



National Archives and Records Administration

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL		# of pages ▶
To <i>Joe Beard</i>	From <i>Laura Diachenko</i>	
Dept./Agency <i>APB News</i>	Phone #	
Fax # <i>202-504 3207</i>	Fax #	
NSN 7540-01-317-7368 5099-101		GENERAL SERVICES ADMINISTRATION

8601 Adelphi Road
College Park, Maryland 20740-6001

January 20, 2000

Mr. James K. Robinson
Assistant Attorney General
Criminal Division
U.S. Department of Justice
Tenth Street and Pennsylvania Ave., NW.
Washington, D.C. 20530

Dear Mr. Robinson:

Enclosed is a copy of the final report entitled, "Further Scientific Examination of the JFK Assassination Evidence." This report, dated December 14, 1999, is the final product of the scientific panel charged with further scientific examination of the physical evidence from the assassination of President John F. Kennedy. Also enclosed is a copy of the press release, which we intend to issue, as well as a Q&A sheet that we have prepared for internal use only.

As you know, the Department of Justice had asked the Assassination Records Review Board to arrange for further examination of the copper and lead bullet fragment and four smaller pieces of organic material that were part of the physical evidence of the assassination. The National Archives and Records Administration cooperated with the Assassination Records Review Board to facilitate the testing that began in September 1998. At the time that the Assassination Records Review Board issued its final report, the testing was ongoing. That testing has now been completed and the scientific panel has issued its final report.

Please contact Steven D. Tilley, Chief of Special Access/FOIA staff, at (301) 713-6620, if you have questions about this matter.

Sincerely,

for **LEWIS J. BELLARDO**
Deputy Archivist of the United States

Enc.



National Archives and Records Administration

RECEIVED
CFG-DCR

8601 Adelphi Road
College Park, Maryland 20740-6001

Date : December 22, 1999

Reply to

Attn of : Mary T. Baker, Smithsonian Center for Materials Research and Education *Mary T. Baker*
Margaret Ann T. Kelly, NWTD *Margaret Ann T. Kelly*

Subject : Further Scientific Examination of JFK Assassination Evidence

To : NWTD *Thompson*
NWT *11/27/2000*
NW MK *1-5-00*
NWCTF

Accompanying this memorandum of transmittal is our final report, dated December 14, 1999, entitled Further Scientific Examination of JFK Assassination Evidence, prepared at the request of Steven D. Tilley, Chief of the Special Access / FOIA LICON, Office of Records Services - Washington, DC.



National Archives and Records Administration

8601 Adelphi Road
College Park, Maryland 20740-6001

Further Scientific Examination of JFK Assassination Evidence

Mary T. Baker, Smithsonian Center for Materials Research and Education
Margaret Ann T. Kelly, NARA Document Conservation Research and Testing Laboratory
December 14, 1999

Summary:

On August 12, 1998, the National Archives and Records Administration (NARA) announced that it was working with the John F. Kennedy Assassination Records Review Board (ARRB) to arrange for the further scientific examination of physical evidence from the assassination of the former president, now in the custody of NARA. That examination process, outlined in Chapter 6, Part II, of the Final Report of the ARRB (September 1998), and described therein as "ongoing...at the time of this writing," is now complete.

The evidence under consideration has been Warren Commission Exhibit (C.E.) 567, the nose portion of a bullet recovered from the front seat of the limousine in which the President was riding. This exhibit actually consisted of five fragments: one larger copper and lead fragment with adhering fibrous debris, and four smaller pieces of organic material. The specific purpose of additional scientific examination has been to determine the composition of the adhering fibrous material and of the smaller nonmetallic fragments.

During September 1998, a panel of experts in the areas of histology, DNA analysis, organic materials, and fibrous trace evidence met in the offices of the National Archives and Records Administration at College Park, Maryland, in order to evaluate C.E. 567 and to develop and implement an appropriate course of analysis. Participants included the Federal Bureau of Investigation (FBI) Laboratory, The Armed Forces Medical Examiner, The Department of Pathology and Laboratory Medicine of the Maimonides Medical Center, the Armed Forces DNA Identification Laboratory (AFDIL), and the Smithsonian Center for Materials Research and Education (SCMRE).

