THE USE OF REFERENCE DNA SAMPLES TO ESTABLISH DNA IDENTIFICATION, CONFIRMATION AND RE-ASSOCIATION OF COMBAT CASUALTIES DURING OPERATION IRAQI FREEDOM AND BEYOND

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The war against Iraq began on March 20, 2003 and the combat phase officially ended on May 1, 2003 with the U.S. military gaining control over the capital city of Baghdad. Currently, hostilities continue to produce a large number of casualties. This presentation will detail the casualty identification process of Operation Iraqi Freedom (OIF), report the various identification methods used, and highlight the role of the Armed Forces DNA Identification Laboratory (AFDIL).

The Armed Forces DNA Identification Laboratory (AFDIL) supports the Armed Forces Medical Examiner System by providing DNA analysis on human remains. DNA testing may be performed as the primary source of identification; as a means to supplement other identification methods; and also for re-association of fragmented remains. Currently, one scientific method is required, although 2 or more is preferred, to identify a deceased service member. Any combination of dental records, fingerprint records and/or a DNA comparison to a known reference may be used. Reference bloodstain card samples are maintained by the Armed Forces Repository of Specimen Samples for the Identification of Remains (AFRSSIR). AFRSSIR was established in 1991 for the sole purpose of providing a direct reference sample for DNA comparisons to autopsy specimens in order that no military service member casualty should ever go unidentified. All military personnel and select civilian employees working for the military are required to have a DNA specimen on file at the AFRSSIR.

Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) in Afghanistan marked the first major and prolonged conflicts involving U.S. Forces since the establishment of AFRSSIR. Deaths during Operation Iraqi Freedom resulted from combat, homicides, accidents, suicides, and natural causes. Causes of combat deaths during OIF ranged from single gunshot wounds to massive explosions. This resulted in remains that not only varied from fully intact bodies to severely fragmented pieces, but also in the degree of decomposition. At autopsy, every suitable piece of recovered human remains was sampled for DNA testing for either identification, confirmation of identification or in the case of highly fragmented remains, re-association. The reference specimen is retrieved as required from cold storage at AFRSSIR and transported to AFDIL for analysis. A comparison is made between the DNA profiles obtained from the autopsy specimens to the DNA profile obtained from the bloodstain reference.

The 43-day war in Iraq resulted in 142 deaths of Army, Air Force, Marine, Navy and U.S. civilian personnel. Of these casualties all but two were transported to the Port Mortuary, Dover Air Force Base, DE, for examination by teams of forensic pathologists, odontologists, anthropologists, and fingerprint experts. None of the U.S. Forces who died during Operation Iraqi Freedom went unidentified. Of the 140 casualties processed, 123 were identified by some combination of fingerprint examinations, dental comparisons and DNA testing. There were 13 identifications based solely on DNA testing, far more than fingerprint or dental alone (2 each), and 129 fragmented remains were successfully re-associated to 25 individual casualties. Five of the human remains sampled for DNA yielded no results or insufficient data to render a conclusion.

Despite the declared end of combat operations in Iraq, casualties from the U.S. occupation in Iraq continue to be processed through the combined efforts of AFDIL, AFRSSIR and AFMES. Currently, over 805 identifications have been made using a combination of dental, fingerprint and DNA technology. DNA analysis at AFDIIL has been performed on more than 1200 samples with a 99% success rate.

It is with great pride that the combined efforts of AFRSSIR, AFDIL and AFMES ensure that no service member paying the ultimate sacrifice for their country would remain unknown, but rather expeditious identification, confirmation and re-association will be performed to assist in laying that individual to rest, and hopefully provide a sense of closure to the family.