Bureau of Alcohol, Tobacco, Firearms and Explosives

ATF

Fact Sheet

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ATF NATIONAL LABORATORY CENTER

The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) National Laboratory Center (NLC), opened in 2003, is the centerpiece of ATF's Laboratory Services Division. The NLC, located in suburban Maryland, is home to the Forensic Science Laboratory, the Fire Research Laboratory and the Laboratory Services administrative office.

Forensic Science Laboratory — Washington

The Forensic Science Laboratory — Washington evaluates evidence obtained in criminal investigations involving alcohol, tobacco, firearms, explosives and suspected arson. It offers the following services:

Firearm and Toolmark Examination — The ATF laboratories are among the few forensic laboratories in the world that provide full service in all areas of firearm and toolmark examinations. These include: examination of firearms; comparison and identification of bullets and cartridge casings; restoration of obliterated serial numbers; determination of firing distances; identification of toolmarks related to bombing and arson incidents; and crime scene reconstruction in shooting incidents. Expertise in firearm and toolmark examinations allowed ATF to connect the dots in the investigation of the October 2002 sniper shootings that terrorized the metropolitan Washington, D.C., area.

National Integrated Ballistic Information Network (NIBIN) Program — The ATF forensic laboratories are an integral part of NIBIN, a nationwide program using the Integrated Ballistics Identification System (IBIS). This computer system, combined with microscopy and digital imaging, quickly searches databases for matching toolmarks left by a firearm on fired bullets and cartridge casings. This search allows trained specialists to associate evidence in crimes committed with firearms in multiple locations throughout a geographical region. Without the system, it would take years to comb through evidence in many locations and to identify fired ammunition components with a particular firearm.

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Explosives Examinations — The ATF forensic laboratories perform more explosives examinations than any laboratory in the world, and have played key roles in the investigation of the 1993 World Trade Center bombing, the 1995 Oklahoma City bombing of the Murrah Federal Building, the Sept. 11, 2001, terrorist attacks and other major criminal and industrial explosions. ATF's forensic chemists are specially trained in the identification of explosives and components of explosive devices. Evidence collected at scenes of explosions is examined to identify the type of explosive used as well as all the parts of the explosive device. These can include: blasting caps; leg wires; fuses; timing mechanisms; batteries; radio controlled components; igniters; containers; wire; tapes; and any other parts that may have been used to make the device. The forensic chemists work closely with investigators to find device components that will help link a suspect to the crime. Physical evidence recovered in the course of explosives-related investigations may be mostly intact or may consist entirely of debris.

Fire Debris Analysis — ATF's forensic laboratories have specialized in supporting fire investigations and the examination of evidence involving fire investigations of federal interest for more than 35 years. The primary role of the fire debris chemist is the examination of evidence for the recovery and characterization of any ignitable liquid residues in the debris sample. Commonly, these residues would be from gasoline, kerosene or charcoal lighter fluid. The ATF Forensic Laboratory's work was critical to the 2005 arrest of a serial arsonist responsible for setting more than 40 fires in the Washington, D.C., area.

Alcohol and Tobacco Diversion — Examinations are supported by chemists conducting chemical, physical and instrumental analyses on suspect or illicit alcohol and tobacco products. The chemist examines evidence to determine authenticity of the alcohol and tobacco products and their packaging.

DNA Analysis — Small amounts of DNA left behind by individuals at crime scenes can be detected and used to associate that person with a particular item of evidence. DNA is recovered from biological materials such as blood, saliva, skin cells and perspiration. A wide variety of items are currently suitable for analysis, and ATF biologists are engaged in efforts to improve ATF's ability to recover DNA from degraded items, such as those found at arson and bombing scenes, as well as items with minimal amounts of DNA, such as firearm triggers and grips.

Fingerprint Examination — Fingerprints are an infallible and widely recognized means of personal identification. Their uniqueness and permanence makes the identification of latent prints (those left unintentionally on surfaces) one of the most valuable forms of forensic evidence. In the history of fingerprint identification, no two fingerprints have ever been found alike in friction ridge detail. The friction ridge details of fingerprints are formed during fetal life and remain unchanged until death. Ridge

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details are never duplicated in another individual, including identical twins. Although attempts have been made to disguise a person's fingerprints through surgery and disfigurement, these man-made changes only enforce the theory of individualization. Most evidence received in the forensic laboratory can be examined for the presence of identifiable latent prints and includes: documents; component parts of bombs and incendiary devices; and firearms.

Questioned Document Examination — Questioned document (QD) examination dates back as early as the mid 1800s in England and the United States and has been accepted and utilized in court systems around the world ever since. The most common cases are those involving handwriting or signatures on legal documents such as titles, wills and contractual agreements. Others include altered or forged items such as bank checks and immigration documents. ATF QD examiners typically examine written entries on federal firearms application forms and writing on various pieces of evidence from explosives cases such as mailing labels and threat notes.

Fire Research Laboratory

ATF's Fire Research Laboratory (FRL) is the first facility in the world dedicated to supporting fire scene investigations. The FRL has the ability to simulate full-scale fire scenes to determine how fires begin and spread.

Using the FRL's unique facilities, the staff applies sophisticated instrumentation to perform forensic fire science and engineering analyses to address fire growth and fire dynamics questions that often arise as investigators probe a fire scene. The fire tests and analyses conducted help investigators to better understand fire timelines, assess witness statements and correlate fire scene damage to the fuel loads and ventilation present at the time of the fire.

The FRL also gives fire scientists, engineers, researchers and investigators a controlled environment in which to test fire investigation theories and to evaluate potential fire causes. The FRL has traditional bench scale fire measurement instruments, a cone calorimeter and a large burn cell, approximately one-third acre in size, in which a two-story structure can be burned under a hood that is about the size of a basketball court. The facility's design also includes the ability to test industrial electric components to determine if they were the cause of the fire.

The fire testing facility arose from a demonstrated need identified by ATF's certified fire investigators. Until the FRL was built, there was no fire measurement facility in the United States, or elsewhere, dedicated to the specific needs of the fire investigation community and to answering some of the challenging questions associated with fire investigation.

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