

The logo of the Air Force Research Laboratory is a shield-shaped emblem. The top portion is blue with a yellow sunburst in the upper right and three white stars in the upper left. The bottom portion is yellow with a white and grey stylized aircraft or missile shape. A white banner at the bottom contains the text "AIR FORCE RESEARCH LABORATORY" in blue capital letters.

**HERITAGE PAMPHLET OF THE
AIR FORCE RESEARCH LABORATORY**

Air Force Research Laboratory - History Office

AFRL Emblem



BLAZON: Azure, a flight symbol ascending bendwise Argent garnished Gray fracted and rolling back the field lined of the last voided Or; to dexter five mullets in pale White and in sinister chief a polestar of sixteen, Yellow; all within a diminished bordure of the last. Approved on 22 July 1997 (AFHRA 97-086).

MOTTO: None.

SIGNIFICANCE: Blue and yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. The flight symbol represents all types of Air Force flight craft – fixed wing, missile, and spacecraft. The craft ascends to the heavens, indicating future goals as connoted by the celestial star. The five stars in line reflect the unit's succession from previous units and its collective heritage. The flight symbol pierces the blue night sky, revealing that through research and development, the light of understanding replaces the darkness of the unknown.

AFRL MISSION

AFRL's mission is to "lead the discovery, development, and integration of affordable warfighting technologies for our air, space, and cyberspace forces."

AFRL LINEAGE AND HONORS

Unit Designation: HQ, Air Force Research Laboratory

Authority: Special Order GA-9, HQ AFMC, 1 Apr 97

Higher Headquarters: HQ, Air Force Materiel Command

Commander: Major General Richard R. Paul, 8 Apr 97-14 Apr 00
Brigadier General Paul D. Nielsen, 14 Apr 00-29 Jun 01
Major General Paul D. Nielsen, 29 Jun 01-25 Jun 04
Brigadier General Perry L. Lamy, 25 Jun 04-31 May 05
Major General Perry L. Lamy, 1 Jun 05-08 Nov 05
*Lester McFawn, SES, 09 Nov 05-09 Jan 06
Major General Ted F. Bowlds, 09 Jan 06-30 Sept 07
Lt Gen (sel) Ted F. Bowlds, 01 Oct 07-24 Oct 07
^Maj Gen Curtis M. Bedke, 25 Oct 07-26 Jun 09
^Joe Sciabica, SES (Acting), 27 Jun 09-05 Aug 09
^Maj Gen Curtis M. Bedke, 06 Aug 09-11 Feb 10
Maj Gen Ellen M. Pawlikowski, 12 Feb 10-12 May 11
Maj Gen William N. McCasland, 13 May 11-29 Jul 13
Maj Gen Thomas J. Masiello, 29 Jul 13-

Vice Commander: Colonel Dennis F. Markisello, 8 Apr 97-28 Jun 98
Colonel James R. Heald, 29 Jun 98-09 Apr 01
Colonel Larry D. Strawser (Acting) 10 Apr 01-29 Jun 01
Colonel Michael L. De Lorenzo, 30 Jun 01-1 Jul 03
Colonel David E. Walker, 1 Jul 03-09 Jul 06
Colonel G. Scott Coale, 10 Jul 06-20 Jul 07
Col David B. Glade II, 21 Jul 07-20 May 09
Col Gary M. Konnert (Acting), 21 May 09-30 Jun 09
Col Daniel P. Morin, 01 Jul 09-14 Jul 12
Col Roger M. Vincent, 15 Jul 12-

Units Assigned: Research Site Detachment 1 [Wright-Patterson AFB, OH]
Research Site Detachment 4 [Rome, NY]
Research Site Detachment 6 [Eglin AFB, FL]
Research Site Detachment 7 [Edwards AFB, CA]
Research Site Detachment 8 [Kirtland AFB, NM]
Research Site Detachment 14 [Air Force Office of Scientific Research [Arlington, VA]
Research Site Detachment 15 [Maui, HI]
Research Site Detachment 16 [London, England]**
711th Human Performance Wing

Units Gained: None

Units Lost: Research Site Detachment 2 [Tyndall AFB, FL]
Research Site Detachment 5 [Ft. Sam Houston, TX]

Units Gained: None

Awards and Decorations: None

*General Lamy was relieved of duty 08 November 05 and Mr. McFawn was appointed Interim Director of AFRL 09 November 05.

^Effective 29 Jun 09, Gen Bedke was detailed to a special assignment and Mr. Sciabica was designated as Acting Commander in his absence.

**Under Special Order GA-22, effective 29 Aug 2008, Det 16 Research Site, London, UK was activated under AFRL. At the same time, Det 1, AFOSR at London, UK was inactivated. This information was not received until May 2014.