Most of the examinations recommended by the panel were accomplished on site at NARA. Instrumental analysis of a portion of the fibrous material was undertaken at the FBI Laboratory (Washington, DC); histological preparations of samples taken from the four organic fragments were processed at the Armed Forces Institute of Pathology (Walter Reed Complex); and mitochondrial DNA examinations of samples taken from the four organic fragments were conducted at AFDIL (Rockville, MD).

The fibrous debris recovered from the bullet fragment of C.E. 567 was determined to consist of paper fibers and unidentified proteinaceous material of non-textile origin; and accordingly, did not originate from the clothing of John F. Kennedy or John B. Connally.

The four smaller fragments of organic material were determined on microscopic examination to consist of human skin and tissue, but it was not possible to establish the precise body area of

origin. DNA analyses of these tissue fragments yielded inconclusive results; accordingly, no comparison of the questioned human tissue with known sources is currently possible.

Background:

In its August 1998 recommendations to ARRB regarding proposed testing of JFK assassination evidence, NARA advocated the involvement of a technical coordinator, independent of the FBI or other primary examining agency, whose role would be to ensure that the contemplated examinations were undertaken in a logical, concerted sequence. As implemented, this function has been shared: Dr. Mary T. Baker (SCMRE) has provided expert scientific oversight, review, and continuity to the examination process; while the NARA Document Conservation Research and Testing Laboratory has coordinated the associated technical record-keeping and reporting.

Scope:

This report outlines the scientific decision-making process which evolved as a result of deliberate multi-agency collaboration and consensus, and summarizes the results and conclusions reached as a result of the examinations undertaken. These findings are based on the work of the experts consulted, and do not constitute independent opinions of NARA staff.

Specific Examinations (following):

Fibrous Trace Evidence Examination and Comparison	3
Examination of Suspected Biological Tissue and /or Organic Material.....	5

Appendices:

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Schedule of Testing Procedures.....	9
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Attachments (Individual Reports):

Federal Bureau of Investigation Laboratory Report of microscopic and instrumental fiber analysis, dated September 18, 1998

(Joint) Maimonides Medical Center and Armed Forces Medical Examiner Report of histological examinations, dated September 16, 1998

Armed Forces DNA Identification Laboratory Report of mitochondrial DNA analysis, dated November 2, 1999

Fibrous Trace Evidence Examination and Comparison

The bullet nose fragment recovered from the front seat of the presidential limousine on November 22, 1963, and ultimately designated Commission Exhibit (C.E.) 567, was apparently placed, on collection, into a seamless metal can lined with cotton batting.

As observed during the evaluations reported here, adhering to the surface of the lead portion and partially obscured by the copper jacket portion of C.E. 567 bullet fragment were off-white colored fibers of likely vegetable origin. The apparent firm adherence of these fibers to the substrate rendered them of greater interest than the "ambient debris" and loose fibers observed over other surfaces of this exhibit.

A review of available records indicated that the following textiles in the vicinity of the limousine interior were likely disrupted or perforated by bullet(s): C.E. 393 (Kennedy jacket), C.E. 394 (Kennedy shirt), C.E. 395 (Kennedy necktie), C.E. 683 (Connally jacket), C.E. 685 (Connally shirt), and C.E. 687 (Connally trousers): No such damage to the textile or leather component(s) of the limousine interior itself was reported.

On microscopic examination of C.E. 567 fibers in situ, the panel scientists agreed to the following consensus statements:

The questioned fibrous material could not be identified and compared without removal from the substrate.

The fibrous material should be removed for further examination and comparison.

The fibrous material could be removed and examined microscopically on-site at NARA for preliminary characterization prior to obtaining known samples for comparison.

Accordingly, the questioned fibrous material was removed en masse from C.E. 567 and mounted on a glass microslide for further examination. As initially placed on the slide, a portion of the material was observed to appear similar to tissue-paper: a thin sheet of randomly oriented wood pulp paper fibers. The material was then teased apart using a dissecting needle to better distribute the fibers for microscopic identification.

An additional, distinctly different fibrous material was then noted: a few long, slightly crimped, transparent, yellowish bundles with fibrils which appeared "plastic-like" to some observers and "leather/collagen-like" to others.

It was the consensus of the panel scientists that this unidentified material, which on microscopic examination did not appear to be of textile origin, should be referred for instrumental analysis.

Accordingly, the unidentified fibrous material was examined at the FBI Laboratory (Washington, DC), where instrumental analysis using Fourier Transform Infrared Spectroscopy (FTIR) enabled classification of the material as protein and its exclusion as a synthetic polymer.

