

**THE ROLE OF DNA IDENTIFICATION IN MILITARY INCIDENTS
IN THE WAR ON TERRORISM IN AFGHANISTAN**

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The Armed Forces DNA Identification Laboratory (AFDIL) and the Office of the Armed Forces Medical Examiner (OAFME) work together to identify all military members that have lost their lives during the war on terror in Afghanistan. Several recent military operations in Afghanistan have resulted in U.S. casualties. Short Tandem Repeat (STR) DNA analysis was critical for identification, as well as for the re-association of remains in many cases. Remains from these incidents were recovered and sent to the Dover Air Force Base Port Mortuary in Delaware, to be autopsied and identified. Generally, conventional means such as fingerprints, footprints, dental comparisons, anthropological findings, and other unique identifiers are sufficient to establish identification. The OAFME uses multiple scientific methods for identification, however, and STR DNA analysis is often a confirmatory method used in conjunction with the conventional techniques.

One incident involved a missile mishap. A Hellfire missile landed in very close proximity to three military members and a civilian Afghan located on top of a hill in a dugout. Fifteen specimens obtained from the scattered remains that were burned by ordinance explosion were sent for DNA analysis. Known bloodstain references for the three U.S. military service members were obtained from the Armed Forces Repository of Specimen Samples for the Identification of Remains (AFRSSIR). To date, the Repository contains over 3.7 million bloodstain references that have been collected from individuals in the U.S. Armed Forces. Comparison of STR DNA profiles from the evidentiary tissue and bone specimens with the profiles obtained from the three known bloodstain references, confirmed the identity of the three military members. In addition, a fourth DNA profile was generated from several tissue specimens. It was reported that an Afghan civilian was standing nearby when the missile landed. No reference was received for this individual.

The second incident involved the crash of a KC-130 aircraft into the mountains in Pakistan, near the town of Shamsi in January 2002. Seven U.S. personnel died in the incident. Sixteen pieces of bone and tissue were sent for DNA analysis. Within 48 hours, five individuals were identified by DNA profile comparison of evidentiary profiles to known bloodstain references. A sixth individual was identified by dental and fingerprint comparisons. A DNA profile obtained from the identified dental remains was used as a known reference sample to associate other fragments to the sixth individual. An additional six pieces of evidence were submitted in an attempt to find the DNA profile of the seventh crewmember. No results were obtained from two of the six samples due to the calcined nature of the bone. The seventh person was not identified by DNA analysis, but the other four samples were re-associated to another individual in the incident.

A third incident involved a land mine incident in which four individuals were killed by the blast and fragmentation was extensive. Fifty-seven tissue specimens were sent for DNA analysis and four bloodstain references were received from AFRSSIR. All four individuals were identified by DNA and the multiple fragments were re-associated successfully.

STR DNA analysis of remains from military incidents often involves specimens that have been exposed to blasts, fire from military vehicles, extreme environmental conditions or other unique scenarios that make the OAFME casework and the DNA analyses for primary identification or confirmation both interesting and challenging.