INVESTIGATION OF THE ASSASSINATION OF PRESIDENT JOHN F. KENNEDY

WITHDRAWN

APPENDIX TO HEARINGS

BEFORE THE

SELECT COMMITTEE ON ASSASSINATIONS

OF THE

U.S. HOUSE OF REPRESENTATIVES

NINETY-FIFTH CONGRESS

SECOND SESSION

VOLUME VIII

ACOUSTICS, POLYGRAPH, HANDWRITING, AND FINGERPRINT REPORTS

MARCH 1979

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U.S. GOVERNMENT PRINTING OFFICE
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A STUDY OF THE ACOUSTICS EVIDENCE RELATED TO THE ASSASSINATION OF PRESIDENT JOHN F. KENNEDY

Report to the

Select Committee on Assassinations

U.S. House of Representatives

Ninety-fifth Congress

Second Session

March 1979

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AN ANALYSIS OF RECORDED SOUNDS RELATING TO THE ASSASSINATION OF PRESIDENT JOHN F. KENNEDY*

(Prepared for Select Committee on Assassinations, U.S. House of Representatives, by Mark R. Weiss and Ernest Aschkenasy, Department of Computer Science, Queens College, City University of New York, February 1979)

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*Materials submitted for this report by the committee's acoustics panel were compiled by HSCA staff member Gary T. Cornwell.

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ACKNOWLEDGMENT

The authors gratefully acknowledge the support and cooperation of the New York Police Department in providing both the facilities and personnel needed to make test recordings of gunshot sounds. We particularly appreciate the assistance of Sgt. Eugene McDonnell, Officer Mario Buda, and Officer Steve Baymack of the NYPD communications division, and Lt. Frank McGee and Sgt. John O'Brien of the firearms unit. We wish also to express our appreciation for the generous assistance of Dr. Ali Ghozati of the Queens College Department of Computer Science during the preparation of this report.

FOREWORD

On September 11, 1978, Dr. James Barger of Bolt Beranek and Newman, Inc. (BBN) presented to the House Select Committee on Assassinations the results of a BBN analysis of a Dallas Police Department (DPD) recording that had been made on November 22, 1963. One of the reported findings was that, with a probability of 50 percent, the recording contains sounds of a gunshot, or at least sounds as loud as a gunshot, fired from the so-called grassy knoll area of Dealey Plaza in Dallas; they were received by a microphone on a DPD motorcycle that was moving on Elm Street at a speed of about 11 mph in the same direction as the Presidential motorcade. On October 24, 1978, the committee authorized the authors of this report to conduct an independent examination of that portion of the recording to determine with more certainty whether the sounds in question were of such a shot. The analysis was completed by the middle of December 1978 and described in a public presentation to the committee on December 29, 1978. This report describes the method and results of that analysis.

1.0 INTRODUCTION AND SUMMARY

1.1 Background

On November 22, 1963, in Dallas, Tex., at the time that shots were being fired in the assassination of President John F. Kennedy, a radio on a Dallas Police Department (DPD) motorcycle that apparently had a stuck microphone was transmitting sounds over channel 1 of the DPD radio network that were being recorded at DPD headquarters. In an analysis of this recording, authorized by the House Select Committee on Assassinations, Dr. James Barger and his colleagues at Bolt Beranek and Newman, Inc. (BBN) isolated four groups of sound impulses and identified them as probable sounds of gunshots, and not merely random noise. They calculated that the statistical probabilities that these identifications were correct were, in order of increasing time of occurrence of the sounds, 88 percent, 88 percent, 50 percent, and 75 percent. BBN found that the probable cause of the first, second, and fourth of these groups of impulses were noises as loud as gunshots originating in the vicinity of the sixth floor southeast corner window of the Texas School Book Depository (TSBD) in Dealey Plaza. The probable cause of the third group of impulses was a similarly loud sound from the vicinity of the so-called grassy knoll area of Dealey Plaza. BBN also found that all of the groups of sounds were picked up by a microphone on a DPD motorcycle and that at the time of the third probable gunshot, the motorcycle was on Elm Street in Dealey Plaza, moving at a speed of about 11 miles per hour in the same direction as the motorcade. On October 24, 1978, the committee authorized the authors of this report to perform an independent examination of the sounds on the DPD recording to determine with a higher level of certainty if the third group of impulses was caused by the sounds of a gunshot from the grassy knoll.

1.2 Materials provided for the examination

At the time we began our analyses, we were provided with the following materials:

1. A high-fidelity tape-recorded copy of the original DPD recording.
2. A high-fidelity tape-recorded copy of the DPD tape recording that had been examined by BBN.
3. A high-fidelity tape-recorded copy of the sounds of gunshots that were recorded by BBN during an acoustical reconstruction experiment conducted in Dealey Plaza on August 20, 1978.
4. A topographical survey map of Dealey Plaza, plotted at a scale of 1 inch equal to 10 feet.
5. A map of Dealey Plaza, plotted at a scale of 1 inch equal to 40 feet, on which the locations of microphones used in the reconstruction experiment were indicated.
6. Aerial and ground level photographs of Dealey Plaza and relevant surrounding structures.

In addition, the committee staff provided to us various necessary items of informations, such as the heights of buildings in Dealey Plaza, the distance to objects not shown on the maps, the location of the DPD motorcycle during the BBN reconstruction experiment and the air temperature in Dealey Plaza at the time of the assassination and during the reconstruction experiment.

1.3 Preliminary review of the characteristics and sources of the recorded sounds

During 1963, communications that were transmitted on channel 1 of the DPD radio dispatching system were recorded continuously on a Dictabelt recorder. On November 22, 1963, a microphone on a mobile transmitter that was set to channel 1 apparently became stuck in the "on" position at about 12:28 p.m. and for about 5 minutes continuously transmitted sounds that it picked up. When we first listened to this interval on the DPD recording, we found that it contained a nearly continuous noise, with occasional speech, whistles, and clicks. Also recorded on the Dictabelt in this interval were the sounds that BBN identified as probable gunshots. To the ear, these sounds resembled static much more than they did a gunshot. However, as Dr. Barger testified in September, and as we independently verified, the equipment that was used in the DPD radio dispatching system was not designed to handle sounds as intense as a gunshot, and it was therefore likely to have recorded such sounds with very poor fidelity. Consequently, we recognized that these static-like sounds could be distorted gunshot sounds. On the other hand, such static-like sounds, theoretically could have been generated by a number of other sources, some acoustic, some related to electrical or mechanical disturbances in the DPD radio transmission, reception or recording equipment. Some test more discerning than the human ear was required to determine the probable cause of the sound impulses.

1.4 Basic principles and methods of analysis

To answer the basic question, "Was the third group of recorded sounds generated by a gunshot from the grassy knoll?" with a high level of certainty, these sounds needed to be examined for some characteristic that they would have had if they had been generated by such a gunshot, and would not be likely to have had if they had not been. Of the several characteristics that can be used, the most effective and most reliable one is the sequence of delay times of the muzzle-blast echoes.

The firing of a gun generates a very loud, very brief explosive blast at the muzzle of the gun. This sound, which typically lasts about five one-thousandths of a second (0.005 seconds, or 5 milliseconds), spreads out in all directions from the gun. If the muzzle blast strikes a wall of a structure, it will be reflected from the surface and will move away from it in a new direction. If the muzzle blast strikes the corner of a structure, it will be diffracted, that is, it will spread out from the corner in many directions. These reflected and diffracted sounds are the echoes of the muzzle blast. Like the muzzle blast, which they closely resemble, the individual echoes are very short in duration. The strengths of the echoes tend to diminish with time, the earliest ones being very loud and the later ones growing progressively weaker as they arrive from increasingly distant locations.

The time taken for the muzzle blast to be heard at some location depends solely on how fast the sound travels and how far the listener is from the gun. For example, at 65°F the speed of sound is 1123 ft/sec. A listener 112.3 feet away from a gun would hear its muzzle blast 0.1 second after the gun was fired. The time taken for the muzzle blast echoes to be heard also depends on the speed of sound and on the total distance each echo must travel, which is the total of the distance from

the gun to the echo-producing object and then to the listener. Since the distance traveled by the muzzle blast to a listener must be less than the distance traveled by one of its echoes, the bang of the muzzle blast is always heard first. Then the echoes that are produced by the muzzle blast bouncing off the corners and surfaces of structures are heard.

If we now assume that the sound source (the gun) and the listener are located in a typical urban environment, with a number of randomly spaced echo-producing structures, it is possible to see that the pattern of sounds a listener will hear will be complex and unique for any given pair of gun and listener locations. For example, assuming a fixed location of a listener, the echoes that he hears and the times at which he hears them will be related uniquely to the location of the gun, since for each different location of the gun, even though the distances from the listener to the various echo-producing objects are the same, the distances from these objects to each gun location are different. Consequently, the times at which the echoes are heard will be different for each location of the gun. Similarly, assuming a fixed location of the gun, any change in the location of the listener will change the distances between him and the echo-producing structures, and thus the timing of the pattern of sounds he hears. If the listener is in motion as the muzzle blast and the various echo sounds reach him, the times at which he hears the muzzle blast and its echoes will be related uniquely to his location when he hears each sound.

A listener cannot tell, from the sounds of a gunshot, when the gun was fired. He can determine only the times that elapse between the muzzle blast and each of its echoes. These elapsed times are called the echo-delay times. Because the echo travel times are uniquely related to the locations of the gun and the listener, the echo-delay times are unique to any given pair of those locations. Hence, if we know the temperature (and thus, the speed of sound) and the location of the echo-producing structures, echo-delay times can be used to characterize the sounds of a gunshot for any pair of shooter and listener locations.

The "listener" that we have discussed, of course, could be either a human ear or a microphone. If a microphone receives the sounds and they are subsequently recorded, the recording becomes a picture of the event, not unlike a "fingerprint," that permanently characterizes the original gun and microphone locations.

Echo-delay times in such recordings can be measured easily and precisely by producing a graph of their waveforms on an oscillogram, or oscillograph. Such a graph is shown in figure 1. The narrow peaks represent individual sounds of brief duration (that is, impulse-sounds). The heights of the peaks correspond to the loudness of the impulse-sounds; the spacing between peaks corresponds to the time that elapses between them. The largest of the impulse peaks is the muzzle blast. The peaks that follow it are its individual echoes. The distance between the peak that is identified as the muzzle blast and each peak that repre-

sents an echo is a measure of the delay time of the echo. To convert this distance to a time measurement, it is multiplied by the time-scale of the graph. For example, the muzzle blast impulse in figure 1 and the sixth peak identified as an echo are 47 millimeters apart. Since the time-scale is 1 millisecond per millimeter (1 msec/mm), the measured echo-delay time is 47 milliseconds.

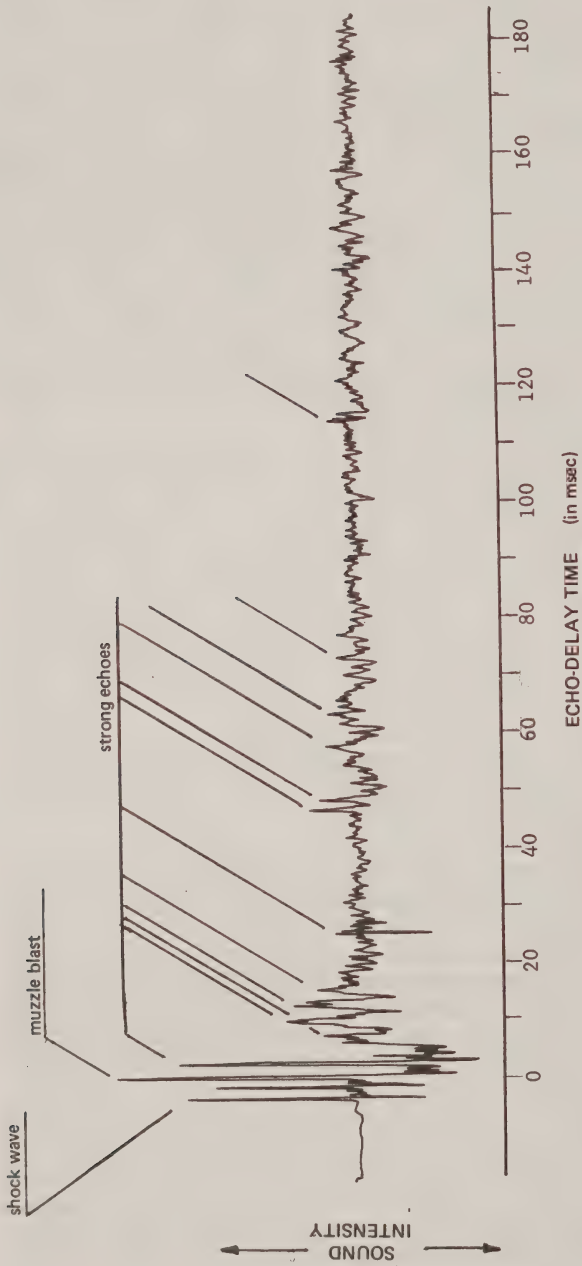


FIGURE 1.—WAVEFORMS OF THE SOUNDS OF A GUNSHOT

It is easy to see how such a graph may be used for identification purposes. It provides a picture of the complex, random spacings of the echo-delay times. When the temperature of the air and the locations of the echo-producing objects are known, the graph is uniquely related to a particular pair of gun and microphone locations. This complex picture can be compared to other such graphs. If the random pattern of echo-delay times (the spacings between peaks) matches in any two such graphs, it may be concluded that the sounds and listener locations that produced both graphs were the same.

Of course, it may be that no second graph can be found that matches the first. Using the fingerprint identification process as an analogy, if a latent fingerprint taken from a knife found protruding from a murder victim's body is given to the FBI for identification, it may be that no matching "known" print is on file at FBI headquarters and that the murderer cannot be immediately identified. Furthermore, the police may proceed to take fingerprint samples from all of the suspects in the case and find that none match the one found on the murder weapon. In the end, the latent fingerprint may not be identified.

Applying the analogy to the graphs of sounds, our problem was to see if any of a number of assumed pairs of shooter and microphone locations would produce a pattern of sounds whose graph would match the graph of the sounds in question on the DPD tape. Before beginning the search, we knew that, just as in fingerprint identification cases, in the end we might find no match. If that occurred, of course, either of two conclusions would be required: (1) The real shooter and microphone locations could not be identified, or (2) the sounds on the tape were not produced by a gunshot in Dealey Plaza. On the other hand, if we found a shooter and microphone location that in combination would cause the same unique, random pattern of echo-delay times that were contained on the DPD tape recording, those sounds could be identified as probably being caused by such a gunshot.

For the sounds on the DPD recording, we knew what two of the four conditions that determine echo-delay time were at the time of the assassination. We knew what the speed of sound was and we knew where the major echo-producing objects were (and still are). We did not know exactly where to locate the gun, nor did we know through which sequence of locations on Elm Street to move the microphone. Therefore, we had to determine numerous hypothetical sequences of echo-delay times for gunshots that may have been fired from a variety of locations on the grassy knoll and picked up by microphones that moved through a variety of locations on Elm Street. This was accomplished in the only practical way possible—by predicting (i.e., mathematically calculating) the echo-delay time sequences that would be obtained for the various locations of a gun and a microphone.

After numerous comparisons between the echo-delay times for the sounds on the DPD recording and various predicted patterns for assumed motorcycle and shooter locations that did not match, a combination of motorcycle and shooter locations was found which mathematically produced a predicted pattern that showed strong similarities to the pattern of impulses on the DPD tape. However, to determine with a high level of certainty if these two sequences of echo-delay times, which were derived from different data, represented the same source, it was not enough to show that the sequences looked alike.

They had to be shown to be alike in an objective sense, that is, by use of a method of comparison that disregarded potentially misleading appearances. Such a method was provided by a computation of the binary correlation coefficient of the two sequences. The binary correlation coefficient of two sequences is a number that is exactly 1.0 if the sequences are identical and that rapidly approaches zero as they grow more dissimilar. As used in this analysis, the binary correlation coefficient takes into account the number of echo-delay times in each of the sequences and the number of echoes that coincide. Echoes in the two sequences are said to coincide if their delay times differ by a small amount. The smaller this amount, or "coincidence window," can be made while maintaining a high binary correlation coefficient, the greater will be the probability that the DPD sequence represents a gunshot from the grassy knoll.

1.5 Results of the analysis

Two different comparisons were made between the sequence of echo-delay times on the DPD tape and the most similar sequence of predicted echo-delay times. One of the comparisons was between those recorded sounds that were significantly louder than the average background noise and those predicted echoes that would have been recorded with comparable loudness. In the other comparison, the delay times of all of the recorded sounds and of all of the predicted echoes, up to a total delay of 50 milliseconds from the muzzle blast, were compared. The computed binary correlation coefficient was found to be 0.79 for the first comparison and 0.75 for the second.

In both of the comparisons described above, the coincidence window was set at ± 1 millisecond. That is, a measured echo-delay time and a predicted one were said to coincide only if they were no more than 1 millisecond apart. For sequences that correlated at levels greater than 0.7 with a coincidence window of ± 1 millisecond, the statistical probability was 95 percent or more that the sequences represented the same source—a sound as loud as a gunshot from the grassy knoll. Put alternatively, the probability that the sounds on the DPD recording were generated by sources other than a sound as loud as a gunshot originating from the grassy knoll is 5 percent or less.

1.6 Findings

The results of our analysis of sounds on the DPD recording permit the following findings:

1. The recording very probably contains the sound of a gunshot that was fired from the grassy knoll. The probability of this event is computed to be at least 95 percent.
2. The microphone that picked up the sounds of the probable gunshot was on Elm Street and was moving at a speed of about 11 miles per hour in the same direction as the motorcade. At the time the probable gunshot was fired, the microphone was at a point about 97 feet south of the TSBD and about 27 feet east of the southwest corner of the building. (For both distances, the uncertainty is about ± 1 foot.)
3. The probable gunshot was fired from a point along the east-west line of the wooden stockade fence on the grassy knoll, about 8 feet (± 5 feet) west of the corner of the fence.

1.7 Outline of the Report

The method and results of this analysis are described in detail in the sections of the report that follow. The sounds on the DPD recording are described in section 2. Following in section 3, is a discussion of the nature of the problems in this analysis and of the considerations that underlie the method of solution. Section 4 discusses the steps that were taken to implement the procedure for predicting echo-delay times and describes the method and results of a test of this procedure. Section 5 discusses the methods that were used to determine and to compare echo-delay times for the recorded and predicted sequences.

2.0 DESCRIPTION OF THE RECORDED SOUNDS

The DPD recording contains a wide range of sounds—speech, clicks, whistles, motor noises, sirens and even the sound of a carillon bell. Mostly the recording contains sounds generated during normal communications on channel 1 of the DPD radio dispatching system. The speech transmissions usually were preceded and followed by sharp clicks. These were keying transients, probably generated by the switch on the transmitter microphones when they were turned on or off. Occasionally, a transmission was attempted while another one was in progress. When this occurred, the interference between the two transmitters usually generated a brief whistle, known as a heterodyne tone, that immediately followed the keying click of the oncoming microphone. At a time that the BBN analysis estimates to have been about 12:28 p.m., a microphone on a mobile unit apparently became stuck in the "on" position and began to transmit a continuous noise that is believed to be the sound of a motorcycle engine. For the first 2 minutes of the stuck-microphone transmission, the sound level of this noise is fairly constant. Occasionally, clicks and whistles can be heard through the noise, indicating attempts by other transmitters to use the channel. At several points, voices can be heard, but, being obscured by the noise, they cannot be understood. At 133 seconds after the start of the stuck-microphone transmission, the level of the noise drops by about 6 decibels (that is, to about one-fourth of its previous level). At almost the same moment a voice can be heard, communicating a brief but unintelligible message. This is followed about 3 seconds later by a series of randomly spaced, loud clicks and pops that lasts for at least 10 seconds. Some of the clicks occur singly, some in groups. Only one of them is accompanied by a heterodyne whistle and by an audible but unintelligible voice.

3.0 THE NATURE OF THE PROBLEM AND THE METHOD OF SOLUTION

3.1 Distortion of the relative intensities of the echoes

The sounds on the DPD recording that are thought to be those of gunshots begin about 5 seconds after the decrease in the level of the continuous noise and last for about 8 seconds. To the ear, these sounds resemble static, not gunshots. However, the equipment that was used in the DPD radio dispatching system in 1963 would have distorted the sounds of gunfire. The effect would have been to compress the peak amplitude of the sounds of the muzzle blast and of its strongest echoes, making them only slightly louder than those of some of the weaker

echoes. Furthermore, if the microphone was on a DPD motorcycle in the motorcade, most of the many very weak echoes of the muzzle blast would have been obscured by the noise of the motorcycle engine (which is possibly the source of the continuous noise on the DPD recording). Consequently, the sounds of a gunshot would have been recorded as a sequence of very brief impulse-sounds (the muzzle blast and its loudest echoes), only a few of which would have been larger than the accompanying engine noise, and none of which would have sounded to the ear like gunshots after being distorted by the limiting circuitry of the DPD radio and recording equipment.

3.2 Waveforms of the sounds on the DPD recording

The waveforms of sounds in the DPD recording are shown in figure 2. The waveforms in the bracketed region include the group of impulse-sounds that the BBN analysis identified as a probable gunshot from the grassy knoll. This segment of the recording begins 144.9 seconds after the start of the stuck-microphone transmission and lasts for 0.36 seconds. The noise thresholds shown in the figure indicate the average peak levels of noise (mostly motorcycle noise) that can be heard immediately before and after this segment.

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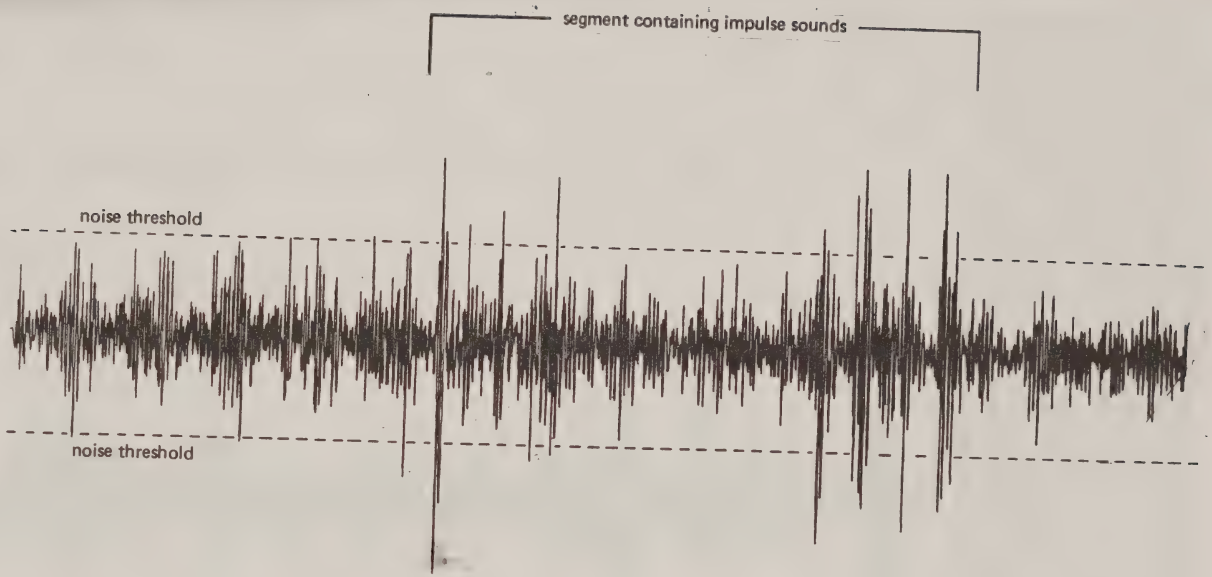


FIGURE 2 WAVEFORMS OF SOUNDS IN THE DPD RECORDING

Figure 3 shows the bracketed region in greater detail. The narrow peaks that exceed the thresholds, as well as many of those that do not, are the waveforms of the impulse-sounds that may be the sounds of a gunshot. Impulse peaks that are less than 1 millisecond apart are considered to be part of the same impulse. Altogether, 15 impulses exceed the thresholds. Five of them occur in the first 85 milliseconds following the one that is labeled as the muzzle blast. The remaining nine impulses occur in the 100-millisecond wide interval that begins about 280 milliseconds after the assumed muzzle blast.

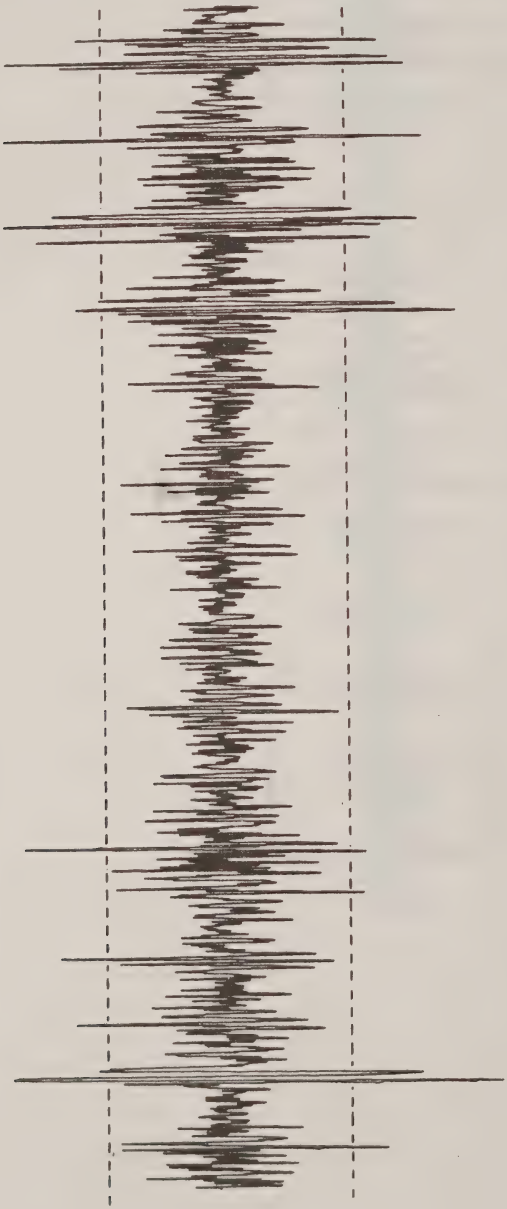


FIGURE 3 EXPANDED GRAPH OF WAVEFORMS OF SOUNDS IN THE DPD RECORDING

3.3 Possible sources of the impulse sounds

While it was possible that the louder impulse noises were the distorted sounds of a gunshot, it also is possible that they could have been generated in other ways. For example, they could have been the sounds of misfiring of the motorcycle engine. They could have been static-like impulse noises generated by the motorcycle's ignition system and picked up by the transmitter. The microphone that was stuck in the "on" position could itself have been the cause of impulses if from time-to-time it became unstuck and turned off briefly and then immediately turned on again. Impulse noises in the recording could also have resulted from scratches in the dictabelt on which the recording was made. Other components of the communication system could have been malfunctioning, producing electrical or mechanical disturbances that would have been recorded as clicks.

3.4 Method of the analysis

The essential questions to be answered were: "What is the source of the impulse-sounds in the DPD recording? Are they derived from the sounds of a gunshot that was fired from the grassy knoll and picked up by a microphone that was moving on Elm Street, or are they derived from one or more of the many other possible sources?" These questions could be answered with a high degree of certainty if the impulses could be shown to exhibit a characteristic that they would be expected to exhibit if they had been generated by a gunshot, and would not be likely to exhibit if they had not been. As explained in Section 1, such a characteristic is found in the unique pattern of time delays of echoes that buildings and other structures in Dealey Plaza would generate for a gunshot fired from the grassy knoll. If the impulse noises are the distorted sounds of a gunshot, their spacing should closely match that predicted for a shot fired from some location on the grassy knoll and "heard" by a microphone traveling along some path on Elm Street at 11 miles per hour. The closer the match between the actual and the predicted sequences, the greater the probability that the impulses are the sounds of a gunshot. If no shooter and microphone location can be found that can produce a sequence of echoes that closely matches the sequence of impulses on the tape recording, then it would have to be concluded that the impulses were not generated by sounds received by a microphone moving on Elm Street from a gun fired on the grassy knoll.

The procedure for determining the probable cause of the specified group of impulses on the DPD recording thus consisted of three steps. First was to calculate the pattern of echo delays that would be produced by a gunshot from a variety of locations on the grassy knoll and recorded by a microphone moving along a variety of paths on Elm Street. Then, select the sequence of predicted echoes that most closely matched the actual recorded sequence of impulses. Finally, compute the probability that impulse sounds generated by sources other than the predicted gunshot could occur by chance in a sequence that would match the selected echo sequence as closely as did the actual DPD recording.

4.0 IMPLEMENTATION OF THE ANALYSIS

4.1 Preliminary considerations

The implementation of the three-step procedure of the analysis required the consideration of a number of questions. Each of these affected either the results of the analysis or the method by which the required echo-delay time sequences were obtained.

4.1.1 Source of the gunshot sounds

If a gun was fired from the grassy knoll during the assassination, the would-be assassin reasonably could have used either a rifle or a pistol, since the target would have been less than 150 feet away. Since rifles typically fire bullets that travel faster than the speed of sound, the firing of a rifle generates two intermixed echo sequences composed of the echoes of the muzzle blast and the echoes of the continuously generated shock wave that is created by a bullet in supersonic flight. On the other hand, most pistol bullets do not fly at supersonic speeds. A pistol that fires a subsonic bullet generates only the set of echoes of the muzzle blast. Since we did not know what type of gun, if any, had actually been used on November 22, 1963, we sought only to compare the DPD tape with predicted sequences of echoes of muzzle blasts which would have been present regardless of the type of weapon fired.*

4.1.2 Placement of the gun on the grassy knoll

The BBN analysis indicated that the gun was in the vicinity of the grassy knoll. During the acoustic reconstruction experiment that was conducted by BBN in Dealey Plaza on August 20, 1978, shots were fired from behind the wooden stockade fence on the grassy knoll. This location was consistent with available eyewitness and earwitness testimony. It was a reasonable one since it afforded good visibility of Elm Street while providing good cover for the shooter of a gun. At any other location on the grassy knoll either the visibility or the cover would have been substantially poorer. However, it is uncertain exactly where a shooter would have stood behind the fence, since equally good locations can be found up to 25 feet along the fence either north or west of its corner.

4.1.3 Placement of the microphone on Elm Street

The BBN analysis placed the stuck microphone on Elm Street in the vicinity of the fourth microphone in the third array of microphones that were set up in Dealey Plaza during the acoustic reconstruction experiment. As illustrated in figure 4, the microphones were located in the center of the street at points 18 feet apart along the route of the Presidential motorcade, from the intersection of Houston and Main Streets to the location of the Presidential limousine on Elm Street in Zapruder frame 312. The sounds of a gunshot from the grassy knoll received by each of these microphones were recorded during the experiment. Later, BBN determined the degree of match between the

*The DPD recording does contain a series of impulses that precede the large impulse ultimately determined to be the muzzle blast. The probability that these earlier impulses were the sounds of supersonic shock wave was discussed by Dr. Barger in his testimony before the committee on Dec. 29, 1978. See Vol. V of the hearings before the select committee, 94th Cong., 2d session (Washington, D.C.: U.S. Government Printing Office, 1979).

recordings from each of these microphones and the impulse noises on the DPD recording by calculating their binary correlation coefficients. A coincidence window of ±6 milliseconds was used for these comparisons. Only one of the 36 comparisons yielded a correlation coefficient greater than 0.5 when compared with the segment of the DPD tape that is here at issue. That one—for the sounds received by microphone 4 in array 3—was at a level of 0.8, indicating a strong similarity between the echo sequence that was heard at that test loca-

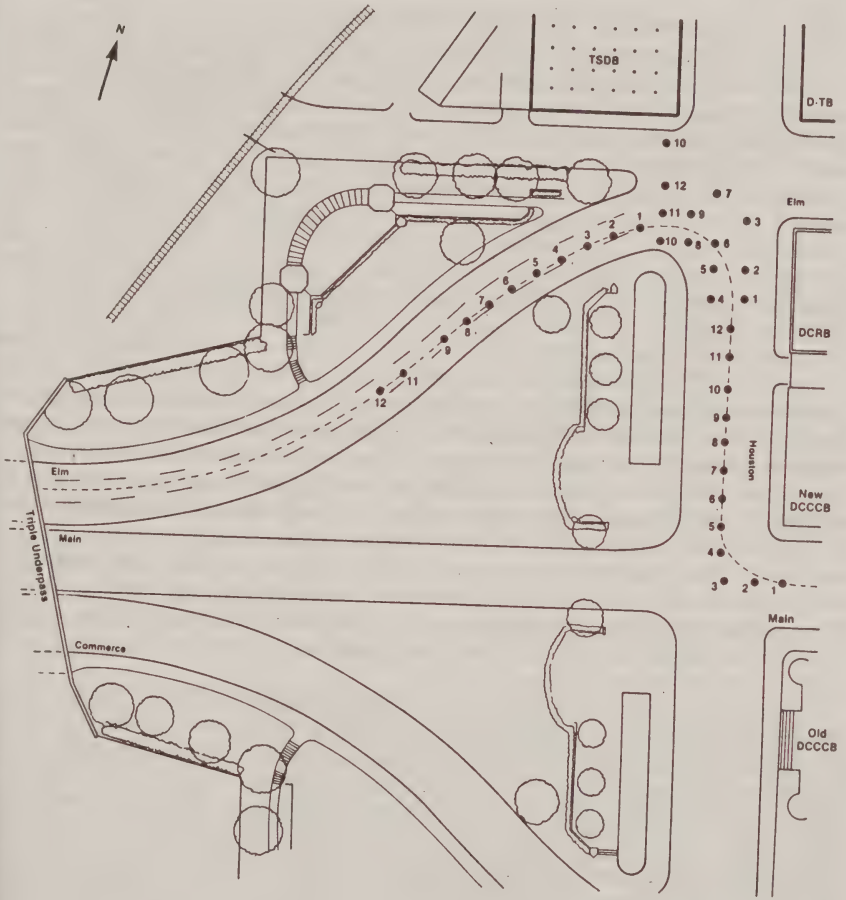


FIGURE 4 MICROPHONE LOCATIONS AT DEALEY PLAZA

tion in Dealey Plaza and the impulse sequence on the DPD recording. The low values of the binary correlation coefficients that were calculated for all of the other microphones indicate that there is no other microphone location either on Elm Street or on Houston Street at which a sequence of echoes caused by a shot from the grassy knoll could

be heard that was even moderately similar to the sequence of impulses on the DPD recording. It was therefore clear that for the purpose of analysis the microphone location in Dealey Plaza for which echo sequences had to be obtained was in the vicinity of microphone 4 of array 3. This region extends along Elm Street from halfway between microphones 3 and 4 to halfway between microphones 4 and 5, and from curb to curb (since the presumed motorcycle with the stuck microphone could be anywhere to the right or left of the center of the street).

4.1.4 Selection of the coincidence window

To compare sequences of impulses and echoes by use of the binary correlation coefficient, it was necessary first to determine how many echoes coincided with impulses. Ideally, if the microphones that were used in the acoustic reconstruction experiment could have been spaced very closely along the route of the motorcade. say, 1 foot apart, and spread from curb to curb, impulses and echoes that were within 1 millisecond of one another could have been considered coincident. For practical reasons, the microphones were located in the middle of the street and spaced 18 feet apart. Also, only one of many possible shooter locations was used. To take into account these practicalities, the coincidence window for BBN's analysis was made ± 6 milliseconds. If a window of ± 1 millisecond had been used, there would have been few points of coincidence in any comparison, and all of the calculated binary correlation coefficients would have been small, since the chances would have been small that a microphone and a shooter would have been arbitrarily located in precisely the correct positions to receive a sequence of echoes that coincided with the sequence of impulses to within 1 millisecond. By increasing the coincidence window to ± 6 milliseconds, the number of coincident impulses and echoes was increased. However, so was the possibility that an impulse generated by a source other than a gunshot would appear to coincide with an echo. The major consequence of this was the value of 50 percent computed as the statistical probability that the impulses under examination were caused by the sounds of a gunshot.

To increase the certainty in our findings above a 50-percent level, we had to be able to reduce the coincidence window to as low a value as possible, preferably to ± 1 millisecond or less. Theoretically, this could be accomplished by placing microphones 1 foot apart in the region of interest and conducting additional test firings in Dealey Plaza from various locations on the grassy knoll. With respect to the microphone location problem alone, the relevant area on the street would be 720 square feet. Therefore, if, as in the BBN acoustic reconstruction experiment, microphones were placed in arrays of 12 each, a total of 60 arrays would be required for each position of a gun fired on the grassy knoll. Clearly, this approach was impractical.

4.1.5 Prediction of echo sequences

The only practical way to obtain the needed echo sequence was to predict them analytically. Using fundamental principles of acoustics, it was possible to compute the time it would take for the sound of a muzzle blast to travel from a gun at any assumed point on the grassy knoll to a microphone at any assumed point on Elm Street. Knowing where the echo-producing objects were in Dealey Plaza, it was also

possible to compute the time it would take for echoes of the muzzle blast to travel from the gun to the microphone. Subtracting the muzzle-blast travel time from the echo travel times yielded the required sequence of echo-delay times.

The principles of acoustics that underlie this approach are described in detail in BBN Report. No. 3497 that was submitted to the committee in January 1979.* The essential principles can be summarized as follows:

1. Most sounds spread out in all directions from the source of the sound.
2. If the medium (in this case, air) through which sound travels is uniform, sound will travel in straight lines from the source and at the same constant velocity in all directions of travel.
3. The time taken for sound to travel from one point to another can be computed by dividing the distance between the points by the speed of sound. For example, at a speed of 1,100 feet per second, it will take 0.5 second for sound to travel a distance of 550 feet. Conversely, the distance traveled by a sound can be computed by multiplying the travel time by the speed of sound.
4. Sound traveling through air will reflect from the surfaces and diffract from the corners of structures such as buildings, walls and columns.

4.2 Information needed to predict echo-delay sequences

Before the echo travel times could be calculated, it was necessary to determine three things: (1) Which objects in Dealey Plaza would produce echoes in the region of interest on Elm Street for a gun fired from the vicinity of the grassy knoll; (2) how far these objects were from the locations of the gun and of the microphone; and (3) what was the speed of sound under the conditions for which the echo travel times were to be predicted. When the required information had been obtained, it was used first to determine the accuracy of the echo procedure. Then it was used to predict echoes for comparison with the impulses in the DPD recording.

4.2.1 Identification of echo-producing objects

The objects in Dealey Plaza that would generate relevant echoes were identified with the aid of a topographical survey map of the plaza that was drawn to a scale of 1 inch equal to 10 feet. Most of these objects were corners of buildings or of walls that, as illustrated in figure 5, produced muzzle blast echoes in the selected region on Elm Street by diffracting the incident sound of a muzzle blast that was generated in the vicinity of the grassy knoll. Two of the objects, the wall of the DCRB and the curved wall at the reflecting pool, produced echoes by reflecting such a sound. In all, we were able to identify 22 objects that would generate echoes of sufficient strength that they would have been recorded on the Dictabelt recording. (See table 1.)

4.2.2 Measurement of distances in Dealey Plaza

The distances of the echo-producing objects from positions of a gun and a microphone were determined by direct measurement on the

*This report follows the present report.

survey map. By comparing the known widths of buildings in Dealey Plaza with measurements made on the map, we found the distances measured on the map to be accurate to about 0.5 foot. We measured distances on the map in millimeters, to the nearest half-millimeter. This simplified the making of measurements by providing a decimal

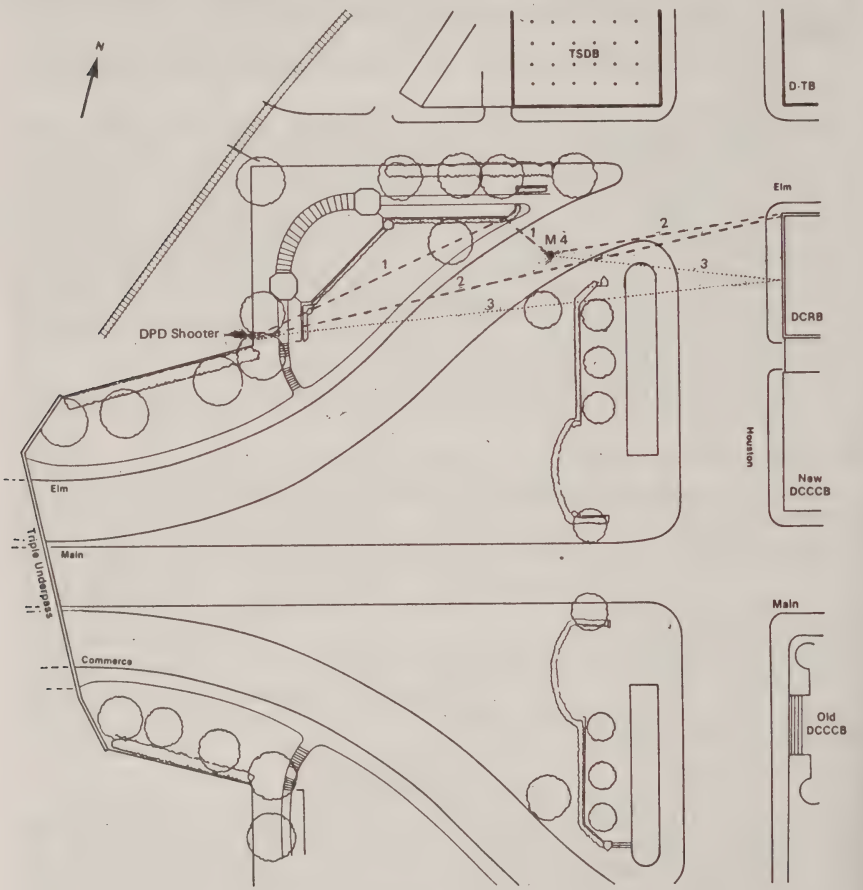


FIGURE 5 PATHS OF THREE MUZZLE BLAST ECHOES

scale. To simplify the calculation of the travel time of the echoes, we converted the speed of sound to an equivalent value for map distances that were measured in millimeters. For example, a speed of sound of 1,123 feet per second was converted to 2,852 millimeters per second for map measurements made in millimeters.

4.2.3 The speed of sound

The speed of sound in air is primarily a function of the temperature of the air. At a temperature of 65° Fahrenheit, it is 1,123 feet per second, and at 90° Fahrenheit it is 1,150 feet per second. To a first order approximation, in this temperature range the speed of sound increases at a rate of 1 foot per second per degree Fahrenheit. By comparison, humidity has a negligible effect on the speed of sound in air. Similarly, small variations in the temperature at different locations in Dealey Plaza would have a negligible effect on the average speed of sound over the path lengths of the echoes.

According to records of the weather bureau in Dallas, as obtained by the committee staff,* the temperature in Dallas at 12:30 p.m. on November 22, 1963 was 65° Fahrenheit. This was substantially confirmed by a photograph that was taken in Dealey Plaza at about that time. In it, a sign on top of the TSBD can be seen on which the time is indicated as 12:40 and the temperature in Dealey Plaza as 68° Fahrenheit. Even if the temperature that was supplied by the weather bureau varied from the temperature in Dealey Plaza by 3° Fahrenheit, the resulting error of 3 feet per second is less than 0.27 percent of the speed of sound at 65° Fahrenheit. For most of the echoes, the resulting error in the computed echo-delay time would be less than 0.25 millisecond. Even for the echoes that travel the longest echo paths, the error would be less than 1 millisecond. In either case, the error is within the accuracy required for the echo prediction procedure. As is explained later in this report, temperature differences up to ±10° Fahrenheit would have had negligible effect on the final results and would not substantially have changed the final conclusion nor the degree of confidence (the final statistical probability) that can be appropriately assigned to it.

Wind also will affect the speed of sound, increasing or decreasing it by an amount that depends on the speed of the wind and on the angle between the direction of the wind and the direction the sound travels. However, the delay time of an echo, which is determined by subtracting the muzzle blast travel time from the echo travel time, will be affected by wind only to the extent that the wind affects the echo and muzzle blast travel times differently. This in turn depends on the difference between the direction of the echo path and the direction of the direct muzzle blast path. For a gunshot fired from the grassy knoll and heard on Elm Street, the travel of most echoes is in approximately the same direction as the directly received muzzle blast. Consequently, the effect of wind on the delay times of these echoes is comparatively small, becoming significant only for windspeeds greater than 40 miles per hour. The weather bureau recorded winds in Dallas on November 22, 1963, as ranging only between 13 knots and 17 knots, which is roughly equal to 15 to 20 miles per hour.**

4.3 Accuracy of the echo prediction procedure

Before proceeding to predict sequences of echoes for comparison with the sequence of impulses on the DPD recording, the accuracy of

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* See addendum A to the acoustics reports.

**The actual recordings made at Dallas Love Field were 13 knots at 11:55 a.m., 13 knots at 12:30 p.m., and 17 knots at 1:00 p.m. See addendum B to the acoustics report.

the echo prediction procedure was tested. Given the estimated accuracy of the map, we expected to be able to predict echo-delay times to within ±1 millisecond for specified locations of a gun and a microphone. However, it was essential to verify that this accuracy would be achieved in practice and that the identified echo-producing objects would generate significant echoes in the region of interest on Elm Street.

To test the procedure, we predicted the delay times of the echoes that would be received by a microphone at the location of microphone 4 of array 3, as shown in figure 5, for a shot fired from the grassy knoll by the DPD shooter during the acoustic reconstruction experiment. We then compared the predicted echo-delay times to echo-delay times actually recorded on the BBN tape recording of the shot that was fired by the DPD shooter. At the time that the test shot was fired, the temperature in Dealey Plaza was approximately 90° Fahrenheit. Accordingly, the value used for the speed of sound was 1,150 feet per second. As discussed in section 4.1.5, the echo-delay time is computed by subtracting the muzzle blast travel time (185.2 msec.) from the echo travel time. The muzzle blast travel time is obtained by dividing the distance between the gun and the microphone in Dealey Plaza (213 feet) by the speed of sound.

For echoes produced at the corners of structures, the measurement procedure was simple and direct. For example, the path of echo 2 in figure 5 consisted of two segments. As measured on the map, the segment from the shooter to the diffraction point was 499 millimeters and from that point to the microphone was 92 millimeters. The total path length, 591 millimeters, when divided by the sound-speed constant (2921 mm/sec) yielded an echo travel time of 0.2024 second (202.4 msec). Subtracting the muzzle blast travel time from the echo travel time yielded an echo-delay time of 17.2 milliseconds.

For an echo produced by a specular reflection, it was necessary first to locate the point at which the reflection would occur. Such reflections occur at that point on an echo-producing surface at which the total length of the echo path to that surface is a minimum. At that point, the reflecting surface will be tangent to an ellipse for which the locations of the gun and the microphone are the locii and the total length of the echo path is equal to the sum of the radii. The required ellipse was easily generated by the following procedure. First, a nonextensible string was cut to a length greater than the probable length of the echo path on the topographical map. One end of the string was tied to a pin at the location of the gun and a portion of the string near its other end was wrapped tightly around a pin at the location of the microphone. The string was then pulled toward the reflecting surface by the point of a pencil. With the string drawn taut, the pencil was moved so that its point drew an arc on the map in the region of the line that represented the reflecting surface. The length of the string was then adjusted until the arc was just tangent to the line. The point at which the arc touched the line was the desired point of reflection. The path from the gun to the point of reflection and then to the microphone (the echo path) was then measured. The total distance of the echo path divided by the speed of sound was the echo travel time. Subtracting from it the muzzle blast travel time yielded the echo-delay time.

TABLE 1.— *List of structures in Dealey Plaza that would have produced echoes of sufficient strength to have been recorded on the DPD tape*

Object No.:	*Identification*
1	South shelter : South door, east post.
2	South shelter : East door, south post.
3	South shelter : East door, north post.
4	North shelter : South door, west post.
5	North shelter : South door, east post.
6	North shelter : East door, south post.
7	North shelter : East door, north post.
8	Wall "A." [1]
9	Wall "A" : Corner 1.
10	Wall "A" : Corner 2.
11	Column "A" [2] : Southwest corner.
12	Wall "B" [3] : Corner 1.
13	Wall "B" : Corner 2.
14	Column "B" [4] : West corner.
15	Wall at the north end of the reflecting pool.
16	DCRB : Southwest corner.
17	DCRB : Northwest corner.
18	DCRB : West wall (front of building).
19	DCRB : Roof edge on west wall.
20	DCRB : Southwest corner.
21	New DCCCB : Northwest corner.
22	DCRB—New DCCCB : Alley wall between buildings.

[1] Wall "A" is a concrete wall on the north side of Elm St. that runs in an east-west direction. Corners 1 and 2 are at the east end of the wall. The direction of the wall changes from east to northeast at corner 1, and from northeast to north at corner 2.

[2] Column "A" is a concrete column on the north side of Elm St. near the intersection with Houston St.

[3] Wall "B" is a concrete wall on the south side of Elm St. near the reflecting pool. It runs in a generally north-south direction. Corners 1 and 2 are at the northern end of the wall. The direction of the wall changes from north to northeast at corner 1 and from northeast to east at corner 2.

[4] Column "B" is a concrete column on the south side of Elm St., at the northern end of Wall "B."

TABLE 2.—*List of echo paths used in the predictions of echo-delay times*

Path No.:	*Echo producing objects (Identification numbers)*
1	1
2	2
3	9
4	2, 8
5	10
6	5
7	4
8	6
9	7
10	12
11	13
12	14
13	3, 13
14	3, 14
15	3, 15
16	16
17	8, 13
18	19
19	18
20	21
21	22
22	4, 19
23	6, 19
24	20
25	17
26	23

TABLE 3.—MEASURED AND PREDICTED DELAY TIMES OF ECHOES FOR A GUNSHOT FIRED ON AUG. 20, 1978

[In milliseconds]

Echo path	Echo travel time	Echo-delay time [1]		Deviation
		Predicted	Measured	
1	192.3	7.0	7.3	0.3
2	196.0	10.8	11.2	.4
3	198.6	13.4	13.1	.3
4	201.7	16.5	16.9	.4
5	202.4	17.2	16.9	.3
6	213.0	27.8	28.3	.5
7	213.0	27.8	29.8	2.0
8	215.4	30.1	29.8	.3
9	218.1	32.9	32.9	0
10	228.4	43.2	42.3	1.1
11	229.4	44.7	45.6	.9
12	232.5	52.3	52.9	.6
13	243.4	58.2	60.0	1.8
14	252.7	67.5	68.3	.8
15	259.9	74.7	76.9	2.5
16	267.1	81.9	82.5	.6
17	267.4	82.2	83.1	.9
18	451.6	266.7	266.6	.1
19	455.0	269.8	269.2	.6
20	458.1	272.9	272.2	.7
21	469.2	284.0	282.3	1.7
22	482.8	297.6	297.7	.1
23	482.8	297.6	297.7	.1
24	487.2	302.0	303.2	1.2
25	497.8	312.6	313.0	.4
26	541.3	356.1	354.0	2.1

[1] For the calculated locations of the gun and the microphone, the muzzle blast travel time is computed to be 185.2 ms.

Using the methods described above, 26 echo paths were defined for 22 echo-producing objects.* For some of these paths, the muzzle blast sound bounced off more than one echo-producing object. The echo-producing objects and echo paths are listed in tables 1 and 2. The travel times and the delay times for the predicted echoes are listed in table 3. Also listed are the echo-delay times determined by analysis of the time waveforms of the sounds received at microphone 4 of array 3 for the shot fired by the DPD shooter from the grassy knoll. These waveforms, which are shown in figure 6, were obtained by playing back the recording of the sounds that were picked up by the microphone, modifying the reproduced signal so as to approximate the effect that a microphone of the type used by the DPD in 1963 would have had on the signal, and then graphing the resulting signal. A 60-Hz tone that was recorded in one segment of the recording made during the testing in August 1978 made it possible to calibrate the time scale of the graph at 1 millisecond per millimeter. The first waveform appearing in the graph, the large peak at the left-hand side, corresponds to the supersonic shockwave of the rifle bullet. The second large peak is the waveform of the muzzle blast. Following it, with generally diminishing heights, are the waveforms of the echoes of the muzzle blast. The delay time of each echo was determined by direct measurement of the distance from the leading edge of the muzzle blast waveform to that of the echo. The numbered peaks shown in this figure correspond to the predicted echoes identified in table 3.

The deviations between the predicted and measured echo-delay times listed in table 3 were in part due to small errors in the locations of the

*At the time of the presentation of our findings on Dec. 29, 1978, 22 echo paths had be defined. After that date, four additional paths were defined.

gun and the microphone. The microphone location was determined from a map of Dealey Plaza that showed where microphones were to be placed during the reconstruction experiment. However, the scale of the map, 1 inch equal to 40 feet, limited the measurement accuracy to about plus or minus 2 feet. Therefore, the actual location of the microphone may have deviated from the indicated one by a foot or two. Similarly, there were no measurements taken of the exact location

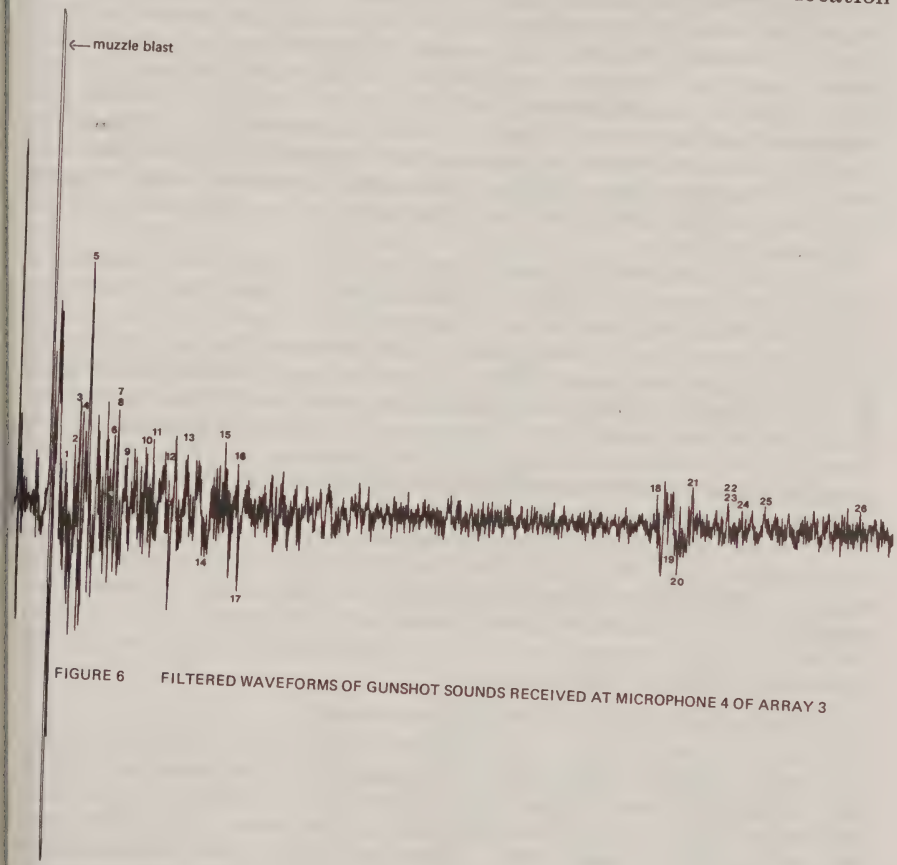


FIGURE 6 FILTERED WAVEFORMS OF GUNSHOT SOUNDS RECEIVED AT MICROPHONE 4 OF ARRAY 3

where the DPD shooter stood as he fired each shot from the grassy mound. Consequently, it was likely that the gun and the microphone locations that were used for the echo-delay time predictions were slightly in error and that if these positions were adjusted correctly, the resulting predictions would be closer to the measured echo-delay time.

An analysis of the data listed in table 3 shows that the assumed locations were sufficiently accurate for the purpose of this test. The average absolute difference between the predicted and measured echo-delay times was 0.8 millisecond. The standard deviation of predicted

delay times about this average was 0.7 millisecond. These results are well within the accuracy required of the echo prediction procedure.

5.0 COMPARISON OF THE SEQUENCE OF IMPULSES ON THE DPD RECORDING WITH SEQUENCES OF PREDICTED ECHOES

5.1 Prediction of echoes for November 22, 1963

Using the techniques described in section 4, we predicted echoes and echo-delay times for gunshot sounds that would have been heard in Dealey Plaza at 12:30 p.m. on November 22, 1963. The predictions were made given the following conditions: (1) The air temperature was 65° F (with a possible error of 3° F); (2) the gun was somewhere along the wooden stockade fence on the grassy knoll; (3) the microphone was somewhere in the region of interest on Elm Street (see section 4.1.3) and moving with the motorcade at a speed of about 11 miles per hour; and (4) the echo-producing objects were the same as those identified in table 1.

The procedure that was used to predict echoes required a few more steps than the method described in section 4. Since the conditions required the microphone to be moving on Elm Street at a speed of 11 miles per hour, the location of the microphone on the map had to be moved in a similar manner. First, a location was specified on the map at which the microphone received the muzzle blast. Then, the microphone was moved along a path corresponding to the path it would have traveled on Elm Street during the time it received all of the predicted muzzle blast echoes. The location of the microphone at the time it would have received each particular echo was determined by calculating the distance the microphone would have moved from the initial position at a constant speed of 11 miles per hour during an interval equal to the echo traveltime. Small deviations about this estimated distance (for example, ±1 millimeter) did not materially affect the predicted echo travel time. The predicted echo-delay times were then obtained by the procedure described in section 4.

5.2 Correction of time delay measurements

The delay times of the impulse sounds on the DPD recording were measured directly from a graph of the sequence of impulse waveforms, such as the one shown in figure 3. To simplify the measurement of time intervals, the graph was plotted with a time scale of 1 millisecond per millimeter (1 msec/mm). However, before the measurements could be used, they had to be multiplied by a time-correction factor to correct for an error in the speed of the DPD Dictabelt machine. As was shown in the BBN analysis, the DPD recorder was running slow at the time the recording was made. Consequently, when the recording is played back at the faster, correct speed, the recorded impulse sounds will be heard closer together than they actually were at the time the recording was made. This error could be corrected by multiplying the time intervals measured on the graph by a time-correction factor. The BBN analysis showed that between 12:22 p.m. and 12:37 p.m., the average speed of the recorder was 0.95 of correct speed. The actual speed at any time during this interval could have been from 0.94 to 0.96 of true speed. Accordingly, the time-correction factor could range from 1.04 to 1.06.

An adjustment in the measurement of impulse delay times would also be necessary if the temperature in Dealey Plaza at 12:30 p.m. on

November 22, 1963, was not 65° F, as was initially assumed. The computed delay time of each predicted echo would be in error by about 0.1 percent for each 1° F difference between the true temperature and the assumed value of 65°F. The effect on the predicted echoes would be to scale their spacing from what they should be. For example, if the true temperature was less than 65° F, then the predicted echoes would be closer together than they should be. Conversely, if the true temperature was more than 65° F, the computed echoes would be spaced more widely than they should be. Since it was not likely that the assumed temperature differed from the true temperature by more than 10° F, the factor for correcting temperature errors would range only from 0.99 to 1.01. Assuming that the differences in temperature and recorder speed occurred in such a way as to compound one another, the combined factor that would correct for both recorder speed and temperature at the same time could range from 1.03 to 1.07. Because we knew that the range of the correction was 1.03 to 1.07, theoretically we could use any value between 1.03 and 1.07 to adjust the measured time intervals between the impulses on the DPD recording.

Because any value between 1.03 and 1.07 was theoretically valid, it was permissible to choose the value between those limits that created the best match between the impulse and echo sequences. By fitting the DPD tape recorded impulse sequence to our predicted echo sequences, we found that a time-correction factor of 1.043 gave the best match, and we therefore used that factor.

TABLE 4.—MEASURED DELAY TIMES OF IMPULSES AND PREDICTED DELAY TIMES OF GUNSHOT ECHOES FOR NOV. 22, 1963

[In milliseconds]

Echo path	Echo travel time	Echo delay time	Impulse delay time	Deviation
1				
2	202.4	6.5	6.3	0.2
3	206.8	10.9	10.5	.4
4	211.0	15.1	14.7	.4
5	214.7	18.8	19.3	.5
6	217.0	21.1	20.1	1.0
7	224.3	28.4	27.4	1.0
8	225.2	29.3	30.3	1.0
9	227.1	31.2	31.6	.4
0	230.6	34.7	34.1	.6
1	244.1	48.2	48.7	.5
2	241.5	45.6	45.4	.2
3	250.3	54.4	54.2	.2
4	255.2	59.3	59.7	.4
5	266.0	70.1	69.4	.7
6	273.4	77.5	77.4	.1
7	281.8	85.9	85.3	.6
8	276.7	80.8	80.2	.6
	473.9	278.0	278.6	.6
	479.8	283.9	283.7	.2
	479.8	283.9	283.7	.2
	489.1	293.2	292.1	1.1
	506.8	310.9	310.5	.4
	507.9	312.0	312.4	.4
	509.6	313.7	313.1	.6
	524.0	328.1	327.5	.6
	565.0	369.1	369.2	.1

[1] For the calculated locations of the gun and the microphone, the muzzle blast travel time is computed to be 195.9 ms.

3 Comparison of the impulse and echo sequences

The sequence of predicted echo-delay times that best matched the quence of impulse-delay times, computed as described above, is listed table 4. The numbered peaks shown in figure 7 correspond to the

predicted echoes identified in table 4. The average absolute difference between the impulse-delay times and the corresponding echo-delay times is 0.5 millisecond, and the standard deviation of impulse-delay times about this average is 0.3 millisecond.

The location of the gun and the path of the microphone for which these predicted echoes were obtained are shown in figure 8. The microphone is initially located 97 feet south of the TSBD and 27 feet east of the southwest corner of the TSBD. The path of the microphone, as it received the muzzle blast and its echoes, extends for about 6 feet

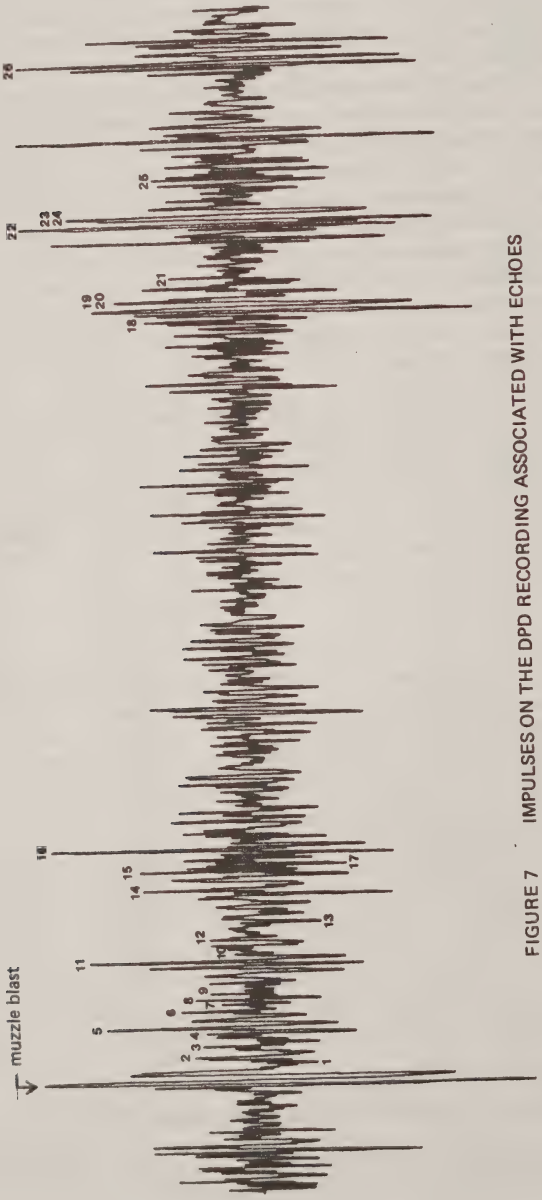


FIGURE 7 IMPULSES ON THE DPD RECORDING ASSOCIATED WITH ECHOES

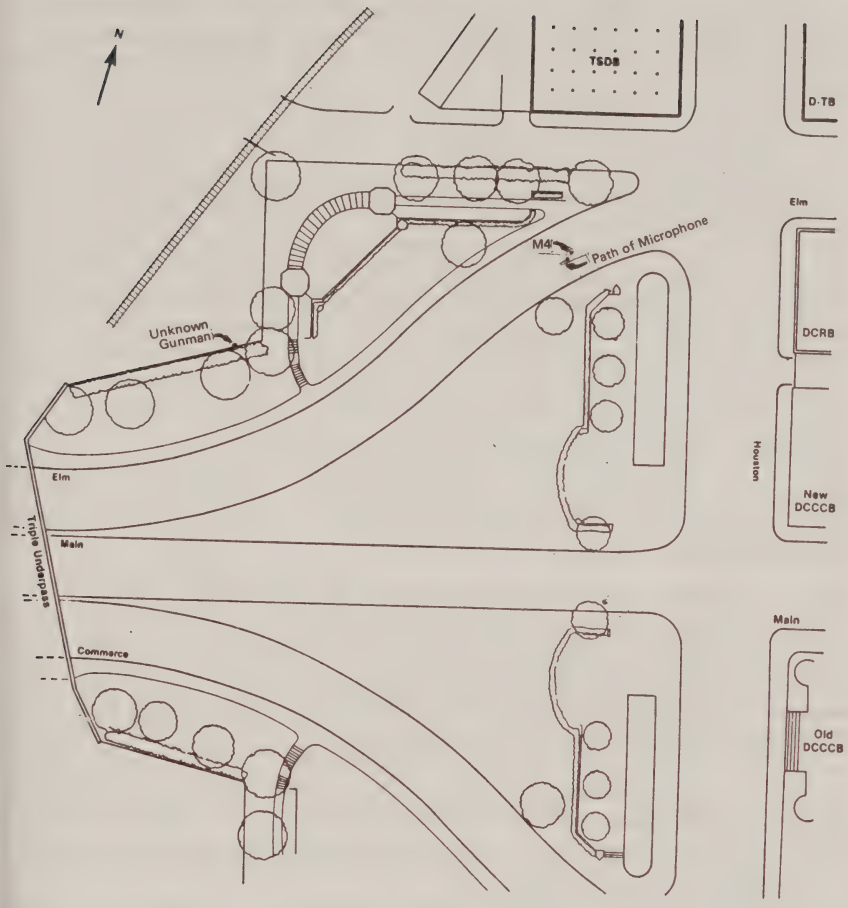


FIGURE 8 LOCATION OF THE GUN AND PATH OF THE MICROPHONE COMPUTED FOR NOVEMBER 22, 1963

ılong Elm Street. The uncertainty in the initial position is ±1 foot, vhich corresponds to the accuracy of measurements made on the topo- ɡraphical survey map. The gun is located about 8 feet to the left of he corner of the wooden stockade fence on the grassy knoll. If the ɡun is moved along the fence from this location, the delay times of the ɑuzzle blast echoes changes. However, for movements up to ±5 feet, hese changes can be reduced to less than 1 millisecond by making a mall adjustment in the initial location of the microphone.

The data in table 4 suggest that the sequence of impulses on the DPD ecording is very similar to the sequence of predicted echoes. A visual omparison indicates that almost all of the impulses and echoes coin- ide within a window of ±1 millisecond. However, such an examina- ion can be deceptive. It does not take into account the impulses that

do not coincide with echoes, or the echoes that are not matched by impulses of even minimal amplitude. For these reasons, a more appropriate method of comparison was to compute the binary correlation coefficient of the sequences.

5.4 Factors affecting the selection of impulses and echoes for correlation

Ideally, a correlation of the impulses and the predicted echoes would have included all of the impulses evident in the waveforms of figure 7 and all of the predicted echoes. However, some of the impulses must have represented components of the background noise. To minimize the number of noise impulses that might be included in the correlation calculation, only those impulses that were greater than the average peak level of the background noise were counted. This required limiting the predicted echoes that were included in the correlation calculation to those that would have been recorded at a level above that of the background noise. To identify these echoes and impulses, it was necessary to consider, first, the relative strengths of predicted echoes near the microphone, and then the way in which the DPD radio dispatching system would have altered both the relative strengths of the echoes as recorded and the recorded level of the background noise.

5.4.1 Relative strengths of echoes near the microphone location

The relative strengths of the predicted echoes at locations along the path traveled by the microphone would be similar to those of the actual echoes of a muzzle blast that were recorded during the acoustical reconstruction experiment at the nearby location of microphone 4 in array 3 (see fig. 5). The strengths of echoes received at these nearby locations would not differ by more than a few decibels. Therefore, the relative strengths of the predicted echoes in the vicinity of the moving microphone could be taken to be the same as those received by microphone 4.

5.4.2 Effects of the DPD radio dispatching system on the relative strengths of recorded echoes

The DPD radio dispatching system contained a circuit that would have greatly affected the relative strengths of the recorded echoes of a muzzle blast. This circuit, the automatic gain control (AGC), limited the range of variations in the levels of signals by reducing the levels of received signals when they were too strong and increasing their levels when they were too weak. It responded very rapidly to a sudden increase in the level of a signal, but comparatively slowly to a sudden reduction in a signal level. Consequently, the response of the AGC to the sound of a muzzle blast would greatly reduce the recorded levels of echoes and background noise received shortly afterward. Progressively during the next 100 milliseconds, the AGC would allow the recorded levels of received signals to increase until full amplification was finally restored. The effect on the predicted echoes would be to make the recorded levels of late-arriving echoes very nearly the same as those of the early ones. Concurrently, the recorded background noise would gradually rise to its level before the muzzle blast was received.

A different but also significant effect on the relative strengths of the recorded echoes would have been caused by the motorcycle windshield. On the DPD motorcycles, the microphone was usually mounted on a

bar directly behind the windshield. Sounds arriving from the front of the motorcycle would have diffracted around the windshield and in doing so would have lost strength. As determined by experiment, the windshield of a 1960's Harley Davidson motorcycle attenuated gunshot sounds received from in front of the motorcycle by from 3 decibels to 6 decibels. The amount of attenuation depended on how close the microphone was to the windshield. Obviously, sounds received from the sides and rear of the motorcycle would not be affected by the windshield.

5.5 Correlations of impulse and echo sequences

The selection of impulses for the calculation of the binary correlation coefficient depends directly on the noise level to which the heights of the impulses are compared. This level can be set, as in figure 2, at the average peak level of the recorded noise immediately adjacent to the recorded impulses. This approach, however, presumes that the noise level is the same during the impulse segment as it is in the adjacent segments of the recording. As was discussed above, the level of the noise recorded during the first 50 milliseconds following a muzzle blast will be greatly reduced. Consequently, an alternative would be correspondingly to lower the level to which the impulses are compared during this 50-millisecond period.

Both approaches to setting the amplitude comparison level were used, each in a separate calculation of the binary correlation coefficient. For the first calculation, the amplitude comparison level was set as in figure 2. Taking all of the factors discussed in section 5.4 into account, we found that 13 gunshot sounds (the muzzle blast and 12 of the predicted echoes) would have been loud enough to have been recorded at a level above the background noise. Eleven of these sounds coincided, within a ± 1-millisecond window, with impulses that exceeded the amplitude comparison level. Including the leading impulse, which was identified as the muzzle blast, a total of 15 impulses exceeded this level. The binary correlation coefficient was calculated as the number of gunshot sounds and impulses that coincided (11) divided by the square root of the product of the number of selected impulses (15) and the number of selected gunshot sounds (13). For these data, the binary correlation coefficient was calculated to be 0.79.

For the second calculation of the binary correlation coefficient, the delay time range over which impulses and echoes were compared was limited to the first 50 milliseconds following the muzzle blast, since this was the range in which the AGC would have had greatest effect. (It is also the range in which most of the echoes arriving from the front of the motorcycle occurred.) In this calculation, the amplitude comparison level was reduced to one-fourth of its value during the previous calculation, which placed it at a level just above that of very small peaks among the waveforms of the recorded impulses. Eighteen impulses exceeded this level. So would have the muzzle blast and all 11 echoes that were predicted to occur in the delay time range up to 50 milliseconds. Eleven of these sounds coincided, within ± 1 millisecond, with one or another of the selected impulses. These data—11 coincident impulses and echoes, 12 gunshot sounds, and 18 impulses—resulted in a computed binary correlation coefficient of 0.75.

5.6 The probability that the recorded impulses are not gunshot sounds

The high degree of correlation between the impulse and echo sequences does not preclude the possibility that the impulses were not the sounds of a gunshot. It is conceivable that a sequence of impulse sounds, derived from nongunshot sources, was generated with time spacings that, by chance, corresponded within one one-thousandth of a second to those of echoes of a gunshot fired from the grassy knoll. However, the probability of such a chance occurrence is about 5 percent.* This calculation represents a highly conservative point of view, since it assumes that impulses can occur only in the two intervals in which echoes were observed to occur, these being the echo-delay range from 0 to 85 milliseconds and the range from 275 to 370 milliseconds. However, if the impulses in the DPD recording were not the echoes of a gunshot, they could also have occurred in the 190-millisecond timespan that separated these two intervals. Taking this timespan into account, the probability becomes considerably less than 5 percent that the match between the recorded impulses and the predicted echoes occurred by chance. Thus, the probability is 95 percent or more that the impulses and echoes have the same source—a gunshot, or a sound at least as sound as a gunshot, from the grassy knoll. Stated differently, the odds are less than 1 in 20 that the impulses and echoes were not caused by a gunshot from the grassy knoll, and at least 20 to 1 that they were.

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*See the BBN report No. 3947.

Report No. 3947

Analysis of Recorded Sounds Relating to the Assassination of President John F. Kennedy

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January 1979

Prepared for:
Select Committee on Assassinations

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FOREWORD

On May 12, 1978, the House Select Committee on Assassinations asked Bolt Beranek and Newman Inc. (BBN) to conduct a preliminary review of the following material:

- Tape recordings reportedly made of the sounds in Dealey Plaza around 12:30 pm on November 22, 1963
- Transcripts of the testimony of earwitnesses who were in the Plaza at that same time.

The purpose of this review was to determine which, if any, of this material constituted potential evidence with respect to the gunfire associated with the assassination of President John F. Kennedy.

The review established that (1) only two of the recordings constituted potential evidence and (2) a statistical analysis of the earwitness testimony could reveal whether the concept of one rifle is consistent with these individual accounts.

The two tapes found to be made of the events surrounding the assassination were records from Channels 1 and 2 of the Dallas Police Department's (DPD) radio dispatching system. The Channel 1 tape contains a continuous record of the sounds transmitted between 12:28 and 12:34 pm over a DPD motorcycle radio stationed in Dealey Plaza. The Channel 2 tape is an intermittent recording of additional radio traffic — in particular, communications between the Chief of the Dallas Police Department, who occupied the car immediately preceding the Presidential limousine in the motorcade, and the Channel 2 Dispatcher at DPD headquarters.

An initial analysis of a portion of the Channel 1 tape did not rule out the possibility that the recording contained the sounds of gunfire. The House Committee therefore authorized BBN to conduct studies both of the DPD tapes and of the earwitness testimony. This report describes the results of an analysis of the tapes. The study of earwitness testimony is reported under separate cover.*

*Green, D.M., "Analysis of Earwitness Reports Relating to the Assassination of President John F. Kennedy," BBN Rep. 4034, January 1979.

ACKNOWLEDGMENT

The authors gratefully acknowledge the fine contributions made to this study by Joseph F. Colaruotolo, Daniel N. Kalikow, Nancy M. McMahon, Theodore L. Rhyne, and Leo A. Sledjeski.

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1. INTRODUCTION AND SUMMARY

The House Select Committee on Assassinations authorized Bolt Beranek and Newman Inc. (BBN) to study two tape recordings made by the Dallas Police Department (DPD) on November 22, 1963 on Channels 1 and 2 of the DPD's radio dispatching system. Channel 1 is the channel ordinarily used to handle DPD radio traffic, and this channel is recorded continuously on a Dictabelt recorder. Channel 2, an auxiliary channel generally used to handle the additional radio traffic necessitated by special events, is recorded intermittently on a Gray Audograph recorder, as actuated by voice communications and time annotation. Frequent time annotations – usually at 1-minute intervals – are made by the radio dispatchers handling each of these channels.

On November 22, 1963, during the time of President Kennedy's assassination, the radio of a DPD motorcycle, which may have been in the motorcade, was stuck in the transmitting mode on Channel 1 for approximately 5 minutes. During this time, the Chief of the Dallas Police Department, whose car immediately preceded the President's limousine in the motorcade, transmitted several messages concerning the progress of the motorcade over Channel 2. Channel 2 had been designated for use by DPD officers in the motorcade on November 22, 1963. Therefore, if the Channel 1 recording were to contain sounds of gunfire associated with the assassination, then at least one of the motorcycle radios used in the motorcade must have been incorrectly switched to Channel 1. Voice transmissions on both tapes were monitored for the call numbers of the 18 motorcycle officers in the motorcade. Six of the officers were heard to transmit on Channel 2; three on Channel 1.* The other nine did not make any transmissions, so it cannot be determined which channel their radios were set for.

*These three transmissions were made at about 2:10 pm, 4:39 pm, and 5:22 pm, all later times than the assassination.

1.1 Initial Analysis

The questions to be addressed in the analysis of these tapes were:

- Does the 5-minute segment recorded on Channel 1 contain the sound of gunfire?
- If so, how many shots were recorded and from what location (or locations) did the shots originate?

To begin with, if gunfire had been recorded on Channel 1, the analysis of that tape could be expected to reveal patterns of transient waveforms that would be generally characteristic of the shock wave produced by the bullet, of the loud and impulsive noise of the muzzle blast, and of echoes of each. It could further be expected that the major components of the shock wave would appear in the 1-kHz to 3.2-kHz frequency band.

The initial analysis of the Channel 1 tape therefore consisted of filtering and recording the entire 5-minute segment through each of two filters designed to reveal the presence of any transient impulsive waveform patterns that might be masked by the repetitive loud noise of the motorcycle. The first was a bandpass filter that filtered out all sounds not contained within the frequency range extending from 1 kHz to 3.2 kHz. This range was known to contain the principal frequency components of the shock wave produced by the bullet and to contain relatively few components of motorcycle noise. The second filter was an adaptive Widrow LMS filter, which studies the repetitive nature of noise, estimates what it will be a short time later, and subtracts these noise components out, leaving transient events not anticipated by the filter.

The recorded outputs from both filters for the full 5 minutes were compared, examined, and plotted on a scale where 5 in. equals 1/10 sec. These plots revealed five impulse patterns introduced by a source other than the motorcycle. Upon closer examination, all but one of these patterns were sufficiently similar to have had the same source, and the impulses contained in these patterns appeared to have shapes similar to the expected characteristics of a shock wave and of a muzzle blast. The remaining pattern was sufficiently different in amplitude and duration as to have been caused by a different source.

The hypothesis to be tested, then, was that these four impulse patterns were caused by gunfire. Initially, this hypothesis was subjected to five simple, but necessary, screening tests:

1. Time of occurrence
2. Uniqueness of patterns
3. Time span between patterns
4. Shape of impulses within the patterns
5. Amplitude of impulses.

Should the hypothesis then pass these tests, a sixth, more rigorous, test would be applied. This final test would require an acoustical reconstruction of the circumstances of the original gunfire in Dealey Plaza to reveal the relative times that muzzle blast and shock wave impulses, together with their echoes, would arrive at microphones located where the motorcycle radio might have been.

1.2 Screening Tests

The five screening tests were designed to determine whether the characteristics of the four impulse patterns corresponded both to other evidence and to the characteristics of actual gunfire.

1. *Did the impulse patterns occur at the same time the shots were actually fired? Yes.*

Stopwatch timing and examination of both tapes placed the time of the shot and the time of onset of the first pattern of waveforms within 35 sec of each other. The margin of acceptable time difference was 60 sec, since the two time clocks used by the two dispatchers were synchronized to within just 1 minute.

2. *Were these impulse patterns unique? Yes.*

Examination of the entire 5-minute segment did not reveal sufficiently similar impulse patterns elsewhere on the tape to discount gunfire as the source of these four patterns.

3. *Did the time span between the patterns correspond to other evidence of intervals between shots? Yes.*

The intervals between the onset times of the four impulse patterns on the DPD tape with the frames on the Zapruder film showing bullet impact were compared. According to the Zapruder film, the time span between the earliest and the latest gunfire-like events recorded on Channel 1 had to be no less than 5.6 sec. The span between onset times of the first and the fourth patterns was 8.3 sec.

4. *Did the shape of the impulse patterns resemble those generated by actual rifle fire? Yes.*

Tape recordings of test shots made with a Mannlicher-Carcano rifle were put through electrical circuits that mimicked those through which the 5-minute segment had been recorded. The shape of the impulse patterns on the Channel 1 tape approximates those produced by the test shots.

5. *Did the range of amplitude (loudness) of the impulse patterns resemble that of the echo patterns produced by the test shots? Yes.*

Processing the echo patterns of the test shots through a radio receiver like that used in the DPD recording system showed similar compression of the range of amplitude of recorded signals with respect to the range of the signals fed into the receiver.

The answers to these five questions neither proved nor disproved the possibility that the four impulse patterns on the Channel 1 tape had been caused by gunfire. A more rigorous analysis was required to determine with some confidence whether or not these patterns had been caused by gunfire.

1.3 Further Analysis

The gunfire and the potential motorcycle radio positions on November 22, 1963 were acoustically reconstructed on August 20, 1978 in Dealey Plaza. The sounds were subsequently processed into echo patterns, each one representing the unique "fingerprint" of gunfire sounds as heard at one location when a weapon is fired from one place to one target. The Channel 1 recording made at the time of the assassination had been similarly processed into sound impulse patterns. However, the

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Channel 1 impulse patterns were like badly smudged "fingerprints," because of the extremely noisy environment in which the original recording had been made.

The echo patterns were compared to the impulse patterns to see if any of the clear "fingerprints" obtained during the reconstruction matched any of the smudged "fingerprints" on the Channel 1 recording. The matching process was a binary correlation detector — a simple but powerful signal-detection scheme that is conducted mathematically.

Several echo patterns from the acoustical reconstruction matched sufficiently well with the four impulse patterns that we were able to place the motorcycle behind the Presidential limousine, at distances varying from 120 ft to 160 ft.

The correlation detector indicated that four shots may have been fired, as follows:

1. time 0.0 sec — one shot from the Texas School Book Depository (TSBD) aimed between the limousine positions seen in frames 160 and 313 of the Zapruder film
2. time 1.6 sec — one shot from the TSBD aimed near the limousine position seen in frame 313
3. time 7.8 sec — one shot from behind the fence on the knoll aimed near the limousine position seen in frame 313
4. time 8.3 sec — one shot from the TSBD aimed between the limousine position seen in frame 313 and the triple underpass.

1.4 Conclusions Based on Results of the Acoustical Reconstruction

The conclusions drawn from the results of the matches obtained by our analysis were presented at the public hearing before the committee on September 11, 1978. Essentially, we had concluded that the motorcycle had indeed been in the motorcade and that possibly four shots had been fired at President Kennedy. The reason that our findings with respect to the four shots were stated in terms of probabilities is as follows.

The correlation detector produced several false alarms that could be identified as such. These false alarms are spurious matches caused by uncertainty of the exact motorcycle position with respect to the known positions of microphones used in the reconstruction test. Therefore, some of the correlations that indicated the four shots must also be suspected as false alarms. This uncertainty introduced by the suspected false alarms can be expressed as a set of probabilities on the possible true outcomes. These probabilities were calculated from the judgment that each match has a 50% probability of being a false alarm and from the assumption that each match is an independent observation. Thus, the individual probabilities that the shots occurred at each of the four times are:

Shot 1. 88% based on three matches

Shot 2. 88% based on three matches

Shot 3. 50% based on one match

Shot 4. 75% based on two matches.

The probability that the four possible shots found by the correlation detector include at least two correct detections is high, about 96%. The probability that there are three correct

detections is lower, about 75%. The probability that all four are correct is only about 29%. The combined probability that there are three correct detections, and that the third (knoll) shot is among them is about 47%.

1.5 Independent Analytical Extension of the Reconstruction Test

The Committee sought to have the uncertainty in the test results reduced, particularly with respect to the 50% probability of the third (knoll) shot. Professor Mark Weiss and Mr. Ernest Aschkenasy of Queens College were authorized by the Committee to conduct an analytical extension of our acoustical reconstruction test. They first identified the objects in Dealey Plaza that caused each echo that appeared in the echo pattern we had found to indicate the possible third (knoll) shot. Next, they calculated how this echo pattern would be modified for receivers in the neighborhood of the microphone from which the echo pattern was obtained. Finally, they were able to show that 10 echoes of 12 in one of their calculated echo patterns matched with 10 sound impulses of 14 on the DPD tape recording — each one to an accuracy of $\pm$ 1 ms. The first of the 10 matching impulses was found to occur 7.6 sec after the first impulse indicating the first shot.

We examined the results of this independent study and judged both the technique and the parameters they used to be correct in every detail. We further concluded that the odds were only about 1 in 20 that their very precise match could have been achieved by chance — i.e., if the 14 sound impulses on the DPD tape were all noise and did not include echoes from a knoll gunshot. For this reason, we conclude that there is a 95% probability that there was a gunshot fired from the knoll at about 7.6 sec after the first one.

1.6 Findings

The results of our analysis of the tape-recorded evidence, together with the independent analysis of the echo-pattern match with the third (knoll) shot, permit the following findings:

1. The recorded sounds on Channel 1 of the Dallas Police radio dispatch system probably include the sounds of four gunshots fired in Dealey Plaza at about 12:30 pm on November 22, 1963.

2. The recorded gunshot sounds were sensed and transmitted by a police radio mounted on a motorcycle in the motorcade and positioned at distances ranging from 120 ft to 160 ft behind the Presidential limousine.

3. The first probable shot was fired at about 12:30:47 from the TSBD. The motorcycle position was then on Houston St. having only about 3 sec earlier slowed in preparation for the left turn onto Elm St. No shock wave indicating a supersonic projectile is seen as a precursor to the sounds of the muzzle blast, and none is expected, owing to the position of the motorcycle with respect to the expected trajectory of the bullet. Therefore, no conclusion can be drawn about whether this first acoustic disturbance was due to a rifle or to a sound impulse as loud as the report of a rifle. However, the sound did originate in the vicinity of the sixth floor of the TSBD.

4. The second probable shot was fired about 1.6 sec after the first one, also from the TSBD. At this time the motorcycle was just at the corner of Houston and Elm. Again, no shock wave is seen as a precursor to the sounds of the muzzle, and, again, none is expected.

5. The third probable shot was fired about 7.6 sec* after the first one, and it was fired from behind the fence upon the "grassy knoll." At this time, the motorcycle was proceeding westward on Elm St. about 80 ft west of the intersection with Houston St. An apparent shock wave is seen as a precursor to the sounds of the muzzle blast. Inasmuch as a supersonic projectile would show such a precursor when the motorcycle is in this position, the third shot is probably from a rifle.

6. The fourth probable shot was fired about 8.3 sec after the first one, and it was fired from the TSBD. The motorcycle was on Elm St. about 90 ft west of the intersection with Houston St. An apparent shock wave is seen as a precursor to the sounds of the muzzle blast. Since the trajectory of the bullet would have been over the motorcycle, such a precursor would be expected for a rifle shot. Therefore, the fourth shot is probably from a rifle.

7. Additional police radio transmissions are intermittently recorded on the tape during and after the last two probable shots. These transmissions contribute a few electrical impulses to the noise background in which the impulses of gunfire are set. However, these noise impulses are too few in number to have a material effect on the accuracy by which the echo patterns of the acoustical reconstruction match the impulse patterns on the DPD tape.

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*This time was obtained from the independent study of Weiss and Aschkenasy, and it differs by about 0.2 sec from the time obtained by our correlation detector.

These findings were presented at public hearing before the Committee on December 29, 1978. At that hearing, Officer H.B. McLain of the DPD testified that he had been riding his motorcycle on the left-hand side of Houston St., approaching Elm St. when he heard a single shot. After the hearing, he said that he remembered that he had turned on his siren shortly after the assassination and moved with the motorcade to the hospital. However, the appearance of McLain in photographs taken in Dealey Plaza just after the assassination suggests he did not leave the area with the motorcade. Unless McLain turned on his own siren, the absence of the siren sound on the tape is consistent with McLain's behavior as documented in photographs and it may have been his motorcycle.

Section 2 of this report describes the acoustical nature of gunfire — i.e., what could be expected after appropriate filtering of the Channel 1 tape, if it did indeed contain the sound of gunfire. Section 3 reports the procedures used to process the tape and the results of this processing. Section 4 describes the five screening tests, and Sec. 5 reports the results of the acoustical reconstruction of gunfire in Dealey Plaza. Section 6 discusses additional relevant sounds on the Channel 1 recording. Finally, Sec. 7 describes our review of an independent analysis of the match between our acoustical reconstruction and the sounds of the probable third shot.

2. NATURE OF RADIO-TRANSMITTED SOUNDS OF GUNFIRE

2.1 Overview

The discharge of a rifle creates two sources of impulsive sound — the sound of the muzzle blast and the sound of the shock wave shed from the supersonic bullet as it travels at a speed greater than the speed of sound. Figure 1 illustrates the difference in how these two impulsive sounds travel through the air. The shock wave, for example, has a direct path of travel that resembles a cone, while the sound of the muzzle blast spreads spherically from the source.