A portion of the fibrous batting present in the seamless metal can of C.E. 567 was mounted on a glass slide, and on microscopic examination was found to be dissimilar to the fibrous materials recovered from C.E. 567 bullet nose fragment. It cannot be determined from available records whether this particular batting was in the seamless can on original collection of C.E. 567, but it was observed that the current batting bears no visible trace of blood or other body fluid.

On stereomicroscopic examination of the known perforated textiles, the panel scientists agreed to the following consensus statement:

With respect to C.E. 393 (Kennedy jacket), C.E. 394 (Kennedy shirt), C.E. 395 (Kennedy tie), C.E. 683 (Connally jacket), C.E. 685 (Connally shirt), and C.E. 687 (Connally trousers), the materials in the areas of perforation can be eliminated as sources of the questioned fibers recovered from C.E. 567 bullet fragment without the need for further sampling and microscopic comparison.

Accordingly, no samples of the known clothing articles were taken.

The fibrous debris recovered from the bullet fragment of C.E. 567 was thus determined to consist of paper fibers and unidentified proteinaceous material of non-textile origin, and did not originate from the clothing of John F. Kennedy or John B. Connally.

Examination of Suspected Biological Tissue and/or Organic Material

A review of the handwritten work sheets of the U. S. House of Representatives Select Committee on Assassinations (HSCA) Firearm Examination Panel revealed that in 1978, examiners noted the presence of "apparent beeswax" [John S. Bates, Jr.] and "what appears to be wax" [Monty C. Lutz and Andrew M. Newquist] along with the metallic portion of C.E. 567 bullet nose fragment.

As observed during the evaluations reported here, four fragments of suspected biological tissue and/or organic material were present with C.E. 567. On microscopic examination, the panel scientists agreed to the following consensus statements:

The bio/organic material(s) cannot be identified and compared without sampling.

The material(s) cannot be eliminated as biological tissue without sampling.

Each of the four fragments should be sampled for further examination and comparison.

The examination sequence should be: (1) Histology, to determine if the material is biological tissue; and if so, whether it is human; (2a) DNA analysis of human tissue, if present; and if successful, comparison with known sources; and/or (2b) Instrumental analysis of organic material of non-tissue origin, if present.

Accordingly, each of the four fragments was aseptically cut in half, with one half referred for histological examination. The remaining half of each fragment was aseptically cored, with the inner portion reserved for possible DNA or instrumental analyses (pending the outcome of histological examinations) and the remainder saved "for the future."

The four samples of bio/organic material taken for histological examinations were re-hydrated and fixed on-site at NARA. Dr. Michael R. Zimmerman (Maimonides Medical Center), an expert in the histological examination of old and degraded human tissue (having undertaken field work involving the University of Innsbruck Iceman Project and the paleopathology of Egyptian and Aleutian mummies) provided the chemical solutions for this initial work-up. Further processing to paraffin-embed, section, mount, and stain the preparations was undertaken at the Armed Forces Institute of Pathology (Walter Reed Complex) at the direction of Dr. Jerry D. Spencer, Armed Forces Medical Examiner.

On microscopic examination of the resulting histological slides, the four nonmetallic fragments of C.E. 567 were determined to consist of human skin and tissue in varying states of preservation, but it was not possible to establish the precise body area of origin (e.g. scalp, torso, limb). One of the samples was reported to include small black non-tissue-related particles which were suggested to be ammunition residue, but further testing of this debris was not undertaken. Another of the samples was reported to include possible fungal or insect fragments, but further mycological or entomological identification of this invasion was not sought.

On microscopic examination by the panel pathologists and DNA scientists, the unidentified proteinaceous material recovered from the bullet nose fragment C.E. 567 was deemed unsuitable, due to its fibrous aspect, for either histological sectioning or DNA analysis.

It was the consensus of the panel scientists that the four fragments identified as human tissue should undergo mitochondrial DNA examinations. The age and apparent degradation of the tissue were deemed to likely preclude the success of nuclear DNA analyses.

With respect to mitochondrial DNA examinations, it was the consensus of the panel scientists that the issue of obtaining known samples for comparison, whether from the bloody clothing or from maternally-related family members, should not be considered until after it could be determined whether such a comparison were even possible, based on analysis of the questioned material.

