



CENTRAL IDENTIFICATION LABORATORY

JPAC FS-2

"Until They Are Home"



The Joint POW/MIA Accounting Command's mission is to conduct global search, recovery, and laboratory operations to identify unaccounted-for Americans from past conflicts in order to support the Department of Defense's personnel accounting efforts.

Employing more than 400 joint military and civilian personnel, JPAC continues its search for the more than 83,000 Americans still missing from past conflicts.

The Central Identification Laboratory is the largest and most diverse skeletal identification laboratory in the world and is staffed by more than 30 anthropologists, archaeologists and forensic odontologists.

In 2008, the lab became the second federal laboratory to pass the American Society of Crime Laboratory Directors'-Laboratory Accreditation Board's International Standards Program. It is the only forensic skeletal identification laboratory accredited by the ASCLD-LAB.

IN THE FIELD

Recovery teams use standard field archaeology methods in the excavation as directed by the on-site anthropologist. At a recovery site, the anthropologist, also referred to as the recovery leader, directs the excavation much like a detective oversees a crime scene. Each mission is unique, but there are certain processes each recovery has in common.

Standard recovery missions last 35 to 60 days depending on the location and recovery methods used on site. Recovery sites can be as small as a few meters for individual burials to areas exceeding the size of a football field for aircraft crashes.



The first step for the anthropologist is to define the site or determine the site perimeter. Once a site perimeter has been defined, the anthropologist establishes a grid system and sections the site with stakes and string. Each section is then excavated one grid at a time. Every inch of soil that comes out of the site is screened for any potential remains, life support equipment or material evidence.

When dictated by the environment or soil conditions, wet screening techniques, where all soil is washed through wire mesh with high-pressure hoses, are used.

Initial analysis occurs at the site, and the material is then brought back to the lab for additional examination.

IN THE LABORATORY

Upon arrival at the lab, all remains and artifacts recovered from a site are signed over to an evidence coordinator and stored in a secure area. Forensic anthropologists are responsible for the analysis of human remains and material evidence, such as military uniforms, personal affects and identification tags.

The forensic anthropologist assigned the case in the laboratory is not the individual who completed the

recovery in the field. This entire procedure is carried out in the "blind," meaning the anthropologist does not know the suspected identity of the individual under analysis. However, scientists are provided specific details that are required to select the appropriate scientific techniques (i.e., the approximate area of the loss incident.) The blind analysis is completed in order to prevent bias from influencing the scientist's analysis.

First all recovered skeletal remains are examined in order to produce a "biological profile." This profile includes sex, race, stature and age at death. Anthropologists may also analyze trauma caused at or near the time of death and pathological conditions of bone such as arthritis or previous healed

Scientists use a variety of techniques to establish the identification of unaccounted-for individuals, including analysis of skeletal remains and sampling mitochondrial DNA. They also analyze material evidence, personal effects and life support equipment. The JPAC scientific director evaluates these overlapping lines of evidence in an effort to identify the remains.

FORENSIC ODONTOLOGY

Dental remains are extremely important to the identification process. An individual's dental records are often the best way to identify remains as they have unique individual characteristics and may contain surviving mtDNA.

Ideally, JPAC's forensic odontologists will have ante-mortem (before death) X-rays to use for comparison, but even handwritten charts and treatment notes can be critical to the research and identification process.

DNA

The lab uses mtDNA in about three-quarters of its cases. Samples taken from bones and teeth are analyzed at the Armed Forces DNA Identification Laboratory, where they extract and amplify the surviving mtDNA to determine the genetic sequence. This sequence is compared with sequences from family

reference samples provided by living individuals who are maternally related to the unidentified American. These family reference samples are collected as needed by the casualty and mortuary offices.

Generally, all persons of the same maternal line have the same mtDNA sequences. Since these sequences are rare but not unique within the general population, they cannot stand alone as evidence for identification.

In addition to the factors previously mentioned, each separate line of evidence must be examined at the lab and correlated with all historical evidence. All reports undergo a thorough peer review process that includes an external review by independent experts.

While JPAC identifies an American about every four days, the recovery and identification process may take years. Since 2003, JPAC has identified more than 560 Americans. More than 1,800 Americans have been identified since the accounting effort began in the 1970's.

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