



FIFTY YEARS OF **AFOTEC** OPERATIONAL TEST 1974-2024



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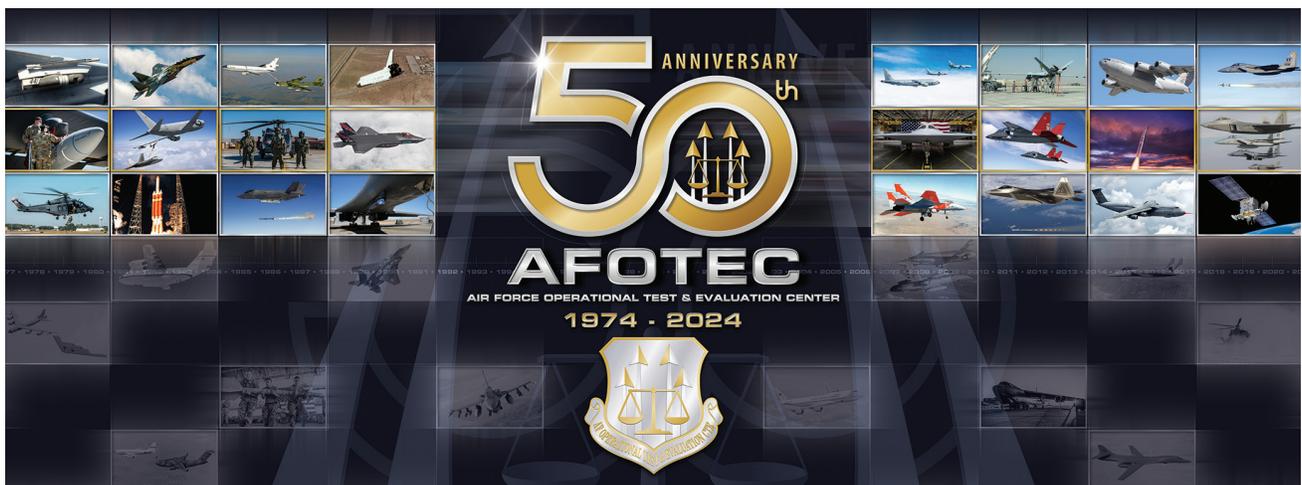
The Air Force Operational Test and Evaluation Center (AFOTEC) integrates the field experience of operators with operational test expertise to test and evaluate new and upgraded systems and airframes in operationally realistic environments. The independent and data-driven information AFOTEC provides influences Air Force and Department of Defense acquisition decisions at the highest levels. Test has been called the “conscience of acquisition,” and the center now proudly celebrates fifty years in service to that ideal.

AFOTEC arose as numerous sources agreed on the need for independent operational test and evaluation (OT&E). These included a Deputy Secretary of Defense (DEPSECDEF) requirement for operational test agencies (OTA) separate and distinct from both the developer and the user, and a 1973 military budget authorization requiring Initial OT&E (IOT&E). The Air Force established the Air Force Test and Evaluation Center (AFTEC)¹ on January 1, 1974, as its operational test agency reporting to headquarters USAF. In April 1974, AFTEC achieved initial operational capability with 80 personnel and 18 major programs. On April 4, 1983, AFTEC became the Air Force Operational Test and Evaluation Center, emphasizing the operational nature of its mission. With the establishment of the U.S. Space Force (USSF) in December 2019 and the transfer of personnel and test programs, AFOTEC became the Space Force’s Operational Test Agency, as well, and continued in that role until December 2023.

In the 1970s, AFOTEC established itself as the center for Air Force OT&E, testing the boundaries of its authority and assuming greater responsibility for OT&E. AFOTEC faced conflicts early on between existing policies and regulations and with obtaining funds to conduct operational test. Removing authority for some OT&E from the operating and supporting major commands (MAJCOM) also created some conflict. Still, AFOTEC conducted OT&E of some of the many Air Force systems still in the inventory today. These included the E-3 Sentry Airborne Warning and Control System, the A-10, B-1, F-15, and the Lightweight Fighter, which led to the F-16. Center leadership established a Space and Reconnaissance Division and worked to claim AFOTEC’s designated role in OT&E, including arguing for and winning OT&E of the Cold War Air Force Satellite Communications (AFSATCOM) program for command and control of nuclear forces. AFOTEC had established itself as the place for Air Force OT&E in only five years.

The 1980s saw a period of reform in acquisition and drove AFOTEC to examine its mission and organization. AFOTEC appointed a chief of staff and drafted its first mission statement. In 1982 AFOTEC adopted Reagan era reforms and decentralized test authority by delegating program management to Detachment 2, created in 1977, and

¹ NOTE: The center is referred to as AFOTEC throughout.





