

**UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF TEXAS  
SAN ANTONIO DIVISION**

JOHN EAKIN

Plaintiff,

v.

AMERICAN BATTLE MONUMENTS  
COMMISSION, *et al*

Defendants

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CIV. A. NO. SA-12-CA-1002-FB(HJB)

**DECLARATION OF EDWIN F. HUFFINE**

I, Edwin F. Huffine, declare as follows:

1. I have been involved in the identification of the missing for more than twenty-five (25) years. Currently, I am an independent forensic consultant specializing in the use of DNA testing for identification of missing persons. My personal work history includes being the Chief of the mtDNA section at the Armed Forces DNA Identification Laboratory (AFDIL), then Director of the Forensic Sciences Program for the International Commission on Missing Persons (ICMP), and most recently Vice President for Humanitarian Missions for Bode Technology, a publicly held company. During my career, I have personally signed more than 10,000 DNA identification reports and been responsible for several thousand more identifications, which were performed under my supervision. In addition to developing the advanced techniques used to identify thousands of victims of genocide in Bosnia, I have participated in the identification of many victims of genocide or mass disasters around the world. Some of the major projects I have worked on include identification of the missing from the World Trade Center, Hurricane Katrina and the Thailand Tsunami.

2. For part of this 25-year period, I was the Chief of the Armed Forces DNA Identification Laboratory (AFDIL), which recently performed the Kelder DNA testing. During my tenure at AFDIL in the mid-90s, I helped develop the DNA testing methodologies utilized by AFDIL. Once I left AFDIL for the ICMP and then later Bode, I oversaw the development of increasingly superior DNA methodologies for identification of unidentified remains.

3. A more detailed summary of my experience is attached as Exhibit one.

4. I have reviewed the materials that were submitted related to the identification of Arthur H. "Bud" Kelder. While this package is incomplete, I made the following observations from the limited data presented.

5. In the first case, CIL Case Number 2014-122, there was an overall success rate of 18.75%. There is no explanation for the failure to report some of these tests. These samples were tested for mitochondrial DNA (mtDNA) and/or Y-STR. There is no indication of testing for nuclear or autosomal DNA (auDNA). Note – in many cases, the terms nuclear or autosomal DNA are used interchangeably, though strictly speaking, autosomal DNA is the same as nuclear DNA minus Y-STR.

6. In the second case, CIL Case Number 2014-125, 75% of the tests were at least partially successful, but there was no explanation for the non-reportable elements. These samples were also tested for mitochondrial DNA (mtDNA) and/or Y-STR. Again, there was no indication of testing for nuclear or autosomal DNA (auDNA).

7. Based on the paucity of information provided, I am unable to determine the total number of skeletal elements that may have been identified or excluded by the testing from this gravesite, but the number of successful DNA tests outlined in the DNA reports submitted as part of the identification package for Arthur Kelder are far below the number I expected based upon

my personal experience. Omitted data and forms does not permit an independent reviewer to determine the quality or accuracy of the DNA testing associated with this case. Why such pertinent, relevant, and required data were omitted from submission is unknown.

8. Due to the lack of submitted data, the reason for the observed high failure rate in obtaining mtDNA and/or Y-STR DNA data is unknown. Two key components to achieving success in obtaining DNA profiles from skeletal elements are how the skeletal samples are prepared and which extraction method is employed. As the protocols, forms, and data submitted by the Defendant do not contain the information required to determine the methodologies employed, it is not possible to determine if the low success rate in obtaining mtDNA is due to the use of older protocols, from contamination, from a lack of results, from an inability to obtain reproducible results, or a combination of these factors. Regardless of the cause/s, the results would be generally considered disappointing in most accredited laboratories.

9. In addition, the DNA testing unexplainably relied exclusively on mtDNA and Y-STRs, which are not unique to individuals, instead of autosomal DNA (auDNA). Not only are mtDNA and Y-STRs not unique indicators of identity, but they are particularly unsuitable in a case where the remains are highly commingled among many missing. AuDNA is not only unique to an individual, it also permits multiple routes for re-association of disarticulated (skeletal elements that have been separated from each other and the body) and commingled remains that is not only more accurate, but also simultaneously faster and less costly.