In addition to traveling at different speeds and in different ways, these impulsive sounds travel over several different paths before arriving at a receiver — in this case, a microphone. Figure 2 illustrates these paths. The first sound impulses to arrive travel in a straight line from the source to the microphone; this sound path is called the direct (D) path. It includes reflections (D_2) from impulses traveling the direct path and striking the ground very near the microphone. Later sound impulses arrive at the microphone after first reflecting from large surfaces, such as building facades and the ground; these sound paths are called reflected (R) paths. Even later sound impulses arrive at the microphone after first diffracting from the corners of buildings and the edges of other large objects; these sound paths are called diffracted (T, M, L) paths. A weaker set of sound impulses, arriving at the microphone just after the direct arrival, are scattered first by small objects such as poles, people, and automobiles. After striking these scattering objects, these weaker sound impulses arrive at the microphone over the scattered (S, P) paths. Finally, reflections

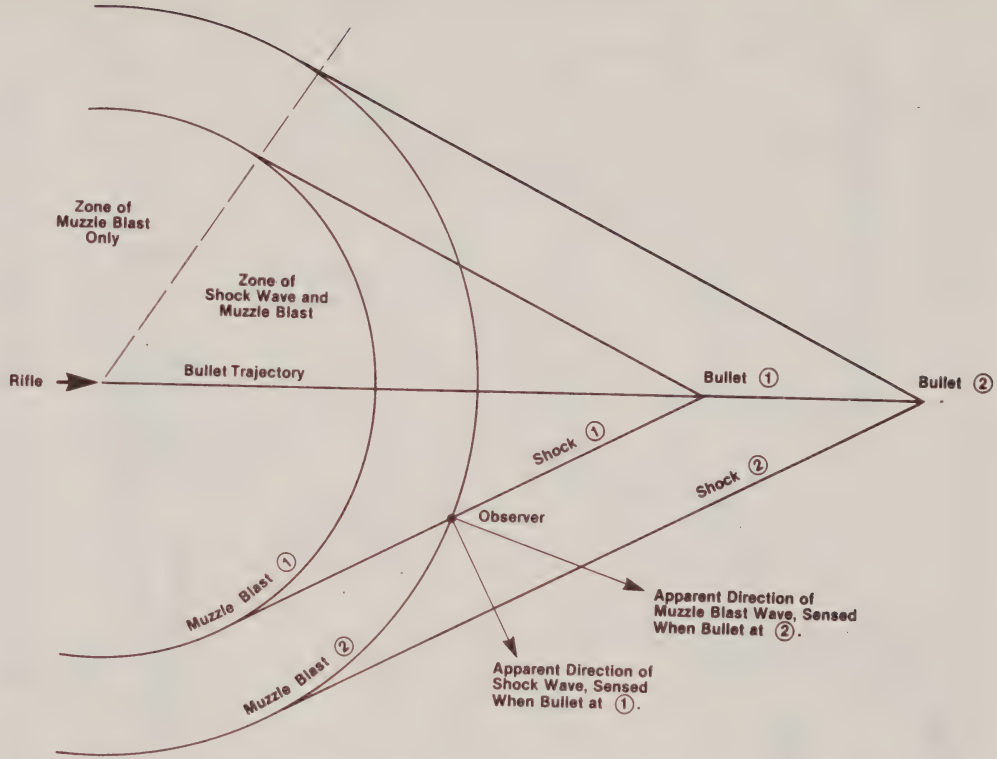


FIG. 1. LOCI OF MUZZLE BLAST AND SHOCK WAVES AT TWO TIMES AFTER FIRING OF BULLET.

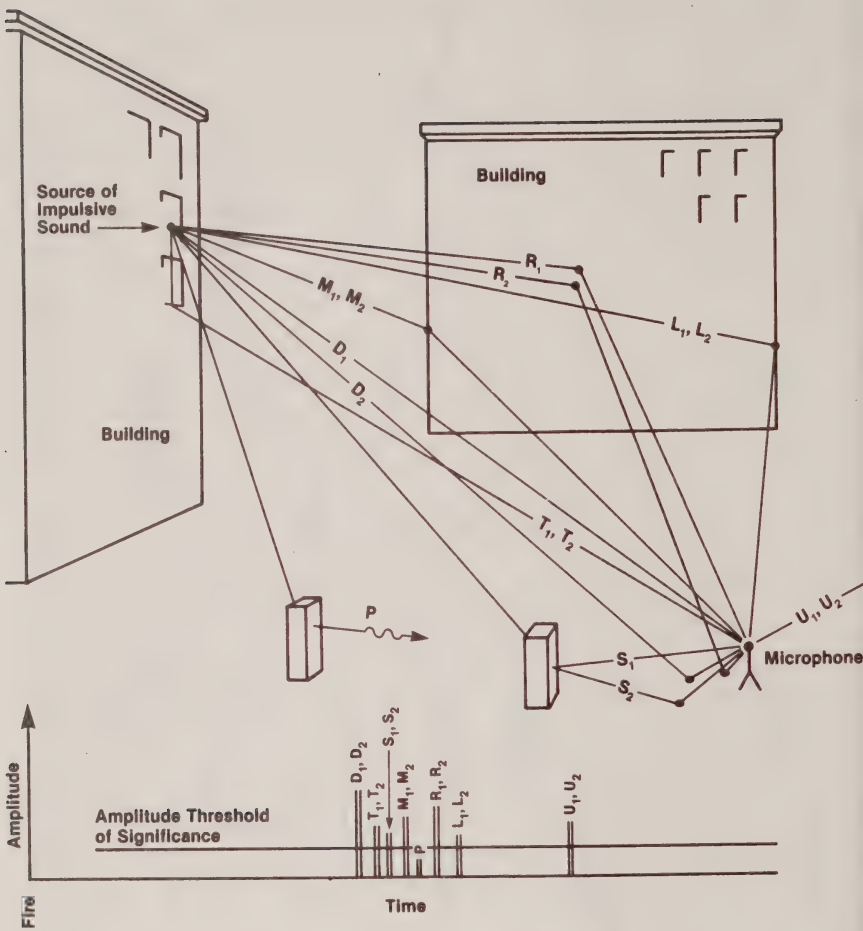


FIG. 2. ECHO PATTERNS CAUSED BY DIRECT, REFLECTED, DIFFRACTED, AND SCATTERED IMPULSIVE SOUNDS IN AN URBAN ENVIRONMENT.

from distant objects (U) arrive over various reflected paths, but these signals appear much later than those arriving by all the previously described paths.

All sound impulses arriving at the microphone that are loud enough to be heard over the environmental noise would be transmitted over the radio connected to the microphone. In this case, the environmental noise consisted primarily of the very loud, repetitive noise made by the engine of a moving motorcycle. This noise was found to be only about 10 dB lower than the loudest gunfire impulse recorded. Thus, only the very loudest gunfire sound impulses would actually be detectable above the engine noise.

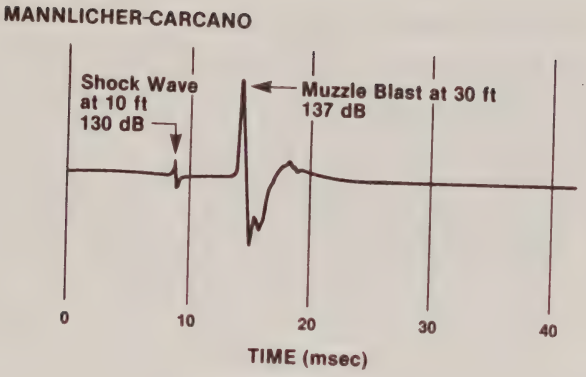
The loudest sound impulses from gunfire are considerably louder than the loudness of speech, for which the radio was designed to operate. These loud impulses overdrive the radio circuitry. Because of the limiting circuits in the radio transmitter, very loud sounds are recorded in distorted fashion and appear as much weaker signals than they really are. In fact, despite the difference in loudness of signals traveling over the several paths illustrated in Fig. 2, each is recorded as having about the same amplitude.

After the sounds that were picked up at the microphone had been transmitted to the DPD radio receiver, the output of the receiver was recorded on a Dictabelt recorder. The circuitry of the receiver and the characteristics of the recorder also affected the transmitted signals. The recorded loudness of the sounds transmitted from the motorcycle radio with the stuck microphone were additionally affected somewhat by simultaneous transmissions from other officers in the motorcade. An FM radio receiver, such as the one in DPD headquarters, receives

best from the transmitting radio having the strongest transmitted signal and can accommodate at the same time all receivers whose transmitted signal strengths differ by less than the receiver capture ratio.

Thus, the effects of severe environmental noise, of the limiting circuitry of the radio transmitter, of simultaneous radio transmissions, and of the recording characteristics of a Dictabelt recorder were such that any waveforms that would emerge from an analysis of the tape would be severely distorted. What these waveforms would look like without such distortion is illustrated in Fig. 3.

The waveforms shown in the upper portion of this figure were produced by a Mannlicher-Carcano with Western Cartridge Co. ammunition and picked up by a microphone positioned 30 ft from the muzzle and 10 ft to one side of the bullet's trajectory. The muzzle-blast waveform reveals a peak pressure impulse having a sound pressure level of 137 dB re $2 \times 10^{-5} N/m^2$. For comparison, Fig. 3 also shows the corresponding waveforms for an M-1 rifle. Despite the differences in loudness (amplitude) from one weapon to the other, the shock wave and the muzzle blast can be seen to have characteristic shapes. Sounds processed from the Channel 1 tape could be expected to contain these shapes, but in distorted fashion. The shapes could be expected to be compressed in amplitude and to be accompanied by indications of overdriving of the radio circuits. They would also be accompanied by waveforms produced by the arrival of sound echoes from several sources, as described in the rest of this section.



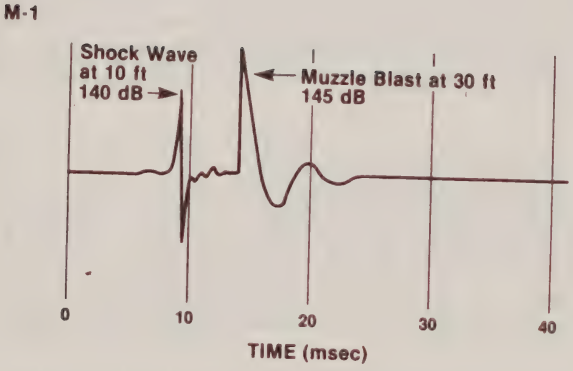


FIG. 3. MUZZLE BLAST AND SHOCK WAVEFORMS FOR MANNLICHER-CARCANO AND M-1 RIFLES.

2.2 Propagation Over the Direct Path

The distance from the muzzle in the TSBD to the nearest possible location of the motorcycle microphone is 60 ft and to the farthest possible location (at Houston and Main) is 260 ft. Loss in amplitude of the sound of the muzzle blast over the direct path is due principally to the spherical spreading of the sound as it travels outward from the source of gunfire. This weakening (attenuation) is accounted for by the quantity 20 log(D/30), where D is the length, in ft, of the path of travel. The estimated loudness of the muzzle blast at the nearest possibly motorcycle location is 137 - 20 log(60/30), which is equal to 131 dB re $2\times10^{-5}N/m^2$. The estimated loudness of the muzzle blast at the farthest possible location is equal to 118 dB re $2\times10^{-5}N/m^2$.

Thus, both the muzzle blasts and the shock waves would be received over the direct path with sound pressure levels greater than the approximately 100-dB limiting sound pressure levels of the motorcycle radio. The result would be both an indication of overdriving the system and a compression of the recorded amplitude.

2.3 Propagation Over Reflected Paths

Ground reflections will always occur from below the microphone at the specular reflection point. Since the path length of the reflected path is only a few feet longer than for the direct path, the amplitude of ground-reflected sounds will nearly equal the amplitude of sounds arriving over the direct path.

Building reflections occur only when a building facade includes a specular reflection point for the source and microphone. This condition is met by the buildings on Houston St. for microphones located on Houston near Main St., and it is also met by the Post Office Annex for microphones located on Elm St. The path length for these reflections is the total distance from the source to the specular reflection point and then to the microphone. For microphones on Elm, the path length for reflections off the Post Office is about 1100 ft. The amplitude of such echoes is, therefore, estimated to be $137 - 20 \log(1100/30) = 106$ dB re 2×10^{-5}N/m^2 — still loud enough to cause limiting by the radio.

All reflected sounds, regardless of the reflecting surface, arrive at the microphone T seconds later than sounds traveling the direct path. T can be expressed as the ratio $\Delta D/c$, where ΔD is the difference between path lengths in ft, and c is the speed of sound in ft/sec. At 65°F, c is 1123 ft/sec, and at 90°F, c is 1150 ft/sec. Sounds reflected from the Post Office occur about (1100-100)/1100, or about 0.9 sec later than the direct sounds.

2.4 Propagation Over Diffracted Paths

The amplitude of sound diffracted by a corner of a building can be estimated as follows.* The ratio of diffracted sound pressure P_d to direct sound pressure P_0 can be written as:

$$\frac{P_d}{P_0} = \frac{|F|}{\sqrt{6\pi kr_0}} \sqrt{\frac{\xi^2+1-2\xi\cos\theta}{\xi(\xi+1)}} \quad ,$$

*See J.J. Bowman, T.B.A. Senior, P.L.E. Uslenghi, *Electromagnetic and Acoustic Scattering by Simple Shapes*, North-Holland Publishing Company, Amsterdam, 1969 (p. 274).

where $\xi = r/r_0$, the distances from the corner to the source and from the corner to the microphone, respectively. The angle between arriving and diffracted rays of sound is θ, and k is the acoustic wavenumber. The function $|F|$ is a number generally between 1 and 2.

There are many corners that can cause diffractions. The corner of the Records Building is typical. The amplitude of a sound impulse diffracted from its corner and received at Houston and Elm would be about 30 dB lower than that of an impulse arriving directly from the source. Since the amplitude of the direct-path sound of the muzzle blast near Houston and Elm is about 131 dB re $2\times10^{-5}N/m^2$, the amplitude of the diffracted impulse will be about 101 dB re $2\times10^{-5}N/m^2$, still loud enough to be somewhat limited by the radio and to be quite audible.

The total path lengths of diffracted sounds vary continuously between limits set by the direct path length and by the longest reflected path length. Thus, diffracted sounds should occur between the time of the direct arrival and the time of the arrival of the reflection from the Post Office.

2.5 Propagation Over Scattered Paths

Objects small enough so that $kd \approx 2$, where d is the nominal diameter of the object, will scatter sound in all directions. Substantial energy in the muzzle blast impulse is contained at frequencies near 500 Hz, where $k = 2.8\ ft^{-1}$. Thus, objects having a diameter of about 1 ft satisfy the scattering requirement. Such objects could be light poles, people, and motorcycles.

The loudness of scattered sound diminishes rapidly with increased distance from the scattering object. For this reason, only sounds scattered from objects fairly close to the microphone would be loud enough to be recorded.

Scattered sounds loud enough to be picked up by the microphone would arrive just following strong direct, reflected, and diffracted sounds. These scattered arrivals tend to increase the apparent time interval in which the primary signals arrive.

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3. RESULTS OF EXAMINING AND PROCESSING THE DPD CHANNEL 1 TAPE

The first tape we received on May 12 from the Committee had a very scratchy overlay of needle noise, indicating that it was a very poor or multiple-generation dub of a recording. In July, the Committee gave us an electromagnetic tape recording that was identified as an original dub made by the DPD, as well as the original Dictabelt record. We then made our own dub on magnetic tape from the original Dictabelt record and compared our dub with that reportedly made by the DPD. We digitized both dubbed tapes — ours and that made by the DPD, plotted the outputs of the digitizing process, and found them to be virtually identical. In this way, we determined that the Dictabelt record was really the source of the data on the DPD-dubbed tape that we were using for analysis.

On the DPD Channel 1 tape, there is an interval of about 5-minute duration, beginning a little after 12:28 pm, in which the radio traffic on this channel is disrupted by a continuous transmission by some remote transmitter, presumably because its transmit button was stuck in the "on" position. As described in Appendix A, we input this entire interval into a digital computer, for subsequent detailed listening, viewing, and processing. This section describes the results of that examination.

3.1 The Unprocessed Waveform Data

First, we made a high-resolution graphical plot of the waveform of this signal, at a scale of 5 in. per 1/10 sec, for detailed visual examination. The plot of the entire interval

comprises a roll of paper 12 in. wide by 234 ft long. Reductions of excerpts of this plot are reproduced in Fig. 4. In this figure and in the following discussion, time is noted in seconds from the beginning of the interval.

The first region to be noted in Fig. 4 is the area around 131 sec. This region is typical of the high level of motorcycle noise that characterizes the first 2 minutes of the data.

In the region of 132 to 133 sec, we can see the amplitude of the noise slowly drop. Later, when we discover the trajectory of the motorcycle as a by-product of detecting the sounds of shots, we find that the motorcycle was approaching the corner of Houston and Elm Sts. at this time. Therefore, this diminution of motorcycle noise is probably due to the slowing necessary to negotiate the 120° left turn at the corner.

At about 135.6 sec, we note a single large impulse of relatively long duration. Because of its length and because the region following this impulse is largely free of other impulses, such as the echoes normally associated with loud impulsive sounds, we feel that it is unlikely that this impulse represents the sound of gunfire.

The regions around 137.3 to 138.7 and 139.2 to 140.5 sec are notable for a number of brief, loud impulses. These impulse patterns, the first to appear in the data up to this time, were judged as potentially representing gunfire.

The region from 144.8 to 147.2 sec, which does not appear in Fig. 4, also contains a large number of impulses of similar character. Because this region is about twice as long as the



FIG. 4. WAVEFORMS RECORDED FROM CHANNEL 1 TRANSMITTER WITH STUCK MICROPHONE.

preceding ones, it was identified as possibly representing two separate impulse patterns, and, therefore, as potentially containing the sounds of two shots.

3.2 Spectrographic Analysis

Another way of portraying acoustical data is in the form of a spectrogram, in which the short-term spectrum of the signal is displayed as a function of time. Two example spectrograms from the region 141 to 148 sec are shown in Fig. 5. In this figure, time runs from left to right across the figure, and frequency from bottom to top. The energy at a given time and frequency is depicted by the blackness of the paper at that point.

The region from 141 to 144 sec is only noise. Just after 144 sec, a single loud click occurs, followed by a region of very faint speech (faint diagonal and horizontal smudges that change rapidly), clicks (thin vertical lines), and keying heterodynes (steady horizontal bars). The analysis into characteristic frequency components performed by the spectrograph permits us to recognize these events in a way not possible in the waveform patterns.

3.3 The Filtered Waveform Data

To be sure that the 137- to 147-sec region of the transmission contained the only transients of potential importance with respect to gunfire, we attempted to remove the effect of the motorcycle engine noise to see if it was obscuring other transients. For this purpose, we implemented on a high-speed digital computer a noise-canceling filter program that adapts to and subsequently cancels sound components that appear to

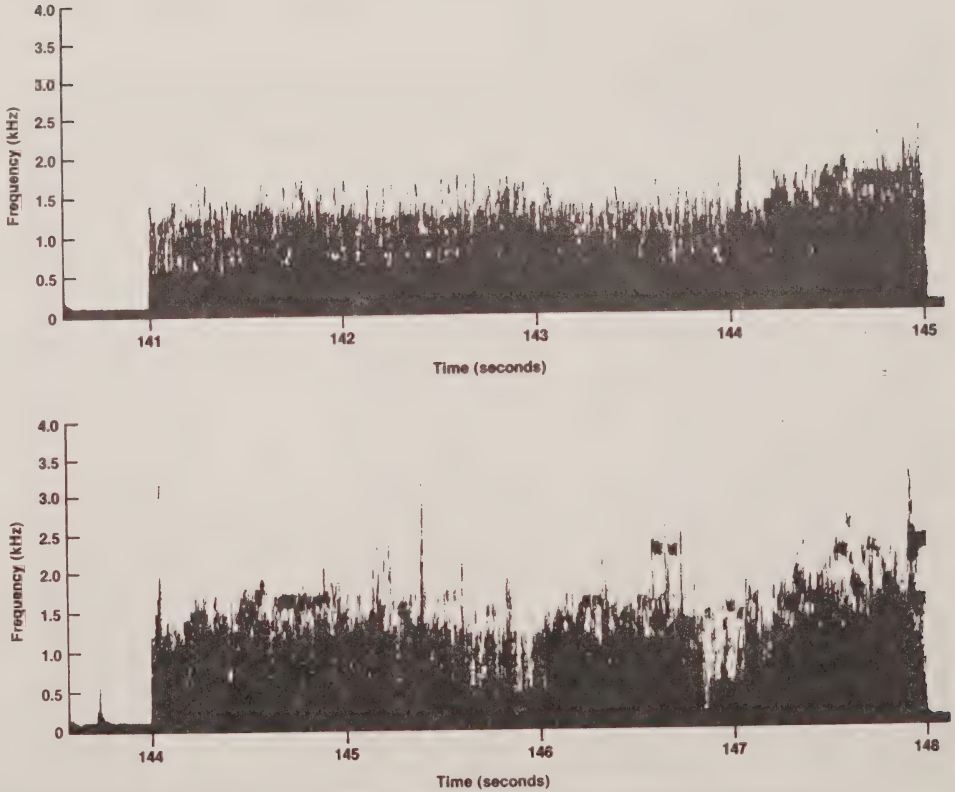


FIG. 5. SPECTROGRAMS FROM WAVEFORMS RECORDED FROM CHANNEL 1 TRANSMITTER WITH STUCK MICROPHONE.

be nonrandom (in this case, the periodic noise of the engine). This filtering algorithm is described in Appendix A. It was tested on a high-fidelity recording of motorcycle engine noise and was found to be very effective in removing it.

The adaptive filtering algorithm, when applied to the entire 5-minute segment of transmission, was not so effective. Figures 6 and 7 show the effect of filtering the waveform from 130 to 150 sec (overlapping the period for which the unprocessed waveform is shown in Fig. 4). The adaptive filtering removed hum and some low-frequency noise components, but the overall effect was not dramatic. Evidently, the distortions introduced by the radio transmitter, the original Dictabelt recording system, and the subsequent multiple playings of the Dictabelt had added nonrandom noise components that the adapative filter was unable to remove.

Appendix A also describes other signal-processing techniques that were applied to these data in attempts to remove the motorcycle noise and to detect and track motorcycle engine speed. The results in both cases were negative.

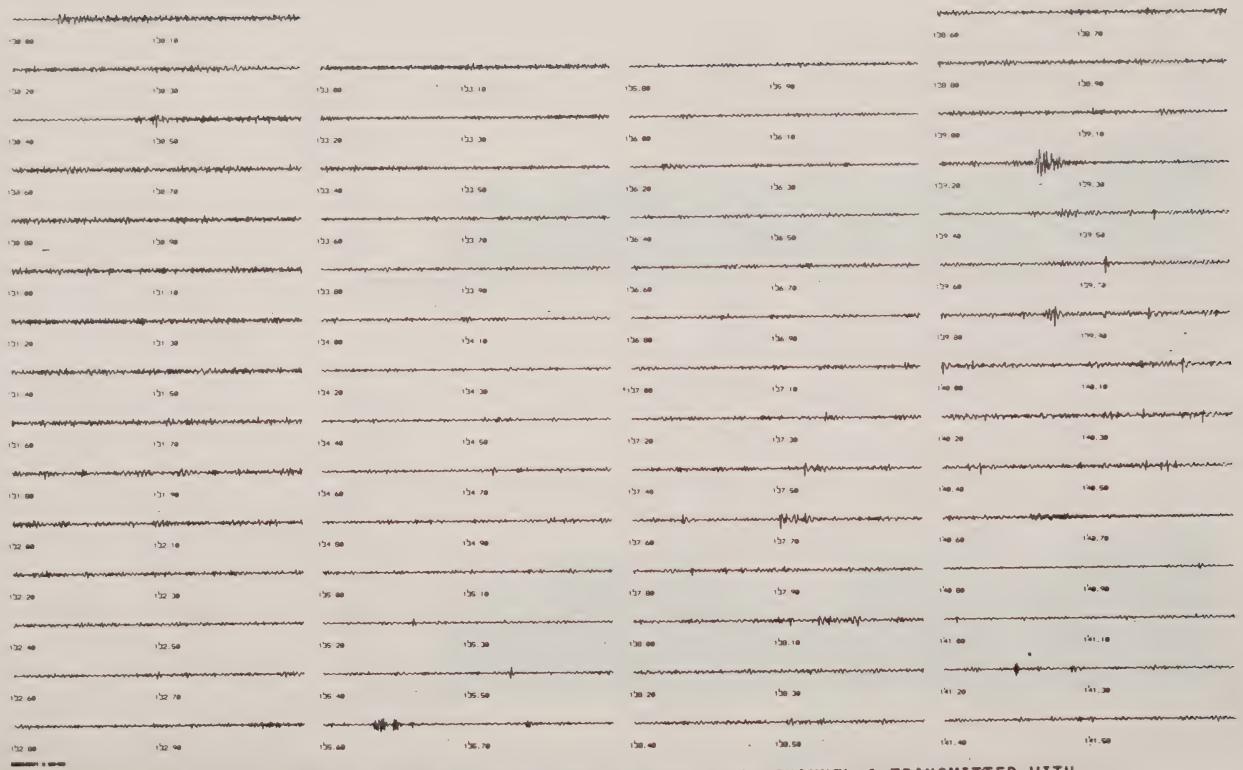


FIG. 6. ADAPTIVE FILTERED WAVEFORMS RECORDED FROM CHANNEL 1 TRANSMITTER WITH STUCK MICROPHONE (130 to 141 sec).

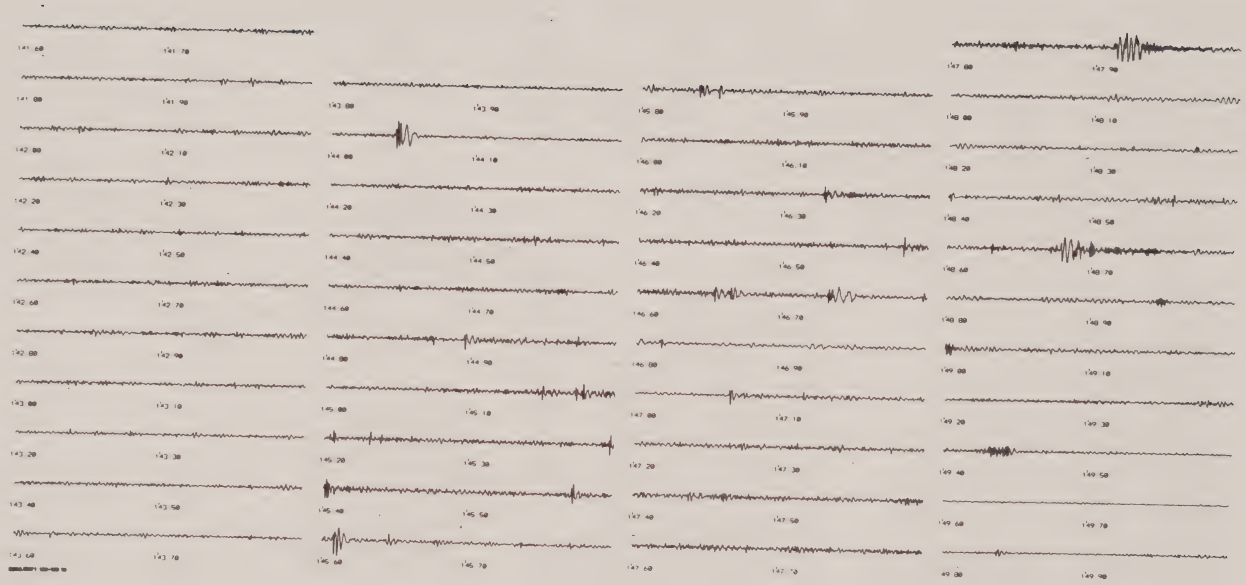


FIG. 7. ADAPTIVE FILTERED WAVEFORMS RECORDED FROM CHANNEL 1 TRANSMITTER WITH STUCK MICROPHONE (141 to 150 sec).

4. SCREENING TESTS

As described in Sec. 1, the four impulse patterns on the DPD tape were subjected to five simple but necessary screening tests. If the patterns did not pass any of these simple tests, then they could safely be assumed to have been caused by something other than gunfire. If they were to pass these tests, they could not be assumed to be gunfire, but further analysis would be warranted. Essentially, the screening tests were designed to answer the following questions:

1. Did the impulse patterns occur at the same time as the assassination?
2. Were the patterns unique? In other words, were they caused by the same source, and did they appear only at this time and nowhere else on the tape?
3. Did the time intervals between the impulse patterns match that of other evidence of gunfire?
4. Did the shape of the impulses resemble the shape of impulses of recorded gunfire?
5. Was the amplitude of the impulses similar to that of recorded gunfire?

This section of the report describes how these questions were answered.

4.1 Time of Occurrence

To determine the time of day when the impulse patterns were recorded on Channel 1, we examined the Channel 1 and the Channel 2 tapes. It is usual DPD practice for the Dispatchers on both channels to make frequent time annotations. In doing so, they

refer to two different clocks, which are synchronized at the beginning of each month and which are read out in full minutes only. An FBI study concluded that, towards the end of the month, the clocks could differ by as much as 1 minute. The allowable difference in the timing of events on Channels 1 and 2, therefore, was 60 sec.

The Channel 1 segment was a continuous recording that had no time annotations during the period of stuck transmission, but time annotations preceded and followed this period. The Channel 2 segment was an intermittent recording with frequent time annotations throughout. A stopwatch was used to time the events on both channels.

Figure 8 illustrates the results of stopwatch timing of the Gray Audograph record of Channel 2 events. Time annotations made by the Channel 2 Dispatcher are plotted against time on the stopwatch for the interval extending from 12:22 pm to 12:40 pm. Lines representing the least-square error fit are drawn through the time annotations. Note that the clock used by the Dispatcher is read out only in full minutes, and occasionally there is more than one annotation for the same minute.

For the events occurring before 12:30 pm on the Channel 2 tape, the slope of the least-square error fit is only 0.4, indicating intermittent operation of the recorder, which stops recording when there are no voice transmissions. At about 12:30 pm, the voice traffic picked up, and the Gray Audograph began recording continuously, as indicated by a least-square error fit slope of 1.0.

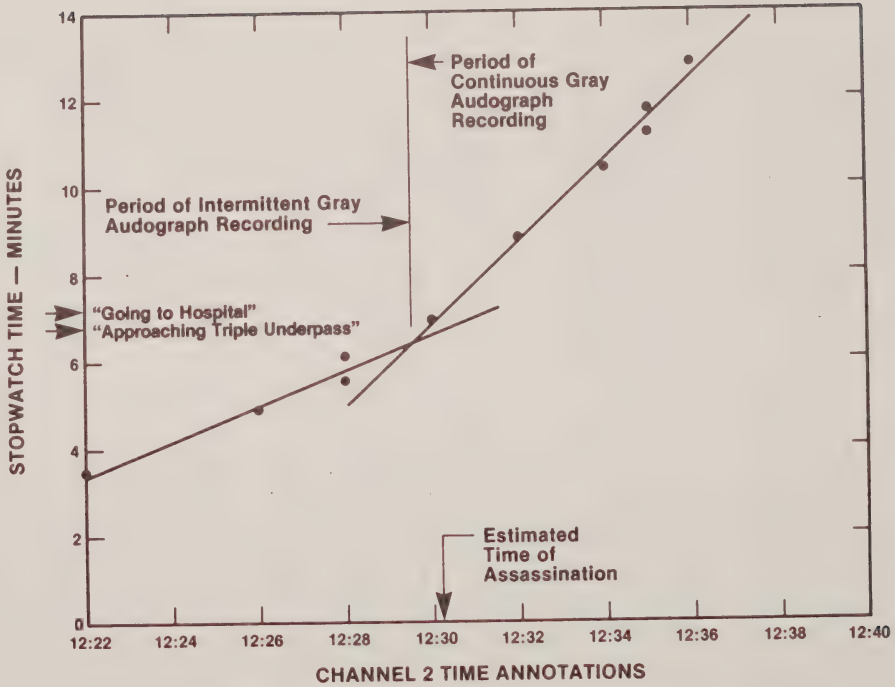


FIG. 8. LEAST-SQUARE ERROR FITS TO CHANNEL 2 DISPATCHER'S TIME ANNOTATIONS SHOWING TIMES OF DPD CHIEF'S RADIO TRANSMISSIONS.

The stopwatch time of two successive transmissions from Chief Curry are noted at the left of the illustration between the period extending from 6 minutes to 8 minutes. In the first, he notes that the motorcade is "approaching the triple underpass." After the Dispatcher notes the time as being 12:30, the Chief announces, "We are going to the hospital, officers." The assassination must have occurred sometime between Chief Curry's two voice transmissions. Since the slope of the least-square error fit changes at about 12:30, it is impossible to determine precisely the time on the Channel 2 clock when the assassination occurred. The best estimate is 12:30:12 pm.

Figure 9 illustrates the results of stopwatch timing of the Dictabelt record of the events on Channel 1. Here, the slope of the least-square error fit is 0.95, indicating that the recorder was running 5% too slow and, therefore, was compressing time slightly.* The fact that the slope does not change over the course of the entire segment shows that the recorder operated continuously.

The onset of the first impulse pattern, or 'gunfire-like event, on Channel 1 occurred at 12:30:47, Channel 1 time. Thus, the events on Channels 1 and 2 occurred within 35 sec of each other, well within the time difference allowable for this screening test.

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*Frequency analysis of the power hum on the tape recording also indicated that the recorder had been about 5% slow. Since the hum could have been added when the tape was recorded from the dictabelt, this is not a reliable indication of the original recording speed.

FIG. 9. LEAST-SQUARE ERROR FIT TO CHANNEL 1 DISPATCHER'S TIME ANNOTATIONS SHOWING TIME OF FIRST SET OF GUNFIRE-LIKE EVENTS.

4.2 Uniqueness of the Impulse Patterns

If impulse patterns similar to those occurring at the time of the assassination were to be found anywhere else during the 5-minute recording of stuck transmission, then the patterns could safely be assumed to have been caused by something other than gunfire. Thus, we examined processed waveforms for the entire segment of stuck transmission, looking for impulse patterns similar to those already identified. During the course of this examination, only one other pattern was found. It began about 30 sec after the other four patterns and was comprised mostly of impulses apparently caused by radios keying in, attempting to transmit. This sequence, which lasted for approximately 4 sec, did not resemble the earlier impulse patterns well enough to have been caused by the same source.

4.3 Time Span of the Impulse Patterns

If the impulse patterns were caused by the gunfire of the assassination, the time span they occupy would have to be at least as long as the evidence of time between bullet impacts as seen on the Zapruder film. On that film, bullet impact is judged to occur before frame 210 and again at frame 313, an interval of 103 frames. Since Zapruder's camera was judged to be operating at 18.3 frames per sec, the time span between these two events is 5.6 sec. The time span between the onset of the first impulse pattern and the onset of the fourth impulse pattern on the Channel 1 tape is 7.9 sec. When corrected for the fact that the tape recorder was running about 5% too slowly, the real time span is 8.3 sec.

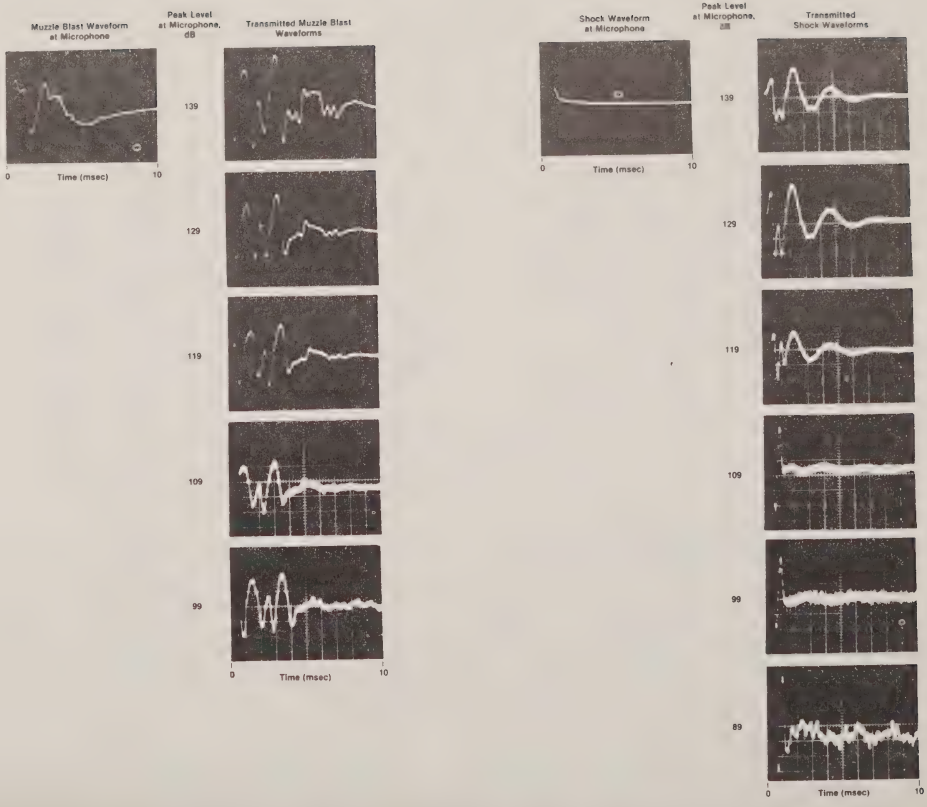


FIG. 10. MUZZLE-BLAST AND SHOCK WAVEFORMS TRANSMITTED BY A POLICE RADIO SIMILAR TO THE ONE USED BY DPD MOTORCYCLES FOR SEVERAL DIFFERENT LOUDNESSES.

4.4 Shape of Impulses

If the impulse patterns recorded on the DPD tape were gunfire, the shape of the waveforms would have been distorted by the limiting circuitry of the radio transmitter. Figure 10 shows the nature of these distortions. At the left of the figure is a muzzle-blast waveform obtained from the test firing of a Mannlicher-Carcano rifle. This waveform has a double peak showing the direct arrival of the muzzle blast with a strong ground reflection immediately following. A tape recording of these impulses was fed through a transmitting and recording system similar to that used by the DPD. The characteristics of both these systems are discussed in Appendix B.

The series of five photographs of transmitted muzzle-blast waveforms shows the effect of the system's circuitry on impulse shapes — essentially, the louder the input signal, the greater the distortion. For example, the top photograph shows how the loudest signals, those arriving over the direct path, would be recorded. The signal that was input at 109 dB is a good example of what the reflection from a large and distant surface, such as the Post Office, would look like. Similar analysis of the shock-wave impulse at the right of the figure illustrates how the simple N-wave of the bullet is severely distorted when the input signal greatly exceeds the 100-dB limiting circuitry of the transmitter.

Comparison of these waveforms with the impulse patterns obtained from the DPD tape showed sufficient similarity that the possiblity that the impulse patterns were caused by gunfire could not be ruled out.

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4.5 Amplitude of Impulses

Another characteristic of the waveforms that would have been affected by the circuitry of the radio transmitter if the input signal was as loud as gunfire was their amplitude. The recorded amplitudes of the sounds would be compressed in such a way that strong signals would appear to be weaker than they actually were, and weak signals in the same pattern would, therefore, appear stronger. As can be seen in Fig. 11, this compression is greatest for very loud signals, especially those with high-frequency content. For example, although all the signals were compressed, the amplitude compression of muzzle-blast waveforms above 100 dB was in every case less than that of the shock waves that are of higher frequency.

When the peak-to-peak difference in amplitude between two signals was 30 dB, they were recorded as having only a 20-dB difference (muzzle blast) or only a 10-dB difference (shock wave). As the amplitude of the input signal decreased, the difference in peak-to-peak level became more noticeable. This analysis gave us greater insight into the characteristics of the sounds originally recorded on the DPD tape. The signals on that tape also appeared to be compressed in amplitude, indicating that the sounds, as originally picked up at the motorcycle microphone, may have been loud enough to have been caused by gunfire.

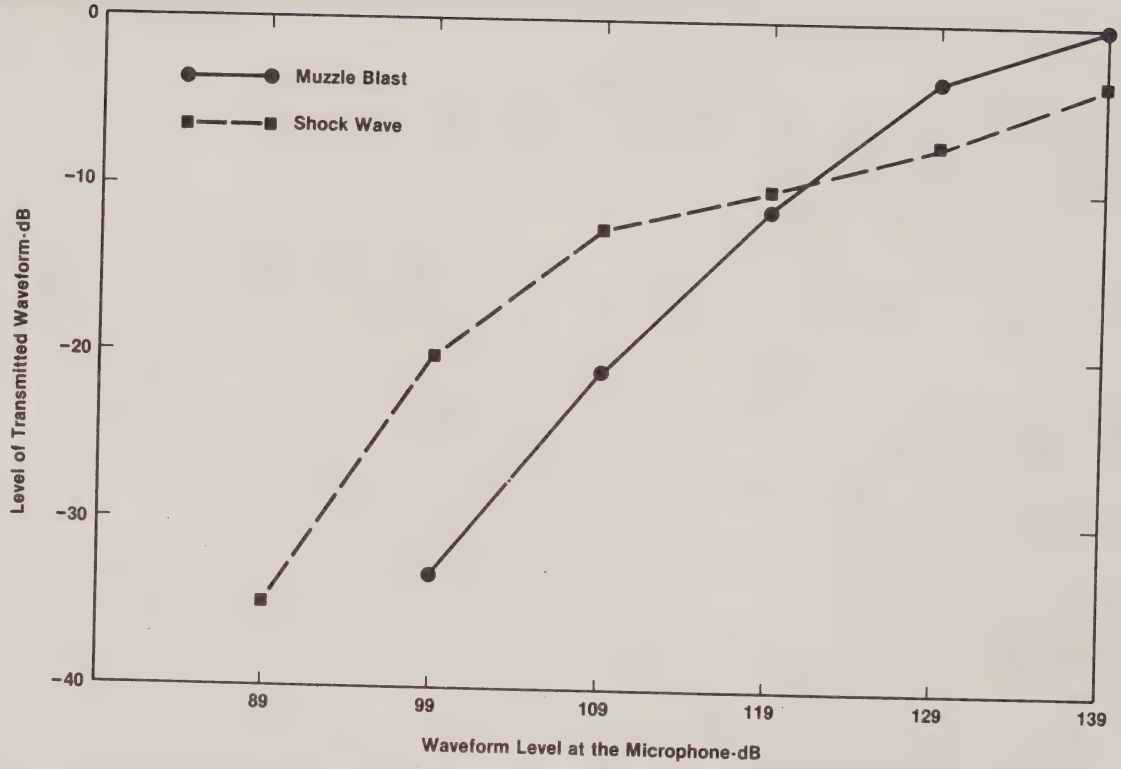


FIG. 11. LEVEL OF TRANSMITTED WAVEFORMS AS A FUNCTION OF WAVEFORM LEVEL AT THE MICROPHONE.

5. ACOUSTICAL RECONSTRUCTION IN DEALEY PLAZA

Because the five screening tests described in Sec. 4 had failed to disprove the possibility of gunfire having been recorded on the Channel 1 tape, a more rigorous test was required. The objective of the acoustical reconstruction, therefore, was to obtain several "acoustical fingerprints" of the sound of gunfire in Dealey Plaza to compare with the impulse patterns found on the Channel 1 tape. If any of the "fingerprints" matched, then the reconstruction would result in determining both the timing of the shots and the locations of the weapon and the target for each shot. Only those weapon and target locations indicated by available testimony were to be tested.

5.1 Nature of the Test

The most powerful test for the presence of weak signals that have many known features, but that are not clearly detectable because of background noise, is the correlation detection test. There are six distinct steps required to conduct this test.

Step 1: Obtain acoustical measurements, called test patterns, of the signals to be detected.

These test patterns are uniquely determined by weapon-target-microphone locations for each shot. There were 12 combinations of weapon-target locations, and they are listed in Table I. There were 36 microphone locations (3 arrays of 12 microphones), which, along with the four target locations, are illustrated in Fig. 12. Thus, 432 (12 × 36) unique test patterns were obtained. Six of these are illustrated in Fig. 13, where the logarithm of sound-pressure amplitude is displayed as a function of time, on a scale 16 in. to 1 sec.

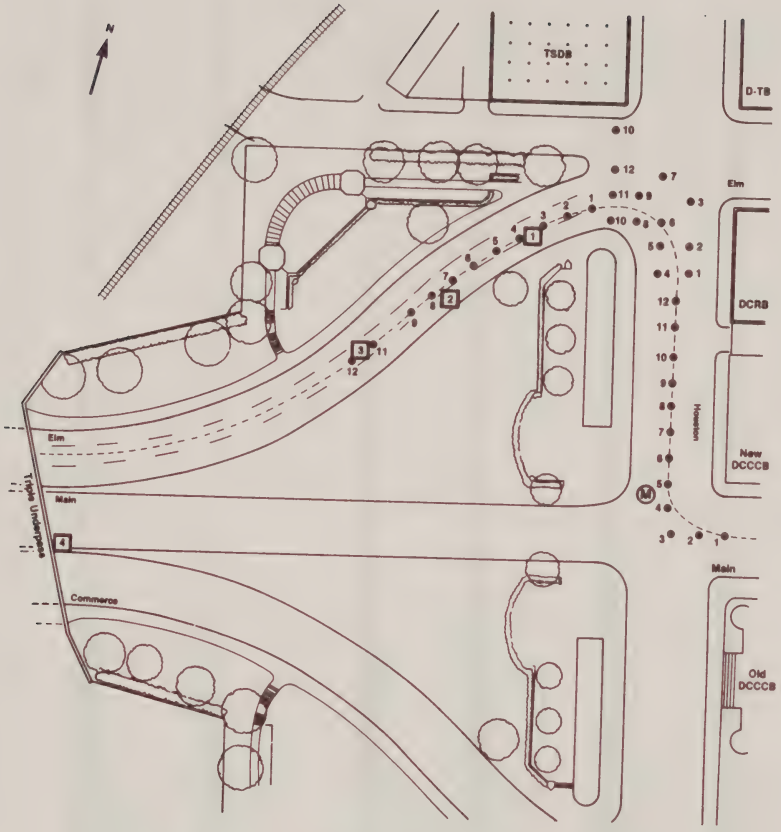


FIG. 12. MICROPHONE LOCATIONS AT DEALEY PLAZA.

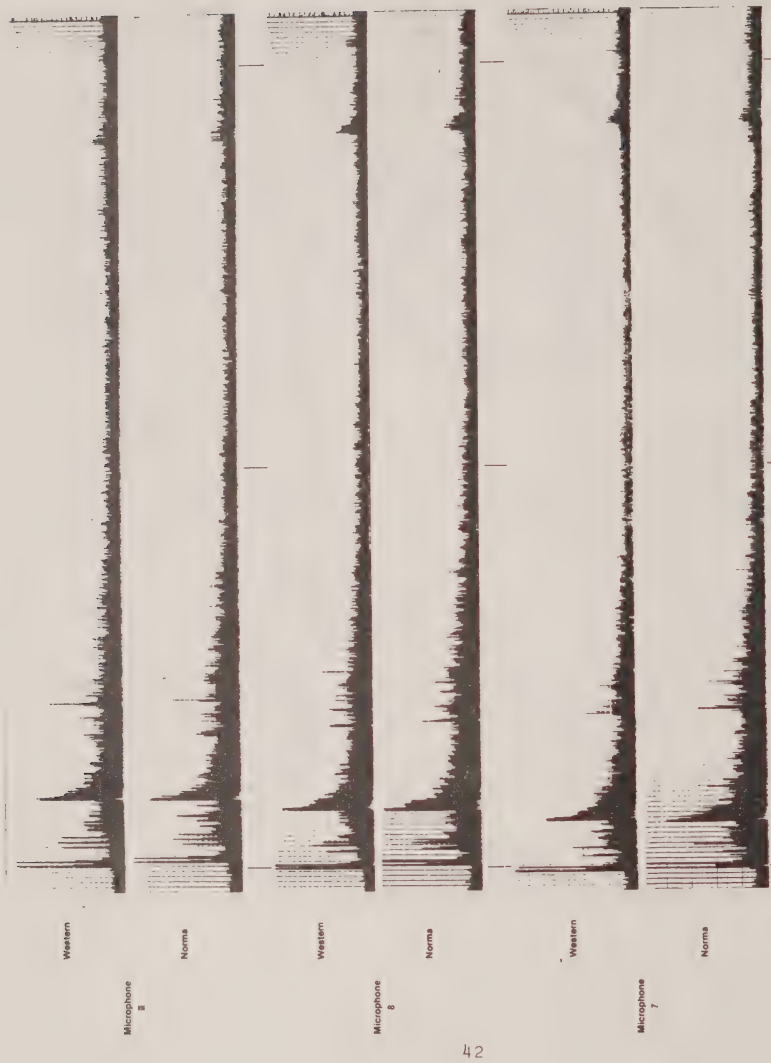


FIG. 13. COMPARISON OF TEST ECHO PATTERNS PRODUCED BY BOTH WESTERN AND NORMA AMMUNITION FIRED FROM TSBD (MUZZLE WITHDRAWN) AT TARGET NO. 3 AND RECEIVED AT ARRAY 3, MICROPHONES 7, 8, AND 9.

TABLE I. SEQUENCE OF TEST SHOTS

Weapon Location	Target 1	Target 2	Target 3	Target 4
TSBD (Muzzle in plane of window)	Shot 1	Shot 3	Shot 6	Shot 10
TSBD (Muzzle 2 ft inside plane of window)	Shot 2	Shot 4	Shot 7	Shot 11
Knoll (Rifle)		Shot 5	Shot 8	Shot 12
Knoll (Pistol)			Shot 9	

Step 2: Process the 432 unique test patterns into a like number of unique echo patterns or "fingerprints."

Since the radio receiver compresses the amplitude of loud gunfire sounds into a narrow range of amplitudes, for comparison with the compressed impulse patterns, test-shot echoes that differ greatly in loudness must be compressed so as to differ only slightly in loudness after transmission by the radio. To achieve this compression, we selected only those echoes in a pattern having sufficient loudness to render them distinct from their neighboring weaker echoes.

This echo selection process is illustrated in Figs. 14 through 17, for test patterns of individual shots as recorded by three adjacent microphones. For each of these figures, the geometry of the test shot – i.e., the weapon-target microphone location sequence – can be reconstructed by referring to Fig. 12. As can be seen from that figure, 12 microphones were placed in 3 successive arrays along the route of the motorcade, beginning at the right of the figure at the corner of Houston and Main. The outputs of the microphones were recorded on channels having the same numbers as the microphones. Thus, the echo patterns

in Fig. 14 represent the sound of gunfire made by a Mannlicher-Carcano rifle, withdrawn 2 ft within the plane of the TSBD window, fired at the target located closest to the TSBD, and picked up by microphones 4, 5, and 6 located on Houston St. before the turn onto Elm.

In each of these four figures, 14 through 17, very loud echoes were selected from the echo patterns recorded by the three adjacent microphones. Those echoes judged to have been caused by some feature in Dealey Plaza – e.g., direct arrivals of shock wave and muzzle blast, ground and building reflections, etc. – were identified by dots that are connected by nearly vertical lines. The reason the lines are not vertical is that the microphones were far enough apart to receive the same sound at different times. When Fig. 14 is again used as an example, the slope of the vertical lines at the left of the figure indicates that microphone 6 was closest to the weapon location and was, therefore, the first microphone to pick up sound arriving by the direct path and by other short paths. The slope of the lines at the right of the figure indicates that microphone 4 was closest to a major reflecting surface, such as the Post Office, and was the first to pick up those echoes.

From the four groups of echo patterns shown in Figs. 14 through 17, we selected as "fingerprint" material the following number of echoes: 15, 14, 9, and 10. Again, selection of these echoes was based on their strength and on an understanding of how all the echoes would be compressed in amplitude by the limiting circuitry of the DPD dispatching system. The same procedure was used to select echo patterns from each of the 432 test patterns. Each echo pattern consisted of dots placed at

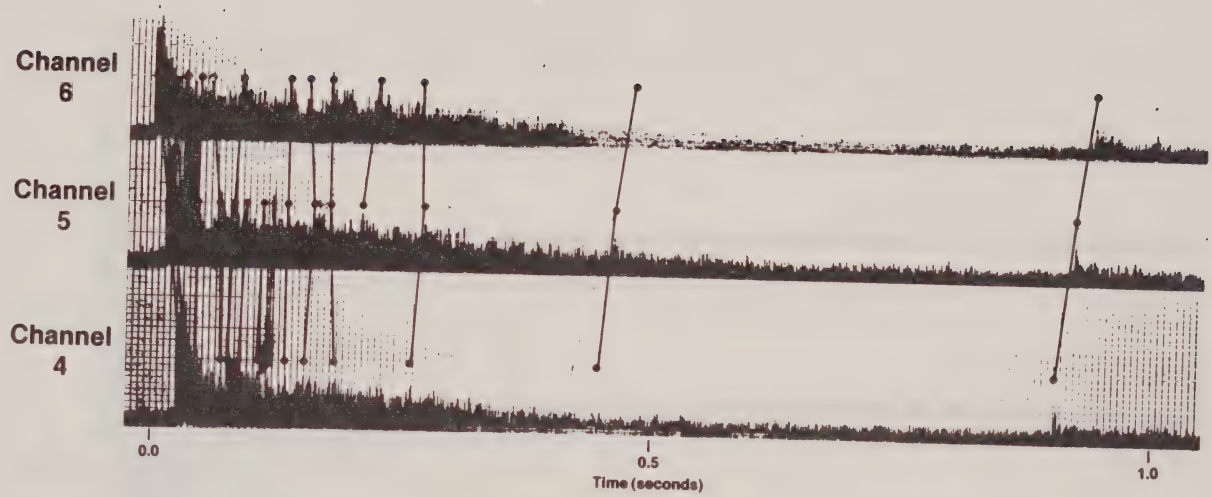


FIG. 14. ECHO PATTERN FOR SHOT 2 (TSBD, MUZZLE WITHDRAWN, TARGET NO. 1) RECEIVED AT ARRAY 2, MICROPHONES 4, 5, AND 6.

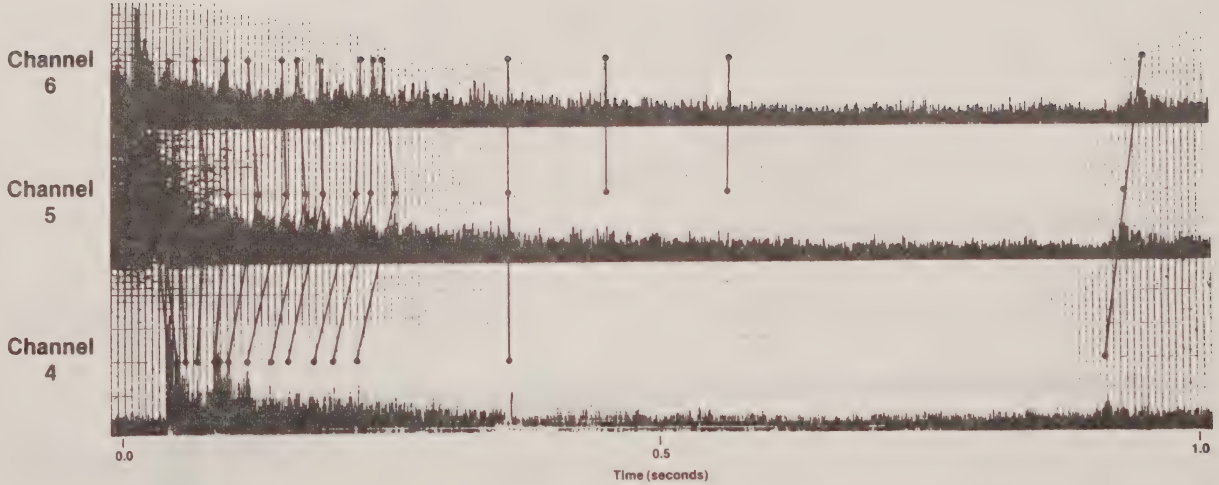


FIG. 15. ECHO PATTERN FOR SHOT 7 (TSBD, MUZZLE WITHDRAWN, TARGET NO. 3) RECEIVED AT ARRAY 2, MICROPHONES 4, 5, AND 6.

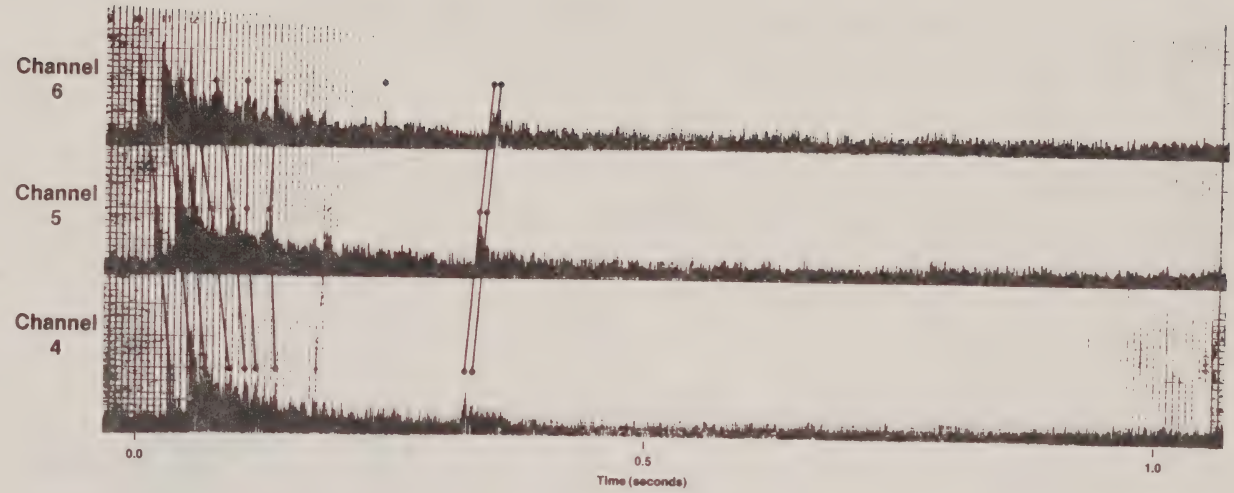


FIG. 16. ECHO PATTERN FOR SHOT 8 (KNOLL, TARGET NO. 3) RECEIVED AT ARRAY 3, MICROPHONES 4, 5, AND 6.

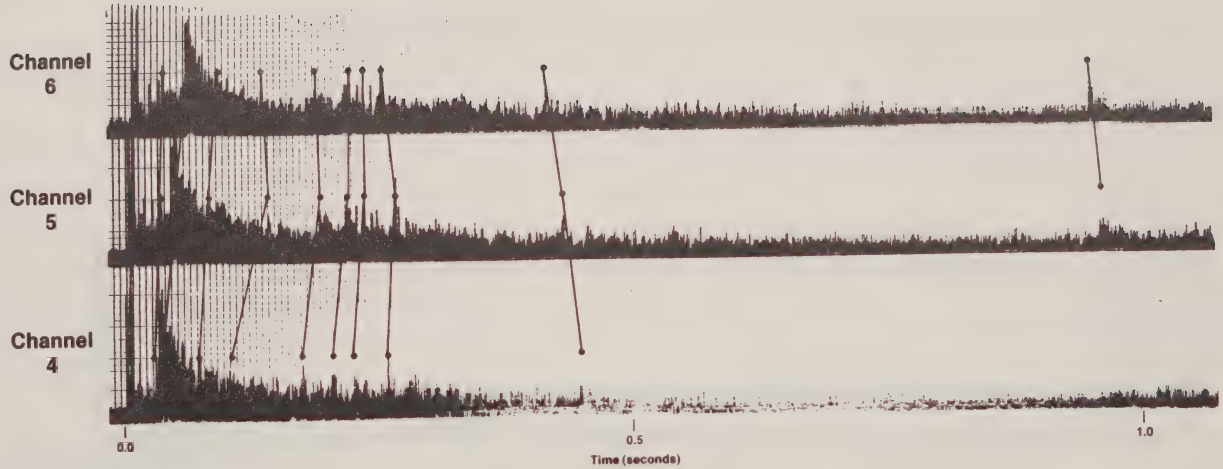


FIG. 17. ECHO PATTERN FOR SHOT 6 (TSBD, MUZZLE EXPOSED, TARGET NO. 3) RECEIVED AT ARRAY 3, MICROPHONES 4, 5, AND 6.

the time of each echo on a scale of 16 in. per sec, and there was an average number of 12 echoes on each echo pattern. Most echo patterns were of about 1-sec duration, or 16 in. long.

Step 3: Process into impulse patterns the segment of the DPD tape recording that passed all five screening tests.

The amplitude of the sounds on each segment was displayed in dB as a function of time, with each second of data occupying 16 in. of the display. The tape segment was subdivided for convenience into six separate segments of about 1-sec duration, each segment containing numerous sound impulses.* About 4 sec of data were discarded, because there were no impulses occurring within them. All impulses louder than a threshold value were selected as members of the impulse pattern. This process is illustrated in Fig. 18, where 17 impulses were selected in a 1.2-sec-long segment of the DPD tape that begins at 137 sec from onset of the stuck microphone.

Above each numbered impulse in Fig. 18 is a pair of vertical lines separated from the time of impulse by 6 msec. The 12 msec between this pair of lines represents a window in which an echo from an echo pattern recorded during the reconstruction might acceptably occur. The reason for establishing such an acceptance window for the comparison between impulse and echo patterns is that the precise motorcycle position and, therefore, its position relative to the actual test microphone locations, was not known. This subject is addressed further in Sec. 5.2.

Three other impulse patterns are illustrated in Figs. 19 through 21. These correspond to DPD tape segments that begin at 139, 145, and 145.5 sec, and they contain 15, 11, and 8

*These segments included the four impulse patterns that passed the screening tests, with the fourth pattern divided into two segments, and one pattern that did not pass the tests.



FIG. 18. IMPULSE PATTERN FROM STUCK-TRANSMITTER RECORDING BEGINNING AT TIME 137 SEC.

FIG. 19. IMPULSE PATTERN FROM STUCK-TRANSMITTER RECORDING BEGINNING AT TIME 139 SEC.

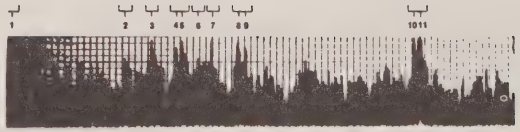


FIG. 20. IMPULSE PATTERN FROM STUCK-TRANSMITTER RECORDING BEGINNING AT TIME 145 SEC.

FIG. 21. IMPULSE PATTERN FROM STUCK-TRANSMITTER RECORDING BEGINNING AT TIME 145.5 SEC.

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impulses, respectively. The two impulse patterns not illustrated contained 4 and 8 impulses, so that all six of the 1-sec segments averaged 10.5 impulses each.

Step 4: Correlate each of the 432 echo patterns with each of the six impulse patterns for a total of 2592 separate correlation coefficients.

The process of correlation, which obtains the measure of goodness of match between an echo pattern and an impulse pattern, is the essence of the correlation detector. The process is carried out by sliding the impulse pattern along the echo pattern until the maximum number of echoes occurs within the acceptable windows of corresponding impulses. This maximum number is called the number of matches. The correlation coefficient is the number of matches divided by the square root of the product of the number of echoes and the number of impulses; i.e.,

$$\text{correlation coefficient} = \frac{\text{No. of Matches}}{\sqrt{\text{No. of Echoes} \times \text{No. of Impulses}}} .$$

If there is an equal number of echoes and impulses, and if they all match when the two patterns are positioned at one relative time, then the match is perfect and the value of the correlation coefficient is unity (1.0). If there are extraneous impulses or echoes, such as may be caused by noise on the DPD tape or by an echo-acceptance threshold too low for the reconstructed sounds, then the match cannot be perfect and the correlation coefficient will be less than unity. If the echo pattern is not at all similar to the impulse pattern, there will be only one or two matches, and the correlation coefficient will be only a little larger than zero.

The correlation coefficients for all 2592 matches were calculated by determining the maximum correlation coefficient possible for each, after sliding each pair of echo patterns and impulse patterns relative to one another. The time of the first impulse on the impulse pattern was noted with respect to the instant that the microphone button became stuck.

Step 5: Select all correlation coefficients having values greater than the detection threshold value.

The detection threshold concept is necessary because we have observed that noise and experimental uncertainty tend to prevent any perfect correlations (unity value of the correlation coefficient). Whenever an echo pattern matches sufficiently well with an impulse pattern to produce a correlation coefficient higher than the threshold value, that echo pattern is said to pass the detection test. There are two possible meanings to be assigned to each passing of the test. First, if the impulse pattern was truly caused by gunfire, the passing is called a detection. Second, if the impulse pattern was *not* caused by gunfire — but rather by any other event capable of introducing noise in the radio — then the passing is called a false alarm.

Since impulse patterns that are truly caused by gunfire and mixed with radio noise cannot be expected to correlate perfectly with the test patterns, the detection threshold must be set low enough to ensure that no detections are missed. But the lower the detection threshold is set, the more false alarms that can be expected to occur. The analysis described in Appendix C indicated that random noise on one 1-sec segment of the DPD tape having about 12 impulses per sec will cause

fewer than 3.3 false alarms out of 432 echo patterns, provided the detection threshold is 0.6. This rate of false alarms was judged acceptable and was considered necessary to prevent misses.

Step 6: Eliminate from the set of detections and false alarms the false alarms that can be identified.

Since false alarms are caused by noise (unexplainable events), they may occur with echo patterns that represent weapon, target, and microphone positions that are obviously disjoint from actual detections and from false alarms that mimic actual detections. These events can be correctly identified as false alarms and eliminated from further consideration. Only independent (non-DPD tape) evidence can be used to identify those false alarms that may be mimicking detections.

5.2 Problems To Be Solved by the Acoustical Reconstruction Test

The acoustical reconstruction test had to be conducted in a safe and timely manner. Therefore, all conceivable weapon, target, and microphone locations could not be reconstructed. Five problems arising from this fact, and their solutions, are discussed here.

1. *Where in the motorcade was the motorcycle during the time span of the assassination, assuming that it was in the motorcade?*

The motorcycle would need to be within the confines of Dealey Plaza in order to pick up the sound of gunfire. From the corner of Main St. and Houston St. to the position of the President's limousine at the time the President's head wound was inflicted is a distance of about 460 ft. Since the pavement

widens greatly at the corner of Houston and Elm, about 150 ft needed to be covered twice, for a total linear distance of 610 ft. It was judged that there would be time from sunrise until noon to conduct four complete firing sequences. One of these would need to be a repeat to test for the similarity of two types of ammunition. Only 12 microphones could be used simultaneously, because of the need to keep 2 channels of a 14-channel tape recorder in reserve for annotation. Therefore, 36 microphone positions would have to cover a distance of 610 ft. Also, the streets in Dealey Plaza are about 40 ft wide, meaning that a motorcycle would likely be no more than about 18 ft from the center of a street. For these reasons, the microphones were spaced 18 ft apart, as illustrated in Fig. 12.

Because of the spacing of the microphones and lack of knowledge of the precise position of the motorcycle within the motorcade, it was judged that the motorcycle would, in the worst case, have been no more than 18 ft away from a microphone location. The most likely separations were accounted for in Sec. 5.1, Step 3, by the establishing of a ±6-msec acceptance window for matching echo and impulse patterns.

2. *Is live ammunition necessary in the acoustical reconstruction, and does the type of weapon and ammunition make a difference?*

In Sec. 2, we described how the shock waves generated by rifle bullets would be sufficiently loud at some microphone positions to become a significant part of an echo pattern. The speed of the bullet is important, because it determines the difference in time between perception of the shock waves and perception of the muzzle-blast waves. Therefore, it would

be best to use the same type of rifle and the same type of ammunition in the reconstruction as was used in the assassination. Evidence dictated use of a Mannlicher-Carcano rifle from the sixth floor of the TSBD, firing Western Cartridge Co. ammunition. The Committee supplied a similar rifle, but only 15 WCC rounds. It was necessary to use Norma ammunition for the first three sequences of rifle fire, while the fourth sequence was a duplicate of the third, with the exception of substituting WCC rounds for Norma rounds. No significant difference due to the type of ammunition was observed, as can be seen in Fig. 13.

Gunfire from behind the fence on the knoll had been alleged by some, although there was no evidence to indicate what type of weapon or ammunition might have been used. The greatest difference between echo patterns caused by two different weapons occurs whenever one fires a supersonic projectile and the other a subsonic one. For this reason, a Mannlicher-Carcano was used to produce the supersonic projectile and a 38-caliber pistol was used to produce the subsonic projectile. Since the knoll-to-target distances were only about 100 ft, it was not necessary to obtain great accuracy in matching test weapons with alleged assassination weapons in this case.

3. Where should the targets be located?

Photographic evidence indicated that shots struck the President when his limousine was at the locations indicated approximately in Zapruder frames 200 and 313. Also, evidence indicated that a bullet may have struck the curb on the south side of Main St., near the triple underpass. Finally, our initial investigation of the tape indicated a shot may

have been fired when the limousine was near frame 160. For these reasons, four targets were selected, and their positions are marked on Fig. 12.

4. *Had any significant physical changes been made in Dealey Plaza?*

An important factor to be considered was the change over 15 years in the physical, and therefore acoustical, characteristics of Dealey Plaza. The absence of the crowd and cars was judged insignificant, because reflections of sound from these sources would constitute sufficiently weaker signals than those that would be selected for analysis. Thus, only two changes of importance had taken place: the introduction of the Hyatt Regency building a couple of blocks away as a possible reflector of sound and the absence of the building formerly located at the southeast corner of Commerce and Houston Sts.

Travel time for a sound wave to reach the Hyatt Regency and be reflected back to the microphone was estimated at 2 sec. Since the four impulse patterns had durations of no more than 1.1 sec each, the echo from the Hyatt Regency would not distort the data.

The sound waves that originally hit the missing building would have been diffracted by the corner of the building itself, with much of the sound energy being scattered. The reflected signal from this building would, therefore, have been sufficiently weak to have been swamped by the very strong reflection coming off the Post Office Building located at the southwest corner of the same streets.

For the purposes of reconstruction, therefore, Dealey Plaza was judged to have the same acoustical characteristics in 1978 that it had in 1963. However, when the test was being set up, we found that to shoot from the TSBD at Target No. 2, it was necessary to shoot between two overhead signboards on a sign above Elm St. that was not there during the assassination. This sign could not be moved. The secondary echoes generated by the projectile shock waves impinging on these two signs apparently reduced the correlation coefficients for matches with test shots at this target, for only three were ever found to exceed the detection threshold, and these were identified as false alarms.

5. *How could the listening tests be accommodated?*

The experts used by Dr. Green* to determine how earwitness accounts of the sounds of gunfire might be explained needed to hear each of the various test shots from at least four different locations. This requirement was met by our use of four identical sequences of test shots.

5.3 Results of the Acoustical Reconstruction Test

Of the 2592 maximum correlation coefficients determined by correlating the 432 echo patterns with the impulse patterns on six tape segments, 15 correlation coefficients exceeded the detection threshold value of 0.6. The time and weapon-target-microphone locations for each of these coefficients are listed in Table II. Inspection of the table shows that no correlations exceeded the threshold value for the two segments beginning at 136.20 sec and 146.30 sec after the time the microphone button became stuck. Fourteen of the 15 correlations that did exceed the

*See footnote, p. iv.

TABLE II. LIST OF ALL 15 CORRELATIONS BETWEEN IMPULSE PATTERNS OCCURRING IN SIX SEGMENTS OF THE DPD RECORD AND ECHO PATTERNS FROM 432 TEST SHOTS (2592 SEPARATE CORRELATIONS) HAVING A CORRELATION COEFFICIENT HIGHER THAN 0.5.

Beginning Time of First Impulse on Tape Segment§	Microphone Array and (Channel Number)	Rifle Location	Target Location	Correlation Coefficient**
136.20 sec	No Correlations Higher Than			0.5
137.70 sec	2 (5)	TSBD*	1	0.8
"	2 (5)	TSBD*	3	0.7
"	2 (6)	TSBD	3	0.8
"	2 (6)	KNOLL	4	0.7
139.27 sec	2 (6)	TSBD*	3	0.8
"	2 (6)	TSBD	3	0.6
"	2 (10)	TSBD	3	0.6
140.32 sec	2 (11)	TSBD*	3	0.6
139.27 sec	3 (5)	KNOLL	2	0.6
145.15 sec	3 (4)	KNOLL	3	0.8
"	3 (7)	TSBD*	2	0.7
"	3 (8)	TSBD	3	0.7
145.61 sec	3 (5)	TSBD	3	0.8
"	3 (6)	TSBD	4	0.8
"	3 (8)	TSBD*	2	0.7
146.30 sec	No Correlations Higher Than			0.5

§These times are tape times, and they are about 5% smaller than true time because the tape-recording process was about 5% slow.

*Indicates Muzzle Withdrawn 2 ft from Plane of Window.

$$**\text{Correlation Coefficient} = \frac{\text{Number of Echoes Matched with Impulses}}{\sqrt{\text{Number of Echoes} \times \text{Number of Impulses}}} \leq 1.0$$

threshold value occurred at four different instants of time, those beginning at 137.70 sec, 139.27 sec, 145.15 sec, and 145.61 sec. This result shows the possibility of four shots having been fired, each at one of the four times listed. The fifteenth correlation value to exceed the detection threshold occurred at 140.32 sec after the time the microphone button became stuck. This lone correlation will be identified as a false alarm in the next section and, therefore, does not indicate the possibility of a fifth shot. These times are all about 5% too small, because the tape-recording process was found to be about 5% slow (see Sec. 4.1).

5.4 Conclusions about the Acoustical Reconstruction Test

It becomes clear upon examination of the weapon, target, and microphone locations for the several echo patterns that passed the correlation detection test at each of the four different times, that some are inconsistent with each other. Thus, some or perhaps all represent false alarms. Deciding which are false alarms was greatly facilitated by plotting the microphone locations for each of the 15 echo patterns against the time on the DPD tape when it correlated highly. This plot appears in Fig. 22, where zero on the time scale is taken to be the time on the DPD tape where high correlations were first detected. Zero on the distance scale is taken at the point where the Hughes film* shows a motorcycle to be, just as the Presidential

*Frames from the film taken by Robert Hughes, an amateur photographer, were introduced as evidence at the December 29 Hearing. This film was taken from the left-hand edge of Houston St., near Main St. With the camera pointed north up Houston St., the limousine is seen just disappearing around the corner after a left turn onto Elm St. A few frames later a motorcycle passes through the field of view, moving from right to left, proceeding north on Houston St.

FIG. 22. MICROPHONE POSITIONS ALONG MOTORCYCLE ROUTE WHERE HIGH CORRELATIONS WERE OBTAINED, AS A FUNCTION OF TIME. ESTIMATED TRAJECTORIES OF MOTORCYCLE AND OF THE PRESIDENTIAL LIMOUSINE ARE SHOWN FROM THEIR POSITIONS INDICATED BY THE HUGHES FILM AT THE TIME THE LIMOUSINE TURNED DOWN ELM ST.

limousine is seen to disappear around the corner from Houston St. onto Elm St. This motorcycle position is marked M in Fig. 12. Distance is measured in feet from this point along the motorcade route.

Even a brief glance at Fig. 22 shows that the microphone locations that correspond to correlations at the three times after the first impulse tend to progress uniformly forward along the motorcade route. This conclusion can be quantified statistically by the chi-square test. If the motorcycle were not moving through Dealey Plaza at the time of the assassination, the distance along the motorcade route would be a meaningless coordinate, and the microphone locations for the correlations that exceed the detection threshold would occur at random. When the chart in Fig. 22 is partitioned into a 2 × 2 table by separating time at 5 sec and distance at 250 ft, we find 1, 6, 8, and 0 correlations in the four sections reading from left to right, top to bottom. But the expected number of correlations to be found in these four sections, if the correlations occurred at random, are 4.2, 2.8, 4.8, 3.2. The value of chi-square for the observed and expected values is equal to 11.4. There is only 1 degree of freedom in this 2 × 2 table, and the probability that this large value of chi-square could occur at random is less than 1%. Therefore, there is little doubt that the distance coordinate is meaningful, and we conclude that the motorcycle was moving through Dealey Plaza and did, in fact, detect the sounds of gunfire.

Looking at the information in Table II and in Fig. 22, we can determine that at least 6 of the 15 correlations above the detection thresholds are false alarms. These six false alarms are indicated in Fig. 22 with an X drawn over them, and they are:

1. The fourth entry in Table II that occurred at 137.70 sec is a false alarm, because it represents a rifle shot fired from the knoll at Target 4 near the triple underpass at a time when the limousine was near the position seen in frame 171. Thus, this shot was fired in a direction opposite to that of the logical target.

2. The entry in Table II that occurred at 140.32 sec is a false alarm, because it occurred only 1.05 sec later than earlier correlations also obtained from the TSBD. The rifle cannot be fired that rapidly. Since there are three correlations plausibly indicating the earlier shot, the one occurring 1.05 sec later must be a false alarm.

3. The fourth entry in Table II that occurred at 139.27 sec is a false alarm, because the motorcycle would have had to travel 130 ft in 1.6 sec (55 mph) to gain that position.

4,5,6. The second and third entries at 145.15 sec and the third entry at 145.61 sec are false alarms, because the motorcycle would have had to travel at 16 mph to gain the indicated position of only 70 ft behind the limousine at the time of the last shot. The motorcycle noise level (see Fig. 4) decreased by about 10 dB just 3 sec before the time of the first correlations, indicating a slowing to negotiate the 120° turn onto Elm St. The motorcycle noise level did not increase for the next 13 sec, so it could not have increased speed to 16 mph and maintained it.

There remain nine correlations that exceeded the detection threshold, and they occur at four different times:

Group 1. 137.70 sec — four correlations with test shots from the TSBD at Targets 1 and 3.*

Group 2. 139.27 sec — three correlations with test shots from the TSBD at Target 3.

Group 3. 145.15 sec — one correlation with a test shot from the knoll at Target 3.

Group 4. 145.61 sec — two correlations with test shots from the TSBD at Targets 3 and 4.

There is no other acoustical evidence that would help to determine which of the remaining nine correlations are false alarms, if any. Clearly, at least one of the first two groups of correlations and at least one of the second two groups of correlations must contain detections, because the order found in the data would not likely have occurred by chance. The probability that two detections have been achieved and that one is near 138 sec and the other near 145 sec is at least 95%.

However, the expected number of false alarms to be found when testing four different impulse patterns is 13 (see Appendix C), and only six have been found. Therefore, it is not unreasonable to expect that there are seven more, although that would be the largest number possible since at least two of the remaining nine are probably detections. The best that can be safely assumed is that each of the nine remaining correlations is equally likely to represent a detection or a false alarm.

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*Possibly because of the presence of an overhead sign that interfered with test shots at Target 2, no correlations were found with that target.

On the basis of this judgment and the assumption that each of the 15 events are independent, the probabilities of several different outcomes can be calculated.

The probability that at least two shots have been detected is 96%, the probability that at least three shots have been detected is 75%, and the probability that four shots have been detected is 29%. The individual probabilities that shots occurred at each of the four times at which correlations exceeded threshold are 88%, 88%, 50%, and 75%, listed in order of increasing time. The combined probability that there were three shots and that the third (knoll) shot was one of them is 47%.

Our correlation detector that located the origin of gunfire also located the position of the radio that transmitted the gunfire sounds. It is important to show that the motorcycle trajectory determined by the detections is compatible with independent evidence about a motorcycle trajectory. The necessary independent evidence to show this compatibility is partially obtained from the positions of the Presidential limousine and a motorcycle shown in the movie taken by Hughes (see footnote on p. 62). This movie shows the limousine just turning onto Elm St. just before a motorcycle passes that has turned onto Houston St. from Main St. We estimate that the motorcycle was at point M (Fig. 12) at that sighting. We estimate that the limousine was at the position of microphone 2(9) (Fig. 12) at that sighting, 215 ft north on Houston St.

The position of the limousine at the instant of the President's head wound is shown in Fig. 22 at two different times, assuming that either the third or the fourth shot

struck. Photogrammetric determination of the limousine speed on Elm St. was about 11 mph. The limousine's positions at times before the head wound is shown by the two parallel lines projected backward, having a slope equal to 11 mph. The two times at which the limousine position is equal to its assumed position when the motorcycle was at point M are shown in Fig. 22. We find that these times were either 6.5 sec or 7.2 sec before the first shot was fired. The motorcycle position at either one of these two times was 180 ft away from its position when the first shot was fired, according to the results of our correlation detector. Therefore, its average speed north on Houston St. would be either 15.9 mph or 18.6 mph, depending upon whether the third or fourth shot caused the head wound. These two trajectories are shown in Fig. 22 also.

A precise motorcycle location at the time of the third shot, calculated by Weiss and Aschkenasy, was found to be 5 ft southwest of microphone position 3(4). This location is marked in Fig. 22. The straight line that passes through this point, and best fits the eight other microphone locations that produced echo patterns indicating the other three shots, is plotted in Fig. 22. This line is the estimated motorcycle trajectory on Elm St., and it indicates an average speed of 10.6 mph.

The complete motorcycle trajectory shows that the motorcycle traveled north on Houston St. at about 17 mph. It slowed to about 10 mph at a point about 40 ft south of the corner at Elm St., and then continued west on Elm St. at about 10 mph. This single diminution of speed is compatible with the single

diminution of motorcycle noise about 3 sec before the first shot is heard (see Fig. 6). We conclude that the motorcycle trajectory determined by the gunfire detections is compatible both with the positions of a motorcycle shown in the Hughes film and with the loudness of the motorcycle noise as transmitted to the Dispatcher.

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6. ADDITIONAL RELEVANT SOUNDS ON THE DPD CHANNEL 1 TAPE

In an attempt to gain as much acoustical evidence as possible, the Channel 1 tape was examined for other relevant sounds. These other sounds consisted primarily of the tolling of a bell, the noise of sirens, and voice and other transmissions.

6.1 Bell

The toll of a bell can be heard faintly at about 152.5 sec. It was hoped that the location of the bell, and therefore of the radio transmitter, could be obtained by acoustically identifying the bell.

The energy spectrum of the 1/3-sec segment containing the bell sound is shown in Fig. 23. Several peaks evident in the spectrum are harmonically related. The fundamental frequency of this series of spectral peaks is 210 Hz. The spectral peaks are marked according to the usual nomenclature used to describe overtones of a carillon bell. The fundamental tone is called the hum note. The second harmonic, called the strike note, is at the nominal pitch of the bell — in this case, 420 Hz. The third harmonic is a fifth above the strike note. Higher harmonics are strong at 1050 Hz and 1470 Hz. The minor third above the strike note is strong, and this fact is characteristic of carillon bells.

The tape-recording system was found to be about 5% slow, when the time annotations were measured with a stopwatch (see Fig. 9). Therefore, the apparent pitch of the tone would have a frequency of (1.05) (420) = 441 Hz.

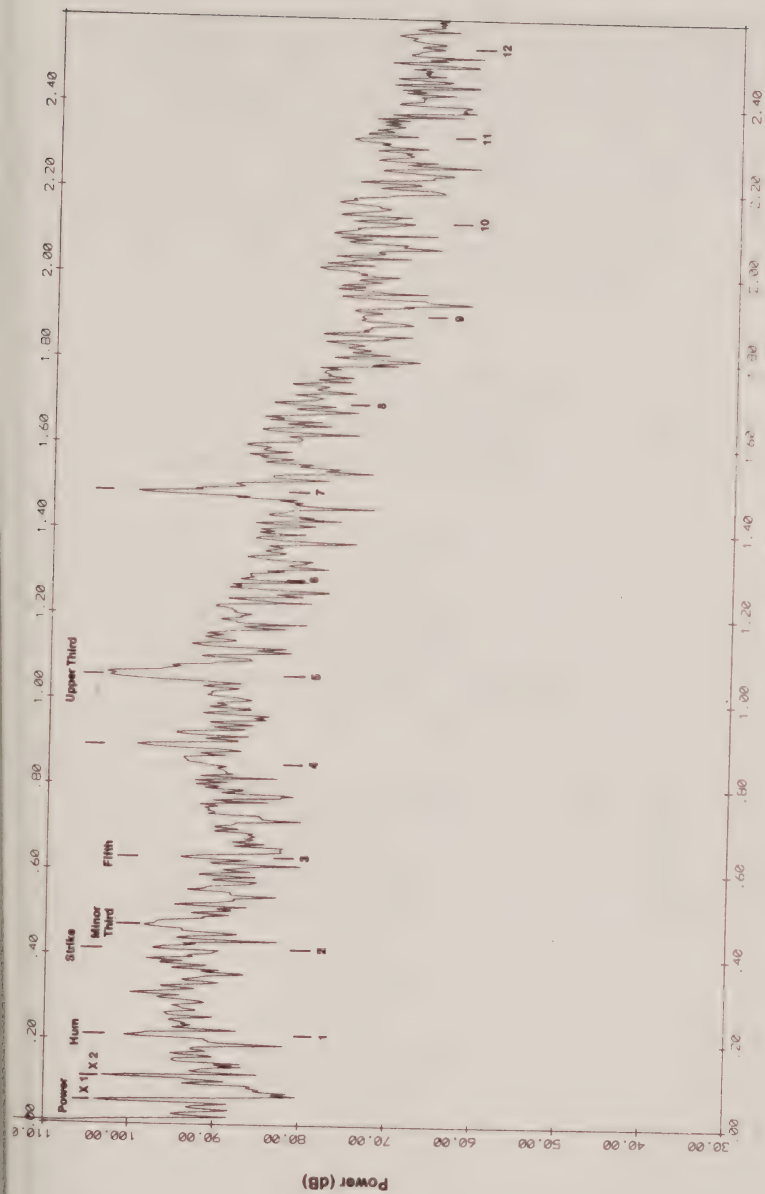


FIG. 23. ENERGY SPECTRUM OF TAPE SEGMENT CONTAINING THE SOUND OF A BELL.

Careful investigation by the Committee staff did not discover any such bell within earshot of Dealey Plaza. During the acoustical reconstruction tests in Dealey Plaza, the sounds of railroad locomotive bells were recorded and subsequently analyzed. These sounds bore no similarity to the carillon-like sounds of the original recording.

We concluded that the bell sound on the Channel 1 tape recording must contain sounds from at least one transmitter not in Dealey Plaza at a time near 152.5 sec.

6.2 Sirens

The region from 263 to 300 sec of the stuck transmission contains the sounds of a number of sirens. The effect is not that of a microphone being carried on a vehicle with a wailing siren, but rather of many vehicles with sirens coming and going around the microphone.

6.3 Voice and Other Remote Transmissions

Starting just after 264 sec, a voice transmission says, "Anybody know where 56 is?" The quality of this voice is such that it sounds as if it may have been picked up by the open microphone of the stuck transmitter, rather than having come from a second transmitter on the same channel, but it is impossible to tell for sure.

In many other cases, there are brief voice signals from other remote transmitters. Sometimes these signals are too faint to be understood (such as the voice signal shown in the spectrograms in Fig. 5), sometimes they are loud but very distorted, and sometimes they are quite intelligible. These

competing transmissions are often, but not always, accompanied by heterodynes, which are tones caused by slight differences in frequency among the competing transmitters. Many times these remote transmissions are very brief (around 0.1 sec) "beeps" with no voice, signifying attempts to make one's desire to use the channel known. This beeping is common practice on a shared radio channel.

7. REVIEW OF AN INDEPENDENT ANALYSIS OF THE POSSIBLE THIRD SHOT

Owing to the uncertainty about the possible third shot found in our study, the Committee sought an independent analysis. Professor Mark Weiss and Mr. Ernest Aschkenasy of Queens College conceived of an analytical extension to our work that could determine with more certainty whether or not the match between one echo pattern from our acoustical reconstruction with one impulse pattern on the DPD tape indicated a third shot. At a meeting on October 24, we contributed to the design of this analytical work.

Their analysis was conducted as follows. First, they made a graph of the waveform of the echo pattern we recorded on microphone 3(4), when a rifle was fired from the knoll at target no. 3 (see Table II). From this graph, they identified the 22 loudest individual echoes within the pattern. Then, they identified the 22 echo-producing objects within Dealey Plaza by noting which objects corresponded to observed echo delay times — i.e., by identifying rifle-to-object-to-microphone sound paths that would account for the times each of the 22 echoes were received by microphone 3(4).

Next, they analytically moved the position of microphone 3(4) several times by calculating for each time what the echo pattern would have looked like if that microphone used in the acoustical reconstruction had been located in these other positions. After a time, they found that a position about 5 ft southwest of the actual location of microphone 3(4) represented the true location of the motorcycle at the instant the muzzle blast would have been received by its radio. Then they calculated the delay times for each of the 22 echoes received at

that point as it moved down Elm St. at 11 mph. The resulting series of echoes was found to match with the sound impulses on the DPD tape beginning at about 144.9 sec (see Table II).

Weiss and Aschkenasy found that 12 of the 22 echoes were loud enough to exceed a threshold that they felt excluded most of the weak echoes that would not be audible in the DPD tape. They found that 10 of these 12 echoes occurred within ±1 msec of the occurrences of 10 of the 14 impulses on the DPD tape that were loud enough to exceed a threshold. The value of the correlation coefficient that represents this match is 0.77. This value exceeds the threshold value of 0.60 for which we accept a correlation as possibly indicating a shot.

The probability that a false alarm will be produced by the correlation scheme used by Weiss and Aschkenasy is much lower than it is by our correlation scheme, because in our analysis we counted echoes that occurred within ±6 msec of the occurrence of impulses on the DPD tape. We were required to count echoes occurring within this larger time interval, because of our initial uncertainty of the true motorcycle location.

We computed the probability that Weiss and Aschkenasy could have obtained by chance their good match between their calculated echo pattern and the impulse pattern on the DPD tape. We observed that they obtained 10 matches, to a precision of ±1 msec, out of 12 test echoes, with 14 impulses in a 320 msec time span. We note, however, that the 12 test echoes were contained in two time intervals of 90-msec total duration. These two intervals were separated by a span of about 230 msec in which no echoes appeared. Because an echo was counted if

it occurred within a 2-msec time window, there were 45 possible windows in which echoes may occur. Since one of the 10 occurrences can always be matched simply by adjusting the origin of the time scale, there are only 9 independent occurrences. The probability of obtaining by chance 9 or more out of 12 echoes occurring within any specific 14 time windows out of a possible 45 is equal to 3.13×10^{-4}. This probability of obtaining by chance as good a match as was obtained on a single try is given by the hypergeometric probability function. However, they were required to try not once, but about 180 times. This is because the motorcycle could have been anywhere in a 40-ft by 18-ft rectangular space. Since a significantly different pattern would be calculated by them for each different 2-ft by 2-ft square, they were required to examine about 180 different patterns. The probability of obtaining just one match by chance in any of 180 independent tries is equal to 5.3×10^{-2}, or about 5%. Therefore, the probability that they obtained their match because the two matched patterns were due to the same source (gunfire from the knoll) is about 95%.

APPENDIX A. COMPUTER SIGNAL PROCESSING

Many of the analyses of the acoustic data were performed on digital computers. In this appendix, we describe these processing methods.

