Eustis, VA

Schofield Barracks, Hi
**AVIATION DEVELOPMENT DIRECTORATE**
- Aviation S&T supports both the current helicopter and future rotorcraft fleets in improving survivability, performance, and affordability
- Current efforts are focused on platforms, power, survivability, vehicle management, and operations support and sustainment
- Future efforts are focused on Future Vertical Lift (FVL)
- Joint Multi-Role (JMR) Technology Demonstrator (TD)
- Focus on Transition to PEO Aviation

**ENGINEERING DIRECTORATE**
- Systems Engineering
- Test and Evaluation
- Production Engineering
- Product Assurance
- Configuration Management
- Prototype Integration Facility / Rapid Response
- Logistics Engineering
- Industrial Base Assurance
- Life Cycle Cost Reduction
- Manufacturing Technology
- Reliability and Maintainability Engineering
- Quality Engineering
- Quality Management

**AVIATION ENGINEERING DIRECTORATE**
- Delegated Airworthiness (AW) Authority
- Systems Engineering
- Aeromechanics
- Propulsion
- Structures and Materials
- Mission Equipment
- Maintenance/Sustainment Engineering
- Foreign Military AW Authority Recognitions

**WEAPONS DEVELOPMENT & INTEGRATION DIRECTORATE**
- 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
- Lead Army agent in the execution of the Missile Science and Technology Enterprise

**SYSTEMS SIMULATION, SOFTWARE, & INTEGRATION DIRECTORATE**
- Hardware-In-the-Loop (HWIL) Models and Simulations for Aviation and Missile Systems
- Conduct Performance and Effectiveness Evaluations for Aviation and Missile Systems
- Design and Develop Virtual Prototyping Facilities for User Evaluations of Aviation and Missile Applications
- Define and Develop Modeling and Simulation Methods and Technologies for DoD Applications
- Computer Hardware/Software Technology
- Independent Verification and Validation (IV&V)
- Aviation Flight Safety/Airworthiness Software Assessments
- Software Development and Sustainment
- Information Assurance/Cyber Security
- Interoperability Engineering and Test (IET)
- Software Fielding/New Equipment Training
- Configuration and Data Management
- Software Quality Engineering
STRATEGIC ROADMAP

LINES OF EFFORT

- **Strategic Readiness**: Provide aviation and missile technology and system solutions to ensure the Soldier victory on the battlefield.
  - Integrated Tech Development & Engineering Services
  - Sustainable Materiel Readiness
  - Future Force
  - Human Dimension/Resource Management

- **Future Force**: Develop and mature S&T to provide technical capability to our Army's (and nation's) aviation and missile systems.
  - Provide innovative S&T/R&D technologies and valued life cycle engineering expertise across the enterprise
  - Provide aviation and missile technology and systems solutions to ensure victory on the battlefield
  - Develop and mature S&T to provide technical capability to Army's aviation and missile systems
  - Develop the engineering talent to support S&T and Aviation and Missile materiel enterprise

- **Soldiers & People**: Develop the engineering talent to support both S&T and Aviation and Missile materiel enterprise.
## Priorities

### #1: Readiness

Provide aviation and missile systems solutions to ensure victory on the battlefield today.

### #2: Future Force

Develop and mature Science and Technology to provide technical capability to our Army’s (and nation’s) aviation and missile systems.

### #3: Soldiers and People

Develop the engineering talent to support both Science and Technology and the aviation and missile materiel enterprise.
Patriot Missions
- Provides verification that software meets all performance and reliability requirements by performing system, software and operation testing
- Maintains an interoperability test bed that is used to perform all PATRIOT Joint Tactical Data Link Certification

Corrosion Mitigation
- Developing new procedures and techniques to combat corrosion on aircraft and missile platforms, ground support equipment and parts and components in storage facilities

Aviation and Missile Composites
- On-site fabrication capabilities ensure aviation and missile structures are built and tested to the requirements demanded by the Army’s combat environments

UH-60V
- Features a digital cockpit that updates legacy analog gauges
- Similar to UH-60M Pilot Vehicle Interface
- Meets Global Air Traffic Management requirements
Airworthiness

- Safely attain, sustain, and complete flight in accordance with approved usage limits
- Deliver responsive airworthiness solutions throughout the system life cycle

Javelin & Javelin Lightweight Command Launch

- Affordability & manufacturing improvements: updated firing module and electronics modules
- Size and weight

Simulations, Trainers, & Integration Labs

- New methods include creating a PVI that closely replicates the actual aircraft
- Optimal mix of tactical and simulated hardware to keep trainers concurrent with aircraft

Lethal Miniature Aerial Missile System (LMAMS)

- Soldier-carried, Soldier-launched precision weapon system
- Allows precision engagement of enemy combatants without exposing the Warfighter to direct enemy fire

Support Readiness
ARMY MODERNIZATION PRIORITIES

#1: Long Range Precision Fires

#2: Next Gen Combat Vehicles (NGCV)

#3: Future Vertical Lift (FVL)

#4: Network/C3I

#5: Air & Missile Defense

#6: Soldier Lethality

Sustain & Train – Crosscutting
Army Modernization Priorities

**Long Range Precision Fires**
- Low-Cost Tactical Extended Range Missile (LC TERM)
- Seekers
- Precision Target Acquisition Seeker (PTAS)
- Land-Based Anti-Ship Missiles (LBASM)
- Long Range Maneuverable Fires (LRMF)

**Future Vertical Lift**
- Joint Multi-Role Technical Demo (JMR-TD)
- Modular Open System Approach
- Modular Missile Technology
- NexGen Tactical UAS
- Multi-Role Small Guided Missile (MR-SGM)
- Single Multi-Mission Attack Missile (SMAM)
- Degraded Visual Environment-Mitigation

**Air & Missile Defense**
- Low-cost Extended-Range Air Defense (LowER-AD)
- Maneuvering Air Defense Technologies (MADT)
- Digital Array Radar Testbed (DART)
BENEFITS FOR THE AMTC OTA

• Gives Army direct access to more than 780 industry partners, to include small businesses

• Increases engagements with those industry partners in the RSA community

• Provides OTA contracting expertise to ACC-Redstone

• Provides an acquisition vehicle to meet the technical and programmatic requirements of the US Army and DoD modernization initiatives

• Fosters development of prototype and advanced manufacturing technologies in support of aviation and missile commodities
“You can only deter your opponent if your opponent believes that you have the will and the capability…readiness has a deterrent value, as well as a war-fighting value.”

Gen. Mark A. Milley, Chief of Staff of the Army
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