Accordingly, no samples of the known clothing articles were taken.

Mitochondrial DNA (mtDNA) analyses of the four core samples of human tissue were conducted at the Armed Forces DNA Identification Laboratory (Rockville, MD), where scientists have developed considerable expertise in the examination of older, degraded samples (military remains). Although mtDNA was successfully extracted and amplified from the specimens, inconclusive sequence information was obtained for these four core samples. Additional amplification and sequencing attempts using the four paraffin-embedded samples remaining from the histological examination also proved inconclusive. As a result, no comparison of the questioned tissue with known sources is currently possible.

Participants in the Evaluation of JFK Assassination Evidence at NARA
September 1998

Baker, Dr. Mary T.	Polymer Chemist, Smithsonian Center for Materials Research and Education (SCMRE)
Blumenfeld, Ms. Laura R.	Assistant General Counsel, Federal Bureau of Investigation (FBI)
Burmeister, Mr. Steven C.	Chief, Chemistry Unit, FBI Laboratory
Constance, Mr. John A.	Director, Congressional Affairs, National Archives and Records Administration (NARA)
Deedrick, Mr. Douglas W.	Chief, Trace Evidence Unit, FBI Laboratory
DiZinno, Dr. Joseph A.	Chief, DNA-II Unit, FBI Laboratory
Fram, Mr. Robert B.	Forensic Examiner, Trace Evidence Unit, FBI Laboratory
Grover, Mr. William D.	Archivist, Special Access and Freedom of Information Act (FOIA) Staff, NARA
Hamilton, Mr. Steven L.	Archives Specialist, Special Access and FOIA Staff, NARA
Hastings, Mr. James J.	Director, Textual Archives Services Division, NARA
Holland, Dr. Mitchell M.	Chief, Armed Forces DNA Identification Laboratory (AFDIL)
Kelly, Ms. Margaret Ann T.	Research Chemist, Document Conservation Laboratory, NARA
Lindsey Smith, Dr. Jenifer A.	Chief, DNA-I Unit, FBI Laboratory
Nisbet, Ms. Miriam M.	Special Counsel for Information Policy, Office of General Counsel, NARA
Shycoff, Ms. Tracy J.	Deputy Director, Assassination Records Review Board (ARRB)
Sibert, Mr. Robert W.	Deputy Chief, Scientific Analysis Section, FBI Laboratory
Spencer, Dr. Jerry D.	The Armed Forces Medical Examiner
Tilley, Mr. Steven D.	Chief, Special Access and FOIA Staff, NARA

Tunheim, Hon. John R. U.S. District Court Judge for the District of Minnesota; and
Chair, Assassination Records Review Board (ARRB)

Zimmerman, Dr. Michael R. Director of Clinical Laboratories, Department of Pathology and
Laboratory Medicine, Maimonides Medical Center

Off-Site Examiners

Huffine, Mr. Edwin F. Chief DNA Analyst, Armed Forces DNA Identification
Laboratory (AFDIL)

Menold II, Mr. Ronald E. Forensic Chemist/Examiner, Federal Bureau of Investigation
(FBI) Laboratory

Wilson, Mr. Richard E. Supervisory DNA Analyst, AFDIL

Scientific Examination of JFK Collection Evidence
Schedule of Testing Procedures

Thursday, September 3, 1998

- 10 am - 4 pm NARA Special Access and FOIA Unit: Samples taken of bio-organic material for histology and DNA/instrumental analysis by Drs. Holland, Smith, Spencer, and Zimmerman; fibrous material removed from bullet fragment and mounted in Permount® medium on glass microslide by Mr. Fram, with Dr. Baker participating.

Friday, September 4, 1998

- 4 pm NARA Special Access and FOIA Unit: Rehydration/fixation fluids (histology samples) exchanged by Dr. Spencer.

Tuesday, September 8, 1998

- 9 am from NARA: Dr. Spencer, NARA, and ARRB representatives deliver histology samples to Armed Forces Institute of Pathology (AFIP) Histology Laboratory, Walter Reed Complex. Samples placed in dedicated, secured tissue processor for overnight paraffin embedding procedure.