A.1 Digitizing

When played from a magnetic tape, sound is in the form of a continuous electrical signal. For it to be amenable to processing by a digital computer, its voltage must be sampled, or read, at frequent intervals. The voltage must then be expressed as a digital quantity. The sampling rate must be sufficiently rapid to preserve the high-frequency components of the signal; sampling rates of 10,000 times per sec and 20,000 times per sec were used in this work. The signal must then be digitized with an analog-to-digital converter; the resulting series of numbers is stored on a computer disk-file.

A.2 Interactive Playback and Display

Once the signals have been digitized, waveforms can be graphically plotted on a computer display; the signals may also be reconverted to sound by a digital-to-analog converter. Interactive signal display, editing, and playback programs make it possible to display any time interval of the signal and to convert it back to a sound signal for listening. This interactive process of observing portions of the signal waveform and simultaneously listening to it is very valuable.

A.3 Plotting

In addition to showing portions of the signal waveform on the computer display, we also used the computer and a graphical plotter to make pen-and-paper drawings of the signal waveforms. These high resolution plots, usually made with a scale of 5 in. per 1/10 sec, provide a permanent record of the signal. Examples of these plots are shown in Sec. 3 of this report.

A.4 Signal Enhancement

Computations performed on the digitized signal can produce filtered versions and other representations of the signals. Digital signal processing can accomplish the same kinds of filtering that can be performed in the analog domain, and it can accomplish new kinds of filtering that are impossible by conventional means. Several different kinds of signal processing were performed on the data.

Enhancement by Adaptive Noise-Canceling Filter

An adaptive noise-canceling filter differs from fixed filters in that it automatically adjusts its signal-processing characteristics by means of an algorithm that allows it to predict certain noise components. The particular filtering process* used for the Channel 1 tape allows the filter to separate periodic components of the noise from random components. Periodic components are those elements of an input signal that repeat at regular intervals — for example, the ticks of a clock and a 60-Hz powerline voltage hum.

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*Widrow, B., Glover, J.R., Jr., McCool, J.M., Kaunitz, J., Williams, C.S., Hearn, R.H., Zeidler, J.R., Dong, E., Jr., and Goodlin, R.C., "Adaptive Noise Cancelling: Principles and Applications," *Proc. IEEE* 63, 1692-1716 (December 1975).

One property of periodic components is that, given sufficient past history, they can be predicted; indeed, a perfectly periodic signal can be predicted perfectly. The filter "learns" from the past history of the signal, estimates the signal for the next time period, and subtracts its estimate from the input. What is left are those portions of the signal that the filter cannot estimate — i.e., the random components.

A time delay was inserted into the processing system, just ahead of the adaptive filter, to assist in controlling the separation of periodic and random components. Random components having a time duration less than that of the time delay pass through essentially unaffected by the filter. These random components form the primary output of the filter. A second output was the periodic component that was being subtracted out; this subtracted information was also saved in digital form on disk. Examination of this subtracted signal, by aural and visual means, yields considerable insight into filter performance. Several test signals were fed into the filter to verify proper operation and to adjust the various filter parameters. The filter performed very well on the various test signals.

On the DPD Channel 1 tape, anticipated periodic and undesirable interferences included components of motorcycle cylinder firing, powerline hum, heterodyne "squeals," and occasional speech. Sections of this tape were played into the filter with a wide range of filter parameter values. Filter action was monitored by listening to both the primary and the secondary outputs. The filter removed residual powerline hum, some speech, and heterodyne "squeals" of time duration longer than that of the time delay. However, it

accomplished little with respect to what had been believed to be motorcycle noise. We therefore performed an autocorrelation analysis, as described below.

Autocorrelation Analysis of Motorcycle Engine Noise

Our interpretation of the sounds on the Channel 1 tape would have been made much easier if we had had some knowledge of the movements of the motorcycle carrying the microphone. For example, if we had had information on when the motorcycle was moving steadily (along a straight street), slowing down and possibly shifting gears to turn a corner, or stopping, we might have been able to infer whether these movements were consistent with travel into or through Dealy Plaza. However, we did not have this information. Thus, to determine the engine speed with greater accuracy than is possible from engine loudness, we wrote a computer program that would compute the short-time autocorrelation function of the motorcycle noise signal. This function assesses the similarity of a signal with itself shifted in time; if the signal is periodic, this similarity will peak when the signal is shifted by one period.

This autocorrelation analysis program was applied to the stuck transmission period on the Channel 1 tape. The results showed no periodicity that we could attribute to motorcycle engine firing. As a test case, this program was also applied to a high-fidelity recording of motorcycle engine noise, and it clearly showed the known periodicity of the test signal. Although our failure to detect the motorcycle engine periodicity is puzzling, it is consistent with our inability to perceive the engine firing clearly when we are listening to the tape, and it is also somewhat consistent with the failure of the adaptive noise-canceling filter to filter out a coherent motorcycle engine sound signal.

Enhancement by Spectral Subtraction

A third method applied to enhance the Channel 1 signals was the subtraction of a noise spectrum estimate. This method is currently under development at BBN, under U.S. Government sponsorship, for the enhancement of speech signals in the presence of stationary flat-spectrum additive noise.* It is similar to, but somewhat more general than, the INTEL enhancement method developed by Weiss *et al.*† We could not tell whether this method would be effective with nonstationary non-flat-spectrum noise, but since the program was already available, we tried it.

In this method, the signal is converted by a Discrete Fourier Transform to a magnitude spectrum and a phase spectrum. A previously computed estimated noise spectrum is subtracted from the magnitude spectrum; the altered magnitude spectrum is then recombined with the phase spectrum converted back to a waveform by an Inverse Discrete Fourier Transform. Several parameter settings for this filtering method were used with a portion of the Channel 1 tape. None were successful in reducing the motorcycle noise without introducing noise transients attributable to the filtering process.

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*Berouti, M., Schwartz, R., and Makhoul, J., "Enhancement of Speech Corrupted by Acoustic Noise," IEEE Int. Conf. on Acoustics, Speech, and Signal Processing, Washington, DC, April 2-4, 1979.

†Weiss, M.R., Aschkenasy, E., and Parsons, T.W., "Study and Development of the INTEL Technique for Improving Speech Intelligibility," Nicolet Scientific Corp., Report RADC-TR-75-108, 1975.

APPENDIX B. RADIO TRANSMISSION OF GUNFIRE SIGNALS

The 1963 DPD Channel 1 radio link and recording system contained the following components: microphones, radio transmitters, an RCA Fleetline radio receiver (Model C9F350), and a Dictabelt recorder. Radio systems such as this are designed to carry speech signals and therefore incorporate signal modifiers to optimize the dynamic range and bandwidth of the system with respect to voice transmissions. Since these signal modifiers are usually incorporated in the transmitter, rather than in the receiver or the recording device, we focused our efforts to simulate the radio link on the transmitter/microphone combination.

Among the radio transmitters in use by the DPD in 1963, House Committee researchers found that five different models were used on motorcycles. These were

- Motorola Model FMT-41
- Motorola Model T-31BAT
- Motorola Model U-41GGT
- Motorola Model T-41GGT
- General Electric Model MT-13-N.

At the time of this study, it was very difficult to find manuals for these models and even more difficult to obtain access to a working unit. With the manuals we were able to find and with assistance from Motorola factory personnel, we discovered that the microphone used with the T-31BAT would have been Motorola NMN 6006A and that microphones used with the other Motorola transmitters would have had similar

characteristics; i.e., they would have been dynamic cardioid types with internal preamplifiers. We have no information about the GE radio model and its microphone. We eventually located a T-31BAT owned by the Boston Metropolitan District Commission Police Department. The MDC kindly made this radio and a GE Model ER51A receiver available to us.

The basic scheme used in this and other Motorola radio transmitter/microphone systems of the same vintage is sketched below. This type of circuit limits the slope of the audio



signal rather than its amplitude. Therefore, it will limit high-frequency signals more than low-frequency signals, as shown in Fig. 11 of this report. The frequency response of the system rolls off at 36 dB/octave above 3 kHz and at 6 dB/octave below 2.3 kHz. The signal, in effect, is differentiated and low-pass filtered. The smoothed, calculated frequency response of the system is plotted in Fig. B.1.

Our procedure for obtaining the data shown in Figs. 10 and 11 was to play tape recordings of gunfire, made anechoic by time gating, through a circuit designed to simulate the frequency response and amplitude-limiting characteristics of the Motorola 6006A microphone into a second tape recorder. We then took the second tape to the MDC Police radio shop. There, we played this tape through a variable attenuator (to control the level of the signal being put into the transmitter), through the Motorola

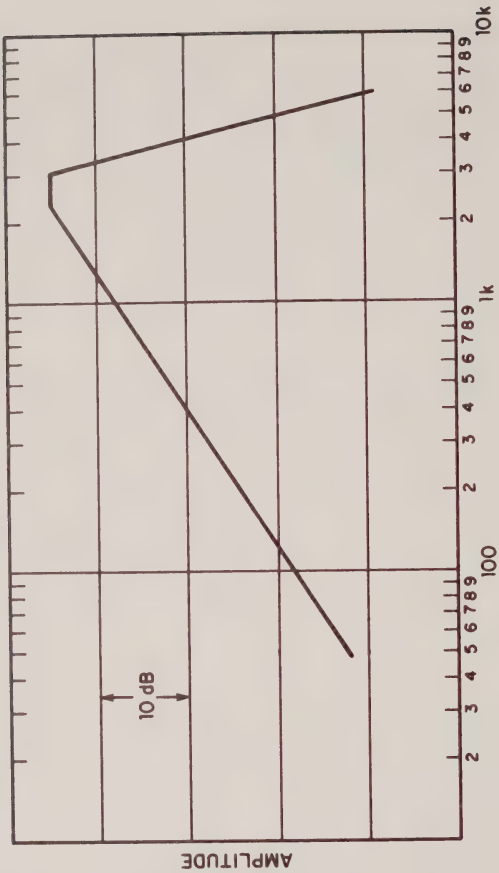


FIG. B.1. TRANSMITTER/MICROPHONE SYSTEM FREQUENCY RESPONSE.

transmitter, through the GE receiver, and onto another tape recorder. This third tape recording was played back into an oscilloscope and photographed producing the waveforms shown in Fig. 10. Peak-to-peak amplitudes of these waveforms were measured and plotted to produce Fig. 11.

In addition to having had similar effects on the waveforms recorded on Channel 1, the DPD recording shows evidence of a time constant in the 0.1 to 1.0 sec range. This AGC does not occur in any of the Motorola transmitters. It could, therefore, have been caused by the GE transmitter, by the receiver, or by the recorder.

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APPENDIX C. ANALYSIS OF FALSE ALARMS IN THE CORRELATION DETECTION TEST

The process of binary correlation that was used to detect gunfire echo patterns among the impulse patterns on the DPD tape can, like any other detector, produce false alarms. This analysis determines the number of false alarms to be expected from random noise impulses on the DPD tape.

Each echo pattern contains an average of M = 12 echoes in a 1/2-sec span. But, we consider each echo to have a $\pm$6-msec acceptance window to account for echo time differences introduced by not knowing the motorcycle position relative to the test microphone positions. Therefore, there are about N = 40 different time slots in which the 12 echoes may exist.

Each impulse pattern contains some number of impulses ranging from n = 8 to n = 17, also in a 1/2-sec span.

The matching process seeks to find the number of impulses, i, that lie within the acceptance windows of the echoes that comprise the echo pattern. If the impulses are caused by a random noise source, then the number of matches, i, is what would be expected from random sampling n times a population of N that contains M echoes. The probability of getting i matches at random is given by the hypergeometric probability distribution p(N, M, n, i).

The correlation coefficient is defined to be equal to $i/\sqrt{Mn}$. The probability of obtaining a correlation coefficient equal to 0.6 or greater was calculated for N = 40, M = 12, and n = 8, 10, 12, 13, 14, 17. The results for the six successive values of n were: 4.8×10^{-3}, 6.0×10^{-3}, 8.5×10^{-3}, 1.0×10^{-2}, 1.2×10^{-2}, 1.5×10^{-2}.

For an impulse pattern having 10 impulses (n=10), there are expected $(6.0\times10^{-3}\times432) = 2.6$ false alarms, because there are 432 echo patterns to correlate with. There were four impulse patterns that were correlated with all 432 echo patterns, and they had n = 8, 10, 12, 17 impulses on them. The total number of false alarms to be expected works out to 13.

This number was judged to be acceptably small, so the detection threshold value was set at 0.6.

Report No. 4034

Analysis of Earwitness Reports Relating to the Assassination of President John F. Kennedy

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January 1979

Prepared for:
Select Committee on Assassinations

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1. INTRODUCTION

The analysis of witness reports comprised (1) an examination of two compilations of testimony given by witnesses present in Dealey Plaza on November 22, 1963, (2) an analysis of how the sounds of gunfire in Dealey Plaza would be perceived by witnesses located at different areas in the Plaza, and (3) the reports of trained listeners who were present during the acoustical reconstruction on August 20, 1978. The two compilations examined were those by J. Thompson, in his book, *Six Seconds in Dallas*, and by members of the staff of the House Select Committee on Assassinations.

All earwitness reports, whether of those present in Dealey Plaza in 1963 or of the experienced listeners in 1978, must be examined with an understanding of the characteristic acoustical behavior of gunfire in a reverberant space. Section 2 of this report explains how listeners can misjudge the source and number of shots in such a space. Section 3 reports the analysis of the two compilations mentioned above; Sec. 4 details the observations of trained listeners stationed in the Plaza during the acoustical reconstruction.

2. LOCALIZATION OF SOUND

The nature of gunfire is such that three basic errors in judgment relating to the source and the number of shots are possible:

- confusion of the shock wave and the muzzle blast
- front-back reversals
- misjudgment of interfering echoes.

The acoustic stimulus, or shot, has two primary components: the shock wave and muzzle blast (illustrated in Fig. 1); and several echoes, or reflections.

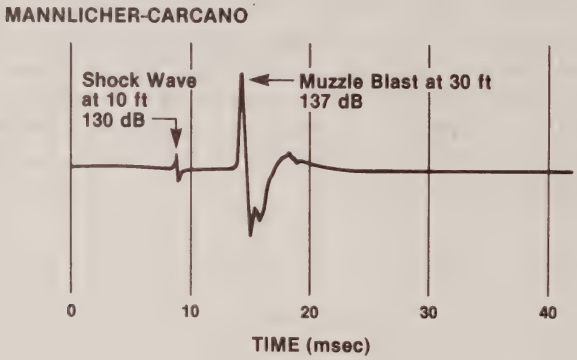


FIG. 1. MUZZLE BLAST AND SHOCK WAVEFORMS FROM MANNLICHER-CARCANO.

Because a rifle bullet travels at supersonic speed, it generates a shock wave that spreads acoustically in the shape of a cone, with the bullet as the tip of the cone. The muzzle blast, which propagates at the speed of sound, spreads out spherically from the source. Both of these sounds are very loud. The shock wave has a peak sound pressure level of about 135 dB re $2\times10^{-5}N/m^2$, and the muzzle blast, a peak of 157 dB re $2\times10^{-5}N/m^2$, at 1 m. The time between arrivals of these two sounds at a given listener location can vary considerably, depending on the listener's position with respect to the location of the rifle and the path of the bullet. Since the amplitude of the shock wave diminishes as one over the distance from the source and the amplitude of the muzzle blast diminishes as one over the square of the distance from the source, the relative intensity of these two sounds also varies considerably from one listener location to another.

At any reasonable distance, both the conical and spherical waves are essentially plane waves with respect to a small object such as an observer's head. Thus, to determine the *apparent* locus of the source, we need only take a perpendicular to the appropriate wavefront as it sweeps over the observer. Figure 2 shows the geometry of the two waves at two different times. The shock wave, at time 1, has just reached the observer; its apparent locus is along the path of the bullet on a perpendicular to the shock wave. At this time, the wave from the muzzle blast has not reached the observer. At time 2, when the blast wave has reached the observer, the apparent source of the shot is on a perpendicular to the plane of the spherical blast wave and, therefore, at the muzzle of the rifle.

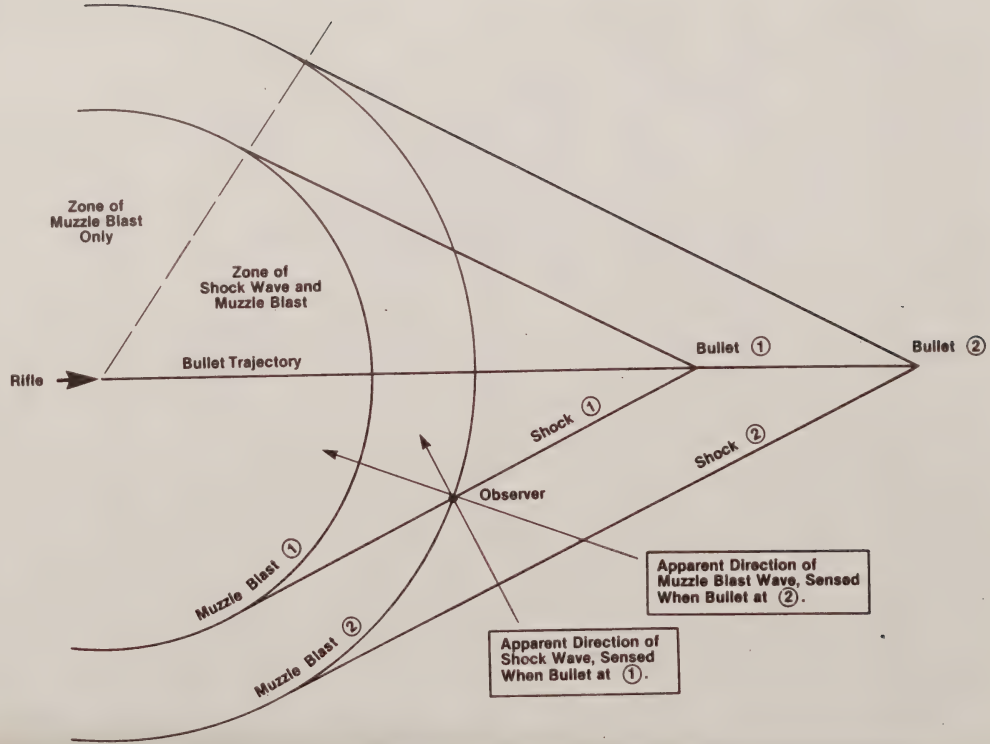


FIG. 2 LOCI OF MUZZLE BLAST AND SHOCK WAVES AT TWO TIMES AFTER FIRING OF

Dr. George Garinther confirmed this analysis at a test carried out with 20 to 30 observers at the Aberdeen Proving Ground. The observers were seated in rows parallel to the path of the bullet. The blast wave was muffled by firing the rifle through a small hole in an enclosed van. The reports of the observers are portrayed graphically in Fig. 3. About 75% of the observers pointed at the path of the bullet, while 25% pointed away from this path – but still perpendicular to the surface of the conical shock wave.

This latter judgment is called a front-back reversal. If the sound of the shock wave were not so brief, an observer would have time to execute a head motion and tell whether the source was exactly in front of or behind him. However, the shock wave endures for only about 1 msec and the blast wave about 5 msec; some front-back reversals are therefore expected. Even if the muzzle blast is not silenced, the observer may be confused. The further the observer stands away from the muzzle and the nearer the path of the bullet, the more likely that localization of sound will be based on the shock wave and, hence, incorrect.

Some muffling of the blast wave will occur if a rifle is fired from within an open window. Thus, in the acoustical reconstruction, the rifle was fired from two locations in the TSBD: (1) in the plane of the open sixth-floor window and (2) with the muzzle tip withdrawn 2 ft from the plane of the window.

The buildings around the Plaza caused strong reverberations, or echoes, that followed the initial sound by from 0.5 to 1.5 sec. While these reflections caused no confusion to our listeners, who were prepared and expected to hear them, they may well have

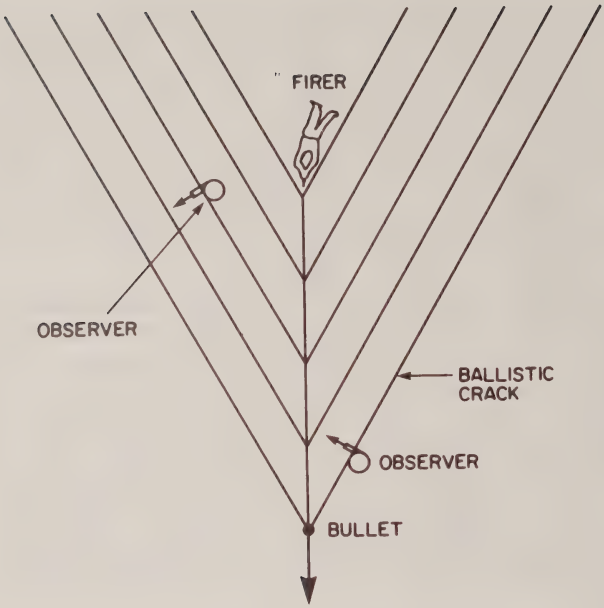


FIG. 3. OBSERVERS LOCALIZING SOURCE OF SOUND ALONG PATH OF BULLET.

inflated the number of shots reported by the suprised witnesses during the assassination. The source of these echoes can be predicted from the general geometry of the Plaza. For example, one hears a very strong reflection from the Post Office Annex that arrives about 1 sec after the shot, regardless of whether the rifle is fired from the TSBD or the knoll. Because of the long delay, a listener located on the knoll would recognize this as an echo but might place the source somewhere in back of him, anywhere from the TSBD to the railway overpass.

From near the TSBD, a listener would hear a strong echo from the general vicinity of the railway overpass. However, since the initial disturbance, the shock wave from the bullet, would be almost directly overhead — an anomalous locus, especially if the rifle had been fired from well within the TSBD — this echo would cause some confusion. The general area of the knoll, to the right of the bridge, would then be a prime candidate as the locus of the source. Even though this echo occurs 0.8 sec after the shock wave, it is the first sound that would make sense to the listener. On the other hand, listeners located near the railroad overpass would react to the very strong reflections from along Houston St.

For listeners in the Plaza area, the location of the rifle muzzle relative to the window opening is a critical determiner of the perceived sound. The further inside the building the muzzle is located, the greater the potential for the shock wave to dominate perception. If the muzzle of the rifle had been withdrawn and, therefore, little or no blast were present for one or more of the shots in 1963, the localization judgments of people in the Plaza would have been based primarily on the shock wave, creating much uncertainty and lack of agreement.

During the reconstruction, echoes were heard from the new hotel, but they arrived some seconds after the primary sound and long after the earlier echoes from structures bordering the Plaza. The hotel echoes, therefore, did not interfere with the subjective evaluations in any way.

3. STATISTICAL SURVEYS

3.1 Origin of Shots

According to Investigator J. Basteri, 692 people were present in the Plaza during the assassination. Two surveys of interviews and testimony given by some of these people have classified the witness reports as to the origin of gunfire into four categories: the TSBD, the Knoll, Other (not TSBD or Knoll), and Don't Know (origin uncertain). J. Thompson's compilation in *Six Seconds in Dallas* of 190 witness reports is summarized in Table I.

TABLE I. THOMPSON'S ANALYSIS OF ORIGIN OF SHOTS.

TSBD	Knoll	Other	Don't Know	Total
25	33	6	126	190
13.2%	17.3%	3.2%	66.3%	100%

This sample of 190 is 27.4% of the total available witnesses. It is difficult to know what, if any, bias is present in the selection of these witnesses. The sheer size of the sample makes it difficult to believe that a sizeable selection bias was present. It is also difficult to predict the effect of a selection bias, if one were present. How could one tell what the witness was likely to report prior to the interview? People were scattered over a large area of the Plaza, but we do not know if equal proportions were selected from each area. This factor could influence the results, since analyses reveal that a person located near the knoll was more likely to report the knoll as the origin of the shots than any other location; similarly, a person located near the TSBD was more likely to report the TSBD as the origin of the shots than any other location.

The House Committee compilation is drawn from witness interviews by the Dallas Police Department and the FBI and from sworn testimony in the Warren Report. The total number of reports in this survey is 178. With very few exceptions, all these people appeared in the 190 sampled by Thompson. Similar sample-selection uncertainties apply here as well. The House Committee analysis is summarized in Table II.

TABLE II. HOUSE COMMITTEE ANALYSIS OF ORIGIN OF SHOTS.

TSBD	Knoll	Other	Don't Know	Total
49	21	30	78	178
27.5%	11.8%	16.9%	43.8%	100%

Over half the sample had some opinion as to the origin of the shot; the majority of these reported the origin as the TSBD. Twenty-one witnesses reported the Knoll as the source, 30 reported some other location, and only 4 witnesses gave more than a single location for the shots. The four reporting a dual or multiple location are counted as "Other" in Table II. Of the 49 witnesses pointing at TSBD, 13 were at the depository itself, 16 were in the motorcade, and the remainder were scattered throughout the area, including at the Sheriff's Office, the overpass, the knoll, and the triangular park.

A breakdown of these reporting the knoll as the origin of the shots show that 2 of 21 were located on the knoll. Eight were on the curb along Elm St. on the knoll side or on that side of the motorcade traveling down Elm St. Four were near the TSBD. One was on the east side of Houston. Five were in

the triangular area bordered by Elm, Houston, and Main, and one was on the railroad overpass.

An analysis of the "Other" responses showed no obvious pattern. Some witnesses at the TSBD point toward Houston St.; others point down Elm. Similarly, those at the Sheriff's Office point in an arc ranging from west of TSBD to the railroad overpass.

Comparing this statistical analysis with Thompson's, the most striking discrepancy is the relatively low percentage of witnesses reporting origins other than the knoll or the TSBD in Thompson's compilation. Another important difference is in the relative number of people pointing at the TSBD vs the knoll. Although the categorization of a given response is somewhat arbitrary, the major discrepancy in the two compilations must be laid to a difference in classification of responses making up the compilations. Zapruder is listed in the Thompson survey as pointing to the knoll, while his sworn testimony before the Warren Commission was as follows:*

Liebeler: But you didn't form any opinion at that time as to what direction the shots did come from actually?

Zapruder: No.

Hence, House Committee staff placed his response in the "Don't Know" category.

3.2 Number of Shots

The House Committee compilation also categorized witness responses according to number of shots attributed to the four

*Warren Report, Vol. 7, p. 572.

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different categories of origin. This analysis is summarized in Table III.

TABLE III. NUMBER OF PEOPLE REPORTING VARIOUS ORIGINS AS A FUNCTION OF THE NUMBER OF SHOTS REPORTED

Reported Origin of Shot	No. of Shots Reported					
	2	2 or 3	3	4	Don't Know	Total
TSBD	3 (4.5)*	2 (1.9)	38 (35.5)	2 (1.6)	1 (2.4)	46
Knoll	5 (2.0)	2 (0.8)	11 (15.4)	0 (0.7)	2 (1.1)	20
Other	2 (2.9)	1 (1.2)	22 (22)	3 (1.0)	1 (1.5)	29
Don't Know	7 (7.5)	2 (3.1)	61 (58.6)	1 (2.7)	5 (4.0)	76
Total	17	7	132	6	9	171†

*Expected number of judgments if origin and number of shots are independent judgments.

†Seven other witnesses report 1, 4-5, 5, 6, or 8 shots.

Reports as to the number of shots range from 1 to 8. Of the 178 witnesses, however, the vast majority, 74.2% (132/178), reported 3 shots, and the mean number reported was 2.98.

Given the scatter in the reported sources of the gunfire, one tenable hypothesis is that only people in certain locations might hear the knoll shot. We therefore sought to investigate to what extent the data matrix was interrelated, i.e., to what extent does one judgment influence the other? One test for

this interrelation is to assume the converse — namely, that the judgments are independent and to determine how well we can predict the entire data matrix on the basis of this hypothesis. The expected number, which is given in parenthesis beneath the number of people actually reporting, is calculated by determining the probability of each report from the margins and assuming that a particular cell, the intersection of that row and column, can be calculated from the product of the probabilities. For example, 20/171 = .117 report the shot coming from the knoll and 132/171 = .772 reported 3 shots. Thus, the joint occurrence of both events, assuming they are independent, is (.772) (.117) = .09, and the expected number of such reports is (.09) (171) = 15.4. The number of people reporting shots in this cell of the matrix is 11, 4 or 5 fewer than expected. By and large, the predictions are excellent, and there is no reason to suspect that the two responses are other than independent.

4. REPORTS OF TRAINED OBSERVERS

On August 20, 1978, Dr. Dennis McFadden of the Psychology Department of the University of Texas and Dr. Frederick Wightman of the Department of Audiology at Northwestern University listened to the three sequences of shots fired during the acoustical reconstruction and recorded their impressions. Appendix A contains a transcription of their notes. Their reports concerned the apparent origin of shots, any apparent secondary sources or echoes, how loud the shots were, and any other remarks they felt appropriate.

Initially, we were uncertain as to how easy it would be to determine the correct location and what degree of consistency there would be among the observers. Hence, for the first sequence, and during most of the second, the observers were located about 1 m apart and in such a way that I could see and compare their responses. The approximate observer locations for each sequence are indicated in Fig. 4. During the first sequence, Dr. Wightman correctly localized all 17 shots, and Dr. McFadden missed only 1. Their general qualitative descriptions and descriptions of the reverberations were also highly consistent. We were, therefore, more confident about the consistency of the reports, and during the latter part of the second sequence, Dr. McFadden moved from his original location at the curb at the top of Elm directly in front of the TSBD, to across Elm on the southwest corner of Elm and Houston. For the third sequence, Dr. Wightman and I observed from the grassy triangle formed by Elm, Houston, and Main Sts., while Dr. McFadden observed from the railroad tracks, above the northern curb of Elm.

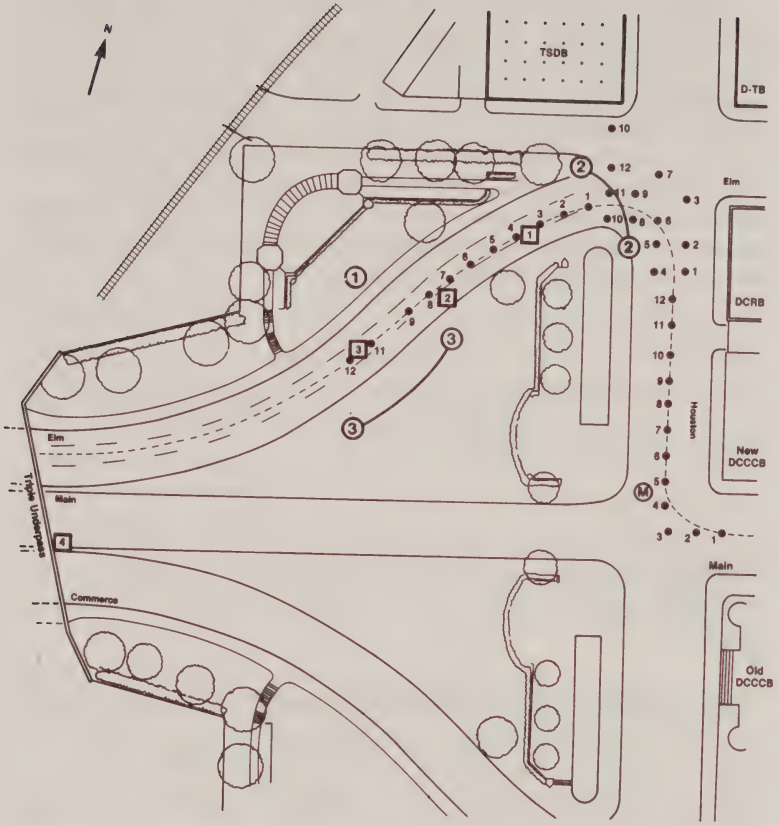


FIG. 4. OBSERVER LOCATIONS AT DEALEY PLAZA.

My own impressions and the reports of Dr. William Hartmann, the investigator of the "jiggle analysis," were very similar to those of McFadden and Wightman, although my own hearing is impaired by about 50 dB in my left ear. The primary manifestation of this difficulty was my failure to hear some echoes if they occurred to my left. Thus, it would seem that our observers, because of their special training and experience, are only slightly more acute concerning nuances of the echoes and reverberations and, perhaps, in separating the shock wave and the blast wave than are untrained people.

The emotional condition of our observers during the test and the emotional condition of the people during the assassination were undoubtedly quite different. The influence of such emotion on the localization judgment may be quite large, but there is no way to quantify this factor.

4.1 Test Conditions

The shot sequence was unknown to both of the observers. Because repeats of certain shots were requested during the sequence, I was also uncertain — despite knowing the planned sequence.

We requested three motorcycles to be running during the test to provide some background noise that would approximate the original listening conditions in Dealey Plaza. Unfortunately, these newer motorcycles were not very noisy, but the shots were so loud that any reasonable level of background noise would have been low in comparison with the shots themselves. Our listening conditions were, therefore, essentially representative of those at the time of the assassination, except for our being able to hear some very-low-level, long-delay echoes that originally might have been inaudible.

Our observers *did* know that there were only two possible locations for the marksman, whereas there was considerably more uncertainty on this issue at the time of the assassination. Signal uncertainty of this kind generally does not seriously degrade the accuracy of judgments, but it does depend on the number of potential alternatives. In this case, as we shall see, the localization reports made by the trained listeners were, for the most part, of general areas, rather than specific windows of a building. The total number of potential locations was not, therefore, large and, thus, was likely to be representative of localization responses given at the time of the assassination.

4.2 Analysis of Observers' Localization Responses

The descriptive comments made by the observers are difficult to compare with any degree of precision. However, there was clear agreement in their reports with respect to the apparent loudness of the sounds and echoes and the apparent size of the acoustic image. After each test shot, we asked the two observers to guess whether the shot was fired from the TSBD or the knoll, independent of what the apparent locus might be. Table IV is an analysis of this forced-choice data.

TABLE IV. ACCURACY OF FORCED-CHOICE RESPONSES AS TO ORIGIN (TSBD OR KNOLL)

Sequence	Dr. Wightman		Dr. McFadden	
1	12/12	100%	11/12	92%
2	11/15	73%	14/15	93%
3	19/25	76%	23/25	92%
Overall	47/57	82%	53/57	93%

Overall Agreement 82%

The average accuracy of the reports is nearly 90%, and the consistency between the two observers is 82%. Also, the average accuracy is nearly exactly the same whether the shot came from the TSBD or the knoll. Thus, this analysis shows high accuracy in localizing the source of the sound and reasonably good consistency.

4.3 Loudness and Apparent Size of Acoustic Image

All observers rated the rifle shots as very very loud, and they were unable to understand how they could have been described as a firecracker or backfire. Only the pistol, which was subsonic, produced a moderate loudness.

Practically all the rifle shots, whether fired from the knoll or the TSBD, appeared to be diffuse and to occupy a very large acoustic space. For example, the sound did not seem to come from the sixth floor window of the TSBD, but from the right upper side of the building. This apparently large source location may be a result of acoustic scatter of the muzzle blast — either because of the building in the case of the TSBD or because of the trees in the case of the knoll. Only the pistol shot appears to have a reasonably constrained acoustic image and, for that reason, could be localized with some precision.

One might consider whether silencers would change the apparent loudness of the size of the image. The Garinther-Moreland study* reports the average attenuation produced by a number of silencers as being about 18 dB for all weapon-silencer combinations. Sound from the supersonic weapons tested were attenuated

*"Acoustical Considerations for a Silent Weapon System: A Feasibility Study," 1966, p. 70.

by 18.6 dB and 37.5 dB, but even with this reduction, the peak overpressure was still very large. Two rifle-silencer combinations produced peak overpressures of 138 dB and 120 dB at 3.8 m, clearly loud enough to be easy to locate and clearly audible above the motorcycle and crowd noise.

5. CONCLUSIONS

It is difficult to draw any firm conclusions relating the reports of witnesses in the Plaza to the possible locus of any assassin. Confusion between the shock wave and muzzle blast, front-back reversals, confusion caused by echoes, and the startle of the witness could all be used to impeach the testimony of any particular witness. There is no way of knowing which, if any, of these factors was most significant with respect to any single observation made on November 22, 1963. Thus, one witness can be assigned no more credibility than any other. For example, even if a shot was fired from the TSBD, the witnesses standing on the knoll would likely report the source of the shot in the following way. The witness would presumably localize on the basis of the shock wave. With the path of the bullet behind the President's car, the witness would perceive the apparent locus of the shot as being on a line from himself to the bullet's path — i.e., in the street or open park behind the path of the bullet. Since this location is impossible, a front-back reversal is likely. This front-back reversal would place the source 180° behind the bullet path and, hence, on the knoll.

Despite this uncertainty, two general remarks seem worthwhile — one based on the test, the other on the statistical analysis.

First, it is hard to believe a rifle was fired from the knoll. Such a shot would be extremely loud, even if silenced, and it would be hard to imagine anyone in the vicinity of the knoll missing such an event. An unsilenced pistol firing subsonic bullets also seems unlikely because this shot was the easiest to localize of all the shots fired. It produced the least reverberation. As an acoustic image, it was much sharper

and less diffuse than that of the rifle, sounding much like a firecracker. It is, however, conceivable that had a pistol been fired from the knoll at about the same time a rifle was fired from the TSBD, the pistol shot would have been less easily localized, or even completely masked from some vantage points. As an isolated shot, however, it is extremely easy to localize.

Finally, if one accepts the hypothesis that a marksman fired from the knoll and that other shots were fired from some other location, then it seems most unlikely that only 4 of 178 witnesses would report a single location as the origin of the shots. Despite the various causes of confusion in the locus of any single shot, a second shot from a different location should be distinctive and different enough to cause more than four witnesses to report multiple origins for the shots.

APPENDIX A. TRANSCRIPTION OF OBSERVERS' NOTES

The tabular information in this appendix was transcribed from notes made during the acoustical reconstruction on August 20, 1978 by two trained observers — Dennis McFadden and Frederick Wightman. Included in this table, along with their responses, are the number of the shot in each sequence of test firing, the origin of the shot, and the target fired upon. For convenience in determining the positions of rifle, target, and listener, the reader may refer to Fig. 4 of this report.

Abbreviations used within the table are as follows:

- T always refers to the TSBD and K to the knoll.
- In the column headed origin, T_p means the rifle was fired in the plane of the sixth floor window of the TSBD, T_2 means the muzzle was withdrawn 2 ft from the plane of the window, K indicates a rifle shot from the knoll, and K_p represents a pistol shot from the knoll.

A.1 Observer: Dennis McFadden

Location 1: On grass north of Elm Street in front of Zapruder position

Shot No.	Origin	Target	Forced Choice Response	Judgments	Blast and N-Wave	Comments
1	T_p	1	T	TSBD Something behind me, too. Long reverberation from south.	?	--
2	T_p	1	T	TSBD Long reverberation from south.	?	Different quality than No. 1—Less reverberation?
3	T_p	1	T	TSBD	Yes, sharp crack.	Heard a sharp crack but also muzzle. Acoustically rich?
4	T_p	1	T	TSBD	Duller thud than No. 3. (Muzzle?)	Long reverberation from south. Somehow not so rich as No. 3.
5	T_p	1	T	TSBD	Somewhat sharper than No. 4. No obvious crack.	Very rich acoustically. Maybe as many as 4 to 5 echoes, 2 to 3 of them earlier and weaker than strong 1 from south. All reverberations from south.
6	T_2	1	T	TSBD	No crack.	Very much like No. 5.
7	T_p	2	T	TSBD	Yes, blast and crack.	Perhaps not so much reverberation from south.

A.1. *(Cont.)*

Shot No.	Origin	Target	Forced Choice Response	Judgments	Blast and N-Wave	Comments
8	T_2	2	T	TSBD	Yes, blast and crack.	*Very much* like No. 7.
9	K	2	K	Over my head. Not really on Knoll or even behind me.	No, not a sharp crack, blast and N-wave blended.	One massive experience. No clear reverberation from south.
10	T_p	3	T	TSBD	Yes. Crack.	Long reverberations from south.
TSBD as a response means only "to the left"; impossible to localize at sixth floor window; diffuse origin.						
11	T_2	3	K	Multiple locations. Overhead kind of toward court house on Houston.	Yes. Crack primarily.	Single sharp sound initially plus reverberation. Most firecrackery sound so far.
12	K	3	K	To the right on the Knoll with absolutely *no* question.	No crack.	Made me jump. Very loud compact sound. No obvious reverberations.
13	K_p	3	K	To the right on Knoll.	No. Pistol, I guess.	Kind of firecrackery but a little too long. Much less loud. No obvious reverberations. Localization judgments are probably being affected by knowledge of source. Also an experience of it being high in air over toward blue hotel.

A.1 *(Cont.)*

Shot No.	Origin	Target	Forced Choice Response	Judgments	Blast and N-Wave	Comments
14	K_p	3	K	To the right Knoll/underpass	No.	Just like No. 13. Single compact, high-frequency sound. No obvious reverberations.
[These last two pistol shots from Knoll sounded to our right, but not so obviously from behind as did No. 13; No. 13 and No. 14 were more like from overpass.]						
15	T_p	4	T	TSBD (No motorcycle on for No. 15.)	Yes, I think so. Certainly was a sharp report.	Very sharp report. Minimal reverberation. Just a couple of echoes.
16	T_2	4	T	TSBD Sound definitely *began* at TSBD.	Definitely yes. Muzzle followed by very sharp crack.	Pretty good reverberation. 3 to 4 good echoes.
17	K	4	K	On Knoll pretty far behind me. Pistol?	Uncertain. Maybe just N?	Big "pop." Sounded like large pistol rather than rifle. Not clear about reverberation. Think there was an echo located over by truck.

[Truck was then on NW corner of Main and Houston, pointed west on Main.]

A.1 *(Cont.)*

Location 2: On sidewalk on north side of Elm, across east-west side street (also Elm?) from TSBD

Shot No.	Origin	Target	Forced Choice Response	Judgments	Blast and N-Wave	Comments
1	T_p	1	T	Directly overhead.	No. Just one *massive* and diffuse sound.	One big shock. Couple of very weak reverberations following it. Long delay. Totally different from Location 1.
2	T_2	1	T	Overhead — not directly though.	--	Sharper than No. 1. Localized kind of down front of TSDB because I had my head turned down Elm talking.
[This is the east-west Elm in front of TSBD.]						
3	T_2	1	T	Overhead	No.	Somewhere between No. 1 and No. 2 in sharpness.
4	T_p	2	T	Overhead and to some degree *on* overpass. Right down the street (Elm).	No, one big sound.	Stronger and longer delay reverberations than previous couple of shots.
5	T_2	2	T	Overhead	No, one sound.	Very much the same as No. 4.
6	K	2	K	Knoll area Pistol?	Pretty much a crack. Not a firecracker though.	3 to 4 good echoes from *behind* me. From TSBD.

A.1 *(Cont.)*

Shot No.	Origin	Target	Forced Choice Response	Judgments	Blast and N-Wave	Comments
7	T_p	3	T	Overhead	No, single sound.	Besides echoes from blue hotel area, got a good one from my left (down Houston St.) that wasn't delayed very long.
8	T_2	3	K	Hard to tell. Knoll area but more to *right* of it. In gazebo thing.	--	--
9	K	3	K	Definitely Knoll. Pistol?	Compact thud.	Little reverberation if any.
10	K_p	3	K	Knoll Pistol?	Brief "pop." Weakest source so far.	Firecrackery except a little too long and a little too low frequency.
11	K_p	3	K	Knoll Pistol again. Re-do of 10.	Pop gun! Same as 10 except ... (didn't finish this)	We had crossed street and gone to stand in front of truck over by court house for this trial only.
12	T_p	4	T	Down Elm. Also along front surface of TSBD (to our right rear).	? No. All pretty much 1 sound.	Loud, dense sound. Some rapid reverberation.

A.1 *(Cont.)*

Shot No.	Origin	Target	Forced Choice Response	Judgments	Blast and N-Wave	Comments
13	T_2	4	T	--	Muzzle and very sharp crack.	Crack seemed high in air and down along front surface of TSBD (to our right rear).
[For the next two shots I was across the street, crouched down near "The Brennan Position" with Bill Hartman. He had indicated that he heard a clear "double sound" from that location on previous shots, and D.M. Green sent me there to check on Hartman's report. My experience was much in accord with Hartman's; and from that spot the muzzle blast was muted somewhat, the rich reverberations so obvious from Location 2 were generally absent, and there was a clear "double-thud" and/or "triple-thud" quality to the shot.]						
14	K	4	K	"Brennan Position"	--	Muzzle from Knoll area and then marked second and third report from northeast.
15	K	4	K	Knoll "Brennan Position"	No	2 marked fronts. Muzzle and then echo from Mel Rose Bldg.
[Exact head location clearly very important back behind this wall, for in No. 14 I heard more than one echo (less than about 750 msec) and in No. 15 I heard only one. In between, I had moved my body and head.]						

A.1 *(Cont.)*

Location 3: On underpass over the most southerly lane of Elm.

Shot No.	Origin	Target	Forced Choice Response	Judgments	Blast and N-Wave	Comments
1	T_p	1	T	Definitely TSBD area, *not* Knoll. To right slightly of TSBD; from juncture of 3 buildings at corner of Elm and Houston.	No, single blast.	Got a rapid echo off court house (on corner of Houston and Main).
2	T_p	1	T	Definitely TSBD *area.*	No, single blast.	A little more diffuse in locus than No. 1.
[From this location for the first two targets I frequently heard numerous, reasonably strong echoes off the fronts of the buildings lining Houston St. (Records Bldg. and Court House). Often there was an impression of them running off in rapid sequence from north to south. Not so for target on Main St. See below.]						
3	T_2	1	T	Definitely TSBD *area.*	No crack.	Some good echoes. 3 to 4 from Houston St. bldgs.
4	T_p	2	T	Definitely TSBD.	--	Much louder than previous shots. More echoes too. 5 to 6 all within 1 second or so. Also got some echo from behind (blue hotel) but it wasn't here then (in 1963).

A.1 *(Cont.)*

Shot No.	Origin	Target	Forced Choice Response	Judgments	Blast and N-Wave	Comments
5	T_2	2	T	TSBD	Yes. Crack and muzzle	Much more of a crack. Many echoes from Houston St. bldgs.
6	K	2	K	More toward Knoll but *not* markedly so.	Quieter than previous.	Not like it was way to my left.

[This last comment was meant to indicate my uncertainty as to the origin of the shots heard from this location. I *knew* some were supposed to be from Knoll and some from TSBD, but none seemed to be coming from Knoll. No. 6 seemed to be different in its origin from previous ones, but it didn't really localize at the Knoll, just more to the left, more towards the Knoll, than the previous shots. The feeling of uncertainty persisted.]

7	T_p	3	T	TSBD	Some crack. Not so loud as some previous TSBD shots.	Plenty of reverberation.
8	T_2	3	T	TSBD? Not clear. Kind of between Knoll and TSBD.	Some crack.	Reverberation weak.
9	K	3	K	Knoll? Not really confident.	More blast than ___ .	Coming too fast to get thoughts straight and reactions written.

A.1 *(Cont.)*

Shot No.	Origin	Target	Forced Choice Response	Judgments	Blast and N-Wave	Comments
10	K_p	3	K	Knoll definitely. Pistol?	Weak sound.	Little reverberations. I think the uncertainty about Knoll localization with rifle shots may be (dut to a) short, strong reflection off TSBD bldg. directly behind it (Knoll). This one, if it *was* a pistol was much more compact and easily localized.
11	T_p	1	T	TSBD definitely.	Compact sound.	Acoustically rich. Most marked echoes from behind me off blue hotel.
12	T_2	1	T	Again, definitely TSBD corner.	Compact sound.	Early echoes not really strong, but present. Stuff comes (off of) front of Houston St. bldgs.
13	T_p	2	T	Same as No. 12? Pretty small focus of localization.	--	*Very much* like No. 12.
14	T_2	2	T	Same as 13? Small focus. Right at corner Elm and Houston.	--	--
15	K	2	T	TSBD	--	*Much* sharper early echoes off Houston St. bldgs.

A.1 *(Cont.)*

Shot No.	Origin	Target	Forced Choice Response	Judgments	Blast and N-Wave	Comments
16	T_p	3	T	TSBD? Maybe Knoll.	Compact sound not as loud as some.	--
17	T_2	3	T	Same as No. 16.	Same as No. 16.	Most marked echoes from ... (see below)
18	K	3	K	Knoll?	Compact.	Good echo off post office. Not so obvious off Houston St. bldgs.

No. 16, No. 17, No. 18, all came fast and my writing lagged behind them.

[Remainder of shots taken at target on south curb of Main St. which was to my right (south). With exception of No. 19 (during which I was writing and my head was averted) all of these shots aroused very distinct impressions of a source due east, directly down Main St. I was clearly using only the N-wave and ignoring the blast.]

19	T_p	4	T	TSBD? (Had head down and averted at time of this shot.)	Good crack. Some muzzle too.	Echo off post office.
20	T_p	4	T	Localized on N-wave right down Main St.	Good crack. No muzzle.	--
21	T_2	4	T	Same as 20.	Louder somehow?	--
22	K	4	T	Same as 20 and 21.	Very good crack.	--

A.1 *(Cont.)*

Shot No.	Origin	Target	Forced Choice Response	Judgments	Blast and N-Wave	Comments
23	T_p	4	T	Same as above.	--	Some reverberation off post office and blue hotel.
24	T_2	4	T	Right down N-wave. Right down Main St.	Good crack.	--
25	K	4	K	More to left toward TSBD and/or Knoll but not really at it. More from court bldg.	Very full sound (long and low-frequency I guess I mean).	--

A.2 Observer: Fred Wightman

Location 1: On grass north of Elm Street in front of Zapruder position

Shot No.	Origin	Target	Forced Choice Response	Apparent Source Description	Secondary Choice	Rever-berations	Loudness
1	T_p	1	T	TSBD	across st.(3) PO	3 or 4	High
2	T_p	1	T	TSBD	across st.(3) PO	3 or 4	High
3	T_p	1	T	L of TSBD	across st. PO	3 or 4	High
4	T_p	1	T	TSBD	PO	3 or 4	High
5	T_p	1	T	TSBD	PO	3 and 4	Sharper than 1 to 4 sharp echoes 3 or 4, then big echo, echoes from concrete st. in plaza.
6	T_2	1	T	TSBD	PO	3 or 4	About like 5, but duller.
7	T_p	2	T	TSBD	PO	Crack at beginning	Sharp.
8	T_2	2	T	TSBD	--	--	Same as 3.
9	K	2	K	Knoll — to right (of FW)	--	--	--

A.2 *(Cont.)*

Shot No.	Origin	Target	Response	Apparent Source Description	Secondary Choice	Reverberations	Loudness
10	T_p	3	T	TSBD	--	Sharp crack at beginning.	A little duller than 7.
11	T_2	3	T	TSBD	PO	--	Sharpest, smallest.
12	K_p	3	K	Knoll to right (of FW).	None.	--	Loud, dull, large sound.
13	K_p	3	K	Knoll	None.	Little.	Cracker-like, thin, little reverb, though crackly.
14	K_p	3	K	Knoll — underpass from south of Knoll.	--	Little.	Firecracker-like.
15	T_p	4	T	TSBD	2 — PO plus new hotel.	--	Crack.
16	T	4	T	TSBD	In front — the reverbs only.	--	Dull, hollow, big.
17	K	4	K	Knoll	Was looking in Knoll direction.	--	Loud, dull, large sound.

A.2 *(Cont.)*

Location 2: On sidewalk on north side of Elm, across east-west side street (also Elm?) from TSBD

Shot No.	Origin	Target	Forced Choice Response	Apparent Source Description	Secondary Choice	Reverberations	Loudness
1	T_p	1	T	TSBD (above and behind)	No reverb to speak of.	--	Big blast, no crackling shock wave felt.
2	T_2	1	T	TSBD and in front	--	--	Less blast, strong echoes from in front.
3	T_2	1	K	Knoll and TSBD (equal)	--	--	Blast — very diffuse.
4	T_p	2	K	Knoll	--	--	Strong, higher pitched blast
5	T_2	2	T	Overhead — toward Knoll.	--	--	--
6	K	2	K	Knoll	2 shots clearly separate	--	Little blast origin of 2nd, not clear, small sources.
7	T_p	3	K	Knoll and	2 echoes 1 above — one in front left.	--	Big blast.
8	T_2	3	T	Above and right (not clearly TSBD but not as clearly Knoll as 4 and 6).	--	--	Blast

Shot No.	Origin	Target	Forced Choice Response	Apparent Source Description	Secondary Choice	Reverberations	Loudness
9	K	3	K	Single dull blast from Knoll — no confusion.	No reverb at all — quite a thud.	--	Dull blast.
10	K_p	3	K	Knoll, almost behind arc-like structure Firecracker-like "smallest" source of all.	--	--	--
11	K_p	3	K	Knoll to left of arc-like structure no question— precise localization. Firecracker-like small source.	--	--	--
12	T_p	4	T	Above and toward Knoll. Reverb from new hotel strong blast or shock wave.	--	--	--
13	T_2	4	K	Knoll, above several reverb, sharp blast — higher pitch. 1 strong "twig-snap" after 300 msec.	--	--	--

A.2 *(Cont.)*

Shot No.	Origin	Target	Forced Choice Response	Apparent Source Description	Secondary Choice	Reverberations	Loudness
14	K	4	K	Knoll, lots of reverb dull blast	--	--	--
15	K	4	K	Knoll about like 13, sharper blast			
Location 3: On underpass over the most southerly lane of Elm.							
1	T_p	1	T	TSBD 6th floor	--	--	Prom. blast
2	T_p	1	T	TSBD	--	--	Hotel echo after long delay.
3	T_2	1	T	TSBD	--	--	Hotel echo after long delay . Sharper — less blast.
4	T_p	2	T	TSBD — all reverb to left.	--		Hotel echo (as in 2,3).
5	T_2	2	T	TSBD	--	--	Single, thinner blast, smaller.
6	K	2	T	TSBD (or in front).	--	--	Crack before blast.
7	T_p	--	T	TSBD diffuse.	--	--	Blasting.
8	T_2	3	T	TSBD	--	--	Cracker.

A.2 *(Cont.)*

Shot No.	Origin	Target	Forced Choice Response	Apparent Source Description	Secondary Choice	Reverberations	Loudness
9	K	3	K	Knoll — big blast — booming, broad image where shooter was.	--	--	--
10	K_p	3	K	Knoll — small source precise location firecracker.	--	--	--
11	T_p	1	T	TSBD	--	--	Like 6.
12	T_2	1	T	TSBD	--	--	More cracking than 10
13	T_p	2	T	TSBD	--	--	Big blast — lots of reverb for 2 sec.
14	T_2	2	T	TSBD	--	--	Reverb in front, little cracks.
15	K	2	T	TSBD or in front.	--	--	Big blast — diffuse.
16	T_p	3	T	TSBD, more definite.	--	--	Hollow blast, more local to 6th floor.
17	T_2	3	T	TSBD	--	--	Sharp

A.2 *(Cont.)*

Shot No.	Origin	Target	Forced Choice Response	Apparent Source Description	Secondary Choice	Reverberations	Loudness
18	K	3	K	Knoll, big blast.	--	--	Hollow, diffuse.
[We are across from the fence (we moved).]							
19	T_p	4	K	Knoll and TSBD.	--	--	Crack, then blast — crack is above Knoll.
20	T_p	4	K	Knoll and TSBD.	--	--	Same as 19.
21	T_2	4	K	Knoll, big blast.	--	--	From right in front of us.
22	K	4	T	Knoll and TSBD	--	--	Crack then blast, similar to 19, less blast than 19.
23	T_p	4	T	Knoll and TSBD.	--	--	Like 22.
24	T_2	4	T	TSBD	--	--	Sharp crack from 6th floor.
25	K	4	K	Knoll	--	--	Like 19.

Addendum A: Report on the Temperature in Dallas, Tex., November 22, 1963

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ENVIRONMENTAL DATA SERVICE
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Federal Building
Asheville, N. C. 28801

March 23, 1979

Reply to: D5422/MR/lbd/(09684)

Mr. Gary Cornwell
Deputy Chief Counsel-Select
Committee on Assassinations
House Office Building Annex No. 2
Washington, DC 22180

This is in response to your telephone call of 3/22/79.

We are furnishing the materials listed below:
DEPARTMENT OF COMMERCE CERTIFIED COPIES:

SURFACE WEATHER OBSERVATIONS
Dallas, Love Field, Texas
November 22, 1963

Daniel B. Mitchell

Daniel B. Mitchell
Director

NOAA FL 24-325
(Rev. 9-76)

U. S. DEPARTMENT OF COMMERCE

FORM CD-64
(REVISED)
PRESCRIBED BY
D.A.O. 201-17

Asheville,
North Carolina
~~Washington~~ March 23, 19 79

I HEREBY CERTIFY that the annexed is a true copy of the SURFACE WEATHER OBSERVATIONS for Dallas (Love Field), Texas, November 22, 1963

on file in the National Climatic Center, Asheville, North Carolina

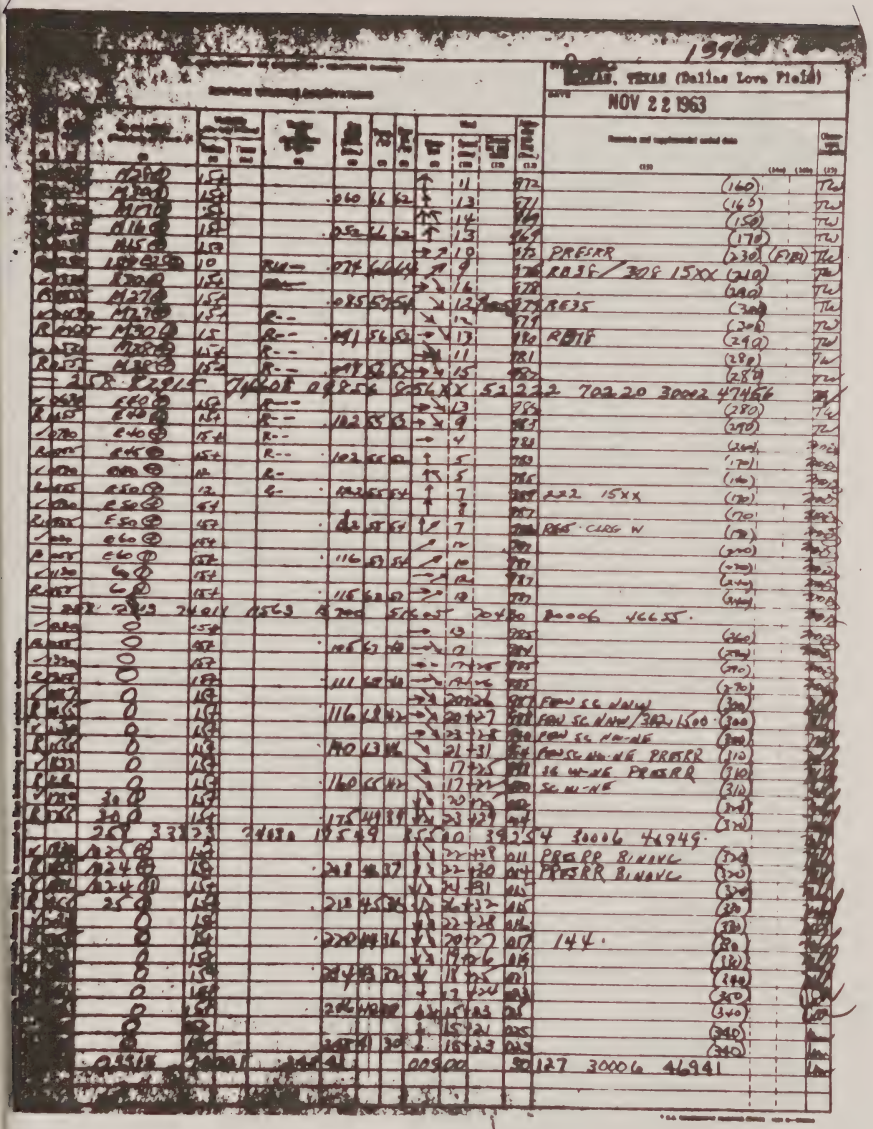
Clyde M. Branks
Technical Assistant
Information Services Division
(Official title)

I HEREBY CERTIFY that Clyde M. Branks *who signed the foregoing certificate, is now, and was at the time of signing,* Technical Assistant, Information Services Division, National Climatic Center *and that full faith and credit should be given his certificate as such.*

IN WITNESS WHEREOF, I have hereunto subscribed my name, and caused the seal of the Department of Commerce to be affixed this Twenty-third *day of* March, *one thousand nine hundred and* Seventy-nine

For the SECRETARY OF COMMERCE:

William B. McMurray
for Daniel B. Mitchell
Director, National Climatic Center
Certifying Officer


TEXAS (Dallas Love Field)
NOV 22 1963

U. S. DEPARTMENT OF COMMERCE, WEATHER BUREAU

SURFACE WEATHER OBSERVATIONS

STATION DALLAS, TEXAS (Dallas Love Field) DATE NOV 22 1963

STA. NO.	WEATHER (Local time)	WIND DIR.	WIND SPEED	WIND GUST	SKY COVER	CLOUDS AND OBSCURING PHENOMENA: LOWEST LAYER TYPE & AMT.	LOWEST LAYER HEIGHT	STRATUS LAYER TYPE & AMT.	STRATUS LAYER HEIGHT	THIRD LAYER TYPE & AMT.	THIRD LAYER HEIGHT	FOURTH LAYER TYPE	FOURTH LAYER AMT.	TOTAL OPAQUE SKY COVER	PRESENT WEATHER	SEA LEVEL PRESSURE	3-HR. PRESS. CHANGE	PRECIPITATION (INCHES)
0055	7200	66		87	7	SC	7000	0		7	0	7	0	7				
0155	7170	66		87	9	SC	9000	0		9	0	9	0	9				
0255	7245	66		93	10	SC	15	10	SC	25	10	U		U		10	3	.025		.01
0355	7215	57		90	10	10	SC	4000	U			U		U		10				T
0455	7180	56		87	10	10	SC	4500	U			U		U		10				T
0555	7210	56		87	10	10	SC	4500	U			U		U		10	2	.065		.11
0655	7220	55		90	10	10	SC	5000	U			U		U		10				T
0755	7220	55		90	10	10	SC	5000	U			U		U		10				.01
0855	7220	55		90	10	10	SC	5000	U			U		U		10				.01
0955	7220	55		90	10	10	SC	5000	U			U		U		10				T
1055	7210	57		90	7	7	SC	4500	0			7	0	7		7				
1155	7200	63		65	1	1	SC	4000	0			1	0	1		1	6	.015		
1255	7180	67		42	0	0	SC	4000	0			0	0	0		0				
1355	7160	67		39	0	0	SC	4000	0			0	0	0		0				
1455	7145	68		39	0	0	SC	3000	0			0	0	0		0	3	.015		
1555	7140	63		54	0	0	SC	3000	0			0	0	0		0				
1655	7135	55		62	0	0	SC	3000	0			0	0	0		0				
1755	7150	49		68	4	4	SC	3000	0			4	0	4		3	2	.160		
1855	7160	46		71	10	10	SC	4000	U			U		U		10				
1955	7165	45		71	1	1	SC	3500	0			1	0	1		1				
2055	7155	44		73	0	0			0			0	0	0		0	1	.130		
2155	7145	43		65	0	0			0			0	0	0		0				
2255	7130	42		62	0	0			0			0	0	0		0				
2355	7135	41		65	0	0			0			0	0	0		0	1	.080		

SYNOPTIC OBSERVATIONS

TIME (L.S.T.)	TIME (G.C.T.)	STA. NO.	PERIOD (HRS.)	SHORT FALL (HRS.)	SHORT DEPTH (INS.)	SHORT DENS. (%)	RAIN (INS.)	RAIN DENS. (%)	WET BULB TEMP.	STATE OF WEATHER	SEA STATE & DIR.	SWELL PERIOD & DIR.	SWELL HEIGHT	PAST W.S., W.D., & N.A.	ENTER TEMP.	RAIN TEMP.			STATION PENDING OBSERVATIONS			
																			TIME (L.S.T.)	0552	1154	1752	2352
																			BAR. TENDN.				
																			CHANGE (MB)				
																			CHAR. PRESS.				
																			PRES. HEIGHT	M 30	M 30	M 30	M 30
																			CHANGE	M 30	M 30	M 30	M 30
																			RAIN GAGE	0.005	0	0	0.005
0552	1152	1	00	0	0	66	58		2														
1154	1754	1	00	0	0	63	55		2														
1752	2352	1	0	0	0	49	49		1														
2352	0552	1	0	0	0	49	41		1														

SUMMARY OF DAY (MIDNIGHT TO MIDNIGHT)

24-HR. MAX. TEMP. (°F)	24-HR. MIN. TEMP. (°F)	24-HR. PRECIP. (WATER EQUIV.) (INS.)	24-HR. SNOWFALL (MELTED WATER) (INS.)	SNOW DEPTH (INS.)	PEAK GUST: SPEED (M.P.H.)	PEAK GUST: DIR. (TENS OF DEGS.)	PEAK GUST: TIME (L.S.T.)	THICK. FROZEN DEPOSIT ON WIRES (INS.)	FROZEN DEPOSIT ON WIRES: TYP	FROZEN DEPOSIT ON WIRES: DIAM.	FASTEST MILE: SPEED (M.P.H.)	FASTEST MILE: DIR. (TENS OF DEGS.)	FASTEST MILE: TIME (L.S.T.)	24-HR. AVG. W.S. (M.P.H.)	24-HR. RES. W.S. (M.P.H.)	RES. WIND DIRECTION (TENS OF DEGS.)	
69	41	.06	0	0							32	96	39				

PRECIP. & THUNDER	BEGAN	ENDED	DUR. (H. — Min.)	OBSTR. TO VIS.	BEGAN	ENDED	DUR. (H. — Min.)
R-	0238	0335					
R--	0418	0710					
R-	0810	0715					

REMARKS, NOTES AND MISCELLANEOUS PHENOMENA

Total sunshine 374 Sunrise CLOUDY Sunset CLEAR 777

Fastest observed 1-minute wind speed _____ m.p.h. at _____

Fastest mile _____ m.p.h.; accelerated direction _____ and time _____

Excessive precipitation:

At (minutes)	5	10	15	20	30	45	60	80	100	120	150	180
PRECIPITATION (inches)												

PAPER CHECKED

HOURS 12 POINTS 10 m. P.

BAROGRAPH TIME CHECK: 12 m.C. 977 49

Addendum B: Report on Wind Conditions in Dallas, Tex., November 22, 1963

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
ENVIRONMENTAL DATA SERVICE
National Climatic Center
Federal Building
Asheville, N. C. 28801

March 30, 1979

Reply to: D5422/MR/lbd/(09684)

Mr. Gary Cornwell
Deputy Chief Counsel
Select Committee on Assassinations
House Office Building Annex No. 2
Washington, DC 22180

This is in response to your telephone call of 3/22/79 and related correspondence.

We are furnishing the materials listed below:

DEPARTMENT OF COMMERCE CERTIFIED COPY:

WIND GUST RECORDER CHART
Dallas Naval Air Station, Texas
November 22, 1963

Daniel B. Mitchell

Daniel B. Mitchell
Director

NOAA FL 24-325
(Rev. 9-76)

U. S. DEPARTMENT OF COMMERCE

FORM CD-64
(REVISED)
PRESCRIBED BY
D.A.O. 201-17

Asheville,
North Carolina
March 30, 1979

I HEREBY CERTIFY that the annexed is a true copy of the WIND GUST RECORDER CHART for Dallas Naval Air Station, Texas, November 22, 1963

on file in the National Climatic Center, Asheville, North Carolina

Clyde M. Branks
Technical Assistant
Information Services Division
(Official title)

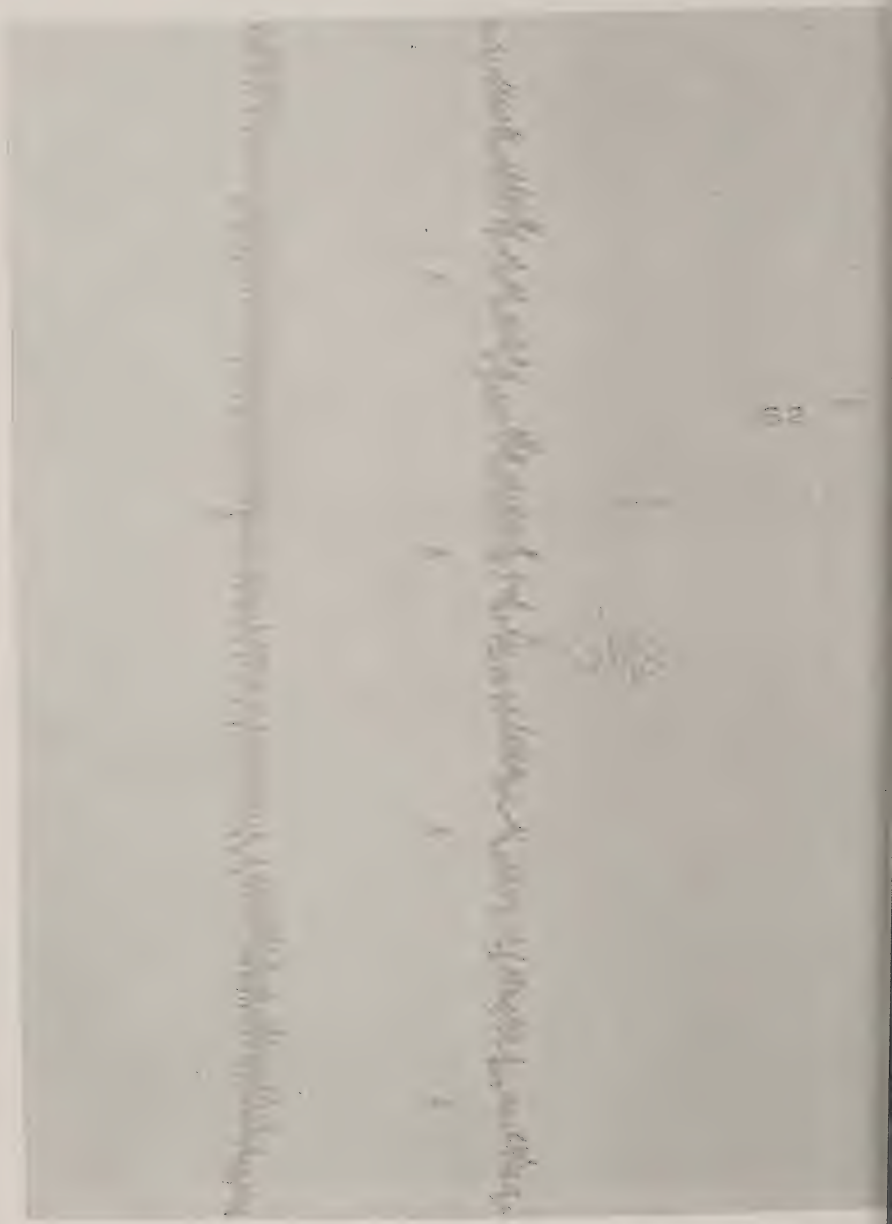
I HEREBY CERTIFY that Clyde M. Branks *who signed the foregoing certificate, is now, and was at the time of signing,* Technical Assistant, Information Services Division, National Climatic Center *and that full faith and credit should be given his certificate as such.*

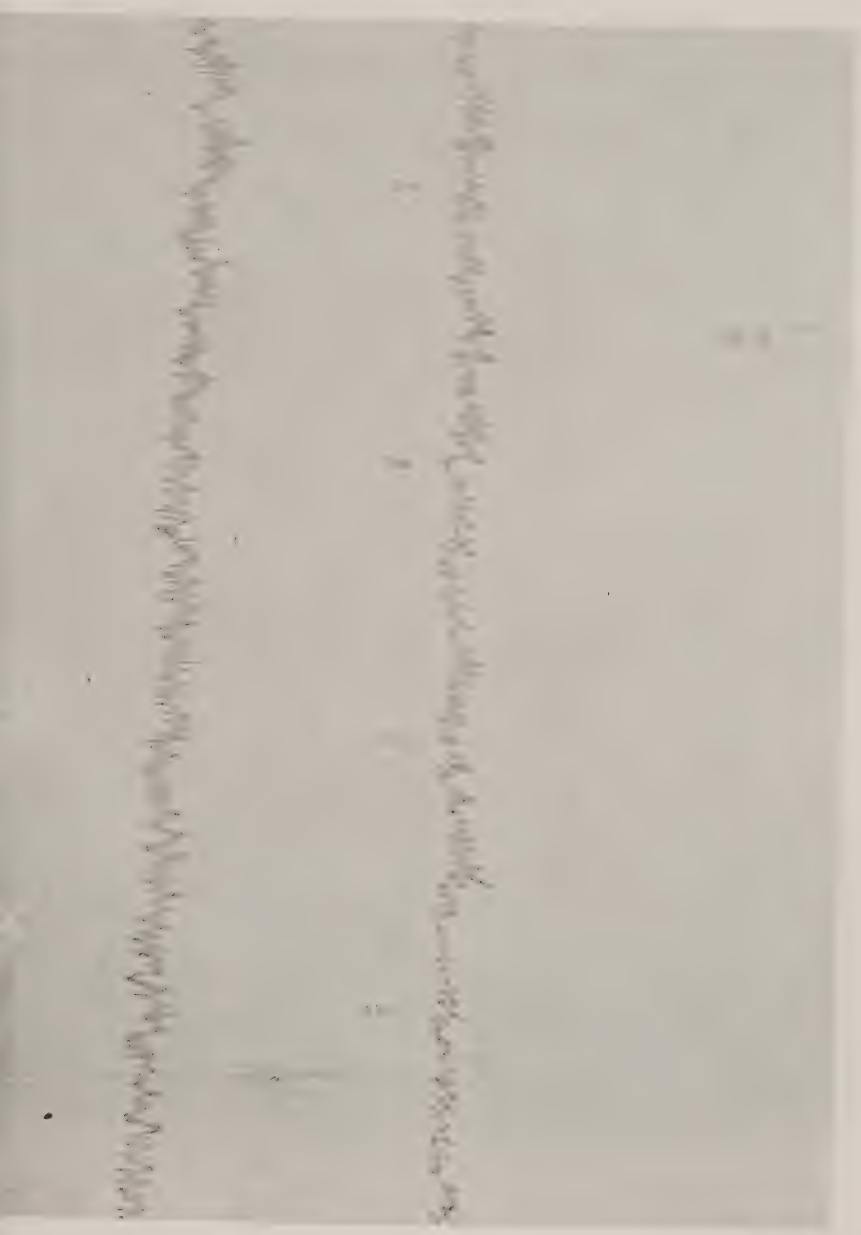
IN WITNESS WHEREOF, I have hereunto subscribed my name, and caused the seal of the Department of Commerce to be affixed this Thirtieth *day of* March, *one thousand nine hundred and* Seventy-nine

For the SECRETARY OF COMMERCE:

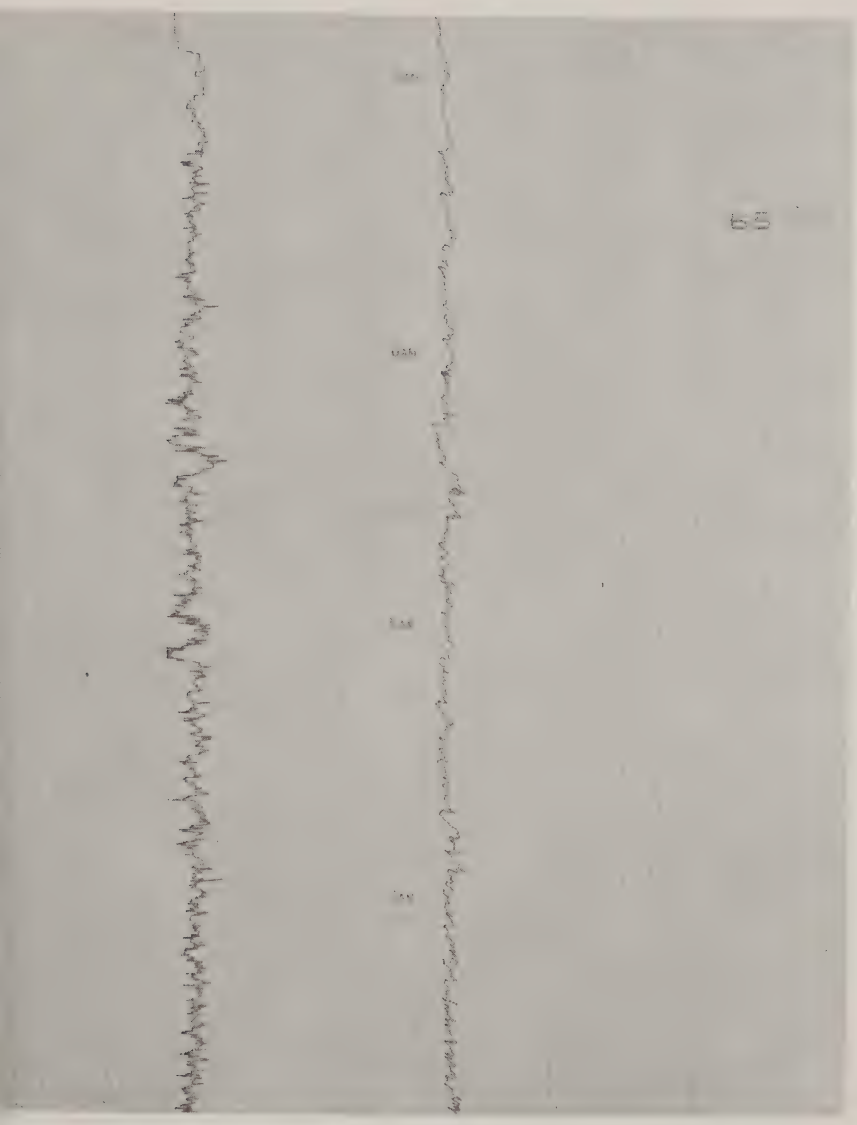
William M. Mc Murray
Daniel B. Mitchell
Director, National Climatic Center
Certifying Officer

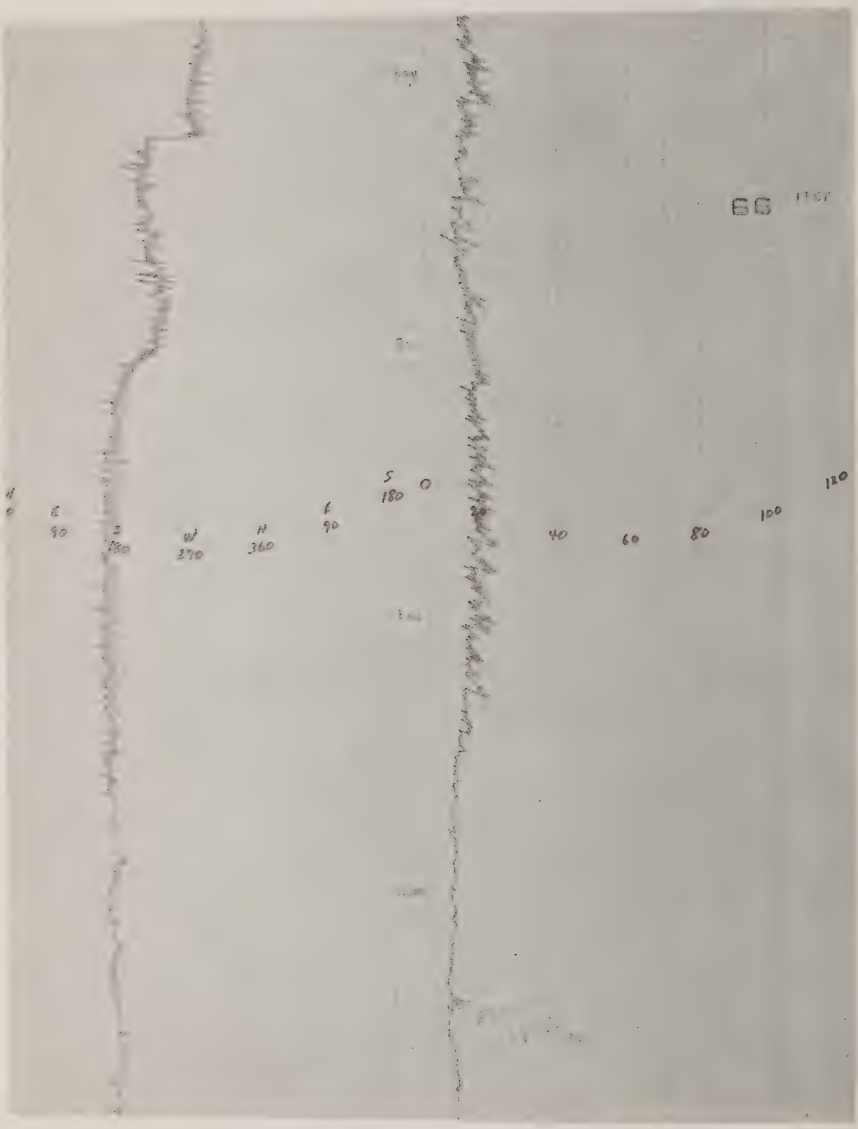











66
E
90
S
180
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270
N
360
E
90
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0
40
60
80
100
120

Addendum C: Memorandum From G. Robert Blakey to the Select Committee on Assassinations on the Mannlicher-Carcano Firing Test

MEMORANDUM

TO: ALL COMMITTEE MEMBERS

FROM: G. Robert Blakey, Chief Counsel and Director GRB 3-22-79

SUBJECT: Test on Mannlicher-Carcano

DATE: March 22, 1979

Yesterday, with the assistance of Sgt. Cecil Kirk and other members of the D. C. Police Department, the staff conducted a second test of the time necessary to fire two consecutive rounds from a 6.5 mm Mannlicher-Carcano rifle similar to that found on the 6th floor of the Texas School Book Depository on November 22, 1963. The test was conducted primarily to answer the question, would it have been possible for Lee Harvey Oswald to fire two shots in less than 1.7 seconds? Our test shows that it is.

As you recall, the estimated trigger pulls for the shots that the acoustics analysis identified as #1 and #2 occurred approximately 1.66 seconds apart. (See my previous memo on correlating the shots)

In addition, the test was designed to provide some insight into the difficulty Oswald would have encountered in firing three consecutive shots within 8.31 seconds, at least two of which were less than 1.7 seconds apart, and at least two of which hit the targets at the noted ranges.

From knowledge of the difficulty involved in so shooting, it may be possible indirectly to infer something about the probability, as opposed to the possibility, that Oswald did so. Nevertheless, even the most improbable event may have occurred. Thus, to answer the ultimate question of whether Oswald did fire the first two shots 1.66 seconds apart and hit his target at least once in so doing, as much information as available in addition to that gathered in yesterday's testing should obviously be taken into consideration. This, of course, was what the Committee did in reaching its decisions on December 29, 1978, when it reviewed the previous test firing data, together with other evidence such as the acoustics analysis, and the physical evidence (e.g. the three empty shell casings found on the TSBD 6th floor).

The test was conducted yesterday between 10:00 a.m. and noon at the Lorton Correctional Facility firing range in Virginia. The National Archives, represented by Mr. David Paynter, brought the Oswald rifle (C.E. 139) for use in the test, but bench rest firing tests and operation of the weapon established that it was in too poor condition to be used. (The Committee's Firearms Panel had previously noted the weapon's deterioration since 1963, and their final report reflects the specific nature of the deterioration). Consequently, a similar weapon was used for the actual testing. This rifle was one of the two previously used in August, 1978 for the tests in Dealey Plaza and will be turned over to the Archives as part of the Committee's files at the end of this month.

The shots were fired from a two story tower (approximately 20 feet high), at three targets, stationed from left to right at distances of 143, 165 and 266 feet from the tower.[1] The rifle was shot by four expert marksmen from the D.C.P.D., Officers D. M. Smith, B. L. Miller, Joe Masson, and E. E. Lewis, and two inexperienced staff members, Deputy Chief Counsel Gary Cornwell and myself. Also present were Sgt. Cecil Kirk and Officer M. D. Gonzales, the D.C.P.D. Range Instructor. All members of the D.C.P.D. who fired the rifle had prior military experience. Officers Lewis and Smith had additional extensive civilian training in the use of rifles, while officers Miller and Masson had similar extensive training in the use of handguns. Each of the officers thus can be considered experts in the use of such weapons. Gary Cornwell and I have had neither military nor civilian training in the use of firearms, although I hunted with rifles as a boy, and Cornwell has hunted with rifles periodically throughout his adult life.

Each shooter practiced working the bolt for several minutes (usually 2 to 3 minutes) before shooting. All shots were fired using open iron sights. All times were determined by 3 handheld stop watches. Only 35 shells were fired, including those expended in preliminary tests to determine if the weapon operated properly.[2] Each officer fired two series of three shots and Cornwell and I each fired one series of two shots.

The test established the following:

> (1) The weapon can be quite accurately fired more rapidly using open iron sights than the FBI tests in 1963 indicated, where the telescopic sight was used. For example, Officer Masson, during one test series, hit the body silhouette at 143 and 165 feet on the first two shots, and missed the head portion of the silhouette at 266 feet on the third shot by approximately one inch (1"), taking 2.0 seconds between shots 1 and 2, and a total of less than 5 seconds for all three shots. Two other series, one by officer Smith and another, again, by Officer Masson, were fired in which only 1.9 seconds elapsed between two shots, and one of the three shots scored a "kill".[3]

1/ The distances were chosen upon the assumption that the 4th shot (Oswald's third) hit the President in the head at frame 312.

2/ We found that the weapon was characteristically difficult to operate, due to its poor basic design, and in addition, the particular weapon we used had badly worn riflings and therefore shot somewhat inaccurately.

3/ Normal target range body silhouettes, portraying an individual from waist to head, were used as targets. A "kill" was judged to be any shot that hit the silhouette. A "miss" was scored even if the bullet struck the target background, but not within the silhouette.

(2) It is apparently difficult, but not impossible -- at least with only minimal practice with the firearm used -- to fire 3 shots, at least two of which score "kills", with an elapsed time of 1.7 seconds or less between any two shots, even though, in the limited testing conducted, no shooter achieved this degree of proficiency.

(3) It is not difficult to fire two consecutive shots from a Mannlicher-Carcano within 1.66 seconds, and to "point aim", if not carefully "sight" it, on the target on each shot. Cornwell fired the rifle twice in 1.2 seconds, and I fired it twice within 1.5 seconds. In both cases the second shot missed, but was close to the silhouette. In fact, my second shot only missed the silhouette by approximately 2". 4/

(4) There was ample time for Oswald to have fired 3 shots, hitting with two of them, within 8.31 seconds. All series of 3 shots were fired in less than 8 seconds, two were fired in less than 7 seconds, two in less than 6, and two in less than 5. 5/

4/ The first shot in the test series, of course, routinely scored "kills" since there was no time pressure imposed in aiming the rifle in preparation for that shot.

5/ In light of the difficulty involved in making the first two shots in 1.66, I note that showing that it is possible does not offer any reason why he would have acted so quickly after the first miss.

THE ANALYSIS OF YURI NOSENKO'S POLYGRAPH EXAMINATION

Submitted by

Richard O. Arther, President, Scientific Lie Detection, Inc., New York, N.Y., and Director, National Training Center on Polygraph Science

Report to the

Select Committee on Assassinations

U.S. House of Representatives

Ninety-fifth Congress

Second Session

March 1979

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INTRODUCTION*

(1)** As part of its investigation into the possibility that Lee Harvey Oswald was involved in a conspiracy to assassinate John F. Kennedy, the select committee looked into whether he might have been a Soviet agent.

(2) One controversial source of information on this point has been a former high-ranking KGB official, Yuri Ivanovich Nosenko. Nosenko had been, on two occasions, in charge of coordinating surveillance and recruitment of American tourists in Russia. At the time of Oswald's defection to Russia, Nosenko claimed to have personally reviewed Oswald's file.

(3) In February 1964, Nosenko defected to the United States and was placed under custody of the Central Intelligence Agency. Because of strong doubts within the Agency that Nosenko was a bona fide defector, he was later placed in solitary confinement for 3 years. He was subjected to extensive interrogation, and during three periods took polygraph examinations: April 4, 1964; October 18, 1966; and August 6, 1968. The examinations were wide-ranging, but only the second dealt with Oswald in any depth. On all occasions, Nosenko maintained categorically that the KGB had never been interested in Oswald and had never used him as an agent.

(4) The polygraphist conducting the first two tests concluded that on the first test Nosenko had lied, though not to the Oswald question. On the second, he had lied to two of the Oswald questions. Another polygraphist conducted the third test. He concluded that Nosenko was answering truthfully.

(5) In the 1970's, the CIA investigated the overall handling of the Nosenko matter and concluded, with respect to the first two polygraph tests, that they should be considered "invalid or inconclusive" because of deficiencies in the way they were conducted. For example, the first had been designed principally to create a hostile atmosphere for Nosenko. The polygraphist was instructed to tell Nosenko that the tests showed he was lying, regardless of what they actually showed. (The expert, in fact, interpreted the results as showing that Nosenko was lying.) However, the CIA did conclude that the third examination was valid and that the results could be considered credible.

(6) The Warren Commission was aware of the Nosenko issue, but was unable to make much of it since most of the material was classified and unavailable. Similarly, critics of the Warren Commission have not dealt with it in any depth.

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*Materials submitted for this report by the committee's polygraph consultant were compiled by HSCA staff members G. Robert Blakey and Whitney Watriss.

**Arabic numerals in parentheses at the beginning of paragraphs indicate the paragraph number for purposes of citation and referencing; italic numerals in parentheses in the middle or at the end of sentences indicate references which can be found at the end of each report or section.

46-129 O - 79 - 13

(7) The select committee decided to have an independent analysis of the polygraph tests conducted. First, such an examination had never been carried out. Second, it wished to know if the tests had been properly conducted and interpreted and if the answers could be considered credible. If so, then it could be stated with considerable certainty that Nosenko was a valuable source of information. If not, the committee would explore other avenues in order to decide what, if any, relation Oswald had to the KGB.

Selection of the expert

(8) The committee retained Richard O. Arther to conduct an independent analysis of the three polygraph tests taken by Nosenko. Arther had been a member of the committee's polygraph panel that examined the Jack Ruby and James Earl Ray polygraph tests. He had been selected because of his extensive qualifications and lack of prior involvement with either assassination investigation.

(9) Arther received a B.S. with honors in police science from Michigan State University in 1951, and an M.A. in psychology from Columbia University in 1960. Arther has been in private practice in New York City since 1963. He founded Scientific Lie Detection, Inc., and cofounded the National Training Center of Polygraph Science. He has taught at Brooklyn College, Seton Hall University, the John Jay College of Criminal Justice and the Graduate School of Public Administration of New York University.

