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**PRESIDENT'S COMMISSION**  
**ON THE**  
**ASSASSINATION OF PRESIDENT KENNEDY**

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Report of Proceedings

Held at

Washington, D. C.

Thursday, June 4, 1964

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PAGES 6663 - 6808

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**CONFIDENTIAL  
CONTENTS**

TESTIMONY OF:

Thomas J. Kelley

Leo J. Gauthier

Lyndal L. Shaneyfelt

Robert A. Frazier

Thomas J. Kelley - resumed

PAGE

6664

6679

6689

6769

6798

EXHIBITS

<u>NUMBER</u>	<u>FOR IDENTIFICATION</u>	<u>IN EVIDENCE</u>
Commission 871	6666	6666
Commission 872	6667	6667
Commission 873	6668	6668
Commission 874	6668	6668
Commission 875	6677	6677
Commission 876	6681	6681
Commission 877	6681	6681
Commission 878	6681	6683
Commission 879	6681	6683
Commission 880	6682	6683
Commission 881	6682	6683
Commission 882	6685	6685
Commission 883	6685	6685
Commission 884	6688	6688
Commission 885	6702	6787
Commission 886	6708	6787
Commission 887	6714	6787

**CONFIDENTIAL**

**CONFIDENTIAL**

**B**

EXHIBITS

<u>NUMBER</u>	<u>FOR IDENTIFICATION</u>	<u>IN EVIDENCE</u>
Commission 888	6717	6787
Commission 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901 902 and 903	6787	6787
Commission 904, 905, 906 and 907	6808	6808

**CONFIDENTIAL**

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**PRESIDENT'S COMMISSION****ON THE**  
**ASSASSINATION OF PRESIDENT KENNEDY**

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Washington, D. C.

Thursday, June 4, 1964

The President's Commission met, pursuant to recess, at 2:10 p.m., in the Hearing Room, Fourth Floor, 200 Maryland Avenue, Northeast, Washington, D. C., Chief Justice Earl Warren, presiding.

**PRESENT:**

Chief Justice Earl Warren, Chairman

Senator John Sherman Cooper, Member

Representative Gerald R. Ford, Member

Allen W. Dulles, Member

John J. McCloy, Member

- - -

J. Lee Rankin, General Counsel

Norman Redlich, Special Assistant to General Counsel

Arlen Specter, Staff Counsel

Charles Murray, Observer

Waggoner Carr, Observer

**CONFIDENTIAL**



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(Members present at this point: The Chairman, Representative Ford, Mr. Dulles, and Mr. McGloay.)

Mr. Specter. Mr. Chief Justice, we have witnesses today -- Thomas Kelley of the Secret Service; Leo Gauthier, Mr. Shaneyfelt, and Robert Frazier, of the F.B.I., who are going to testify concerning certain on-site tests made in Dallas at the scene of the assassination, and of preliminary studies which were made prior to the making of the on-site tests at Dallas.

May we have them sworn in as a group?

The Chairman. Yes.

Will you rise and raise your right hands, please?

Do you solemnly swear that the testimony you are about to give before this Commission shall be the truth, the whole truth, and nothing but the truth, so help you God?

Mr. Kelley. I do.

Mr. Gauthier. I do.

Mr. Shaneyfelt. I do.

Mr. Frazier. I do.

The Chairman. You may be seated, gentlemen.

Mr. Kelley, will you take the witness chair, please?

Mr. Specter will conduct the examination.

**TESTIMONY OF THOMAS J. KELLEY**

Mr. Specter. Will you state your full name for the record, please?

Mr. Kelley. Thomas J. Kelley.

**CONFIDENTIAL**

Mr. Specter. By whom are you employed?

Mr. Kelley. I am employed by the U.S. Secret Service.

Mr. Specter. In what capacity?

Mr. Kelley. I am an inspector.

Mr. Specter. In a general way, of what do your duties consist?  
Mr. Kelley?

Mr. Kelley. As an inspector, I am part of the chief's headquarters staff. I conduct office inspections of our field and protective installations, and report on their actions to the chief.

Mr. Specter. How long have you been with the Secret Service?

Mr. Kelley. Twenty-two years.

Mr. Specter. Did you participate in the planning of the on-site tests at Dallas, Texas?

Mr. Kelley. I did.

Mr. Specter. And did you participate in the making of those tests themselves?

Mr. Kelley. Yes, sir.

Mr. Specter. On what date was the on-site testing made?

Mr. Kelley. It was a week ago Sunday.

Mr. Specter. That would be May 24, 1964?

Mr. Kelley. Yes, sir.

Mr. Specter. What car was used for testing purposes?

Mr. Kelley. The car that was used was a 1956 specially built Cadillac, open, a convertible, seven passenger Cadillac. It has

CONFIDENTIAL

6566

a termination of 679-X, the Secret Service calls it. It is a car that is used as a follow-up car to the President's car when he is in a motorcade.

