



## Physical Anthropology Section – 2003

### H70 Scene Recovery Efforts in Shanksville, Pennsylvania: The Role of the Coroner's Office in the Processing of the Crash Site of United Airlines Flight 93

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Attendees can expect to learn about new techniques, based upon contemporary archaeological methods, employed during the recovery of large aircraft mass fatality sites in general, and specifically, with regards to the recovery of the United Flight 93 crash. The role played by the coroner of a rural county is also explored at length.

On September 11, 2001, at 10:10 AM, a Boeing 757 (United Airlines Flight 93) crashed in an open field near the small town of Shanksville in Somerset County, PA. All 44 individuals aboard were killed. It was clear from the start that terrorists who intended to use the plane as an instrument of suicide and mass homicide had hijacked the plane. In this presentation, issues related to the role of the coroner's office during the forensic processing and subsequent mitigation of the scene will be discussed.

Following the initial response by local fire and law enforcement agencies to put out the fires and search for survivors, the Somerset County Coroner (WM) was summoned to assess the crash scene and determine how best to recover and identify the human remains. Part of the coroner's response was to assemble a team of advisors (including other coroners, funeral directors, and forensic anthropologists) and support personnel. The crash site included two forensic features: a vehicle impact crater and a large fan-shaped debris-splash area emanating from the crater. The plane impacted the ground at a steep angle near the edge of a reclaimed strip mine. Since the ground was rather soft, much of the plane imbedded into the ground, creating a pit about 10 feet deep and 15-20 feet wide with an associated mounded pile of dirt opposite the initial impact point. A portion of the plane sheared off upon impact and fell into the adjacent forested area, scattering in an approximately 70-acre fan-shaped debris field. A concentration of debris and jet fuel landed in the forest near the crater and significantly charred the trees in this area.

**Phase 1 Recovery.** The first step in the recovery process required the formulation of a successful strategy for locating, documenting, and removing the associated physical evidence. This process involved consideration of jurisdictional matters, personnel, equipment, and a myriad of other issues. It was decided at the outset that the recovery strategy should provide a balance between the rapid recovery and documentation of potentially forensically significant physical evidence (e.g., voice and flight data recorders, important mechanical parts of the vehicle, items related to the cause of the crash such as explosive devices and residue, weapons, and personal effects of terrorists) with maximal recovery of the biological and personal effects of the victims. The coroner suggested using a new search, documentation, and recovery protocol, recently developed by the first author, which included sequential and concurrent stages involving thorough and meticulous searches, sectioning of the scene into manageable grid sections, and the use of an electronic total station to precisely document significant physical evidence location. The protocol had been tested at a mock crash scene during an FBI training short course in St. Louis and successfully implemented during the recovery efforts of the plane crash involving Melvin Carnahan, Governor of Missouri.

Given the context of the crash relative to other national events of September 11, and since it was immediately clear that the crash involved criminal activity, the FBI assumed responsibility for recovery of the forensically significant physical evidence (and larger fragments of human remains) from both the impact crater and the forested area impacted by the crash debris. FBI and Pennsylvania State Police personnel completed these efforts. Approximately 500 pounds of human tissue was recovered. During this time, civilian efforts were focused on the documentation and identification of the human remains at the temporary morgue as part of the DMORT operation.

**Phase 2 Recovery Efforts.** Federal authorities released the scene two weeks later. Due to the tremendous forces imparted upon the aircraft and associated materials during a crash of this nature, a nearly overwhelming volume of debris was created and deposited on the scene. Much of this material—deemed non-forensically significant and including, primarily, plane debris and small fragments of human remains—remained on the scene. The decision was made by the coroner to comprehensively (i.e., as close to 100 percent as possible) recover and remove this material from the scene prior to the final release of the scene to the public. The coroner's office, Mercyhurst Archaeological Institute personnel, and Pennsylvania Emergency Management Agency officials organized recovery efforts utilizing forensic archaeological methods during two subsequent weekends involving approximately 200 volunteers (firemen, funeral directors). The entire 70 acres of crash debris field was searched using pedestrian in-line shoulder-to-shoulder visual scanning methods. Teams of 10-12 individuals were assembled and coordinated by a team leader who set the direction and pace of the search. In the areas most distant from the impact crater, pedestrian search sufficed because debris was widely scattered and not abundant. In areas closer to the impact crater, the searchers performed the recovery efforts on hands and knees since much of the remaining debris was hidden under leaf litter and natural forest debris.



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Approximately 100 pounds of highly fragmented human tissue was recovered.

In the following three months, additional site mitigation efforts by an independent company hired by the airline resulted in the location of additional human remains, personal effects, and plane debris, especially during removal of charred trees in the burn zone. In May of 2002, another 100 volunteers resulting in nearly complete recovery of site crash debris conducted a final search of the crash site.

**Mass Fatality Recovery, Forensic Archaeology, United Flight 93**