Wednesday, September 9, 1998

- 8 am - Noon AFIP Histology Laboratory (Walter Reed Complex): NARA and ARRB representatives observe preparation of histological slides from paraffin tissue blocks. NARA/ARRB representatives take possession of prepared slides and remaining paraffin blocks for immediate return to NARA Special Access/FOIA.
- 2 - 5 pm NARA Special Access and FOIA Unit: Further microscopic examination of fibrous material by Messrs. Deedrick and Fram, with Drs. Baker and DiZinno participating. Sample taken from fibrous batting material and mounted in Permount® medium on microslide. Known clothing articles examined without sampling. Examination of histological slides by Drs. Spencer and Zimmerman, with Drs. Baker, DiZinno and Holland participating; bio-organic samples selected for mitochondrial DNA analysis on the basis of histological identification.
- 5 pm Dr. Holland, NARA and ARRB representatives deliver selected tissue samples for mitochondrial DNA analysis to Armed Forces DNA Identification Laboratory (AFDIL), Rockville, MD.

01/20/

Thursday, September 10, 1998

Armed Forces DNA Identification Laboratory (Rockville, MD): Mitochondrial DNA analysis of tissue samples begun by Mr. Huffine.

Friday, September 11, 1998

9 am FBI Laboratory Chemistry Unit (Washington, DC): Microslide bearing fibrous material delivered by NARA/ARRB representatives for instrumental analysis by Mr. Menold II, with Dr. Baker participating.

Tuesday, September 15, 1998

8 am - Noon AFIP Histology Laboratory (Walter Reed Complex): NARA and ARRB representatives deliver prepared histological slides for further immunochemical processing, followed by immediate return of materials to NARA Special Access/FOIA.

3 pm NARA Special Access and FOIA Unit: Further examination of histological slides and proteinaceous fibrous material by Drs. Spencer and Zimmerman.

4:30 pm NARA and ARRB representatives deliver additional tissue samples for mitochondrial DNA analysis to AFDIL (Rockville, MD).

Tuesday, October 13, 1998

11 am NARA and ARRB representatives deliver additional tissue samples (paraffin blocks) to AFDIL (Rockville, MD) for mitochondrial analysis by Mr. Wilson.

Objects Examined
C.E. = Commission Exhibit

- C.E. 393 John F. Kennedy jacket
- C.E. 394 John F. Kennedy shirt
- C.E. 395 John F. Kennedy necktie
- C.E. 567 Bullet nose fragment from front seat of presidential limousine, bearing fibrous trace evidence; with associated fragments of suspected biological tissue or other organic material
- with C.E. 567 Seamless metal can containing fibrous batting material
- C.E. 683 John B. Connally jacket
- C.E. 685 John B. Connally shirt
- C.E. 687 John B. Connally trousers

Referred for Instrumental Analysis

- from C.E. 567 Fibrous trace evidence recovered from bullet nose fragment

Referred for Histological Examination

- from C.E. 567 Samples from each of four fragments of suspected biological tissue or other organic material: 01A, 02A, 03A, 04A
- from C.E. 567 Proteinaceous fibrous trace evidence recovered from bullet nose fragment (examined microscopically in Permount® mounting medium but not subjected to further histological processing)

Referred for Mitochondrial DNA Analysis

- from C.E. 567 Samples from each of four fragments of biological tissue: 01B, 02B, 03B, 04B
- from C.E. 567 Paraffin block samples of biological tissue remaining after histological examination: 01A, 02A, 03A, 04A

examined the debris removed from C.E. 567. In addition, the clothing from John F. Kennedy and John B. Connally, and the batting from the seamless metal can which originally contained C.E. 567, were examined.

On September 11, 1998, debris from C.E. 567 was brought to the FBI Laboratory in Washington D.C. Examiner Ronald E. Menold II performed the requested polymer examinations.

Included in this report are the results from SSA Fram and Examiner Menold. This concludes all examinations requested by your office.

The evidence from C.E. 567 was returned to representatives from your office on September 11, 1998.

7-1a (2-5-93)



FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D. C. 20535

Report of Examination

Examiner Name: ¹⁰⁷ Robert Fran Date: 9/18/98
Unit: Trace Evidence Phone No.: (202) 324-8915
Case ID#: 89A-DL-60165 Lab No.: 980611002 S JA ZJ

Results of Examinations:

Debris was removed from specimen C.E. 567 and mounted on a glass microscope slide for microscopic examination. The debris was determined to consist of paper fibers and an unknown substance which was determined to be non-textile in nature.