Mr. Specter. Was that car actually in the motorcade on November 22, 1963 in Dallas?

Mr. Kelley. Yes, it was.

Mr. Specter. Was there any special reason why the car in which the President rode on November 22nd was not used?

Mr. Kelley. Yes. The car in which the President rode has been modified by a body builder in Cincinnati, the Hess and Eisenhardt Company of Cincinnati.

Mr. Specter. And do you have a diagram showing the dimensions of the Secret Service follow-up car which was used during the on-site tests?

Mr. Kelley. I have. It was felt that the best simulation of the test could be presented by having a car that was similar to the car in which the President was riding, which was also an open Lincoln convertible.

Mr. Specter. Why it please the Commission, I would like to mark the diagram of the follow-up car as Commission Exhibit 871 and move its admission into evidence.

The Chairman. It may be admitted.

(The document referred to was marked Commission Exhibit 871 for identification, and received in evidence.)

Mr. Specter. Do you have diagrams showing the dimensions

CONFIDENTIAL

**CONFIDENTIAL**

6667

of the Presidential car?

Mr. Kelley. I have.

Mr. Specter. I would like to have that marked as Commission Exhibit 872 and move for its admission into evidence.

The Chairman. It may be admitted.

(The document referred to was marked Commission Exhibit 872 for identification, and received in evidence.)

Mr. Specter. Without specifying all of the details, Inspector Kelley, are the follow-up car and the Presidential car generally similar in dimensions?

Mr. Kelley. Yes, they are. There are a very few, of course, seven passenger convertible cars in existence, and these are specially -- these cars are specially built for us by the Lincoln - The Ford Motor Company, and the follow-up car by the General Motors Company.

Mr. Specter. Would you describe what seating arrangements are present in each of these cars in between the permanent front seat and the permanent rear seat?

Mr. Kelley. There are two jump seats that can be opened up for riders in each of the cars. The Presidential follow-up car, these jump seats are usually occupied by Secret Service agents.

In the President's car, they are occupied by the President's guests.

On the day of the assassination, of course, the jump seats

were occupied by Mrs. Connally and Governor Connally.

Mr. Specter. Mr. Kelley, have you brought with you two photographs depicting the interior of the President's car?

Mr. Kelley. I have. These are photographs of the interior of the President's car which is known to us as 100,

Mr. Specter. May it please the Commission, I would like to mark one of these photographs as Commission Exhibit No. 873, and move its admission into evidence.

The Chairman. It may be admitted.

(The document referred to was marked Commission Exhibit 873 for identification, and received in evidence.)

Mr. Specter. I would like to mark the second photograph as Commission Exhibit 874 and move, also, its admission into evidence.

The Chairman. It may be admitted.

(The document referred to was marked Commission Exhibit 874 for identification, and received in evidence.)

Mr. Specter. Would you describe briefly what 873 depicts, please?

Mr. Kelley. 873 is a photograph of the interior of the rear section of the 100-X, the President's car, showing the seating arrangement in the car and the jump seats are in an open position.

Mr. McCloy. As of what time were these photographs taken?

Mr. Kelley. I am sorry, Commissioner. I don't know just when those photographs were taken. They are taken some time

CONFIDENTIAL

6669

in the last 10 years.

Mr. Specter. 873 and 874 -- do they accurately depict the condition of the President's car as of November 22, 1963?

Mr. Kelley. They do, sir.

Mr. Specter. Would you describe briefly what 874 shows?

Mr. Kelley. 874 is another photograph of the car taken from the rear, and it shows the relative positions of the jump seats in an open position as they relate to the back seat of the car.

Mr. Specter. So that the record may be clear, which Commission number has been given to the diagram of the President's car?

Mr. Kelley. The President's car is Exhibit 872.

Mr. Specter. And the follow-up car diagram is --

Mr. Kelley. 871.

Mr. McCloy. Do you know whether these photographs were taken before or after the assassination?

Mr. Kelley. Before the assassination.

Mr. Dulles. Did the car that you used for this test -- did that car have the seat lifting capacity that I understand the President's car had?

Mr. Kelley. No, it did not, sir. I might say that there is in the Commission's records photographs of the President's car after the assassination, showing the condition of it after the assassination, at the garage.

Mr. Specter. On the President's car itself, what is the distance on the right edge of the right jump seat, that is to say, from the right edge of the right jump seat to the door on the right side?

Mr. Kelley. There is six inches of clearance between the jump seat and the door.

Mr. Specter. And what is the relative position of the jump seat to the rear seat on the Presidential automobile?

Mr. Kelley. There is 8-1/2 inches between the back of the jump seat and the front of the back seat of the President's car, the rear seat.

Mr. Specter. And what is the relative height of the jump seat and the rear seat?

Mr. Kelley. The jump seat is three inches lower than the back seat in its bottom position. That is, the back seat of the President's car had a mechanism which would raise it 10-1/2 inches. But at the time of the assassination, the seat was in its lowest position.