F-15A 1st Flight, photo credit: Boeing



F-4 over Edwards AFB, photo credit: U.S. Air Force



AIM-120D-3 AMRAAM F-16 Release, photo credit: U.S. Air Force



B-2 over Kosovo, photo credit: U.S. Air Force



E-8 JSTARS, photo credit: U.S. Air Force

the new Detachment 5. While early involvement could not stem rising costs or schedule, changes in policy and law resulted in AFOTEC becoming involved in OT&E earlier and earlier. New regulations meant both development and operational test requirements appeared in Test and Evaluation Master Plans for the first time and AFOTEC also brought measures of readiness, reliability, and sustainability to bear along with system performance as key parts of OT&E.

AFOTEC conducted OT&E of a large number of major programs familiar to us during the 1980s. AFOTEC tested the F-15E Strike Eagle dual-role fighter, as well as navigation/targeting systems and low-level laser-guided bombs for the F-4 and F-117. All would help shape the outcome of Operations ALLIED FORCE in Kosovo, as well as DESERT STORM. AFOTEC facilitated the nation's nuclear capabilities with OT&E of the Peacekeeper Advanced Intercontinental Ballistic Missile (ICBM) and both the Air- and Ground-Launched Cruise Missiles. Space systems under test included an offensive space capability, the F-15 Anti-Satellite (ASAT) program, as well as major Air Force satellite systems, including the Navigation Satellite Timing and Ranging Global Positions System (NAVSTAR GPS), which would revolutionize military operations and civilian life.

AFOTEC became a Direct Reporting Unit on February 5, 1991, and adjusted to efforts to overhaul OT&E in the 1990s. The first Program Executive Officers emerged to oversee acquisition programs. Headquarters made former AFOTEC Commander Lt. Gen. Howard W. Leaf (USAF, retired) the first Air Force Director of Test and Evaluation (AF/TE). Leaf increased AFOTEC's mission set to include all IOT&E, Qualification Operational Test and Evaluation (QOT&E) for programs without RDT&E funded development, and some Follow-On OT&E (FOT&E). Changes in 1992 to the Operational Assessment process redirected it towards early reviews of effectiveness and suitability, and a new policy in 1996 introduced test of experimental systems as Advanced Concept Technology Demonstrations. Under resource and manpower pressure, AFOTEC created a critical need list to prioritize its projects in 1999. AFOTEC also continued OT&E of systems used in ALLIED FORCE and DESERT SHIELD/STORM, such as the AIM-120 Advanced Medium-Range Air-to-Air Missile, its most high-visibility program, accelerated for DESERT STORM. AFOTEC tested GPS-aided weapons like the Joint Stand-off Weapon (JSOW) as the military built on the promise of GPS. Following AFOTEC's IOT&E of the B-2, the Air Force employed the stealth bomber on the first nights of ALLIED FORCE, DESERT STORM, and Operation ENDURING FREEDOM (OEF). Another AFOTEC program fast-tracked for DESERT STORM, the E-8C Joint Surveillance and Target Attack System (JSTARS), provided battlefield intelligence until 21 September 2023. After AFOTEC's OT&E of the Joint Direct Attack Munition (JDAM), it became the smart bomb of choice. IOT&E of the C-17 helped modernize airlift, and IOT&E of Titan IV rocket and launch system upgrades provided continued access to space.

AFOTEC OT&E programs once again advanced Air Force capabilities in the 2000s both in new technologies, such as directed energy, as well as systems to equip the service for overseas contingency operations. Remotely piloted aircraft like the Global Hawk (RQ-4) and unmanned autonomous aerial vehicles like MQ-1 Predator underwent test at

AFOTEC during this period and later supported OEF. The Air Force released the RQ-4 Block 10 before completion of test and evaluation to support combat missions less than 48 hours later. In August 2001 AFOTEC funded a study of high energy laser off-board sensing and completed an early Operational Assessment of the Airborne Laser; by 2009 the prototype successfully engaged and simulated a missile intercept. America gained air superiority in part due to AFOTEC's efforts in IOT&E of the F-22 Raptor, released to combat squadrons in December 2005, and as early operational assessment of the F-35 Joint Strike Fighter began. The need to minimize collateral damage resulted in AFOTEC's IOT&E of the GBU-39B Small Diameter Bomb (SDB). AFOTEC also accelerated test projects urgently required by the field such as the Air Combat Command request for a Laser-Guided Joint Direct Attack Munition in May 2008. AFOTEC's operational test supported systems to address the risk of chemical, biological, or other weapons with programs such as the Joint Biological Agent Decontamination System and Joint Service Warning and Reporting.