10. It is my understanding that AFDIL uses auDNA testing for identification of current casualties, but only rarely, if ever, utilizes the auDNA techniques for identification of casualties from past conflicts such as WWII or the Korean War. This is a serious disadvantage, highlighted by the limited results obtained in the Kelder case.

11. I would also note that there is nothing in the submitted identification documents to indicate that these remains had been chemically treated or any other explanation for difficulty or delay in extracting reportable DNA profiles. From my own experience, which covers 25-years of using DNA to aid in the identification of the missing, sample preparation and extraction methodology are the critical elements in successfully obtaining DNA results from skeletal remains.

12. Overall, this testing produced inadequate results and the appropriateness of the testing methodologies are questionable. The documentation provided to the Kelder family for review was vague and incomplete, making it difficult, if not impossible, for the Kelder family to determine if the identification of Arthur Kelder is justified.

13. To better understand the current system, a review of the historic use of DNA testing in the identification of the missing is useful.

14. The recovery and identification of the missing US service members where DNA first played an important role began with the missing from Vietnam. In Vietnam, many of the missing were in gravesites containing only a few individuals or in a single grave/crash site. This meant that a presumption of identity could often be formulated from surrounding evidence and/or documentation. As it was known which pilot was flying that particular plane, as well as if other Americans went missing in that particular region (to exclude all other American missing), it was often possible to determine the likely identity of the recovered remains. Thus, any remains found associated with the crash site may be those of the missing pilot.

15. This would be considered an exclusionary identification in that all other potential identities could be excluded based on circumstantial evidence. MtDNA and Y-STR are exclusionary tools, which are useful when sufficient circumstantial evidence exists. A mtDNA

or Y-STR match is not conclusive evidence of identity and is most useful when sufficient circumstantial evidence exists.

16. Given the state of the technology in the 1990s, it was more likely that mtDNA data could be obtained from degraded remains and these mtDNA techniques became the standard for use in identification of aged remains. However, as technology has advanced and it has become possible to extract nuclear or autosomal DNA from aged remains, the use of auDNA has become the standard and has overcome the substantial limitations of these original mtDNA techniques. A valid auDNA match to a reference sample is conclusive evidence of identity even in the absence of additional circumstantial evidence.

17. The above realities of the missing in Vietnam combined with the state of DNA testing in the 1990s were the basis of the rules and regulations that defined how the missing from past wars were recovered and identified. In my professional opinion, during the 1990s, this was a sound, technically advanced, and world-leading system for the recovery and identification of the missing from Vietnam in the 1990s.

18. The standard DNA testing system used in the identification of the missing has significantly changed since the 1990s. When I went to Bosnia in 1999, mtDNA testing would not be an effective testing strategy as hundreds of maternal relatives from the same extended family may be missing and would thus have the same mtDNA sequence. The only DNA option was to develop techniques to extract and profile auDNA from the skeletal samples in Bosnia. At first, the same DNA extraction methodologies that had been used by AFDIL were utilized in an attempt to obtain auDNA profiles. The auDNA testing system in Bosnia initially had less than a 30% success rate when utilizing these methods, which was not sufficient for a robust, large-scale DNA-led identification process. The DNA extraction and testing methodologies were

significantly altered, and this resulted in being able to obtain auDNA testing on more than 95% of the cases. This made the auDNA testing option feasible. Since most of the missing were in mass graves, in virtually all the cases it was not possible to produce a presumptive ID using 'classic' forensics, where DNA would only be used at the end of the identification process to confirm a presumptive identification. The auDNA-led system altered the role of DNA testing in the identification process as such testing took the lead and significantly improved the identification process.

19. The auDNA-led system is more accurate, less costly, and more capable of leading to the unique identification of the missing as well as more easily adapted to use in re-association of disarticulated and commingled remains. This auDNA system has been developed in many other nations and is the basic model used in the identification of the missing. In addition, auDNA testing is where the future of DNA testing resides and it is rapidly increasing its capabilities.