(10) Arther has authored over 200 professional articles and two books. He is a member of the Academy of Certified Polygraphists and the American Polygraph Association.

Procedures

(11) As noted, Arther was asked to analyze the material related to the three examinations to determine if they had been validly conducted and interpreted and if the results were credible. On June 2, 1978, he made the first of three trips to CIA headquarters in Langley, Va. Following procedures standard for an analysis of past polygraph tests, he reviewed the polygraph charts "blind," that is, without any knowledge of whether the questions were control, relevant, or irrelevant. The purpose was to try to determine solely from the tracings on the charts to which questions Nosenko appeared to be lying. This procedure was followed on two separate occasions. After each review, Arther then checked the question sheets to determine which questions were control, relevant, or irrelevant (see below for an explanation of these terms).

(12) The other trips were made on June 7 and August 24. Subsequently, Arther submitted his final report, which appears in full following this introductory section.

A polygraph examination

(13) A polygraph examination records physiological responses to questions asked. The polygraphist attempts to design the examination in such a way that the truthful person will react to the control questions and the lying person to the relevant questions The test structure must be constructed so that it poses a threat to both the truthful and untruthful person. The polygraphist attempts to determine the "psychological set" of the examinee. He tries to determine, by reading the physiological activity of the examinee in the polygraph charts, what

questions or question areas pose the greatest threat to the examinee's well-being. A "psychological set" is "a person's fears, anxieties, and apprehension, [which] are channeled toward that situation causing the greatest threat to the individual's well-being. He will tune in on that which is of a greater threat, and tune out that of a lesser threat." *

(14) Responses to questions are recorded on a polygraph chart, which consists of tracings produced by three different types of psychological reactions associated with the circulatory, nervous, and respiratory systems:

1. The breathing pattern is recorded by means of a rubber tube placed around the person's chest.
2. The Galvanic skin response is measured by placing the attachments on either the fingers or the palms.
3. Changes in blood pressure, heart beat, and pulse rate are obtained by a standard blood pressure cuff placed around the upper arm.

(15) Questions are broken down into three categories:

1. Relevant—those pertinent to the investigation.
2. Irrelevant—hopefully, meaningless, nonemotion-producing ones to get the person used to being questioned and giving answers.
3. Control—nonrelevant, to which it can be assumed the person will lie during the test. These provide a standard for comparing the responses to relevant questions. If a person reacts more to a proper control question than to the relevant questions, then he is considered to be truthful to the relevants. On the other hand, if he reacts more to the relevants than to the proper control question, he is considered to be lying to the relevants.

(16) Relevant, irrevelant, and control questions are interspersed throughout the polygraph chart. The examination may consist of various series covering various relevant issues. Each relevant issue must be asked a minimum of two times in a series, but as many times as necessary to conclude that relevant issue successfully. Each series should have a minimum of two charts, but as many charts as necessary to conclude the relevant issues in that series successfully.

(17) The procedure for a polygraph examination is as follows: The polygraphist first conducts a pretest interview, during which the test questions are read to the person exactly as they are going to be asked. It is vital that all questions be properly worded and discussed with the person. Then the actual test is conducted.

FINDINGS AND CONCLUSIONS OF RICHARD O. ARTHER

Materials examined

(18) On June 2, 1978, I went to Central Intelligence Agency headquarters to study the polygraph examinations administered by the CIA to Yuri Ivanovich Nosenko. I was given what they claimed was the complete file. When I asked for the polygraphists' handwritten notes, handwritten question sheets, chart analyses and other papers from the examinations, I was again told I had the complete file. This amazed me, since I had been given only official reports, typed test

*From the Curriculum of the U.S. Army Provost Marshal General Polygraph School, Ft. McClellan, Georgia.

questions and charts. Handwritten notes have always been included in every polygraph file I have ever reviewed. Either on this day, June 2, or on June 7 (the date of my second visit), I asked for the tape recordings from the examinations. I was told there were none. This also greatly surprised me.

(19) On both June 2 and June 7, CIA polygraphists were assigned to me to provide all the background information they had on all three examinations. I was assured that they were holding nothing back.

(20) My third trip to the CIA headquarters was on August 24. Again I had a polygraphist assigned to me. I was given only material provided in June.

Procedures

June 2 visit

(21) The purpose of this visit was to get an overview of Nosenko's polygraph examinations, including the quality of the test questions and testing procedures, and to conduct an analysis of the polygraph recordings to determine if I agreed with the interpretations of the CIA polygraph experts.

(22) I spent the first several hours analyzing the polygraph reactions—without knowing if any given question was a relevant, irrelevant, or control. Such a procedure is referred to as a "blind chart analysis" and is a standard one, designed to eliminate all preconceived opinions a polygraphist might have as to a person's truthfulness. That is, I formed my opinions as to Nosenko's truthfulness to each test question prior to knowing if any given question was a relevant, irrelevant, or control.

(23) Only after I finished this blind chart analysis did I learn which questions were relevant, irrelevant, or control. I then determined if I agreed with the CIA expert's analysis of Nosenko's polygraph recordings.

(24) On June 2, Kenneth Klein, committee counsel, asked if I wanted to conduct my own polygraph examination of Nosenko and/or personally interview the two CIA polygraph experts. I replied that I would consider both possibilities.

June 7 visit

(25) On June 7, I returned to CIA headquarters to reevaluate the polygraph examinations, decide if Nosenko should be given another polygraph examination, and determine if interviews of the two CIA experts would prove beneficial. I also did another blind chart analysis to determine if I was consistent with my June 2 analysis. The results were substantially identical.

August 24 visit

(26) The objective of this visit was to reevaluate the charts and question sheets to make sure that my preliminary written report was as accurate as possible. I had had to write it from memory as the CIA requested I not take my notes away from the Agency's control.

Evaluation of the polygraph examinations

April 4, 1964

(27) The April 4, 1964, examination was administered exactly 2 months after Nosenko had defected. It consisted of more than 50 relevant questions, divided into 13 individual tests. (The great major-

ity of polygraph examinations are limited to three or four relevant issues.)

(28) It was obvious that the CIA's purpose was to determine Nosenko's truthfulness to a wide variety of issues. Only one question in one test dealt with Lee Harvey Oswald: "Did you tell us the truth about Lee Harvey Oswald?" The answer was "Yes."

(29) The wording of this question is very general. It is the type of broad question that many polygraphists use only at the very end of a test, after at least three or four relevant questions have been asked on the same issue.

(30) Further, this question was the 51st one asked. It occurred in the 12th test and was the 3rd of 11 questions in the test. Because important questions are generally placed at the beginning, with questions of lesser importance near the rear, it would appear that the Oswald issue had an extremely low priority.

(31) As noted, in this examination over 50 relevant questions were asked. Fred E. Inbau and John E. Reid, authors of the classic textbook on polygraphy, Lie Detection & Criminal Interrogation (3d edition, 1953), recommended that no more than three relevant test questions be asked. This is because the more a person is asked relevant questions, the more likely he will become "test-tired," that is, even though lying, he will not react because he has become emotionally exhausted.

(32) Further compounding this situation, the examination started at 10:45 a.m. and ended at 3:15 p.m.—a period of 4½ hours—whereas the usual polygraph examination lasts less than 2 hours, with four or five separate tests. Again there is a definite risk that a person will become "test-tired" if the examination runs too long.

(33) Although the CIA expert's opinion was that Nosenko gave a "reaction" (I presume by this he means that Nosenko was "lying") to 6 of the 11 questions, he listed Nosenko as showing "no reaction" to the Oswald question.

(34) In both my blind chart analyses, I picked the Oswald question as showing the greatest valid "lie" reaction by Nosenko, certainly greater than those for the six questions indicated by the CIA expert as having produced lies.

(35) In spite of all the above problems, which would normally lead a polygraphist to believe that Nosenko should be "emotionally unresponsive," Nosenko gives a substantial "lie" reaction to the Oswald question.

October 18, 1966

(36) The October 18, 1966, examination was administered by the same CIA polygraphist who had administered Nosenko's 1964 examination. In his written report, dated October 23, 1966, he stated:

(37) The specific purpose of the October 18, 1966, polygraph test was to:

> a. Attempt to establish whether subject was in fact actually involved in the *Oswald* case while *Oswald* was in the Soviet Union, or if his association with the *Oswald* case was only part of his cover story legend.
>
> b. Determine if subject was personally active in the *Oswald* case in 1963 after President Kennedy's assassination.

c. Ascertain if subject received special instructions from KGB to pass on to the American Government regarding the *Oswald* case.

(38) This series of examinations began on October 18 and ended on October 28. The thrust of the first day of examinations had to do with Oswald. The subsequent examinations, that is, October 19 through October 28, had nothing to do with Oswald. It would appear that the CIA now fully appreciated the significance of Nosenko/Oswald, and that their polygraphist was doing his best to determine Nosenko's truthfulness regarding Oswald.

(39) During the examination, Nosenko was asked 32 questions in which the name Oswald appears. On my blind analysis, I selected the following questions as containing valid indicators of lying:

1. Did you receive special instructions about what to tell Americans about the Oswald case? (No)
2. Was Oswald recruited by the KGB as an agent? (No)
3. Did the KGB consider Oswald abnormal? (Yes)
4. To your knowledge did Oswald talk to a KGB officer in Mexico? (No)
5. Is your contact with the *Oswald* case part of your legend? (No)
6. Did you hear of Oswald prior to President Kennedy's assassination? (Yes)
7. Did you hear of Oswald only after President Kennedy's assassination? (No)
8. Did you personally order ————————, in 1959, to collect material on Oswald? (Yes)
9. Did the KGB instruct you to tell us Oswald was a bad shot? (No)
10. Did the KGB give the Oswalds any kind of help in their departure from the Soviet Union? (No)

(40) When a liar is asked a large number of relevant test questions, he will not react as lying to all questions. Instead he will pick out the questions most significant to him and react as lying only to those. Generally, the questions he does not regard as significant, he will not react to, even though he is lying.

(41) On test series 1, the CIA expert wrote that the "most significant reactions" were to questions 1 and 6 above. For test series 2, the CIA expert wrote that the "most significant reactions" were to questions 5, 6 and 7 above, plus two questions not on my list.*

(42) By having the Oswald questions the first day of this second series of polygraph examinations, both the validity and reliability were greatly increased.

August 6, 1968

(43) The third series of polygraph examinations was administered in August 1968. These examinations were conducted by a different CIA polygraph expert. The first series of tests was administered on August 2.

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*Since my blind analysis involved selecting only the two or three questions to which Nosenko was reacting the most strongly within each test, I did not expect to agree fully with the CIA expert.

(44) Twenty-three relevant test questions were asked, but not one had to do with Oswald. The second day of testing was August 6, 1968. At this time, 27 relevant questions preceded the first Oswald question, of which there were 2.

(45) It is obvious that once again the Oswald issue was considered extremely minor. As noted, the Oswald questions did not occur until quite far into the procedure. The longer a question is postponed, the more likely a liar will come out as "truthful" because he has become "test-tired," that is, unresponsive. On the first day, the polygraphist himself acknowledged the possibility of Nosenko's becoming unresponsive when he wrote, after the sixth test of August 2, 1968:

> No further polygraph tests were administered on this date because the examiner did not want to run the risk of fatigue setting in and thus possibly causing adrenalin exhaustion.

(46) Thus he stopped on August 2, after 6 tests and 23 relevant questions. Yet on the second day of testing (August 6), it was not until test 7 and the 28th relevant question that he first asked about Oswald.

(47) Further, the wording of the two Oswald questions was very startling:

1. Did you actually review the KGB file on Oswald? (Yes)
2. Did Lee Harvey Oswald receive any KGB training or assignments? (No)

(48) No date was referred to within this first question, a serious error in wording. Nosenko was claiming that he had reviewed Oswald's file before the assassination. Therefore, the question should have been worded:

(49) "Before November 1963, had you actually reviewed Oswald's KGB file?" Leaving out the date meant that Nosenko could have truthfully answered this question even if he had first reviewed Oswald's file after the assassination. In fact, he could have reviewed it 1 week before he was told to defect and still come out as truthful to the question.

(50) The second question is also very poor in that it has the word "or" in it, which automatically means that it is really two questions. When there are two questions within one question, if a person happens to be truthful to one of those questions and lying about the other, generally he will come out as truthful.

(51) For example, if Oswald did not receive any KGB training but was told to assassinate President Kennedy, Nosenko could possibly truthfully answer "yes" to this question.

Comparison of 1966 and 1968 examinations

(52) Not only was the first day of the 1966 examination directed totally toward the Oswald issue, but the questions were very specific and basically worded properly. In 1968, neither was the case.

(53) In 1966, the CIA polygraph expert rendered an opinion that Nosenko was lying both about why he defected and as about Oswald. On the other hand, in 1968, the polygraphist rendered an opinion that Nosenko was "substantially truthful." This second expert even had Nosenko answering truthfully to the question: "Is there any possibility that the KGB would dispatch an officer to defect to the Americans?" Answer: "No."

(54) The HSCA has informed me that without exception every intelligence officer interviewed—including KGB defectors—has stated that the KGB is capable of dispatching an officer to defect. The fact that Nosenko denies this and the polygraphist finds him truthful makes the entire examination suspect.

Opinions

(55) 1. For two major reasons, there would be no point in interviewing the two CIA polygraph experts. First, the charts spoke for themselves. Second, since I supposedly had the complete case file, I would rather go by the file than by someone's memory of what happened some 10 to 14 years ago.

(56) 2. Another polygraph examination is not recommended for Nosenko. After such a long period of time and such extensive testing, the results could not be trusted.

(57) 3. The polygraph examination given on October 18, 1966, should be considered the most valid and reliable of the three regarding Lee Harvey Oswald. Given the state of the art in 1966, this examination met the criteria of validity and reliability.

(58) 4. Both the 1964 and 1968 examinations involving Lee Harvey Oswald should be disregarded because of the large number of inherent deficiencies in both examinations.

(59) 5. On another occasion, I provided four questions which I would have asked had I examined Nosenko:

Did the KGB order Oswald to assassinate President Kennedy?

Before November 1963, had you ever heard of Lee Harvey Oswald?

Did the KGB order you to defect?

Did the KGB instruct you what to tell the Americans about Oswald?

(60) *Note:* My August 16, 23, 24, and 28 review of the reports, charts, and my blind chart analysis at the Select Committee on Assassinations' offices served only to strengthen the above opinions.

THE ANALYSIS OF JACK RUBY'S POLYGRAPH EXAMINATION

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Report to the

Select Committee on Assassinations

U.S. House of Representatives

Ninety-fifth Congress

Second Session

March 1979

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INTRODUCTION*

(1) On July 18, 1964, Jack Ruby voluntarily took a polygraph examination to test his truthfulness. Even though the Warren Commission disclaimed any reliance on the results of the test, (*1*) the committee believed that popular interest in such tests, as well as the possibility that new investigative "leads" might emerge, warranted a review of the examination.

(2) The committee was specifically prohibited by its own rules (*2*) from using either failure or agreement to take a polygraph examination, or the results of a polygraph examination, as a basis for fact-finding in any public hearing or report. Such restrictions did not apply, however, to a review of polygraph tests previously administered. The committee therefore engaged a panel of experts to review the Ruby polygraph examination to determine if it was properly conducted and analyzed.

A polygraph examination

(3) A polygraph examination records physiological responses to questions asked. The polygraphist attempts to design the examination in such a way that the truthful person will react to the control questions and the lying person to the relevant questions.

(4) The test structure must be constructed so that it poses a threat to both the truthful and untruthful person. The polygraphist attempts to determine the "psychological set" of the examinee. He tries to determine, by reading the physiological activity of the examinee in the polygraph charts, what questions or question areas pose the greatest threat to the examinee's well-being. A "psychological set" is "a permission disclaimed any reliance on the results of the test, (*1*) the son's fears, anxieties, and apprehensions, [which] are channeled toward that situation causing the greatest threat to the individual's well-being. He will tune in on that which is of a greater threat, and tune out that of a lesser threat." (*3*)

(5) Responses to questions are recorded on a polygraph chart, which consists of tracings produced by three different types of psychological reactions associated with the circulatory, nervous, and respiratory systems:

(6) 1. The breathing pattern is recorded by means of a rubber tube placed around the person's chest.

(7) 2. The Galvanic skin response is measured by placing the attachments on either the fingers or the palms.

(8) 3. Changes in blood pressure, heart beat and pulse rate are obtained by a standard blood pressure cuff placed around the upper arm.

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*Materials submitted for this report by the committee's polygraph consultants were compiled by HSCA staff members G. Robert Blakey and Whitney Watriss.

(9) Questions are broken down into three categories:

1. Relevant—those pertinent to the investigation.
2. Irrelevant—hopefully meaningless, nonemotion-producing ones to get the person used to being questioned and giving answers.
3. Control—nonrelevant to which it can be assumed the person will lie during the test. These provide a standard for comparing the responses to relevant questions. If a person reacts more to a proper control question than to the relevant questions, then he is considered to be truthful to the relevants. On the other hand, if he reacts more to the relevants than to the proper control question, he is considered to be lying to the relevants.

(10) Relevant, irrelevant, and control questions are interspersed throughout the polygraph chart. The examination may consist of various series covering various relevant issues. Each relevant issue must be asked a minimum of two times in a series, but as many times as necessary to conclude that relevant issue successfully. Each series should have a minimum of two charts, but as many charts as necessary to conclude the relevant issues in that series successfully.

(11) The procedure for a polygraph examination is as follows. The polygraphist first conducts a pretest interview, during which the test questions are read to the person exactly as they are going to be asked. It is vital that all questions be properly worded and discussed with the person. Then the actual test is conducted.

Ruby's polygraph examination

(12) Jack Ruby had repeatedly requested that he be examined with a polygraph, truth serum, or other scientific means to test his veracity.(*4*) In his testimony before the Warren Commission on June 7, 1964, he stated, "I would like to be able to get a lie detector test or truth serum of what motivated me to do what I did at that paricular time * * *."(*5*) Chief Justice Earl Warren responded,

> * * * if you and your counsel want any kind of test, I will arrange it for you. I would be glad to do that, if you want it. I wouldn't suggest a lie detector test to testify the truth * * *.(*6*)

Ruby repeated his request several times during his testimony.

(13) Following numerous discussions among attorneys for Ruby and his family and other interested parties,(*7*) on July 18, 1964,(*8*) Ruby(*9*) took the examination signing a standard "Consent to Interview with Polygraph" form.(*10*)

(14) The following persons were present during the examination, in addition to the expert, SA Herndon: (*11*)

1. Arlen Specter, Warren Commission counsel;
2. Clayton Fowler, Ruby's attorney;
3. William R. Beavers, Ruby's psychiatrist;
4. James Woods, FBI special agent;
5. E. L. Holman, chief jailer;
6. Odell Oliver, court reporter.

(15) In addition to the above, Joe Tonahill, Ruby's other attorney, and William Alexander, assistant district attorney for Dallas County, Tex., were present at each of the 13 pretest interviews. (*12*) Clayton Fowler, Ruby's attorney, did not want Assistant District Attorney

William Alexander to hear Ruby's answers and insisted that Ruby not answer questions until the actual tests had begun and Alexander had left the examination room. (*13*) In some instances, however, Ruby did answer the questions during the pretest stage. Special Agent Herndon had indicated that he preferred to have Ruby answer the questions during the pretest interview, as this was a generally accepted polygraph procedure. (*14*)

(16) The polygraph examination lasted from 2:23 p.m. to about 9 p.m. (*15*) Ruby was asked a total of 101 questions, broken into 13 series. A pretest interview was conducted before each question series, at which time the questions were explained to Ruby. They were often rephrased for the actual tests.

(17) The following are the relevant questions and answers from all 13 test groups comprising the Ruby polygraph examination:

Question. Did you know Oswald before November 22, 1963?
Answer. No. (*16*)
Question. Did you assist Oswald in the assassination?
Answer. No. (*17*)
Question. Are you now a member of the Communist Party?
Answer. No. (*18*)
Question. Have you ever been a member of the Communist Party?
Answer. No. (*19*)
Question. Are you now a member of any group that advocates the violent overthrow of the U.S. Government?
Answer. No. (*20*)
Question. Have you ever been a member of any group that advocates violent overthrow of the U.S. Government?
Answer. No. (*21*)
Question. Between the assassination and the shooting, did anybody you know tell you they knew Oswald?
Answer. No. (*22*)
Question. Aside from anything you said to George Senator on Sunday morning, did you ever tell anyone else that you intended to shoot Oswald?
Answer. No. (*23*)
Question. Did you shoot Oswald in order to silence him?
Answer. No. (*24*)
Question. Did you first decide to shoot Oswald on Friday night?
Answer. No. (*25*)
Question. Did you first decide to shoot Oswald on Saturday morning?
Answer. No. (*26*)
Question. Did you first decide to shoot Oswald on Saturday night?
Answer. Yes. (*27*)
Question. Did you first decide to shoot Oswald on Sunday morning?
Answer. Yes. (*28*)
Question. Were you on the sidewalk at the time Lieutenant Pierce's car stopped on the ramp exit?
Answer. Yes. (*29*)

Question. Did you enter the jail by walking through an alleyway?

Answer. No.(*30*)

Question. Did you walk past the guard at the time Lieutenant Pierce's car was parked on the ramp exit?

Answer. Yes.(*31*)

Question. Did you talk with any Dallas police officers on Sunday, November 24, prior to the shooting of Oswald?

Answer. No.(*32*)

Question. Did you see the armored car before it entered the basement?

Answer. No.(*33*)

Question. Did you enter the police department through the door at the rear of the east side of the jail?

Answer. No.(*34*)

Question. After talking to Little Lynn, did you hear any announcement that Oswald was about to be moved?

Answer. No.(*35*)

Question. Before you left your apartment Sunday morning, did anyone tell you the armored car was on the way to the police department?

Answer. No.(*36*)

Question. Did you get a Wall Street Journal at the Southwestern Drug Store during the week before the assassination?

Answer. No.(*37*)

Question. Do you have any knowledge of a Wall Street Journal addressed to Mr. J. E. Bradshaw?

Answer. No.(*38*)

Question. To your knowledge, did any of your friends or did you telephone the FBI in Dallas between 2 or 3 a.m. Sunday morning?

Answer. No.(*39*)

Question. Did you or any of your friends to your knowledge telephone the sheriff's office between 2 or 3 a.m. Sunday morning?

Answer. No.(*40*)

Question. Did you go to the Dallas police station at any time on Friday, November 22, 1963, before you went to the synagogue?

Answer. No.(*41*)

Question. Did you go to synagogue that Friday night?

Answer. Yes.(*42*)

Question. Did you see Oswald in the Dallas jail on Friday night?

Answer. Yes.(*43*)

Question. Did you have a gun with you when you went to the Friday midnight press conference at the jail?

Answer. No.(*44*)

Question. Is everything you told the Warren Commission the entire truth?

Answer. Yes.(*45*)

Question. Have you ever knowingly attended any meetings of the Communist Party or any other group that advocates violent overthrow of the Government?

Answer. No. (*46*)

Question. Is any member of your immediate family or any close friend, a member of the Communist Party?

Answer. No. (*47*)

Question. Is any member of your immediate family or any close friend a member of any group that advocates the violent overthrow of the Government?

Answer. No. (*48*)

Question. Did any close friend or any member of your immediate family ever attend a meeting of the Communist Party?

Answer. No. (*49*)

Question. Did any close friend or any member of your immediate family ever attend a mee'ing of any group that advocates the violent overthrow of the Government?

Answer. No. (*50*)

Question. Did you ever meet Oswald at your post office box?

Answer. No. (*51*)

Question. Did you use your post office mailbox to do any business with Mexico or Cuba?

Answer. No. (*52*)

Question. Did you do business with Castro-Cuba?

Answer. No. (*53*)

Question. Was your trip to Cuba solely for pleasure?

Answer. Yes. (*54*)

Question. Have you now told us the truth concerning why you carried $2,200 in cash on you?

Answer. Yes. (*55*)

Question. Did any foreign influence cause you to shoot Oswald?

Answer. No. (*56*)

Question. Did you shoot Oswald because of any influence of the underworld?

Answer. No. (*57*)

Question. Did you shoot Oswald because of a labor union influence?

Answer. No. (*58*)

Question. Did any long-distance telephone calls which you made before the assassination of the President have anything to do with the assassination?

Answer. No. (*59*)

Question. Did any of your long-distance telephone calls concern the shooting of Oswald?

Answer. No. (*60*)

Question. Did you shoot Oswald in order to save Mrs. Kennedy the ordeal of a trial?

Answer. Yes. (*61*)

Question. Did you know the Tippit that was killed?

Answer. No. (*62*)

Question. Did you tell the truth about relaying the message to Ray Brantley to get McWillie a few guns?

Answer. Yes.(*63*)

Question. Did you go to the assembly room on Friday night to get the telephone number of KLIF?

Answer. Yes.(*64*)

Question. Did you ever meet with Oswald and Officer Tippit at your club?

Answer. No.(*65*)

Question. Were you at the Parkland Hospital at any time on Friday?

Answer. No.(*66*)

Question. Did you say anything when you shot Oswald other than what you've testified about?

Answer. No.(*67*)

Question. Have members of your family been physically harmed because of what you did?

Answer. No.(*68*)

Question. Do you think members of your family are now in danger because of what you did?

Answer. [No response.](*69*)

Question. Is Mr. Fowler in danger because he is defending you?

Answer. [No response.](*70*)

Question. Did "Blackie" Hanson speak to you just before you shot Oswald?

Answer. No.(*71*)

Interpretations of the polygraph examination

Dr. Beavers' testimony.

(18) The testimony of Ruby's psychiatrist, Dr. William Beavers, who was present during the examination, was taken by Specter immediately after the polygraph examination on July 18, 1964. (*72*) Beavers testified that he had examined Ruby 9 or 10 times and had diagnosed him as a "psychotic depressive." However, Beavers stated that on the day of the examination, the "depressive element" had diminished, (*73*) and that most of the time Ruby understood the questions and answered with an appreciation of reality. (*74*) The only questions that seemed to tap Ruby's underlying delusional state related to his opinion about the safety of his defense counsel or his family. (*75*) Beavers did caution, however, that he was not an expert in the area of "interrelationships between mental illness and the polygraph." (*76*)

Special Agent Herndon's testimony

(19) On July 28, 1964, Special Agent Herndon testified before the Warren Commission regarding his interpretation of the Ruby polygraph. (*77*) Referring to Beavers' testimony, which Herndon had heard on July 18, 1964, Specter questioned him about the validity of a polygraph examination of a psychotic depressive person as described by Beavers. Herndon responded that an examination of such a person would be inconclusive or invalid in view of the fact that a psychotic individual is divorced from reality, and the tracings of his polygrams could not be logically interpreted. (*78*)

(20) Specter then questioned Herndon about his interpretation of the polygraph examination based on the hypothesis that Ruby was in fact in touch with reality during the examination and understood the nature of the questions and the quality of his answers. Herndon testified that, assuming Ruby was mentally competent and sane, he would interpret the charts as indicating that there was no deception in Ruby's responses to the relevant questions in the examination, that Ruby answered all relevant questions truthfully. (*79*) During later testimony, when Herndon was questioned about specific questions, he again was careful to qualify his interpretation with the assumption that Ruby was of sound mind. Herndon made it clear that he would find the results inconclusive and the examination invalid in the event Ruby was not of sound mind. (*80*)

(21) Herdon did mention four factors that he believed should be considered in the overall evaluation of Ruby's polygraph examination. The factors involved the prior extensive interrogation of Ruby, the time elapsed since Ruby shot Oswald, the number of persons present during the polygraph examination, and the number of relevant test questions asked. Herndon stated:

> Mr. SPECTER. Do you have anything to add which you think would be helpful to the President's Commission?
>
> Mr. HERNDON. Yes. I would like to make a few additional comments with regard to this polygraph examination, in view of the fact that it was somewhat unique and unusual. I think these factors should be somewhat considered in the overall evaluation of the polygraph examination.
>
> First of all, Ruby has obviously been extensively interviewed by law enforcement officers and by the Commission and other people, and there has been a considerable length of time lapse since the time that the instant offense occurred of him shooting Oswald. These factors of length of time and considerable previous interrogation would tend to detract or negate any specific or definite conclusion that could be rendered with regard to the polygraph examination.
>
> The fact that there were other personnel in the room would tend to negate a valid polygraph technique. However, here again I did mention that this did not appear to bother Mr. Ruby. But it should be considered and made a matter of record.
>
> One other point I would like to mention, and that is the large number of relevant questions asked Mr. Ruby during this particular examination. This is not general standard procedure. However, I realize that the President's Commission wanted to cover many facets, and that it was mutually agreed upon that we would ask the questions that the Commission had originally drawn up for this particular interrogation. In normal polygraph procedure it is usual to keep the relevant questions down to perhaps several specific critical relevant questions and work strictly on those, and in this particular examination we had a large number of relevant questions to ask.
>
> I think these are all factors that should be considered in the overall evaluation of Mr. Ruby's polygraph examination.
>
> Mr. SPECTER. Thank you very much, Mr. Herndon. (*81*)

FBI memoranda

(22) Two FBI memoranda address the Bureau's interpretation of Ruby's polygraph. The first, dated July 20, 1964, (*82*) states that a preliminary review of the charts indicated that Ruby was not deceptive when denying that he knew Oswald or that he was involved in any conspiracy. The memo went on to note that this interpretation did not conflict with any of the FBI's prior investigations. The memo did caution, however, that if in fact Ruby had a "psychotic" personality, the test results should be considered inconclusive and not be relied on. The second memorandum, dated July 22, 1964, (*83*) repeated the same conclusion.

The Warren Commission's conclusion

(23) The Warren Commission stated in its report that it did not rely on the results of the Ruby polygraph examination in reaching its conclusions.(*84*) The commission noted that it had merely granted Ruby's request for such an examination. It published the transcript of the examination, as well as the transcript of the deposition of the FBI polygraph expert who administered the test.

Selection of the panel

(24) In August 1977, the committee decided to convene a panel of experts with no prior affiliation with the Kennedy (or the King) * case to review the polygraph examination. Recommendations for panel membership were invited from Walter F. Atwood, executive director of the American Polygraph Association in 1976, and Charles R. Jones, vice president of the American Polygraph Association in 1978.

(25) They suggested nine people who were asked to provide resumes; additional information was sought later. Each was also asked to provide a list of the leading polygraphists.

(26) The committee interviewed 19 prospective panel members and chose 3:

(27) Richard O. Arther—B.S., with honors, in police science, Michigan State University, 1951; M.A. in psychology, Columbia University, 1960. Arther has been in private practice in New York City since 1953. He founded Scientific Lie Detection, Inc., cofounded the National Training Center of Polygraph Science. He has taught at Brooklyn College, Seton Hall University, the John Jay College of Criminal Justice, and the Graduate School of Public Administration of New York University. He has authored over 200 professional articles and two books. Arther is a member of the Academy of Certified Polygraphists and the American Polygraph Association.

(28) Charles R. Jones—B.S. in education (major in social science); completed National Training Center of Polygraph Science in 1959. Jones has been an instructor at the police training school in Charleston, W. Va., and currently teaches at the Zonn Institute of Polygraph, Inc., in Atlanta, Ga. He joined the Lincoln M. Zonn firm in 1961. Jones is a member of the American Polygraph Association and was elected vice president in 1976.

(29) Benjamin Frank Malinowski—retired Army warrant officer, with a career in criminal investigation and polygraph examinations.

*The same panel was to conduct an analysis of the James Earl Ray polygraph examinations.

He has been an instructor at the U.S. Army Military Police School, Fort Gordon, Ga. He attended the National Training Center of Polygraph Science in 1966. From 1967 to 1969 he was an operations officer with the Southern European Criminal Investigations task force. In 1975, he founded the Malinowski Polygraph Service. He is a member of the American Polygraph Association, and a former director of the Georgia Polygraph Association; twice president of the Georgia Polygraph Association; author of numerous articles on polygraph and criminal investigations, and formerly president of the Zonn Institute of Polygraph. He is also a nationally recognized speaker on polygraph and criminal investigations.

Examination procedures

(30) On March 6, 1978, a letter was sent to each panel member informing him of the materials available relating to the Ruby polygraph. They were:

1. The original polygraph charts.
2. A stenographic transcript of the entire examination, including the pretest and posttest interviews.
3. Testimony of Dr. Beavers, given before the Warren Commission, concerning Ruby's medical condition at the time of the examination.
4. Testimony of FBI Special Agent Herndon, the FBI polygraph examiner, before the Warren Commission.
5. Expert medical testimony given at Ruby's trial.

(31) Each panel member was asked to review the list and inform the committee if they required all items or additional material. Each responded that the first four items were necessary and that the medical testimony at Ruby's trial would not be required. On May 19, 1978, copies of the materials other than the medical trial testimony were sent to each expert.

(32) The procedures were that: (1) Each polygraphist would conduct an independent examination of the materials; (2) the panel would then meet to discuss each member's findings; (3) a final joint panel report would be prepared and submitted to the select committee.

(33) The experts were asked to focus on the following major areas:

1. The circumstances surrounding the administration of the examination.
2. Any problems created by the medical condition, age, mental stability, et cetera, of the subject.
3. The procedure/technique used by the expert in administering the examination.
4. The analysis of the charts.

(34) The experts were told, however, that they should not feel confined by the above areas and should comment on any factor they considered relevant.

(35) On June 22, 1978, the three panelists and two committee staff members met at the Algonquin Hotel in New York City. The National Archives agreed to have the original charts taken to this meeting. At this time, the experts reviewed the original charts and discussed the polygraph examination. The panel was unanimous in its evaluation and agreed that Arther would be responsible for writing the panel's Ruby report, subject, of course, to the review and approval of the other two panel members. (*85*)

(36) The panel conducted its review using the state of polygraph technology in 1964. However, since the panel's review involved basic polygraph principles, the comments and conclusions are still timely.

REPORT OF THE POLYGRAPH PANEL

Crucial factors affecting the examination

(37) The panel noted the four factors mentioned by Herndon as having a detrimental effect on the examination: The time elapsed since the shooting; Ruby's extensive prior interrogation; the many people present during the examination; and the great number of relevant questions asked. (*86*)

(38) The panel believed these factors had a serious negative impact on the validity and reliability of the polygraph examination. Because Ruby had been extensively interrogated previously, Herndon should have been sure that the polygraph examination was very carefully conducted.

(39) When first approached by the Commission, Herndon immediately should have explained the polygraph's limitations. He should have refused to compromise the validity and reliability of the polygraph procedure by letting it become yet another interrogation of Ruby.

(40) Herndon himself considered the procedure to be more an interrogation than a polygraph examination, as seen in his testimony before the Commission with regard to test series 9:

> Mr. HERNDON. Yes, there was at this point in the interrogation. Realizing the Commission had a large number of questions they wanted to ask, it was decided at this point, in view of the fact that we had asked the main critical questions, to proceed with what I call direct interrogation, that is that each and every one of the questions asked is a relevant question, and that there are no irrelevant questions or control questions asked. (*87*)

And again, discussing test series 9A, he testified:

> Mr. HERNDON. This was done in order to save time inasmuch as the interrogation was becoming rather lengthy at this point, and Mr. Specter indicated he was anxious to proceed and to complete the rest of the questions that we had agreed upon with all those parties that were interested in this interrogation. (*88*)

(41) Note that in the above quotes Herndon uses the term "interrogation" four times, but not once does he use the term "polygraph examination." If the events of July 18 were considered an interrogation rather than a polygraph examination, the panel would be far less concerned with what it felt were gross abuses of basic polygraph principles. However, since Herndon rendered his opinions as a "polygraph examiner," the panel evaluated Ruby's charts as a polygraph examination.

(42) The panel was also very concerned about the number and movement of people in the examination room. During the pretest interviews, as many as 10 persons were present. Two left for the testing

phase, returning for the next pretest interview. Since there was a series of 13 pretests and then tests, such comings and goings certainly must have caused distractions.

(43) Herndon himself testified:

> Mr. HERNDON. Normally during a polygraph examination the only ones in the room are the examinee and the examiner, and during Bureau proceedings we usually have another agent in the room out of sight that takes notes. It is considered an undesirable factor to have many people present in the room during a polygraph examination, particularly if these people are involved in any way in the case, such as the defendant's attorney or someone who has a personal and keen knowledge in the proceedings. In this particular instance, it appeared to me that Mr. Ruby divorced the presence of these people from his mind during his response to the questions. However, it should be considered a factor which is one that could tend to negate a valid conclusion with regard to chart interpretation. (*89*)

(44) The panel believes the presence of eight persons in the examination room seriously impaired the examination. Any momentary distraction during the examination could cause the examinee to react, thereby recording a "lie" reaction on the polygraph chart. Herndon could well think this reaction was a true reaction to a lie, especially when reviewing the charts at a later time. Further, the panel found that Herndon never repeated a relevant question. The possibility of uncorroborated reactions which are false becomes very crucial in the evaluation of the Ruby polygraph examination.

(45) Herndon should have insisted, long before the date of the examination, that the standard procedure be followed whereby only the polygraphist and the person are in the room. If others had a need to observe the examination, then a room with a one-way mirror, a sound system, and perhaps a recording device could have been used—all standard procedures since the 1930's. A recorder might also have eliminated the need for the presence of a reporter in the examination room. A recorder generally provides a more accurate record. The Dallas Police Department had available a specially prepared and equipped room which would have allowed for a much more professional and conducive atmosphere. (*90*)

(46) A third factor the panel finds impaired the Ruby polygraph examination concerned the number of relevant test questions asked. The panel members believe it showed total disregard of basic polygraph principles.

(47) The crux of every polygraph examination is the number of test questions and how they are worded. When the Ruby examination was conducted, the primary textbook on the subject was "Lie Detection and Criminal Interrogation," by Fred E. Inbau and John E. Reid (3d ed., 1953). This book recommends three relevant questions, since the more a person is tested, the less he tends to react when lying. That is, sooner or later, liars become so "test-tired," they no longer produce significant physiological reactions when lying. One panel member, Arther, said that in his 27 years of experience he had never heard of

a polygraph examination with more than 17 relevant questions. Yet, in the Ruby examination, Herndon asks some 55 relevant questions. As Herndon himself stated:

> In normal polygraph procedure it is usual to keep the relevant questions down to perhaps several specific critical relevant questions and work strictly on those. (*91*)

(48) Further, the panel could see no need for the vast majority of the relevant questions. It considered most to be trivial in comparison with the major issues on which Herndon should have concentrated. For example, the following trivial and poorly worded relevant questions were asked:

> 1. Did you get a Wall Street Journal at the Southwestern Drug Store during the week before the assassination?
> 2. Did you go to the Dallas police station at any time on Friday, November 22, 1963, before you went to the synagogue?
> 3. Did any close friend or any member of your immediate family ever attend a meeting of any group that advocates the violent overthrow of the Government? (*92*)

(49) The panel concludes that Herndon should have insisted that the total number of issues covered be reduced to no more than four. The panel suggested, for example, that only the following four relevant test questions should have been asked to cover the critical issues (Herndon did ask questions similar to three of the areas):

> Before last November 22, did you ever hear the name of Lee Harvey Oswald?
> Did you murder Oswald to silence him?
> Did anyone instruct you to murder Oswald?
> Did you ever talk with Lee Harvey Oswald? (*93*)

Loss of control

(50) Numerous instances in the transcript of the Ruby polygraph examination indicate that Herndon completely lost control over the examination. The problem most often stemmed from the ad hoc participation of the observers in the conduct of the polygraph examination. (Of course, the panel found the number of observers itself to be detrimental to the examination.)

(51) As an example, the standard pretest procedure is to ask the person each question and allow for discussion and a response. This is done before any of the components are attached to the examinee. Herndon stated his intention to proceed in this manner, but upon objection from Ruby's attorney, Clayton Fowler, Herndon acquiesced, abandoning this most important aspect of the pretesting phase and disregarding an important polygraph principle. The applicable part of the transcript follows:

> Mr. Herndon. In other words. I am going to tell you what the question is going to be and you shall feel free to answer it "yes" or "no."
> Mr. Fowler. Excuse me. sir.
> Mr. Herndon. Certainly.
> Mr. Fowler. At this time, Jack, I request that in view of the fact that you're not hooked up, that you do not answer the

question and reserve those until such time as you will be on the machine.

Mr. RUBY. That's fine.

Mr. HERNDON. Then, we will just discuss the questions.

Mr. RUBY. Do it to your advantage, may I add.

Mr. HERNDON. I generally prefer in my practice with the polygraph to have the gentleman answer the question so that he knows he has already answered it, and as a matter of record, he knows that that question is coming along.

Mr. RUBY. Please let me do it, will you? [Addressing Mr. Fowler.]

Mr. FOWLER. [No response.]

Mr. HERNDON. I will bow to whatever Mr. Specter or counsel wants to do in this regard.

Mr. RUBY. Fowler, I hate to dispute with you, but let me do it this way?

Mr. FOWLER. Well, Jack, again, Mr. Alexander is here and again I tell you this—that the answers to some of these questions could be absolutely very detrimental to you.

Mr. RUBY. They can't be.

Mr. FOWLER. I'm talking about from a legal standpoint. Now, morally, I know how you feel and you want to do the best you can for the commission.

Mr. RUBY. I will.

Mr. FOWLER. But by the same token, this gentleman over here [referring to Mr. Alexander] represents the State, who at this time is not representing you. Now, if we could allow Mr. Alexander to have the benefit of the nature of the questions, with the exception of the answers—if this it what Jack wants—but I do not want Mr. Alexander to have the benefit of the answers.

Mr. SPECTER. The test may be conducted either way. As Mr. Herndon has explained, he has a slight preference to have the answers, but the ultimate decision on that is up to Mr. Ruby and his counsel. The commission will proceed in either manner.

Mr. RUBY. It's unfortunate that my attorney, Mr. Fowler, don't see as I do. I would like to give every cooperation without the slightest fraction of interference. That's why I requested that. You won't let me do it that way, huh, Fowler?

Mr. FOWLER. I'm requesting that you do not, Jack.

Mr. HERNDON. It will be no problem. (*94*)

(52) Other examples of Herndon's loss of control abound. For example, on one page of the transcript he makes only two short statements; (*95*) at another point, a discussion by the observers about one question occupies almost six pages and includes an argument between Ruby and his attorney, Fowler, about who should be present in the room. (*96*) At other points, Ruby is reminded by Fowler that he could be convicted of first-degree murder by telling the truth and that he should not even be taking the polygraph examination. And at still another point, Herndon seeks the advice of Warren Commission attorney Specter about the phrasing of a question. (*97*)

(53) A good example of an objectionable result that occurred because of Herndon's loss of control takes place as follows. Just before test series No. 4, Ruby's responses were very erratic. He appeared to have "gone to pieces." Herndon later attributed this to fatigue, citing this as "the first series where Mr. Ruby tends to show a little fatigue." (*98*)

(54) However, just before that series had started, Ruby had had a private conversation from 4:13 to 4:15 with another of his attorneys, (*99*) whom Ruby previously had not wanted in the examination room, as shown by this:

> Mr. RUBY. Did you get your pants sewed up, Joe?
> Mr. TONAHILL. It went through to my leg.
> Mr. RUBY. That was a pretty rough brawl we had, wasn't it, Joe?
> Mr. TONAHILL. Yes.
> Mr. RUBY. Joe, I'd appreciate it if you weren't in the room. Can I ask you to leave, Joe?
> Mr. TONAHILL. I'll be glad to leave, if you want me to, Jack.
> Mr. RUBY. As a matter of fact, I prefer Bill Alexander to you, you're supposed to be my friend.
> Mr. TONAHILL. Let the record show that Mr. Ruby says he prefers Bill Alexander being here during this investigation, who is the assistant district attorney who asked that a jury give him the death sentence, to myself, who asked the jury to acquit him, his attorney. (*100*)

(55) Ruby then had two off-the-record conversations with Alexander—from 4:15 to 4:18 and from 4:22 to 4:25, (*101*) followed by still another extremely long argument as to the wording of just one test question, with five people taking part in the discussion: (*102*) "Were you in the Dallas Police Department jail at the time Lieutenant Pierce's car drove out of the basement?" (*103*)

(56) The panel questioned Herndon's conclusion that it really was fatigue that caused Ruby to "go to pieces" on this particular test, believing it might have been due either to something said during the three private conversations or to the argument over the wording of that one question. Perhaps it simply was the chaotic nature of the entire situation.

(57) The panel believed that the participation of the observers and the various asides never should have been allowed by Herndon. The panel concluded that Ruby was probably distracted, both mentally and physicaly, making a difficult examination even more difficult to conduct successfully.

Other factors

(58) In addition to the factors discussed above which impaired the Ruby polygraph examination, the panel concluded that 10 additional factors, of perhaps less importance, further reduced the validity and reliability of the examination. These are as follows:

(59) 1. It is generally agreed that the best time to examine is in the morning, because then the great majority of persons are both physically and mentally "fresh." As the day progresses, a person normally tires. Since the polygraph mainly records physical change induced by mental stimulation, a tired person does not react to stimulation as well

as a rested person does. Although Ruby most likely was a night-oriented person as a result of his occupation as a nightclub owner, by July 18, 1964, normal prison routine no doubt had changed his orientation. The panel therefore concluded that the examination should have started early in the day, perhaps around 8 a.m. As it was, the examination started at 2:23 p.m., with the first test beginning at 3:10 p.m. (*104*)

(60) 2. When administering an extremely difficult examination, most experts advocate reexamination on a later date to check the reliability of the first examination, that is, will the same reactions be obtained on the reexamination? Ruby was never given a second polygraph examination, nor is there any indication that one was ever considered. After reviewing the charts, each panel member believed strongly that a reexamination was absolutely essential for at least three reasons:

(61) a. It is a basic and commonly accepted polygraph procedure.

(62) b. Herndon did not repeat relevant questions, thereby providing no possible corroboration of the results.

(63) c. All of the adverse factors working against the orderly conduct of the examination made the results of the examination suspect, at best.

(64) 3. The panel concluded that the polygraph instrument was either improperly adjusted, or defective, or both. It made three tracings, two of which are so totally inadequate that they appear to be defective. The breathing tracing is particularly poor, either because the sensitivity was maladjusted or possibly because the pneumograph tube was not properly placed on Ruby. The amplitude of the breathing tracing is not even minimally acceptable in any of the 13 tests. The panel found this to be a constant handicap in analyzing this extremely important tracing and interpreting the charts. Sufficient amplitude is critical because the polygraphist looks for changes in the breathing pattern. Often such changes are minute and simply do not appear when the amplitude is small to begin with.

(65) The panel found the galvanic skin response (GSR) tracing to be of minimal help in analyzing Ruby's charts. The main problem with the GSR in the first session (before the break) is a lack of sensitivity due to Herndon's setting the sensitivity at one-fourth of maximum. He decreased it to one-fifth for the third series of questions. The panel noted that it should have been tried at a maximum sensitivity prior to the first test, where probably it should have remained for the entire examination. Had the sensitivity been higher, the polygraph probably would have produced an adequate tracing, that is, one that the panel could analyze.

(66) The panel could provide no explanation for why Herndon decreased the sensitivity for the third series. In fact, generally recognized principles in 1964 called for the sensitivity to be continually increased.

(67) After the break, the examination commenced with series 5 through 11, with the sensitivity set at one-fifth of maximum.

(68) The panel concluded that during this entire session, the GSR was completely defective. At best the polygraph appeared to be in extremely poor condition. In an examination of this importance, a back-up polygraph should have been available and, in the panel's view, should have been used. The examination should have been stopped until another polygraph could be obtained.

(69) 4. Herndon's definition of a "control" question goes far beyond the generally recognized definition, as discussed in the leading book of the day by Inbau and Reid. The "control" question, developed by Reid in 1943, is one similar but unrelated to the crime being investigated to which the expert knows the correct answer and to which the person will probably lie. If the person's reaction to a properly worded control is more pronounced than to the relevant questions, he is considered to be truthful. On the other hand, if his reaction to the relevant questions is more pronounced, he is considered to be lying to the relevant questions.

(70) If the control questions are properly worded, it is very possible that a person lying to the relevant questions will appear to be truthful.

(71) Herndon's control questions were not correctly worded. He defined a "control" question as one to which the person will have some emotional response. (*105*) Thus, he used such controls as:

1. Have you ever been arrested? (*106*)
2. Are you married? (*107*)
3. While in the service did you receive any disciplinary action? (*108*)
4. Have you served time in jail? (*109*)
5. Did you attend the synagogue regularly? (*110*)

(72) It is obvious that not one of the above questions is a control, as defined by Inbau and Reid. For example, to the question, "have you ever been arrested?", Ruby answered "yes." Therefore, it is not a lie, yet Herndon considered it to be a control question. (*111*)

(73) Further, Herndon violated a basic rule that surprise questions should never be used as controls. For example, while asking a series, he says, during the test, "have you ever been known by another name? Don't answer that question. Skip it. Just sit and relax." (*112*)

(74) Such talk by the expert should automatically prevent this question from being used in the chart analysis. Yet Herndon uses it as a control. He testified: "The only significant change physiologically during series No. 2 was in Mr. Ruby's response to the question, 'Have you ever been known by another name?,' portrayed by an increase in his blood pressure." (*113*)

(75) Such a procedure can easily lead to a mistake, particularly in indicating a liar to be truthful. In fact, if one wants to generate a truthful response on the chart when testing a liar, one could ask a surprise question, then immediately give extensive instruction regarding it, and thereafter evaluate it as a control question. In such a situation, at least 95 percent of the liars will give a more intense physiological reaction than they will to the relevant question to which they are lying.

(76) 5. What Herndon considers to be irrelevant questions often do not meet the criteria for an irrelevant question. The generally accepted definition of an irrelevant question is a meaningless, nonemotional question which the polygraphist knows the person will answer truthfully, e.g., "Do you live in the United States", or "Right now are you in Texas?"

(77) It was difficult for the panel to determine if Herndon considered certain questions to be irrelevants or controls. In fact, he himself confused their distinction. For example, question 4 in series 3 is officially listed as an irrelevant ("Are you married?"), yet Herndon used it as one of his control questions. (*114*)

(78) Following are several examples of irrelevant questions, as indicated on Herndon's question sheets, which the panel concluded were improperly classified. The panel found these questions to be more relevant, at times, to the important issues than the questions Herndon had listed as relevant.

1. Is your last name Ruby? (Originally his name was Rubenstein, and Herndon asked this question even after being told that Ruby changed his name from Rubinstein.) (*115*)
2. Did you take any medication this morning?
3. Have you answered these questions truthfully?
4. Are your parents alive? (Both are dead, and after his father died Ruby went to the synagogue "consistently for 11 months, morning and evening.") (*116*)
5. Are you tired?
6. Do you intend to answer the questions truthfully?
7. Were you at one time employed by a union? (There was also a relevant question, "Did you shoot Oswald because of labor union influence?") (*117*)
8. Is everything you told the Warren Commission the entire truth?

(79) 6. It is customary to repeat every question at least on a second test. This is done in order to establish the consistency (reliability) of the polygraph reactions. This was not done in the Ruby examination. Therefore, there was no way for Herndon to establish the reliability of the relevant questions.

(80) Hence, the possibility that a "lie reaction" to a control was caused by something other than a lie remains an open issue. This is particularly important because there were so many possible distractions in the examination room.

(81) 7. Between tests, a polygraphist should not tell a person if the tracings indicate truthful or lying responses to the relevant questions. This is particularly important in case a liar has some method of "beating the lie detector." If he believes he is coming across as truthful, he is reassured that his method is working. Thus, he will feel less uneasy when he lies, producing less dramatic reactions.

(82) In spite of this, after completing the first series, Herndon told Ruby: "Mr. Ruby, there are two questions I want to ask you about on our first series." At this point he discussed only the questions having to do with Ruby's middle name and the question having to do with whether Ruby had ever been arrested. Herndon did not mention the relevant questions, which could easily have led Ruby to believe that he had "passed" the test in regard to the relevant questions. (*118*)

(83) Herndon finished the discussion of series 1 with the comment: "Mr. Ruby, you are now a veteran of the first series. You did real well. You cooperated very fine." (*119*)

(84) Such statements could easily be interpreted by Ruby as meaning that he seemed to be truthful (to the relevant questions), especially when Herndon stated, "You did real well."

(85) If Ruby had lied on the first test, he would have had good reason to believe he had beaten the polygraph. Such knowledge certainly would have reduced his fear of lying, hence his lying reactions would have been reduced in subsequent questioning.

(86) And again, just as the first series is ending (prior to the break at 4:45 after series 4), Herndon stated: "You've done very well thus far, Mr. Ruby, as far as cooperating on the examination." (*120*)

(87) 8. A great deal of thought and preparation is necessary to conduct a quality polygraph examination. When a case is complicated or the examination conditions adverse, more preexamination preparation is necessary.

(88) In the panel's opinion, Herndon appeared largely unprepared to conduct the Ruby examination. Herndon testified that he knew the issues the Warren Commission wanted covered. (*121*) However, it appeared that all questions were not prepared in written form before the day of the examination. For example, as the first phase of the examination was being completed, Herndon said: "We will have to prepare some more questions." Specter: "May the record show that Mr. Alexander and Mr. Tonahill are now back in the room, and we are going to take a brief recess." (*122*) The "brief recess" lasted 1 hour and 40 minutes, during which time Ruby apparently was left in the examination room. (*123*)

(89) 9. The panel concluded that Herndon often used techniques in conducting the polygraph examination which did not conform to generally recognized principles of polygraphy. An example is test series 3A, which apparently was a "searching peak-of-tension test." A searching peak-of-tension test usually contains six or seven logical questions on the same issue. The polygraphist does not know which one is actually true. It is hoped that the liar will give a lying reaction to the appropriate question, thus permitting the expert to learn information not previously known. This test is usually given to locate loot and/or weapons, learn the names of accomplices, determine the amount of money embezzled, et cetera.

(90) The panel found the wording of the basic question in this series—("When did you first decide to shoot Oswald?")—to be very poor. This question ignored the possibility that Ruby might have been ordered to murder Oswald. The panel also found other choices to be poor. For example, the possibility that Ruby may have decided to shoot Oswald on the previous Friday night or the next Saturday afternoon were not even asked.

(91) 10. It is generally agreed that the more a person is tested, the less responsive he becomes. If a liar is tested enough times, sooner or later, his reaction to lies will be no more intense than to control and relevant questions. He therefore will appear truthful when lying. For this reason, the great majority of the recognized polygraph techniques limit the number of test groups to five or less, with no more than two different series of questions. Most call for the entire examination to be concluded within 2 hours. Panel member Richard Arther, for example, uses just one series of four relevant questions, asked in three separate test groups.

(92) The Ruby examination consisted of 13 groups of questions, with the actual examination starting at 2:23 p.m. (*124*) and ending at 8:59 p.m. (*125*) Even though there supposedly was a break of 100 minutes, the testing should never have been resumed that day.

(93) Herndon himself recognized this:

> Mr. Specter. Is there any overall limitation on the amount of time that a person can appropriately take a polygraph examination?
>
> Mr. Herndon. Yes; there is a limitation. Certainly if a person is interviewed with polygraph at great length, in

due time he is bound to become desensitized to the technique. In other words, the pressure on his arm and the technique itself becomes less valid as the increase in time proceeds.

Mr. SPECTER. Did Mr. Ruby ever become desensitized to the technique?

Mr. HERNDON. I believe in the last series of the first session, which I believe is series 4, Mr. Ruby showed some indications of becoming fatigued and displayed some tiredness in the charts. Also, I might add in the later phase of the examination, in the latter series, there was some indication that he was approaching this desensitization that I have mentioned before. (*126*)

(94) The panel concluded that the Ruby examination was far too long.

Chart analysis

(95) The panel concluded that the Ruby polygraph examination was probably invalid and unreliable. As discussed above, the panel found serious flaws in the examination procedures. The questions were especially poorly worded. The polygraph instrument itself was either incorrectly adjusted or defective in its operation. The panel could render no opinion regarding the examination results.

(96) Of the 13 test groups, the first and second are perhaps the most valid in that they were conducted when Ruby was still "fresh." Because of the importance of the relevant questions in these two tests, the panel has briefly summarized its opinion about them.

(97) The relevant questions on the first series and Ruby's answers were:

1. Did you know Oswald before November 22, 1963?
   Answer. No.
2. Did you assist Oswald in the assassination?
   Answer. No.

(98) Herndon concluded from his analysis of the charts that Ruby was truthful in answering these two relevant questions. He arrived at this conclusion by comparing Ruby's response to the control question (Have you ever been arrested? Answer: Yes.).

(99) As previously noted, the panel believed this to be an extremely poor control question.

(100) Herndon testified that Ruby's physiological response to this control question was recorded on the charts in terms of a "noticeable rise in his blood pressure." (*127*) The panel took issue with this conclusion because the rise in blood pressure occurred at least 7 seconds after Ruby answered. A response normally never occurs this long after the question. The typical reaction, would be in 1 or 2 seconds. Further, the panel noted that at the point of the rise in blood pressure, Herndon indicated on the chart (as "MF") that Ruby moved his feet. The panel believed that the rise in blood pressure most likely was caused by Ruby's movement and not his physiological reaction to the "control" question. This conclusion is corroborated by the fact that Ruby's breathing remained relaxed at the time of the rise in blood pressure, and the Galvanic skin response showed no reaction.

(101) In fact, the reactions to the preceding question—(Did you assist Oswald in the assassination?)—showed the largest valid GSR reaction in test series No. 1. In addition, there is a constant suppres-

sion of breathing and a rise in blood pressure at the time of this crucial relevant question. From this test, it appeared to the panel that Ruby was possibly lying when answering "no" to the question, "Did you assist Oswald in the assassination?" This is contrary to Herndon's opinion that Ruby was truthful when answering that question.

(102) The relevant questions on the second series and Ruby's answers were:

1. Are you now a member of the Communist Party?
   Answer. No.
2. Have you ever been a member of the Communist Party?
   Answer. No.

(103) Herndon concluded that Ruby was truthful when answering these two questions. He testified that the only significant physiological change noted occurred in response to the question, "Have you ever been known by another name?" The response identified by Herndon was a rise in blood pressure. (*128*) However, Herndon stated that Ruby later said he was confused on how to answer the question because he had changed his name from Jack Rubenstein years before. Herndon testified that other variations in the breathing tracing were caused by Ruby's hesitating to answer some questions due to their length. (*129*)

(104) The panel noted that according to the transcript of the examination, Ruby did not answer the question about his having another name. Herndon told him not to answer because they had not reviewed it during the pretesting phase. (*130*) The panel concluded that Ruby's reaction was simply a false reaction to Herndon's unorthodox instruction after he asked the question. On the other hand, the panel noted a large rise in blood pressure in response to the question, "Have you ever been a member of the Communist Party?", to which Ruby answered, "no."

(105) This question also evoked by far the most dramatic breathing reaction. Although Herndon claimed that the only variation in breathing in this series is caused by the length of the questions, this was certainly a short question, and it is much more likely he was referring to other questions. (*131*)

(106) In fact, in regard to the question, "Are you a member of the Communist Party?", Herndon stated, "there was no significant physiological change." (*132*) However, Herndon himself apparently wrote on the chart on this question, "slight suppression," which indicates a specific emotional change and one which is an excellent indicator of lying.

(107) It is interesting to note that during the entire first testing session this is the only place where Herndon wrote on the chart anything having to do with the breathing, except on series 4, when he wrote as a general comment, "Breathing irregular."

(108) In summary, the panel strongly disagreed with Herndon's opinions, and specifically with series 1 and 2, as discussed above. The panel concluded that the "lie" reactions on these two tests occurred on questions different from those suggested by Herndon. Based on its analysis of the charts themselves, and not considering the negative factors affecting the veracity of the examination, the panel could not form an opinion that Ruby told the truth when answering "No" to the four relevant questions asked on test series 1 and 2. On the contrary, the panel found more indication that Ruby was lying in response to these four questions.

(109) It is emphasized by the panel, however, that no opinion could be rendered on the validity of this examination or the reliability of the results for the numerous reasons discussed in this report.

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(*2*) Procedural rules of the House Select Committee on Assassinations, rule 7.2 (a).
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(*7*) FBI teletype, to director from Dallas, July 15, 1964, file No. 44–24016–1762; letter from Hoover to Rankin, July 16, 1964, FBI file No. 44–24016–1765; FBI teletype, to director from Dallas, July 25, 1964, FBI file No. 44–24016–1797; Warren Report, p. 808.
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(*9*) Warren Commission hearings, vol. 14, p. 515.
(*10*) Consent to Interview with Polygraph, signed by Jack Ruby, July 18, 1964, FBI file No. 44–24016–1821. See Warren Commission hearings, vol. 14, p. 515.
(*11*) Id. at 511.
(*12*) Id. at 514.
(*13*) Id. at 514.
(*14*) Id. at 518.
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(*17*) Ibid.
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(*48*) Ibid.
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(*51*) Id. at 560.
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(*54*) Id. at 560–561.
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(*56*) Ibid.
(*57*) Ibid.
(*58*) Ibid.
(*59*) Ibid.
(*60*) Ibid.
(*61*) Ibid.
(*62*) Ibid.
(*63*) Ibid.
(*64*) Ibid.
(*65*) Ibid.
(*66*) Id. at 563.
(*67*) Ibid.
(*68*) Ibid.
(*69*) Ibid.
(*70*) Ibid.
(*71*) Ibid.
(*72*) Id. at 570.
(*73*) Id. at 571.
(*74*) Id. at 572.
(*75*) Ibid.
(*76*) Id. at 575.
(*77*) Id. at 579.
(*78*) Id. at 582.
(*79*) Id. at 586.
(*80*) Id. at 587.
(*81*) Ibid.
(*82*) FBI memorandum, to Conrad from Jones, July 20, 1964, file No. 44–24016–1807.
(*83*) FBI memorandum, to Conrad from Jones, July 22, 1964, file No. 44–24016–1827.
(*84*) Warren Commission Report, p. 816.
(*85*) HSCA Outside Contract Report, June 22, 1978, JFK Document No. 006748.
(*86*) Warren Commission hearings, vol. 14, p. 598.
(*87*) Id. at 595.
(*88*) Ibid.
(*89*) Id. at 583.
(*90*) In July 1964, Paul Bentley was the chief polygraphist, Dallas Police Department. During the summer of 1978, Bentley confirmed to panel member Arther that his properly equipped room would have been made available had anyone requested it for Ruby's examination.
(*91*) Warren Report at 598.
(*92*) Id. at 551–556.
(*93*) Id. at 559–561, inter alia.
(*94*) Id. at 518.
(*95*) Id. at 528.
(*96*) Id. at 530.
(*97*) Id. at 528.
(*98*) Id. at 592.
(*99*) Id. at 537.
(*100*) Id. at 515.
(*101*) Id. at 537.
(*102*) Id. at 537, 539.
(*103*) Id. at 537.
(*104*) Id. at 511, 522.
(*105*) Id. at 581.
(*106*) Id. at 587.
(*107*) Id. at 590.
(*108*) Id. at 533.
(*109*) Id. at 534.
(*110*) Id. at 594.
(*111*) Id. at 587.
(*112*) Id. at 526.

(*113*) Id. at 588.
(*114*) Id. at 590.
(*115*) Id. at 526, 534.
(*116*) Id. at 552.
(*117*) Id. at 595.
(*118*) Id. at 523.
(*119*) Id. at 524.
(*120*) Id. at 541.
(*121*) Id. at 598.
(*122*) Id. at 540.
(*123*) Id. at 541.
(*124*) Id. at 511.
(*125*) Id. at 569.
(*126*) Id. at 588.
(*127*) Id. at 587.
(*128*) Id. at 588–589.
(*129*) Ibid.
(*130*) Id. at 526.
(*131*) Id. at 589.
(*132*) Ibid.

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THE EXAMINATION OF THE HANDWRITING AND FINGERPRINT EVIDENCE

Submitted by

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Report to the

Select Committee on Assassinations

U.S. House of Representatives

Ninety-fifth Congress

Second Session

March 1979

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INTRODUCTION*

(1) Several critics of the Warren Commission have speculated that there were two Lee Harvey Oswalds. Two versions of this theory have been put forward. One is that the real Lee Harvey Oswald never returned from the Soviet Union; instead, an imposter was sent on a sinister mission. The second is that others, for whatever purposes, used Oswald's name.

(2) One of the first proponents of the two-Oswald theory was a philosophy professor named Richard Popkin, who in 1966 published a book entitled "The Second Oswald."(*1*) Popkin cited the numerous instances recounted in the Warren Commission report in which people claimed to have seen or dealt with Oswald under odd or suggestive circumstances. Examples included Oswald being seen at a rifle range,(*2*) driving a car,(*3*) and in the company of two Latin-looking men seeking financing for illegal activities from Mrs. Sylvia Odio (a Cuban refugee leader in Dallas).(*4*) Popkin concluded that the cases of apparent duplication could plausibly be interpreted as evidence that Oswald was involved in a conspiracy, culminating in the events of November 22, 1963.(*5*)

(3) Sylvia Meagher, in "Accessories After the Fact," also criticized the Commission for not seriously considering the two Oswald possibility, "* * * much less evaluate[ing] the evidence for or against such an explanation."(*6*)

(4) The Warren Commission discounted the incidents, principally on grounds that they had occurred when it was concluded that Oswald was elsewhere—in Mexico at the time of the rifle practice,(*7*) en route to Mexico at the time of the Odio meeting.(*8*) It dismissed other incidents because they involved activities in which Oswald apparently did not engage, such as driving.(*9*)

The committee's approach

(5) In an effort to resolve the two-Oswald issue, the committee decided to convene a panel of experts to examine samples of handwriting attributed to Oswald. These samples were taken from numerous documents purportedly written and signed by Oswald in the last 7 years of his life. They were organized according to five significant periods: (1) October 1959 through September 1959, when Oswald was in the Marines; (2) October 1959 through June 1962, when Oswald was in the Soviet Union; (3) July 1962 to September 1963, when Oswald lived in Dallas and then in New Orleans; (4) the final week of September 1963, when Oswald visited Mexico; and (5) from the end of September 1963 to the day of the assassination, when Oswald lived in Dallas. The panel was to determine if the handwriting on the documents was that of one person.

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*Materials submitted for this report by the committee's questioned documents panel were compiled by HSCA staff members G. Robert Blakey and Whitney Watriss.

(6) The committee also decided to retain another expert to verify, independently, that one or more of Oswald's signatures was in fact his. To make such a determination, the committee sought all fingerprint cards which Oswald had signed. Three were found in the FBI records, two of which were signed: One, dated October 24, 1956, was from Oswald's induction into the Marines; the second, of August 9, 1963, was from his arrest in New Orleans; and the third, unsigned, was dated November 22, 1963, the day of his arrest after the assassination. The expert was to determine if the fingerprints were all Oswald's, which would verify the signatures as Oswald's.

(7) The committee reasoned that if these determinations could be made, the two-Oswald theory would be far less plausible. If not, it would be more authoritatively established.

(8) This approach of the committee was substantially different from that of the Warren Commission. The Commission had used the documents for evidentiary purposes, for example, to determine if Oswald had used the alias "Hidell" or to link Oswald with the purchase of the Mannlicher-Carcano rifle. It had accepted as fact that certain of the documents had actually been signed or written by Oswald and compared these with "unknown" documents to establish evidentiary links.

(9) The committee, on the other hand, did not assume that any of the documents were written by Oswald. Instead, it sought to prove that one or more signatures were positively Oswald's and that all the documents had been written by the same person.

Selection of the experts

(10) The committee asked the president of the American Society of Questioned Document Examiners for recommendations on the leading experts in the field of questioned document examination, specifically handwritten documents. The committee then asked each of the people he recommended for their suggestions. Three names appeared consistently. After ascertaining that none had had a prior connection with the FBI or the Kennedy case, the committee requested that they undertake an examination of various documents. The panel members, all of whom belong to the American Society of Questioned Document Examiners, were Joseph P. McNally, David J. Purtell, and Charles C. Scott.

(11) McNally received a B.S. and an M.P.A. in police science from the John Jay College of Criminal Justice, University of New York City in 1967 and 1975 respectively. He started in the field of questioned document identification in 1942 with the New York Police laboratory. He has been supervisor of the document identification section of the police laboratory, training officer in the police academy, commanding officer of the police laboratory, and handwriting expert in the district attorney's office of New York County. He retired from the police department with the rank of captain in 1972 and entered private practice. He serves as a consultant to New York's Human Resources Administration.

(12) McNally is a fellow of the American Academy of Forensic Sciences, and a member of the International Association for Identification, and the American Society for Testing and Materials. He has lectured at the University of New York City, Rockland College, and the New York Police Academy.

(13) Purtell received a Ph.B., with a major in mathematics and chemistry, from Northwestern University in 1949. He began his career in questioned document identification in 1942 with the Chicago Police Department, where he served as document examiner in the scientific crime detection laboratory. He retired in 1974 as chief document examiner and captain of police, and entered private practice in 1973.

(14) Purtell is a fellow of the American Academy of Forensic Sciences and served as chairman of the questioned document section and chairman of the program committee. He is a past vice president and president of the American Society of Questioned Document Examiners. Purtell has lectured at Northwestern University, the University of Illinois, the University of Indiana and St. Joseph's College, among other schools. He has presented and published numerous scientific papers.

(15) Scott received an A.A. degree from Kansas City Junior College in 1930 and a J. D. from the University of Missouri School of Law in 1935, whereupon be became a member of the Missouri bar. While attending law school, he founded the University of Missouri at Kansas City Law Review and was its first editor-in-chief. He began his career as a questioned document examiner with the Federal Reserve Bank in 1935 and has been in private practice since 1946. The first edition of his three-volume book, "Photographic Evidence," was published in 1942. Now in its second edition, it has become the standard textbook on the subject.

(16) Scott served on the first board of directors of the American Board of Forensic Document Examiners. He has conducted seminars on scientific document examination for more than 20 State bar associations, written numerous professional articles, and, since 1954, has been an adjunct professor of law at the University of Missouri School of Law.

(17) The expert selected for the print—finger and palm—analysis was Vincent J. Scalice, president of Forensic Control Systems, Inc., of New York City.

(18) Scalice, before entering private practice, served with the New York City Police Department from 1956 to 1977, where he attained the rank of detective first grade. He has been a lecturer and instructor on crime scene examination and latent print identification at the New York City Police Academy, a lecturer on fingerprint identification and courtroom technique at Brooklyn Law School, and he formulated and taught a course on crime scene examination for the detective division of the New York City Police Department.

Issues addressed by the experts

(19) The committee asked McNally, Purtell, and Scott to address four issues:

1. Were the signatures "Lee Harvy Oswald" and "Lee H. Oswald" on the various documents written by the same person?
2. Was the script writing on the various documents, which was purported to be Oswald's, done by the same person?
3. Was the Russian writing on the various documents, which was purported to be Oswald's, done by the same person?
4. Was the "historical diary" written in one sitting?

(20) Subsequently, the committee asked Purtell and McNally to look at whether the signature "A. J. Hidell" on the June 15, 1963, Fair Play for Cuba card was written by Marina Oswald. In addition, McNally was asked to determine whether the signature "Jack Ruby" on the undated Cuban identification card had been written by Jack Ruby.

(21) Scalice was asked to verify that the finger and palm prints which appeared on the three cards were of the same person. Subsequently, he was asked to examine some other documents.

Evidence examined

(22) *Handwriting.*—The committee gathered some 50 documents to be examined.* Following is a list and description of those items.

1. October 24, 1956. Original of U.S. Marine Corps enlistment contract and record, service No. 1653230, signed Lee Harvy Oswald. Blue ink; nib pen. Location: Department of Defense (hereinafter DOD). (JFK exhibit F–479.)**
2. October 24, 1956. Carbon of item 1, with an original signature, Lee Harvey Oswald. Blue ink; nib pen. Location: DOD (JFK exhibit F–479a.)
3. October 24, 1956. Loyalty certificate for personnel of the Armed Forces, signed Lee Harvey Oswald. Blue ink; nib pen. Location: DOD. (JFK exhibit F–481.)
4. October 24, 1956. U.S. Marine Corps examination of applicant by recruiting officer, signed Lee Harvey Oswald. Blue ink; nib pen. Location: DOD. (JFK exhibit F–480.)
5. October 24, 1956. U.S. Marine Corps record of emergency data, signed Lee Harvey Oswald. Blue ink; nib pen. Location: DOD. (JFK exhibit F–478.)
6. October 24, 1956. Armed Forces fingerprint identification card, numbered 327 925 D, signed Lee Harvey Oswald. Blue ink; ballpoint pen. Location: Federal Bureau of Investigation (hereinafter FBI). (JFK exhibit F–482.)
7. October 25, 1956. U.S. Marine Corps miscellaneous information and index form (NAVMC 118(1)–PD), signed Lee H. Oswald. Blue-black ink; nib pen. This document bears a second signature, reading Lee H. Oswald, dated October 28, 1956, blue-black ink, nib pen; and a third signature, reading Lee H. Oswald, dated May 2, 1957, black ink, nib pen. Location: DOD. (JFK exhibit F–483.)
8. May 8, 1958. Identification card, U.S. Forces, Japan, signed Lee H. Oswald. Location: National Archives (hereinafter Archives). Found in Oswald's wallet on the day of his arrest. (FBI exhibit D–225: B 1–9; JFK exhibit F–505.)
9. September 10, 1959. U.S. passport No. 1733242, signed Lee H. Oswald. Faded blue ink; ballpoint pen. Location: Archives. (Warren Commission exhibit 946, hereinafter CE 946; JFK exhibit F–486.)

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*The items listed here number 63; the difference in numbers is due to examination of more than one copy of an item, that is, an original and a photo reproduction.

**Copies of most of the documents appear at the end of this report. Numbers 53 and 61 were not available, but are contained in committee files at the Archives.

10. September 10, 1959. Photograph of passport bearer of U.S. passport No. 1733242, appearing on page 4, signed Lee H. Oswald, and photograph of "Baby Lee Oswald," on page 14, signed June Lee Oswald, father. Black ink; ballpoint pen. Location: Archives. (CE 946; JFK exhibit F–486.)
11. September 11, 1959. U.S. Marine Corps notice of obligated service, signed Lee Harvey Oswald. Blue ink; ballpoint pen. Location: Archives. (JFK exhibit F–485.)
12. September 11, 1959. U.S. Marine Corps security termination statement and index, signed Lee Harvey Oswald. Blue ink; ballpoint pen. Location: DOD. (JFK exhibit F–484.)
13. September 11, 1959. Carbon copy of Armed Forces of the U.S. report of transfer or discharge, signed Lee Harvey Oswald, with a carbon copy signature. Location: DOD. (FBI exhibit D–18.)
14. September 14, 1959. Selective Service System registration card, signed Lee H. Oswald. Black ink; ballpoint pen. Location: Archives. (JFK exhibit F–487.)
15. September 14, 1959. Selective Service System registration certificate, signed Lee H. Oswald. Black ink; ballpoint pen. Location: Archives. (JFK exhibit F–505.)
16. October 16, 1959 to March 27, 1962. Historical diary, 12 handwritten pages. (Only p. 11, dated July 15, 1961 to January 4, 1962, was examined, as all other pages were badly stained with fingerprint developer and are entirely unsuitable for handwriting examination.) Location: Archives. (CE 24; JFK exhibit F–491.)
17. November 3, 1959. Declaration requesting revocation of U.S. citizenship, signed Lee Harvey Oswald. Purple ink; nib pen. Location: Archives. (CE 244; JFK exhibit F–488.)
18. November 15, 1959. Photocopy of handwritten account of interview with Miss Aline Mosby, UPI reporter. Unsigned. (The original of this document was also submitted but could not be examined because it was completely covered and stained with fingerprint developer.) Location: Archives. (CE 2717; JFK exhibit F–489.)
19. 1960, undated. Political discussion, handwritten on stationery of the Holland-American Line; 15 pages. Blue ink; nib pen. Location: Archives. (FBI exhibits 123 and 124; CE 25; JFK exhibit F–490.)
20. 1962, undated. Self-questionnaire. Location: Archives. (FBI exhibit 116; CE 100 and part of 24.)
21. 1962, undated. Photocopy of document identified as a self-questionnaire. Original was stained and unsuitable for examination. Location: Archives. (JFK exhibit F–402.)
22. January 17, 1962. Affidavit of support, addressed to the American Embassy, Moscow, U.S.S.R., signed Lee H. Oswald. Blue ink; nib pen. Location: Archives. (CE 775; JFK exhibit F–492.)
23. February 20 (1962). Russian script on lined paper, from "Alek" to "Marina" and "June." Location: Archives. (FBI exhibit 134; CE 59; JFK exhibit F–493.)
24. March 24, 1962. Entry papers of Marina Oswald, including a fingerprint identification card. (FBI exhibit D–10.)

25. June 10, 1962. Two-page handwritten letter to the "Worker," 23 West 26th Street, signed Lee H. Oswald. Blue ink; ballpoint pen. Date was appended with a different pen. Location: Archives. (Document marked "A. Johnson exhibit No. 1"; JFK exhibit F–494.)
26. July 13, 1962. Letter to Leslie Welding Co., signed Lee H. Oswald; written on part of a page from a yellow legal pad. Blue ink; ballpoint pen. Location: Archives.
27. October 9, 1962. Application for P.O. Box No. 2915, signed Lee H. Oswald. Black ink; ballpoint pen. Location: Archives. (CE 791; JFK exhibit F–496.)
28. March 8, 1963. Photocopies of a note in Russian to Ruth Paine from Marina Oswald. Location: Archives. (CE 404.)
29. March 12, 1963. U.S. postal money order No. 2,202,130,462, bearing handwritten fill-ins as follows: Klein's Sporting Goods, A. Hidell, P.O. Box 2915, Dallas, Tex. Blue ink, ballpoint pen. Location: Archives. (CE 788; JFK exhibit F–509A and 509B.)
30. March 12, 1963. Enlargement of microfilm reproduction of Klein's order form for rifle from A. Hidell, superimposed on envelop, postmarked March 12, 1963, addressed to Klein's, Dept. 358, 227 W. Washington Street, Chicago 6, Ill., with return address: A. Hidell, P.O. Box 2915, Dallas, Tex. Location: Archives. (CE 773; Cadigan's exhibit 1; JFK exhibit F–504.)
31. May 4, 1963. Photograph of man with rifle and newspapers. On the back of the photograph is a handwritten notation reading "To my friend George from Lee Oswald 5/IV/63" and, in Russian, the statement "Copyright G de M." Also in Russian is writing which translated as "Killer of Fascists—Ha-Ha-Ha!!!" Blue ink; ballpoint pen. Location: House Select Committee on Assassinations (hereinafter HSCA), which obtained it from the effects of George de Mohrenschildt after his death in 1977. (JFK exhibit F–183 and 184, F–382 and 383.)
32. May 26 (1963)* Two-page letter to Fair Play for Cuba Committee, signed Lee H. Oswald. Blue ink; ballpoint pen. Location: Archives. (Document also marked "V. T. Lee No. 2;" JFK exhibit F–497.)
33. June 15, 1963. Fair Play for Cuba Committee, New Orleans chapter, signed Lee H. Oswald, with A. J. Hidell signing as chapter president. Found in Oswald's wallet on the day of his arrest. Location: Archives. (JFK exhibit F–505.)
34. June 24, 1963. Passport application, signed Lee H. Oswald. Blue ink; ballpoint pen. Location: FBI. (CE 781; JFK exhibit F–40.)
35. June 24, 1963. Passport photograph attached to item 34, signed Lee H. Oswald. Blue ink; ballpoint pen. Location: Archives.
36. August 9, 1963. Fingerprint identification card of New Orleans Police Department, signed Lee H. Oswald. Blue ink; ballpoint pen. Location: Archives. FBI current arrest or receipt, dated August 12, 1963. Location: Archives. (JFK F–400.)
37. August 9, 1963. Photocopy of fingerprint card and attached mug shots, New Orleans Police Department, signed Lee H. Oswald. Location: FBI.

*Year was derived from content.

38. August 28, 1963. Handwritten letter to Central Committee C. P. (Communist Party), USA, signed Lee H. Oswald. Blue ink; ballpoint pen. Location: Archives. (Document also marked "A. Johnson exhibit No. 4"; JFK F–498.)
39. September 27, 1963. Photocopy of a page from a hotel register, signed, on line 18, "Lee, Harvey Oswald, U.S.A. (Texas) PHOTO. U.S. citizen." Location: Archives. (FBI exhibit D–36; JFK F–499.)
40. September 27, 1963. Photographs (one of the entire document and one of the signature) of the original of the visa application, Cuban Consulate, Mexico City, signed Lee H. Oswald. Location: Archives. (CE 2564; JFK F–407, entire document.)
41. September 27, 1963. Photograph of the carbon copy of item 40, shown to the committee staff when they met with President Fidel Castro in Havana, Cuba, with an original signature, Lee H. Oswald. Location: HSCA. (JFK F–408.)
42. October (no date), 1963. Letter to the Russian Embassy. (JFK F–500.)
43. October 15, 1963. Employment application, with face sheet signed Lee H. Oswald. Blue ink; ballpoint pen. Location: Archives. (FBI exhibit D–18; JFK F–503.)
44. October 16, 1963. Employee's W–4 withholding exemption certificate, signed Lee H. Oswald. Blue ink; ballpoint pen. Location: Archives. (FBI exhibit D–90; JFK F–501.)
45. November 1, 1963. Application for P.O. Box 6225, two cards, each signed Lee H. Oswald. Blue ink; ballpoint pen. Location: Archives. (CE 792; JFK F–495.)
46. November 1, 1963. Receipt for key to P.O. Box 6225, signed Lee H. Oswald. Blue ink; ballpoint pen. Location: Archives. (CE 792; JFK F–495.)
47. November 8, 1963. Two photographs of a facsimile copy of a handwritten letter to Mr. Hunt. One is of the entire document, the other an enlargement of the signature. These were obtained by the committee from a researcher in Dallas, Tex. Location: HSCA files. (JFK F–506.)
48. November 9, 1963. Photomechanical (halftone) reproduction of a typewritten letter to the Consular Division, Embassy, U.S.S.R., Washington, D.C., signed Lee H. Oswald. Location: Archives. (Photomechanical reproduction—CE 15; JFK F–500.)
49. July 18, 1964. Exemplar (standard) signatures and writing of Jack Ruby. Location: Archives.
50. Undated. Photograph of unsigned rough draft of item 48. Location: Archives. (JFK F–500.)
51. Undated. Handwritten speech, nine pages. Green ink: nib pen. Location: Archives. (FBI exhibit 117; CE 97; JFK F–508.)
52. Undated. Two receipts for salary from the Texas School Book Depository, signed Lee H. Oswald. (FBI exhibit 422.)
53. Undated (August?). Photograph of Cuban identification card, flight 751, signed Jack Ruby. (JFK F–583.) Location: HSCA files.
54. Undated. Exemplar writing of Marina Oswald, including seven slips of paper containing the writing "A. J. Hidell." Location: Archives, HSCA.

55. Undated. Dallas Public Library card, expiring December 7, 1965, signed Lee H. Oswald. Location: Archives. (JFK F–505, B1–10.)
56. Undated. Note in Russian, consisting of 10 lines of handwriting, signed, in Russian, "Alek." Location: Archives. (FBI exhibit 133; CE 40; JFK F–507.)
57. Undated. Note in Russian consisting of two pages of 11 handwritten instructions concerning the Walker incident, referred to as "the Walker Note." Location: Archives. (FBI exhibit D–30; CE 1; JFK F–510.)
58. Undated. Certificate of service, U.S. Marine Corps, signed Lee Harvey Oswald. Location: Archives. (FBI exhibit D–225.)
59. Undated. Social security card, 433–54–3937, Lee Harvey Oswald; unsigned. Location: Archives. (FBI exhibit D–225.)
60. Undated. Complimentary card, GA–Joen Kanko Hotel. Location: Archives.
61. Three photographs of Oswald, one with the notation on the back, "taken at Camp Pendleton Feb. 5." Location: Archives.
62. Undated. Slip of paper with the following handwriting:

"The Worke
23 W. 26th St.
New York 10, N.Y.
The Worker
Box 28 Madison
Sq. Station, New York 10, N.Y.
Embassy USSR.
1609 Decatur St. N.W.
Washington, D.C."

Location: Archives.
63. November 22, 1963. Photograph of fingerprint form of the Dallas Police Department. Location: FBI. (CE 627, 630.)

Procedures

(23) The panel members traveled to Washington, D.C. at various times to examine and photograph originals of documents to be examined. These were located at four places: The National Archives, the Department of Defense, the FBI, and the offices of the committee. The panel members prepared photographs of the originals for further study in their own laboratories.

(24) The panel met as a whole on July 6, 1977, to review the original documents and discuss their respective findings. Each member then prepared a final report of his findings and conclusions (these also provide further detail on the procedures followed by each member).

(25) The panel followed standard procedures and techniques in its examinations. The writings and signatures were looked at individually and in juxtaposition with each other, taking into consideration the gross characteristics of the writing process, writing skill, slant, speed, proportions of the letters, ratio of small to capital letters, height ratio, lateral spacing, and overall writing pattern. Significant differences were looked for. A stereoscopic microscope was used for minute examination and comparison of individual letters and characteristics.

(26) Scalice examined and compared the inked impressions on the three fingerprint cards on June 8, 1978, at the latent print section of the Federal Bureau of Investigation in Washington, D.C.

SUMMARY OF CONCLUSIONS

(27) With the restrictions and reservations stated in each panel member's final report,* the members conclude, generally, that the signatures and handwriting purported to be by Oswald are consistently that of one person. Because of the poor condition of the historical diary, they are unable to conclude firmly whether it was written at one or more than one sitting. On balance, it appears to have been written at one or a few sittings.
(28) Purtell and McNally conclude the name "A. J. Hidell" was written on the 1963 Fair Play for Cuba card by the same person who wrote the exemplars attributed to Marina Oswald.
(29) Finally, McNally concludes that the name "Jack Ruby" written on an undated Cuban identification card was by the same person who wrote the exemplars attributed to Jack Ruby.
(30) Scalice concluded that all inked finger and palm prints were identical and were Lee Harvey Oswald's.

FINDINGS AND CONCLUSIONS OF JOSEPH P. MC NALLY

Procedures

(31) I conducted an examination and comparison of the signatures and writings on the items described in this report. At the time of the initial work in Washington, D.C., I made color photomacrographs of the signatures and the writings on these documents. I then made slides from the photomacrographs, which I subsequently projected and studied. The signatures were a particular focus of my examination.
(32) I first met with committee staff in Washington, D.C., on September 7, 1977, to examine and photograph signatures and writings on documents available at the Department of Defense and the National Archives. On September 17, 1977, I went to the committee's offices to examine and photograph a photoreproduction designated item No. 47. On May 8, 1978, I returned to Washington, D.C., to make additional examinations and photographs. These were made at the Department of Defense, the National Archives, and the committee offices.
(33) On July 6, 1978, I met with other members of the handwriting panel to review the documents examined and to consult with them. Subsequently, I prepared my final report with my findings and conclusions.

Conclusions

(34) I. The signatures "Lee Harvey Oswald" and "Lee H. Oswald" on the following documents were all written by the same person:

1, 2, 4, 5, 7, 11, and 12. Marine Corps documents.
3. U.S. Armed Forces Loyalty Certificate.
6. USMC fingerprint form.
8. ID card—U.S. Armed Forces, Japan.
9 and 10. Three (3) passport signatures.
13. Carbon of U.S. Armed Forces Report of Discharge.

*In particular, members noted that not all documents were available in their original. It is standard practice in the profession of questioned document examination to make definitive conclusions only about documents examined in their original. Thus the panel members gave only tentative opinions for items provided them in some type of facsimile.

14. Selective Service registration.
15. Selective Service card.
17. Citizenship revocation.
22. Support affidavit.
25. Letter to "The Worker".
27, 45 and 46. Signatures on U.S.P.O. applications (4).
31. Photo of Lee Oswald (back).
32. Letter to "Fair Play for Cuba".
33. Fair Play for Cuba card.
34. Passport application.
36. New Orleans Police Department fingerprint form, dated Aug. 9, 1968.
37. Photocopy of New Orleans Police Department fingerprint form.
38. Letter to the "Communist Party U.S.A.".
39. Hotel registry.
40. Application for Cuban visa.
41. Photograph of carbon of application for Cuban visa.
42. Letter to Russian Embassy.
43. Employment form.
44. Form W–4.
45. P.O. Box 6225 application.
46. Receipt for key to P.O. Box 6225.
48. Photomechanical copy of letter to Russian Embassy.
55. Dallas Public Library card.

(35) II. The script writing on the following documents was done by the same person:

17. Citizenship revocation.
19. Stationery of Holland-American Line.
20. Self-questionnaire.
21. Photocopy of self-questionnaire.
22. Support affidavit.
25. Letter to "The Worker".
29. Xerox of Klein's money order.
32. Letter to "Fair Play for Cuba".
38. Letter to "Communist Party U.S.A.".
42. Letter to the Russian Embassy.
48. Photomechanical copy of letter to Russian Embassy.

(36) III. A number of documents have script and handprint, both of which are by the same person (the script writings of these documents correspond to that of documents listed above under I and II):

16. Historical diary.
18. Aline Mosby interview.
26. Employment application with letter.
30. Envelope and order form—Klein's.
43. Employment application and letter of resignation.

(37) IV. A few documents have handprint only. On those listed below, all the handprint is by the same person, and it corresponds to the handprint on documents listed above under III. Since the script in items under III corresponds to the script in items under II, it can be concluded that the items under II, III, and IV correspond.

9. Inside cover of passport.
27, 45 and 46. U.S.P.O. forms—box rental.
51. Speech.

(38) V. In summary, the script writing (much of it on documents also bearing the signature of Lee H. Oswald) is identifiable with the signatures, "Lee H. Oswald." From the script writing on the documents described in section II, it is possible to create composite signatures, "Lee Harvey Oswald" and "Lee H. Oswald," which correspond to the Oswald signatures on the documents listed in section I.

(39) VI. The Russian language writing on documents 23, 56, and 57 is by the same person. Although there are a few letter design forms which appear to be in the Cyrillic alphabet, the bulk are in the Latin alphabet and correspond to their counterparts in the script and handprint in the documents listed in sections I, II, III, and IV above.