It was determined that the clothing from John F. Kennedy (C.E. 393 through C.E. 395), and John B. Connally (C.E. 683, 685 and 687), as well as the fibrous batting material from the seamless metal can (originally containing the C.E. 567 bullet nose fragment (C.E. 567)), could not be the source of the paper fibers.

-11 (2-5-93)



FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D. C. 20535

Report of Examination

Examiner Name: Ronald E. Menold II *(initials)*

Date: September 18, 1998

Unit: Chemistry

Phone No.: (202) 324-1814

Case ID #: 89A-DL-60165

Lab No.: 980911002 S JA ZJ

Results of Examinations:

Debris from C.E. 567 was analyzed microscopically and instrumentally including Fourier Transform Infrared Spectroscopy. Based on the examinations performed, the debris from C.E. 567 is not consistent with the class of compounds commonly known as synthetic polymers.



REPLY TO
ATTENTION OF

DEPARTMENT OF DEFENSE
ARMED FORCES INSTITUTE OF PATHOLOGY
WASHINGTON DC 20306-6000

September 25, 1998

Office of the Armed Forces
Medical Examiner

Steven D. Tilley, Chief
Special Access and FOIA Staff/NWCTF
National Archives and Record Administration
8601 Adelphi Road, Room 6350
College Park, MD 20740-6001

Dear Steven:

I am forwarding the final report of that Dr. Zimmerman forwarded to me. I also talked to Margaret Kelley yesterday, informing her that I would be happy to conduct additional tests on the histological slides at any time.

It was a pleasure working with you. Please call me at (301) 589-8873 if I can be of further assistance.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jerry D. Spencer".

Jerry D. Spencer, M.D., J.D.
Armed Forces Medical Examiner

Maimonides Medical Center
4302 Tenth Avenue
Brooklyn, New York 11219
718 283-6000

Department of Pathology and Laboratory Medicine
718 283-2300
718 283-8655 Fax line

718 283-7002 Direct line
e-mail: mzimmerman@maimonidesmed.org

September 16, 1998

Maimonides



Jerry D. Spencer, M.D., J.D.
Armed Forces Medical Examiner
1413 Research Blvd., Bldg. 102
Rockville MD 20850

Dear Dr. Spencer: *Jerry*

Enclosed is our report on the JFK material. Please review, sign and forward to:

Steven D. Tilley, Chief
Special Access and FOIA Staff/ NWCTF
National Archives and Record Administration
8601 Adelphi Road, Room 6350
College Park MD 20740-6001

One of my colleagues pointed out that the black material in specimen 04 might be primer and that a calcium stain might be useful in identifying it as such. If you think it would be helpful to pursue this matter, you might retrieve one of the unstained slides and try it. If it were positive, we could issue a supplementary report.

It was a pleasure working with you on this project. Please convey my compliments to your staff on the superb work they did in processing these minute fragments of desiccated material.

Sincerely

Mike

Michael R. Zimmerman, M.D., Ph.D.
Director of Clinical Laboratories

Maimonides Medical Center
4802 Tenth Avenue
Brooklyn, New York 11219
718 233-6000

Department of Pathology and Laboratory Medicine
718 233-8200
718 223-6555 Fax line

1

September 16, 1998



718 263-7002 Direct line
e-mail: mzimmerman@maimonidesmed.org

Maimonides

Final Report - Evaluation of John F. Kennedy Assassination Evidence

Gross Examination: The specimens consist of 4 roughly triangular fragments of dark brown material, each measuring approximately 3 mm in greatest dimension and 1-2 mm in thickness, said to have become detached from a bullet sometime in the past. The surfaces are irregular and slightly reflective in incident light. The specimens are bisected under sterile conditions and one half of each is submitted, labeled 01, 02, 03, and 04 for rehydration and microscopic examination. A core is taken from each of the other halves for DNA analysis. The remaining portions are preserved for possible future study.

Microscopic examination:

01: The sections show small fragments of flattened eosinophilic material resembling superficial epithelium. No nuclei are seen. There are small intracytoplasmic PAS granules suggestive of glycogen. Other stains are noncontributory.

Impression: human superficial skin.

02: The sections show eosinophilic material containing several parallel slender fragments of PAS positive material in a thick walled cellular configuration that is not of human origin. These appear to be the legs of a insect (or possibly a saprophytic fungus) that invaded the tissue post-mortem. The intervening material contains small aggregates of orange material appearing to be blood. Other stains are noncontributory.