20. The use of nuclear/autosomal DNA revolutionized the field of identification in the early years of this century. *The Latin American Initiative for the Identification of the Disappeared (LAIID)* was just one example of the acceptance of the use of this advanced DNA testing technique. The impact of this shift away from the use of mitochondrial to nuclear DNA was recognized by the U.S. Congress as illustrated by the attached letter (exhibit 2). Part of the reasoning for funding this project is stated in one of several letters of support submitted by various Congressional offices.

21. Given the appropriate family references, I would expect most accredited DNA testing laboratories that are experienced with the identification of skeletal remains to have little difficulty in identifying and reassociating cases similar to the example of the Author Kelder case.

I note that documents submitted for this case during the past 6-months indicate that more than 10 individuals are represented amongst the remains recently exhumed from Cabanatuan Grave 717. Collection of reference samples from all families represented from Cabanatuan Grave 717 would be needed for a complete resolution of this case. AuDNA testing would permit for a greater number and variety of family references to be available, thus further assisting the identification process.

22. I believe it is highly likely that all of the remains from Cabanatuan Grave 717 can be identified and properly reassociated through use of auDNA testing if proper reference samples are available.

Pursuant to 28 U. S. C. § 1746, I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed on the 16<sup>th</sup> day of March, 2015 in Lawton, Oklahoma.



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Edwin F. Huffine

#### EXHIBITS

1. Huffine Bio
2. Letter, Unites States Senate, October 21, 2005

## CV for Edwin F. Huffine

Mr. Huffine is an independent forensic consultant who has been involved in the identification of the missing for more than 25-years and has also worked as a government employee, government contractor, senior member of an NGO, and for a private company. During this time, Mr. Huffine has helped develop identification systems for many nations and provided DNA testing services for many more. His work changed the manner in which DNA testing was performed on skeletal remains as well as altered the role of DNA testing in the identification of the missing. Mr. Huffine has personally signed more than 10,000 DNA identification reports. During Mr. Huffine's career, in addition to living in three states in the United States, he has also lived in Bosnia, Croatia, Dubai of the United Arab Emirates, South Sudan, and Saudi Arabia.

Mr. Huffine's forensic career began in 1990 when he was hired by the Federal Aviation Administration (FAA) and tasked with developing a DNA laboratory to assist in the identification of fatal air crash victims and to help upgrade the FAA's existing toxicology capability. During his time with the FAA, Mr. Huffine validated and operated the GC-FTIR and mass spectrometer instruments as well as headed the accessioning department. The FAA's DNA laboratory was successfully established and was fully functional by the time Mr. Huffine left the FAA in April of 1994.

From 1994 – 1999, Mr. Huffine worked for the Armed Forces DNA Identification Laboratory (AFDIL) where he became the Chief of the section responsible for the identification of missing



Mr. Huffine during a live press event announcing the identification of the previously unknown soldier from the Tomb of the Unknown Soldier – Vietnam in June of 1998.

American service members from the Vietnam, Korean, and World War II wars as well as the testing of cases of special interest such as the bullet that allegedly killed John F. Kennedy. During his time at AFDIL, Mr. Huffine oversaw the development of new techniques to assist in the identification of the missing.

In addition, Mr. Huffine frequently interacted with family groups and

government officials to update them about the use of DNA testing in the overall United States identification efforts.

When he first arrived at AFDIL, only a few skeletal cases had been tested and the laboratory was under a testing moratorium by the US Department of Defense as a review was being conducted

on past tests. Mr. Huffine reorganized the work flow of the mitochondrial (mtDNA) section as well as implemented new testing techniques and case work management. This resulted in a dramatic increase in both the success rate of mtDNA testing as well as the number of samples being processed at AFDIL. The staff under the direction of Mr. Huffine totaled more than 40 scientists by 1999. By the time Mr. Huffine left, AFDIL was recognized as the world's leading mtDNA testing laboratory.



Inside the Tuzla Mortuary in 2001. Prior to DNA testing taking the lead role, only 7 of these ~4,000 bodies had been identified in 3 years.