(40) VII. The two signatures, "Lee H. Oswald," in item 52 (receipts for salary—Texas School Book Depository) do not correspond to the Oswald signatures as described under section I. The handwriting appears to be more skillful, with a more rhythmic flow. It varies in slant and differs in proportion. The overall writing pattern differs from the Oswald signatures in section I, as do the individual letter designs. The "L" of item 52 is taller and without an eyelet loop at the top right of the "L" as found in the section I signatures. The "H" of item 52 is distinctly different from the "H" in the section I signatures. The "O" of item 52 retraces on itself, not the case in the section I signatures, where it loops around at the top right and usually swings into the following "s". The "d" of item 52 reverses slant to go backhand, which does not occur in the section I signatures.

(41) VIII. The signature, "Lee Harvey Oswald," on the Hunt note (item 47) does not correspond to the Oswald signatures described under section I. To begin with, the bulk of the documents which are signed with the full name, "Lee Harvey Oswald," are more formal in tone. For example, the full name appears on all but one of the Marine Corps documents. The full name appears infrequently elsewhere—usually only the first name, middle initial, and last name are used. Further, in the Hunt note, the middle name "Harvey" is misspelled—the "e" appears to be missing; the "H" of "Harvey" differs from that found in the section I signatures; the "ar" of "Harvey" is ellided to a point that does not occur in any section I signatures; the "O" of "Oswald" is retraced part of the way along the left side, not true of the section I Oswald signatures; and the ending "d" of Oswald is smaller than the preceding "l", whereas most of the ending "d"s of the section I signatures are taller than the "l" (only in signatures that appear to be "squeezed-in" is the end "d" shorter than the preceding "l").

(42) While the script writing on the Hunt note is similar in pictorial quality to the writings under section II, the format of the note differs from that of the notes and letters of section II. The writing line is so exact as almost to give the impression it has been made on a ruled line. Usually Oswald writes in an arhythmic manner—for example, with an irregular and crooked writing line. This writing creates the jumbled effect apparent in the section II documents.

(43) From the examinations of item 47, it was determined that the signature does not correspond with any of the Oswald signatures of section I. Similarly, the writing does not correspond to that in the section II Oswald documents.

(44) I would like to note, however, that the quality of the original photoreproductions of the Hunt note was poor. Under the best of cir-

cumstances, reproductions lack clarity and detail. Here, as can be seen from the copies, the original photoreproduction was out of focus, giving the document a fuzzy appearance. Accurate analysis was difficult. The note is highly suspicious. The original would have to be checked in order to make a more definite analysis and reach a definitive conclusion.

(45) IX. An examination and comparison was made of writings and signatures on documents attributed to Marina Oswald. The writings on the note (item 28) are such poor copies that it is virtually impossible to make a definite determination as to whether they correspond with the signatures of Marina Oswald on item 24. There is some similarity between the name in the return address on the envelope of item 28 and the signature of Marina Oswald on her entry papers (item 24), but the return address name is obscured to some extent by the postmark. The rest of the writing on the note (item 28) is not sufficiently parallel to the writing on her entry documents (item 29) and exemplars (item 54) to warrant any effective determination.

(46) The name, "A. J. Hidell" on the Fair Play for Cuba card (item 33) was examined and compared with the exemplar writings of Marina Oswald (item 54). It was determined that the "A. J. Hidell" of the card (item 33) was written by Marina Oswald (as in item 54). The writing pattern of the signature on the card corresponds with that of the name "A. J. Hidell" as written by Marina Oswald on item 54. The Hidell signature in question is written with the same degree of writing skill as evinced by Marina Oswald. The slant, speed, proportions, et cetera, of the Hidell signature is matched in the writings of Marina Oswald. The design, form, and execution of stroke making up the individual letters of the Hidell signature in question (item 33) correspond to those of the letters in the writing of Marina Oswald (item 54).

(47) X. The "Jack Ruby" signature on the Cuban identification card (item 53) was examined and compared with exemplars of Jack Ruby (item 49). It was determined that the "Jack Ruby" of the Cuban identification card was written by the author of the exemplar signatures attributed to Jack Ruby (item 49). While there is an odd "J" in the identification card which does not occur in the Ruby exemplars, the rest of the letters tally in all respects. The signature has been written quickly, easily, and fluently, consistent with the writing pattern of the known exemplars. The odd "J" may be "accidental" or could be accounted for in additional writing of Ruby, most likely in spontaneous writing contemporaneous with the signature of the identification card. "Request" writing, such as that of item 49, sometimes differs to a slight extent from "spontaneous" writing.

(48) XI. A check was made of the historical diary (item 16). The 12 pages were written with the same type of writing instrument. The paper used for 11 of the 12 pages is similar; only the last page differs—it is appreciably thinner. The writing has a continuity from page to page and line to line that is indicative of being written about, or at, the same time. It does not give the impression of being "random" as would be expected of a diary extended over a period of time. It appears that this diary has been written within a short period of time and not over any extensive period.

Summary of conclusions

(49) Virtually all the Lee H. Oswald and Lee Harvey Oswald signatures are by the same person. There is some normal variation among the signatures, and no significant differences among the Oswald signatures identified as being the same. The overall writing pattern is consistently similar, and the individual letter designs match throughout without major differences. The same holds true for the script and handprint on these documents that are identified as being written by the same person.

(50) The same writing is on the U.S. Postal money order to Klein's (item 29) as is on the various letters and correspondence. The same writing is on the order form and envelope (item 30) as is on the letters and on the inside cover of the passport (item 9).

(51) The writing and signatures that appear on the letters (items 25, 32, 38, and 42) agree with the writing and signatures on the U.S. Post Office applications for post office boxes (items 27, 45, and 46).

(52) The signature and writing on the back of the photograph (item 31) agree with the signatures and script writing of Oswald (sections I and II).

(53) Differences indicative of different authorship were found on the "Hunt" note (item 47) and the salary receipts (item 52).

(54) It appears that the historical dairy (item 16) was written within a short period of time.

FINDINGS AND CONCLUSIONS OF DAVID J. PURTELL

Procedures

(55) Items 1, 2, 4, 5, 6, 7, 8, 9, 11, 12, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 27, 29, 31, 32, 33, 34, 36, 38, 39, 40, 43, 45, 47, 48, 51, 54, 55, 56, 57, 58, 59, 61, and 62 were studied, both visually and microscopically. A detailed drawing was made of all features observed in the writings. Later, each piece of writing was compared with every other piece of evidence. Photographs were taken of the evidence, and these were studied along with the detailed drawings. Thus the evidence was evaluated a total of three times.

Findings

(56) The examinations and comparisons revealed that all the writings were executed by a person having limited writing skill. The writings show physical evidence of natural movement and manner, with some normal variations. The carefree qualities and the unrestrained movements associated with genuine writing are present. None exhibit the characteristics of simulation produced by imitators attempting to duplicate the writing of another. The writings have similarities in the formation of letters, quality of writing, movement within the writing, size and proportions of letters and parts of letters, beginning and ending strokes, pen pressure, slope of the writing, spacing, alinement, direction, and speed.

(57) These similarities and the lack of any unexplainable differences resulted in the following findings and opinions:

(58) A. One person wrote the signatures, Lee Harvey Oswald, Lee H. Oswald, and Lee Oswald on documents 1, 4, 5, 6, 7, 8, 9, 11, 12, 15, 17, 22, 25, 27, 31, 32, 33, 34, 36, 38, 43, 45, and 55.

(59) B. The person who wrote the signatures on the above-listed documents also completed the messages on documents 17, 22, 25, 31, 32, 38, and 43.
(60) C. The person who wrote the signatures and completed the messages on the documents listed in A and B above executed the handwriting on documents 18, 19, 20, 48, 61, and 62.
(61) D. One person executed the handprinting appearing on documents 9, 27, 34, and 45, all of which were signed Lee H. Oswald.
(62) E. The person who hand printed the information on the documents listed in D above, also hand printed the material on document 51.*
(63) F. With regard to the Russian writing on items 23, 56, and 57, this examiner is not familiar with this language and the characteristics of the various writing systems used.
(64) It is almost impossible to distinguish between class characteristics and individual characteristics unless the writing styles of a language are known.
(65) This examiner is, therefore, unable to render a definite opinion, but can point out that there are similarities between the writing in in items 23, 56, and 57 and the handwriting on the items listed in A, B, and C above.
(66) G. With respect to the timespan of the historical diary (item 16), an answer cannot be provided because of the present condition of the paper. The documents had been processed by the silver nitrate method in an attempt to develop latent fingerprints. While a recognized method, the drawback is that it soils the paper; the silver nitrate which remains on the paper causes it to turn black in time. Today, the pages are in very poor condition, and though the message can be read in part, it is a very difficult task. One observation that can be reported is that one sheet of paper is of a different weight (thickness) than the other sheets.
(67) H. The committee requested that a determination be made as to whether the person who prepared items 24 and 54 also wrote the name, "A. J. Hidell" on the Fair Play for Cuba Committee card, dated June 15, 1963 (item 33).

Known

(68) Known handwriting of Marina Oswald appears in:
Item 24—one fingerprint identification card, dated March 24, 1962; and
Item 54—seven slips of paper containing the writing of the name, "A. J. Hidel" and "A. J. Hidell."
(69) The items above were examined to determine their individual writing features, as was the signature on the FPCC card (item 33). The two groups of writings were then compared.
(70) The examiner is of the opinion that the person who executed the handwriting on item 54 wrote the name, "A. J. Hidell" on the Fair Play for Cuba Committee card (item 33). This opinion is based on similarities in letter formation, quality of the writings, size, and proportions of the letters, beginning and ending strokes, pen pressure, and slant of the writing. No unexplainable differences could be noticed.

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*Attached to and made part of this report are photographic illustrations (Purtell Exhibits 1 and 2) made up of signatures demonstrating all the points of similarities noted above.

Limitations on the examination

(71) Five items of evidence were not examined in the original, but were copies. Photocopies have several limitations. They do not reproduce all the fine details in handwriting needed in making an examination and comparison. At best, they do not produce as sharp an image as a properly produced photograph, and they lack tonal gradations, a result of the contrasting process of reproduction. In addition, it is possible to incorporate or insert changes and alterations into copies. A method frequently used is to paste together parts of documents to make one fradulent document, which is then copied. If the first copy can pass inspection, it will be used; if not, it will be reworked to eliminate all signs of alteration. This amended copy is then recopied for the finished product. This is usually referred to as the "cut and paste" method.

(72) Document examiners only render a qualified or conditional opinion when working from copies. They stipulate that they have to examine the original before a definite opinion will be made.

(73) Because of problems with the following documents, no definite opinion can be rendered:

(74) Item 18, a halftone copy of a photograph of the original document. This is at least a third generation copy and is not suitable for comparison. (A halftone copy consists of very small dots and not continuous lines.)

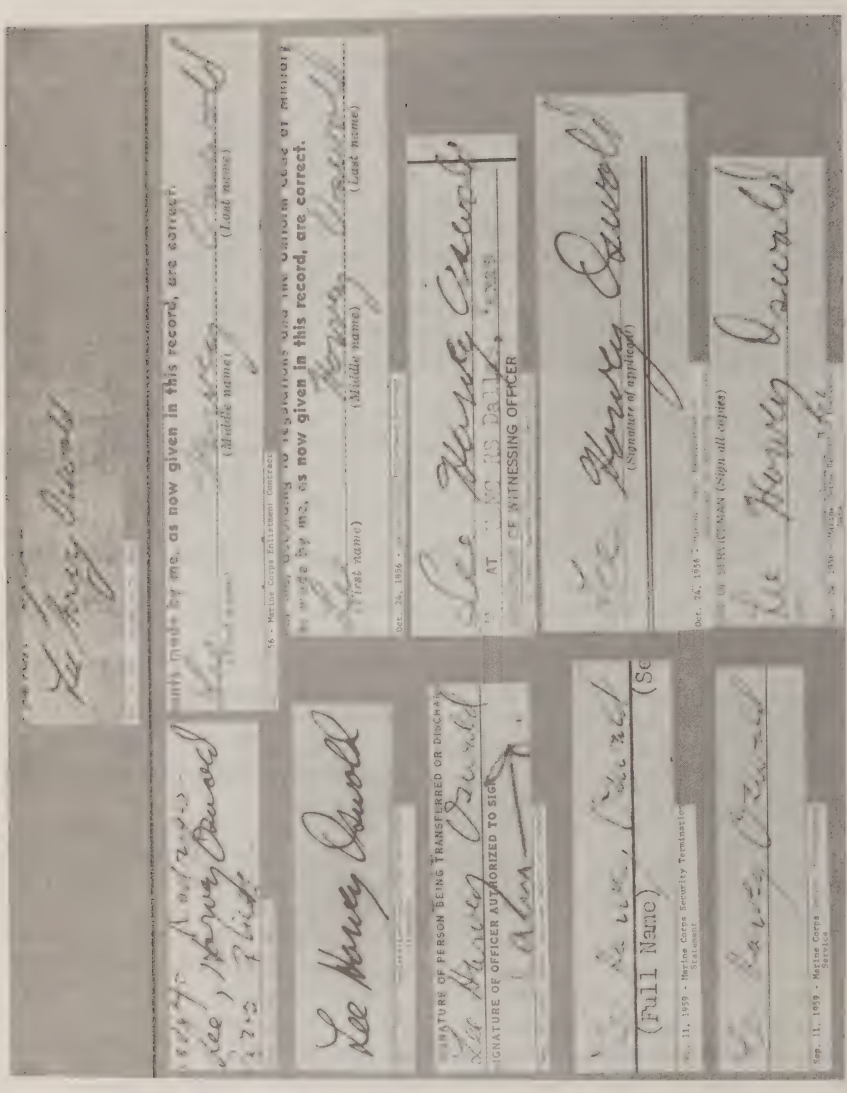
(75) Item 29 was a Xerox copy made from a microfilm copy. Such a second generation copy has the defects of both processes.

(76) Item 39 was a photograph taken without a scale so that the magnification or reduction of the writing could not be determined.

(77) Items 40 and 41 were very poor quality photographs and lacked scales to determine the size of enlargements.

(78) Item 47 was a photograph of an out-of-focus facsimile copy. Instead of having clear discernible lines, the copy has indistinct and blurred outlines. Such a muddy and unclear copy gives the appearance that it might have been so made for a purpose.

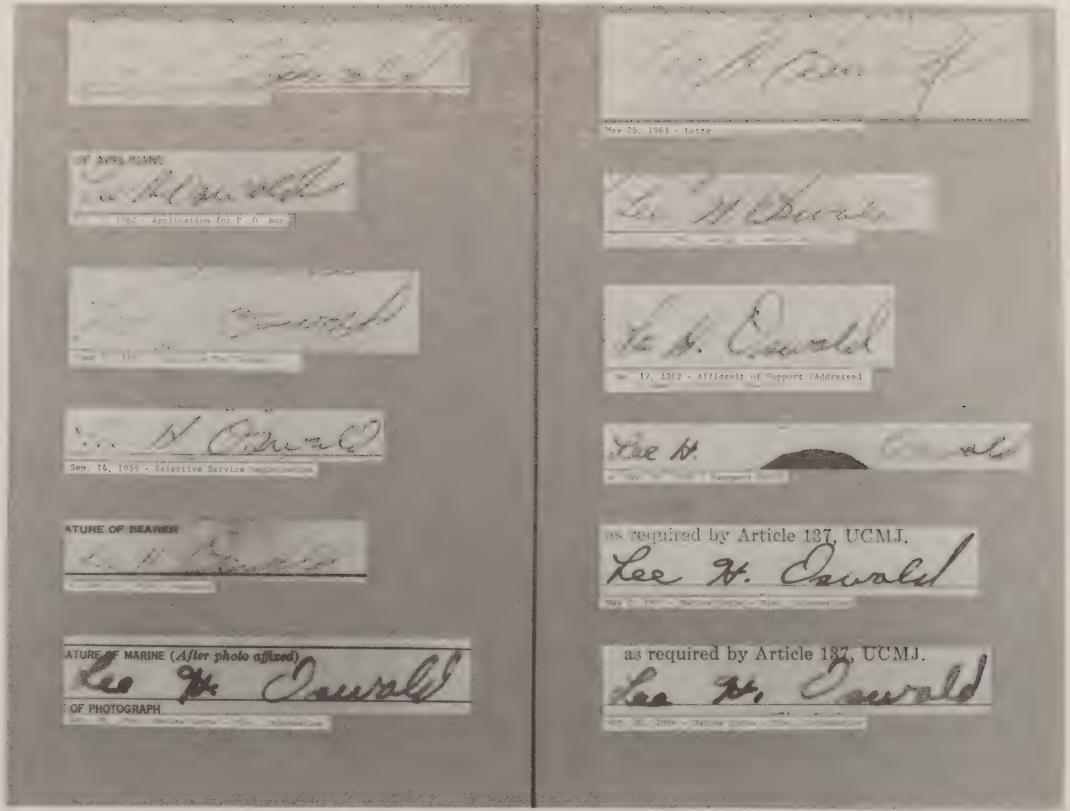
(79) It should be noted that pictorial similarities can still be noticed between the handwriting appearing on items 18, 29, 39, 40, and 41 listed above, and the documents that have been identified as being written by one person (see A, B, and C). While the handwriting appearing in item 47 contains some of the pictorial similarities, the quality of the writing appears different, and the signature has a strange and distorted appearance.



PURTELL ATTACHMENT NO. 1



PURTELL ATTACHMENT NO. 2A



PURTELL ATTACHMENT NO. 2B

Procedures

(80) 1. I examined all documents except items 8, 23, 24, 28, 52, 56, 57, 60, 61, 62, and 63.

(81) 2. Minute scrutiny of the signatures and other handwriting purporting to be that of Oswald was conducted under a stereoscopic microscope with reflected light, sidelight from all angles, transmitted light, and ultraviolet rays. In addition, they were studied under infrared rays by means of an infrared image converter. (The primary purpose of the first two methods is to detect any evidence of tracings, alterations, erasures, or obliterated writing.)

(82) 3. Microscopic examination was also used to determine the color of ink and type of pen used in the execution of each document.

(83) 4. Photographs of original documents were studied in the laboratory in Kansas City.

(84) 5. Photographic comparison charts of the purported signatures of Oswald were prepared and evaluated for most of the documents.

(85) The above-described methods of examination were applied to all original documents submitted for examination, with the exception of two fingerprint cards, dated October 24, 1956, and August 9, 1963 (items 6 and 36), which were not received in time for this type of treatment.

(86) Photographic reproductions could only be compared visually with other photographic reproductions or with original documents. All conclusions based solely upon photographic reproductions are necessarily tentative and inconclusive, since they cannot reveal much about pen pressure and other dynamic qualities of handwriting. Further, they sometimes conceal, rather than reveal, evidence of tracings, alterations, erasures, or obliterated writing.

Findings

(87) *Question.* Are all of the signatures and other writings on the documents purported to have been written by Oswald by one and the same person?

(88) Opinion. After very careful examination and comparison of the documents provided, I am of the opinion that, on the following original documents, Oswald's purported signatures and other writings are all in the same handwriting and were all written by one and the same person.

(89) Item 1—October 24, 1956. U.S. Marine Corps enlistment contract and record, signed "Lee Harvey Oswald."

(90) Item 2—October 24, 1956. Carbon copy of item 1 bearing an original signature, reading "Lee Harvey Oswald."

(91) Item 3—October 24, 1956. Loyalty certificate for personnel in the Armed Forces, signed "Lee Harvey Oswald."

(92) Item 4—October 24, 1956. U.S. Marine Corps examination of applicant by recruiting officer, signed "Lee Harvey Oswald."

(93) Item 5—October 24, 1956. U.S. Marine Corps record of emergency data, signed "Lee Harvey Oswald."

(94) Item 6—October 24, 1956. Armed Forces fingerprint card, signed "Lee Harvey Oswald."

(95) Item 7—October 25, 1956. U.S. Marine Corps miscellaneous information and index form, signed "Lee H. Oswald" in three places.
(96) Item 9—c.* September 10, 1959. U.S. passport, signed "Lee H. Oswald."
(97) Item 10—c.* September 10, 1959. Photograph on page 4 of U.S. passport, signed "Lee H. Oswald."
(99) Item 11—September 11, 1959. U.S. Marine Corps notice of obligated service, signed "Lee Harvey Oswald."
(100) Item 12—September 11, 1959. U.S. Marine Corps security terminaton statement, signed "Lee Harvey Oswald."
(101) Item 15—September 14, 1959. Selective Service System registration card, signed "Lee H. Oswald."
(102) Item 16—July 15, 1961 to January 4, 1962. Page 11 of a 12-page diary.
(103) Item 17—November 3, 1959. Declaration requesting revocation of U.S. citizenship, signed "Lee Harvey Oswald."
(104) Item 19—1960, undated. Handwriting on Holland-American Line stationery.
(105) Item 22—January 17, 1962. Affidavit of support addressed to the American Embassy, Moscow, signed "Lee H. Oswald."
(106) Item 25—June 10, 1962. Letter to the "Worker," 23 West 26th Street, signed "Lee H. Oswald."
(107) Item 26—c. July 13, 1962. Letter to Leslie Welding Co., signed "Lee H. Oswald."
(108) Item 27—October 9, 1962. Application for P.O. Box No. 2915, signed "Lee H. Oswald."
(109) Item 31—May 4, 1963. Photograph of man with rifle. On the back of this photograph is a notation reading "To my friend George from Lee Oswald 5/IV/63."
(110) Item 32—May 26, (1963?). Letter to Fair Play for Cuba Committee, signed "Lee H. Oswald."
(111) Item 34—June 25, 1963. Passport application, signed "Lee H. Oswald."
(112) Item 35—June 25, 1963. Passport photograph attached to application and signed "Lee H. Oswald."
(113) Item 36—August 9, 1963. Fingerprint card of New Orleans Police Department, signed "Lee H. Oswald."
(114) Item 38—August 28, 1963. Letter to central committee of the Communist Party, signed "Lee H. Oswald."
(115) Item 43—October 15, 1963. Employment application, signed "Lee H. Oswald."
(116) Item 44—October 16, 1963. Employee's withholding exemption certificate, signed "Lee H. Oswald."
(117) Item 45—November 1, 1963. Two cards. Application for P.O. Box 6225, both signed "Lee H. Oswald."
(118) Item 46—November 1, 1963. Receipt for key to P.O. Box 6225, signed "Lee H. Oswald."
(119) Item 51—Undated. Handwritten speech.
(120) I examined each of the above-described documents (with the exception of items 6 and 36) under a stereoscopic microscope by reflected light, side light from all angles, transmitted light, and ultra-

*Circa is used because a passport is usually signed by the holder after receipt, which is often different than that of the date of issuance.

violet rays. I also inspected them under infrared, using an infrared image converter.

(121) I did not find any evidence of tracing or copying in any of the signatures or other handwriting purporting to be Oswald's on any of the original documents, nor did I find any material erasures, alterations, or obliterations. All seem to have been executed in the ordinary course of business without any suspicious signs. Equally important, all the purported signatures and writings of Oswald on the above-described documents conform with each other in letter formation, slant, proportions, alignment, and connecting strokes—allowing for normal variation. If Oswald's writing were imitated by some other person, in all probability the imitations would display a slavish uniformity somewhat like that of rubber stamping. There was no such suspicious uniformity and lack of natural variation in the signatures and writings.

(122) Also highly significant was that all the signatures and handwriting on the above-described original documents were executed with the same type of free, rapid writing movement and without any indications of suspicious hesitations or skips.

(123) Where, as here, two or more writings conforming with each other in the pictorial aspects of form or design (allowing for natural variation) show evidence of having been written with the same type of writing movement and rhythm, and lack any indications of tracing or other imitiative processes, the conclusion is inescapable that all were written by the same person.

(124) With respect to the carbon copies and photographic reproductions submitted for examination, the form or design, slant, proportions, connecting strokes, and the like conformed with the writing on original documents. Therefore, tentatively, and subject to modification should the original documents become available for examination, it is my opinion that the following are probably carbon copies or photoreproductions, as the case may be, of documents bearing writings that conform with the writing on the original documents purporting to be Oswald's:

(125) Item 13—September 11, 1959. Carbon copy of Armed Forces of the U.S. report of transfer or discharge bearing a carbon copy of a signature reading "Lee Harvey Oswald."

(126) Item 18—November 15, 1959. Photocopy of handwritten account of interview with Miss Mosby.

(127) Item 21—1962, undated. Photocopy of document identified as a "self-questionnaire."

(128) Item 37—August 9, 1963. Photocopy of fingerprint card and mug shots taken by New Orleans Police Department, signed "Lee H. Oswald."

(129) Item 39—September 27, 1963. Photograph of a page from a hotel register, signed "Lee, Harvey Oswald."

(130) Item 40—September 27, 1963. Photographs (one of entire document and one of signature on visa application), Cuban Consulate, Mexico City, signed "Lee H. Oswald."

(131) Item 41—September 27, 1963. Photograph of carbon copy of item 40.

(132) Item 47—November 8, 1963. Two photographs of a letter to Mr. Hunt (one of entire document, the other an enlargement of signature).

(133) Item 48—November 9, 1963. Photomechanical (halftone) reproduction of typewritten letter to Soviet Embassy, signed "Lee H. Oswald."
(134) Item 50—Undated. Photograph of unsigned rough draft of Item 48.
(135) The photographs of the visa application (item 40) and of the carbon copy of the visa application (item 41) appear to be in the same handwriting as the other purported signatures of Oswald, as far as the pictorial aspects of form or design, slant, proportions, connecting strokes, et cetera, are concerned. Because the pictures are fuzzy, it is impossible to rule out tracing or some other method of imitative writing.
(136) It is impossible to determine positively whether the letter to Hunt (item 47) is or is not in the handwriting of the same person as the other writings purporting to be Oswald's.
(137) The photographs appear to be photographs of a document bearing handwriting of the same person as that in the other documents purporting to be Oswald's. It is true that the signature is not typical—"Harvey" is misspelled—but that could be due to haste. If not genuine, the original from which this photograph was made is certainly a clever imitation.
(138) It is recommended that an effort be made to obtain the originals of all of the above-described reproductions so that they can be submitted to the same thorough examination, given the original documents.
(139) *Question.* Although they purport to be the handwriting of one Hidell, were the postal money order (item 29) and the envelope addressed to Kleins (item 30) actually written by the person who wrote the signatures and other writings which purport to be Oswald's?
(140) Opinion. The original of the money order (item 29) was examined and compared with the original writings purporting to be Oswald's. I am of the opinion that the fill-ins on the face of this money order are in the handwriting of the same person as the signatures and writings purporting to be Oswald's. The writing on the money order conforms with the writing purporting to be that of Oswald on the other documents in every material way, including writing movement and rhythm, as well as the pictorial aspects of form or design, proportions, alinement, slant, and connections. It is also significant that the writing on this money order shows no indication of being a mere copy or imitation of the writing purporting to be that of Oswald. This money order was submitted in the original, and hence it was possible to give it a complete microscopic examination and to study it under the infrared image converter.
(141) The envelope addressed to Kleins (item 30) was available only in the form of a microfilm enlargement. This is even less satisfactory than a photocopy as a basis for an opinion on handwriting. It can only be said that as far as the pictorial aspects of form or design, proportions, alinement, slant, and connecting strokes are concerned, the writing on this envelope, although it purports to be that of one Hidell, conforms with the original writing submitted for examination which purported to be that of Lee Harvey Oswald.
(142) *Question.* Was the diary (item 16) written from day to day, as it is dated, or was it written at one sitting?

(143) Opinion. While the diary was submitted for examination in original form, it was almost completely unsuitable (with the exception of p. 11) for document examination because of treatment with fingerprint developer. Little patches of ink were unobscured, but these were insufficient as a basis for a definite conclusion. From the patches of ink that could be studied, there are indications that the same pen and ink could have been used to write the entire diary. However, this observation is based solely on microscopic examination; no chemical tests were made or authorized. Use of the same pen and ink (particularly when, as here, a fountain pen or a dip pen, rather than a ballpoint pen, was used) is more consistent with the diary having been prepared at one time, or over a few consecutive writing sessions, than it is with execution from day to day over the extensive period covered.

Concluding remarks

(144) As far as original documents are concerned, the conclusion is that the signatures and writings on them which purport to be Oswald's are all in the handwriting of the same person. In those instances where reproductions of any kind were examined, it was found that the writing conformed in pictorial aspects with the writing purporting to be Oswald's on the original documents examined. Only a tentative opinion could be reached as to these reproductions.

(145) Attached are two photographic comparison charts, prepared by the examiner, one showing most of the signatures reading "Lee Harvey Oswald," placed close to each other for ready comparison, the other a composite of most of the signatures reading "Lee H. Oswald" and of one signature reading "Lee Oswald." Large mural-size reproductions of these charts, suitable for simultaneous viewing by a number of persons, are being sent to the committee under separate cover.

(146) The photographs on these charts were taken by this examiner, who also prepared the charts. They are reliable representations of all of the signatures depicted, and they show all signatures enlarged to approximately the same extent.

FINDINGS AND CONCLUSIONS OF VINCENT J. SCALICE

(147) The following inked impressions were examined and compared at the latent print section, Federal Bureau of Investigation, on June 8, 1978.

(148) 1. Fingerprint impressions of Lee Harvey Oswald:
U.S. Marine Corps
Service No. 1653230
Prints taken by: Ogell W. Melam
Date of prints: October 15, 1956
Armed Forces No. 327925D
Signed: Lee Harvey Oswald

(149) 2. Arrest fingerprint impressions of Lee Harvey Oswald:
Dallas, Tex. Police Department
Dallas No. 54018
Commission exhibit No. 630
Prints taken by: Not indicated
Date of prints: November 25, 1963
Individual fingerprinted refused to sign same

(150) 3. Arrest fingerprint impressions of Lee Harvey Oswald:
New Orleans, Louisiana Police Department
New Orleans No. 112–723
Prints taken by: Arthur M. James
Date of prints: August 9, 1963
Not signed by Lee Harvey Oswald

(151) 4. Palm print impressions of Lee Harvey Oswald:
Dallas, Tex. Police Department
Left hand No. 628
Right hand No. 629
Prints taken by: J. B. Hicks
Date of prints: November 22, 1963

(152) 5. Fingerprint impressions of Lee Harvey Oswald:
Dallas, Tex. Police Department
Commission exhibit No. 627
Prints taken by: J. B. Hicks
Date of prints: November 22, 1963

(153) The inked fingerprint and palm prints of Lee Harvey Oswald appearing on exhibits 1–5 are identical and are those of Lee Harvey Oswald.

(154) In addition, the following latent impressions were examined and compared with the inked fingerprint impressions of Lee Harvey Oswald at the latent print section, Federal Bureau of Investigation, on June 8, 1978.

(155) 6. Latent fingerprint designated 4a recovered from brown paper container (wrapping) and developed by the Federal Bureau of Investigation. I identified it as the left index finger (no. 7) of Lee Harvey Oswald.

(156) 7. Latent palm print, designated 4b, recovered from brown paper container (wrapping), developed by the Federal Bureau of Investigation. I identified it as the right palm of Lee Harvey Oswald.

(157) 8. Latent fingerprint recovered from the trigger guard of a 6.5-millimeter, Mannlicher-Carcano rifle, serial no. C2766, processed at the Dallas Police Department. It is of no value for identification purposes.

(158) 9. Lift from rifle (designated commission exhibit 139) from the underside of the foregrip at the gun barrel end of the foregrip of a Mannlicher-Carcano, serial no. C2766. I identified five characteristics or points of identity which match the lift.

(159) 10. Latent palm print lifted from the underside of the gun barrel near the end of the foregrip, developed by the Dallas Police Department. I examined enlarged negatives which I identified as being identical to the right palm print of Lee Harvey Oswald.

(160) 11. Palm print recovered from small cardboard box A (commission No. 641), by Federal Bureau of Investigation. I identified it as the left palm of Lee Harvey Oswald.

(161) 12. Latent print (designated 2a) recovered from a cardboard box and processed by Federal Bureau of Investigation. I identified it as the right index finger (No. 2) of Lee Harvey Oswald.

(162) 13. Latent palm print recovered from the bottom of a cardboard carton marked D, developed by Dallas Police Department. I identified it as identical to that of right palm print of Lee Harvey Oswald.

(163) 14. Latent fingerprint recovered from page 37 of the American Rifleman (June 1963), developed by the Federal Bureau of Investigation. An order blank for Klein's Sporting Goods Co. had been torn from page 59. I identified it as the right thumb (No. 1) of Lee Harvey Oswald.

EXHIBITS*

(1) October 24, 1956. Original of United States Marine Corps Enlistment Contract and Record, Service No. 1653230, signed Lee Harvey Oswald.

UNITED STATES MARINE CORPS
ENLISTMENT CONTRACT AND RECORD

NAVMC 118 (2)-PD (REV. 1-53) (SUPERSEDES NAVMC 118 (2)-PD (REV. 4-5), WHICH WILL BE USED)

24 Oct 1956
AFQT-6 52 III

1. LAST NAME—FIRST NAME—MIDDLE NAME	2. RACE	3. SERVICE NO.	4. COMPONENT
OSWALD, Lee Harvey	Cauc	1653230	USMC

5. DATE OF BIRTH DAY	MONTH	YEAR	6. PLACE OF BIRTH (City)	(State or country)	7. RELIGION	8. CITIZENSHIP	9. SEX
18	Oct	39	New Orleans	Louisiana	Lutheran	US	M

10. HOME OF RECORD AT TIME OF ENLISTMENT

STREET AND NUMBER OR R. F. D. NUMBER	CITY OR TOWN	COUNTY OR PARISH	STATE OR COUNTRY
4936 Collinwood Street	Fort Worth	Tarrant	Texas

11. PLACE AT WHICH ENLISTED (City, county, and State)	12. EFFECTIVE DATE OF ENLISTMENT DAY	MONTH	YEAR	13. CONTRACT LIMITATION (if any)
USMC RS Dallas, Texas	24	October	1956	None

ENTRIES AS TO PREVIOUS SERVICE

14. DATE ENLISTED	15. DATE DISCHARGED	16. REASON	17. TIME LOST DAYS	CAUSE	18. BRANCH OF SERVICE	19. SERVICE NO.	20. TYPE OF DISCHARGE
None Claimed							

21. RANK TO WHICH APPOINTED OR REAPPOINTED	22. TRANSFERRED TO
Pvt	USMC RDep, San Diego, California

23. Examining Surgeon's Certificate. (This certification no longer used.)

24. For and in consideration of the pay or wages due in the grades which may from time to time be assigned me during the continuance of my service, I do hereby acknowledge to have voluntarily enlisted in the (*strike one*) (1) United States Marine Corps (2) Reserve of the United States Marine Corps, as a private, and I agree to and with R. K. JONES (*Name of recruiting officer*), an officer of the United States Marine Corps (Reserve) as follows:

25. To enter the service of the United States Marine Corps and to report to such post or station of the Marine Corps as I may be ordered to join, and to the utmost of my power and ability discharge my several services or duties and be in everything conformable and obedient to the several requirements and lawful commands of the officers who may be placed over me.

26. I oblige and subject myself to serve unless sooner discharged by proper authority

WORD	FIGURE
Three YEARS	3 YEARS

(*Word and figure to be in applicant's handwriting.*)

27. In the event of war or national emergency declared by the President to exist during my term of service, I oblige and subject myself to serve until 6 months after the end of that war or national emergency if so required by the Secretary of the Navy unless I voluntarily reenlist or extend my enlistment.

28. I am of legal age to enlist; I have never been found guilty of a crime except as stated by me to the recruiting officer; I have never deserted from any of the Armed Forces of the United States, and have never been discharged therefrom for any reason other than recorded herein.

29. I understand that upon enlistment in the Reserve of the United States Marine Corps, or upon transfer or assignment thereto, I may not be ordered to active duty without my consent except in time of war, or when in the opinion of the President a national emergency exists, or when otherwise prescribed by law, and that I may be required to perform active duty during such periods.

30. I HAVE HAD THIS CONTRACT FULLY EXPLAINED TO ME. I UNDERSTAND IT, AND CERTIFY THAT NO PROMISE OF ANY KIND HAS BEEN MADE TO ME CONCERNING ASSIGNMENT TO DUTY, OR PROMOTION DURING MY ENLISTMENT.

31. **Oath of Enlistment: I do solemnly swear (or affirm) that I will bear true faith and allegiance to the United States of America; that I will serve them honestly and faithfully against all their enemies whomsoever; and that I will obey the orders of the President of the United States and the orders of the officers appointed over me, according to regulations and the Uniform Code of Military Justice. And I do further swear (or affirm) that all statements made by me, as now given in this record, are correct.**

SIGNATURE Lee (First name) Harvey (Middle name) Oswald (Last name)

Subscribed and sworn to before me this 24th day of October, A. D. 1956

SIGNATURE AND RANK OF RECRUITING OFFICER R. K. JONES, Capt., USMC, ARO

U. S. GOVERNMENT PRINTING OFFICE 16—64393-3

[redacted]

— JFK EXHIBIT F-479

UNITED STATES MARINE CORPS
ENLISTMENT CONTRACT AND RECORD

NAVMC 118 (2)-PD (REV. 1-53) (SUPERSEDES NAVMC 118 (2)-PD (REV. 1-51), WHICH WILL BE USED)

NOV 27 1956

24 Oct 1956
AFQT-6 53 III

1. LAST NAME—FIRST NAME—MIDDLE NAME	2. RACE	3. SERVICE NO.	4. COMPONENT
OSWALD, Lee Harvey	Canc	- 1653230	USMC - 1

5. DATE OF BIRTH (DAY / MONTH / YEAR)	6. PLACE OF BIRTH (City)	(State or country)	7. RELIGION	8. CITIZENSHIP	9. SEX
18 / Oct / 39	New Orleans	Louisiana	Lutheran	US	M

10. HOME OF RECORD AT TIME OF ENLISTMENT — 181039 (STREET AND NUMBER OR R. F. D. NUMBER) — 4936 Collinwood Street (CITY OR TOWN) — Fort Worth (COUNTY OR PARISH) — Tarrant (STATE OR COUNTRY) — Texas

11. PLACE AT WHICH ENLISTED (City, county, and State): USMC RS Dallas, Texas 11342

12. EFFECTIVE DATE OF ENLISTMENT: DAY 24, MONTH October, YEAR 1956

13. CONTRACT LIMITATION (if any): None

ENTRIES AS TO PREVIOUS SERVICE: 3 4/1956

14. DATE ENLISTED	15. DATE DISCHARGED	16. REASON	17. TIME LOST DAYS	17. TIME LOST CAUSE	18. BRANCH OF SERVICE	19. SERVICE NO.	20. TYPE OF DISCHARGE
None Claimed							

21. RANK TO WHICH APPOINTED OR REAPPOINTED: Pvt

22. TRANSFERRED TO: USMC RDep, San Diego, California

23. Examining Surgeon's Certificate. (This certification no longer used.)

24. For and in consideration of the pay or wages due in the grades which may from time to time be assigned me during the continuance of my service, I do hereby acknowledge to have voluntarily enlisted in the (*strike one*) (1) United States Marine Corps (2) ~~Reserve of the United States Marine Corps~~, as a private, and I agree to and with R. K. JONES, Capt, USMC (*Name of recruiting officer*) as an officer of the United States Marine Corps (~~Reserve~~) as follows:

25. To enter the service of the United States Marine Corps and to report to such post or station of the Marine Corps as I may be ordered to join, and to the utmost of my power and ability discharge my several services or duties and be in everything conformable and obedient to the several requirements and lawful commands of the officers who may be placed over me.

26. I oblige and subject myself to serve unless sooner discharged by proper authority — WORD: Three YEARS — FIGURE: 3 YEARS (*Word and figure to be in applicant's handwriting.*)

27. In the event of war or national emergency declared by the President to exist during my term of service, I oblige and subject myself to serve until 6 months after the end of that war or national emergency if so required by the Secretary of the Navy unless I voluntarily reenlist or extend my enlistment.

28. I am of legal age to enlist; I have never been found guilty of a crime except as stated by me to the recruiting officer; I have never deserted from any of the Armed Forces of the United States, and have never been discharged therefrom for any reason other than recorded herein.

29. I understand that upon enlistment in the Reserve of the United States Marine Corps, or upon transfer or assignment thereto, I may not be ordered to active duty without my consent except in time of war, or when in the opinion of the President a national emergency exists, or when otherwise prescribed by law, and that I may be required to perform active duty during such periods.

30. I HAVE HAD THIS CONTRACT FULLY EXPLAINED TO ME. I UNDERSTAND IT, AND CERTIFY THAT NO PROMISE OF ANY KIND HAS BEEN MADE TO ME CONCERNING ASSIGNMENT TO DUTY, OR PROMOTION DURING MY ENLISTMENT.

31. Oath of enlistment: **I do solemnly swear (or affirm) that I will bear true faith and allegiance to the United States of America; that I will serve them honestly and faithfully against all their enemies whomsoever; and that I will obey the orders of the President of the United States and the orders of the officers appointed over me, according to regulations and the Uniform Code of Military Justice. And I do further swear (or affirm) that all statements made by me, as now given in this record, are correct.**

SIGNATURE: Lee (First name) Harvey (Middle name) Oswald (Last name)

Subscribed and sworn to before me this 24th day of October, A. D. 1956

SIGNATURE AND RANK OF RECRUITING OFFICER: R. K. JONES, Capt, USMC, APO

U. S. GOVERNMENT PRINTING OFFICE 16—64393-3

PROCESSED By

JFK EXHIBIT F-479 a

(2) October 24, 1956. Carbon of Item 1, with an original signature, Lee Harvey Oswald.

UNITED STATES MARINE CORPS
ENLISTMENT CONTRACT AND RECORD

NAVMC 118 (3)-PD (REV. 1-58)
SUPERSEDES NAVMC 118 (3)-PD
(REV. 4-56), WHICH WILL BE USED)

NOV 27 1956 ST C 24 Oct 1956
AFQT-6 58 III

1. LAST NAME—FIRST NAME—MIDDLE NAME	2. RACE	3. SERVICE NO.	4. COMPONENT
OSWALD, Lee Harvey	Cauc	- 1652230	USMC - /

5. DATE OF BIRTH			6. PLACE OF BIRTH (City)	(State or country)	7. RELIGION	8. CITIZENSHIP	9. SEX
DAY	MONTH	YEAR					
18	Oct	39	New Orleans	Louisiana	Lutheran	US	M

181039

10. HOME OF RECORD AT TIME OF ENLISTMENT — 01217 - 43942

STREET AND NUMBER OR R. F. D. NUMBER	CITY OR TOWN	COUNTY OR PARISH	STATE OR COUNTRY
4936 Collinwood Street	Fort Worth	Tarrant	Texas

11. PLACE AT WHICH ENLISTED (City, county, and State)	12. EFFECTIVE DATE OF ENLISTMENT			13. CONTRACT LIMITATION (if any)
	DAY	MONTH	YEAR	
USMC RS Dallas, Texas	24	October	1956	None

11342 ENTRIES AS TO PREVIOUS SERVICE 241056

14. DATE ENLISTED	15. DATE DISCHARGED	16. REASON	17. TIME LOST		18. BRANCH OF SERVICE	19. SERVICE NO.	20. TYPE OF DISCHARGE
			DAYS	CAUSE			
None Claimed							

21. RANK TO WHICH APPOINTED OR REAPPOINTED	22. TRANSFERRED
Pvt	TO USMC RDep, San Diego, California

23. Examining Surgeon's Certificate. (This certification no longer used.)

24. For and in consideration of the pay or wages due in the grades which may from time to time be assigned me during the continuance of my service, I do hereby acknowledge to have voluntarily enlisted in the (*strike one*) (1) United States Marine Corps (2) ~~Reserve of the United States Marine Corps~~, as a private, and I agree to and with R. K. JONES, (*Name of recruiting officer*) an officer of the United States Marine Corps (~~Reserve~~) as follows:

25. To enter the service of the United States Marine Corps and to report to such post or station of the Marine Corps as I may be ordered to join, and to the utmost of my power and ability discharge my several services or duties and be in everything conformable and obedient to the several requirements and lawful commands of the officers who may be placed over me.

26. I oblige and subject myself to serve unless sooner discharged by proper authority

WORD		FIGURE	
Three	YEARS	3	YEARS

(*Word and figure to be in applicant's handwriting.*)

27. In the event of war or national emergency declared by the President to exist during my term of service, I oblige and subject myself to serve until 6 months after the end of that war or national emergency if so required by the Secretary of the Navy unless I voluntarily reenlist or extend my enlistment.

28. I am of legal age to enlist; I have never been found guilty of a crime except as stated by me to the recruiting officer; I have never deserted from any of the Armed Forces of the United States, and have never been discharged therefrom for any reason other than recorded herein.

29. I understand that upon enlistment in the Reserve of the United States Marine Corps, or upon transfer or assignment thereto, I may not be ordered to active duty without my consent except in time of war, or when in the opinion of the President a national emergency exists, or when otherwise prescribed by law, and that I may be required to perform active duty during such periods.

30. I HAVE HAD THIS CONTRACT FULLY EXPLAINED TO ME. I UNDERSTAND IT, AND CERTIFY THAT NO PROMISE OF ANY KIND HAS BEEN MADE TO ME CONCERNING ASSIGNMENT TO DUTY, OR PROMOTION DURING MY ENLISTMENT.

31. Oath of Enlistment: I do solemnly swear (or affirm) that I will bear true faith and allegiance to the United States of America; that I will serve them honestly and faithfully against all their enemies whomsoever; and that I will obey the orders of the President of the United States and the orders of the officers appointed over me, according to regulations and the Uniform Code of Military Justice. And I do further swear (or affirm) that all statements made by me, as now given in this record, are correct.

SIGNATURE Lee (*First name*) Harvey (*Middle name*) Oswald (*Last name*)

Subscribed and sworn to before me this 24th day of October, A. D. 1956

SIGNATURE AND RANK OF RECRUITING OFFICER R. K. Jones R. K. JONES, Capt., USMC, ARO

U. S. GOVERNMENT PRINTING OFFICE 16—64383-3

PROCESSED By [redacted]

—JFK EXHIBIT F-479 a

(3) October 24, 1956. Loyalty Certificate for Personnel of the Armed Forces, signed Lee Harvey Oswald.

LOYALTY CERTIFICATE FOR PERSONNEL OF THE ARMED FORCES

I. PROVISIONS. The Department of Defense has the authority to establish procedures implementing the national policy relating to loyalty of persons entering on duty with the Armed Forces. This has been determined by proper authority to include restrictions as to certain standards of conduct and membership in, or sympathetic association with, certain organizations.

STANDARDS OF CONDUCT

1. Conduct which may be considered as establishing reasonable grounds for imposing appropriate penalties shall include but is not limited to, one or more of the following:

(*a*) Sabotage, espionage, or attempts or preparations therefor, or intimate and sympathetic associations with or voluntary assistance to persons who the subject of investigation has reasonable cause to believe may be spies or saboteurs.

(*b*) Treason, sedition, or writings and acts which can reasonably be considered as intended to encourage seditious or treasonable opinions or actions.

(*c*) Advocacy of revolution or of force or violence to alter the existing constitutional form of government of the United States; advocacy of revolution or of force or violence to bring about economic, political, or social change.

(*d*) Intentional unauthorized disclosure to any person under circumstances which may indicate disloyalty to the United States, of documents or information of a classified or nonpublic character.

(*e*) Acting, attempting to act, or knowingly failing to act when such conduct is calculated to serve the interests of another government in preference to the interests of the United States of America.

MEMBERSHIP IN OR ASSOCIATION WITH CERTAIN ORGANIZATIONS

2. Associations which may be considered as establishing reasonable grounds for imposing appropriate penalties include but are not limited to membership in, affiliation with, or sympathetic association with, any foreign or domestic organization, association, movement, group or combination of persons having the following characteristics:

(*a*) Which practices, seeks to practice, or advocates either:

(1) Denial, to any person, group of persons, or class of persons within the United States or territory subject to its jurisdiction, of any right or rights which the Federal Constitution guarantees or protects against encroachment by either or both Federal and State Governments when such denial is attempted by force, violence, or intimidation, or;

(2) Alteration of the existing form of government of the United States or territory subject to its jurisdiction, or of the existing economic, social, or political order within it when such alteration is through or with the aid of force, violence, or intimidation.

(*b*) Which is disclosed by investigation, or is designated by the Attorney General of the United States to be totalitarian, fascist, communist, or subversive, or as having adopted a policy of advocating or approving the commission of acts of force or violence to deny persons their rights under the Constitution of the United States, or as seeking to alter the form of government of the United States by unconstitutional means regardless of practice, advocacy, or nonadvocacy of any of the tenets set forth in 1 (*a*) and 1 (*b*) above.

3. Organizations designated by the Attorney General, pursuant to Executive Order 10450, are listed below:

Communist Party, U. S. A., its subdivisions, subsidiaries and affiliates.
Communist Political Association, its subdivisions, subsidiaries and affiliates, including—
Alabama People's Educational Association.
Florida Press and Educational League.
Oklahoma League for Political Education.
People's Educational and Press Association of Texas.
Virginia League for People's Education.
Young Communist League.
Abraham Lincoln Brigade.
Abraham Lincoln School, Chicago, Illinois.
Action Committee to Free Spain Now.
American Association for Reconstruction in Yugoslavia, Inc.
American Branch of the Federation of Greek Maritime Unions.
American Christian Nationalist Party.
American Committee for European Workers' Relief.
American Committee for Protection of Foreign Born.
American Committee for the Settlement of Jews in Birobidjan, Inc.
American Committee for Spanish Freedom.
American Committee for Yugoslav Relief, Inc.
American Committee to Survey Labor Conditions in Europe.
American Council for a Democratic Greece, formerly known as the Greek American Council; Greek American Committee for National Unity.
American Council on Soviet Relations.
American Croatian Congress.
American Jewish Labor Council.
American League Against War and Fascism.
American League for Peace and Democracy.
American Lithuanian Workers Literary Association (*also known as Amerikos Lietuviu Darbininku Literaturos Draugija*).
American National Labor Party.
American National Socialist League.
American National Socialist Party.
American Nationalist Party.
American Patriots, Inc.
American Peace Crusade.
American Peace Mobilization.
American Poles for Peace.
American Polish Labor Council.
American Polish League.
American Rescue Ship Mission (*a project of the United American Spanish Aid Committee*).
American-Russian Fraternal Society.
American-Russian Institute, New York (*also known as the American Russian Institute for Cultural Relations with the Soviet Union*).
American Russian Institute, Philadelphia.
American Russian Institute of San Francisco.
American Russian Institute of Southern California, Los Angeles.
American Slav Congress.
American Women for Peace.
American Youth Congress.
American Youth for Democracy.
Armenian Progressive League of America.
Associated Klans of America.
Association of Georgia Klans.
Association of German Nationals (*Reichsdeutsche Vereinigung*).
Association of Lithuanian Workers (*also known as Lietuviu Darbininku Susivienijimas*).
Ausland-Organization der NSDAP, Overseas Branch of Nazi Party.
Baltimore Forum.
Benjamin Davis Freedom Committee.
Black Dragon Society.
Boston School for Marxist Studies, Boston, Massachusetts.
Bridges-Robertson-Schmidt Defense Committee.
Bulgarian American People's League of the United States of America.
California Emergency Defense Committee.
California Labor School, Inc., 321 Divisadero Street, San Francisco, California.
Carpatho-Russian People's Society.
Central Council of American Women of Croatian Descent (*also known as Central Council of American Croatian Women, National Council of Croatian Women*).
Central Japanese Association (*Beikoku Chuo Nipponjin Kai*).
Central Japanese Association of Southern California.
Central Organization of the German-American National Alliance (*Deutsche-Amerikanische Einheitsfront*).
Cervantes Fraternal Society.
Chins Welfare Appeal, Inc.
Chopin Cultural Center.
Citizens Committee to Free Earl Browder.
Citizens Committee for Harry Bridges.
Citizens Committee of the Upper West Side (*New York City*).
Citizens Emergency Defense Conference.
Citizens Protective League.
Civil Liberties Sponsoring Committee of Pittsburgh.
Civil Rights Congress and its affiliated organizations, including:
Civil Rights Congress for Texas.
Veterans Against Discrimination of Civil Rights Congress of New York.
Columbians.
Comite Coordinator Pro Republica Espanola.
Comite Pro Derechos Civiles.
Committee to Abolish Discrimination in Maryland.
Committee to Aid the Fighting South.
Committee to Defend the Rights and Freedom of Pittsburgh's Political Prisoners.
Committee for a Democratic Far Eastern Policy.
Committee for Constitutional and Political Freedom.
Committee for the Defense of the Pittsburgh Six.
Committee for Nationalist Action.
Committee for the Negro in the Arts.
Committee for Peace and Democracy Festival in Philadelphia.
Committee for the Protection of the Bill of Rights.
Committee for World Youth Friendship and Cultural Exchange.
Committee to Defend Marie Richardson.
Committee to Uphold the Bill of Rights.
Commonwealth College, Mena, Arkansas.
Congress Against Discrimination.
Congress of the Unemployed.
Connecticut Committee to Aid Victims of the Smith Act.
Connecticut State Youth Conference.
Congress of American Revolutionary Writers.
Congress of American Women.
Council on African Affairs.
Council of Greek Americans.
Council for Jobs, Relief, and Housing.
Council for Pan-American Democracy.

Croatian Benevolent Fraternity.
Dai Nippon Butoku Kai (*Military Virtue Society of Japan or Military Art Society of Japan*).
Daily Worker Press Club.
Daniels Defense Committee.
Dante Alighieri Society (*Between 1935 and 1940*).
Dennis Defense Committee.
Detroit Youth Assembly.
East Bay Peace Committee.
Emergency Conference to Save Spanish Refugees (*founding body of the North American Spanish Aid Committee*).
Families of the Baltimore Smith Act Victims.
Families of the Smith Act Victims.
Federation of Italian War Veterans in the U. S. A., Inc. (*Associazione Nazionale Combattenti Italiani, Federazione degli Stati Uniti d' America*).
Finnish-American Mutual Aid Society.
Frederick Douglass Educational Center.
Freedom Stage, Inc.
Friends of the New Germany (*Freunde des Neuen Deutschlands*).
Friends of the Soviet Union.
Garibaldi American Fraternal Society.
George Washington Carver School, New York City.
German-American Bund (*Amerika-deutscher Volksbund*).
German-American Republican League.
German-American Vocational League (*Deutsche-Amerikanische Berufsge-meinschaft*).
Guardian Club.
Harlem Trade Union Council.
Hawaii Civil Liberties Committee.
Heimuska Kai, also known as Nokubei Heieki Gimusha Kai, Zaibei Nihonjin, Heijaku Gimusha Kai and Zaibei Heimusha Kai (*Japanese Residing in America Military Conscripts Association*).
Hellenic-American Brotherhood.
Himode Kai (*Imperial Japanese Reservists*).
Hinomaru Kai (*Rising Sun Flag Society—a group of Japanese War Veterans*).
Hokubei Zaigo Shoke Dan (*North American Reserve Officers Association*).
Hollywood Writers Mobilization for Defense.
Hungarian-American Council for Democracy.
Hungarian Brotherhood.
Independent Party (*Seattle, Washington*).
Independent People's Party.
Independent Socialist League.
Industrial Workers of the World.
International Labor Defense.
International Workers Order, its subdivisions, subsidiaries and affiliates.
Japanese Association of America.
Japanese Overseas Central Society (*Kaigai Dobo Chuo Kai*).
Japanese Overseas Convention, Tokyo, Japan, 1940.
Japanese Protective Association (*Recruiting Organization*).
Jefferson School of Social Science, New York City.
Jewish Culture Society.
Jewish People's Committee.
Jewish People's Fraternal Order.
Jikyoku Lin Kai (*The Committee for the Crisis*).
Johnson-Forest Group.
Johnsonites.
Joint Anti-Fascist Refugee Committee.
Joint Council of Progressive Italian-Americans, Inc.
Joseph Weydemeyer School of Social Science, St. Louis, Missouri.
Kibei Seinen Kai (*Association of U. S. citizens of Japanese ancestry who have returned to America after studying in Japan*).
Knights of the White Camellia.
Ku Klux Klan.
Kyffhaeuser, also known as Kyffhaeuser League (*Kyffhaeuser Bund*), Kyffhaeuser Fellowship (*Kyffhaeuser Kameradschaft*).
Kyffhaeuser War Relief (*Kyffhaeuser Kriegshilfswerk*).
Labor Council for Negro Rights.
Labor Research Association, Inc.
Labor Youth League.
League for Common Sense.
League of American Writers.
Lictor Society (*Italian Black Shirts*).
Macedonian-American People's League.
Mario Morgantini Circle.
Maritime Labor Committee to Defend Al Lannon.
Maryland Congress Against Discrimination.
Massachusetts Minute Women for Peace (*not connected with the Minute Women of the U. S. A., Inc.*).
Maurice Braverman Defense Committee.
Michigan Civil Rights Federation.
Michigan Council for Peace.
Michigan School of Social Science.
Nanka Teikoku Gunyusdan (*Imperial Military Friends Group or Southern California War Veterans*).
National Association of Mexican Americans (*also known as Asociacion Nacional Mexico-Americana*).
National Blue Star Mothers of America (not to be confused with the Blue Star Mothers of America organized in February 1942).
National Committee for the Defense of Political Prisoners.
National Committee for Freedom of the Press.
National Committee to Win Amnesty for Smith Act Victims.
National Committee to Win the Peace.
National Conference on American Policy in China and the Far East (*a Conference called by the Committee for a Democratic Far Eastern Policy*).
National Council of Americans of Croatian Descent.
National Council of American Soviet Friendship.
National Federation for Constitutional Liberties.
National Labor Conference for Peace.
National Negro Congress.
National Negro Labor Council.
National Textile Action League.
Nationalist Party of Puerto Rico.
Nature Friends of America (*Since 1935*).
Negro Labor Victory Committee.
New Committee for Publications.
Nichibei Kogyo Kaisha (*The Great Fujii Theatre*).
North American Committee to Aid Spanish Democracy.
North American Spanish Aid Committee.
North Philadelphia Forum.
Northwest Japanese Association.
Ohio School of Social Sciences.
Oklahoma Committee to Defend Political Prisoners.
Original Southern Klans, Incorporated.
Pacific Northwest Labor School, Seattle, Washington.
Palo Alto Peace Club.
Partido del Pueblo of Panama (*operating in the Canal Zone*).
Peace Information Center.
Peace Movement of Ethiopia.
People's Drama, Inc.
People's Educational Association (*Incorporated under name Los Angeles Educational Associations, Inc.*), also known as People's Educational Center, People's University, People's School.
People's Institute of Applied Religion.
Peoples Programs (*Seattle, Washington*).
People's Radio Foundation, Inc.
People's Rights Party.
Philadelphia Labor Committee for Negro Rights.
Philadelphia School of Social Science and Art.
Photo League (*New York City*).
Pittsburgh Arts Club.
Political Prisoners' Welfare Committee.
Polonia Society of the IWO.
Progressive German-Americans, also known as Progressive German-Americans of Chicago.
Proletarian Party of America.
Protestant War Veterans of the United States, Inc.
Provisional Committee of Citizens for Peace, Southwest Area.
Provisional Committee on Latin American Affairs.
Provisional Committee to Abolish Discrimination in the State of Maryland.
Puerto Rican Comite Pro Libertades Civiles (CLC).
Puertorriquenos Unidos (*Puerto Ricans United*).
Quad City Committee for Peace.
Queensbridge Tenants League.
Revolutionary Workers League.
Romanian-American Fraternal Society.
Russian American Society, Inc.
Sakura Kai (*Patriotic Society, or Cherry Association, composed of veterans of Russo-Japanese War*).
Samuel Adams School, Boston, Mass.
Santa Barbara Peace Forum.
Schappes Defense Committee.
Schneiderman-Darcy Defense Committee.
School of Jewish Studies, New York City.
Seattle Labor School, Seattle, Washington.
Serbian-American Fraternal Society.
Serbian Vidovdan Council.
Shinto Temples (*limited to State Shinto abolished in 1945*).
Silver Shirt Legion of America.
Slavic Council of Southern California.
Slovak Workers Society.
Slovenian-American National Council.
Socialist Workers Party, including American Committee for European Workers' Relief.
Socialist Youth League.
Sokoku Kai (*Fatherland Society*).
Southern Negro Youth Congress.
Suiko Sha (*Reserve Officers Association, Los Angeles*).
Syracuse Women for Peace.
Tom Paine School of Social Science, Philadelphia, Pennsylvania.
Tom Paine School of Westchester, New York.
Trade Union Committee for Peace.
Trade Unionists for Peace.
Tri-State Negro Trade Union Council.
Ukranian-American Fraternal Union.
Union of American Croatians.
Union of New York Veterans.
United American Spanish Aid Committee.
United Committee of Jewish Societies and Landsmanschaft Federations, also known as Coordination Committee of Jewish Landsmanschaften and Fraternal Organizations.
United Committee of South Slavic Americans.
United Defense Council of Southern California.
United Harlem Tenants and Consumers Organization.
United May Day Committee.
United Negro and Allied Veterans of America.
Veterans of the Abraham Lincoln Brigade.
Voice of Freedom Committee.
Walt Whitman School of Social Science, Newark, New Jersey.
Washington Bookshop Association.
Washington Committee to Defend the Bill of Rights.
Washington Committee for Democratic Action.
Washington Commonwealth Federation.
Washington Pension Union.
Wisconsin Conference on Social Legislation.
Workers Alliance (*since April 1936*).
Workers Party (*including Socialist Youth League*).
Yiddisher Kultur Farband.
Yugoslav-American Cooperative Home, Inc.
Yugoslav Seamen's Club, Inc.

THE FOLLOWING ADDITIONS TO AND DELETIONS FROM THE ABOVE LIST ARE ANNOUNCED:

ADD:

ELSINORE PROGRESSIVE LEAGUE
EVERYBODY'S COMMITTEE TO OUTLAW WAR
IDAHO PENSION UNION
MASSACHUSETTS COMMITTEE FOR THE BILL OF RIGHTS

THE FOLLOWING ADDITIONS TO AND DELETIONS FROM THE ABOVE LIST ARE ANNOUNCED: (CONTINUED)

II. DECLARATION. *(Concealment of, misrepresentation as to, or failure to divulge in full, conduct or associations of the character set forth in the provisions at the time of execution of this certificate may constitute grounds for court martial, discharge, separation, or other disposition of personnel. Penalties for making a false statement which will expose you to criminal trial, is claimed about all or any part of any conduct, membership, or association in question, you may so claim under Remarks below, "Federal Constitutional privilege is claimed" or "Federal Constitutional privilege is claimed as to . . ." describing the specific part of any conduct, membership, or association about which claim is made.)*

CERTIFICATION

I certify, as regards the standards of conduct, or membership in or association with, certain organizations, that:

1. *I have read the provisions applying to standards of conduct and membership in or association with certain organizations and I understand them.*
2. *If I have engaged in any such conduct, I have so indicated the nature thereof under Remarks below.*
3. *I have entered under Remarks below, the name(s) of the organization(s) from the above list of which I am or have been a member, or by which I am or have been employed, or which I have attended or been present at, or engaged in, organizational or social activities or activities which they sponsored, or for which I have sold, given away or distributed written, printed, or otherwise recorded matter published by them, or with which I have been identified or associated in some other manner.*
4. *If I have not engaged in any such conduct, or have not been associated in any manner with listed organizations, or have never been a member or participated in the activities of any pro-communist, pro-Nazi, or pro-Fascist organizations in foreign countries, I have so indicated by writing "NONE" or "None to my knowledge" under Remarks below.*
5. *I understand that if what I state below is found to be incorrect, incomplete, or misleading in any important particular, I may be subject to prosecution and punishment under the appropriate laws of the United States.*
6. *I understand the meaning of the statements made in the certifications above.*

REMARKS *(Use the space provided below and attach additional sheets, if necessary, for a full detailed statement. If associated with any of listed organizations, specify nature and extent of association with each including dates, places, and credentials now or formerly held)*

None

TYPED FULL NAME OF PERSON MAKING CERTIFICATION	SERVICE NO. *(If any)*	SIGNATURE OF PERSON MAKING CERTIFICATION
OSWALD, Lee Harvey	1653230	Lee Harvey Oswald

GIVEN UNDER MY HAND THIS 24th DAY OF October 19 56 AT USMC RS Dallas, Texas

TYPED NAME, GRADE AND ORGANIZATION OF WITNESSING OFFICER	SIGNATURE OF WITNESSING OFFICER
R. K. JONES, Captain, USMC, ARO	R K Jones

DD FORM 1 APR 55 98 PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE. ☆ U. S. GOVERNMENT PRINTING OFFICE : 1955—O-355363

(4) October 24, 1956. United States Marine Corps Examination of Applicant by Recruiting Officer, signed Lee Harvey Oswald.

EXAMINATION OF APPLICANT BY RUITING OFFICER

NAVMC 136 PD (REV. 4-51)
SUPERSEDES NAVMC 136 PD (REV. 3-51) WHICH WILL NOT BE USED

INSTRUCTIONS

After the applicant's answers to the questions in PART I have been typed in, the applicant will read over and sign the form in the presence of the Recruiting Officer.

If an applicant admits having ever been arrested, that fact must be affirmatively shown, regardless of the triviality of the offense.

If an applicant has answered "YES" to one or more of the questions in PART I, the Recruiting Officer should consult the applicable section of the Marine Corps Manual and

(1) Recommend waiver by completion of PART II and submit, in duplicate, to the Commandant of the Marine Corps (Code DP) prior to effecting enlistment or reenlistment, or

(2) Explain circumstances under item 31, if offense consists solely of traffic or parking violation or other minor nature not triable in Federal or State Courts, and waiver is not required by the Commandant of the Marine Corps, or

(3) Reject applicant for failing to meet the moral requirements.

If applicant is enlisted or reenlisted, this form will be forwarded with the duplicate of the Enlistment Contract and Record to the Commandant of the Marine Corps (Code DGK).

1. ORGANIZATION						2. DATE
USMC RS Dallas, Texas						24 Oct 1956
3. NAME OF APPLICANT (*in full*)					4. DATE OF BIRTH	11. PHYSICAL PROFILE
OSWALD, Lee Harvey					18 Oct 39	P U L H E S
5. APPLICANT FOR ENLISTMENT IN	6. HIGHEST GRADE COMPLETED IN SCHOOL	7. RACE	8. AFQT SCORE	9. MENTAL GROUP	10. SERVICE NO. (*when assigned*)	
[X] USMC [ ] USMCR	9th	Cauc	58	III	1653230	1 1 1 1 1 1

or induction

PART I

12. HAVE YOU EVER BEEN REJECTED FOR ENLISTMENT IN ANY BRANCH OF THE ARMED FORCES? [ ] YES [X] NO	IF SO, WHICH BRANCH, WHEN AND WHY?
13. HAVE YOU EVER BEEN ARRESTED? [ ] YES [X] NO	IF SO, FOR WHAT OFFENSE, WHEN AND WHERE?
14. HAVE YOU EVER BEEN CONVICTED OF A CRIME? [ ] YES [X] NO	IF SO, WHAT CRIME, WHEN AND WHERE?
15. HAVE YOU EVER BEEN SENTENCED BY ANY COURT? [ ] YES [X] NO	IF SO, WHEN, WHERE, FOR WHAT OFFENSE, AND FOR WHAT PERIOD?
16. HAVE YOU EVER BEEN IN JAIL, A REFORM OR INDUSTRIAL SCHOOL, OR PENITENTIARY? [ ] YES [X] NO	IF SO, WHEN AND WHERE?
17. HAVE YOU EVER RECEIVED A SUSPENDED SENTENCE BY ANY COURT? [ ] YES [X] NO	IF SO, WHEN, WHERE, FOR WHAT OFFENSE, AND FOR WHAT PERIOD?
18. ARE YOU NOW ON PAROLE, PROBATION, SUPERVISION, OR OTHER FORM OF CIVIL RESTRAINT? [ ] YES [X] NO	IF SO, EXPLAIN.
19. HAVE YOU EVER BEEN ON PAROLE, PROBATION, SUPERVISION OR OTHER FORM OF CIVIL RESTRAINT? [ ] YES [X] NO	IF SO, EXPLAIN, GIVING DATE OF RELEASE.

20. I have been cautioned to answer the above questions truthfully; that any false statement detected prior to enlistment will constitute a bar to my enlistment, and that any false statement detected subsequent to enlistment will be processed as a fraud against the Government and may ultimately result in my discharge from the Marine Corps under other than honorable conditions.

Lee Harvey Oswald
(Signature of applicant)

SEE INSTRUCTIONS

21. WAS THE OFFENSE FOR WHICH CONVICTED OR ADJUDICATED: ☐ CIVIL ☐ CRIMINAL

22. WAS THE OFFENSE FOR WHICH CONVICTED OR ADJUDICATED (*Applying laws of the State in which tried*): ☐ FELONY ☐ MISDEMEANOR ☐ JUVENILE DELINQUENCY

23. AGE OF APPLICANT AT TIME OF OFFENSES

24. CITY AND STATE IN WHICH OFFENSES WERE COMMITTED

25. NAME OF COURT IN WHICH TRIED | DATE

26. IF FOUND GUILTY, WAS COURT ACTION DEEMED: ☐ CONVICTION ☐ ADJUDICATION AS A JUVENILE DELINQUENT, YOUTHFUL OFFENDER OR WAYWARD MINOR.

27. OFFENSE FOR WHICH APPLICANT WAS CONVICTED OR ADJUDICATED IS PUNISHABLE BY: (*Apply laws of the State in which tried, if the length of sentence was indefinite or indeterminate, state the maximum punishment provided for the offense in the law under which convicted.*):

28. DATE OF RELEASE FROM CONFINEMENT | DATE OF RELEASE FROM PAROLE, PROBATION OR OTHER FORM OF SUPERVISION OR RESTRAINT (UNCONDITIONAL)

29. EMPLOYMENT RECORD SUBSEQUENT TO CONVICTION OR RELEASE FROM CONFINEMENT (*Give inclusive dates*)

	30. INFORMATION WAS OBTAINED BY	IF OTHER, EXPLAIN
X	INTERVIEW OF APPLICANT	
	VERBALLY FROM CIVIL AUTHORITIES	
X	REPORTS FROM CIVIL AUTHORITIES	
	EXAMINATION OF COURT RECORDS	
	OTHER	

31. REMARKS: (*Extenuating circumstances surrounding offense, inclusive dates, component, and former service number, if applicant claims any prior service in any branch of the Armed Forces. Give brief estimate of applicant's potential value for military service, and other pertinent information.*)

32. RECOMMEND THAT WAIVER BE GRANTED ☐ YES ☐ NO

33. I CERTIFY that I have personally questioned the applicant whose signature appears hereon; that I am satisfied that he is fully qualified, in accordance with existing instructions, for enlistment in the Marine Corps [redacted]; and that he signed the foregoing questionnaire in my presence.

SIGNATURE AND RANK R. K. JONES, Captain U S M C
Asst. (Recruiting Officer)

* *Strike out when not applicable*

FIRST ENDORSEMENT

DATE:

FROM: COMMANDANT OF THE MARINE CORPS
TO:

1. Returned. Enlistment ☐ IS ☐ IS NOT authorized provided physically and otherwise qualified.

By direction

16—86462-3 U. S. GOVERNMENT PRINTING OFFICE 1955—O-338862

(5) October 24, 1956. United States Marine Corps Record of Emergency Data, signed Lee Harvey Oswald.

RECORD OF EMERGENCY DATA
SEE INSTRUCTIONS ON REVERSE BEFORE MAKING ENTRIES

1. DESIGNATOR'S LAST NAME—FIRST NAME—MIDDLE NAME	2. SERVICE NO.	3. GRADE OR RATE	4. SERVICE
OSWALD, Lee Harvey	1653230	Pvt	USMC

5. MARITAL STATUS	6. FULL NAME OF SPOUSE	7. ADDRESS (Number, street, city, zone, and State)
Not Married		

8. CHILDREN (List each child of any marriage. If none, so state)

FIRST NAME—MIDDLE NAME—LAST NAME	ADDRESS	MARITAL STATUS	SEX	DATE OF BIRTH
None				

9. NAME OF ☒ FATHER OR ☐ MALE GUARDIAN	10. ADDRESS IF LIVING—IF DECEASED SO STATE
Robert E. Lee OSWALD	Deceased
11. NAME OF ☒ MOTHER OR ☐ FEMALE GUARDIAN	**12. ADDRESS IF LIVING—IF DECEASED SO STATE**
Marguerite (Claverie) OSWALD	4936 Collinwood St., Fort Worth, Texas

IN THE EVENT THAT I AM NOT SURVIVED BY A SPOUSE OR ELIGIBLE CHILD I DESIRE THAT PAYMENT OF 6 MONTHS' DEATH GRATUITY BE MADE TO THE RELATIVE SHOWN BELOW. (The name of father or mother must be repeated if it is desired that he or she receive payment)

13. FIRST NAME—MIDDLE NAME—LAST NAME	14. RELATIONSHIP	15. ADDRESS
Margaerite OSWALD	Mother	4936 Collinwood St., Fort Worth, Texas
16. ALTERNATE RELATIVE	**17. RELATIONSHIP**	**18. ADDRESS**
John Edward PIC	Step-Brother	4936 Collinwood St., Fort Worth, Texas

19. IN THE EVENT THAT I AM LISTED AS MISSING OR OTHER MILITARY CIRCUMSTANCES PREVENT ME FROM TRANSMITTING FUNDS TO MY DEPENDENTS, IT IS MY DESIRE THAT

FIRST NAME—MIDDLE NAME—LAST NAME	RELATIONSHIP
Marguerite OSWALD	Mother
ADDRESS	**RECEIVE EACH MONTH**
4936 Collinwood St., Fort Worth, Texas	100 PERCENT OF MY PAY

20. I REQUEST THE FOLLOWING COMMERCIAL INSURANCE COMPANIES BE OFFICIALLY NOTIFIED IN CASE OF MY DEATH IN ACTIVE SERVICE

NAME OF COMPANY	ADDRESS OF HOME OFFICE	POLICY NO.
None		

21. DESIGNATION OR CHANGE OF BENEFICIARY—SERVICEMEN'S INDEMNITY (PL 23, 83d Cong.)
(Does not operate as a designation or change of beneficiary of any insurance contracts issued by United States Government)
ALL PREVIOUS DESIGNATIONS OF PRINCIPAL AND CONTINGENT BENEFICIARIES, IF ANY, UNDER SERVICEMEN'S INDEMNITY ACT OF 1951, ARE HEREBY CANCELED, AND IT IS DIRECTED THAT SAID INDEMNITY BE PAID TO:

NAME	RELATIONSHIP	SHARE OR AMOUNT TO EACH BENEFICIARY
Marguerite OSWALD	Mother	Full Amount

WITNESSED BY (Signature on all copies)	SIGNATURE OF SERVICEMAN (Sign all copies)
R K Jones	Lee Harvey Oswald
GRADE OR RATE OF WITNESS / **SERVICE NO.**	**DATE SIGNED**
Captain 052083	24 October 1956

DD FORM 1 FEB 52 93 Replaces DD Form 93, 1 Jul 50, which may be used. 16—67492-1

JFK EXHIBIT F-478

INSTRUCTIONS

(Items for which no instructions are printed below are self-explanatory)

This form will be completed and maintained current by all officer and enlisted personnel in accordance with Navy: BuPers Manual Art B-2312; Marine Corps Manual Par 11223; USCG Pers Cir No. 30–50; AFR 35–38; ANGR 35–38.

All items must be completed. In the event you, the designator, become a casualty the persons named in items 6, 8, 9, and 11 will be notified. If notification is not desired due to health or other reason state in remarks. If there are no living relatives, the name and address of a friend may be entered in remarks. Continue any item in remarks if necessary.

Item 4.—Enter one of the following: USN, USNR, USMC, USMCR, USCG, USCGR, USAF *(for Air Force add "Res" or "ANG" as appropriate only if not in active military service)*.

Item 5.—Enter single, married, widowed, divorced, or legally separated.

Item 6.—Spouse to whom alimony or support is legally payable must be shown even if divorced or legally separated.

Items 9 and 11.—If the person entered is in the class of guardian, indicate whether stepparent, foster parent, loco parentis, guardian, or adoptive parent.

Items 13 and 16.—If you do not desire to designate anyone enter "I decline to designate any person to receive this pay" in your own handwriting. Only designated relatives are eligible to receive payment without proof of dependency.

Item 19.—The "Missing Persons Act" provides that pay and allowances continue to accrue to the pay account of any service member for the period he is missing or captured and may be paid to the dependents for support. This item reflects your desires and is used as a guide in disposition of your pay. Allotments to dependents and insurance companies initiated prior to entering a missing status are continued in effect unless unusual circumstances indicate changes.

Item 20.—Completion of this item will insure that insurance companies listed are promptly notified when necessary. Accuracy in entering policy numbers will facilitate prompt settlement.

Item 21.—The indemnity is payable only to persons within the following classes:

(1) Spouse (*husband or wife*).

(2) *Children.*—The term "children" includes natural children, stepchildren, adoptive children. Illegitimate children are included only if designated.

(3) *Parents.*—The term "parents" includes natural parents, stepparents, adoptive parents or persons who stood in loco parentis to the insured at any time prior to entry into the active service for a period of not less than one year. Unless designated otherwise by the serviceman the term "parent" includes only the mother and father who last bore that relationship to the serviceman.

(4) *Brothers and sisters.*—The term "brothers and sisters" includes those of the half blood and those through adoption.

If the designated beneficiary or beneficiaries do not survive the insured, or if none has been designated, the indemnity will be paid to the first eligible class of beneficiaries according to the order set forth above and in equal shares if the class is composed of more than one person. If this order is in accord with your wishes state "No Designation." If the order is not in accord with your wishes you should name the person or persons in the class to receive the indemnity. Any person so named will be considered a principal beneficiary unless specifically designated as a contingent.

DISPOSITION INSTRUCTIONS

NAVY: Original to BuPers, Washington 25, D. C. Attn.: Casualty Branch.

Duplicate—same as original.

Triplicate—file in service record at duty station.

MARINE CORPS: See Marine Corps Manual Par 11223.

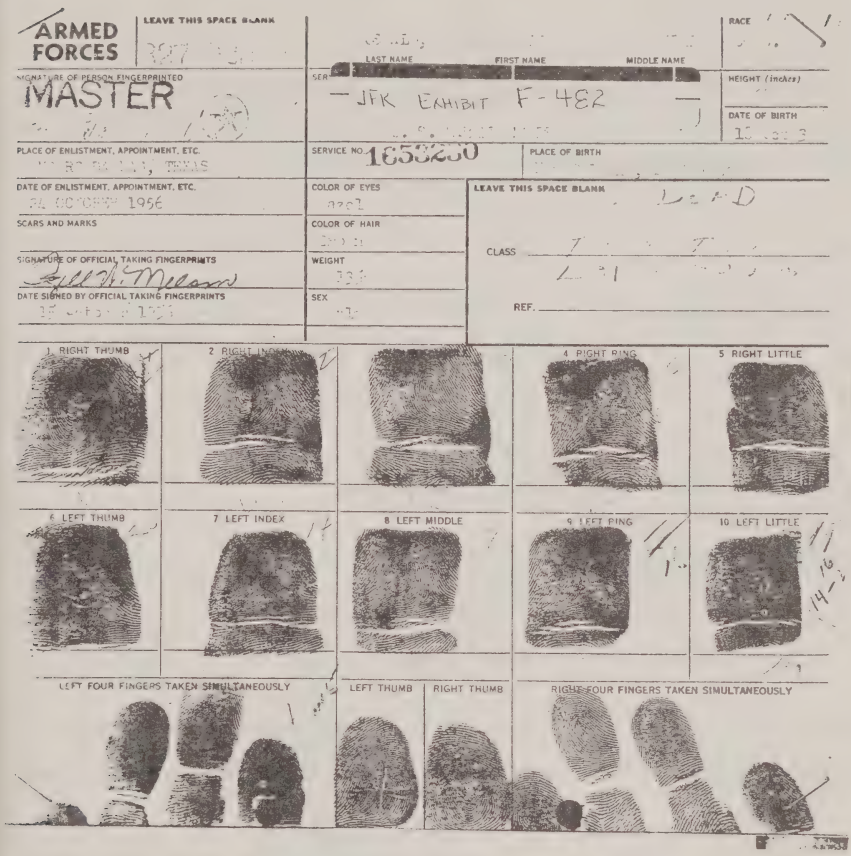
COAST GUARD: See Personnel Circular No. 30–50.

AIR FORCE: See AFR 35–38 or ANGR 35–38.

REMARKS

U. S. GOVERNMENT PRINTING OFFICE 19—67402-1

(6) October 24, 1956. Armed Forces fingerprint identification card, numbered 327 925 D, signed Lee Harvey Oswald.



RECORDED OCT 29 1956 IDENT DIV. 32

Bureau No. 73-
Approval Expires

Date

Dear Sir:

who claims to have resided at

from to and whose fingerprints and personal description are recorded hereon, is an applicant for enlistment in the United States It is requested that the following information be furnished from your files. A return envelope is inclosed for your convenience.

Very truly yours,

1 Inclosure
Return Envelope

(Recruiting Officer)

POLICE RECORD CHECK	CITY AND STATE	DATE

HAS APPLICANT A POLICE OR JUVENILE RECORD? *(other than minor traffic violation)* ☐ YES ☐ NO IF "YES," WHAT WAS THE OFFENSE OR CHARGE, DISPOSITION, AND SENTENCE?

IS APPLICANT NOW UNDERGOING COURT ACTION OF ANY KIND? ☐ YES ☐ NO IF "YES," GIVE DETAILS

DOES CIVIL CUSTODY EXIST? ☐ YES ☐ NO IF "YES," SPECIFY

IS APPLICANT ☐ MARRIED ☐ SEPARATED ☐ DIVORCED ☐ WIDOWED ☐ SINGLE ☐ MARITAL STATUS UNKNOWN

REMARKS

TITLE	SIGNATURE

DD FORM 1 AUG 50 369

☆ U. S. GOVERNMENT PRINTING OFFICE : 1954 O - 91411

(7) October 25, 1956. United States Marine Corps Miscellaneous Information and Index Form (NAVMC 118(1)–PD).

MISCELLANEOUS INFORMATION AND INDEX

MISCELLANEOUS INFORMATION Social Security No. 433-51-2037

HEIGHT	WEIGHT	COLOR EYES	COLOR HAIR	DATE
68 INCHES	135 LBS.	Hazel	Brown	24 Oct 1956

PHYSICAL PROFILE

DATE	P	U	L	H	E	S	CODE	SIGNATURE
24Oct58	1	1	1	1	1	1	A	Capt, USMC, ARO
	1	1	1	1	1	1	A	

ANNUAL ADMINISTRATIVE AUDIT COMPLETED

DATE	SIGNATURE AND RANK
5Nov57	1stLt. USMC
30Oct58	2ndLt

TOTAL SEA AND FOREIGN DUTY

YEARS: MONTHS:

DATE LAST RETURNED CONTINENTAL LIMITS OF U. S. PEBD 8 Dec 56

DATES IDENTIFICATION CARDS ISSUED

DATE ID TAGS ISSUED:

BLOOD TYPE: A

GAS MASK SIZE:

DEPOSIT RECORD BOOK NO:

CLASS SWIMMER: Y.O

REENLISTMENT BONUS:

(a) Paid $ None (Amount) reenlistment bonus _____ (Date) for _____ (Number) reenlistment.

(b) Prev pd $ None (Amount) total amt of reenl bonuses to include _____ (Number) reenlistment.

SIGNATURE: C.P. Wilson By direction

DATE: 25 OCT 1956

Articles UCMJ explained to me this date as required by Article 137, UCMJ.

Lee H. Oswald (Signature)

DATE: 2 MAY 57

Articles UCMJ explained to me this date as required by Article 137, UCMJ.

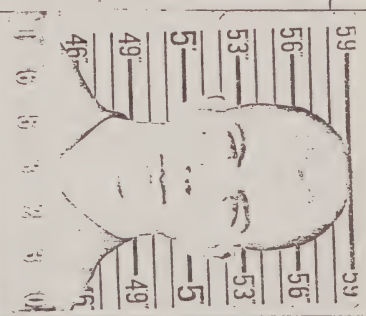
Lee H. Oswald (Signature)

INDEX

STANDARD PAGES		CHECK (✓) INITIAL PAGE	A	B
ENLISTMENT CONTRACT	NAVMC 118(2)–PD	X		
RECORD OF SERVICE	NAVMC 118(3)–PD	X		
FITNESS REPORTS SUBMITTED	NAVMC 118(4)–PD			
PROMOTION AND REDUCTION	NAVMC 118(5)–PD	X		
TIME LOST; ALLOTMENT; WEAPONS FIRING	NAVMC 118(6)–PD	X		
INDIVIDUAL TRAINING RECORD	NAVMC 118(7)–PD			
OCCUPATIONAL SPECIALTY AND EDUCATION	NAVMC 118(8)–PD	X		
COMBAT RECORD—MEDALS	NAVMC 118(9)–PD	X		
ADMINISTRATIVE REMARKS	NAVMC 118(11)–PD	X		
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LEAVE RECORD	NAVMC 118(16)–PD	X		
SEA AND AIR TRAVEL	NAVMC 118(17)–PD	X		
RECORD OF INDIVIDUAL RIFLE	NAVMC 118(20)–SD	X		
DEPENDENT TRAVEL RECORD	NAVMC 118(21)–SD	X		

DOCUMENTS INSERTED	INITIAL
~~Statement of Military Information~~	[illegible]
Parent's Consent	[illegible]
SA Action.	R.D.D.

DOCUMENTS INSERTED (Continued)	INITIAL



SIGNATURE OF MARINE (After photo affixed) Lee H. Oswald

DATE OF PHOTOGRAPH

NAME (Last) OSWALD (First) Lee (Middle) Harvey SERVICE NO. 1652230

NAVMC 118(1)–PD (REV. 10-54) (REPLACES PREVIOUS EDITION, WHICH IS OBSOLETE AND WILL NOT BE USED) 16—71103-1 U. S. GOVERNMENT PRINTING OFFICE

JFK EXHIBIT F-483

(8) May 8, 1958. Identification card, U.S. Forces, Japan.

U.S. FORCES, JAPAN
(在日米軍)
IDENTIFICATION CARD
(身分証明書)

Name (姓名)
OSWALD, LEE H.

Grade (階級) PVT
SN. (番号) 1653230

Organization (所属部隊)
MACS-1 MAG-11 1stMAW

Signature (署名)

DEC 1957 177

AG 613-Army-AG Admin Cen-AFPE-Japan

Nationality (国籍)
American

Date of Birth (生年月日)
18 October 1939

Identity Card No. (身分証明書番号)
00646

Date of Issuance (交付日)
8 May 1958

Signature of Issuing Officer (交付官署名)
Adjutant

(9) September 10, 1959. United States Passport No. 1733242, signed Lee H. Oswald.



[redacted]

IMPORTANT

This passport is NOT VALID until signed by the bearer on page two. PLEASE fill in names and addresses below:

BEARER'S NAME AND ADDRESS IN THE UNITED STATES:

Name LEE H. OSWALD

Address 7313 DAVANPORT ST. FT. WORTH [redacted]

BEARER'S FOREIGN ADDRESS:

MINSK 4, APT 24 KALININA ST.

U.S.S.R.

IN CASE OF DEATH OR ACCIDENT, NOTIFY:

Name ROBERT OSWALD

Address 2313 DAVANPORT ST. FORT WORTH, TEXAS

EXPIRATION AND RENEWAL

Unless limited to a shorter period, this passport EXPIRES two years from the date of issue shown on page two. You can RENEW it for not more than two additional years for a fee of five dollars. No matter when renewed, the period of renewal MUST end four years after date of original issue. This passport MUST be presented with your renewal application. Renewal is shown by a stamp placed in the passport.

NEW PASSPORT

When this passport expires and you want a new one, this passport should be presented with your application for the NEW passport.

(SEE OTHER IMPORTANT INFORMATION ON INSIDE OF BACK COVER)

4417 DDD

No. D 1733242

Passport

United States of America

Department of State

Photograph of bearer



DEPARTMENT OF STATE
LOS ANGELES, CALIF.

Renewal, extensions, amendments, limitations, and restrictions

This passport, properly visaed, is valid for travel in all countries unless OTHERWISE RESTRICTED. It is not valid for travel to or in any foreign state for the purpose of entering or serving in the armed forces of such a state.

This passport is not valid for travel to the following areas under control of authorities with which the United States does not have diplomatic relations: Albania, Bulgaria, and those portions of China, Korea and Viet-Nam under Communist control.

THIS PASSPORT IS NOT VALID FOR TRAVEL IN HUNGARY.