In the second decade of the twenty-first century, AFOTEC tested programs to equip the warfighter for OEF and sustain readiness under Great Power Competition. In recognition of the senior role its leadership played, AFOTEC appointed its first Executive Director in 2010. A member of the Senior Executive Service, AFOTEC's senior civilian and General-Officer (GO) equivalent represented the commander on GO and SES-level occasions. AFOTEC also continued to turn quick reaction capability test projects to support warfighter needs. AFOTEC's operational test of the Battlefield Airborne Communications Node (BACN), for example, met a number one CENTCOM priority for relay communications beyond-line-of-sight in hilly or mountainous areas during OEF. AFOTEC's involvement supported early fielding to the theater. In 2011, AFOTEC's OT&E answered an urgent request from U.S. Central Command to lessen collateral damage, resulting in fielding of the Very Low Collateral Damage Weapon. Center testers bolstered efforts to update and re-equip bombers, including OT&E of the B-2 Flex Strike bomber improvement program, as well as the B61 Service Life Extension Program (SLEP) Tail Kit Assembly (TKA), which supported modernization of the Air Force's nuclear capabilities. Recapitalization efforts received a boost from AFOTEC's efforts as test of the F-35 continued and the Air Force approved the KC-46A Pegasus for IOT&E.

By the third decade of the 21st century, AFOTEC continued to support recapitalization and revitalization of capability after two decades of OEF and frequent budget turmoil. The nation also faced new challenges with the COVID pandemic, and AFOTEC helped the Air Force meet those challenges. In 2020, AFOTEC executed OT&E in support of projects for a U.S. Transportation Command urgent request for safe transport of COVID patients, completing test of two system in less than two months. AFOTEC again became involved in experimentation, testing networked drones for swarming and autonomy. Center testers influenced airframe design after early tests of the MH-139A Grey Wolf and the T-7A, the latter corrected before first flight. AFOTEC personnel tested a new bomber in the B-21, a new fighter in the F-15EX, and put F-35 IOT&E to bed after a herculean effort assuring the credibility of the Joint Simulation Environment for virtual test/training. Center personnel conducted OT&E of hypersonic weapons like the Air-Launched Rapid Response Weapon and made



RQ-4 Global Hawk, USAF photo credit: Greg L. Davis



F-117 dropping GBU-28, photo credit: MSgt Edward Snyder



B61 Tailkit Flight Test, photo credit: U.S. Air Force



KC-46 Refuels F-35, USAF photo credit: Ethan Wagner



1st AF T-7A, USAF photo credit: Bryce Bennet



F-35 Pre-IOT_E at Eielson AFB, photo credit: U.S. Air Force



CV-22 Flight Test, photo credit: U.S. Air Force



B-21 Raider Unveiling, photo credit: U.S. Air Force

progress toward revitalizing the land-based portion of the nuclear triad in the Sentinel program.

Between 1974 and 2024, AFOTEC conducted operational test and evaluation activities supporting the national defense, helping to best equip the Air Force to accomplish its mission. The center has supported the Combat Air Forces with fourth- and fifth-generation fighters from the F-4G Wild Weasel to the F-35 Joint Strike Fighter. AFOTEC personnel have tested weapons from the AIM-120 to hypersonics, and space systems from upgrades to the Titan IV for access to space to the invention of GPS. The expertise of AFOTEC's test personnel facilitated upgrades to the nation's nuclear capabilities from the Peacekeeper to the Minuteman III and its replacement, the Sentinel ICBM. AFOTEC's operational testers have supported air mobility from the KC-135 to the KC-46A. Combat search and rescue and special operations have benefited from the center's OT&E of fixed and rotary-wing aircraft, from the HH-60G to the CV-22/MV-22 and AC-130 gunship, to the HH-60W Jolly Green II. AFOTEC's input supported upgrades to the bombers that form the backbone of American air superiority and support 21st century warfare in OT&E of the B-21 Raider. AFOTEC has supported efforts from experimental backscatter radar to the Airborne Laser and from remotely piloted/unmanned aerial vehicles to commercial flying cars. Its personnel have provided expertise and leadership from test of the cybersecurity of our most important platforms to ensuring the credibility of the DoD's most advanced modeling and simulation test/training capability, the Joint Simulation Environment. AFOTEC has postured the Air Force to use data as a weapon system, leaning forward to exploit the untapped potential of F-35 capability. Indeed, the success of many of the Secretary of the Air Force's seven operational imperatives will rest in part on the efforts of AFOTEC's personnel. For over fifty years, AFOTEC has supported warfighters in every corner of the globe. We stand ready to continue that mission today.



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