AIR FORCE RESEARCH LABORATORY: A BRIEF OVERVIEW

On 8 April 1997 four Air Force research laboratories, the Air Force Office of Scientific Research, and the Air Force Materiel Command Science and Technology Headquarters (HQ AFMC/S&T) were consolidated into a “transitional” organization. On 31 October 1997 a second phase commenced. The four laboratories (which contained twenty-two technology directorates) and a technology transition office (which had reported directly to HQ AFMC/S&T) were inactivated. At this time, the Air Force Research Laboratory (AFRL) became, in fact, one laboratory. This transformation was intended to streamline laboratory organizational structure, consolidate resources and accountability, reduce technology fragmentation, and focus laboratory activity.

On 31 October 1997 nine technology directorates were created within AFRL and a Signature Technology Office was absorbed into AFRL. Also, 115 divisions, 351 branches, and five planning staffs were consolidated into 50 divisions, 192 branches, and one planning staff. Detachment commanders were created at the eight largest research locations for administration and oversight of AFRL’s troops.

Since its inception, AFRL’s total obligation authority (TOA) budget has annually exceeded \$2 billion and its personnel have numbered more than 8,000. Since 1997 the number of “assigned” personnel has diminished while the number of on-site contractors has increased.

During seventeen years of pioneering activity AFRL has undertaken many projects. These included creation of an AFRL strategic plan, an AFRL corporate strategy, and the Air Force science and technology plan, baselining of integrated technology thrusts, and implementation of activity-based costing initiatives and acquisition reform.

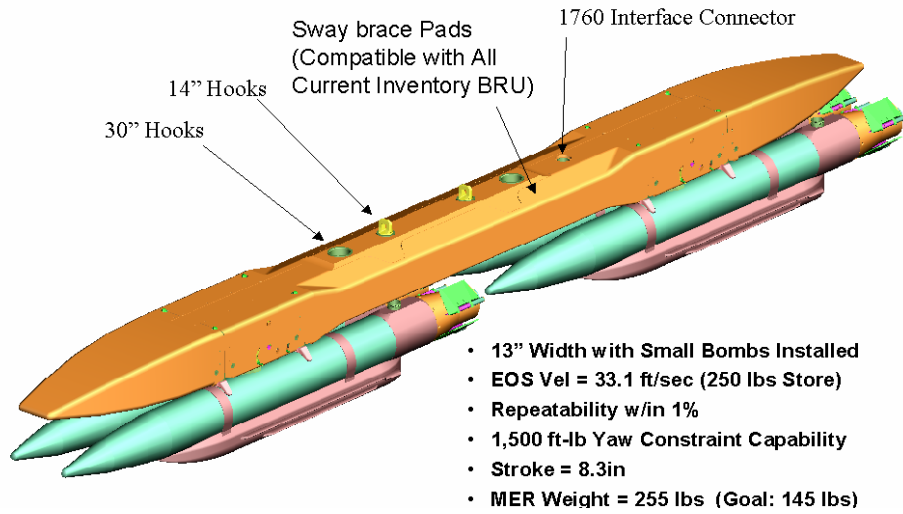
Since AFRL's inception, its technology directorates have worked upon more than one thousand projects. These have included activity transitioned from the four laboratories and items of more recent vintage. As components of what is now one lab, the technology directorates have placed special emphasis upon cooperating to overcome technical challenges and upon filling "gaps" in the Air Force's S&T repertoire. Major technical activities of note have included space-based surveillance, protection, and innovation. A creative example of the latter has been a series of programs that explore the use of many, relatively inexpensive, little satellites in lieu of one large one. Directed energy applications in tactical airborne combat, studies of lasers and advanced space optical systems, explorations into large lightweight optical apertures and compensation methods, beam control, and high power microwave command and control information warfare have advanced. Research has progressed along the contours of radio frequency sensors and countermeasures, electro-optical sensors and countermeasures, and automatic target recognition and sensor fusion. Research into military uses of information has blossomed under the rubrics of global information exchange, global awareness, and dynamic planning and execution.

Turbine engine and rocket engine propulsion technology has been carefully studied as well as development of jet fuel, and the aptly-named "more electric aircraft." Even when undertaken with constrained resources, activity grouped under the heading of "human effects" has moved forward in the areas of warfighter training, bioeffects and protection, crew systems interface, and deployment and sustainment. Similarly, a bout with constrained resources has not impeded advances by "air-vehicles" specialists in the field of computational electromagnetic scattering simulations, or with the development of an effective automatic ground collision avoidance system, or with work on active aeroelastic wings and a space operations vehicle. Research with materials and manufacturing technologies has involved composites, robotics applications, and thermal management in spacecraft. Munitions research has proceeded on a