SURETE NATIONALE
R.S.LE HAVRE
-3 OCT 1959
S.ENTREE.P.
S.N.
R.S.LE HAVRE
-8 OCT 1959
SORTIE
-F.-
VISIT UP TO THREE MONTHS
IMMIGRATION OFFICER
30 OCT 1959
SOUTHAMPTON
IMMIGRATION
OFFICER
(144)
EMBARKED
10 OCT 1959
LONDON AIRPORT
10 X
6
7

Renewed extensions, amendments,
limitations and restrictions
SEE PAGE-15
Embassy of the United States of America
at Moscow, U.S.S.R. JULY 10,1961.
THIS PASSPORT IS VALID ONLY FOR
DIRECT TRAVEL TO THE UNITED
STATES.
RICHARD E. SNYDER
AMERICAN CONSUL
6

Visas

LAHTENUT
15 X 1959
VAINIKKALA

Гр. Освальд Ли Харвей

Зарегистрирован в Отделе Виз и Регистрации
УВД Мосгорсовета
для проживания в г. Москве
до 22 октября 1959 г.
Начальник Отдела виз
и Регистрации
№ 80886 20 октября 1959 г.
гор. Москва

Виза № 403339
продлена до 22 октября
1959 года
Начальник Отдела виз и регистрации
Управления УВД Мосгорсовета

8

Туристская Visas

ВИЗА № 403339
Ленинградского октября 1959 г.
ВЪЕЗДНАЯ-ВЫЕЗДНАЯ,
Гр-н США
Освальд Ли Харвей
Следует из Выборг в гор. Москву
15 ОКТ 1959
Выезд
для проживания в гор. Москва
до 22 октября 1959 г.
для пребывания в СССР и для выезда
из СССР через погр. пункт Выборг
в течение шести суток Москва
с момента перехода границы.
Консул СССР в Хельсинки

9

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Visas

AMERICAN EMBASSY
MOSCOW
U.S.S.R.
RENEWED MAY 4 1962
EXPIRES NOVEMBER 9 1963
CANCELED
JOSEPH F. MORRISSEY
AMERICAN CONSUL

Visas

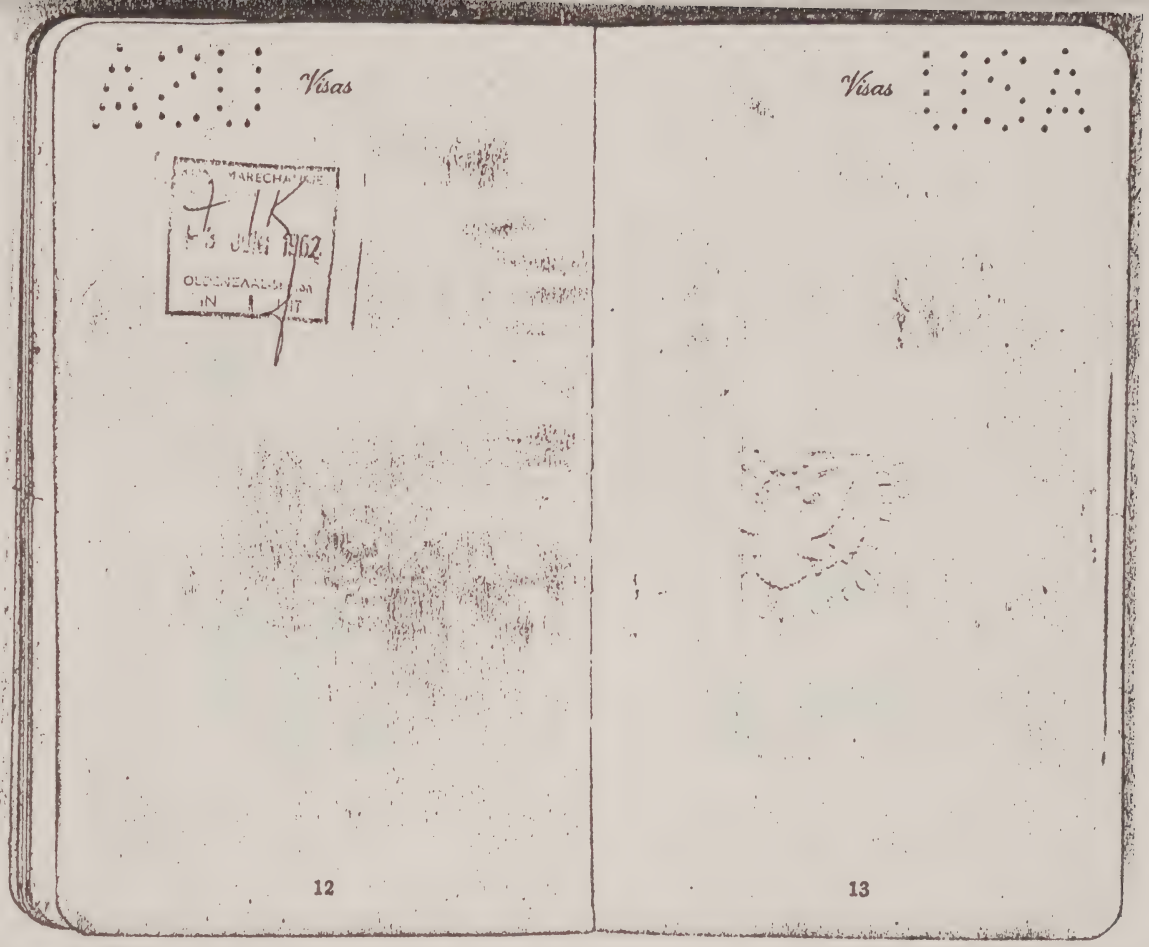
ВИЗА №305002

Выдана 22 мая 1962 г.
владельцу паспорта № 1733242
гр. США Освальду
Ли Харвею

ДЕЙСТВИТЕЛЬНА ДЛЯ ВЫЕЗДА
по 12/двенадцатое мая 62 г.
через пограничный пункт
а/п Москва-Брест

СССР ВЫЕЗД 07 МАЙ 1962 КПП СТ

Начальник милиции
Паспортного отдела
Город Минск


Visas
MARECHAL
JUIN 1962
12
Visas
13

Embassy of the United States of America
at Moscow, U.S.S.R. MAY 24, 1962.
THIS PASSPORT IS AMENDED TO
INCLUDE DAUGHTER JUNE LEE.



Joseph B. Norbury, Jr.
Consul of the United States of America

14

Visas

IMM. & NATZ. SERVICE
NEW YORK, N. Y. 33
ADMITTED
JUN 13 1962

AMERICAN EMBASSY,
MOSCOW,
U.S.S.R.
CLASS
TO

RENEWED- MAY 24, 1962
EXPIRES JUNE 24, 1962

JOSEPH B. NORBURY
AMERICAN CONSUL

Service fee 1152091
Tariff item No. 4
Fee paid: US $ 5.00
equal CY equiv. 4.50 Rubles

15

Visas

SEE PAGE -6

WARNING—ALTERATION OR MUTILATION OF ENTRIES IS PROHIBITED

DESCRIPTIVE DATA SEE PAGE ~~XXX~~ 6 AND 15

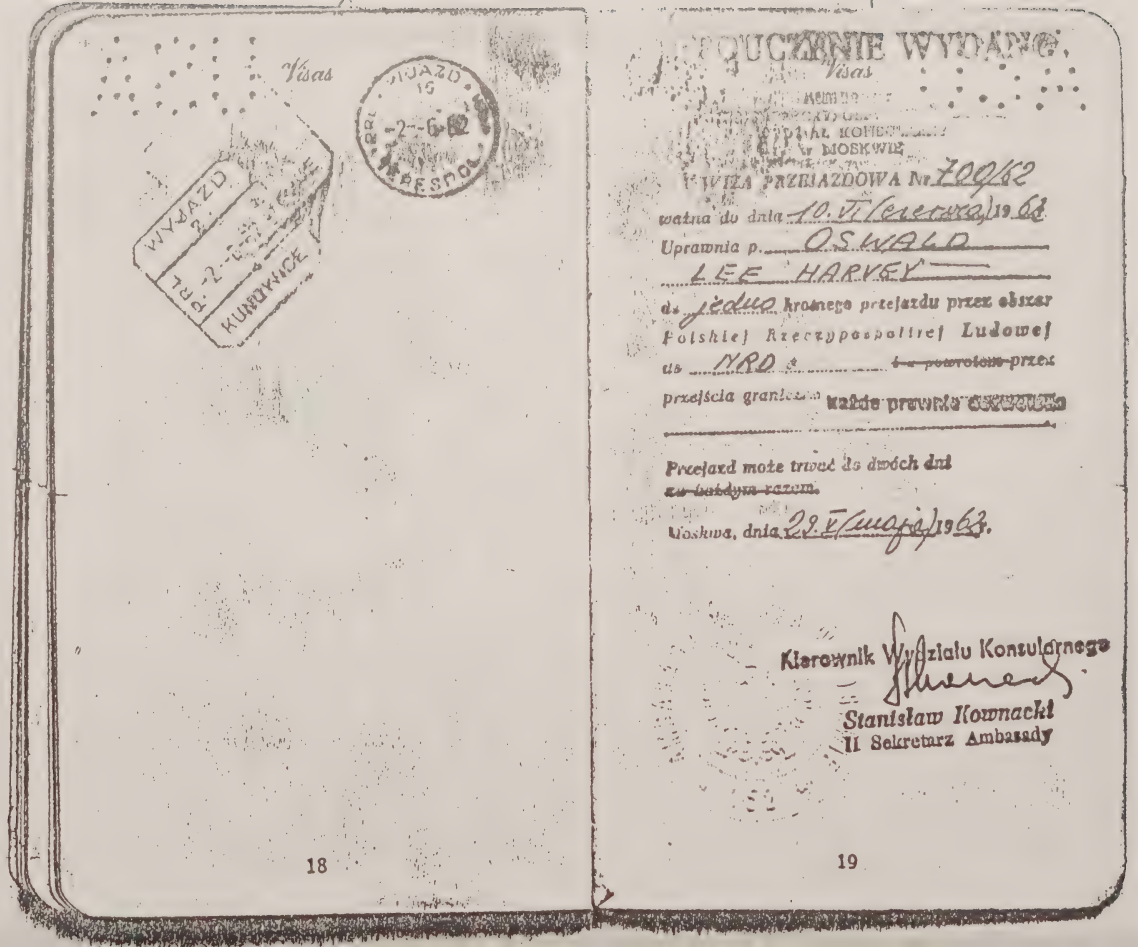
NAME: LEE HARVEY OSWALD			
WIFE: X X X			
MINORS: X X X SEE PAGE -14			
HEIGHT: 5 FT. 11 IN.	HAIR: BROWN	EYES: GRAY	VISIBLE MARKS: X X X
BIRTHPLACE: NEW ORLEANS, LA.			
BIRTH DATE: OCT. 18, 1939		OCCUPATION: SHIPPING EXPORT AGENT	
ISSUE DATE: SEPT. 10, 1959		SIGNATURE OF BEARER: Lee H. Oswald	

THIS PASSPORT IS NOT VALID UNLESS SIGNED BY
THE PERSON TO WHOM IT HAS BEEN ISSUED

I, the undersigned, Secretary of State of the United States of America, hereby request all whom it may concern to permit safely and freely to pass, and in case of need to give all lawful aid and protection to the above named citizen(s) of the United States.

Given under my hand and the seal of the Department of State

Christian A. Herter



Visas

WYJAZD 2. 12. 62 KUROWICE

Visas

WIZA PRZEJAZDOWA Nr. 70962

ważna do dnia 10. VI Czerwca 1963

Uprawnia p. OSWALD

LEE HARVEY

do jednokrotnego przejazdu przez obszar Polskiej Rzeczypospolitej Ludowej

do NRD

Przejazd może trwać do dwóch dni

Moskwa, dnia 29 V Maja 1963.

Kierownik Wydziału Konsularnego

Stanisław Kownacki

II Sekretarz Ambasady

18

19

(11) September 11, 1959. United States Marine Corps Notice of Obligated Service, signed Lee Harvey Oswald.

NOTICE OF OBLIGATED SERVICE

NAVMC 10228-PD (REV. 10-56)
(SUPERSEDES (REV. 2-55) EDITION WHICH MAY BE USED FOR 8-YEAR OBLIGORS)

INSTRUCTIONS

Prepare in quadruplicate
Original to Service Record Book
Duplicate to CMC (Code DGH)
Triplicate to member
Quadruplicate to district director concerned
X out those words which do not apply

NAME OF MEMBER	SERVICE NO.	RANK	MOS
OSWALD, Lee Harvey	1653230	PFC E-2	6741

1. You, having assumed the 6-year military service obligation prescribed by law upon your (induction) (enlistment) in the U. S. Marine Corps (Reserve), on 24 October, 19 56,
(Branch of Armed Forces initially entered)

and having served in the United States Marine Corps (Reserve) from 24 October, 19 56, to 11 September, 19 59, are hereby (released from active duty and transferred to the Marine Corps Reserve) (retained in the Marine Corps Reserve) for the remainder of that 6-year period which ends on 8 December, 19 62, unless sooner discharged. During that period you are deemed by law to be a member of the Marine Corps Reserve and will be subject to such training and service as is now or may hereafter be authorized by law for members of the Marine Corps Reserve.

2. You are (assigned to) (retained in) the (Ready) (Standby) Reserve, Class (I) (II) (III). You are further (transferred to) (retained in) the Marine Air Reserve Training Command
(Unit or district)
address of which is: Naval Air Station, Glenview, Illinois
(Unit or district address)
You have given your future mailing address as: 3124 West 5th Street
Forth Worth, Texas

3. This Notice of Obligated Service executed for and on behalf of the United States Marine Corps at:
on 11 September, 19 59
HEADQUARTERS AND HEADQUARTERS SQUADRON
MARINE CORPS AIR STATION
EL TORO (SANTA ANA), CALIFORNIA

By A. G. Ayers
(Signature and rank of officer executing notice)
A. G. AYERS, JR., 1st Lt, USMCR

4. I hereby acknowledge receipt of this Notice of Obligated Service.

SIGNATURE OF MEMBER Lee Harvey Oswald

This is to certify that a copy of this Notice of Obligated Service was (mailed to) (delivered to) the man named above.

SIGNATURE A. G. Ayers
A. G. AYERS, JR., 1st Lt, USMCR

E 45411

JFK Exhibit F-485

(12) September 11, 1959. United States Marine Corps Security Termination Statement and Index, signed Lee Harvey Oswald.

SECURITY TERMINATION STATEMENT
OF NAV FORM 5511-14

HEADQUARTERS AND HEADQUARTERS SQUADRON
U. S. MARINE CORPS AIR STATION
EL TORO (SANTA ANA) CALIFORNIA

1. I hereby certify that I have conformed to the directives contained in the U. S. Navy Security Manual for Classified Matter and Registered Publication Manual in that I have returned to the Naval Establishment all classified matter which I have had in my possession.

2. I further certify that I am not retaining or taking away with me from my place of employment (duty) any document or thing containing or incorporating information affecting the National Defense of other matter Classified, Top Secret, Secret, or Confidential to which I obtained access during my employment (duty), in any manner whatsoever.

3. I shall not hereafter in any manner reveal or divulge to any person any information affecting the National Defense, Classified, Top Secret, Secret, or Confidential, or which I have gained Knowledge during my employment (duty), except as may be hereafter authorized in writing by officials of the Naval Establishment empowered to grant such authority.

(If any of the above statements cannot truthfully be made, the word "not" shall be stricken out of the appropriate sentence and a full statement attached hereto indication in detail the circumstances which prevent the making of the statement in its original form, includint the names of the persons authorizing the particular handling of classified matter)

4. I, LEE HARVEY OSWALD 1653230 have been informed and am aware that 18 U. S. C., 1946 ed., Sup. IV, 792-797 and the Internal Security Act of 1950 prescribe severe penalties for unlawfully divulging information affecting the National Defense. I certify that I have read and understand appendices B, D, E, F, and H of the U. S. Navy Security Manual for Classified Matter, I have been informed and am aware that certain categories of Reserve and Retired personell on inactive duty can be recalled to duty, under the pertinent provisions of law relationg to each class for trial by court-martial for unlawful disclosure of information. I have been informed and an aware that the making of a wilfully false statement herein renders me subject to trial therefore, as provided by 18 U. S. C., 1946 ed., Sup. IV, 1001.

A. C. [illegible], 1stLt., USMCR 072172 — Lee Harvey Oswald 1653230
(Witness) (File of Ser No) — (Full Name) (Ser No)

Officer in Charge Separation Section — 11 September 1959
(Date)

[redacted]
—JFK EXHIBIT F-484—

(13) September 11, 1959. Carbon copy of Armed Forces of the United States Report of Transfer or Discharge, signed Lee Harvey Oswald, with a carbon copy signature.

111-114 114 ○ ○ N K

LEGEND: Insert N/A to the items below which are not applicable.

PERSONAL DATA

1. LAST NAME - FIRST NAME - MIDDLE NAME	2. SERVICE NUMBER	3a. GRADE, RATE OR RANK	b. DATE OF RANK (Day, Month, Year)
OSWALD, Lee Harvey	1653230	PFC (E-2)	1Mar59

4. DEPARTMENT, COMPONENT AND BRANCH OF SERVICE	5. PLACE OF BIRTH (City and State or Country)	6. DATE OF BIRTH (DAY / MONTH / YEAR)
USMC	New Orleans, Louisiana	18 / Oct / 39

7a. RACE	b. SEX	c. COLOR HAIR	d. COLOR EYES	e. HEIGHT	f. WEIGHT	8. U.S. CITIZEN	9. MARITAL STATUS
Caucasian	Male	Brown	Grey	71"	150	☒ YES ☐ NO	Single

10a. HIGHEST CIVILIAN EDUCATION LEVEL (Years)	b. MAJOR COURSE OR FIELD
High School - 1	Academic

TRANSFER OR DISCHARGE DATA

11a. TYPE OF TRANSFER OR DISCHARGE	b. STATION OR INSTALLATION AT WHICH EFFECTED
Transferred to Marine Corps Reserve	H&HS, MCAS, El Toro, (Santa Ana), California

c. REASON AND AUTHORITY	d. EFFECTIVE DATE (DAY / MONTH / YEAR)
1900.2B & CG MCAS's 5th End of 31Mar59 (2Ab-Deputamay. Par 10277) MARCORMAN & MCO	11 / Sep / 59

12. LAST DUTY ASSIGNMENT AND MAJOR COMMAND	13a. CHARACTER OF SERVICE	b. TYPE OF CERTIFICATE
AirFMFPac,MCAS,ElToro(SantaAna)California MCC-9,MARTC,3rdMAW,	HONORABLE	DD-217-MC

SELECTIVE SERVICE DATA

14. SELECTIVE SERVICE NUMBER	15. SELECTIVE SERVICE LOCAL BOARD NUMBER, CITY, COUNTY AND STATE	16. DATE INDUCTED (DAY / MONTH / YEAR)
N/A	N/A	N/A

17. DISTRICT OR AREA COMMAND TO WHICH RESERVIST TRANSFERRED
MARTC NAS, Glenview, Illinois

SERVICE DATA

18. TERMINAL DATE OF RESERVE OBLIGATION (DAY / MONTH / YEAR)	19. CURRENT ACTIVE SERVICE OTHER THAN BY INDUCTION a. SOURCE OF ENTRY	b. TERM OF SERVICE (Years)	c. DATE OF ENTRY (DAY / MONTH / YEAR)
8 / Dec / 62	☒ ENLISTED (First Enlistment) ☐ ENLISTED (Prior Service) ☐ REENLISTED ☐ OTHER:	3	24 / Oct / 56

20. PRIOR REGULAR ENLISTMENTS	21. GRADE, RATE OR RANK AT TIME OF ENTRY INTO CURRENT ACTIVE SERVICE	22. PLACE OF ENTRY INTO CURRENT ACTIVE SERVICE (City and State)
NONE	Private	Dallas, Texas

23. HOME OF RECORD AT TIME OF ENTRY INTO ACTIVE SERVICE (Street, RFD, City, County and State)
4935 Collinwood Street
Fort Worth, Tarrant, Texas

24. STATEMENT OF SERVICE		YEARS	MONTHS	DAYS
a. CREDITABLE FOR BASIC PAY PURPOSES	(1) NET SERVICE THIS PERIOD	2	9	3
	(2) OTHER SERVICE	0	0	0
	(3) TOTAL (Line (1) + line (2))	2	9	3
b. TOTAL ACTIVE SERVICE		2	9	3
c. FOREIGN AND/OR SEA SERVICE		1	2	24

25a. SPECIALTY NUMBERS AND TITLE	b. RELATED CIVILIAN OCCUPATION AND D.O.T. NUMBER
6741, Communications Operator	Radio Operator 0-61.30

26. DECORATIONS, MEDALS, BADGES, COMMENDATIONS, CITATIONS AND CAMPAIGN RIBBONS AWARDED OR AUTHORIZED
NONE

27. WOUNDS RECEIVED AS A RESULT OF ACTION WITH ENEMY FORCES (Place and date, if known)
NONE

300 W. Vickery Blvd. Fort Worth 4, Texas OCT 12 1959

28. SERVICE SCHOOLS OR COLLEGES, COLLEGE TRAINING, COURSES AND/OR POST-GRADUATE COURSES SUCCESSFULLY COMPLETED			29. OTHER SERVICE TRAINING COURSES SUCCESSFULLY COMPLETED
SCHOOL OR COURSE a	DATES (From - To) b	MAJOR COURSES c	
Jacksonville, Florida	18Mar57-24May57	Avn Fundamentals Cl "A" Sch	USAFI GED HS Level
Biloxi, Mississippi	27May57-19Jun57	ACRMOperCrse	

30a. GOVERNMENT LIFE INSURANCE IN FORCE	b. AMOUNT OF ALLOTMENT	c. MONTH ALLOTMENT DISCONTINUED
☐ YES ☒ NO	N/A	N/A

31. VA BENEFITS PREVIOUSLY APPLIED FOR (Specify type)	d. VA CLAIM NUMBER
NONE	C- N/A

AUTHENTICATION

32. REMARKS
Lump sum leave settlement due but not settled.
Military pay[illegible] $221.55
Allotment for [illegible] Bank.
Time lost current active duty: Forty-five (45) days
Periods in a non-pay status: From 29Jun58 to 12Aug58
Good Conduct Medal period commences 27Jun58 (1st Award)
Total payment on separation: $132.30 (9/11/59)

33. PERMANENT ADDRESS FOR MAILING PURPOSES (Street, RFD, City, County and State)	34. SIGNATURE OF PERSON BEING TRANSFERRED OR DISCHARGED
4935 Collinwood, Fort Worth, Tarrant, Texas	Lee Harvey Oswald

35a. TYPED NAME, GRADE AND TITLE OF AUTHORIZING OFFICER	b. SIGNATURE OF OFFICER AUTHORIZED TO SIGN
A.G.AYERS Jr,1stLt USMCR Asst OIC SepSec	[signature]

DD FORM 1 NOV 58 214 REPLACES EDITION OF 1 JUL 52 WHICH IS OBSOLETE

ARMED FORCES OF THE UNITED STATES REPORT OF TRANSFER OR DISCHARGE

D-1899 5

17 Cr. 1.

24 Cr

(14) September 14, 1959. Selective Service System Registration card, signed Lee H, Oswald.

1. NAME IN FULL — Last	First	Middle	SELECTIVE SERVICE NUMBER
OSWALD	Lee	Harvey	41 114 39 532
2. PLACE OF RESIDENCE — Street and Number or RFD Route			5. DATE OF BIRTH
3124 West 5th St.			Oct 18, 1939
City, Town, or Village	Zone	County / State	4. PLACE OF BIRTH
Fort Worth	7	Tarrant / Texas	New Orleans, La.
3. MAILING ADDRESS (If different from place of residence) — Street and Number or RFD Route			
City, Town, or Village	Zone	County / State	
6. NAME AND ADDRESS OF PERSON WHO WILL ALWAYS KNOW YOUR ADDRESS			
Robert Oswald, 7313 Davenport St., Ft. Worth(Brother)			
7. OCCUPATION	8. NATURE OF BUSINESS, SERVICE RENDERED, OR CHIEF PRODUCT		
Unemployed			
9. FIRM OR INDIVIDUAL BY WHOM EMPLOYED			
10. PLACE OF EMPLOYMENT OR BUSINESS			
Form Approved Budget Bureau No. 33-R099.7.			SELECTIVE SERVICE SYSTEM REGISTRATION CARD

SSS Form No. 1 (Revised 6-11-58) (over)

D-18

11. Active duty in the Armed Forces of the United States or a cobelligerent nation since Sept. 16, 1940:

BRANCH OF ARMED FORCES OR COUNTRY	SERVICE NO.	DATE OF ENTRY	DATE OF SEPARATION
USMC	1653230	24 Oct 56	11 Sep 59

12. Present membership in a reserve component of the Armed Forces:

BRANCH OF ARMED FORCES	SERVICE NO.	DATE OF ENTRY	GRADE
USMCR	1653230	11 Sep 59	Pfc

ORGANIZATION MARTC NAS Glenview, Ill

I affirm that I have verified the foregoing answers and that they are true:

Lee W. Oswald
(Signature of registrant)

DESCRIPTION OF REGISTRANT

13. Color of eyes Blue Color of hair Brown Complexion Med Height (approx.) 5 ft 11 in

Weight (approx.) 150 Other obvious physical characteristics that will aid in identification: None

I certify that my answers are true; that the person registered has read or has had read to him his own answers; that I have witnessed his signature or mark and that all of his answers of which I have knowledge are true, except as follows:

None to my knowledge

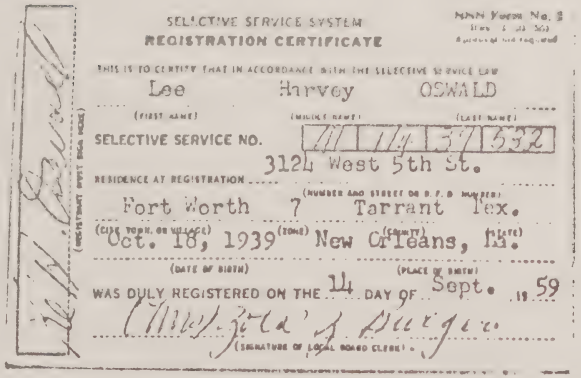
Sep 11, 1959
(Date of registration)

Lydia T. Sheridan
(Signature of registrar)

Registrar for Local Board 114 (Number) Fort Worth (City or county) Texas (State)

GPO : 1958 O—449390

(15) September 14, 1959. Selective Service System registration certificate.



SELECTIVE SERVICE SYSTEM
REGISTRATION CERTIFICATE

NAVY Voucher No. 8
Approval not required

THIS IS TO CERTIFY THAT IN ACCORDANCE WITH THE SELECTIVE SERVICE LAW

Lee (FIRST NAME) Harvey (MIDDLE NAME) OSWALD (LAST NAME)

SELECTIVE SERVICE NO. 11 114 5 7 552

RESIDENCE AT REGISTRATION 3124 West 5th St. (NUMBER AND STREET OR R. F. D. NUMBER)

Fort Worth (CITY, TOWN, OR VILLAGE) 7 (ZONE) Tarrant (COUNTY) Tex. (STATE)

Oct. 18, 1939 (DATE OF BIRTH) New Orleans, La. (PLACE OF BIRTH)

WAS DULY REGISTERED ON THE 14 DAY OF Sept. 1959

(SIGNATURE OF LOCAL BOARD CLERK)

COLOR OF EYES Blue COLOR OF HAIR Brn.

COMPLEXION Med.

HEIGHT 5 FT 11 IN WEIGHT 150

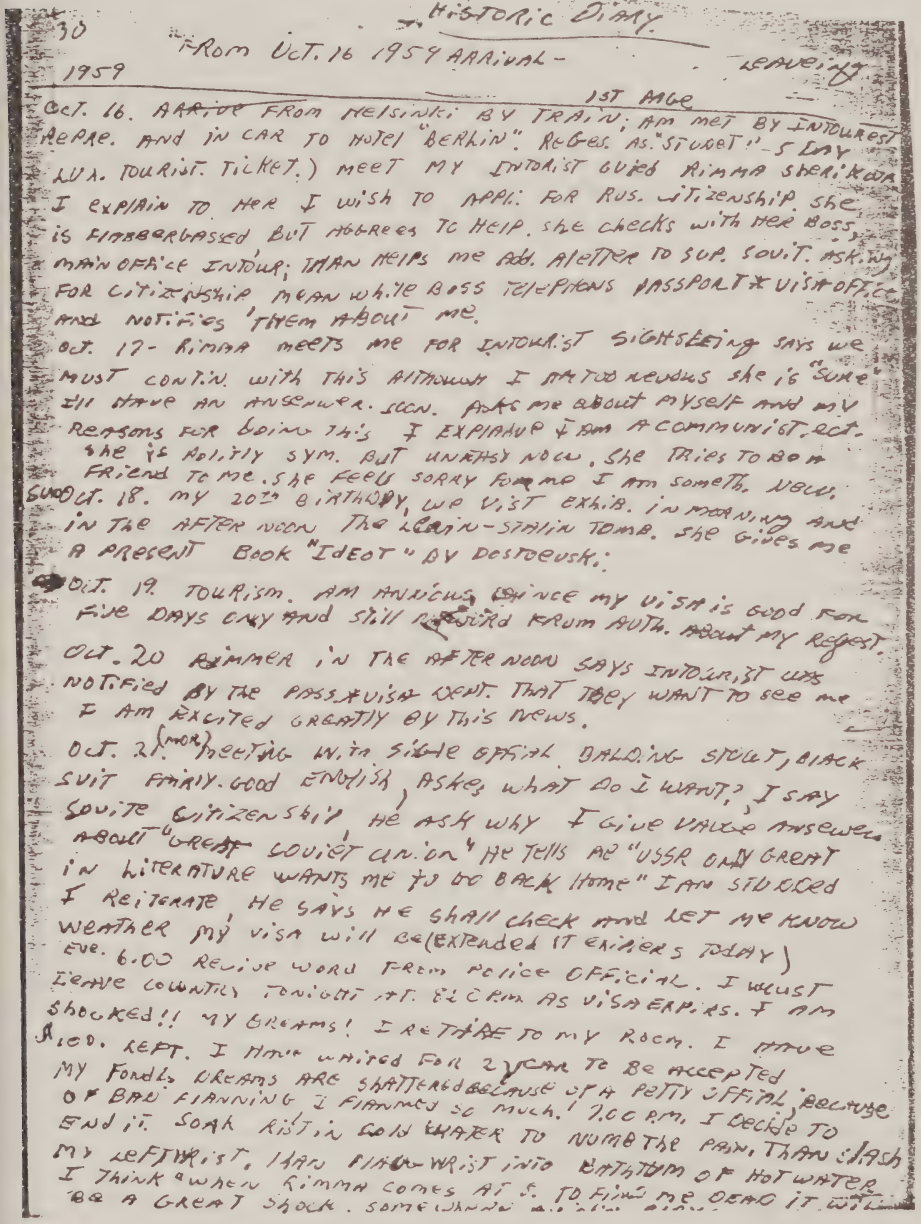
TEXAS LOCAL BOARD NO. 114
SELECTIVE SERVICE SYSTEM
RM 2[illegible] [illegible] A. [illegible] ST.
FORT [illegible], TEXAS

(LOCAL BOARD STAMP)

THE LAW REQUIRES YOU TO HAVE THIS CERTIFICATE IN YOUR PERSONAL POSSESSION AT ALL TIMES FOR IDENTIFICATION AND TO NOTIFY YOUR LOCAL BOARD OF ANY CHANGE OF ADDRESS.

GPO 1956 O-381648

(16) October 16, 1959 to March 27, 1962. Historical diary. 12 handwritten pages.



30 HISTORIC DIARY.

1959 FROM OCT. 16 1959 ARRIVAL - LEAVE, 19

1ST PAGE

Oct. 16. ARRIVE FROM HELSINKI BY TRAIN; AM MET BY INTOURIST REPRE. AND IN CAR TO HOTEL "BERLIN". REGES. AS "STUDET" - 5 DAY LUX. TOURIST TICKET.) MEET MY INTOURIST GUIDE RIMMA SHERIKOVA I EXPLAIN TO HER I WISH TO APPLI. FOR RUS. CITIZENSHIP. SHE IS FLABBERGASSED BUT AGREES TO HELP. SHE CHECKS WITH HER BOSS, MAIN OFFICE INTOUR; THAN HELPS ME ADD. A LETTER TO SUP. SOVIT. ASK. ING FOR CITIZENSHIP MEAN WHILE BOSS TELEPHONES PASSPORT & VISA OFFICE AND NOTIFIES THEM ABOUT ME.

OCT. 17 - RIMMA MEETS ME FOR INTOURIST SIGHTSEEING SAYS WE MUST CONTIN. WITH THIS ALTHOUGH I AM TOO NERVOUS SHE IS "SURE" I'LL HAVE AN ANSWER SOON. ASKS ME ABOUT MYSELF AND MY REASONS FOR DOING THIS I EXPLAIN & I AM A COMMUNIST. ECT. SHE IS ABILITY SYM. BUT UNHAPPY NOW. SHE TRIES TO BE A FRIEND TO ME. SHE FEELS SORRY FOR ME I AM SOMETH. NOW.

OCT. 18. MY 20TH BIRTHDAY, WE VISIT EXHIB. IN MORNING AND IN THE AFTER NOON THE LENIN-STALIN TOMB. SHE GIVES ME A PRESENT BOOK "IDEOT" BY DOSTOEVSK.

OCT. 19. TOURISM. AM ANXIOUS SINCE MY VISA IS GOOD FOR FIVE DAYS ONLY AND STILL NO WORD FROM AUTH. ABOUT MY REQEST.

OCT. 20 RIMMA IN THE AFTER NOON SAYS INTOURIST WAS NOTIFIED BY THE PASS & VISA DEPT. THAT THEY WANT TO SEE ME I AM EXCITED GREATLY BY THIS NEWS.

OCT. 21. (MON.) MEETING W. TO SIDE OFFICIAL. BALDING STOUT, BLACK SUIT FAIRLY GOOD ENGLISH, ASKED WHAT DO I WANT? I SAY SOVIET CITIZENSHIP, HE ASK WHY I GIVE VAGUE ANSWERS ABOUT "GREAT SOVIET UNION" HE TELLS ME "USSR ONLY GREAT IN LITERATURE WANTS ME TO GO BACK HOME" I AM SHOCKED I REITERATE, HE SAYS HE SHALL CHECK AND LET ME KNOW WEATHER MY VISA WILL BE (EXTENDED IT EXPIRES TODAY)

EVE. 6.00 RECIVE WORD FROM POLICE OFFICIAL. I MUST LEAVE COUNTRY TONIGHT AT 12 O'CLOCK AS VISA EXPIRES. I AM SHOCKED!! MY DREAMS! I RETIRE TO MY ROOM. I HAVE $100. LEFT. I HAVE WAITED FOR 2 YEARS TO BE ACCEPTED MY FONDLY DREAMS ARE SHATTERED BECAUSE OF A PETTY OFFICIAL BECAUSE OF BAD PLANNING I PLANNED SO MUCH. 7.00 P.M. I DECIDE TO END IT. SOAK RIGHT IN COLD WATER TO NUMB THE PAIN, THAN SLASH MY LEFT WRIST, HAND RIGHT WRIST INTO BATHTUB OF HOT WATER I THINK WHEN RIMMA COMES AT 8. TO FIND ME DEAD IT WILL BE A GREAT SHOCK. SOMETHING [illegible]

DIARY 2 pp Hdy

31

Sept. 21 (Sun.) "WATCH MY LIFE WHIRL AWAY. I THINK TO MYSELF "HOW EASY TO LIE" AND "A SWEET DEATH, (TO VIOLINS) ABOUT 800 Rimma finds me unconscious (bathtub water A RICH Red color) She screams (I remember that) and runs for help. AMBULANCE comes, am taken to hospital. Where five stitches are put in my wrist. Poor Rimma stays by my side (as interpreator (my Russian is still very bad) FAR into the night, I tell her "go home" (my mood is BAD) But she stays, she is my friend & she has a strong will only at this moment I notice she is pretty

Oct. 22. HOSPITAL I am in a small room with about 12 others (sick persons.) 2 doctors and a nurse The room is very drab as well as the breakfast. Only after prolonged (2 hours) observation of the other pat. do I realize I am in the insanity ward. This realization disquits me. Later in afternoon I am visited by Rimma, she comes in with two doctors & as enters she must ask me medical question: Did you know what you were doing? Ans. yes Did you black out? No. ect. I thank comp. about poor food the doctors laugh approvingly. This is a good sign later the 1 leave, I am alone with Rimma (among the hospital ?) she encourages me and scolds me. she says she will help me to get transfered to another section of hos. (not for insane) where food is good.

Oct. 23. Transferred to ordinary ward, (airy, good food.) But nurses suspicious of me. [they know]. Afternoon I am visited by Rosa Abramovna of the Hotel Tourist office, who asks about my health, very beautiful, excellent end., very merry and kind, she makes me very glad to be alive. Later Rimma visits

Oct. 24 Hospital routine, Rimma visits me in afternoon

Oct. 25. " "

Oct. 26 An Embassy American at the hospital grow suspicious about me for some reason. Because at Embassy I told him I had not registered as most tourist and I am in general evasive about my presence in Moscow & at hospital afternoon Rimma visits.

Oct. 27. Stitches are taken out by doctor with "dull" scissor

Oct. 29 leave hospital & interpret chr. with Rimma for hotel "Berlin" later I change hotels to "Metropole", all clothes packed, and money from F.I. (from M the last kopeek) Returned as well as watch, rings. Obtained Similtseva (tourist office head) new room is with bath to come now sit and take with them poor time & get telephone at new hotel. They feel sorry for me—

32 DIARY 3rd page

Oct. 28 (Con.) Rimma notifies me that, Passs Registration Office wishes to see me about my future. Later Rimma and car pick me up and we enter the offices to find four officials waiting for me (all unknown to me) They ask how my arm is, I say ok. They ask "Do you want to go to your Homeland. I say no I want soviet citizen I say I want to reside in the Soviet Union. They say they will see about that. Then they ask me about the one official with whom I spoke in the first place (border. He did not pass along my request at all but thought to simply get rid of me by not extending my soviet visa. At the time I requested it) I describe him. They make notes (what papers do you have to show who and what you are) I give them my Discharge papers from the Marine Corps, They say wait for our ans. I ask how long? Not soon. Later Rimma comes to check on me. I feel invited and insult her.

Oct. 29. Hotel Room 214 Metropole Hotel. I wait. I worry I eat once, stay near to phone worry I keep fully dressed

Oct. 30. Hotel Room. I have been in hotel three days it seems like three years I must have some sort of a showdown.

Oct. 31. I make my decision. Getting passport at 12:00 I meet and talk with Rimma for a few minutes she says; stay in your room and eat well, I don't tell her about what I intend to do since I know she would not approve. After she leaves I wait a few minutes and then I catch a taxi. "American Embassy" I say. 12:30, I arrive American Embassy, I walk in and say to the receptionist "I would like to see the consular" She points at a large door and says "If you are a tourist please register". I take out my American passport and say "I'm the desk, I have come to dissolve my American citizenship" (a way matter-of-factly she tells me to enter the office of Richard Snyder, American Consular in Moscow at that time He invites me to sit down. He finishes a letter he is typing and then ask what he can do for me. I tell him I have decided to take Soviet citizenship and would like to legally dissolve my U.S. citizenship. His assistant (now Head Consular) [illegible] leaves us and [illegible]

See Oct 31st INTERVIEW

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3 1959 U.S. DIARY PAGE 4

SAT. OCT 31. CON WARNES ME NOT TO TAKE any steps before the soviets suspect me, says I am a "fool" and says the dissolution PAPERS ARE ALONG TIME in PREPARING (IN OTHER WORDS REFUSES TO ALLOW ME AT THAT TIME TO Dissolve U.S. Citiz. I STATE "MY MIND is MADE UP" FROM THIS DAY FORWARD I CONSIDER MYSELF NO CITIZEN OF THE U.S.A. I SPEND 40 MINUTES AT THE EMBASSY BEFORE SNYDER SAYS "NOW UNLESS YOU WISH TO EXPOUND ON YOUR MARXIST BELIEFS YOU CAN GO." I WISH TO DISSOLVE MY U.S. CITIZ, NOT TODAY HE SAYS IN EFFECT. I LEAVE EMBASSY ELATED AT THIS SHOWDOWN, RETURNING TO MY HOTEL I FEEL NOW MY ENERGIES ARE NOT SPENT IN VAIN. I'M SURE RUSSIANS WILL EXCHANGE ME AFTER THIS SIGN OF MY FAITH IN THEM. 2:00 A KNOCK, A REPORTER BY THE NAME OF GOLDSTENE WANTS AN INTERVIEW I'M FLABBERGASSED & HOW DID YOU FIND OUT? THE EMBASSY CALLED U.S. HE said. I SENT HIM AWAY I SHOULD REALIZE THIS IS ONE WAY TO BRING PRESSURE ON ME BY NOTIFYING MY RELATIONS IN U.S. THROUGH THE NEWSPAPERS, ALTHOUGH THEY WOULD SAY "IT'S FOR THE PUBLIC RECORD" A HALF HOUR LATER ANOTHER REPORTER MISS MOSBY COMES. I ANSWER A FEW QUICK QUESTIONS AFTER REFUSING AN INTERVIEW. I AM SURPRISED AT THE INTEREST. I GET PHONE CALLS FROM "TIME" at night a phone call from the States I refuse all calles without finding out who it from. I feel NON-DEPLUME because of the attention 10:00 I RETIRE.

NOV. 1 - MORE REPORTERS, 3 PHONE CALLS FROM BROTHER & MOTHER NOW I FEEL SLIGHTLY AXZIMARATED, NOT SO LONELY.

NOV-2-15 DAYS OF UTTER LONELINESS I REFUSE ALL REMARKS PHONE CALL I REMAINE IN MY ROOM, I AM RAKED WITH DESPERATE

NOV 15 - I DECIDE TO GIVE AN INTERVIEW, I HAVE MISS MOSBYS CARD SO I CALL HER. SHE DRIVES RIGHT OVER I GIVE MY STORY, ALLOW PICTURES, LATER STORY IS DISTORTED, SENT WITHOUT MY PERMISSION, THAT IS; BEFORE I EVER SAW AND OKED HER STORY. AGAIN I FEEL SLIGHTLY BETTER BECAUSE OF THE ATTENTION

See Nov 15th Entry

NOV. 16. A RUSSIAN OFFICIAL COMES TO MY ROOM MAKES KNOWN I AM NOTIFIED ME I CAN REMAIN IN USSR TILL SOME SOLUTION IS FOUND WITH WHAT TO DO WITH ME, IT IS COMFORTING NEWS.

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D. ARY. PAGE 5

NOV 17 - DEC. 30 I HAVE BOUGHT MYSELF TEXT SELF-TEACHING RUSSIAN LAN. BOOKS I FORCE MYSELF TO STUDY 8 HOURS A DAY I SIT IN MY ROOM AND READ AND MEMORIZE WORDS. ALL MEALS I TAKE IN MY ROOM. RIMMER ARRANGED THAT IT IS VERY COLD ON THE STREETS SO I RARELY GO OUTSIDE AT ALL FOR THIS MONTH AND A HALF I SEE NO ONE SPEAK TO NO-ONE ACCEPT EVERY-MOD. AND THAN RIMMER, WHO CALLS THE MINISTRY ABOUT ME. HAVE THEY FORGOTTEN?, DURING DECEMBER I PAID NO MONEY TO THE HOTEL, BUT RIMMER TOLD HOTEL I WAS EXPECTING A LOT OF MONEY FROM USSR. I HAVE 28. LEFT. THIS MONTH I WAS CALLED TO THE PASSPORT OFFICE AND MET 3 NEW OFFICIALS WHO ASKED ME THE SAME QUESTIONS I WAS A MONTH BEFORE. THEY APPEAR NOT TO KNOW ME AT ALL.

DEC 31. NEW YEAR'S EVE I spend in the COMPANY OF ROSA HAFNOVA AT THE HOTEL BERLIN, SHE HAS THE DUTY. I SIT WITH HER UNTIL PAST MIDNIGHT, SHE GIVES ME A SMALL "BORATIN" CLOWN, FOR A NEW YEARS PRESENT SHE IS VERY NICE I FOUND OUT ONLY RECENTLY SHE IS MARRIED, HAS A SMALL SON WHO WAS BORN CRIPPLED, THAT IS WHY SHE IS SO STRANGELY TENDER AND COMPELING.

JAN 1-4 NO CHANGE IN ROUTINE

JAN 5 I AM CALLED TO PASSPORT OFFICE AND FINALLY GIVEN A SOVIET DOCUMENT NOT THE SOVIET CITIZENSHIP AS I SO WANTED, ONLY A RESIDENCE document, not even for foreigners but a paper called "for those without citizenship" still I am happy. THE OFFICIAL SAYS THEY ARE SENDING ME TO THE CITY OF MINSK I ASK "IS THAT IN SIBERIA?" HE LAUGHS, HE ALSO TELLS ME THAT THEY HAVE ARRANGED FOR ME TO RECEIVE SOME MONEY THROUGH THE Red Cross TO PAY MY HOTEL BILLS AND EXPENSES I THANK THE GENTLEMEN AND LEAVE LATER IN THE AFTERNOON I SEE ROSANNA SHE ASKS ARE YOU HAPPY? "YES"

JAN. 6. I GO TO RED CROSS IN MOSCOW FOR MONEY WITH INTERPRETER (A NEW ONE) I RECEIVE 350 RUBLES A MONTH!! LATER IN MINSK I AM TO EARN 90 RUBLES A MONTH AT THE FACTORY.

JAN. 7. I LEAVE MOSCOW BY TRAIN FOR MINSK BELORUSSIA, MY HOTEL WILL HAVE MADE RESERVATION FOR ME. I HAVE A TRAIN TICKET TO MINSK AT COST OF 5 RUBLES AND I HAVE ABT $ MONEY & HOPE. I WROTE MY BROTHER & MOTHER LETTERS IN WHICH I SAID "I DO NOT KNOW WHAT TODAY WILL BRING BUT THAT YOU REMAIN I AM BEGINNING A NEW LIFE AND I DON'T WANT ANY PART OF THE OLD",

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235. DIARY MINSK. 1946

JAN. 2. ARRIVE IN MINSK, MET BY 2 WOMEN RED CROSS WORKERS. WE GO TO HOTEL "MINSK" I TAKE ROOM, AND MEET ROSA AND STELLINA TWO PERSONS FROM INTOURIST IN HOTEL WHO SPEAK ENGLISH STELLINA IS IN 40's NICE MARRIED YOUNG CHILD, ROSA ABOUT 23 BLOND ATTRACTIVE UNMARRIED EXCELLENT ENGLISH, WE ATTRACT EACH OTHER AT ONCE.

JAN 8. I MEET THE CITY MAYOR, COMRADE SHARPOF. WHO WELCOMES ME TO MINSK, PROMISES A RENT FREE APARTMENT "SOON" AND WARNS ME ABOUT "UNCULTURED PERSONS" WHO sometimes INSULT FOREIGNERS. MY INTERPRETER: ROMAN DETKOF. HEAD FOR. TECH INSTIT. NEXT DOOR.

JAN. 10. TALK TO MYSELF I WALK THROUGH CITY, VERY NICE.

JAN. 13 I VISIT MINSK RADIO FACTORY WHERE I SHALL WORK. THERE I MEET ARGENTINIAN EMMIGRANT ALEXANDER ZEGER BORN A POLISH JEW. EMIGR. TO ARGEN. IN 1938 AND BACK TO POLISH HOMELAND (NOW PART OF RUSS.) IN 1955 SPEAKS ENGLISH with AMER. ACCENT he WORKED FOR AMER. COM. IN ARGEN. HE IS HEAD OF A DEPT. A QUALIFIED ENGINEER, IS UNHAPPY AND MISTREATED LIKewise HE SEEMS TO WANT TO TELL ME SOMETHING BUT I SUSPECT HIM IN MY TEMPER. DOCU. AND SAY. SOON I SHALL HATE RUSS. CITIZ.

JAN. 13 TO I WORK AS A "CHECKER" METAL WORKER, PAY: 700 RUB A MONTH. WORK VERY EASY I AM LEARNING RUSSIAN QUICKLY. NOW, EVERYONE IS VERY FRIENDLY AND KIND. I MEET MANY YOUNG RUSSIAN WORKERS MY OWN AGE THEY HAVE VARIED REMONTITIC AIR WISH TO KNOW ABOUT ME EVEN OFFER TO HOLD A MASS MEETING SO I CAN SAY. I REFUSE POLITELY. AT NIGHT I TAKE REST TO THE THEATER, MOVIE OR GO TO BED almost every day. I'm living BIG AND AM VERY SATISFIED. I RECIVE A CHECK FROM THE RED CROSS EVERY 5TH OF THE MONTH "TO HELP". THE CHECK IS 700 RUBLES. THEREFORE EVERY MONTH I MAKE 1400 R. ABOUT THE SAME AS THE DIRECTOR OF THE FACTORY! ZEGER CASERES ME DURING THIS TIME I DON'T like: PICTURE OF LENIN WHICH WATCHS FROM ITS PLACE OF HONOUR AND PHY. TRAINING AT 11.-HRS EACH MORNING (COMPULSORY). FOR ALL (SHADES OF H.G. WELLS!!)

MARCH 1. I RECIVE A SMALL FLAT ONE-ROOM KITCHEN-BATH NEAR THE FACTORY (8 MIN. WALK) with SPLENDID VIEW FROM 2 BALCONIES OF THE RIVER. ALMOST RENT FREE (60. RUB A MON.) IT IS A RUSSIAN DREAM.

MARCH 12 - MARCH 21. - WORK, I HAVE LOST CONTACT WITH RUSSIAN after my RETURN visiting. I MEET PHYL GOLOVACH. A YOUNG MAN MY AGE FRIENDLY VERY INTELLIGENT A EXPERT RADIO TECHNICIAN HIS FATHER: GEN. GOLOVACH COMMANDER OF NORTH WESTERN SIBERIA. TWICE HERO OF USSR IN WW. II.

DIARY PAGE 1

MAY 1 - MAY DAY CAME AS MY FIRST HOLIDAY HERE FROM MOSCOW ECT. CLOSED AFTER SPECTACULAR MILITARY PHARAE ALL WORKERS PARAD FIRST REVIEWING STAND WAVING FLAGS AND PICTURES OF MR. K[redacted] ECT. I FOLLOW THE AMER. CUSTOM OF MARKING A HOLIDAY BY SLEEPING IN IN THE MORNING. AT NIGHT I VISIT WITH THE ZEBERS DAUGHTERS AT AN PARTY THROW BY THEM ABOUT 45 PEOPLE COME MOST OF ARGENTINE ORIGEN WE DANCE AND PLAY AROUND AND DRINK UNTIL 2 AM. WHEN PARTY BREAKS UP. LEONARA ZEBER OLDEST DAU. 26 FORMALLY MARRIED, NOW DIVORCED A TALANTED SINGER. ANITA ZEBER 20 VERY GAY, NOT SO ATTRACTIVE BUT WE HIT IT OFF. HER BOY-FRIEND ALFRED IS A HUNGARIAN JEW, SILENT AND BROODING, NOT AT ALL LIKE ANITA ZEBER ADVISES ME TO BE BACK TO USA, IT'S THE FIRST VOICE OF OPPOSITION I HAVE HEARD. I RESPECT ZEBER, HE HAS SEEN THE WORLD. HE SAYS MANY THINGS, AND RELATES MANY THINGS I DO NOT KNOW ABOUT THE U.S.S.R. . I BEGIN TO FEEL UNEASY INSIDE, IT'S FALSE!

JUNE-JULY SUMMER MONTHS OF GREEN BEAUTY, PINE FOREST VERY DEEP. I ENJOY MANY SUNDAYS IN THE ENVIRONMENTS OF MINSK. WITH THE ZEBERS WHO HAVE A CAR "MOSKVICH" ALFRED ALWAYS GOES AROUND WITH ANITA, LEONARA SEEMS TO HAVE NO PERMANENT BOY-FRIEND BUT MANY ADMIRERS. SHE HAS A BEAUTIFUL SPANISH FIGURE, LONG BLACK HAIR, LIKE ANITA I NEVER PAY MUCH ATTENTION TO HER SHES TOO OLD FOR ME SHE SEEMS TO DISLIKE MY LACK OF ATTENTION FOR SOME REASON. SHE IS HIGH STRUNG. I HAVE BECOME HABITUATED TO A SMALL CAFE WHICH IS WHERE I DINE IN THE EVENING THE FOOD IS GENERALLY POOR AND ALWAYS EXACTLY THE SAME, MENUE IN ANY CAFE AT ANY POINT IN THE CITY. THE FOOD IS CHEAP AND I DONT REALLY CARE ABOUT QUALITY AFTER THREE YEARS IN THE U.S.S.R..

AUG-SEPT AS MY RUSSIAN IMPROVES I BECOME INCREASINGLY CONSCIOUS OF JUST WHAT SORT OF A SOCIETY I LIVE IN. MASS GYMNASTICS, COMPULSORY AFTER WORK MEETING, WEEKLY POLITICAL INFORMATION MEETING. COMPULSORY ATTENDANCE AT LECTURES AND THE SENDING OF THE ENTIRE SHOP COLLECTIVE (EXCEPT ME) TO PICK POTATOES ON A SUNDAY, AT A STATE COLLECTIVE FARM. "PATRIOTIC DUTY" TO BRING IN THE HARVEST. THE OPINIONS OF THE WORKERS (UNVOICED) ARE THAT IT'S A GREAT PAIN IN THE NECK, THEY DONT SEEM TO BE ESPECIALLY ENTHUSIASTIC ABOUT ANY OF THE "COLLECTIVE" ACTIVITIES. A NATURAL FEELING FOR INCREASINGLY AWARE OF THE PRESENCE, (UNWILLING) OF LEBIZEN, SHOP PARTY SECRETARY. FAT FORTYISH MAN OF JOVIAL ON THE OUTSIDE. HE IS A NO-NONSENSE PARTY REGIMENTER.

DIARY page 8

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Oct. the coming of Fall, the dread of a new Russian winter. ARE mellowed in splendid golds and reds of FALL IN BELORUSSIA. PLUMS PEACHS APRICOTS AND CHERRYS ABOUND FOR THESE LAST FEW WEEKS I AM A HEALTHY BROWN COLOR AND STUFFED WITH FRESH FRUIT. (AT OTHER TIMES OF THE YEAR UNOBTAINABLE) Oct. 17 MY 21ST BIRTHDAY SEES ROSA, PAVIL, ELLA ~~and~~ ~~and~~ AT A SMALL PARTY AT MY PLACE. ELLA A VERY ATTRACTIVE Russian Jew I HAVE BEEN GOING WALKING WITH VITIY, WORKS AT THE RADIO FACTORY AND. ROSA AND ELLA ARE JELOUS OF EACH OTHER, IT BRINGS A WARM FEELING TO ME. BOTH ARE AT MY PLACE FOR THE FIRST TIME, ELLA AND PAVIL BOTH GIVE ASH-TRAYS (I don't smoke) WE HAVE A NIGHT. Nov. FEELS THE APPROACH OF WINTER NOW. SORROWING LONELINESS OVERTAKES ME. IN SPITE OF MY CONQUEST OF ~~ANATACHINA~~ A GIRL FROM RIGA, STUDYING AT THE MUSIC CONSERVATORIE, IN MINSK. ~~BUT SHE~~ AFTER AN AFFAIR WHICH LAST A FEW WEEKS WE PART. WISH HER WELL. I MAKE THE ACQUAINTANCES OF FOUR GIRLS ~~ROOMING~~ at the Ton. Lan. Dormitory in room 212. NELL IS VERY INTERESTING, SO IS TONKA, TONI'S AND HELA, I USUALLY GO TO THE INSTITUTE DORMITORY WITH A FRIEND OF MINE who SPEAKS ENGLISH VERY WELL, EKAICH T. TOV IS IN THE FORTH YEAR AT THE MEDICAL INSTITUTE, VERY BRIGHT FELLOW AT THE DORMITORY WE SIT AND TALK FOR HOURS IN ~~RUSSIAN~~ ENGLISH I AM HAVING A LIGHT AFFAIR WITH NELL KOROBKA. JAN 1 NEW YEARS I SPEND AT HOME OF ELLA GERMAIN. I THINK I'M IN LOVE WITH HER. SHE HAS REFUSED MY MORE DISHONOURABLE ADVANCES, WE DRINK AND EAT IN THE PRESENCE OF HER FAMILY IN A VERY HOSPITABLE ATMOSPHERE. LATER I GO HOME DRUNK AND HAPPY. PASSING THE RIVER HOMEWARDS, I DECIDE TO PROPOSE TO ELLA. JAN. 2. AFTER A RECESSENT WANDERING-HAND WALK TO THE LOCAL CINEMA WELCOME HOME, STANDING ON THE DOORSTEP I PROPOSE'S she HESITATES THAN REFUSES, MY LOVE IS REAL BUT SHE HAS NONE. FOR ME, HER REASON BESIDES LACK OF LOVE; I am american and someday might be arrested simply because of that simple Polish television in the 21's. Due to arrest of all people in the world situation there is too much against you and you don't even know it" I am stunned after snickers at my awkwardness in suggesting it (I am too stunned not to think) I realize she was there, person with me but only exploited my being an american in order to get the envy of the other girls who considers me different from the Russian Boys. I AM MISERABLE!

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JAN 3. I AM MISARABLE ABOUT ELLA. I LOVE HER BUT WHAT CAN I DO? IT IS THE STATE I ~~FEEL~~ WHICH WAS ALWAYS IN THE QUIET UNION.
JAN 4. ONE YEAR AFTER I RECIVED THE RESIDENCE DOCUMENT I AM CALLED IN TO THE PASSPORT OFFICE AND ASKED IF I WANT CITIZENSHIP (RUSSIAN) I SAY NO SIMPLY EXTEND MY RESIDENTAL PASSPORT TO AGREE AND MY DOCUMENT IS EXTENDED UTILL JAN 4. 1962
JAN-4-31 I AM STARTING TO RECONSIDER MY DESIRE ABOUT STAYING THE WORK IS DEAD THE MONEY I GET HAS NOWHERE TO BE SPENT - NO LIGHTCLUBS OR BUILDING ANYS NO PARKS OF RECREATION ACEPT THE TRADE UNIONS DANCES I HAVE HAD TOO MUCH ENOUGH.
FEB. 1st MAIL MY FIRST REQUEST TO AMERICAN EMBASSY, MOSCOW FOR RECONSIDERING MY POSITION, I START "I would like to be Am. Cit."
FEB. 28nd recive letter from Embassy. Richard E SNYDER STATES "I could come in FOR AN INTERVIEW ANY TIME I WANTED"
MARCH 1-15 I NOW LIVE IN A STATE OF EXPECTATION ABOUT GOING BACK TO THE U.S. I CONFIDED WITH ZEGER HE SUPPORTS MY JUDGMENT BUT WARNES ME NOT TO TELL ANY RUSSIANS ABOUT MY DESIRE TO RETURE. I UNDERSTAND NOW WHY.
MARCH 17 - I AM ERICH WENT TO TRADE UNION DANCE. BORING - BUT AT THE LAST HOUR I AM INTRODUCED TO A GIRL WITH A FRENCH HAIR-DO AND RED-DRESS WITH WHITE SLIPPERS I DANCE WITH HER. THEN ASK TO SHOW HER HOME I DO AMONG WITH 5 OTHER ADMIRERS. HER NAME IS ANN. NA. WE LIKE EACH OTHER RIGHT AWAY SHE GIVES ME HER PHONE NUMBER AND LEAVES HOME WITH AN AUTO-SO-NE-N FRIENDS IN A TAXI I WALK HOME.
MARCH 18-31 - WE WALK & TALK A LITTLE ABOUT MYSELF - SHE TALKS ALOT ABOUT HERSELF. HER NAME IS MARINA N. PROKOFIEVA
APR. 1st-30 WE ARE GOING STEADY AND I DECIDE I MUST LEAVE HER, SHE PUTS ME OFF AS TO APRIL 15 I PROPOSE SHE ACCEPTS
APRIL 30, AFTER A 7 DAY DELAY AT THE MARRIAGE BUREAU BECAUSE OF MY MARITAL PASSPORT THEY ALLOW US TO REGISTER AS MAN & WIFE. TWO OF MARINA ~~FRIENDS~~ GIRL FRIENDS ACTED AS BRIDESMAID, WE ARE MARRIED. AT HER AUNTS HOME WE HAD A SMALL RECEPTION FOR ABOUT 20 FRIENDS AND RELATIVES WHO WISH US HAPPINESS (IN SPITE OF MY PASSPORT) I ACCEPT, WHICH WAS A GREAT SURPRISE FOR MANY. THEN WE WENT IN THE CENTER OF MOSCOW FOR A TOURIST. AFTER AN EVENING OF EATING AND DRINKING IN WHICH MUCH VODKA STARTED A FIGHT AND THE POLICE FLEW ON AN UNINVITED GUEST WE TOOK OUR BRIDE AND WALK THE 15 MINUTES TO OUR HOME. WE LIVED HAPPILY AFTER. AT MIDNIGHT WE WERE ALONE.

DIARY PAGE 10

1ST MAY DAY 1961. FOUND US THINKING ABOUT OUR FUTURE IN USSR. IN FACT I MARIED MARINA TO MEET ELLA I FOUND MYSELF IN LOVE WITH MARINA.

MAY - THE TRANSITION OF CHANGING FULL LOVE FROM ELLA TO MARINA WAS VERY PAINFULL ESP. AS I SAW ELLA ALMOST EVERY DAY AT THE FACTORY BUT AS THE DAYS & WEEKS WAS BY I ADJUSTED MORE AND MORE MY WIFE MENTALY. I STILL MODENT TOLD MY WIFE OF MY DESIRE TO RETURN TO US. SHE IS MADLY IN LOVE WITH ME FROM THE VERY START. BOAT RIDES ON LAKE MINSK WALKS THROUGH THE PARKS EVENING AT HOME OR AT AUNT VALIA'S PLACE MARK MAY.

JUNE - A CONTINUENCE OF MAY, EXCEPT. THAT WE DRAW CLOSER AND CLOSER, and I THINK VERY LITTLE NOW OF ELLA. IN THE LAST DAYS OF THIS MONTH I DECIDE MY LONGING TO RETURN TO AMERICA. MY WIFE IS SLIGHTLY STARTLED BUT THEN ENCOURAGES ME TO DO WHAT I WISH TO DO.

JULY - I DECIDED TO TAKE MY TWO WEEK VACATION AND TRAVEL TO MOSCOW (without Police Permission) TO THE AMERICAN EMBASSY TO SEE ABOUT GETTING MY U.S. PASSPORT BACK AND MAKE ARRANGEMENTS FOR MY WIFE TO ENTER THE U.S. WITH ME.

JULY 8 - I FLY BY PLANE TO MINSK ON A IL-20, 2 HRS 20 LATER AFTER TAKING A TEARFUL AND ANXIOUS PARTING FROM MY WIFE I ARRIVE IN MOSCOW DEPARTING BY BUS FROM THE AIRFIELD I ARRIVE IN THE CENTER OF THE CITY. MAKING MY WAY THROUGH HEAVY TRAFFIC I DON'T COME IN SIGHT OF THE EMBASSY UNTIL 2:00 IN THE AFTERNOON. IT'S SATURDAY WHAT IF THEY ARE CLOSED? ENTERING I FIND THE OFFICES EMPTY BUT MANAGE TO CONTACT SNYDER ON THE PHONE (Since All EMBASSY personal live in the same building) HE COMES DOWN TO GREET ME SHAKES MY HAND AFTER INTERVIEW HE ADVISES ME TO COME IN FIRST THING MON.

(see - July 8-13.)

July 8. INTERVIEW JULY 9 RENEW PASSPORT, CALL MARINA TO MOSCOW ALSO

July 14. I AND MARINA RETURN TO MINSK.

July 15. MARINA AT WORK, SO SHOCKED TO FIND OUT THEY EVERYONE KNOWS SHE entered the U.S. embassy. They were called at her place of work from some official in Moscow! THE BOSS HELD A MEETING AND GAVE HER A [illegible] BROWBEATING. THE FIRST OF MANY [illegible]

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25 Minsk 1st page

July 15 thru 20. We have found out which forms and certificates are necessary for to apply for a exit visa They number about 20 Parents birth certificates Affidavits photos ect. On Aug 20th we can do papers out they say it will be 3½ months before we know whether they let us go or not. In the meantime Marina has had to face a difficult meeting at the place of work held by her boss at the direction of "someone" in power. The young comm. league headquarters also called about her and she had to go see them for 1½ hrs. The purpose (appeared?) is to dissuade her from going to the U.S., not effect: make her more st unbearn about wanting to go. Marina is pregnet. We only hope that the visas come through soon.

Thur 21-Sept/ I make enquiries to the passport & visa office also to ministry of for. affairs in Minsk, also min. of internal affairs, all of which have a say in the granting of a visa. I extracted promises of quick attention to us.

Sept-Oct 15. No word from min. ("They'll call us")

Marina leaves Minsk by train on vaction to the city of Khkov in the Urals to visit an aunt for 3 weeks. During this time I was lonely but I had Erich go to the banyes and public places for entertainment. It's been months now.

I havent done this in quite a few months now. I spent my birthday alone at the opera watching my favorit "Queen of Spades" I am 22 years old.

Oct 20 Marina arrives back, radient, with several jars of preserves for me from her Aunt in Khkov.

Nov-Dec. Now we have beginning hints from the Soviets Marina is beginning to whisper about going to the U.S. probably from the strain and her being pregnant, still we guarded and so things were not to bright etc. with the march of the long russian winter.

Dec 25th Marina & I sue. Marina is called to the passport & visa office. She is told we have been granted exit visa's. She fell sat the complet. big shock and to the point where with in hours (I think) New years we had at the soviet at a dinner party at midnight. Guests at 6 o'clock dinner.

Jan. 4. I am called to the passport office since my residence & passport expires today. since I am here on U.S. passport in my position I must give up my new residence. Office of visas & registration tells me they have given us permission to leave the U.S.S.R. until July 5 1962.

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D. HARVEY PACK 12

24

Jan 15- Feb 15. DAYS OF Cold RUSSIAN WINTER. BUT WE FEEL FINE. MARINA is supposed to have BABY ON MARCH 1ST.

Feb 15 - DAWN. MARINA WAKES ME. ITS HER TIME. AT 9:00 WE ARRIVE AT THE HOSPITAL I LEAVE HER IN CARE OF NURSES AND LEAVE TO GO TO WORK. 10:00 MARINA HAS A BABY GIRL. when I visit the Hospital AT 5:00 AFTER WORK, I AM GIVEN NEWS. WE BOTH WANTED A BOY. MARINA FEELS WELL, BABY GIRL, OK.

Feb. 23 MARINA LEAVES HOSPITAL I SEE June for first TIME.

Feb. 28 I GO TO REGISTRA (AS REQUIRED BY LAW) THE BABY. I WANT HER NAME TO BE June Marina Oswald. But Those Bureaucrats SAY HER middle name must be the Same AS MY FIRST. A RUSSIAN CUSTOM SUPPORT BY LAW. I REFUSE TO HAVE HER NAME WRITTEN AS "June Lee". THEY PROMISE to call the city ministry (city hall) and find out if this one since I do have an U.S. passport

Feb. 29. I AM TOLD THAT NOBODY KNOWS what TO DO exactly, But everyone agrees "GO AHEAD AND DO IT." PO. RUSSKI". NAME: June Lee.

March. THE LAST comuniques are exchanged between myself and Embassy. letters are always arriving from my mother and brother in the U.S. I HAVE STILL NOT TOLD ERICH who is my OLDEST EXISTING ACQUAINTANCE, THAT WE ARE going TO the STATES, he's OK. But I'M AFRAID HE IS TOO CLOSE to Young COMMUNIST LEAGUE MEMBER so I'll wait TILL LAST MIN.

MARCH 28 - MARINA QUITS HER JOB IN THE FORMAL FASHION.

MARCH 29 I RECIVE A LETTER FROM EMMIGRATION & NATUR. SERVICE AT San ANTONIO, TEXAS, THAT MARINA HAS HAD HER VISA PETITION TO THE U.S. (APPROVED!!) THE LAST DOCUMENT. NOW WE ONLY HAVE TO WAIT FOR THE U.S. EMBASSY TO RELEASE their COPY OF THE APPROVAL So they CAN OFFICIALLY GIVE THE go AHEAD.

MARCH 30 I RECIVE A LETTER FROM MR. PHILLES (A FRIEND) OF MY MOTHER, PLEDGING TO SUPPORT MY WIFE IN CASE OF NEED.

APRIL -

(17) November 3, 1959. Declaration requesting revocation of United States citizenship, signed Lee Harvey Oswald. Purple ink; nib pen.

— Commis[illegible] 44 —

Nov. 3, 1959

I, Lee Harvey Oswald, do hereby request that my present United States citizenship be revoked.

I appeared in person, at the consulate office of the United States Embassy, Moscow, on Oct 31st, for the purpose of signing the formal papers to this effect. This legal right I was refused at that time.

I wish to protest against this action, and against the conduct of the official of the United States consular service who acted on behalf of the United States government.

My application, requesting that I be considered for citizenship in the Soviet Union is now pending before the Supreme Soviet of the U.S.S.R.. In the event of acceptance, I will request my government to lodge a formal protest regarding this incident.

Lee Harvey Oswald

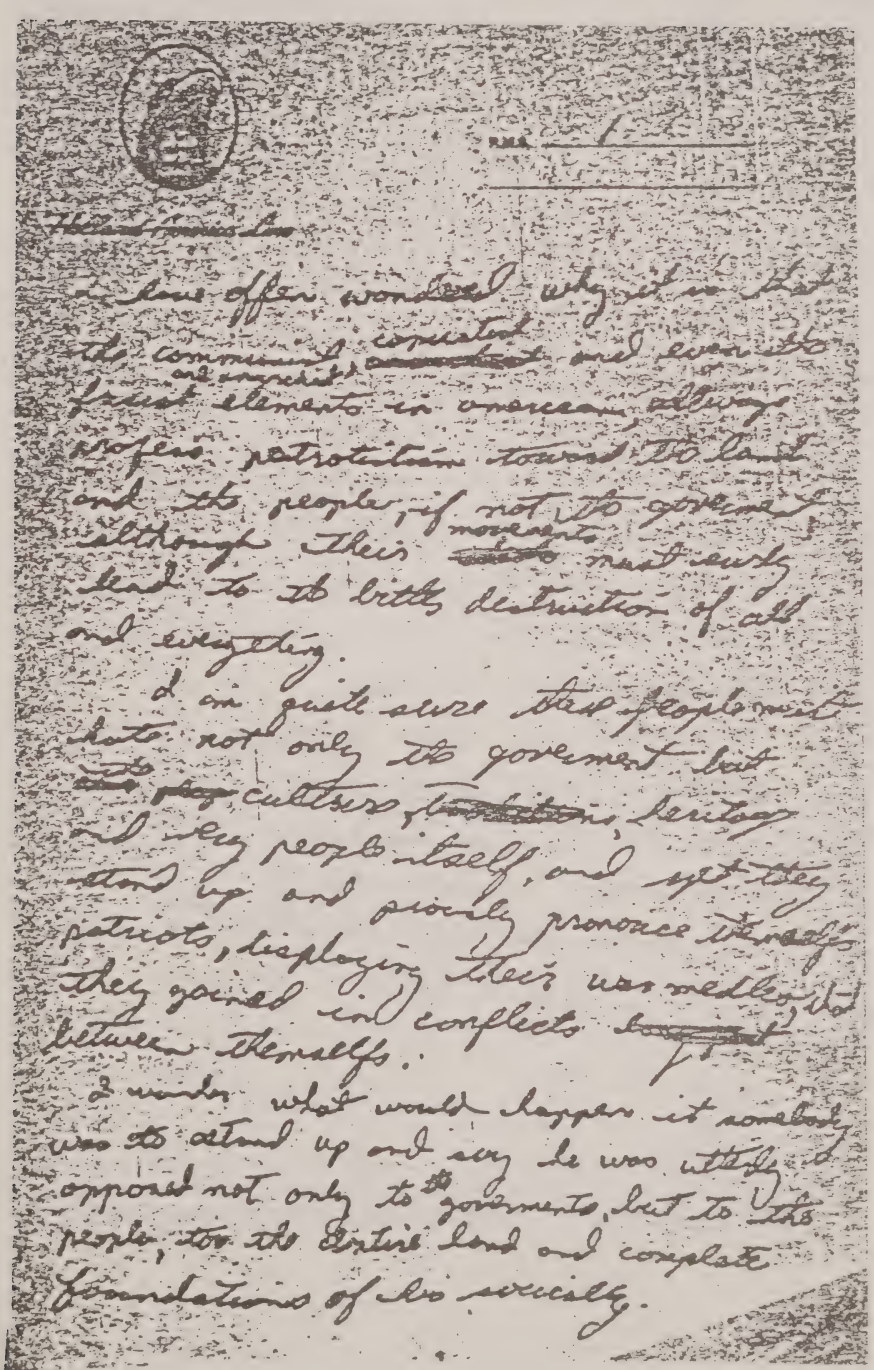
(181) November 15, 1959. Photocopy of handwritten account of interview with Miss Aline Mosby, UPI Reporter.

23 DIARY INTERVIEW WITH MISS MOSBY NOV. 15, 1959

MISS MOSBY ENTERS GREETS ME AND SITS DOWN I START BY SAYING. I WISH IT UNDERSTOOD THAT I WISH TO SEE THE STORY BEFORE IT IS SENT. "ALL RIGHT" SHE SAYS "IT'S ALL THE SAME TO ME WHAT YOU DO IN REGARDS TO YOUR LIFE" I'M JUST TAKING DOWN YOUR WORDS" O.K. I SAY, FIRST THE REASONS FOR MY COMING. SHE ASKS ABOUT MILITARY SERVICE I ANSWER QUESTIONS ABOUT MY MILITARY SERVICE AND THEN SHE ASKS WHY DID YOU APPLY FOR SOVIET CITIZENSHIP, WHAT ARE YOUR REASONS FOR COMING HERE? I HAVE WAITED FOR TWO YEARS IN ORDER TO DISSOLVE MY AMERICAN CITIZENSHIP I HAVE SEEN TOO MUCH HATE AND INJUSTICE IN THE U.S. I HAD SERVED IN THE OCCUPATION FORCES IN JAPAN AND OCCUPATION OF A COUNTRY IS IMPERIALISM, WHAT THE ROMANS WOULD CALL "IMPERIUM" I HAVE CHOSEN A SOCIALIST COUNTRY SINCE THERE ARE ONLY TWO MAIN SYSTEMS IN THE WORLD." WHY THE USSR." SHE ASKED "WHY NOT CZECHOSLOVAKIA, WHERE THE ROMAN PROBLEM IS NOT SO BAD" "I HAVE CHOSEN THE USSR SINCE IT IS THE LEADER OF THE SOCIALIST CAMP. AND THE SYMBOLIC CHAMPION OF THE CAUSE OF COMMUNISM." WHAT ELSE REASONS LED YOU TO CHANGE YOUR LOYALTY. "IN THE U.S. YOU WE KNOW THERE ARE MANY SHORTCOMINGS, RACIAL SEGREGATION AND THE SUPPRESSION OF THE UNDER DOG, THE COMMUNIST PARTY." HOW LONG HAVE YOU BEEN STUDYING MARXISM. "I FIRST STARTED STUDYING "MARXISM" WHILE I WAS IN THE U.S. "I ALWAYS HAD TO DIG FOR MY BOOKS IN THE BACK, DUSTY SHELVES OF LIBRARYS AND OLD OUTDATED BOOKS WERE THE ONLY KIND OF MY READING BOOKS ON PHILOSOPHY, POLITICAL ECONOMY ETC." "IN ANY LIBRARY IN THE MOST OBVIOUS PLACES THERE ARE THE PROMINENT ANTI-COMMUNIST BOOKS WE KNOW SO WELL BUT AS I SAY I ALLWAYS HAD TO DIG FOR MY BOOKS" WHAT ARE SOME IMPRESSIONS YOU GOT SERVING IN THE OCCUPATION FORCES." I SAW THE AMERICAN MILITARY LEADING COMMON PEOPLE ON A MODERN SIDE, THE TOOL OF WAR AND OPPRESSION I LEARNED TO HATE THE U.S. IMPERIALISTIC MILITARY." THANK YOU MISS

HANDWRITTEN ACCOUNT OF INTERVIEW WITH MISS MOSBY, UPI REPORTER, FOUND AMONG OSWALD'S PERSONAL EFFECTS. (OSWALD'S HANDWRITING)

(19) 1960, undated. Political discussion, handwritten on stationery of the Holland-American Line; 15 pages.





page 2

~~The United States Line~~

I have heard and read of the resurgent americanism in the US not the ultra-right type, but rather the polite, seemingly spineless americanism expressed by such as the "american first group" as the foundation.

and yet even in these veiled, familiar patriotic gestures, there is the obvious "safe being ground" by the ~~business~~ invested interests of the sponsors of these opposite undertakings.

to where can ~~I~~ ~~turn~~ turn? to factional mutants of both systems, to odd ball ~~fascist~~ ideals out of touch with reality, too religious groups. to revisionist ~~or~~ ~~to~~ absurd anarchists. no!

3

~~[illegible]~~ knowing both systems and ~~[illegible]~~ accessories, there can be ~~[illegible]~~ distinction between the systems ~~[illegible]~~ as they exist to-day and stand ~~[illegible]~~ person.

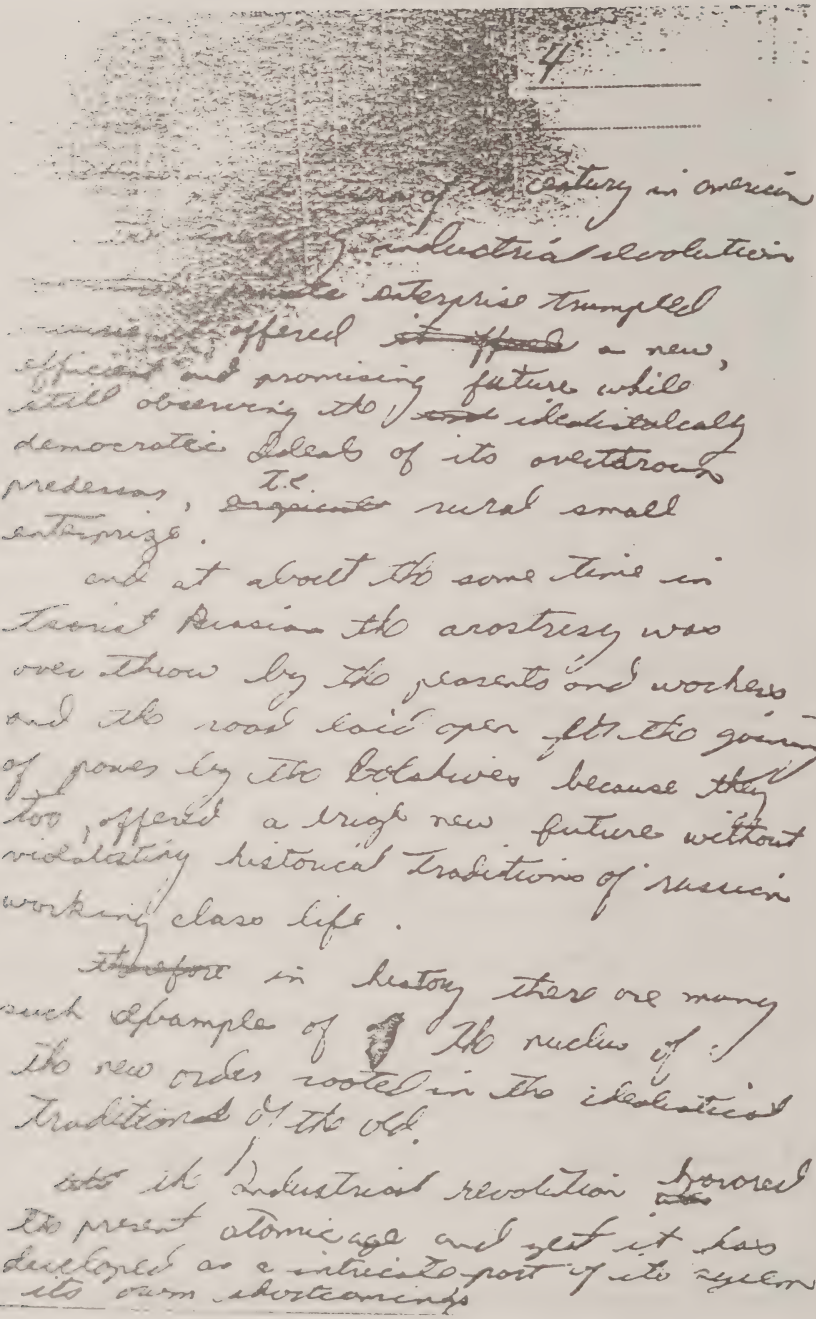
We must be opposed to their ~~[illegible]~~ foundations and representatives

and yet it is ~~[illegible]~~ to ~~[illegible]~~ sort of attitude which says "a curse on both your houses!"

there are two great representatives of power in the world, simply expressed ~~[illegible]~~ left and right, and their ~~[illegible]~~ and centers.

any practical attempt at an alternative must have as its nucleus the traditional ~~[illegible]~~ that of both systems, and yet be utterly opposed to both systems.

for not ~~[illegible]~~ system can be entirely new, that is where most ~~[illegible]~~ revolutions ~~[illegible]~~ industrial or political, go astray. And yet the new system must be opposed unequivocally to the old that ~~[illegible]~~ is where revolutions go astray



4

century in America
industrial revolution
enterprise trampled
offered a new,
efficient and promising future while
still observing the ideologically
democratic ideals of its overthrown
predecessor, i.e. rural small
enterprise.

and at about the same time in
Tsarist Russia the aristocracy was
overthrown by the peasants and workers
and the road laid open for the coming
of power by the Bolsheviks because they
too offered a truly new future without
violating historical traditions of russian
working class life.

Therefore in history there are many
such examples of the nucleus of
the new order rooted in the ideological
traditions of the old.

The industrial revolution ignored
the present atomic age and yet it has
developed as a intricate part of its system
its own shortcomings

R.M.S. 275

for instance
may be compared to the
which displays so many
that of so obvious it is
this away; rather it is the much
more subtle aspects of Industrialization
and Mechanization which bring the
greatest hardship upon the people
a general decay of classic like shapeless
societies without real culture formations;
regimentation; not so much of people
since Industrialization actively provide
for more free movement of classes
around each other, but rather of ideals,
although those regimented ideals have
more freedom of expression throughout
all the classes.



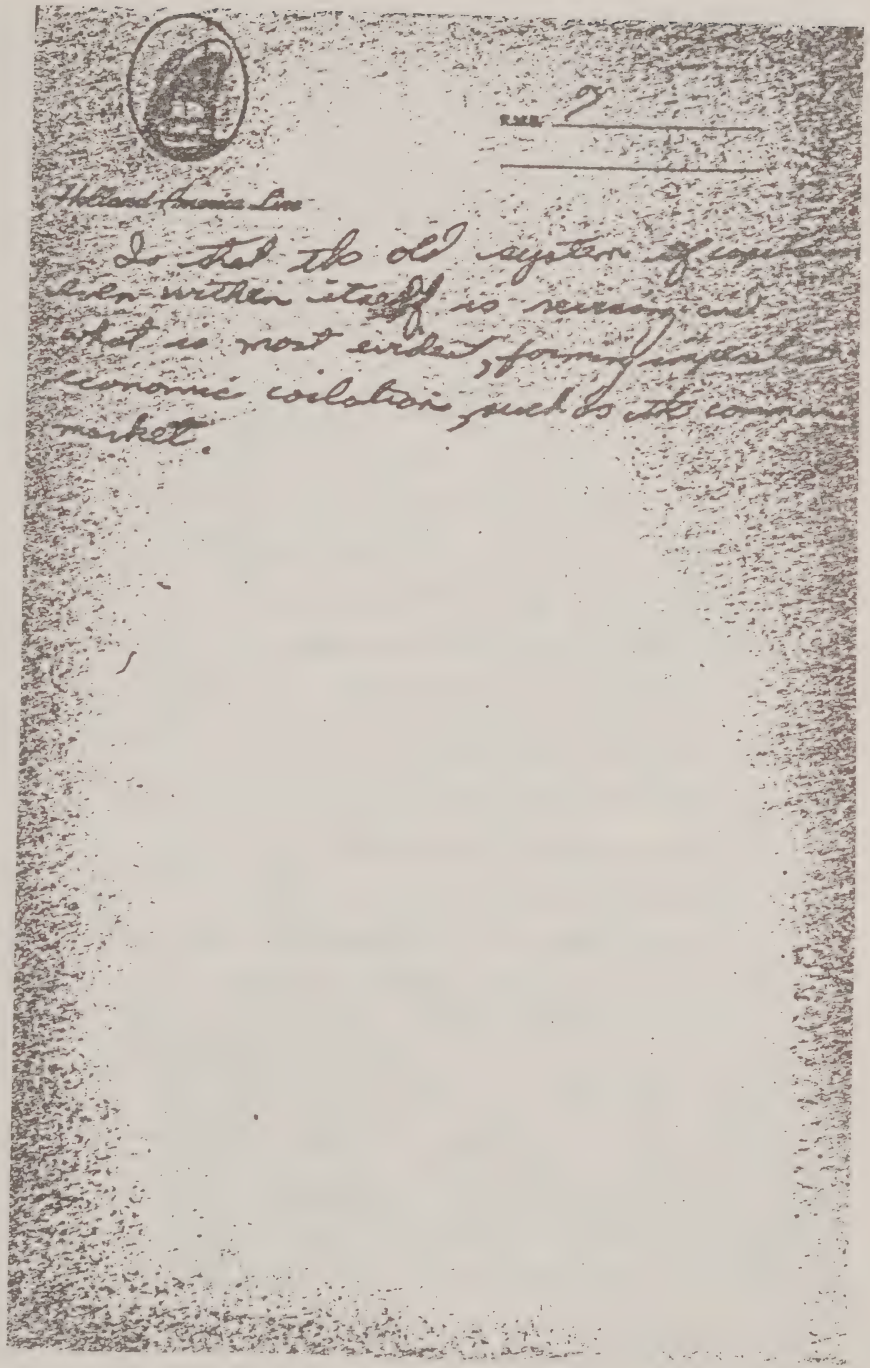
Holland America Line

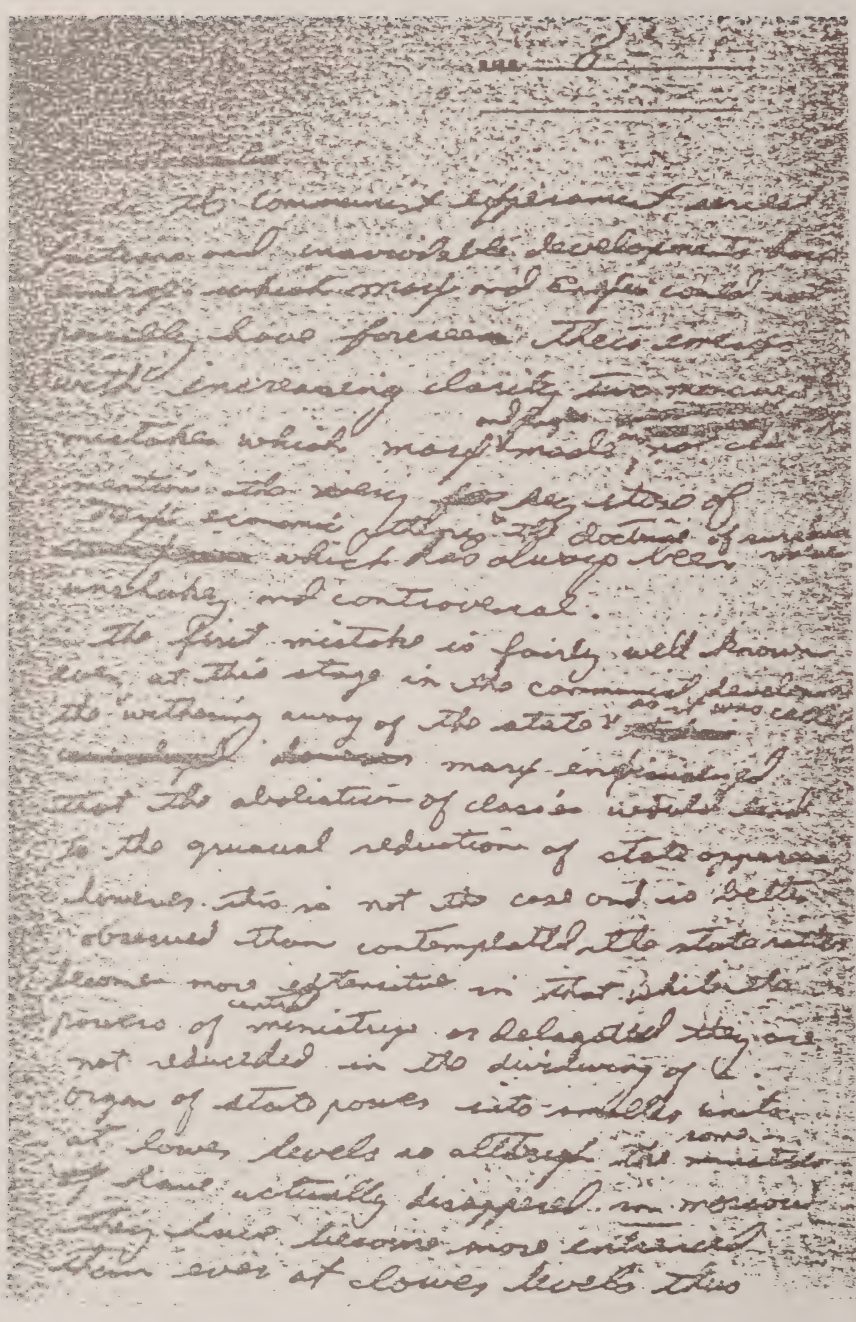
RMS 6

The biggest and key development of course of our era is the fight for markets between the imperialist powers themselves, which lead to the wars, crises and oppressive friction which you have all come to regard as part of your lives.

And it is this prominent factor of the capitalist system which will inevitably eventually lead to the common destruction of all the imperialistic powers already many lesser imperialist countries have become dependent upon other factors than domination of colonial force, they have been deserted by their former colonies by the great imperialist countries or in some cases even given up their colonies themselves as unprofitable and in many cases the oppressed peoples rose up and physically strong to colonial rule and this process is continuing even today as we all can see.