Impression: human tissue and blood with post-mortem insect invasion.

03: The sections show flattened superficial epithelium with well preserved nuclei. The PAS stain shows glycogen granules and the trichrome shows a thin layer of positive material, possibly underlying muscle. Other stains are noncontributory.

Impression: human skin.

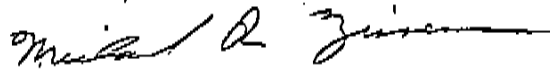
04: The sections show fragments of amorphous unidentifiable eosinophilic tissue with a few small aggregates of black pigment. No nuclei are seen. An immunohistochemical stain for keratin is positive. Other stains are noncontributory.

Impression: poorly preserved human skin and black pigment.

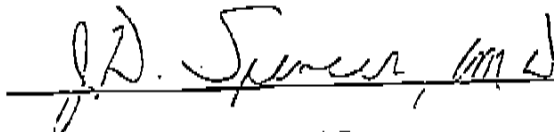
Unlabeled: An additional small fragment of material (initially believed to be fiber or textile but identified as proteinaceous by chemical analysis) was also examined, in an unstained preparation. There are no distinguishing tissue features and the material is slightly birefringent.

Impression: unidentifiable proteinaceous material.

Comment: This material consists of human tissue in varying states of preservation. The skin in specimen 03 is extraordinarily well preserved, and in 01 somewhat less so. The tissue in specimens 02 and 04 cannot be specifically identified and may be muscle or brain. 02 shows invasion by foreign material, probably an insect. Examination by an entomologist or mycologist at the AFIP or Smithsonian Institution might provide further identification, but would probably not be germane to this study.



Michael R. Zimmerman, M.D., Ph.D.
Director of Clinical Laboratories, Maimonides
Medical Center, Brooklyn, NY
Adjunct Professor of Anthropology, University of
Pennsylvania, Philadelphia, PA



Jerry D. Spencer, M.D., J.D.
Armed Forces Medical Examiner
Rockville, MD



DEPARTMENT OF DEFENSE
ARMED FORCES INSTITUTE OF PATHOLOGY
WASHINGTON DC 20306-6000

REPLY TO
ATTENTION OF

Office of the Armed Forces
Medical Examiner (40-31a)

AFIP Accession No. 2690845-00
No Name
National Archives Case No. C.E. 567
AFDIL Case No. 98C-1073

Steven D. Tilley, Chief
Special Access and FOIA Staff/NWCTF
National Archives and Records Administration
8601 Adelphi Road, Room 6350
College Park, MD 20740-6001

01/21/00 12:59 FAX

CONSULTATION REPORT ON CONTRIBUTOR MATERIAL

1. Report Summary

- a. This is a report of mitochondrial DNA (mtDNA) sequence analysis that involves evidence from the John F. Kennedy assassination.
- b. Inconclusive sequence information was obtained for all submitted samples. Multiple amplification and sequencing reactions were performed in an attempt to obtain confirmatory data.

OAFME-DNA

SUBJECT: Consultation Report
 AFIP Accession No. 2690845-00
 National Archives Case No. C.E. 567
 AFDIL Case No. 98C-1073

10V 2 1599

2. Specimens Received

The following samples were received from National Archives Case No. C.E. 567:

	<u>AFDIL Specimen No.</u>
<u>9 September 1998</u>	
Petri dish labeled, "01B MMH 3 Sep 98..."	01B
Petri dish labeled, "MMH 3 Sep 98 03B..."	03B

	<u>AFDIL Specimen No.</u>
<u>15 September 1998</u>	
Petri dish labeled, "02B MMH 3 Sep 98"	02B
Petri dish labeled, "MMH 04B MMH 3 Sept 98"	04B

	<u>AFDIL Specimen No.</u>
<u>13 October 1998</u>	
Paraffin block labeled, "01A"	01A
Paraffin block labeled, "02A"	02A
Paraffin block labeled, "03A"	03A
Paraffin block labeled, "04A"	04A

3. Methods

DNA is extracted from selected specimens. Multiple copies of a specific region of mtDNA are generated using the polymerase chain reaction (PCR). This region is known to have variability within the human population. The predominant base composition (or sequence) is determined using automated DNA sequencing chemistry and gel electrophoresis. The base composition consists of adenine (A), cytosine (C), guanine (G), and thymine (T). Sequence information is analyzed to determine variability when compared to a published standard sequence (Anderson, et al. 1981. *Nature* 290:457-465) that is presented as "Standard."