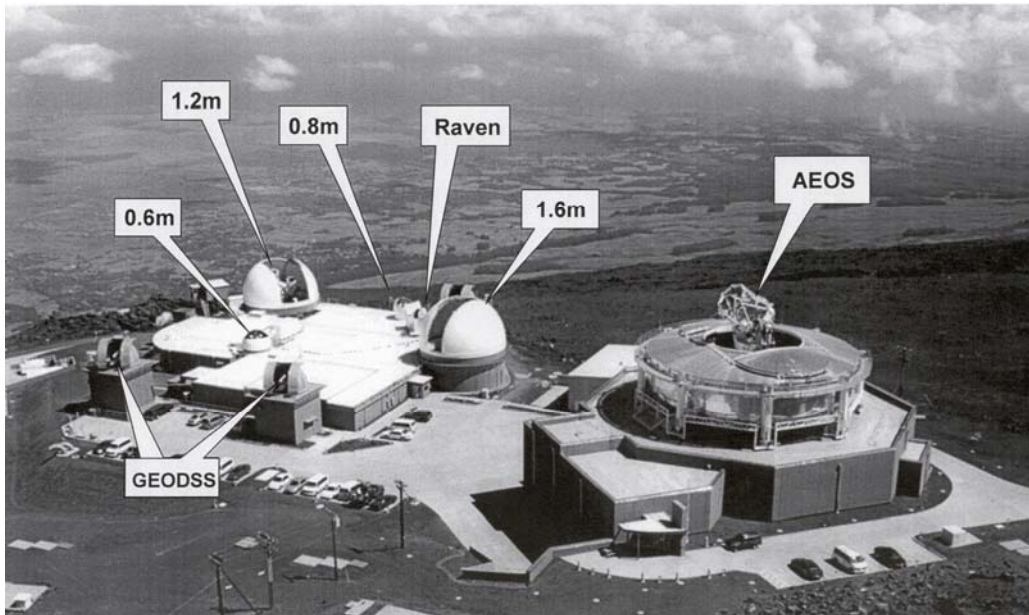
myriad of topics including small smart bombs, an air superiority missile, GPS anti-jam technology, the revolutionary AFX-757 explosive, and the Powered Low-Cost Autonomous Attack System. The Air Force Office of Scientific Research continued to fund and oversee basic research that focused upon aerospace and materials sciences, chemistry and life sciences, physics and electronics, and mathematics and space sciences.

Today, as appreciation for research and development in the Air Force expand, AFRL continues its paradigm-shifting research. Its leadership strives to improve the lab's R&D, its personnel practices, and its corporate communications. These activities include intensive involvement with Scientific Advisory Board S&T reviews, modification of the AFRL personnel demonstration project, and continuing implementation of proposals found in the "Science and Technology Workforce for the 21st Century" report. These also include use of applied technology councils—mechanisms to ensure transition of technology from AFRL to the warfighter--and work on a centralized business process intended to reflect the unity of the lab, providing "single-truth" data for the daily management and defense of the S&T budget.

SSBREX and SMER configuration



Maui Space Surveillance Site Telescopes



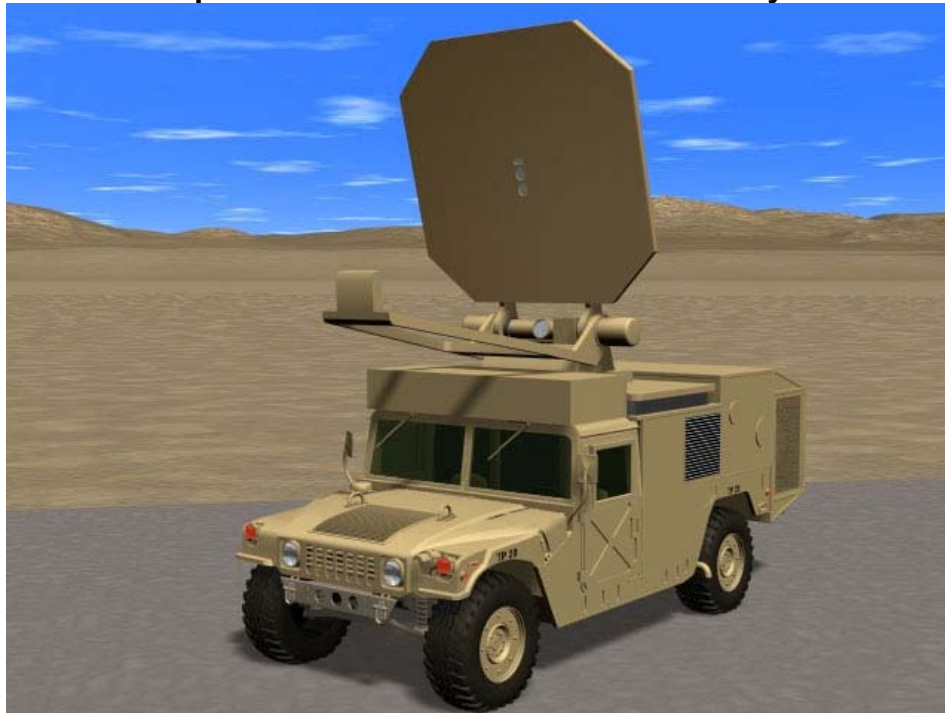
KC-135/UAV Wind Tunnel Test



L – Band Antenna Installation



Concept of Vehicle Mounted Active Denial System



The X-51A Scramjet Engine Demonstrator