But what is important to remember



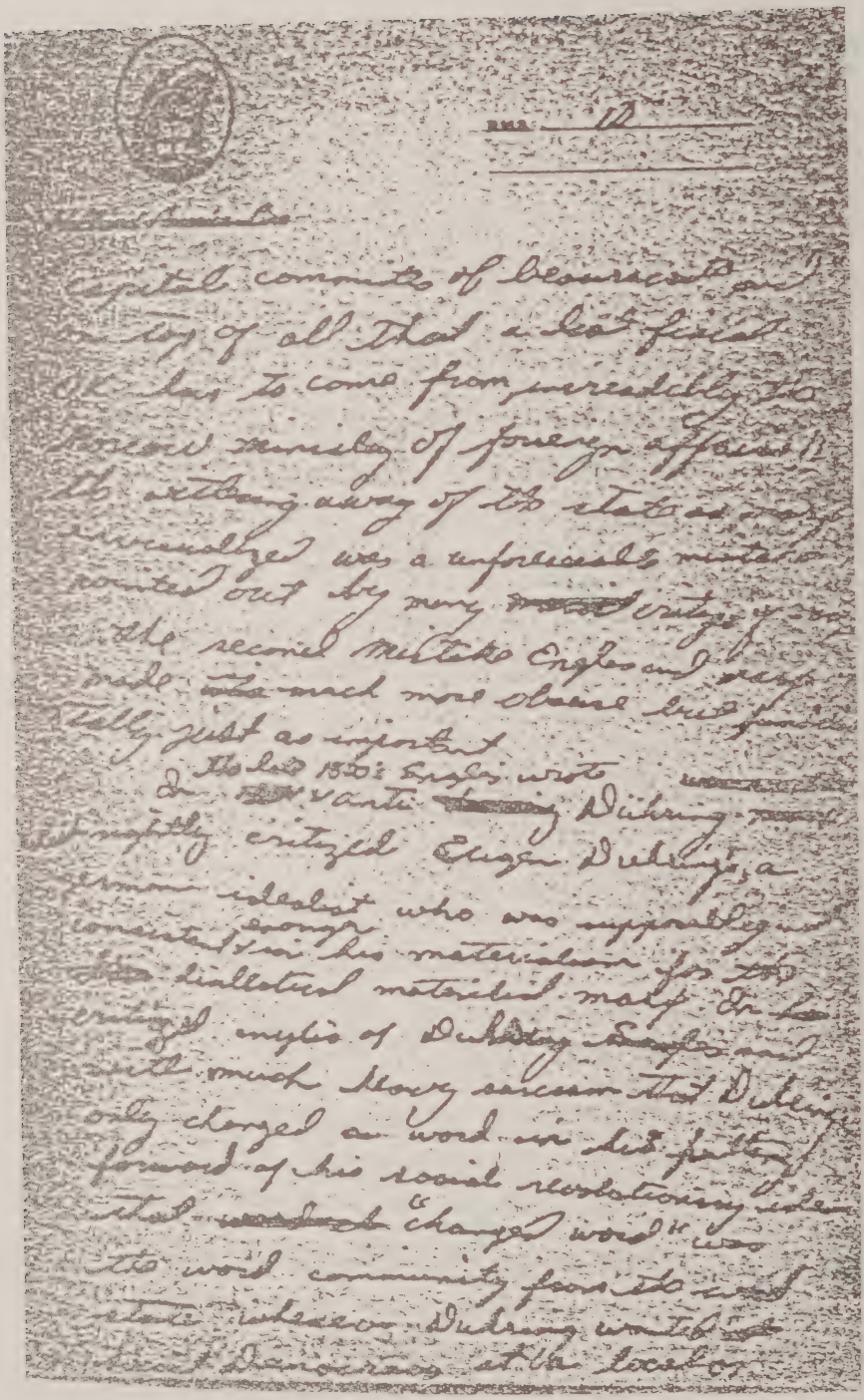


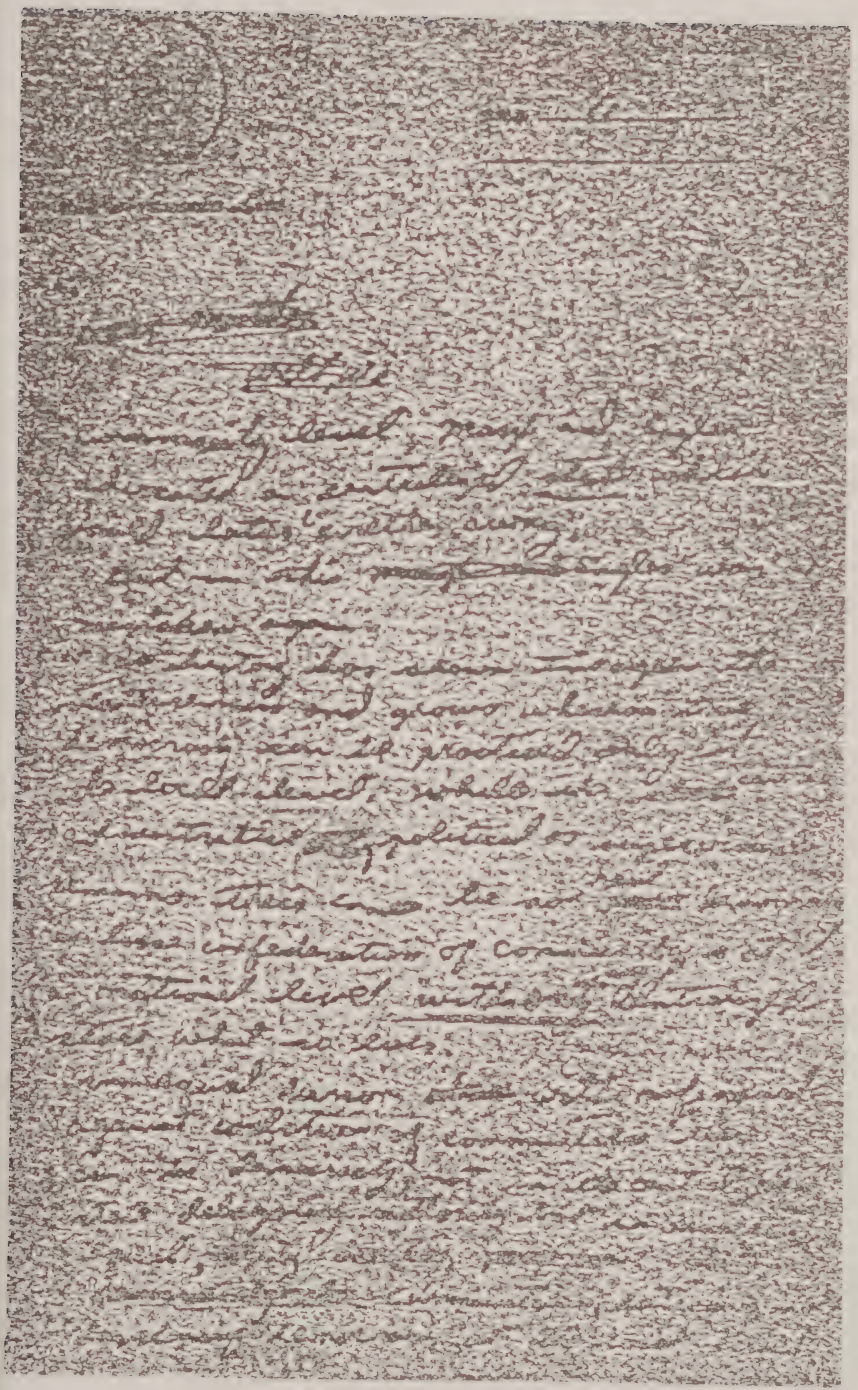


R.M.S. 9

Holland America Line

ni dividing powers you multiply into
and in everyday life you become
more and more depent on the organs
of state power, whereby
you meet them and
touch the lives of the people more
and more, a new bourgeoisie.
rather than a withering away of the
state. In Russia itself too
years there has been a shift of
power from the capital of moscow to
the so-called "republics" but state
apparat simply grows into a greater
size throughout these republics, thus
in minsk the capital of belorussia
the ministry of interior become responsible
for determining the eligibility of applicants
for land to get exit visas too
leave the USSR. formaly the official
prerogative of moscow alone but now that
this state ministry in moscow has "written
away" it become all the more difficult to
get an exit visa since now one has to
go to the area, city and republican







R.M.S. ..... 1[A] .....

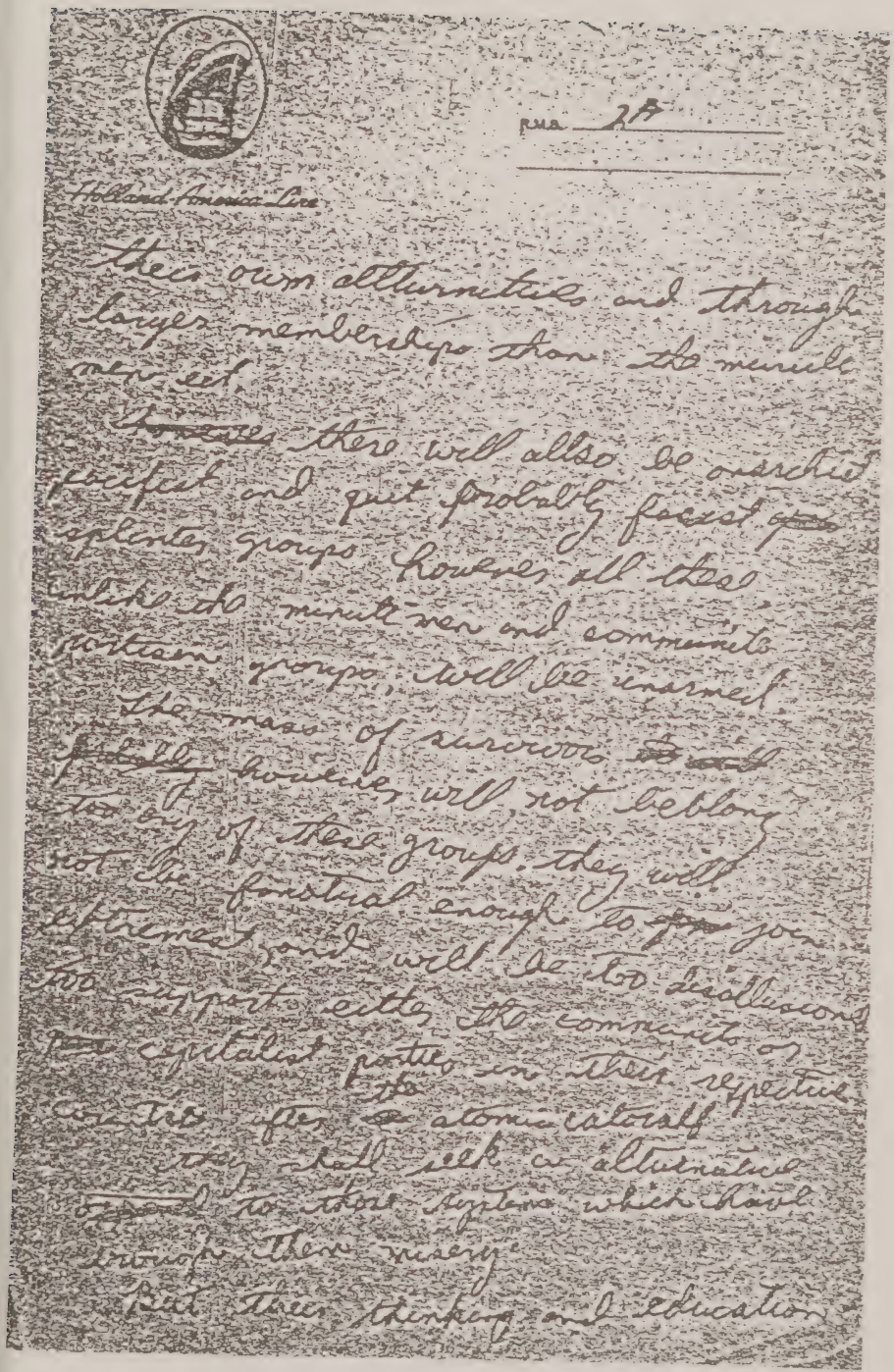
Holland-America Line

"It is now already over a few organizations who have declared that they shall become effective only after conflict between the two world systems leaves the ~~world~~ country without defense or foundation of government, organizations such as the minute men for instance, however they ~~exist~~ are preparing to simply defend the present system and reinstate its influence after the mutual defeat of both systems ~~materially~~ which is more or less taken for granted.

These armed groups will represent the remaining hard core of fanatical american-capitalist supporters.

There will undoubtly be similar representation of this kind by communist groups in communist countries.

There will also be many divided religious segments of pulling forces



Holland America Line

PMA 28

there own alternatives and through
lawyer membership than the menial
new set.
there will also be anarchist
fanatical and quit probably fascist
splinter groups however all these
unlike the main two and communist
partisan groups, will be unarmed.
the mass of survivors
however will not belong
to any of these groups. they will
not be fanatical enough to
be interested and will be too disillusioned
to support either the communists or
capitalist parties in their respective
countries after a atomic catastroff
they will seek an alternative
to those systems which have
betrayed them misery
But their thinking and education



R.M.S. 3 A.

Holland America Line

will be steeped in the traditions of those systems they will feel never accept a "new order" complete beyond their understanding; logically, they would deem it necessary to oppose it old systems but support that at the same time their denied traditions.

I intend to put forward just such an alternative.

~~In the United States it would mean~~

In making such a declaration I must say that in order to make this alternative effective supporters must prepare now ~~for the~~ in the event the situation present itself for the practical application of this alternative.

in this way the minute men and their narrow support of capitalism have been most successful, however they present only a ~~reactionary~~ suicidal force whereas ~~in any alternative we would constitute~~ what is needed is a constructive and practical group of persons desiring



R.M.S. 44

Holland-America Line

but stead fastly opposed to the revival of forces who have led millions of people to death and destruction ~~and~~ if a dozen more ~~died~~ and have now at this moment led the world into unsurpassed danger.

we have lived into a dark generation of tention and fear.

But how many of you have tryed to find out the truth behind the cold-war cliches!!

~~I~~ ~~have~~ ~~no~~ I have lived under both systems, I had sought the answers and although it would be very easy to dupe myself into believing one system is better than the other, I know they are not.

I despise the representatives ~~of~~ of both systems wether they be socialist or christian democrats. wether they be labor or conservative they are all products of the two systems

(21) 1962, undated. Photocopy of document identified as a self-questionnaire. Original was stained and unsuitable for examination.

mission Exhibit 100

Exhibit 100 for identification

Q. WHY DID YOU GO TO THE USSR?

I was a citizen of the U.S. (as a tourist) residing in a foreign country which I have a perfect right to do. I was there to see the people and how their system works

Q. WHAT WAS YOUR STATUS THERE? I MADE NO LETTER RESIDING IN THE U.S.!!

I HAD NO EMPLOYMENT WITH THE U.S. GOVERNMENT. I MADE NO APPLICATION OF ANY KIND FOR ANY EMPLOYMENT. I MIGHT HAVE BEEN ONE OF THOUSANDS OF U.S. CITIZENS NOW MAKING APPLICATION TO GO TO THE U.S.S.R. NOW MAKE APPLICATION TO VISIT THE U.S. MAKE? NO

Q. WHAT WAS THAT TAPE RECORDING? I MADE A RECORDING FOR RADIO STATION WHICH I [redacted] A MORNING JOURNAL RADIO TALKED BOY, IN WHICH I [redacted] SPOKE ABOUT SUPERMARKETS AND WHAT I HAD SEEN IN MOSCOW TOURIST AREAS. I EXPRESSED DELIGHT IN ALL THE INTERESTING PLACES I VISITED IN THIS RESPECT THE UNIVERSITY, MUSEUMS OF ART AND THAT SORT. THE RECORDING I MADE TO CLOSE THIS TALK WAS ACCIDENTALLY BY SAYING I HOPED WAR PEOPLE WOULD LIVE IN PEACE AND

2. DID YOU EVER HAVE BY RESIDING OR DOING WORK IN THE U.S. UNDER U.S. LAW A STATUS MAY LOSS OF ALLEGIANCE OF THE U.S. BY VOTING OR SERVING IN THE ARMED FORCES OF A FOREIGN STATE OR TAKING AN OATH OF ALLEGIANCE TO THAT STATE? I DID NONE OF THESE

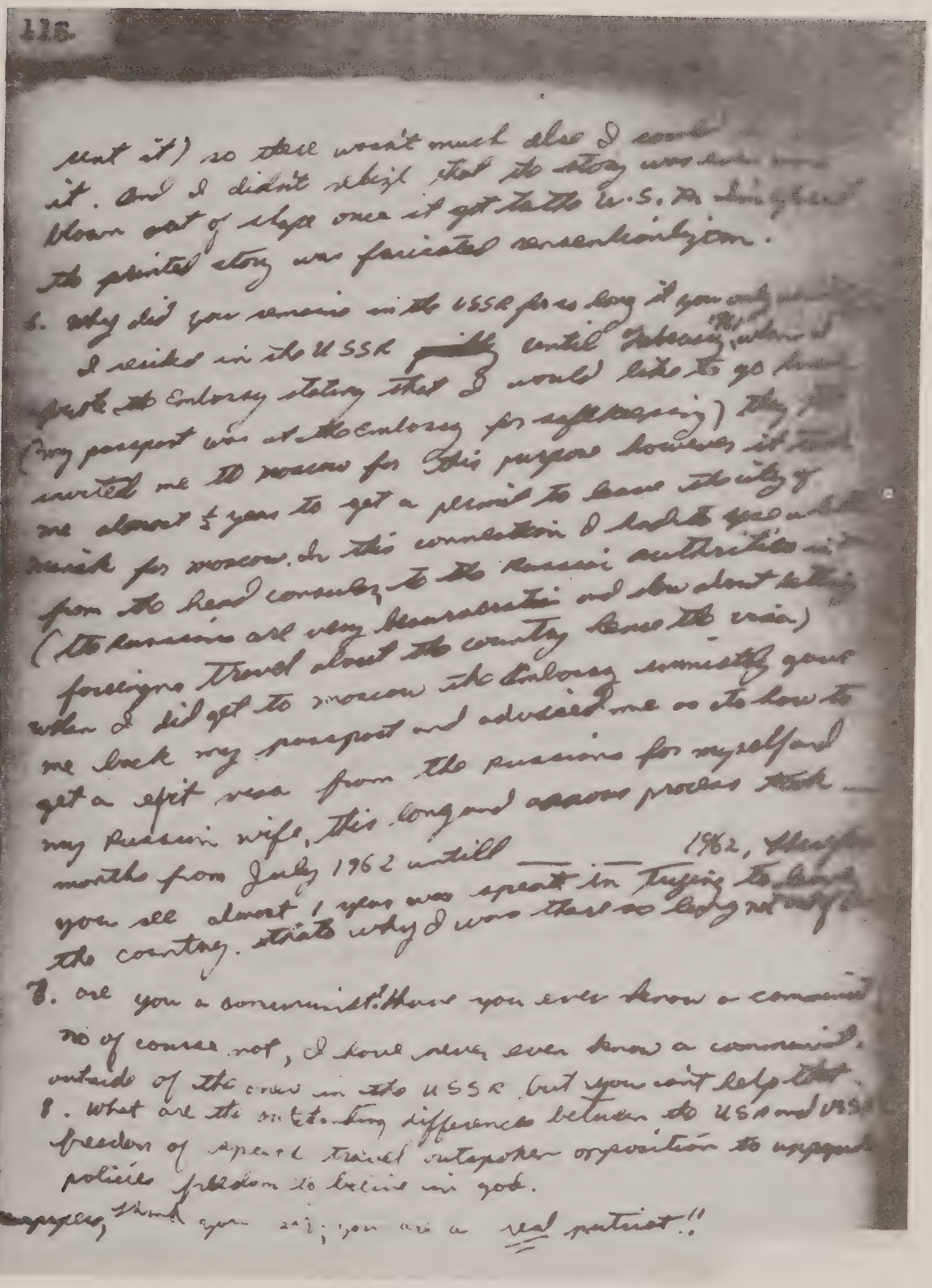
Q. DO YOU KNOW WHETHER THE U.S.S.R. CONSIDERS STATE WORK?

NO. INDIVIDUALLY ONLY PLANTS WORKING DIRECTLY FOR THE STATE, NAMELY DEFENSE. [redacted] ALL OTHER PLANTS ARE OWNED BY THE

Q. WORKERS WHO WORK IN THEM.

5. WHAT DOES STATEMENT YOU MADE TO THE U.S.I. AGENT WHEN YOU WERE IN [redacted]

I WAS APPROACHED AT THE TIME OF MY RETURN TO THE U.S. BY A GOVERNMENT AGENT AFTER I HAD FORMALLY NOTIFIED THE U.S. EMBASSY IN MOSCOW OF MY FUTURE RESIDENCE IN THE U.S.S.R. I WAS BY THE NEWSPAPER REPORTERS IN MOSCOW INCLUDING U.P.I. A.P.I. AND T.I.A. INC. WHO WERE NOTIFIED BY THE EMBASSY I DID NOT SEE THEM. I DID ANSWER QUESTIONS AND GAVE STATEMENTS TO THIS AGENT OF U.S.I. I REQUESTED HER TO SEE ME AGAIN. SHE ACTED VERY [illegible] AND SAID SHE WOULD. SHE WAS A YOUNG, [illegible] AND WHAT I SAID JUST AS I WENT IT. I NORMALLY CALLED HER TO COMPLAIN ABOUT THIS. IT WAS THIS [illegible] AND HER EDITOR AND SO THAT WAS ONE OF THE THINGS. SHE SAID LONDON WAS VERY UPSET ABOUT THE STORY. THAT IS WHAT I MEANT THAT SHE HAD ALREADY



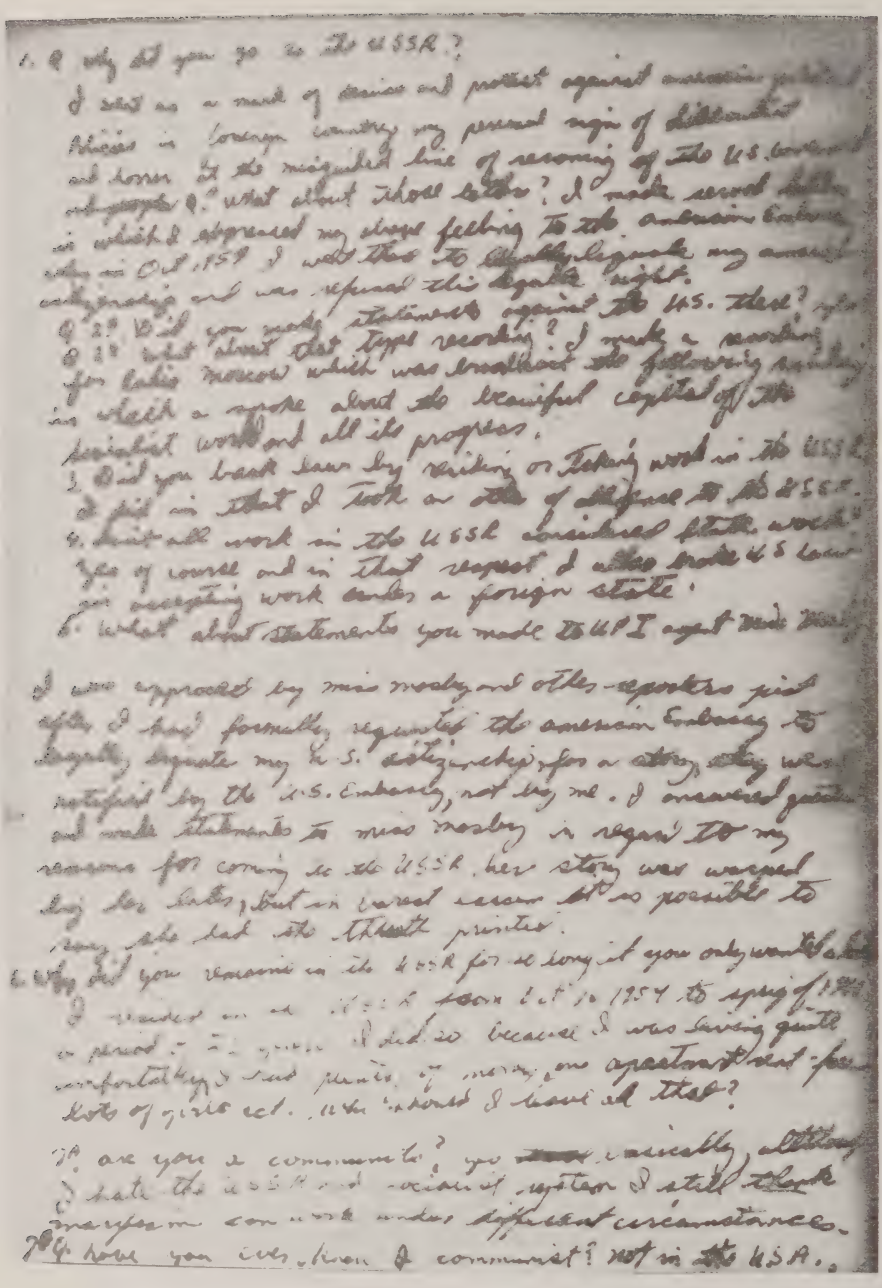
116.

sent it) so there wasn't much else I could
it. And I didn't object that the story was
blown out of shape once it got to the U.S. & the
the printed story was fabricated sensationalism.

6. Why did you remain in the USSR for so long if you only
I resided in the USSR [illegible] until February, when I
spoke to Embassy stating that I would like to go home
(my passport was at the Embassy for safekeeping) they
invited me to moscow for this purpose however, it took
me almost 2 years to get a permit to leave the city of
Perm for moscow. In this connection I had to get
from the local comsomol & the russian authorities
(the russians are very bureaucratic and slow about letting
foreigners travel about the country hence the reason)
when I did get to moscow the Embassy promptly gave
me back my passport and advised me as to how to
get a exit visa from the russians for myself and
my Russian wife. This long and arduous process took
months from July 1962 until ____ 1962, [illegible]
you see almost 1 year was spent in trying to leave
the country. that's why I was there so long not [illegible]

7. are you a communist? Have you ever known a communist
no of course not, I have never ever known a communist
outside of the ones in the USSR but you can't help that.
8. What are the outstanding differences between the USA and USSR
freedom of speech travel outspoken opposition to opposed
policies freedom to believe in god.

[illegible] thank you sir; you are a real patriot!!



1. Statement to speak
2. 2. Letter to Embassy
3. Type according to radio Moscow
4.

1. Social report of the month, movies - night and grounds ordinary - to log of event in motion called, Moscow Control, except
2. Asking for information about the to Invalid — 1544, 1545, 18
U.S. Work

8. What are the principal differences between the USSR and USA? Moral, except in st. ... the living standard is a little higher. Of course we about the same. Medical aid and the vaccinations - epidemics in the USSR is better than in the U.S.A.

(22) January 17, 1962. Affidavit of support, addressed to the American Embassy, Moscow, U.S.S.R., signed Lee H. Oswald.

Lee H. Oswald
Kalinina St.
House 4, Apt. 24
Minsk, U.S.S.R..
January 17, 1962.

American Embassy
Moscow, U.S.S.R..

affidavit of Support

I, Lee H. Oswald, affirm that I have the ability and desire to support my wife, Marina N. Oswald, from such time as she shall become a resident of the U.S.A..

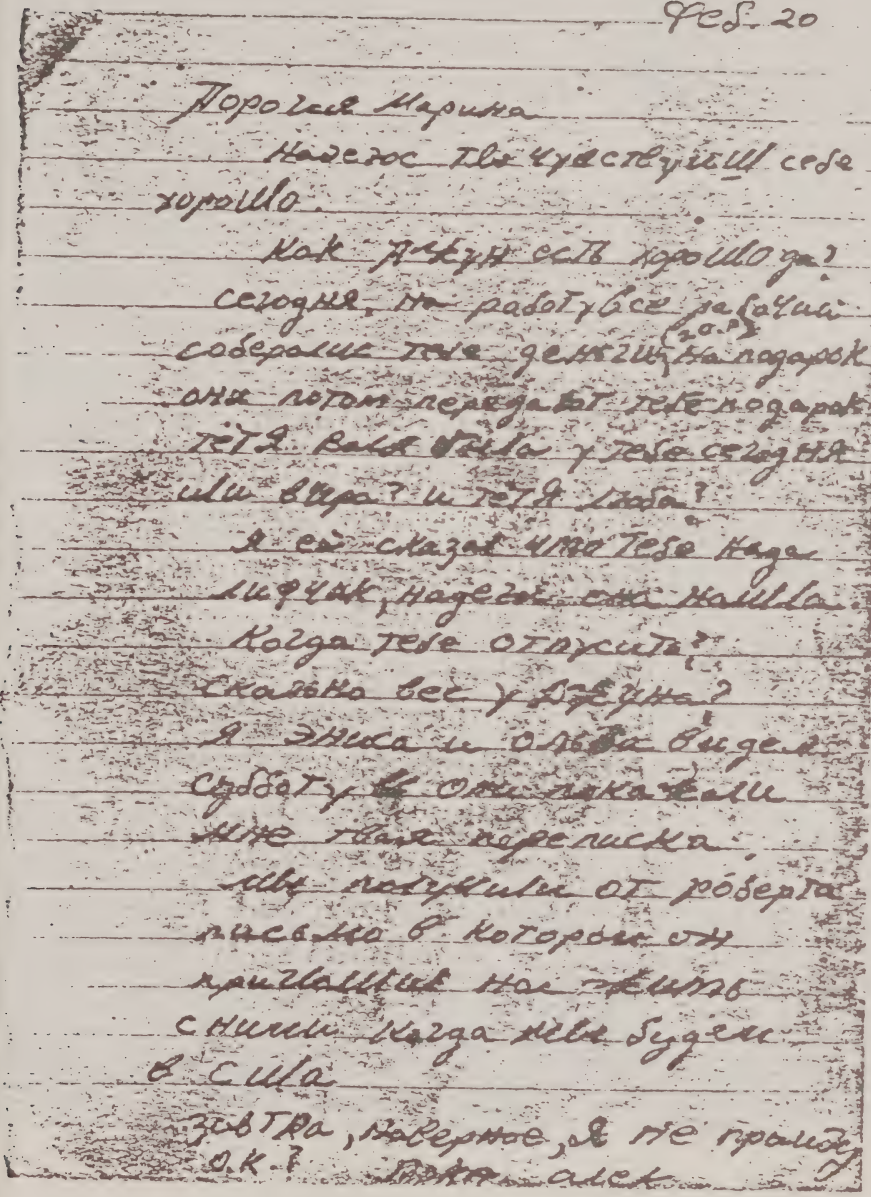
I have no obligations of support to any other person and I have no other debts, expenses or obligations to any firm or individual.

I am fully employable in the occupational fields of metals and electronics.

Plans have been made for my wife to reside with me in Vernon, Texas at the residence of my mother Mrs. M. Oswald.

Lee H. Oswald

(23) February 20, 1962. Russian script on lined paper, from "Alek" to "Marina" and "June".



Feb. 20

Дорогая Марина

Надеюсь ты чувствуешь себя хорошо.

Как дела? Есть хорошо ли?
Сегодня, на работе все работали
собрали тебе деньги на подарок
они потом передадут тебе подарок
тетя Вали Оля у тебя сегодня
или вчера? и тетя Люба?

Я ей сказал что тебе надо
лифчик, надеюсь они нашли
Когда тебе отпуск?
Сколько вес у Джуни?
Я Эмиса и Олега видел
Субботу они показали
мне твои переписка.
Мы получили от Роберта
письмо в которое он
приглашил нас жить
с ними когда мы будем
в США

Завтра, наверное, я не пришлю
О.К.? Пока Алек

(241 March 24, 1962. Entry papers of Marina Oswald, including a fingerprint identification card. (FBI Exhibit D–10)

RECEIVED
I & N SERVICE
NEW ORLEANS, LA.
JUN 25 10 09 AM '63

UNITED STATES DEPARTMENT OF JUSTICE
IMMIGRATION AND NATURALIZATION SERVICE

Form approved
Budget Bureau No. 43-R040.5
26 JUN 1963

File No. A12 530 645

To the District Director
IMMIGRATION AND NATURALIZATION SERVICE

FEE STAMP
$ 10 FEE PAID No. 63246-1
IMMIGRATION & NATURALIZATION SERVICE
NEW ORLEANS, LOUISIANA (INFO)
Late 6-25-63 Verified by

The undersigned, whose alien registration receipt number is A12 530 645, hereby applies for a new alien registration receipt card.

1. ☐ (a) I am attaching the Form I-151 in my possession and desire a new card because ☐ my name has been changed ☐ the card is mutilated.
☐ (b) My alien registration receipt document was (lost / destroyed) on or about April 1ST 1963 (Date)
under the following circumstances A PURSE IN STREET IN DALLAS, TEXAS, WHILE SHOPPING.
In case such receipt which was lost is recovered, or I ascertain its whereabouts, I will report the facts and will surrender such receipt or immigrant identification card to the Immigration and Naturalization office nearest my place of residence.

Present Name: MARINA N OSWALD	Present Nationality: RUSSIAN
Present address: mailing ad.-P.O. BOX 30061 new Orleans, La. 4907 1/2 MAGAZINE ST NEW ORLEANS, LA.	
Name at time of registration and fingerprinting: SAME	
Name at time of lawful admission for permanent residence: SAME	
Admitted at (city or town): Port of NEW YORK (state): N.Y.	Date of admission: JUNE 13, 1962
Name of vessel or other means of conveyance: "MASSDAM" HOLLAND-AMERICAN	Destination in U. S. at time of admission: FT. WORTH TEXAS
Birthdate: JULY 17 1941	Birthplace (city): SEVERO-DVENSK (country): USSR (state):
Dates of any absence from the U.S. for 1 year or longer, since lawful admission for permanent residence: NONE	0109279

I CERTIFY that the information above is true and correct to the best of my knowledge and belief.

Bur. of Statistics (Forms G-22.2a, G-22.2b, G-22.2c) Reg. 6-26-63 Fr. Ir. Marina Oswald
(Signature of applicant)

Form I-90
(Rev. 1-22-62)

Mark 11/29/63

INSTRUCTIONS

1. This application shall be used to apply for an alien registration card in lieu of one lost, mutilated or destroyed, or in a changed name. (Note: Upon request, evidence of registration surrendered by a lawful permanent resident alien on other than Form I-151, such as AR-3 or AR-103, will be replaced with Form I-151 without fee or application.)

2. Submit this application in single copy only.

3. DOCUMENTARY EVIDENCE - An applicant for a new alien registration receipt card in a changed name, whose name has been changed after registration by order of court or by marriage, shall attach appropriate documentary evidence of such change to this application.

4. PHOTOGRAPHS - You are required to send with this application 2 identical photographs of yourself taken within 30 days of the date of this application. These photographs must be 1½ X 1½ inches in size, and the distance from top of head to point of chin should be approximately 1¼ inches. They must NOT be pasted on the cards or mounted in any other way, must be on thin paper, have a light background, and clearly show a front view of your face without hat. Snapshots, group or full-length portraits will not be accepted. DO NOT SIGN YOUR PHOTOGRAPHS. Using crayon or soft pencil to avoid possible mutilation of the photographs, write your alien registration number lightly on the reverse of the photographs.

5. DATE OF YOUR ARRIVAL - If you do not know the exact date of your arrival in the United States, or the name of the vessel or port, and you cannot obtain this information by consulting your family or friends who came over with you, give the facts of your arrival as you remember them in the appropriate blank spaces on the first page of this form. Your Immigrant Identification Card or your passport, ship's card, or baggage labels, if you have them, may help you to answer these questions.

6. FEE - A fee of five dollars ($5) must accompany this application. Remittances should be made payable to the "Immigration and Naturalization Service, Department of Justice." If residing in the Virgin Islands, remittances should be drawn in favor of the "Commissioner of Finance of the Virgin Islands." If residing in Guam, remittances should be drawn in favor of the "Treasurer, Guam." If you mail this application, attach money order or check. DO NOT SEND CASH. The fee is required for filing application and is not returnable regardless of action taken thereon.

TO APPLICANT.--Do not write below this line.

For use in searching Records of Arrival

RECORDS EXAMINED	RECORDS FOUND
Card index _____	Place NYC
Index books _____	Name MARINA N. OSWALD
Manifests _____	
_____	Date 6-13-62
_____	Manner M-1
_____	Marital status M-
_____	_____ (Signature of person making search)

REMARKS OF CONSULAR OFFICER

_____ (Date) _____ (Signature) _____ (Title)

I recommend that the application be- ☒ Granted ☐ Denied

Recommendation- ☒ Approved ☐ Disapproved

_____ Immigration Officer

_____ District Director

GPO 934700

Form FS 240 (Russian)

ГОСУДАРСТВЕННЫЙ ДЕПАРТАМЕНТ СОЕДИНЕННЫХ ШТАТОВ АМЕРИКИ
Department of State
ЗАГРАНИЧНАЯ СЛУЖБА СОЕДИНЕННЫХ ШТАТОВ АМЕРИКИ
The Foreign Service of the United States of America

Form Approved
Budget Bureau No. 47-R 1503

ЗАЯВЛЕНИЕ НА ПОЛУЧЕНИЕ ИММИГРАЦИОННОЙ ВИЗЫ И РЕГИСТРАЦИИ ИНОСТРАНЦА
APPLICATION FOR IMMIGRANT VISA AND ALIEN REGISTRATION

1. [illegible] должен быть заполнен в ДВУХ экземплярах на пишущей машинке или, если он заполняется от руки, четкими печатными буквами. Вы должны ответить на ВСЕ вопросы, применимые в Вашем случае. Если ответ на вопрос должен быть отрицательным, в бланках должны быть соответствующие номера вопросов. Прикрепите листы к бланкам. Подпись на этих бланках должна быть сделана в присутствии должностного лица консульства. Перед подписанием этого заявления Вы не должны получать никаких инструкций от консульского сотрудника. При подаче заявления на получение иммиграционной визы должно быть внесено ПЯТЬ ДОЛЛАРОВ. Этот взнос должен быть сделан в Американских долларах или в местных деньгах по официальному курсу, или банковым чеком, когда Вы явитесь к консульскому сотруднику. (This form must be filled out in DUPLICATE by typewriter, or if by hand in legible block letters. ALL questions must be answered. If inapplicable, questions which are not applicable should be so marked. If there is insufficient room on the form, answer on separate sheets in duplicate using the same numbers as appear on the form. Attach the sheets to the forms. DO NOT SIGN this form until instructed to do so by the consular officer.) The fee for filing this application for an immigrant visa $5.00. The fee should be paid in United States dollars or local currency equivalent or by bank draft, when you appear before the consular officer.)

[illegible] Ваше ложное заявление или сокрытие существенного факта может иметь последствием Ваше постоянное [illegible] Соединенные Штаты. Даже если Вы и въехали в Соединенные Штаты, ложные данные могут быть основанием для [illegible] на суду или высылки из Соединенных Штатов. (Willful misstatement or concealment of a material fact may result in your permanent exclusion from the United States. Even though you may have been admitted to the United States, a fraudulent entry could be ground for your prosecution and/or deportation.)

Настоящим я подаю мне иммиграционной визы и о регистрации меня как иностранца и сообщаю следующие факты:
(I hereby apply for an immigrant visa and alien registration at the United States Embassy at Moscow, USSR and state the following facts:)

1. Моя фамилия: (My family name is)	Мое имя: (My first name is)	Мое отчество: (My middle name is)
OSWALD,	Marina	Nikolaevna

2. Мое полное имя на родном языке: (My full name in native alphabet (if other than Roman letters are used) is)
Марина Николаевна ОСВАЛЬД

3. Другие имена, которые я использовал(а) или под которыми я был(а) известен(на) (если женщина замужем, она должна указать свою девичью фамилию) (Other names I have used or by which I have been known are (If married woman, give maiden name))
Marina Nikolaevna OSWALD nee PRUSAKOVA

4. Дата моего рождения: (The date of my birth is)			5. Место моего рождения. (My place of birth is)		
День (Day)	Месяц (Month)	Год (Year)	Город или деревня (City or town)	Область (Province)	Страна (Country)
17	July	1941	Severodvinsk	Arkhangelskaya obl.	USSR

6. [illegible] 26

7. Моя профессия или занятие в настоящее время (My present calling or occupation is)
Pharmaist

8. Мой настоящий адрес. (My present address is)
Minsk, St. Komunisticheskaya 4, Apt.24

9. Мой пол: (My sex is)
☐ мужской Male ☒ женский Female

10. Мое семейное положение: (My marital status is)
☐ Холост (В браке никогда не состоял(а)) (Single (Never married)) ☒ Женат/Замужем (Married) ☐ Вдовец/Вдова (Widowed) ☐ Разведен(а) (Divorced) ☐ Не живу с мужем/женой (Separated)
Включая мой настоящий брак, я состоял(а) в браке 1 раз. (Including my present marriage, I have been married 1 times.)

11. Моя национальность: (My nationality is)
Soviet

12. Моя раса: (My race is)

13. Моя этническая классификация: (My ethnic classification is)

14. Мои личные данные: (My personal description is)

(a) Цвет волос: (Color of hair) fair
(b) Рост: (Height) 1 м (m) 62 см (inch)
(c) Цвет глаз: (Color of eyes) grey-blue
(d) Цвет лица: (Complexion) white

15. Я имею следующие видимые особые приметы. (I have the following visible marks of identification)
no

16. Цель моей поездки в Соединенные Штаты: (My purpose in going to the United States is)
For permanent residence with husband Lee Harvey Oswald

17. Я намереваюсь остаться в Соединенных Штатах на постоянное жительство или (укажите срок пребывания) (I intend to remain in the United States permanently or (Give length of time))
Permanently

18. Я намереваюсь прибыть в Соединенные Штаты через пограничный пункт (I intend to enter the United States at the port of)

19. У меня [illegible] до конечного пункта моего назначения (I (Do) (Do Not) have a ticket to my final destination)

20. (a) Я еду в Соединенные Штаты к нижеследующему лицу (укажите полное имя и адрес этого лица и степень родства, если родственник) (I am going to the United States to join the following person (Give full name and address and relationship, if any))
Lee Harvey Oswald,
[illegible] Davenport,
[illegible] Texas

20. (b) Моим поручителем является следующее лицо и/или организация (укажите адрес, если отлично от (a)) (I am sponsored by the following person and/or organization (Give address if different from (a))
see Item #20(a)

21. Мой постоянный адрес в Соединенных Штатах (будет: (My final address in the United States is)
See Item #20(a)

Этот бланк может быть получен бесплатно в консульских представительствах Соединенных Штатов Америки
(This form may be obtained gratis at consular offices of the United States of America.)

MAC 11/29/62

Form FS-510 (Russian) 8-17-59 Page 1

22. Мои личные финансовые ресурсы следующие: (My personal financial resources are)

(a) Наличными (Cash) X (e) Недвижимое имущество (очертить) (Real estate (value)) X

(б) В банке (Bank deposits) X (г) Иного рода (Other) X

23. Представляю следующие личные документы в подтверждение и как часть этого заявления. (I am submitting the following personal documents in support of and as part of my application)

☒ Свидетельство о рождении (Birth certificate) ☐ Справка о воинской службе (Military record) ☐ Обещание работы (Promise of employment)

☐ Справка из милиции (Police certificate(s)) ☒ Доказательство о нуждаемости или о личных ресурсах (Evidence of support or own resources) ☒ Медицинская справка (Medical records)

☐ Прочие документы (дать описание) (Other (describe)) Petition ; Marriage cert.

24. Полное имя и настоящий адрес моей(го) супруги(а) (Укажите девичью фамилию Вашей супруги) (Name and present residence of my wife/husband is (Give maiden name of wife))

Mr. LeeHarvey OSWALD, Minsk, St. Kommunisticheskaya 4, Apt.24

25. Имена и адреса моих детей моложе 21 года: (The names and addresses of my children under 21 years of age are)

June Lee Oswald, Minsk, St. Kommunisticheskaya 4, Apt.24

26. Имена членов моей семьи, которые иммигрируют вместе со мной: (The names of members of my family who are immigrating with me are)

husband and daughter accompanying me to the United States - both of US citizens.

27. Полное имя и адрес моего отца (если он умер, укажите дату смерти) (The name and address of my father is (If deceased, so state, giving date))

28. Девичья фамилия и адрес моей матери (если она умерла, укажите дату смерти) (The maiden name and address of my mother is (If deceased, so state, giving date))

Klavdiya Vasilevna Prusakova -deceased

29. Полные имена и адреса моих ближайших родственников на моей родине (The name and address of my next of kin in my home country is)

Uncle Ilya V. Prusakov, Minsk, St. Kommunisticheskaya 39/42, Apt.20

30. Со времени моего шестнадцатилетия, я жил в следующих местах в течение шести месяцев или дольше: (Since my sixteenth birthday my places of residence for 6 months or more have been)

Город (City or town)	Область (Province)	Страна (Country)	Даты (от и до) (Dates(From-To))	Занятие или профессия (Calling or occupation)
Leningrad		USSR	1957-1959	student
Minsk		USSR	1959-to present	pharmaist

31. Со времени моего шестнадцатилетия я состою или состоял членом или был сотрудником следующих политических, профессиональных, непрофессиональных или общественных организаций: (Since my sixteenth birthday I am or have been a member or affiliate of the following political, professional, vocational or social organizations)

Название организации и адрес (Name and address)	Даты (от и до) (Dates(From-To))	Каким членом были и занимали ли какую-нибудь должность в организации (Type of membership and office held, if any)
None		

32. Я говорю, читаю и пишу на следующих языках (включите Ваш родной язык): (I speak, read, write the following language (include your native language))

Какой язык (Language)	Говорю (Speak)	Читаю (Read)	Пишу (Write)
Russian	yes	yes	yes

33. Я был(а) раньше в Соединенных Штатах в течение следующих периодов (укажите год, категорию визы или статус). (Если не был, так и укажите) (I have previously been in the United States during the following periods (Give year and type of visa or status) (If never, so state))

never

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(c) Были ли Вы когда-либо обвинены, арестованы, привлечены к суду или осуждены за преступление или за какой-либо другой проступок? (Have you ever been arrested for, charged with, indicted for, or convicted of, a crime or other offense?	Да Yes	Нет No
(d) Были ли Вы когда-либо заключены в гражданскую тюрьму? (Have you ever been confined in a civilian prison or jail?	Да	Нет
(e) Были ли Вы когда-либо заключены в военную тюрьму? (Have you ever been confined in a military prison or jail?	Да	Нет
(f) Занимались ли Вы когда-либо незаконной покупкой или продажей наркотиков или имели какое-либо отношение к наркотикам? (Have you ever been engaged in illegal buying, selling or handling of narcotic drugs?)	Да	Нет
(g) Были ли Вы помилованы, амнистированы, реабилитированы, или имели другого рода смягчения наказаний? (Если да, объясните) (Have you ever been the beneficiary of a pardon, amnesty, rehabilitation decree, other act of clemency or similar action? (If so, explain))	Да	Нет
(2) (a) Были ли Вы когда-либо помещены в дом для престарелых (или иное благотворительное заведение?) (Have you ever been placed in an almshouse (poorhouse or charitable institution)?)	Да	Нет
(b) Являетесь ли Вы по профессии, являлись ли Вы профессиональным нищим или бродягой? (Are you a pauper, professional beggar or vagrant?)	Да	Нет
(c) Страдаете ли Вы в настоящее время какими-либо физическими недостатком или неспособностью или болезнью, которые могут повлиять на Вашу способность зарабатывать на жизнь? (Are you now afflicted with a physical defect, disease or disability which may affect your ability to earn a living?)	Да	Нет
(d) Будете ли Вы в состоянии в финансовом отношении содержать себя в Соединенных Штатах? (Will you be able to support yourself financially in the United States?)	Да	Нет
(e) Имеете ли Вы или имели когда-либо приступы умопомешательства? (Have you ever had one or more attacks of insanity?)	Да	Нет
(f) Страдаете ли Вы в настоящее время или страдали раньше психопатией, эпилепсией, душевными заболеваниями, приступами общественных приступами, конвульсиями или нервным расстройством? (Are you now or have you ever been afflicted with psychopathic personality, epilepsy, mental defect, fits, fainting spells, convulsions or a nervous breakdown?)	Да	Нет
(g) Являетесь ли Вы теперь или были ли Вы ранее наркоманом или хроническим алкоголиком? (Are you now or have you ever been a narcotic or drug addict or chronic alcoholic?)	Да	Нет
(h) Помещались ли Вы когда-либо на излечение в госпиталь, лечебницу или другое учреждение от умопомешательства или других психических расстройств или от наркомании или алкоголизма? (Have you ever been treated in a hospital, institution or elsewhere for insanity or other mental disorder or for drug or narcotic addiction or alcoholism?)	Да	Нет
(3) Были ли Вы когда-либо одной из следующих болезней (Have you ever had any of the following:)		
(a) Туберкулезом в любой форме? (Tuberculosis in any form?)	Да	Нет
(B) Проказой? (Leprosy?)	Да	Нет
(B) Какой-либо иной опасной заразной болезнью? (Any other dangerous contagious disease?)	Да	Нет
(4) (a) Многоженец ли Вы, практикуете ли Вы многоженство или пропагандируете ли Вы осуществление многоженства? (Are you a polygamist, do you practice polygamy, or do you advocate the practice of polygamy?)	Да	Нет
(Б) Являетесь ли Вы теперь или были ли Вы когда-либо проституткой, сводницей или жили всецело или частично на доходы, полученные от проституции? (Are you or have you ever been a prostitute, procurer, or supported wholly or in part from the proceeds of prostitution?)	Да	Нет
(в) Имеете ли Вы в Соединенные Штаты для того, чтобы заниматься безнравственными половыми актами, проституцией или другими незаконными видами деятельности, дающими прибыль? (Are you going to the United States to engage in an immoral sexual act or prostitution, or other unlawful commercialized vice)	Да	Нет
(г) Обращались ли Вы ранее с прошением о визе Вам визы на въезд в Соединенные Штаты в качестве иммигранта? (Если Вам ответ «Да», укажите, когда и где Вы обращались за иммиграционной или не иммиграционной визой и была ли такая виза Вам выдана). (Have you previously applied for a visa to enter the United States either as an immigrant or as a nonimmigrant? (If answer is "Yes", state where and when, whether you applied for a nonimmigrant or an immigrant visa and whether the visa was issued)	Да	Нет
(д) Были ли Вы когда-либо в затруднении на въезд в Соединенные Штаты в течение последних двенадцати месяцев? (Если Вам ответ «Да» предоставьте доказательство, что Министр Юстиции США разрешил Вам снова подать прошение о разрешение Вам визы в Соединенные Штаты) (Have you been refused admission to the United States during the last twelve months? If the answer is "Yes" submit evidence that the Attorny General has consented to your replying for admission into the United States)	Да	Нет
(e) Были ли Вы когда-либо: (Have you ever been:)		
(А) арестованы и депортированы из Соединенных Штатов: (arrested and deported from the United States?)	Да	Нет
(Б) добровольно высланы из Соединенных Штатов за счет правительства Соединенных Штатов, как лицо, которое признано нищенством? (voluntarily removed from the United States at United States Government expense as a person who was "not able to support")	Да	Нет
(В) высланы из Соединенных Штатов, как иностранец враждебный США? (removed from the United States as an alien enemy?)	Да	Нет
(Г) высланы из Соединенных Штатов за счет правительства вместо депортации? (removed from the United States at Government expense in lieu of deportation?)	Да	Нет
Если ответ на какой-либо из вышеуказанных вопросов «Да», то представьте доказательство, что Министр Юстиции США разрешил Вам снова подать прошение о въезде в Соединенные Штаты. (If the answer to any of the above questions is Yes, submit evidence that the Attorney General has consented to your reapplying for admission into the United States.)		
(6) (a) Пытались ли Вы когда-либо обманным путем или преднамеренным искажением сведений получить визу или другие документы для въезда в Соединенные Штаты? (Have you ever attempted to obtain by fraud or willful misrepresentation a visa or other documentation to enter the United States?)	Да	Нет
(б) Получали ли Вы когда-либо обманным путем или преднамеренным искажением сведений визу или другие документы для въезда в Соединенные Штаты? (Have you ever obtained by fraud or willful misrepresentation a visa or other documentation to enter the United States?)	Да	Нет
(7) (a) Жили ли Вы когда-либо отчаянно в гражданстве Соединенных Штатов в прошлом или настоящем? (Are you now or have you ever been ineligible for United States citizenship?)	Да	Нет
(б) Уклонялись ли Вы когда-либо от Соединенных Штатов или оставались за их пределами для того, чтобы избежать или уклониться от военной службы во время войны или критического положения в стране? (Have you ever departed from or remained outside of the United States to avoid or evade military service in time of war or national emergency?)	Да	Нет
(в) Регистрировались ли Вы когда-либо в Призывном Совете, согласно законам Соединенных Штатов о воинской повинности? (Have you ever registered with a draft board under the selective service laws of the United States?)	Да	Нет

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(8) Можете ли Вы, если Вы старше шестнадцати лет, читать и понимать какой-нибудь язык или диалект? (Can you, if you are over sixteen, read and understand some language or dialect?)	Да Yes	Нет No
(9) Содействовали ли Вы когда-нибудь ради наживы другому иностранцу въехать или пытаетесь въехать в Соединенные Штаты в нарушение законов Соединенных Штатов? (Have you for gain ever assisted another alien to enter the United States or try to enter the United States in violation of the laws of the United States?)	Да	Нет
(10) Являетесь ли Вы бывшим участником обменной программы, который не прожил заграницей в течение двух лет после отъезда из Соединенных Штатов? (Are you a former exchange visitor who has not resided abroad for two years following your departure from the United States?)	Да	Нет
(11) Являетесь ли Вы теперь или были ли Вы когда-либо. (Are you now or have you ever been)		
(а) анархистом? (an anarchist?)	Да	Нет
(б) сторонником оппозиции всем организованным правительствам? (an advocate of opposition to all organized government?)	Да	Нет
(в) сторонником коммунизма? (an advocate of Communism?)	Да	Нет
(г) членом или сторонником коммунистической партии или филиальных отделений ее или организации, пропагандирующей коммунизм, или организации под контролем или влиянием коммунистов, или организации, преследующей насильственное свержение всякого организованного правительства, или какой-либо другой подобной организации? (a member of or affiliated with the Communist Party or affiliated organization, an organization advocating Communism or a Communist-dominated or controlled organization or an organization advocating the overthrow by force of all organized government or any other similar organization?)	Да	Нет
(Если Ваш ответ на какой-либо из вышеуказанных вопросов —«Да», то представьте объяснение, указывая даты и род деятельности или членства.) (If the answer to any of the above questions is Yes, explain, giving dates and nature of activities or membership.)		
(12) Намереваетесь ли Вы въехать в Соединенные Штаты из Канады, Мексики, или с острова, близлежащего к Соединенным Штатам, в течение двух лет после Вашего прибытия в такую страну или на такой остров? (Если Ваш ответ «Да», то укажите название перевозочной компании, через которую Вы въехали или собираетесь въехать в такую страну или на такой остров) (Do you intend to enter the United States from Canada, Mexico or an island adjacent to the United States within two years after arrival in such country or island? (If answer is Yes, give the name of transportation company by which you entered or intend to enter such country or island))	Да	Нет

35. Помогал ли Вам кто-либо в заполнении этой анкеты? (Если «Да», то укажите имя и адрес этого лица (или имена и адреса), которое Вам помогало, указывая также, кем было это лицо-поручитель, друг, адвокат, агент бюро путешествий, и т.д.) (Were you assisted in completing this application? (If so, give name and address of person or persons assisting you indicating whether relative, friend, attorney, travel agent, or other))

ИМЯ Name	АДРЕС Address
no	

НЕ ПИШИТЕ НИЖЕ ЭТОЙ ЛИНИИ
(DO NOT WRITE BELOW THE FOLLOWING LINE)
Консульский сотрудник поможет Вам ответить на нижеследующие вопросы № 36 и 37
(The consular officer will assist you in answering the following parts 36 and 37)

36. Я утверждаю, что я не должен считаться лицом, непригодным для получения визы и что я не подлежу исключению по параграфу во-
прос № 34 по следующим причинам:
(I claim to be exempt from ineligibility to receive a visa and exclusion under item in part 34 for the following reasons:)

37. Я утверждаю, что я (I claim to be a)

☐ Подлежу к категории квотных иммигрантов по квоте
(preference quota immigrant under the quota.)

☒ Подлежу к неквотным иммигрантам. (Nonquota immigrant.)

Мое утверждение основано на следующих фактах: (My claim is based on the following facts:)
Wife of American citizen. Petition approved Feb.28, 1962.

Я понимаю, что я должен сдать свою визу сотруднику Иммиграционной Службы Соединенных Штатов в том месте, где я прошу разрешения с визой въехать в Соединенные Штаты, и что обладание визой не дает мне права въехать в Соединенные Штаты, если в это время я буду найден неподходящим для въезда по иммиграционным законам.
(I understand that I am required to surrender my visa to the United States Immigration Officer at the place where I apply to enter the United States, and that the possession of a visa does not entitle me to enter the United States if at that time I am found to be inadmissible under the immigration laws.)

Я понимаю, что всякое преднамеренно ложное или вводящее в заблуждение заявление, или преднамеренное скрытие существенного факта, сделанное мною в данной анкете, может повлечь за собой постоянное недопущение меня в Соединенные Штаты и, если я буду допущен в Соединенные Штаты, может подвергнуть меня уголовному преследованию и/или депортации.
(I understand that any willfully false or misleading statement or willful concealment of a material fact made by me herein may subject me to permanent exclusion from the United States and, if I am admitted to the United States, may subject me to criminal prosecution and/or deportation.)

Я, нижеподписавшийся проситель иммиграционной визы Соединенных Штатов, торжественно клянусь (или утверждаю), что все заявления в данной анкете были сделаны мною, включая отмеченные мною ответы раздела № 34, и я знаю и уверен, что они полны и правдивы. Я далее клянусь (или утверждаю), что, если мне будет разрешен въезд в Соединенные Штаты, я не буду делать ничего, что могло бы нанести ущерб общественным интересам или угрожать благополучию, охранению или безопасности Соединенных Штатов; не буду делать ничего, что запрещено законами Соединенных Штатов, относящимися к шпионажу, саботажу, нарушениям общественного порядка или других актов, угрожающих государственной безопасности; не буду заниматься деятельностью, цель которой быть в оппозиции к Правительству Соединенных Штатов или захвата контроля, или свержения Правительства Соединенных Штатов силой, насилием или другими средствами, не предусмотренными Конституцией; не буду присоединяться, поддерживать или участвовать в действиях любой организации, которая зарегистрирована или подлежит регистрации согласно разделу 7 Закона 1950 года о Борьбе с Подрывными Действиями. Я понимаю все вышесказанные заявления, так как я попросил и получил объяснение по каждому пункту, который был мне не ясен.
(I, the undersigned applicant for a United States immigrant visa, do solemnly swear (or affirm) that all statements which appear in this application have been made by me, including the encircling of items in part 34, and are true and complete to the best of my knowledge and belief. I do further swear (or affirm) that, if admitted into the United States, I will not engage in activities which would be prejudicial to the public interest, or endanger the welfare, safety, or security of the United States, in activities which would be prohibited by the laws of the United States relating to espionage, public disorder or in other activities subversive to the national security, in any activity a purpose of which is the opposition to, or the control, or overthrow of, the Government of the United States, by force, violence, or other unconstitutional means, or join, affiliate with, or participate in the activities of any organization which is registered or required to be registered under Section 7 of the Subversive Activities Control Act of 1950. I understand all the foregoing statements, having asked for and obtained an explanation on every point which was not clear to me.)

М. Освальд
Marina N. OSWALD
Подпись просителя
(Signature of applicant)

Подписано и клятвенно подтверждено в моем присутствии сего (Subscribed and sworn to before me this) 24th day of May месяца 19 62 года.

Jack F. Matlock
American Consul.
Консул Соединенных Штатов Америки
(Consular Officer)

Service No. 152090
Tariff Item No. 20
Fee paid U.S. $5.00
Local Cy Equiv. 4.50 rubles

Form AR-84
(Rev. 6-1-56) Replaces Previous
No. 43-109.7

ALIEN REGISTRATION FINGERPRINT CHART

UNITED STATES DEPARTMENT OF JUSTICE
IMMIGRATION AND NATURALIZATION SERVICE

OFFICIAL STAMP

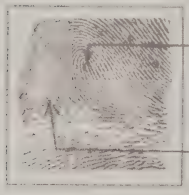
INSTRUCTIONS

To obtain classifiable fingerprints:

1. Use printer's ink.
2. Distribute ink evenly on inking slab
3. Wash and dry fingers thoroughly.
4. Roll fingers from nail to nail, and avoid allowing fingers to slip.
5. Be sure impressions are recorded in correct order
6. If an amputation or deformity makes it impossible to print a finger, make a notation to that effect in the individual finger block.
7. If some physical condition makes it impossible to obtain perfect impressions, submit the best that can be obtained with a memo stapled to the card explaining the circumstances.
8. Examine the completed prints to see if they can be classified, bearing in mind the following:

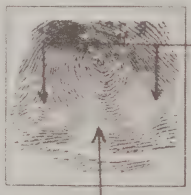
Most fingerprints fall into the patterns shown below (other patterns occur infrequently and are not shown here):

1. LOOP



THE LINES BETWEEN CENTER OF LOOP AND DELTA MUST SHOW

2. WHORL



THESE LINES RUNNING BETWEEN DELTAS MUST BE CLEAR

3. ARCH



ARCHES HAVE NO DELTAS

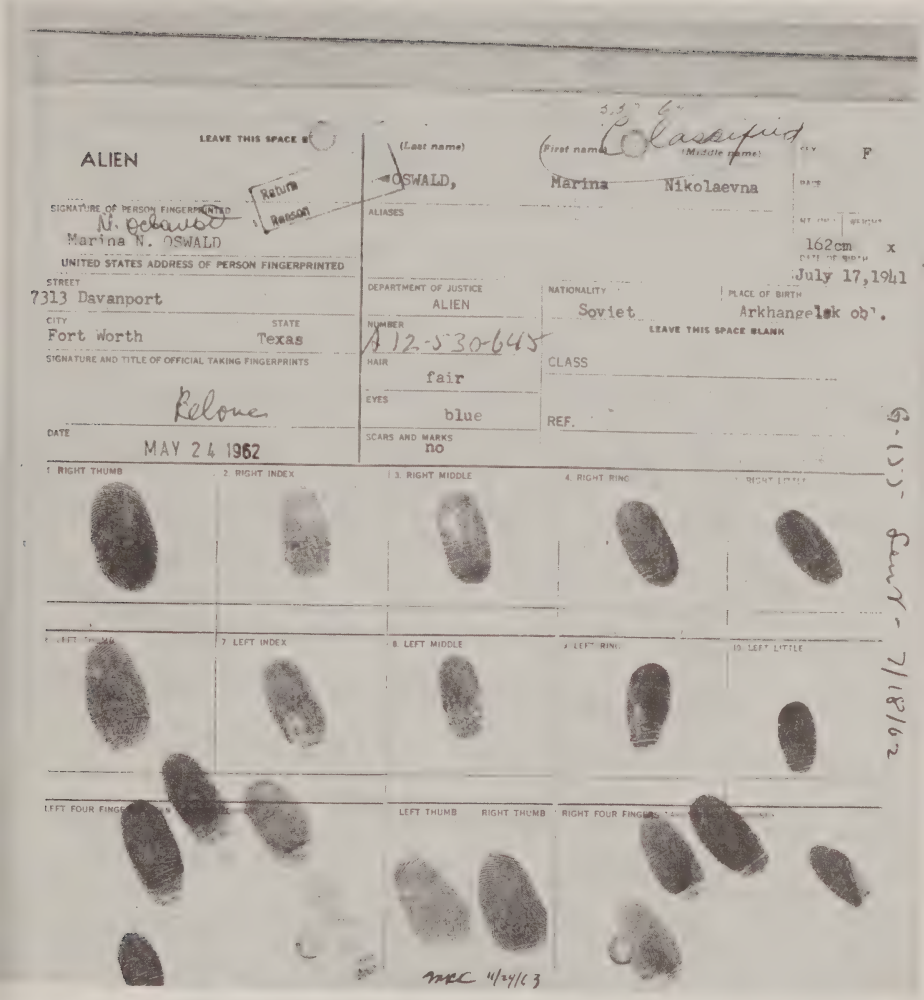
(a) A delta (Δ) is the point at which the lines forming the loop or whorl pattern spread and begin going in different directions. All loop prints have one delta. Whorl prints have two.
(b) Loop prints cannot be classified unless the center of the loop and the delta, and the lines between them, are clear.
(c) Whorl prints cannot be classified unless the two deltas and the lines connecting the deltas are clear.
(d) Arch fingerprints can be classified if a sufficiently clear impression is obtained to permit identification of the pattern as being an arch.

9. If, upon examination, it appears that any of the impressions cannot be classified, new prints should be made. If not more than three impressions are unclassifiable, new prints of these fingers may be taken and pasted over the defective ones. If more than three are unclassifiable, make a new chart.

☆ U.S. GOVERNMENT PRINTING OFFICE 1956 —O-387403

THIS SPACE FOR FBI USE

JUN 15 1962



LEAVE THIS SPACE BLANK

ALIEN

SIGNATURE OF PERSON FINGERPRINTED
Marina N. OSWALD

UNITED STATES ADDRESS OF PERSON FINGERPRINTED
STREET
7313 Davanport
CITY
Fort Worth
STATE
Texas

SIGNATURE AND TITLE OF OFFICIAL TAKING FINGERPRINTS
Relone

DATE
MAY 24 1962

Return
Reason

(Last name) OSWALD,
(First name) Marina
(Middle name) Nikolaevna

Classified

ALIASES

SEX F
RACE
HT. 162cm
WT.
DATE OF BIRTH July 17,1941

DEPARTMENT OF JUSTICE
ALIEN

NATIONALITY Soviet

PLACE OF BIRTH Arkhangelsk ob'.

LEAVE THIS SPACE BLANK

NUMBER A12-530-645

HAIR fair

CLASS

EYES blue

REF.

SCARS AND MARKS no

1. RIGHT THUMB
2. RIGHT INDEX
3. RIGHT MIDDLE
4. RIGHT RING
5. RIGHT LITTLE
6. LEFT THUMB
7. LEFT INDEX
8. LEFT MIDDLE
9. LEFT RING
10. LEFT LITTLE
LEFT FOUR FINGERS
LEFT THUMB
RIGHT THUMB
RIGHT FOUR FINGERS

MKC 4/24/63

S.S.D. Govt. 7/18/62

(25) June 10, 1962. Two-page handwritten letter to The "Worker."

Exhibit No. 1
On Examination
Re Arrest
Lee Oswald
4/11/64

Lee Oswald
P.O. Box 30061
New Orleans, La.

F.P.C.

Dear Sirs,

As a long time subscriber to the Worker, I know I can ask a favor of you with full confidence of its fulfillment.

I have formed a "Fair Play for Cuba Committee" here in New Orleans, I think it is the best way to attract the [illegible] mass of people to the Cuban struggle.

I ask that you give me as much literature as you judge possible since I think it would be very nice to have some literature among the "Fair Play" leaflets like the one enclosed and pamphlets in my office.

Also please let me know so

A. Johnson
Exhibit #1

JFK EXHIBIT

to carry the enclosed "Honorary membership" cards to those fighters for peace Mr. Ben Dell and Mrs. E. Davis.

Yours Fraternally,
Jos. H. Jones
June 10, 1962

A. Johnson
Exhibit #1

HANDS OFF CUBA!

Join the Fair Play for Cuba Committee

NEW ORLEANS CHARTER MEMBER BRANCH

Free Literature, Lectures

LOCATION:

A. Johnson
Exhibit #1

EVERYONE WELCOME!

(26) July 13, 1962. Letter to Leslie Welding Co., signed Lee H. Oswald; written on part of a page from a yellow legal pad. Blue ink; ballpoint pen. Location: Archives.

Leslie Welding Co.
210 N. Beckley Ave.
Fort Worth, Texas
% Tom Yates-Foreman

Dear Sir;

This is to explain that I have moved permanently to Dallas, Texas, where I have found other employment.

I ask that my check for work preformed during the week Oct. 1-8 be forwarded to me now, and the other check coming to me from my first week of work be forwarded as soon as possible.

I futher request that my name be withdrawn from those whom you presently employ.

Very respectfully,
Lee H. Oswald

LEE H. OSWALD
BOX 2915
Dallas,
Texas

46-129 304

JM
D-18

FOR POST OFFICE USE ONLY	POSTMASTER: W. B. [illegible]	DATE BOX OPENED: OCT 9 - 1962	DATE BOX CLOSED: MAY 14 1963	BOX NO.: 2915

APPLICANT PLEASE NOTE: Completion of this application signifies your willingness to comply with all postal rules relative to the renting and use of Post Office boxes.

NAME OF APPLICANT (*Print or type*)
LEE H. Oswald

NAME OF FIRM OR CORPORATION (*If box is rented for use of either*)

KIND OF BUSINESS

BUSINESS ADDRESS (*No., street, and zone*)
D-17

HOME ADDRESS (*No., street, and zone*)
3519 FAIRMONT St. Dallas Texas

SIGNATURE OF APPLICANT
X Lee H. Oswald

DATE OF APPLICATION
Oct 7, 1962

(27) October 9, 1962. Application for Post Office Box No. 2915, signed Lee H. Oswald.

For Post Office Use Only ENTERED IN DIRECTORY	INITIALS OF CLERK	INITIALS OF CARRIER	BOX NO.
	VC		6225

THE FOLLOWING MUST BE COMPLETED AND SIGNED BEFORE P.O. BOX IS ASSIGNED

DELIVER MAIL IN ACCORDANCE WITH INSTRUCTIONS CHECKED BELOW

- ☐ ALL EXCEPT SPECIAL DELIVERY IN BOX
- ☒ ALL INCLUDING SPECIAL DELIVERY IN BOX
- ☐ ONLY MAIL ADDRESSED TO BOX IS TO BE PLACED IN IT. ALL OTHER MAIL TO BE DELIVERED AS ADDRESSED.
- ☐ OTHER INSTRUCTIONS (*Explain*)

SPECIAL DELIVERY MAIL ONLY (*Deliver as checked below*)

- ☐ DELIVER TO LOCAL RESIDENCE AT _____ (*No., street, and zone*)
- ☐ DELIVER TO LOCAL BUSINESS ADDRESS AT _____ (*No., street, and zone*)

NAMES OF PERSONS ENTITLED TO RECEIVE MAIL THROUGH BOX (*If box is rented to a firm, include the full name of each of its members whose mail is to be placed in box.*)

11-22-

☐ HAVE READ ITEMS 1 THROUGH 5, ABOVE AND WILL COMPLY WITH THEM.

X Lee H. Oswald
(*Signature of applicant*)

POD FORM JULY 1960 1093

APPLICATION FOR POST OFFICE BOX

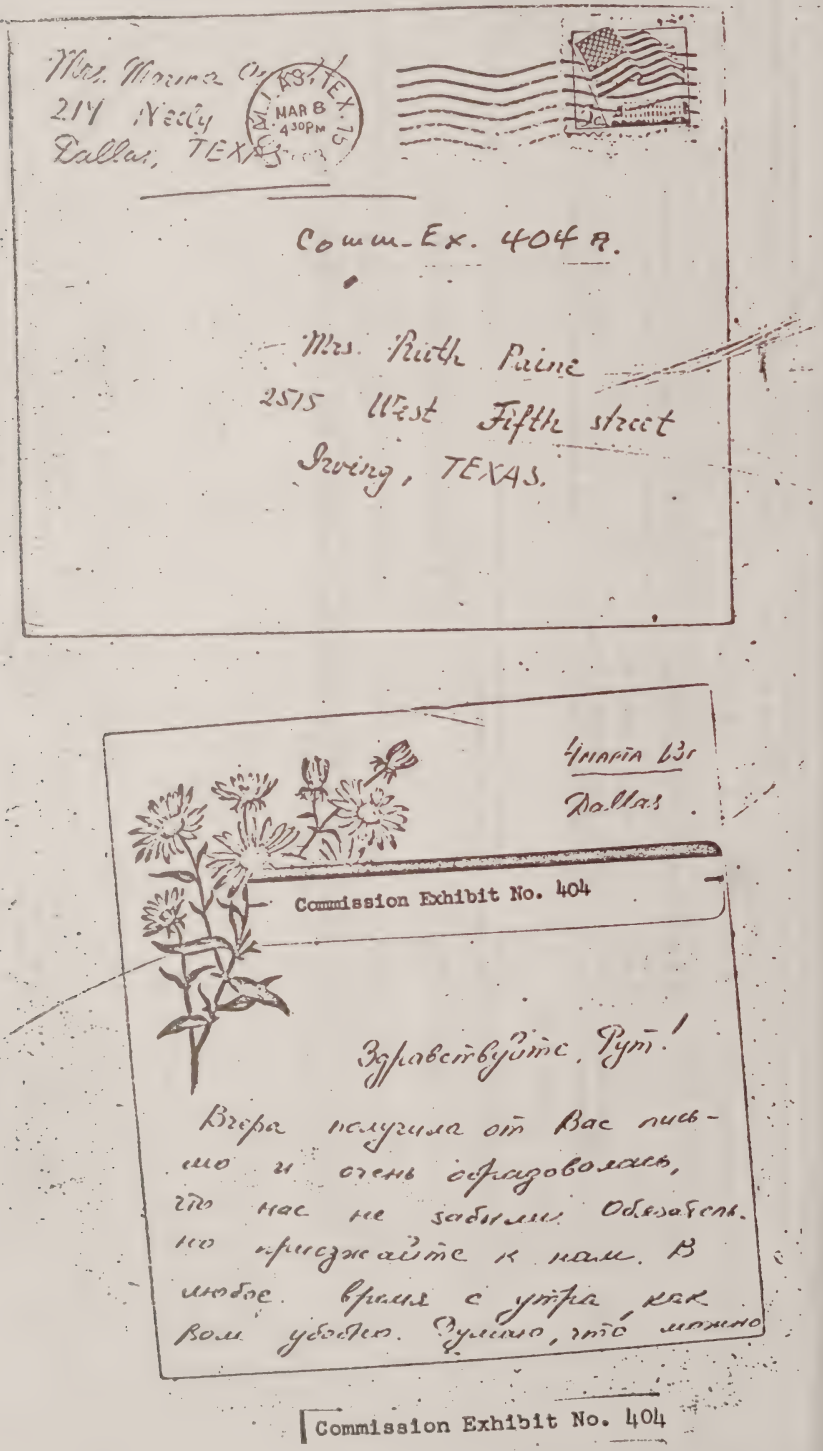
U.S GOVERNMENT PRINTING OFFICE 16—47429-7

2-17

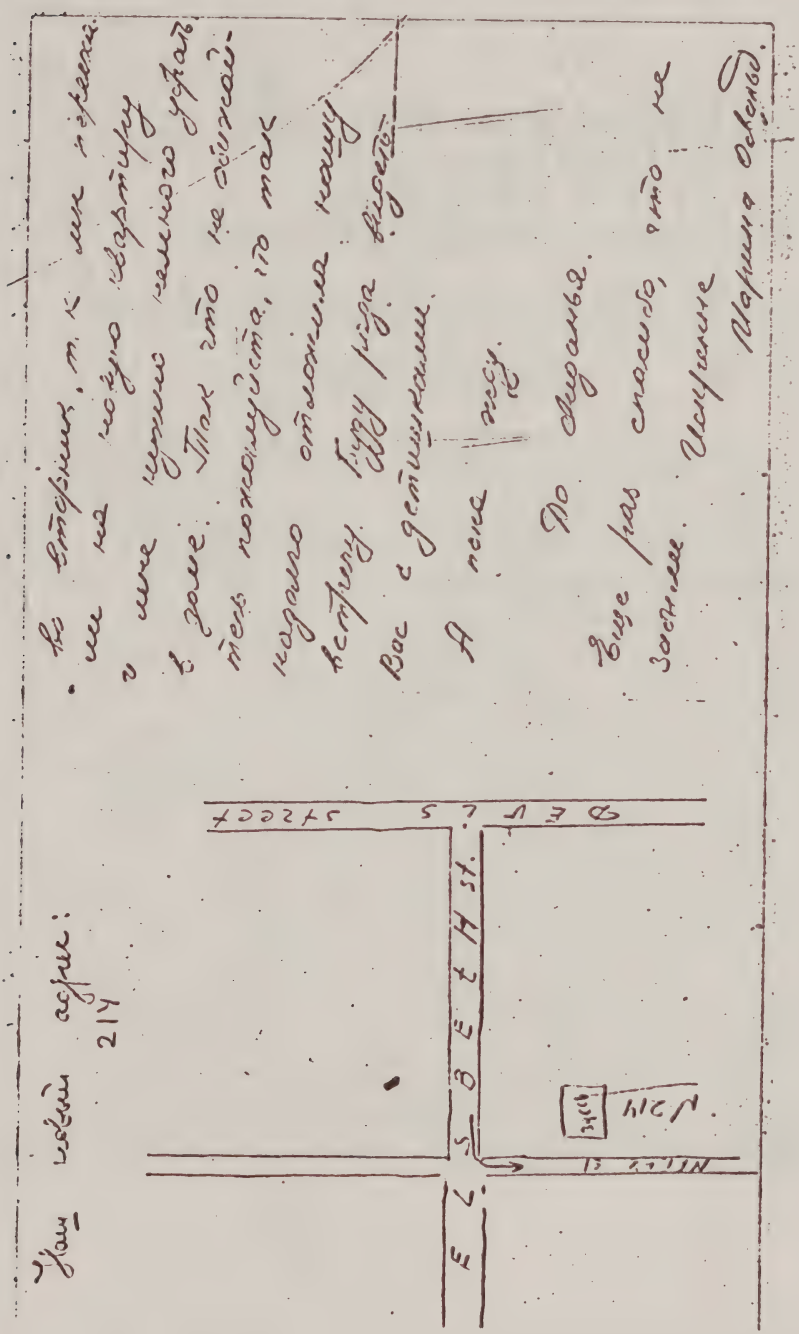
329

46-129 O - 79 - 22

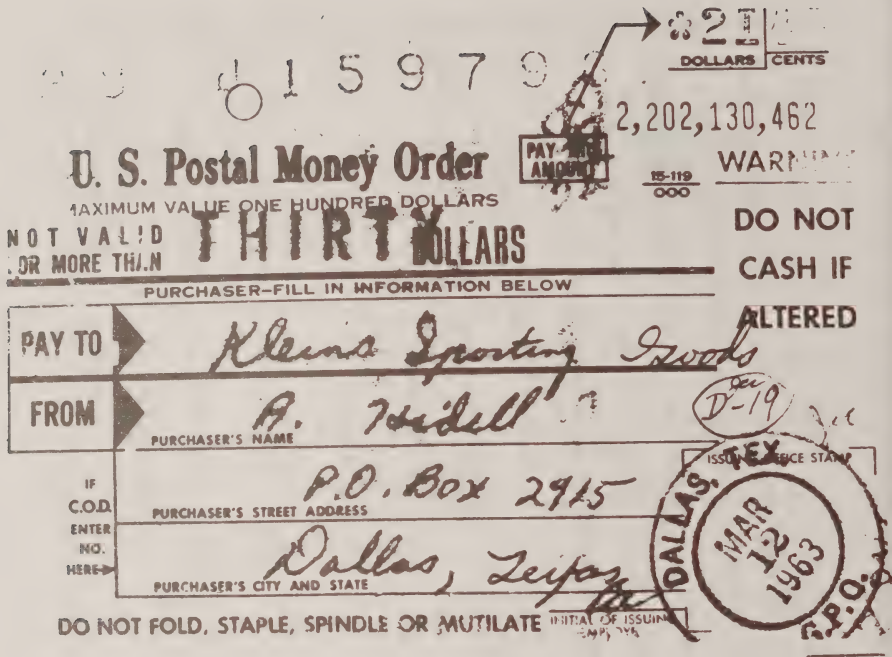
(28) March 8, 1963. Photocopies of a note in Russian to Ruth Paine from Marina Oswald. Location: Archives. (CE 404)



(29) March 12, 1963. United States Postal Money Order #2,202,130,462.



Commission Exhibit No. 404


$21
DOLLARS
CENTS
2,202,130,462
U. S. Postal Money Order
MAXIMUM VALUE ONE HUNDRED DOLLARS
NOT VALID FOR MORE THAN
THIRTY DOLLARS
WARNING
DO NOT CASH IF ALTERED
PURCHASER–FILL IN INFORMATION BELOW
PAY TO
Kleins Sporting Goods
FROM
A. Tidell
PURCHASER'S NAME
P.O. Box 2915
PURCHASER'S STREET ADDRESS
Dallas, Texas
PURCHASER'S CITY AND STATE
IF C.O.D. ENTER NO. HERE
DO NOT FOLD, STAPLE, SPINDLE OR MUTILATE
INITIAL OF ISSUING EMPLOYEE
DALLAS, TEX.
MAR 12 1963
P.O.

PAYEE MUST ENDORSE BELOW ON LINE MARKED "PAYEE"

OWNERSHIP OF THIS ORDER MAY BE TRANSFERRED TO ANOTHER PERSON OR FIRM IF THE PAYEE WILL WRITE THE NAME OF SUCH PERSON OR FIRM ON THE LINE MARKED "PAY TO" BEFORE WRITING HIS OWN NAME ON THE SECOND LINE. MORE THAN ONE ENDORSEMENT IS PROHIBITED BY LAW. BANK STAMPS ARE NOT REGARDED AS ENDORSEMENTS.

CAUTION
IDENTIFICATION REQUIRED

PAY TO THE ORDER OF

PAY TO The First National Bank of Chicago

50 91144

KLEIN'S SPORTING GOODS, INC.

11-23-63

11-23-63

11-23-63

11-24-63

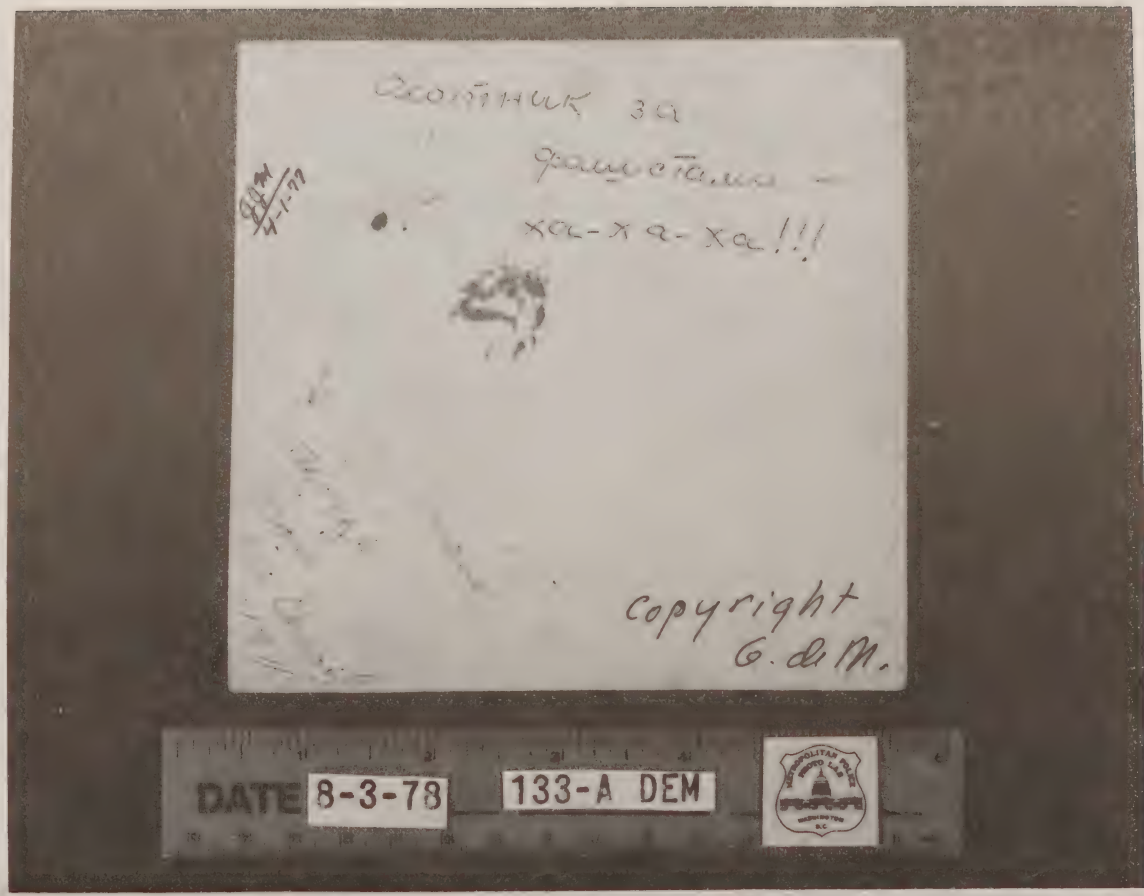
THIS ORDER BECOMES INVALID AFTER 20 YEARS.
THEREAFTER NO CLAIM FOR PAYMENT WILL BE CONSIDERED.

(30) March 12, 1963. Enlargement of microfilm reproduction of Klein's order form for rifle from A. Hidell.



(31) May 4, 1963. Photograph of man with rifle and newspapers. On the back of the photograph is a handwritten notation reading "To my friend George from Lee Oswald 5/IV/63" and, in Russian, the statement "Copyright G de M." Also in Russian is writing which translated as "Killer of Fascists—Ha-Ha-Ha ! ! !"




Осолинок 30
фашистам -
ха-ха-ха!!!
4-1-77
copyright
G. de M.
DATE 8-3-78
133-A DEM

(32) May 26 (1963).* Two-page letter to Fair Play for Cuba Committee.

EXHIBIT NO 2
on deposition of V.T. Lee, 4/17/64 at New York N.Y.
J. L. S.
V. T. L.

may 26

Dear Sirs

I am requesting formal membership in your Organization.

In the past I have received from you pamphlets ect., both bought by me and given to me by you.

now that I live in new orleans I have been thinking about renting a small office at my own expense for the purpose of forming a F.P.C.C. branch here in new Orleans.

could you give me a charter?

also I would like information on buying pamphlets ect. in large lots, as well as blank FPCC application ect.

V. T. Lee
Exhibit #2

also, a picture of Fidel, suitable for framing would be

welcome touch.

Offices down here rent for $30. a month and if I had a steady flow of literature I would be glad to take the expense.

Of course I work and could not supervise the office at all times but I'm sure I could get some volunteers to do it.

Could you add some advice or recommendations?

I am not saying this project would be a roaring success, but I am willing to try.

---

an office, literature, and getting people to know you are the fundamentals of the F.P.C.C. as far as I can see so here's hoping to hear from you.

Yours respectfully
Lee A. Burch

V. T. Lee
Exhibit #2

(33) June 15, 1963. Fair Play for Cuba Committee, New Orleans Chapter.

FAIR PLAY FOR CUBA COMMITTEE
NEW ORLEANS CHAPTER

L. H. OSWALD
Name

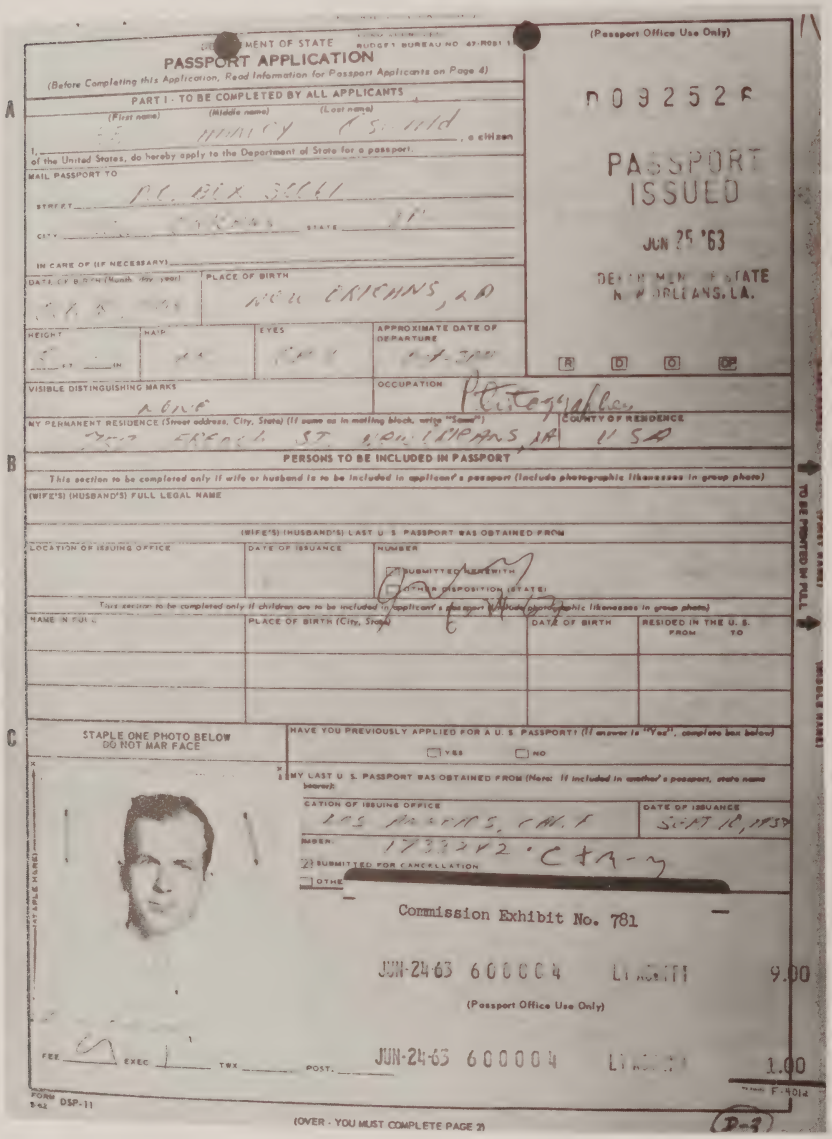
Lee H. Oswald
Signature

JUN 15 1963 O. T. Hurtell
Issued Chapter President

(Reverse side is blank.)

(34) June 25, 1963. Passport application, signed Lee H. Oswald.

(35) June 24, 1963. Passport photograph attached to item 34, signed Lee H. Oswald. Blue ink; ballpoint pen. Location: Archives.



PASSPORT APPLICATION

(Before Completing this Application, Read Information for Passport Applicants on Page 4)

PART I - TO BE COMPLETED BY ALL APPLICANTS

(Passport Office Use Only)

D 092528

PASSPORT ISSUED

JUN 25 '63

DEPARTMENT OF STATE
NEW ORLEANS, LA.

(First name) (Middle name) (Last name)

I, Marcy P. Oswald, a citizen of the United States, do hereby apply to the Department of State for a passport.

MAIL PASSPORT TO P.O. Box 2611

CITY [illegible] STATE [illegible]

IN CARE OF (IF NECESSARY)

DATE OF BIRTH (Month, day, year) [illegible]

PLACE OF BIRTH New Orleans, La

HEIGHT [illegible] FT [illegible] IN

HAIR [illegible]

EYES [illegible]

APPROXIMATE DATE OF DEPARTURE 6-4-63

R D O OP

VISIBLE DISTINGUISHING MARKS None

OCCUPATION Photographer

MY PERMANENT RESIDENCE (Street address, City, State) (If same as in mailing block, write "Same") 7-7 French St. New Orleans, La

COUNTY OF RESIDENCE U.S.A.