OAFME-DNA

SUBJECT: Consultation Report
AFIP Accession No. 2690845-00
National Archives Case No. C.E. 567
AFDIL Case No. 98C-1073

NOV 2 1999

- 4. Address further information to: DoD DNA Registry, Armed Forces Institute of Pathology Annex, ATTN: Armed Forces DNA Identification Laboratory, 1413 Research Boulevard, Building 101, Rockville, MD 20850-3125.

Richard E. Wilson
Supervisory DNA Analyst
Armed Forces DNA
Identification Laboratory

John H. Ryan
Chief DNA Analyst
Armed Forces DNA
Identification Laboratory

Mitchell M. Holland
Scientific Laboratory Director
Armed Forces DNA
Identification Laboratory

Brion C. Smith
LTC, DE, USA
Chief Deputy Medical Examiner
DoD DNA Registry

MAR-23-1996 15:51 FROM DNA LEGAL ASSISTANCE UNIT TO

57242457 P.02



U. S. Department of Justice
Criminal Division

Office of the ~~Assistant~~ Attorney General

Washington, D.C. 20530

January 25, 1996

MEMORANDUM

TO: Louis J. Freeh
Director
Federal Bureau of Investigation

FROM: *JDK* John C. Keeney
Acting Assistant Attorney General

SUBJECT: John F. Kennedy Assassination

As you are aware, the Department, with the support and encouragement of the Congress, has continued to review evidence and analyses submitted from a wide range of sources regarding the John F. Kennedy assassination, and has undertaken further investigation in response to potentially meritorious information or analyses to the extent that the expenditure of resources is deemed justified by the anticipated value of the results. John T. Orr, Jr., Chief of the Antitrust Division's Atlanta Field Office, has submitted an extensive analysis of assassination evidence in this matter to the Attorney General, and it is our opinion that Mr. Orr's observations, as reported in the attached document prepared by Mr. Orr, justify the performance of certain modest preliminary investigative measures to test the foundation of his assassination conspiracy theory. We would also appreciate recommendations from the Bureau regarding any further investigative measures which might be appropriate to address Mr. Orr's observations.

It is requested that the Bureau initiate an inquiry into specific aspects of Mr. Orr's assassination theory related to collected bullet fragments and residue now in the possession of the Federal Government. In particular, it is requested that the bullet and bullet fragments housed at the National Archives be examined, as recommended in the attached memorandum from the General Litigation and Legal Advice Section and in Mr. Orr's attached report, to identify the nature of any foreign matter contamination. Alleged fiber evidence embedded in the bullet nose recovered from the front seat of the limousine should be consistent with the President's shirt collar, tie, and tie liner -- thus establishing a different trajectory than that previously identified -- according to Mr. Orr's observations.

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A comparison of suspected pieces of the same bullet is also requested. If Mr. Orr's theory is correct, evaluation of identified wounds and bullet fragments should confirm the use of two very different types of ammunition. Both the fragments at the impact point of the "third shot" and the debris pattern visible in the skull x-rays should prove consistent only with a soft-nose or hollow-point ammunition, significantly different from the full-metal-jacket, military-style ammunition previously identified as the ammunition used for the assassination. In particular, the reported circular bullet fragment visible between the scalp and skull of the President in x-rays should be reevaluated to determine whether it is consistent with the copper base of a soft-nose or hollow-point bullet, and is thus inconsistent with the full-metal-jacket ammunition believed to have been fired by Oswald.

Finally, if the fabric evidence confirms Mr. Orr's view of the likely trajectory of the "first shot" and the ammunition "footprint" and residue confirm that one round (the "third shot") was very different in composition from the others, we request that the Bureau consider whether further investigation of aspects of the assassination to test Mr. Orr's theory is warranted, and, if so, what measures would be most productive.

The General Litigation and Legal Advice Section of the Criminal Division is familiar with this matter. Please have your staff contact Terry Lord, Acting Chief of that Section at (202) 514-1026, or Mr. Orr at (404) 331-7116 if additional information is needed. Please refer resulting investigative reports directly to the General Litigation and Legal Advice Section. Thank you.

Attachments

JH Vogel 514-1122