From AFDIL, Mr. Huffine went to Bosnia to assess the possibility of using DNA technology to identify thousands of victims of genocide. During his time in Bosnia, Mr. Huffine served as the Director of the Forensic Sciences Program for the International Commission on Missing Persons (ICMP) from 1999 - 2003. The mission of the ICMP was to identify the victims of genocide within the former Yugoslavia. When Mr. Huffine first arrived in Sarajevo, Bosnia, in April of 1999, Bosnia was a war-torn nation with no DNA testing equipment, laboratories, or trained staff and without a consensus among the former adversaries on how to proceed with large-scale, cross border identification efforts. In addition, there was insufficient funding to develop the needed DNA-led identification system. From a scientific perspective, prior to Bosnia DNA testing was used one case at a time primarily as a confirmation tool for presumptive identifications. Such a system would not be feasible to identify thousands of missing. Thus, the role of DNA testing in the identification of

large numbers of missing would need to be altered.

From a central base of operations in Bosnia, Mr. Huffine was the architect of the ICMP's Forensic Sciences Program, which grew to a staff of more than 140 in three nations with five DNA laboratories, more than a dozen family reference collection centers (both fixed and mobile) and multiple mortuary facilities. Mr. Huffine frequently interacted with local family groups, political figures, and media representatives. In addition, Mr. Huffine kept the ICMP's governing board, which was comprised of well-known former political leaders from various nations, including Queen Noor of Jordan, apprised of the developments and progress of the forensic program of the ICMP. Mr. Huffine also met with potential donors and the donations to the

ICMP increased from ~\$2,500,000 in 1999, to more than \$13,000,000/year by the time Mr. Huffine the ICMP in late 2003.

By 2001 a comprehensive forensic system for the identification of the missing in the wake of the breakup of the former Yugoslavia had been created. This system successfully obtained DNA



Hundreds of bodies were identified each month by the DNA-led system Mr. Huffine created. This system became the template model for the rest of the world.

profiles from more than 25,000 skeletal samples and 90,000 reference samples, leading to the identification of more than 15,000 individuals and still serves as a model for the development of similar systems. Further, 13 abstracts were accepted for presentation at the American Academy of Forensic Sciences program in 2002, which was the most presented by any organization in 2002. By the time he left Bosnia, the DNA-led system Mr. Huffine had developed was identifying more than 500 missing persons each month, which was more than the rest of the world combined, and

had altered the role of DNA testing in the identification of large numbers of missing. DNA-testing now led the process of identification of skeletal remains, making large-scale DNA-based identifications possible. Due to his work in the former Yugoslavia, Mr. Huffine received a lifetime achievement from Dr. Henry Lee in 2001 and was recognized by his alma mater as the Alumni of the Year in 2002.

In 2004, Mr Huffine left the ICMP for Bode Technology. As vice president for humanitarian missions at Bode Technology (Bode), Mr. Huffine has overall responsibility for providing identification assistance and mass disaster response for regions that have experienced conflicts or natural disasters as well as assisting nations develop or upgrade their forensic systems. Providing these types of services requires frequent interaction with political, scientific, and diplomatic representatives of nations and various non-governmental organizations and potential donors.

Mr. Huffine served as the lead DNA scientist at Bode for the identification of the missing from the World Trade Center and the Katrina Hurricane. In addition, Mr. Huffine is currently working



Preparing for Congressional Testimony for the Latin American DNA Identification Project. Congress approved the political and financial support for this project, helping to identify the missing in 4 Latin American Nations.

with NGOs in the identification of the missing in several nations, including Argentina, Mexico, and the United States and served as the initial DNA Program Manager for the Thailand Tsunami Identification Center in early 2005. Mr. Huffine left Bode in January 2015 to become an independent forensic consultant.

Mr. Huffine has helped provide expert advice and system development for missing persons' projects in many nations. His global impact on the science and humanitarian aspects of DNA testing for the

missing led to him receiving National Outstanding Member Award from the Phi Kappa Phi in 2014.

