RESEARCH AND TESTING CAPABILITIES

UNITED STATES ARMY AEROMEDICAL RESEARCH LABORATORY | FORT NOVOSEL, AL

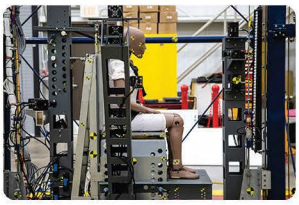
AEROMEDICAL EQUIPMENT TEST & EVALUATION

Aeromedical Equipment testing capabilities consist of electromagnetic interference, altitude, environmentally controlled, and blowing sand/dust/rain chambers; vibration; and acceleration/crash tests equipment retention.

ACOUSTICS AND VESTIBULAR RESEARCH

Acoustics and Vestibular Research capabilities include anechoic and reverberation chambers, an audiometric research facility, an ANSI standardized real-ear attenuation measurement room, and a neuro-otologic rotary chair.

BIODYNAMICS RESEARCH



Biodynamics Research capabilities include a 42-foot vertical acceleration tower, an 42-inch diameter shock tube with 42 and 66-inch diameter expansion cones, and projectile launchers used for studies focused on occupant survivability, injury mitigation, human injury tolerance, and protection criteria using both mechanical and biological surrogates. Medical research support includes digital X-ray, CT scanner, specimen prep, and post-test assessment, along with specimen storage facilities.

EN ROUTE CARE RESEARCH

En Route Care Research capabilities include a ground ambulance medical interior simulator, multiple hi-tech medical simulation manikins designed to mimic injured patients, a custom-built vibration manikin designed to replicate the biodynamic response of a supine human during vibration, and portable digital data acquisition equipment for collecting environmental factors.

HELMET IMPACT AND RETENTION TESTING

Helmet Impact and Retention Testing capabilities include a monorail impact tower, a free-fall impact tower, a mass properties instrument, a Tinius Olsen quasi static test machine, a Instron quasi-static materials tester, two MTS dynamic material testers, multiple high-speed camera systems, and a dynamic mini-sled system.

OPERATOR STATE MONITORING

A full suite of psychophysiological measurement devices is used for conducting operator state monitoring research for Future Vertical Lift. USAARL has the capability to collect, synchronize, and analyze psychophysiological signals to determine workload, as well as acute issues affecting pilots' operational status.

VISION RESEARCH

Vision Research capabilities include a psychophysics laboratory, color vision laboratory, electro-physiology suite, corneal physiology laboratory, highly specialized vision and clinical test instrumentation, and an optical fabrication shop.

FABRICATION SHOP

USAARL's Prototyping and Fabrication workshop brings researchers' ideas to reality with use of a machine shop, fully equipped to deliver a multitude of value to the laboratory.

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LABORATORIES AND SIMULATORS

UNITED STATES ARMY AEROMEDICAL RESEARCH LABORATORY | FORT NOVOSEL, AL

HH-60M BLACK HAWK HELICOPTER

The USAARL's fully equipped HH-60M Black Hawk helicopter can be instrumented with in-flight measurement systems to monitor and record in real time aviator physiological and cognitive status, flight performance, and aircraft performance.

MAN-RATED MULTI-AXIS RIDE SIMULATOR

MARS reproduces the ride of virtually any tracked/wheeled vehicle or aircraft. The simulator is linked with multichannel physiological monitoring, biomechanical measurement, and human performance assessment systems used to assess response in the supine position and study the effects of head-supported mass on Soldier performance.

UH-60M COCKPIT ACADEMIC PROCEDURAL TOOL

USAARL's UH-60M Black Hawk helicopter Cockpit Trainer allows for the evaluation of workload in a digital glass cockpit platform. The device also facilitates the evaluation of aviator performance in reduced oxygen environments simulating high-altitude flight.

ENGAGEMENT SKILLS TRAINER

The Engagement Skills Trainer, a fully-instrumented, simulated small arms range, is used to conduct research on performance of static and dynamic marksmanship under various operational stressors.

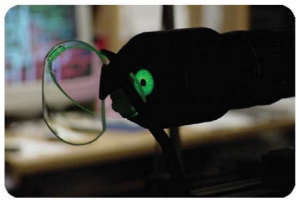
VIRTUAL REALITY LABORATORY

The Virtual Reality laboratory provides an engaging three-dimensional space to assess performance of volunteers in an immersive and operationally relevant mission environment.

UNMANNED AERIAL SYSTEM FLIGHT SIMULATOR

Grey Eagle/Shadow UAS simulator for advanced research in man/unmanned teaming, operator workload assessment, and operator state monitoring.

ELECTRO-OPTICS & NIGHT VISION LABS



The Electro-Optics and Night Vision laboratories are equipped with photometric and radiometric test instrumentation with light measurements traceable to national standards. Advanced display systems can be fully characterized with complete image quality and optical aberration descriptions.

NUH-60FS BLACK HAWK FLIGHT SIMULATOR

USAARL's NUH-60FS is the world's only full-motion, full-visual aeromedical research flight simulator with an RSi CV10R dome and eight Barco FS40 projectors. Capabilities include interchangeable cockpit configurations and the ability to load new symbology sets.

HYPOXIA LABORATORY

The Hypoxia laboratory is a versatile facility for evaluating the sensory, cognitive, and performance effects of aviation-related hypoxia. The use of normobaric hypoxia permits seamless integration with USAARL flight simulators.

FORGE THE FUTURE