



Criminalistics Section – 2006

B33 DNA Identification of Human Remains From the Crash of American Airlines Connection Flight #5966, Kirksville, MO, October 19th, 2004

David A. Boyer, MFS, Department of Defense DNA Registry, Armed Forces Institute of Pathology, 16050 Industrial Drive, Suite 100, Gaithersburg, MD 20877; Patricia A. Foley, PhD*, Demris A. Lee, MSFS, and Brion C. Smith, DDS, Department of Defense DNA Registry, Armed Forces Institute of Pathology, 1413 Research Boulevard, Rockville, MD 20850; and Paul S. Sledzik, MS, National Transportation Safety Board, Office of Transportation Disaster Assistance, 490 L'Enfant Plaza East, SW, Washington, DC 20594*

After attending this poster presentation, attendees will understand DNA field sampling techniques and laboratory efforts necessary to produce DNA results capable of aiding in positive identification and re-association of casualties from fragmented and charred human remains in a mass fatality incident.

This presentation will impact the forensic community and/or humanity by illustrating the ability of DNA laboratories to successfully generate DNA profiles from human remains subjected to post-mortem fire.

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On October 19th, 2004, at approximately 7:50pm, a twin-engine turboprop plane designated as American Airlines Flight #5966 traveling from St. Louis International Airport to the Regional Airport in Kirksville, MO, crashed on final approach killing both crewmembers and 11 of 13 passengers. Although two passengers survived the incident the remains of the fatalities were severely burned due to post-crash fire rendering fingerprint identification impossible. Under the Aviation Disaster Family Assistance

Act, the Adair County Coroner and the National Transportation Safety Board (NTSB) called in the assistance of the Federal Emergency Management Agency's (FEMA) Disaster Mortuary Operation Response Team (DMORT) and the Armed Forces DNA Identification Laboratory (AFDIL) to aid in identification of the fatalities.

AFDIL joined the DMORT operation in Kirksville, MO, for post-mortem identification and collected blood, tissue, and bone specimens for DNA testing. Most of the fatalities had been exposed to extensive burning due to a post-crash fire that produced intense heat sustained by airplane fuel for a significant period of time. The overall condition of the remains ranged from total body thermal changes with extensive charring to completely charred remains with extensive loss of bone and soft tissue. Family references were collected from appropriate members for comparison. The human remains samples and family references were hand-carried to AFDIL in Rockville, MD, to expedite the analysis process.

A total of 25 post-mortem specimens and 16 family references were tested by AFDIL. Laboratory testing was accomplished using PowerPlex®16. Post-mortem DNA specimens were submitted to AFDIL within six days of the incident and DNA analysis results were reported back to the Adair County Coroner within 14 days of the incident. All 13 fatalities were successfully identified by DNA testing. In those instances where other conventional forms of identification (such as dental comparisons) were used as a basis for identification, DNA results from those remains were used as identification confirmation. The success of this undertaking illustrated that even when human remains exhibit severe post-mortem charring DNA testing can resolve identity issues in mass fatality incidents.

Mass Fatality Incident, Charred Human Remains, DNA Analysis