**Education:**

University of Oklahoma  
MS, Biochemistry  
1988 – 1990

Cameron University  
BS, Chemistry/Education  
1979 – 1983/1985

**Professional Organizations and Awards:**

- Board Member- Secretary of History Flight (2015 – current)
- Board Member – Director of Honor, Release, Return (2015 – current)
- Member of the American Academy of Forensic Science
- Member of the International Society for Forensic Genetics
- Lifetime Achievement Award from Dr. Henry Lee, September 2000
- Alumni of the Year – Cameron University, 2002
- Honorary Professor – University of Wisconsin, April 2014
- Distinguished National Member of Phi Kappa Phi Award, April 2014

# United States Senate

WASHINGTON, DC 20510

October 21, 2005

The Honorable Mitch McConnell  
Chairman  
Subcommittee on State, Foreign  
Operations, and Related Programs  
Senate Committee on Appropriations  
361A Russell Senate Office Building  
Washington, DC 20510

The Honorable Patrick Leahy  
Ranking Member  
Subcommittee on State, Foreign  
Operations, and Related Programs  
Senate Committee on Appropriations  
433 Russell Senate Office Building  
Washington, DC 20510

Dear Senators McConnell and Leahy:

We are writing to express our support for efforts to identify thousands of victims of extrajudicial executions and disappearances in Latin America. To that end, we urge you to maintain the \$3 million in FY2006 foreign operations funding for these efforts in conference committee.

Since the early 1980s, independent forensic teams and human rights groups have made enormous advances in the search, recovery, and identification of the victims of internal conflicts and human rights abuses. This process of identification has brought solace to many families, allowing them to properly mourn their dead, begin the healing process, and seek justice for their loved ones' murders.

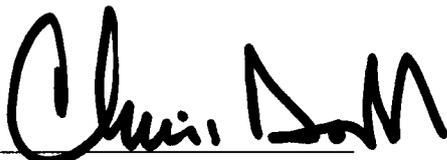
Yet the majority of the victims of these horrendous crimes have not been positively identified. Many families continue to wonder what happened to their children, siblings, and spouses. Even in cases in which burial sites are known, the lack of a positive identification hampers criminal prosecutions and civil procedures such as inheritance, adoption, and remarriage.

Advances in DNA technology have brought new hope to thousands of families in Latin America. To bring this technology to families of victims, non-governmental forensic anthropology teams in Argentina, Guatemala, and Peru are partnering with Bode Technology Group to implement the *Latin American Initiative for the Identification of the Disappeared (LAIID)*. Local forensic teams have already collected thousands of samples from exhumed remains and family members of the missing. Bode Technology Group, a DNA laboratory responsible for many of the identifications of victims of the 9/11 attacks, will process the samples in order to identify possible matches. The *Initiative* also involves upgrading an Argentine DNA laboratory and training its staff, in order to process past cases and serve as an independent, state-of-the-art genetic laboratory for the region. Building local DNA capacity will enhance evidence analysis and give law enforcement officials new tools for solving and prosecuting crimes.

The Senate version of the FY2006 foreign operations bill includes funding for *LAIID*. Section 6096 of that bill states: "Of the funds appropriated under title III of this Act, not less than \$3,000,000 shall be made available through the Bureau of Democracy, Human Rights and Labor, Department of State, to support investigations, including DNA analysis, in cases of extrajudicial killings and child disappearances in Central and South America: Provided, That funds appropriated under this sections are in addition to funds otherwise made available for such purposes."

We urge you to maintain this \$3 million earmark in this year's conference bill, so that these important efforts by Latin American organizations to identify missing persons can proceed. Not only will they provide answers and solace to thousands of families, enabling them to grieve, to heal, and to seek justice for their loved ones' murders, but they will also contribute to the strengthening of judicial institutions in Latin America.

Sincerely,



Christopher J. Dodd  
United States Senate



Barack Obama  
United States Senate



Richard J. Durbin  
United States Senate



James M. Jeffords  
United States Senate



Jeff Bingaman  
United States Senate



Lincoln Chafee  
United States Senate