PERSONS TO BE INCLUDED IN PASSPORT

This section to be completed only if wife or husband is to be included in applicant's passport (Include photographic likenesses in group photo)

(WIFE'S) (HUSBAND'S) FULL LEGAL NAME

(WIFE'S) (HUSBAND'S) LAST U. S. PASSPORT WAS OBTAINED FROM

LOCATION OF ISSUING OFFICE | DATE OF ISSUANCE | NUMBER

☐ SUBMITTED HEREWITH

☐ OTHER DISPOSITION (STATE)

This section to be completed only if children are to be included in applicant's passport (Include photographic likenesses in group photo)

NAME IN FULL | PLACE OF BIRTH (City, State) | DATE OF BIRTH | RESIDED IN THE U. S. FROM TO

STAPLE ONE PHOTO BELOW DO NOT MAR FACE

HAVE YOU PREVIOUSLY APPLIED FOR A U. S. PASSPORT? (If answer is "Yes", complete box below)

☐ YES ☐ NO

MY LAST U. S. PASSPORT WAS OBTAINED FROM (Note: If included in another's passport, state name entered):

LOCATION OF ISSUING OFFICE: [illegible] DATE OF ISSUANCE: Sept 10, 1957

NUMBER: 1733272 C-74-7

☐ SUBMITTED FOR CANCELLATION

☐ OTHER

Commission Exhibit No. 781

JUN-24-63 600004 [illegible] 9.00

(Passport Office Use Only)

FEE [illegible] EXEC [illegible] TBX [illegible] POST. [illegible] JUN-24-63 600004 [illegible] 1.00

FORM DSP-11 (OVER - YOU MUST COMPLETE PAGE 2)

(D-9)

FORM DEP-11 5-62 (PART I - Continued) PAGE 6

D

FATHER'S NAME	FATHER'S PLACE OF BIRTH	FATHER'S DATE OF BIRTH	
ROBERT [illegible] PSARIS	[illegible]	1895	☑ U. S. CITIZEN ☐ NOT U. S. CITIZEN
MOTHER'S MAIDEN NAME	MOTHER'S PLACE OF BIRTH	MOTHER'S DATE OF BIRTH	
[illegible]	[illegible]	1907	☐ U. S. CITIZEN ☐ NOT U. S. CITIZEN

E

☐ I WAS NEVER MARRIED ☑ I WAS LAST MARRIED ON APRIL 21 1961	TO (Full legal name - complete whether widowed or divorced) MARINA PRESSAKAVA
WHO WAS BORN AT [illegible]	ON (Date of birth) JULY 7, 1941
☐ WHO IS A U. S. CITIZEN ☐ WHO IS NOT A U. S. CITIZEN	☑ MARRIAGE NOT TERMINATED ☐ MARRIAGE TERMINATED BY (DEATH) (DIVORCE) ON
☑ I WAS NEVER PREVIOUSLY MARRIED ☐ I WAS PREVIOUSLY MARRIED ON	TO (Full legal name)
WHO WAS BORN AT	ON (Date of birth)
☐ FORMER HUSBAND OR WIFE WAS U. S. CITIZEN ☐ FORMER HUSBAND OR WIFE WAS NOT U. S. CITIZEN	PREVIOUS MARRIAGE TERMINATED BY (DEATH) (DIVORCE) ON

(IF MARRIED MORE THAN TWICE, SET FORTH FACTS IN A SUPPLEMENTAL STATEMENT)

F

PROPOSED TRAVEL PLANS

TRAVELING BY ORGANIZED TOUR? ☐ YES ☑ NO

PURPOSE OF TRIP: TOUR

LIST EACH COUNTRY TO BE VISITED: ENGLAND, FRANCE, GERMANY, HOLLAND, USSR, FINLAND, ITALY, POLAND

PORT OF DEPARTURE: NEW ORLEANS

NAME OF SHIP OR AIRLINE: [illegible] LINE

APPROXIMATE DATE OF DEPARTURE: [illegible]

NUMBER OF PREVIOUS TRIPS ABROAD WITHIN LAST 12 MONTHS: [illegible]

PROPOSED LENGTH OF STAY: 3 MONTHS - 1 YR.

MEANS OF TRANSPORTATION

	SHIP	AIR	OTHER
DEPARTURE	☑	☐	☐
RETURN	☑	☐	☐

PLEASE INDICATE WHETHER YOU EXPECT TO TAKE ANOTHER TRIP ABROAD
☑ YES ☐ NO (IF YES, BY THIS)
☐ 1 YEAR ☑ 2 YEARS ☐ 5 YEARS

IN THE EVENT OF DEATH OR ACCIDENT NOTIFY

NAME IN FULL	RELATIONSHIP	STREET ADDRESS, CITY, STATE
LILIAN PSARIS	AUNT	[illegible] NEW ORLEANS, LA

G

I have not (and no other person to be included in the passport has), since acquiring United States citizenship, been naturalized as a citizen of a foreign state, taken an oath or made an affirmation or other formal declaration of allegiance to a foreign state, entered or served in the armed forces of a foreign state, accepted or performed the duties of any office, post or employment under the government of a foreign state or political subdivision thereof, voted in a political election in a foreign state or participated in an election or plebiscite to determine the sovereignty over foreign territory, made a formal renunciation of nationality either in the United States or before a diplomatic or consular officer of the United States in a foreign state, ever sought or claimed the benefits of the nationality of any foreign state; been convicted by a court or court martial of competent jurisdiction of committing any act of treason against, or attempting by force to overthrow, or bearing arms against, the United States, or conspiring to overthrow, put down or to destroy by force, the Government of the United States, or departed from or remained outside of the jurisdiction of the United States for the purpose of evading or avoiding training and service in the military, air or naval forces of the United States, and I am not and have not been at any time during the period of 12 full calendar months preceding the date of this application (and no other person to be included in the passport is or has been at any time during the said period) a member of any organization registered or required to register as a Communist organization under Section 7 of the Subversive Activities Control Act of 1950, as amended. (50 U.S.C. 786)*

(If any of the above-mentioned acts or conditions have been performed by or apply to the applicant, or to any other person to be included in the passport, the portion which applies should be struck out, and a supplementary explanatory statement under oath (or affirmation) by the person to whom the portion is applicable should be attached and made a part of this application.)

I solemnly swear (or affirm) that the statements made on all the pages of this application are true and that the photograph attached is a likeness of me and of those persons to be included in the passport.

OATH OF ALLEGIANCE

Further, I do solemnly swear (or affirm) that I will support and defend the Constitution of the United States against all enemies, foreign and domestic; that I will bear true faith and allegiance to the same, and that I take this obligation freely, without any mental reservation, or purpose of evasion; So help me God.

[signature]

(To be signed by Applicant in presence of a Clerk of Court or Passport Agent)

Subscribed and sworn to (affirmed) before me this _____ day of _____, 19 _____

(SEAL OF COURT)

Clerk of the _____ Court at _____

* See paragraph 6 of instructions

(36) August 9, 1963. Fingerprint identification card of New Orleans Police Department, signed Lee H. Oswald.



FEDERAL BUREAU OF INVESTIGATION, UNITED STATES DEPARTMENT OF JUSTICE
WASHINGTON, D.C.

CURRENT ARREST OR RECEIPT

DATE ARRESTED OR RECEIVED	CHARGE OR OFFENSE (If code citation is used it should be accompanied by charge)	DISPOSITION OR SENTENCE (List FINAL disposition only. If not now available, submit later on FBI Form R-84 for completion of record.)
8-9-63	828 MCS 42-22 dist the peace by creatin a scene	

OCCUPATION	RESIDENCE OF PERSON FINGERPRINTED
Mechn.	4907 Magazine St

If COLLECT wire reply or COLLECT telephone reply is desired, indicate here

☐ Wire reply ☐ Telephone reply

Telephone number

FOR INSTITUTIONS USE ONLY

Sentence expires

Please Paste Photograph in This Space

Since photograph may become detached indicate name, FBI number, and arrest number on reverse side whether attached to fingerprint card or submitted later.

INSTRUCTIONS

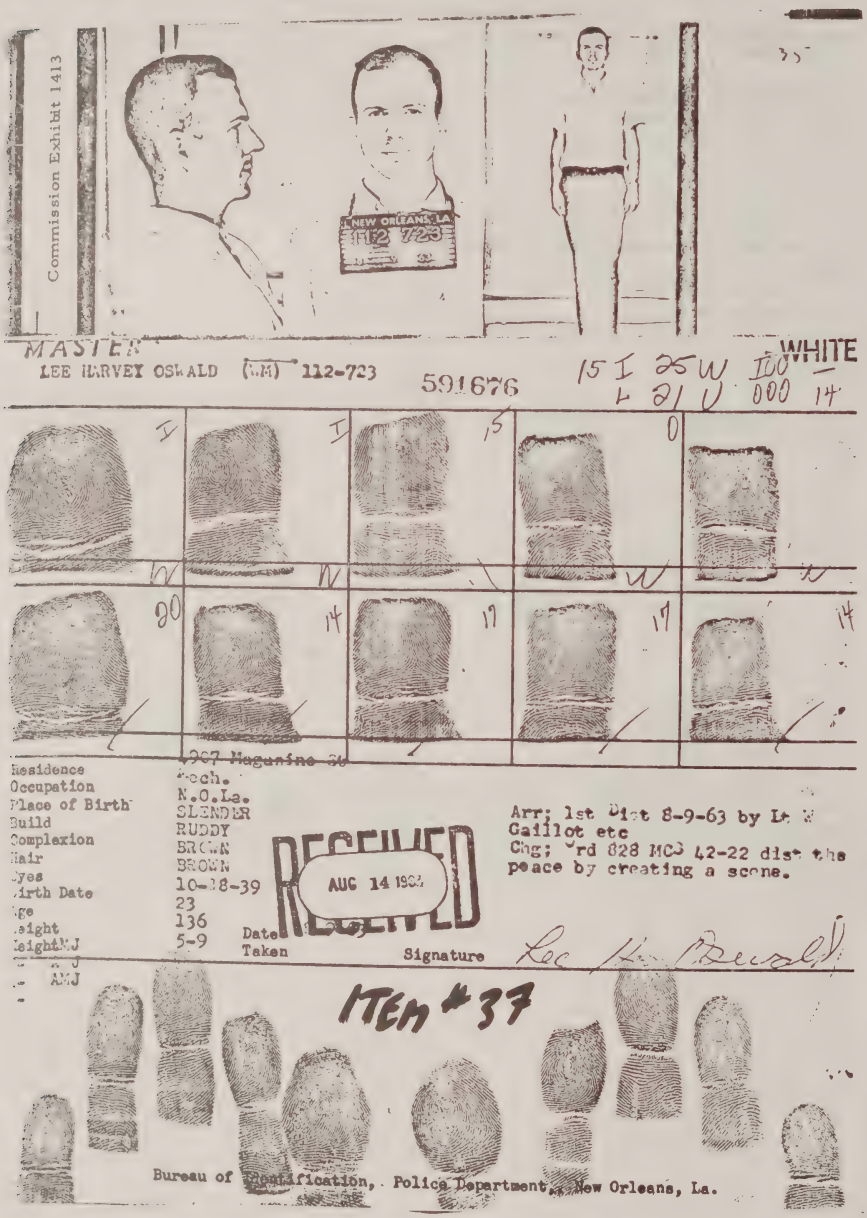
1. FORWARD ARREST CARDS TO FBI IMMEDIATELY AFTER FINGERPRINTING FOR MOST EFFECTIVE SERVICE.
2. TYPE or PRINT all information.
3. Note amputations in proper finger squares.
4. REPLY WILL QUOTE ONLY NUMBER APPEARING IN THE BLOCK MARKED "YOUR NO."
5. Indicate any additional copies for other agencies in space below—include their complete mailing address.

SEND COPY TO:

RECORDED AUG 12 1963 IDENT. DIV.

FD-249 (Rev. 12-17-62)

(37) August 9, 1963. Photocopy of fingerprint card and attached mug shots, New Orleans Police Department, signed Lee H. Oswald.



(38) August 28, 1963. Handwritten letter to Central Committee C. P. (Communist Party), U.S.A.

A. Johnson
Exhibit #4

Central Committee
C.P., U.S.A.

August 28, 1963

Dear Comrades,

Comrades, please reply

[illegible]

[illegible] of personal, [illegible].

I have lived in the Detroit area from Oct. 1955 to July 1962.

I left in 1959, as memory, that I legally divorced my [illegible] state, categorically in favor of Detroit Categorically, however, I did not complete the legal formalities for this.

Upon coming back to the U.S. in 1962 and throwing myself into the struggle for progress and freedom in the United States, I would like to know exactly, in your opinion, I can proceed to [illegible], should I appear at once, by my first name, or [illegible] that [illegible]

[illegible] forces, [illegible]
ground or within [illegible] your own
[illegible] always remain [illegible]
background, i.e. underground.

Our opponents could find any
background of warlike acts the
U.S.S.R. against any country which
[illegible] for, by execution, they could
say the organizers of which I
am a member, is based entirely
upon [illegible]. I am sure you see my
point.

I could of course openly protest,
[illegible] (but I
wanted to dissociate my opinion
[illegible] as a personal protest
against the policy of the U.S. government
[illegible] dictatorship etc.
But what do you think I should

A. Johnson
Exhibit #4

I think as the next to the
general?
Would it answer to make of him
an organizer activity?
Perhaps the Citizens' Committee
secretary of the local work of
the "Save Mexico" Committee?
A position which, frankly, I have
and the point, communistic.
On a local radio show, I was
attacked by other Left organizations
representatives for my neutrality;
and the Detroit News. I'm
afraid I may have compromised
the "A.P.C.", see you all that
I read the advice of trusted,
long time fighters for progress.
Please advise.

With fraternal greetings
Sincerely
Lee M. Pond

A. Johnson
Exhibit #4

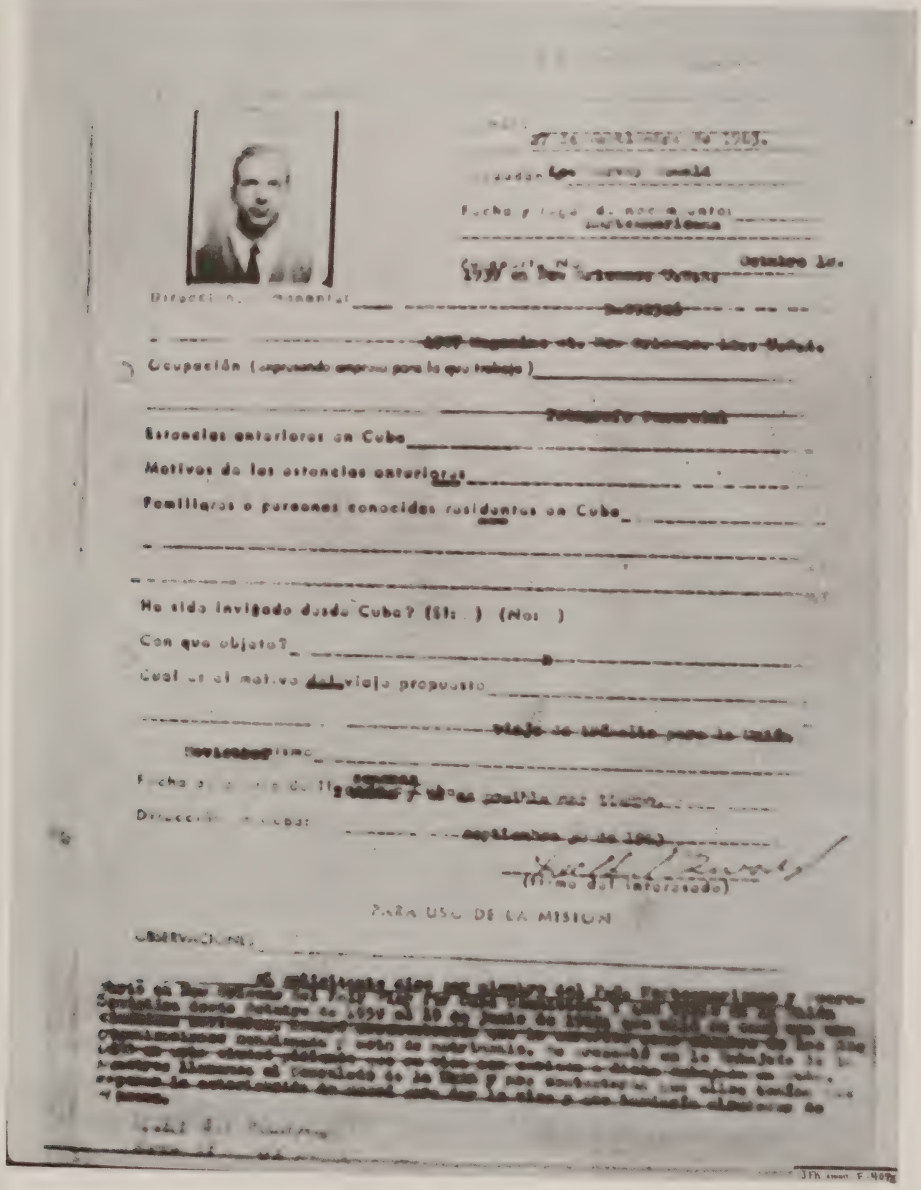
(39) September 27, 1963. Photocopy of a page from a hotel register.



Viernes. 27 de septiembre 1963

Nº	Hombres	Procedencia	Ocupación	Salida	
1	Fr. Isabel Salazar	Irapuato Gto	Empleado		
2	Ignacio Guevara	Durango Dgo	Empleado		
3	Rafa Cuevas	Aguascalientes	mercio		
4	Antonio Avila	D F	Mexico		
5	Martin Barranza	N Laredo Tex	Comite		
6	Fernando Valenzuela	Chihuahua	Empleado		
7	Angelica Zuzyda	Torreon Coah	Hogar		
8	Francisco Morales	Reynosa Tamps	Empleado		
9	Martin Guerrero	El Paso Tex	Empleado		
10	Jose Luis Arrieta	Chihuahua	Empleado		
11	Pedro Quiñones	Torreon	Empleado		
12	Miguel Santos	Saltillo Coah	Empleado		
13	Rafael Rocha	Torreon Coah	Empleado		
14	Gabriel Contreras	Z. Fuego Chih	Empleado		
15	Felipa Arizaga	San Luis Pot	Empleada		
16	Rodolfo Rodrigues	Chihuahua	Empleado		
17	Rodolfo Rodrigues	Chihuahua	Empleado		
18	Lee, Harvey Oswald	USA Texas	Estud.		US citizen
19	Perez Pliego	S L Pot	Empleado		
20	Santos Pedroza	Leon Gto	Empleado		
21	Mario Rosales	Saltillo Coah	Empleado		
22	Roberto Lopez	D F	—		
23					
24	Juan Fco Peña	Durango Dgo	Empleado		Mex
25	Oscar Lara	Monterrey N L	Empl		
26	Alfredo Garcia	Guadalajara	Empl		
27					
28	Fox Blanco	Aguascalientes	Chofer		
29	Manuel Arrieta	Monterrey N L	Empleado		
30					

(40) September 27, 1963. Photographs (one of the entire document and one of the signature) of the original of the visa application, Cuban Consulate, Mexico City, signed Lee H. Oswald. (Shown here is only the photograph of the entire document.)



Ocupación (especificando empleo para lo que trabaja)

Estancias anteriores en Cuba

Motivos de las estancias anteriores

Familiares o personas conocidas residentes en Cuba

Ha sido invitado desde Cuba? (Si:) (No:)

Con que objeto?

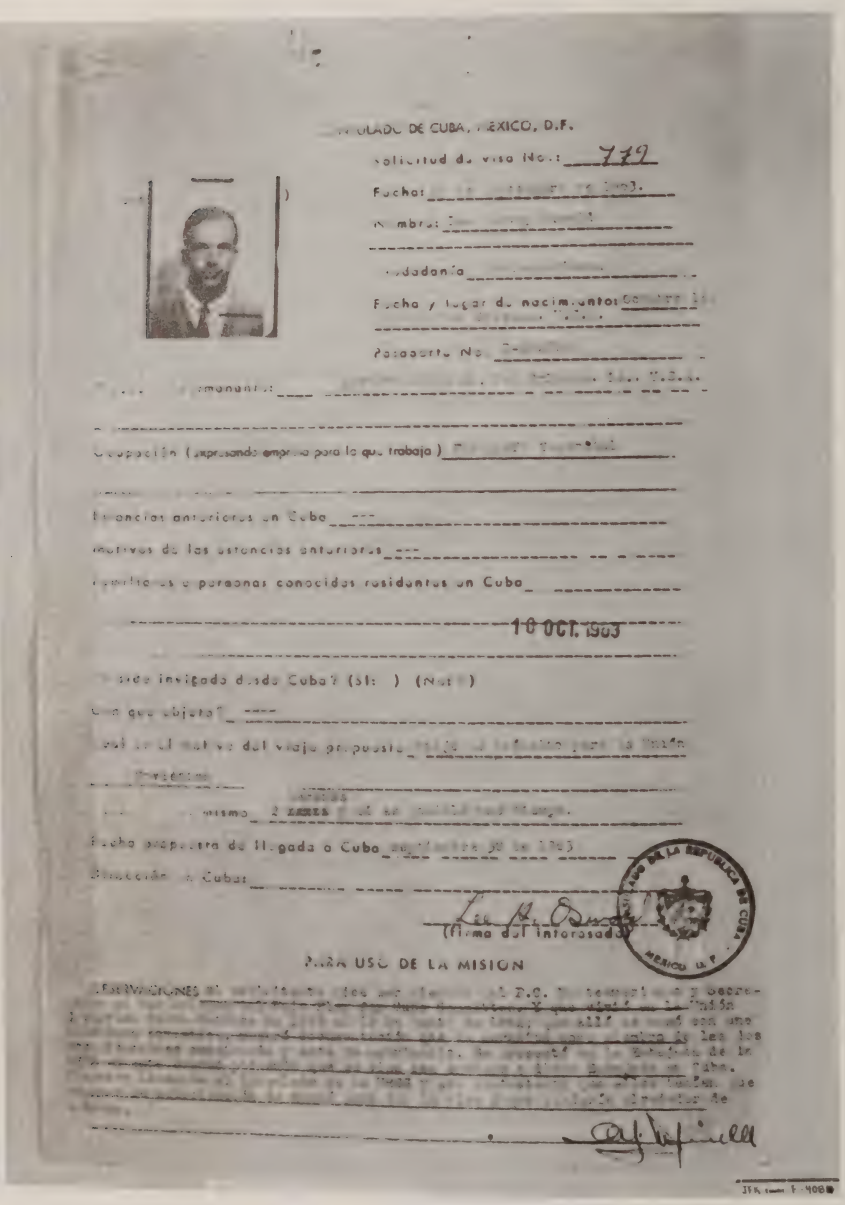
Cual es el motivo del viaje propuesto

Fecha y firma del interesado

PARA USO DE LA MISION

OBSERVACIONES

(41) September 27, 1963. Photograph of the carbon copy of item 40, shown to the Select Committee staff when they met with President Fidel Castro in Havana, Cuba, with an original signature, Lee H. Oswald.



...ULADO DE CUBA, MEXICO, D.F.

Solicitud de visa No.: 779

Fecha: ...

Nombre: ...

...dadanía ...

Fecha y lugar de nacimiento: ...

Pasaporte No. ...

...manente: ...

Ocupación (expresando empresa para la que trabaja) ...

...ancias anteriores en Cuba ...

Motivos de las estancias anteriores ...

...rientes o personas conocidas residentes en Cuba ...

10 OCT. 1963

...sido invitado desde Cuba? (Sí:) (No:)

...na que invita ...

...sea el motivo del viaje propuesto ...

...mismo ...

Fecha propuesta de llegada a Cuba ...

Dirección en Cuba: ...

Lee H. Oswald
(Firma del interesado)

CONSULADO DE LA REPUBLICA DE CUBA
MEXICO, D. F.

PARA USO DE LA MISION

OBSERVACIONES: ...

...

(42) October (no date), 1963. Letter to the Russian Embassy. Location: Archives. (FBI D–441321 AX Q449; CE 103; JFK F–500).

_Exhibit (27 for identification

—Commission Exhibit 103

Dear Sirs.

This is to inform you of ~~my~~ events and my interview with comrade Kostine in the Embassy of the Soviet Union in Mexico city, Mexico.

I was unable to remain in Mexico city ~~[redacted]~~ indefinitly because of my ~~[redacted]~~ Mexican visa restrictions which was for 15 days only. I could not ~~[redacted]~~ apply for an extension unless I used my ~~[redacted]~~ real name as I returned to the U.S. and ~~[redacted]~~ my mother Nicholayeva are now living in Dallas, Texas, ~~[redacted]~~

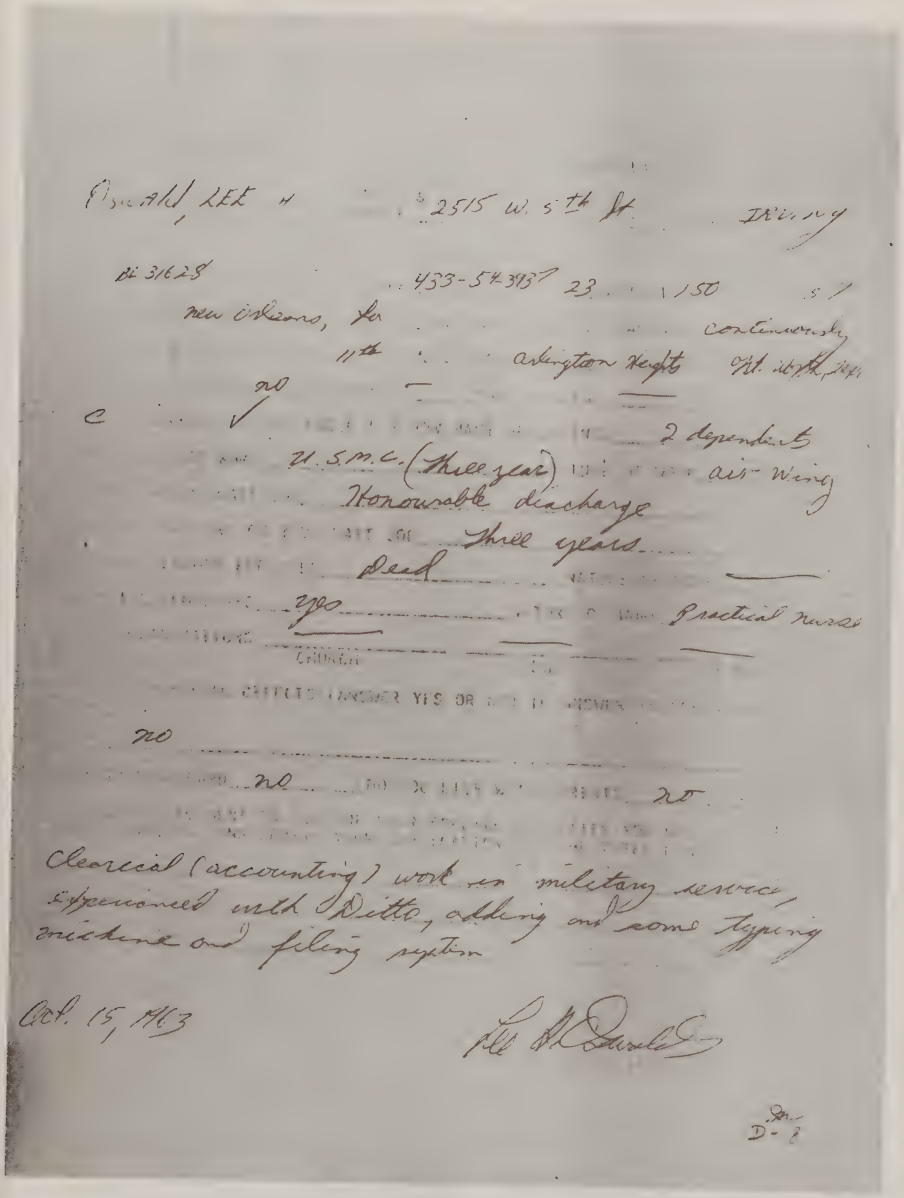
The FBI is not now interested in my activities in the progressive organization FPCC of which I was secretary in ~~[redacted]~~ New Orleans ~~[redacted]~~ Louisiana since I ~~[redacted]~~ no longer live in ~~[redacted]~~ the United States.

~~[redacted]~~ the FBI has visited us ~~[redacted]~~ in Texas on Nov. 1st. Agent of the FBI James P Hosty warned me that if I attempt to engage in FPCC activities in Texas the FBI will again take an "interest" in me. He/She also "suggested" that my wife could" remain in the U.S. under FBI protection, ~~[redacted]~~ that is, she could defect from the Soviet Union to the ~~[redacted]~~ Soviet union. Of course I and my wife strongly protest

these tactics by the notorious F.B.I.

~~Needless to say it was my intention that the Soviet Embassy was unable to aid me in Mexico City~~ I had not planned to contact the Mexican city embassy at all so of course they were unprepared for me & Had I been able to reach Havana as planned I could have contacted the Soviet Embassy there for the completion ~~would have been able to get the necessary documents & visas~~ ~~assist me~~. Would have had time to assist me. But of course the stupid Cuban Consul was at fault here, I'm glad he has since been replaced by another.

(43) October 15, 1963. Employment application, with face sheet signed Lee H. Oswald.


Oswald, Lee H 2515 W. 5th St Irving
4631628 453-54-3937 23 150
New Orleans, La continuously
11th Arlington Heights Ft. Worth, Tex
no
C 2 dependents
U.S.M.C. (three year) air-Wing
Honourable discharge
Three years
dead
yes Practical nurse
no
no no
Clerical (accounting) work in military service, experienced with Ditto, adding and some typing machine and filing system
Oct. 15, 1963
Lee H Oswald
D-2

FORM W-4 (Rev. July 1961)
U. S. Treasury Department
Internal Revenue Service

EMPLOYEE'S WITHHOLDING EXEMPTION CERTIFICATE

Print full name LEE HARVEY OSWALD Social Security Account Number 433-54-3937

Print home address 2515 WEST 5th ST City IRVING Zone ..... State TEXAS

EMPLOYEE:
File this form with your employer. Otherwise, he must withhold U. S. income tax from your wages without exemption.

EMPLOYER:
Keep this certificate with your records. If the employee is believed to have claimed too many exemptions, the District Director should be so advised.

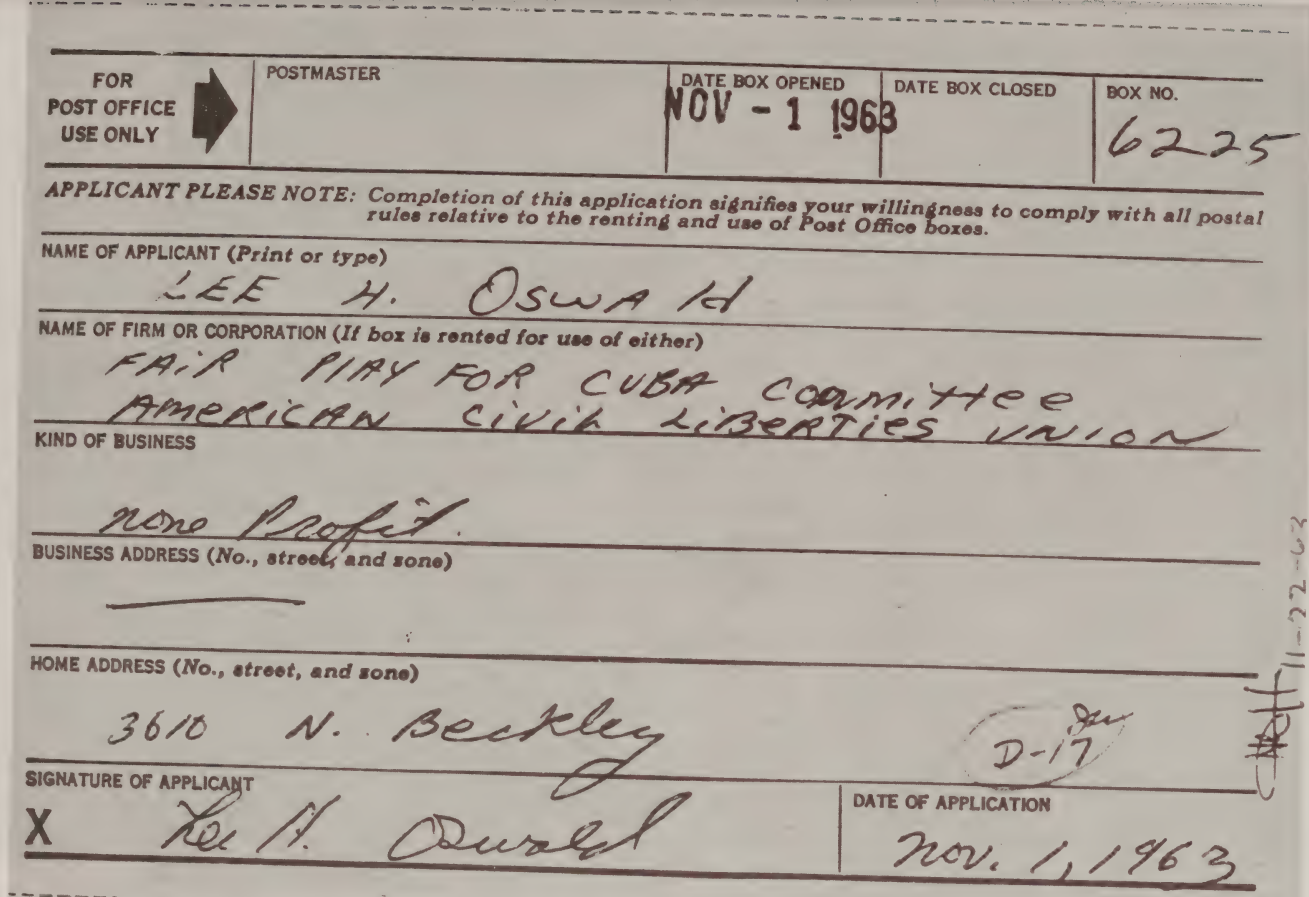
HOW TO CLAIM YOUR WITHHOLDING EXEMPTIONS

1. If SINGLE, and you claim an exemption, write the figure "1" ....
2. If MARRIED, one exemption each is allowable for husband and wife if not claimed on another certificate.
   (*a*) If you claim both of these exemptions, write the figure "2"
   (*b*) If you claim one of these exemptions, write the figure "1"
   (*c*) If you claim neither of these exemptions, write "0" 2
3. Exemptions for age and blindness (applicable only to you and your wife but not to dependents):
   (*a*) If you or your wife will be 65 years of age or older at the end of the year, and you claim this exemption, write "1"; if both will be 65 or older, and you claim both of these exemptions, write "2" ....
   (*b*) If you or your wife are blind, and you claim this exemption, write the figure "1"; if both are blind, and you claim both of these exemptions, write the figure "2" ....
4. If you claim exemptions for one or more dependents, write the number of such exemptions. (Do not claim exemption for a dependent unless you are qualified under instruction 4 on other side.) 2
5. Add the number of exemptions which you have claimed above and write the total 4
6. Additional withholding per pay period under agreement with employer. *See* Instruction 1 ..... $.....

I CERTIFY that the number of withholding exemptions claimed on this certificate does not exceed the number to which I am entitled.

(Date) Oct 16, 1963 048—16—75908-2 (Signed) Lee H. Oswald

(44) October 16, 1963. Employee's W–4 Withholding Exemption Certificate.



FOR POST OFFICE USE ONLY	POSTMASTER	DATE BOX OPENED	DATE BOX CLOSED	BOX NO.
		NOV - 1 1963		6225

APPLICANT PLEASE NOTE: Completion of this application signifies your willingness to comply with all postal rules relative to the renting and use of Post Office boxes.

NAME OF APPLICANT (Print or type)
LEE H. OSWALD

NAME OF FIRM OR CORPORATION (If box is rented for use of either)
FAIR PLAY FOR CUBA COMMITTEE
AMERICAN CIVIL LIBERTIES UNION

KIND OF BUSINESS
none Profit.

BUSINESS ADDRESS (No., street, and zone)
—

HOME ADDRESS (No., street, and zone)
3610 N. Beckley
D-17

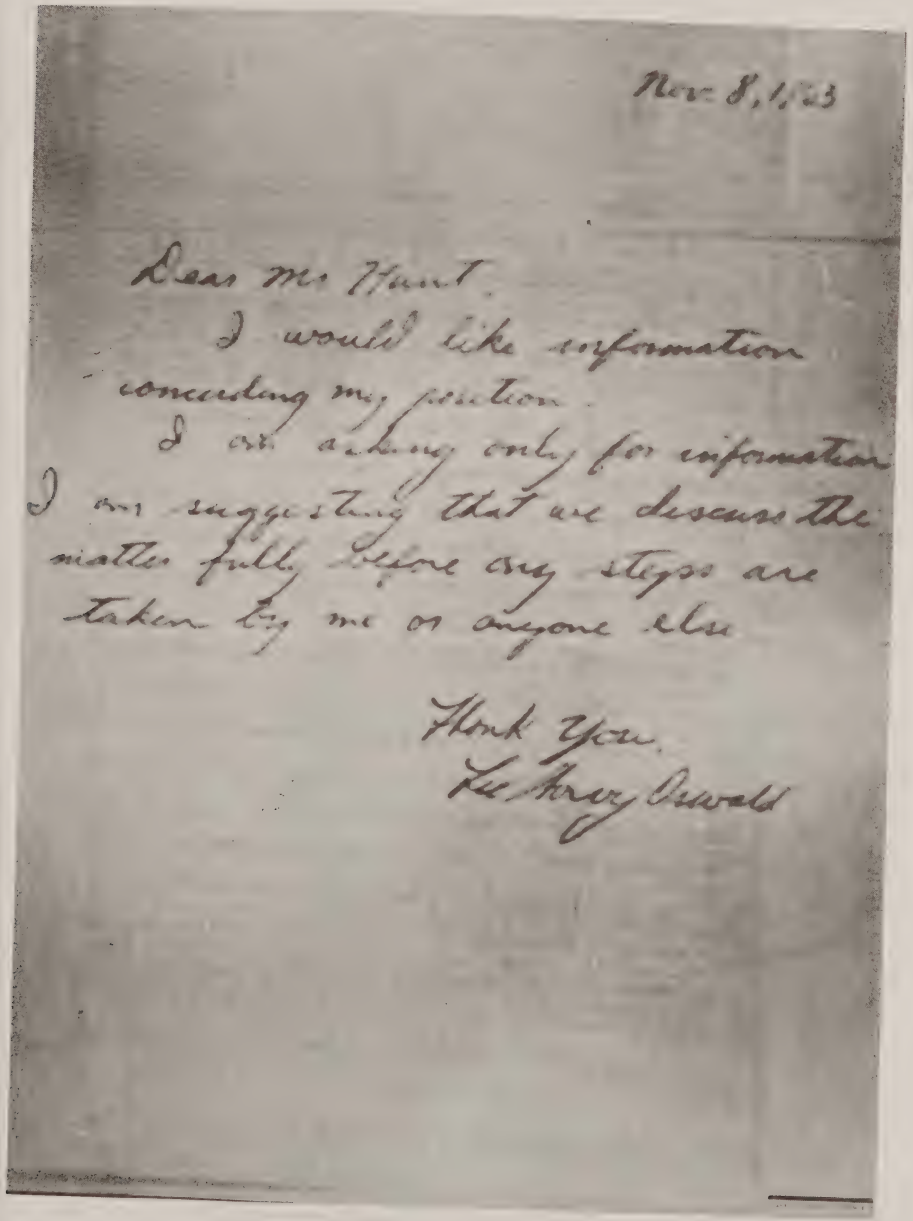
SIGNATURE OF APPLICANT
X Lee H. Oswald

DATE OF APPLICATION
Nov. 1, 1963

(45) November 1, 1963. Application for Post Office Box 6225, two cards, each signed Lee H. Oswald. Blue ink; ballpoint pen. Location: Archives. (CE 792; JFK F-495)

(46) November 1, 1963. Receipt for key to Post Office Box 6225, signed Lee H. Oswald. Blue ink; ballpoint pen. Location: Archives. (CE 792; JFK F–495)

(47) November 8, 1963. Photograph of a facsimile copy of a handwriten letter to Mr. Hunt.



Nov 8, 1963

Dear Mr Hunt.

I would like information concerning my position.

I am asking only for information I am suggesting that we discuss the matter fully before any steps are taken by me or anyone else

Thank You.

Lee Harvey Oswald

(48) November 9, 1963. Photomechanical (halftone) reproduction of a typewritten letter to the Consular Division, Embassy, U.S.S.R., Washington, D.C.

FROM: LEE H. OSWALD, P.O. BOX 6225, DALLAS, TEXAS
MARINA NICHILAYEVA OSWALD, SOVIET CITIZEN

TO: CONSULAR DIVISION
EMBASSY U.S.S.R.
WASHINGTON, D.C.
NOV. 9, 1963

4325
20 XI

Dear sirs;

This is to inform you of recent events sincem my meetings with comrade Kostin in the Embassy Of the Soviet Union, Mexico City, Mexico.

I was unable to remain in Mexico indefinily because of my mexican visa restrictions which was for 15 days only. I could not take a chance on reqesting a new visa unless I used my real name, so I retured to the United States.

I had not planned to contact the Soviet embassy in Mexico so they were unprepared, had I been able to reach the Soviet Embassy in Havana as planned, the embassy there would have had time to complete our business.

Of corne the Soviet embassy was not at fault, they were, as I say unprepared, the Cuban consulate was guilty of a gross breach of regulations, I am glad he has since been replced.

The Federal Bureu of Investigation is not now interested in my activities in the progressive organization" Fair Play For Cuba Committee", of which I was secretary in New Orleans(state Louisiana) since I no longer reside in that state. However, the F.B.I. has visted us here in Dallas, Texas, on November 1st. Agent James P. Hasty warned me that if I engaged in F.P.C.C. activities in Texas the F.B.I. will again take an"interrest" in me.

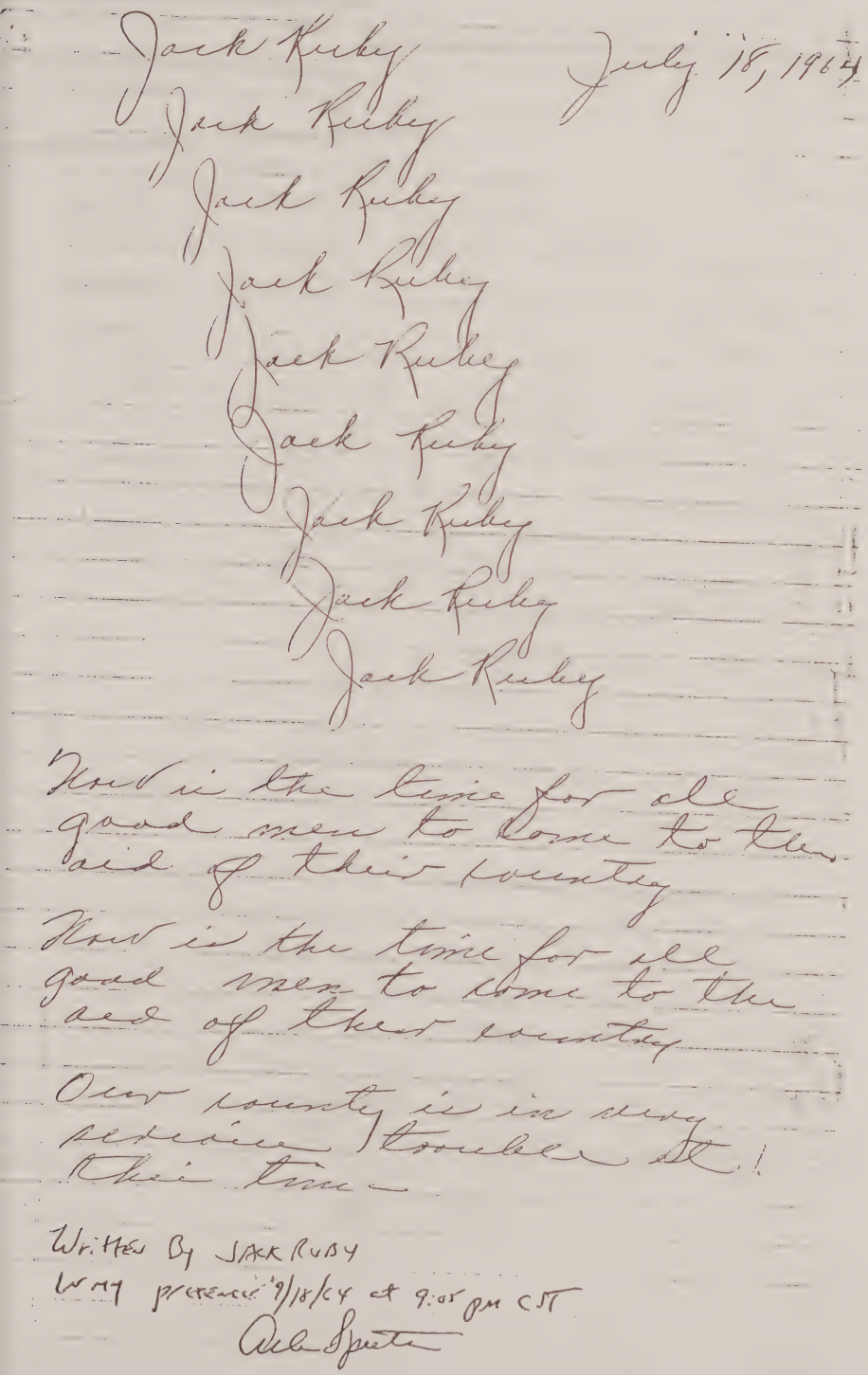
This agent also "suggested" to Marina Nichilayeva that she could remain in the United States under F.B.I. "protection", that is, she could defect from the Soviet Uion, of couse, I and my wife strongly protested these tactics by the notorious F.B.I..

Please inform us of the arrival of our Soviet entrance visa's as soon as they come.

Also, this is to inform you of the birth, on October 20, 1963 of a DAUGHTER, AUDREY MARINA OSWALD in DALLAS, TEXAS, to my wife.

Respectfully,
Lee H. Oswald

(49) July 18, 1964. Exemplar (standard) signatures and writing of Jack Ruby. Location: Archives.



(50) Undated. Photograph of unsigned rough draft of item 48.

JFK EXHIBIT F-500

Exhibit (17 for identification

Commission Exhibit 103

Dear Luis.

This is to inform you of ~~direct~~ and my interview with consular section in the Embassy of the Soviet union mexico city, mexico.

I was unable to remain in mexico city ~~indefinitely~~ indefinitely because of my ~~visit~~ mexican visa restrictions which was for 15 days only. I could not ~~make~~ apply for an extension under ~~the~~ my ~~real~~ name as I returned to the U.S. I used ~~my~~ and maria Nicholayeva are now living in Dallas, Texas, ~~where they live~~

The FBI is not now interested in my activities in the progressive organization, FPCC of which I was secretary in ~~New Orleans~~ Louisiana since I ~~am~~ no longer ~~live~~ live in ~~the~~ that State.

~~The~~ the FBI has ~~visited~~ in Dallas on Nov. 1st. agent of the FBI James P. Hosty warned me that if I attempt to engage in FPCC activities in Dallas the FBI will again take an "interest" in me. Hosty also "suggested" that my wife would remain in the U.S. under FBI jurisdiction, that is, she could ~~not~~ defect from the Soviet union. Of course I and my wife strongly protest

D-441321 AX Q449

FBI

these tactics by the notorious F.B.I.

~~It was my intention that the Soviet Embassy was unable to aid me in Mexico City~~ had not planned to contact the Mexican city Embassy at all so of course they were unprepared for me & had I been able to reach Havana as planned I could have contacted the Soviet Embassy there for the completion of ~~my~~ ~~could have been able to get the necessary documents required~~ ~~assist me~~. Would have had the time to assist me. But of course the ~~stupid~~ stupid Cuban Consul was at fault here, Am glad he has since been replaced by another.

(51) Undated. Handwritten speech, nine pages.

Commission Exhibit 97

Exhibit 97 for identification

The COMMUNIST PARTY OF THE UNITED STATES HAS BETRAYED ITSELF!

IT HAS TURNED ITSELF INTO THE TRADIONAL LEVER OF A FOREIGN POWER TO OVERTHROW THE GOVERMENT OF THE UNITED STATES; NOT IN THE NAME OF FREEDOM OR HIGH IDEALS, BUT IN SERVILE CONFORMITY TO THE WISHES OF THE SOVIET UNION AND IN ANTICIPATION OF SOVIET RUSSIAS COMPLETE domination OF THE AMERICAN CONTIN

The FORSTER'S AND THE FLYNN'S OF THE UNITED SUBSIDIZED COMMUNIST PARTY OF THE ~~UNITED~~ STATES HAVE SHOWN THEMSELES TO BE willing, GULLIBLE MESSENGERS OF THE KREMLINS INTERNATIONALIST PROPAGANDA.

THERE CAN BE NO INTERNATIONAL SOLIDARITY WITH THE ARCH-BETRAYERS OF THAT MOST SUBLIME IDEAL.

THERE CAN BE NO SYMPATHY FOR THOSE WHO HAVE TURNED THE IDEA OF COMMUNISM INTO A VILE CURSE TO WESTERN MAN.

THE SOVIETS HAVE committed CRIMES UNSURPASS EVEN BY THEIR EARLY DAY CAPITALIST COUNTERPARTS THE IMPRISONMENT OF THEIR OWN PEOPLES, WITH THE MASS EXTERMINATION SO TYPICAL OF STALIN, AND

2

The individual suppression and regimentat
under Krushchev.

The deportations, the purposeful curtailme
of diet in the consumer slighted population
of Russia, the murder of history, the prosti
of art and culture.

The Communist movement in the U.S.,
personalized by the Communist Party U.S.A.,
has turned itself into a "valuble Gold coin"
of the Kremlin. It has failed to denounce
any actions of the Soviet Government when
similar actions on the part of the U.S. Governme
bring pious protest. Examples:

Denounced:	Not Denounced:
United States	Russia
Atom Bomb test	Atom Bomb test
Cuba	Hungary
N.A.T.O. manuvers	Warsaw Pact manuvers
U-2	Sobel
Korea	Eastern Germany
Nerve Gas	Genocide

3

ONLY BY DECLARING ITSELF TO BE, NOT ONLY NOT DEPENDENT UPON, BUT OPPOSED TO, SOVIET DOMINATION AND INFLUENCE, CAN DORMENT AND DISILLUSIONED PERSON'S HOPE TO UNITE TO FREE THE RADICAL MOVEMENT FROM ITS INERTIA.

THROUGH THE REFUSAL OF THE COMMUNIST PARTY U.S.A. TO GIVE A CLEAR CUT CONDEMNATION OF SOVIET PRACTICE, PROGRESSIVES HAVE BEEN WEAKEN INTO A STABLE CLASS OF FIFTH COLUMNIST OF THE RUSSIANS.

IN ORDER TO FREE THE hesitating AND JUSTIFIABLY UNCERTAIN, FUTURE ACTIVIST FOR THE WORK AHEAD WE ~~must~~ MUST REMOVE THAT OBSTACLE which HAS SO EFFICIENTLY RETARDED Him, NAMELY, THE QUESTION OF COMMUNIST PARTY U.S.A., TO THE SOVIET UNION, SOVIET GOVERMENT, AND SOVIET COMMUNIST INTERNATIONAL MOVEMENT.

IT IS ~~REALLY~~ READILY FORESEEABLE THAT A coming ECONOMIC, POLITICAL OR MILITARY CRISIS, INTERNAL OR EXTERNAL, WITH CRYING ABOUT THE FINAL [illegible] OF THE CAPITALIST SYSTEM, BECOMING [illegible] IN THE ~~DECLINATION~~ DECLINATION IN A SPECIAL PARTY [illegible] AN INDEPENDENT COURSE OF [illegible] DEFACTO, AN AMERICAN COURSE

4.

STEADFASTLY OPPOSED TO INTERVENTION BY OUTSIDE, REACTIONARY ARMED FOREIGN POWERS, NO MATTER FROM WHERE THEY COME, BUT IN PARTICULAR, AND IF NECESSARY, VIOLENTLY OPPOSED TO SOVIET INTERVENTION.

NO PARTY OF THIS TYPE CAN ~~BE SURE~~ ATTRACT INTO IT MORE THAN A ~~FEW~~ A MINIMAL NUMBER OF FUNDAMENTAL RADICALS. IT IS NOT THE ~~ACTIVITY~~ NATURE OF SUCH AN ORGANIZATION TO ATTRACT SUCH A MEMBERSHIP, AS LETS SAY, THE REPUBLICANS OR EVEN THE SOCIALIST PARTY, BUT IT IS POSSIBLE TO ENLIST THE AID OF ~~DISAFFECTED~~ disenchanted MEMBERS OF THE SOCIALIST PARTY AND EVEN SOME FROM MORE "RESPECTED" (FROM A CAPITALIST STANDPOINT) PARTIES.

BUT WHEREAS SUCH POLITICAL ENEMIES

160 THEY LEGALLY HAVE, THEY HAVE NO CONCEPT OF WHAT REAL CRISIS MEANS.

THE ~~PARTY~~ FACTION WHICH HAS THE FIRMEST BASIS IN SPIRIT AND THE BEST ARGUMENTS AND ~~MEMBERSHIP~~ MEMBERSHIP OF THE FUTURE, WILL BE THE REVOLUTIONARY FACTION.

WE HAVE ~~NO~~ LITTLE INTEREST IN DIRECTLY [illegible] WHY SHOULD WE [illegible] WHEN THERE ARE

S

FAR GREATER FORCE, AT WORK, TO BRING ABOUT
OUR FALL OF THE United STATES GOVERNMENT, THAN
WE could EVER POSSIBLY MUSTER.

WE DO NOT HAVE ANY INTEREST IN DIRECTLY
ASSUMING THE KIND OF GOVERNMENT IN THE EVENT
OF [illegible] FINANCIAL CRISIS. AS DISSENTANT
MINORITY WE ARE MERELY INTERESTED IN
BRINGING ABOUT SOCIAL INTERVENTION WHICH IS
A [illegible] CONDITION IF
ONE BELIEVE IN THE THEORY OF CRISIS.

The ESTABLISHMENT OF A SEPARATE, DEMOCRATIC,
PURE COMMUNIST SOCIETY IS OUR GOAL, BUT
ONE WITH SOCIAL-ECONOMICS, DEMOCRATIC
SOCIALIZING OF PRODUCTION AND WITHOUT
REGARD TO THE RUSSIAN) PART OF MARXIST
COMMUNISM AS THEIR POWERS.

The RIGHT OF PRIVATE PERSONAL PROPERTY
REMAINS A SACRED AND SECURED TRUST
155 (WHICH HAVE ALREADY BEEN VIOLATED UNDER RUSSIAN
COMMUNIST" RULE) MUST BE STRICTLY OBSERVED.
[illegible] TOWARDS
THE END AND THAT THE INTERESTS RATHER THAN
[illegible]
[illegible]

6

BUT THESE PREFERED TACTICS NOW, MAY PROVE
TO BE TOO LIMITED IN THE NEAR FUTURE, THEY
SHOULD NOT BE CONFUSED WITH SLOWNESS,
INDECISION OR FEAR, EVEN THE INTELLECTUALLY
FEARLESS COULD EVEN BE ROMANTICALLY ATTRACTED TO
OUR DOCTRINE, AND YET THIS DOCTRINE REQUIRES
THE UTMOST RESTRAINT, A STATE OF BEING
IN ITSELF MAJESTIC IN POWER.

THIS IS STOICISM, AND YET STOICISM
HAS NOT BEEN EFFECTED FOR MANY YEARS,
AND NEVER FOR SUCH A PURPOSE.

THERE ARE ORGANIZATIONS ALREADY
FORMED IN THE UNITED STATES, WHO HAVE DECLARED
THEY SHALL BECOME EFFECTIVE ONLY AFTER
THE MILITARY ARMIES OF THE UNITED STATES,
ORGANIZATIONS SUCH AS THE MINUTE MEN,
OR THE EQUIVALENT OF A STOICAL ORGANIZATION.
BUT THESE PREPPERS ARE SIMPLY PREPPARING
TO DEFEND IN THEIR OWN BACK YARD, A SYSTEM
WHICH THEY TAKE FOR GRANTED WILL BE DEFEATED
170 MILITARILY ELSEWHERE (I DISAGREE THIS) TO COME FROM PATRIOTIC
THESE ARMED GROUPS REPRESENT WHAT WERE
SOMETIMES CAPITALIST SUPPORTERS. THERE WILL ALSO
BE ANY KIND OF COMMUNIST AND INSANELY FASCIST GROUP
THAT WILL RISE TO OVERTHROW AND RELIGIOUS

2

GROUPS AT WORK.

HOWEVER, THE BULK OF THE POPULATION will
NOT NOTICE IT ANY OF THESE GROUPS BECAUSE THEY
will NOT BE INVOLVED IN ANY OF THE old
EMOTIONS WITH WHICH WE ARE ALL SO FAMILIAR.
BUT THE PEOPLE will NEVER ACCEPT A NEW
ORDER PRESENTED BY POLITICIANS OR OPPORTUNIST
LOGICALLY, THEY will ~~SUBSCRIBE~~ deem IT
~~NECESSARY~~ necessary. IT SPOKE THESE SYSTEM OF
GOVERNMENT ABOUT which THEY HAVE BEEN
~~EDUCATED~~ EDUCATED, BUT THEY will BE ~~THE~~ HEIRS
ANYTHING RESEMBLING THEIR ~~PRESENT~~ FORMER CAPITALIST
MASTERS ALSO.

STEADFASTLY SPEED IT THE REVIVAL OF
THESE FORCES THEY will SEEK ANEW FORE-
THIS will BE THE SENTIMENT OF THE MASSES
MANIPULATING
BUT ANY EXAMINATION CAREFULLY ~~EXAMINATION~~
WORDS ~~KEEP~~ MAY MAY THE FACTS
THIS IS WHERE A SAFEGUARD IS NECESSARY
AND NOT ONLY A SAFEGUARD, BUT A SAFETY
154 VALVE, AS WE CAN'T GUARANTEE FORCES FROM
WITHIN, AND DEFENSE AGAINST FROM WITHOUT.
THERE CAN BE NO DESTRUCTIVE FOR ORGANIZATION
AS EXISTED ~~THAT~~ THAT TOWARDS
IT WILL HAVE A UNITY AND GOAL.

...y.

...work is the key to the future door, but ...failure to apply that key because of possible ...armed opposition in our hypothetical, but very ...possible crisis, is as useless as trying to ...use force now to knock down the door.

...armed leaders of our ideals must be ...be accepted in time to help the crisis, just ...as ~~they~~ refrain [illegible] from any demonstrations ...of force must be abandoned in the ...mean time.

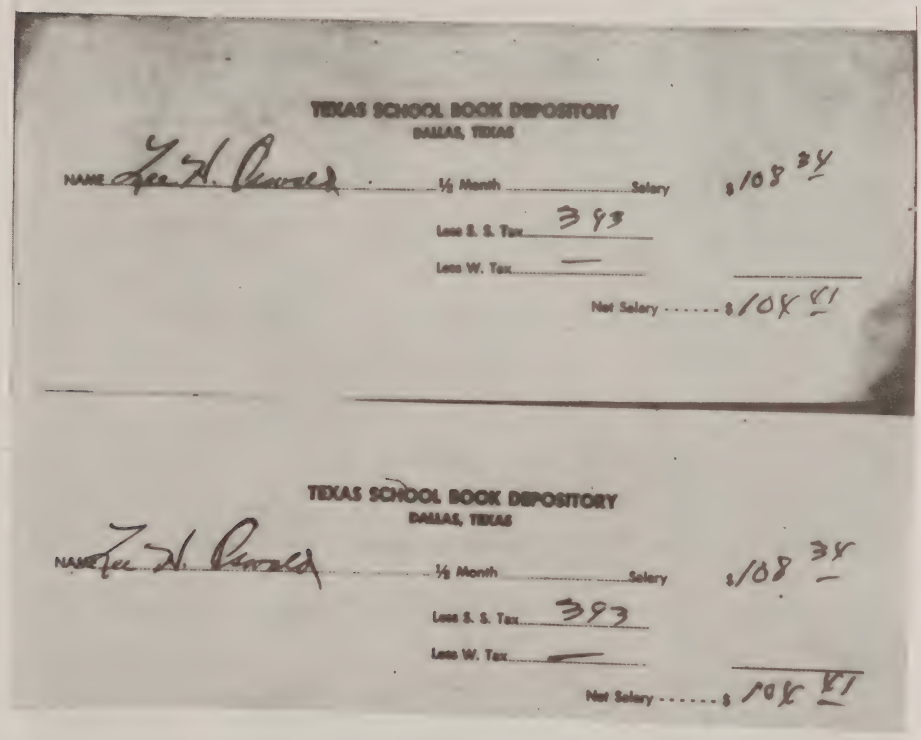
...no man, having known, having lived, under ...the Russian communist and American ...capitalist system, could possibly make ...a choice between them, there is no choice; ...one offers exploitation the other poverty. ...Both offer unrealistic injustice, tinged ...with two brands of idiocy.

...But no rational man can take the attitude ...of "a curse on both your houses". There are two ...world systems, one twisted beyond recognition ...by its cruelty, the other decadent and dying ...in its final evolution.

...A truly democratic system would combine the better ...qualities of the two upon an American

0117

(52) Undated. Two receipts for salary from the Texas School Book Depository, signed Lee H. Oswald. (FBI Exhibit 422)



TEXAS SCHOOL BOOK DEPOSITORY
DALLAS, TEXAS

NAME Lee H. Oswald ½ Month Salary $108.34

Less S. S. Tax 3.93

Less W. Tax —

Net Salary $104.41

TEXAS SCHOOL BOOK DEPOSITORY
DALLAS, TEXAS

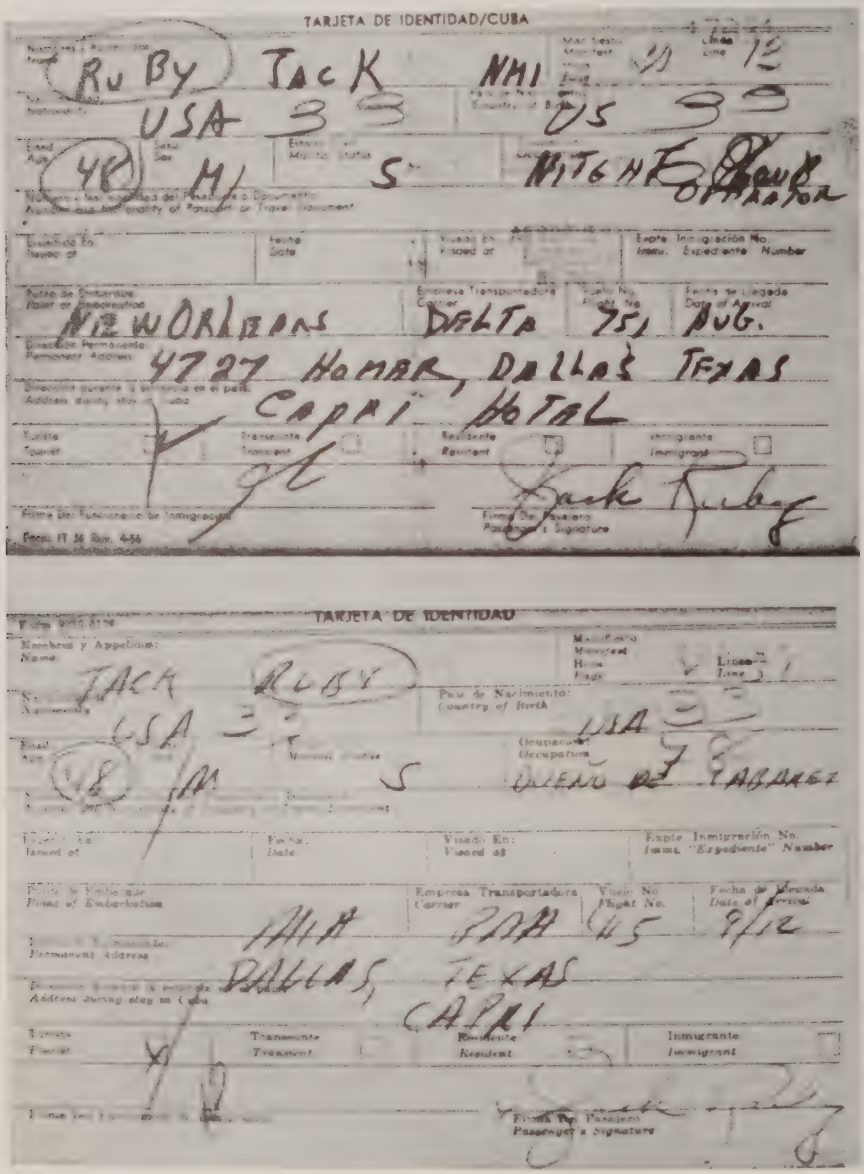
NAME Lee H. Oswald ½ Month Salary $108.34

Less S. S. Tax 3.93

Less W. Tax —

Net Salary $104.41

(53) Undated (August?). Photograph of Cuban identification card, Flight 751, signed Jack Ruby.



(54) Undated. Exemplar writing of Marina Oswald, including seven slips of paper containing the writing "A. J. Hidell." Location: Archives, HSCA.

A. J. Hidel

A J Hidel

A. J. Hidel

A. J. Hidel

~~A J Hid~~

A. J Hidel

A. J. Hidel.

A J. ~~Hid~~ Hidel.

AJ Hidel

A. J. Hidel

A. T. Hidell

A T Hidell

A. T Hidell

A.T.Hidell

A. T Hidell

A.T. Hidell

A. T Hidell

A. T Hidell

Name Oswald, Mr. Lee Harvey

M. Address 603 Elsbeth

City Dallas Zone Phone

Signature [signature]

Address Same

City Zone Phone

School or Business Jaggers-Chiles-Stoval

Name Jack L. Bowen

Home Address 1916 Stevens Forest Dr.

Phone WH8-8997 Expires 12-7-65

DALLAS PUBLIC LIBRARY or

(See Reverse Side)

YOU WILL WANT TO KNOW

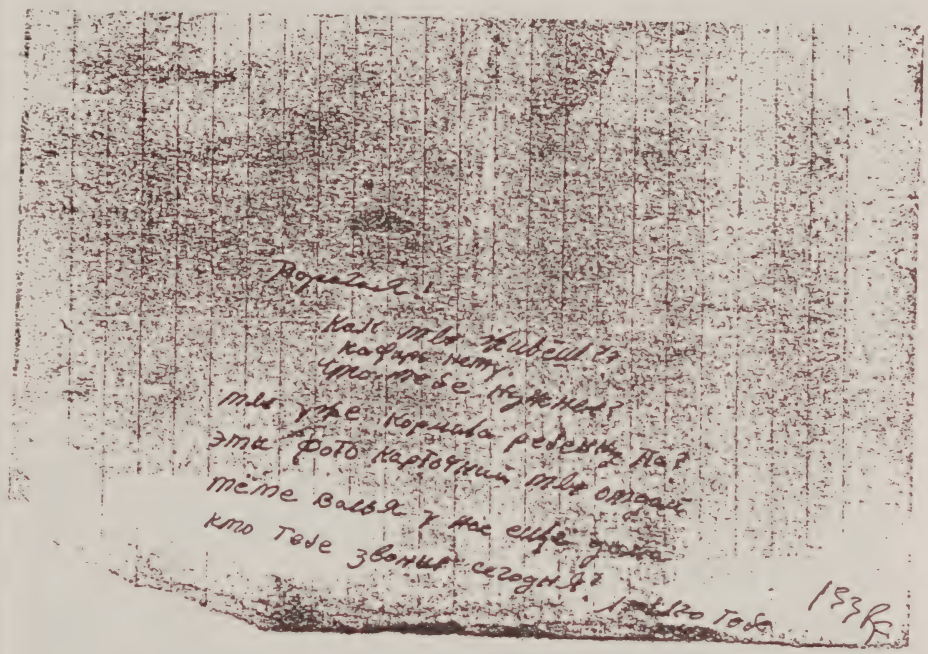
1. This card may be used at any agency of the library system and must be presented when taking any materials out of the library. Ten cents will be charged for a temporary identification form if the borrower's card is not presented.
2. Each borrower is held responsible for all materials drawn on his card and for all charges accruing on the same.
3. Borrowers will please notify the library of any change of address.

THE BORROWER IS ADVISED NOT TO LEND HIS CARD TO ANYONE.

(55) Undated. Dallas Public Library card.

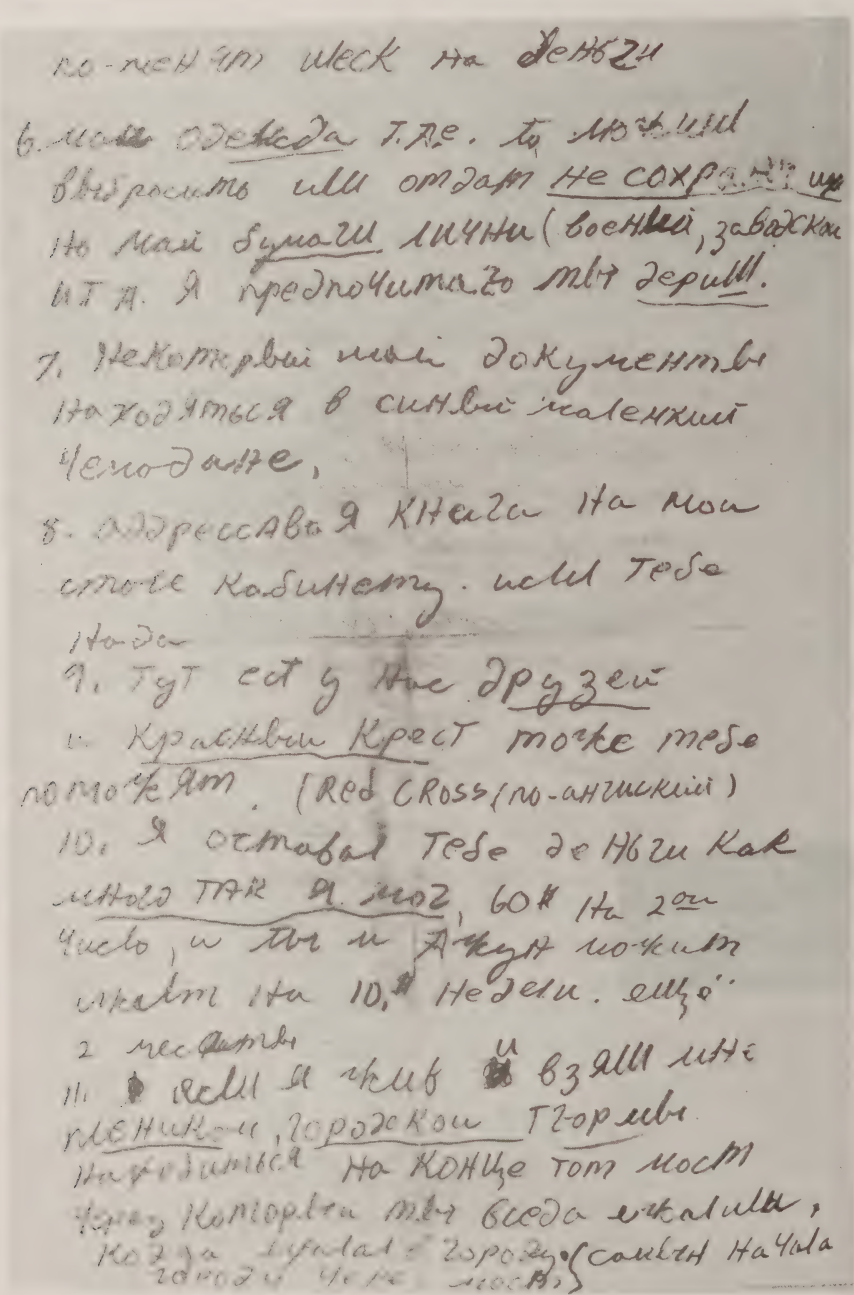
-TEK Exhibit F-505 D-

(56) Undated. Note in Russian, consisting of 10 lines of handwritting, signed, in Russian, "Alek."



133
MISSION EXHIBIT
#40

(57) Undated. Note in Russian consisting of two pages of 11 handwritten instructions concerning the Walker incident, referred to as "the Walker Note."



D-30 дек

1. Эта ключ почтовый ящику почтам нашивши, находиться городу, на улице ERVAY тот же улице где апека где ты всегда стала. Ч блоков от апека на эту улицу и почтамт там найдёш наш ящику. Я платил за ящику прошел месяц так ты не переживаеш об этом.

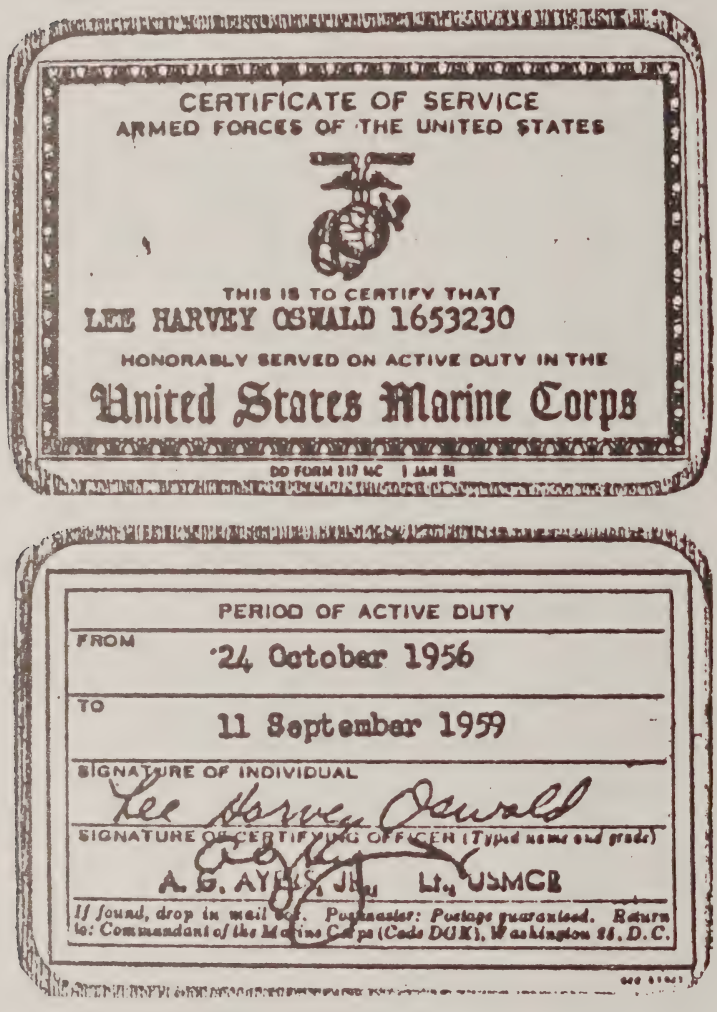
2. посылай посольстве информатия что со мной случилась и потом отрезай из газета (если в газета что-нибудь о мне пишем) я думаю что посольстве будущее тебе помочь когда узнаю всё.

3. Я платил за дом на 2 ом Улиц так не переживаеш об эта

4. За води и газ тоже платил недавно

5. Возможно что деньги с работы будет, они посылаю нашу ящику на почтам. найдёш банк и

(58) Undated. Certificate of Service, United States Marine Corps.



CERTIFICATE OF SERVICE
ARMED FORCES OF THE UNITED STATES

THIS IS TO CERTIFY THAT
LEE HARVEY OSWALD 1653230
HONORABLY SERVED ON ACTIVE DUTY IN THE
United States Marine Corps

DD FORM 217 MC 1 JAN 51

PERIOD OF ACTIVE DUTY

FROM 24 October 1956

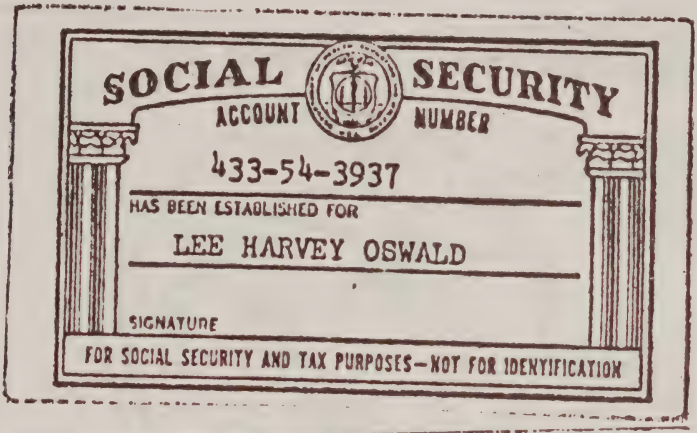
TO 11 September 1959

SIGNATURE OF INDIVIDUAL
Lee Harvey Oswald

SIGNATURE OF CERTIFYING OFFICER (Typed name and grade)
A. G. AYRES, JR. Lt, USMCR

If found, drop in mail box. Postmaster: Postage guaranteed. Return to: Commandant of the Marine Corps (Code DOK), Washington 25, D. C.

(59) Undated. Social Security card, 433–54–3937, Lee Harvey Oswald; unsigned.



SOCIAL SECURITY
ACCOUNT NUMBER
433-54-3937
HAS BEEN ESTABLISHED FOR
LEE HARVEY OSWALD
SIGNATURE
FOR SOCIAL SECURITY AND TAX PURPOSES—NOT FOR IDENTIFICATION

KEEP this card. SIGN it immediately. SHOW it to your employer. Mention the number in all letters about your account. If you lose this card apply for a duplicate, not a new number.

Once a year you can get a statement of wages credited to your account. Get a form for this purpose from any Social Security Administration District Office.

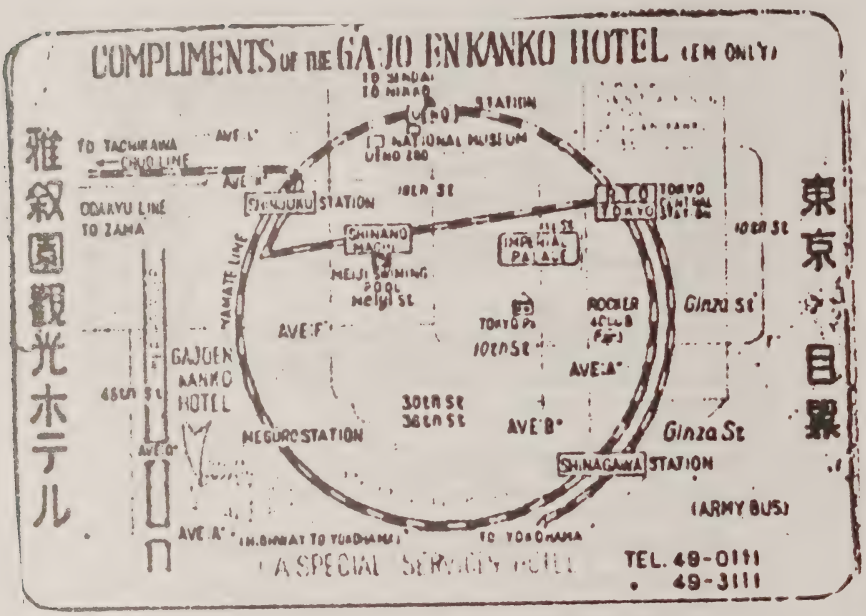
If you change your name notify the nearest Social Security Administration District Office immediately.

TELL YOUR FAMILY TO NOTIFY THE NEAREST SOCIAL SECURITY OFFICE IN THE EVENT OF YOUR DEATH. IT IS ADVISABLE TO GET IN TOUCH WITH A SOCIAL SECURITY OFFICE WHEN YOU REACH RETIREMENT AGE OR IF YOU BECOME SEVERELY DISABLED.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
SOCIAL SECURITY ADMINISTRATION

Form OA-702.1 Rev. (11-61)

(60) Undated. Complimentary card, GA–JO EN KANKO Hotel. Location: Archives.

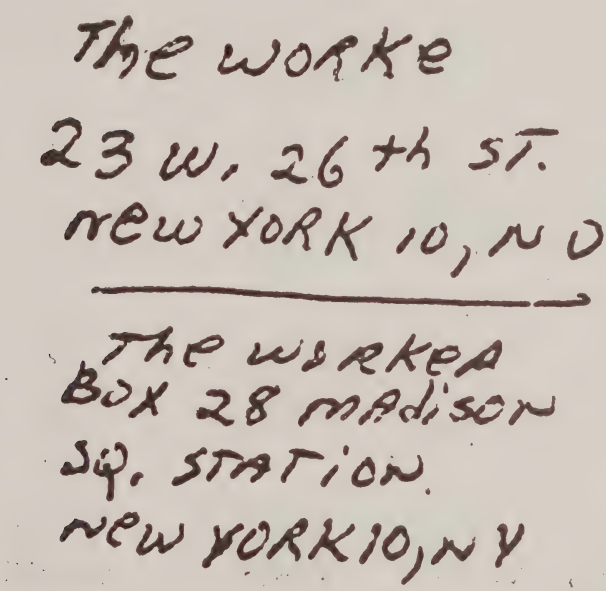


(61) Three photographs of Oswald, one with the notation on the back, "taken at Camp Pendleton Feb. 5." Located in the HSCA files, Archives (unavailable at time of publication).

(62) Undated. Slip of paper with the following handwriting:

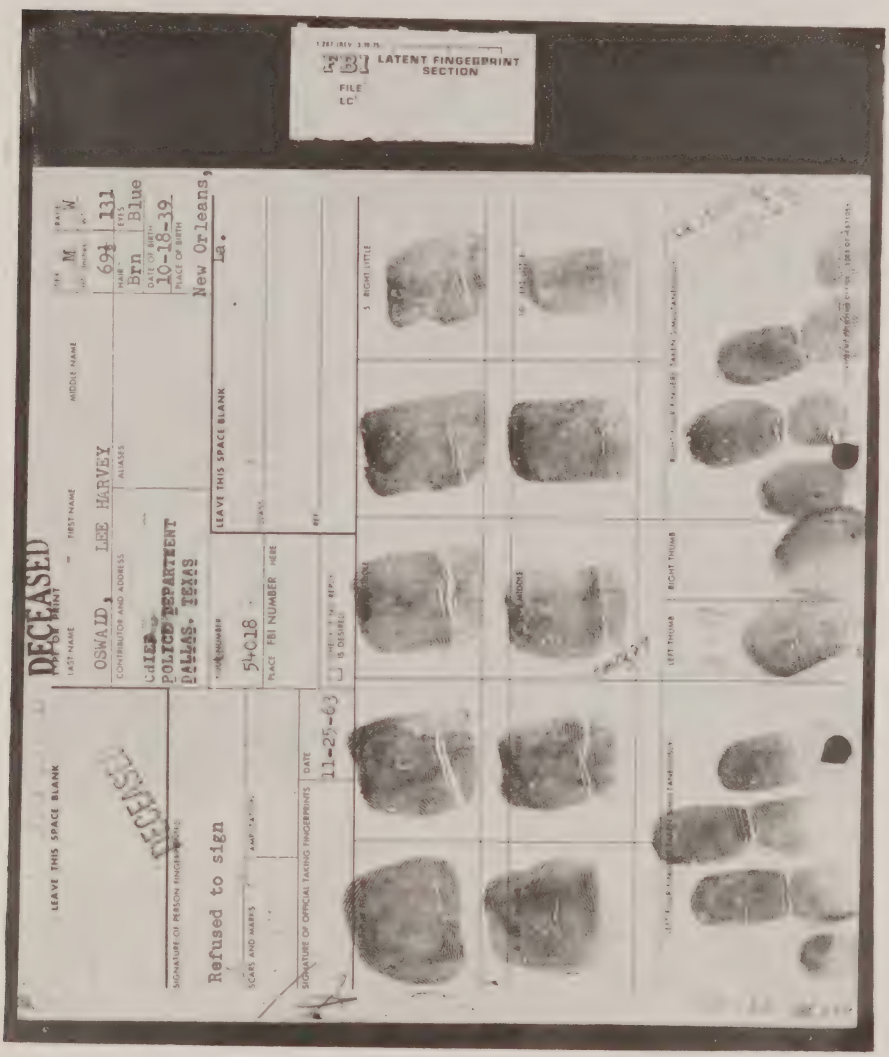
"The Worke
23 W. 26th St.
New York, 10, N.Y.
The Worker
Box 28 Madison
Sq. Station, New York 10, N.Y.
Embassy USSR
1609 Decatur St. N.W.
Washington, D.C."

Location: Archives.



EMBASSY. USSR
1609 DECATUR ST., N.W.
WASHINGTON, D.C.
CONSULAR PLENIPOTENTIARY

(63) November 22, 1963. Photographs of fingerprint forms of the Dallas Police Department. Location: FBI. (CE 627, 630).



DECEASED

FEDERAL BUREAU OF INVESTIGATION, UNITED STATES DEPARTMENT OF JUSTICE

WASHINGTON, D.C.

CURRENT ARREST OR RECEIPT

DATE ARRESTED OR RECEIVED	CHARGE OR OFFENSE (If code citation is used it should be accompanied by charge)	DISPOSITION OR SENTENCE (List FINAL disposition only. If not now available, submit later on FBI Form R-84 for completion of record.)
11-22-63	Assassination of Pres. of U.S. Murder of Dallas Police Officer	Shot & Killed 11-24-63 while being transferred in custody

OCCUPATION	RESIDENCE OF PERSON FINGERPRINTED
Photographer	1026 N. Beckley, Dallas, Texas

If COLLECT wire reply or COLLECT telephone reply is desired, indicate here

☐ Wire reply ☐ Telephone reply

Telephone number

DECEASED

FOR INSTITUTIONS USE ONLY

Sentence expires

DECEASED

Please Paste Photograph in This Space

Since photograph may become detached indicate name, FBI number, and arrest number on reverse side whether attached to fingerprint card or submitted later.

INSTRUCTIONS

1. FORWARD ARREST CARDS TO FBI IMMEDIATELY AFTER FINGERPRINTING FOR MOST EFFECTIVE SERVICE.
2. TYPE or PRINT all information.
3. Note amputations in proper finger squares.
4. REPLY WILL QUOTE ONLY NUMBER APPEARING IN THE BLOCK MARKED "YOUR NO."
5. Indicate any additional copies for other agencies in space below—include their complete mailing address.

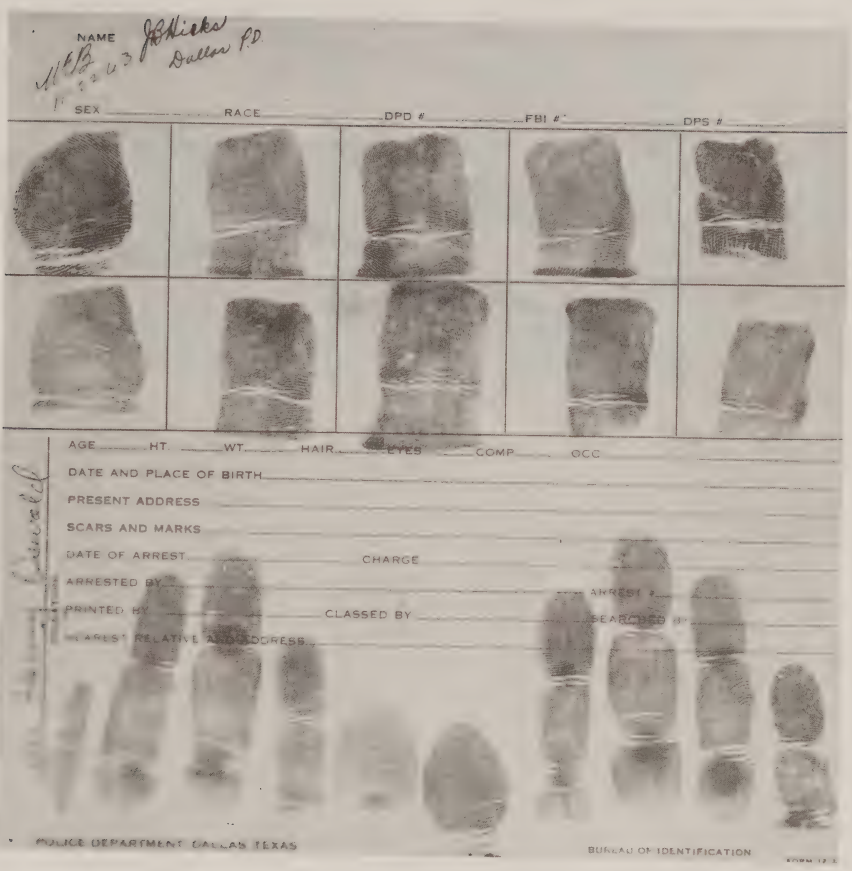
SEND COPY TO

DECEASED

RECORDED NOV 29 1963 IDENT. DIV.

Commission Exhibit No. 666 C 30

FD-249 (Rev. 12-17-62)


NAME J. B. Hicks Dallas P.D.

SEX _____ RACE _____ DPD # _____ FBI # _____ DPS # _____

AGE _____ HT _____ WT _____ HAIR _____ EYES _____ COMP _____ OCC _____

DATE AND PLACE OF BIRTH _____

PRESENT ADDRESS _____

SCARS AND MARKS _____

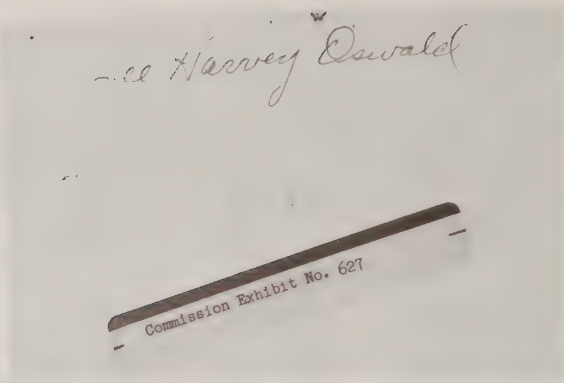
DATE OF ARREST _____ CHARGE _____

ARRESTED BY _____ ARREST # _____

PRINTED BY _____ CLASSED BY _____ SEARCHED BY _____

NEAREST RELATIVE AND ADDRESS _____

POLICE DEPARTMENT DALLAS TEXAS BUREAU OF IDENTIFICATION


Harvey Oswald
Commission Exhibit No. 627

REFERENCES

(1) R. Popkin, "The Second Oswald" (New York: Avon Books/The New York Review of Books, 1966).
(2) Id. at p. 63.
(3) Ibid.
(4) Ibid.
(5) Id. at p. 66.
(6) Sylvia Meagher, "Accessories After the Fact" (New York: Vantage Books, 1976), p. 360.
(7) Report of the President's Commission on the Assassination of President Kennedy (Washington, D.C.: U.S. Government Printing Office, 1964), p. 319.
(8) Id. at pp. 321–325.
(9) Id. at pp. 320–321.

O

Western New England College Law Library
3 5560 00114 9147