Mr. Specter. And what is the differential between the jump seats and the rear seat on the Secret Service follow-up car?

Mr. Kelley. The jump seat of the Secret Service car is a little closer to the right door.

However, the seating arrangement is not exactly the same in these cars, in that there is a portion of a padding that comes around on the rear seat.

## CONFIDENTIAL

But relatively, when the persons are seated in this car, one in the rear seat and one in the jump seat, they are in the same alignment as they were in the President's car.

Mr. Dulles. Could I ask one question in response to your statement that the back seat was in its lowest position at the time of the assassination? How do you know that?

Mr. Kelley. That is a result of questioning of the people who took the car, the driver who took the car from the hospital to the plane. This was one of the drivers of the Presidential car. There was nobody touched the car until it got back to the White House garage. It was in his custody all the time. And he did not move it.

When it was in the White House garage, it was at its lowest point.

Mr. Dulles. And there would be no opportunity to lower it from the time the President was shot?

Mr. Kelley. No, sir.

The President, of course, operates that thing himself. But when it was examined, at the time it was examined, and it was in the custody of this man all the time, it had not been touched.

Mr. Specter. What was the height of President Kennedy?

Mr. Kelley. He was 72-1/2 inches.

Mr. Specter. And were you present when a man was placed in the same position in the Secret Service follow-up car as that in which President Kennedy sat in the Presidential car when the



CONFIDENTIAL

tests were simulated on May 24th of this year?

Mr. Kelley. I was.

Mr. Specter. Do you know the name of that individual?

Mr. Kelley. He was an F.B.I. agent by the name of James W. Anderton.

Mr. Specter. And what was the height of Mr. Anderton?

Mr. Kelley. He was 72-1/2 inches.

Mr. Specter. Do you know the height of Governor Connally?

Mr. Kelley. Governor Connally was 6 foot 4.

Mr. Specter. Was that the height of the Governor himself or the Governor's stand-in?

Mr. Kelley. It was my understanding that Governor Connally was -- 6 foot 2, I guess. The Governor's stand-in, Mr. Doyle Williams, was 6 foot 4.

Mr. Specter. Were you present when those two individuals were seated in the Secret Service follow-up car?

Mr. Kelley. Yes, Sir.

Mr. Specter. And what adjustment was made, if any, so that the relative positions of those two men were the same as the positioning of President Kennedy and Governor Connally on November 22, 1963?

Mr. Kelley. The officials at Hess Eisenhardt, who have the original plans of the President's car, conducted a test to ascertain how high from the ground a person 72-1/2 inches would be seated in this car before its modification. And it was

CONFIDENTIAL

CONFIDENTIAL

5673

ascertained that the person would be 52.7 inches from the ground -- that is, taking into consideration the flexion of the tires, the flexion of the cushions that were on the car at the time.

Mr. Specter. When you say 52.78 inches, which individual would that be?

Mr. Kelley. That would be the President.

Mr. Specter. And what part of his body?

Mr. Kelley. The top of the head would be 52.78 inches from the ground.

When Mr. Anderton was placed in the follow-up car, it was found that the top of his head was 62 inches from the ground. There was an adjustment made so that there would be -- the stand-in for Governor Connally would be in relatively the same position, taking into consideration the three inch difference in the jump seat and the two inch difference in his height.

Mr. Specter. Considering the three inch difference in the jump seat -- and I believe it would be an inch and a-half difference in height between President Kennedy and Governor Connally -- how much higher, then, approximately, was President Kennedy sitting than the Governor on November 22nd?

Mr. Kelley. I am not --

Mr. Specter. Would the President have been about an a inch and a-half higher than the Governor on the day of the assassination?

CONFIDENTIAL

6674

Mr. Kelley. The day of the assassination, yes.

Mr. Specter. And were --

The Chairman. Wouldn't the height of these men depend upon the length of their torso?

Mr. Kelley. Well, --

The Chairman. You have some people who are shortwaisted, some people who are longwaisted. I don't know which either of these men were who were of the same height. But I know there is a lot of difference in men. We sometimes see the -- a man who looks large sitting down, when he stands up he is small, because he has a long torso, and vice versa.

Mr. Kelley. Of course the relative positions are apparent from the films that were taken at the time of the assassination. It would be, of course, that judgment -- and it would have to be a judgment. But I think the films indicate there was just about that much difference in their height when both were seated.

Mr. Specter. Inspector Kelley, I hand you a photograph marked as Commission Exhibit 697, which has heretofore been admitted into evidence, and identified by Governor Connally as depicting the President and the Governor as they rode in the motorcade on the day of the assassination, and ask you if the stand-ins for the President and the Governor were seated in approximately the same relative positions on the reconstruction on May 24th.

Mr. Kelley. Yes, sir, in my judgment that is very close.

CONFIDENTIAL

CONFIDENTIAL

6675

Mr. Specter. What marking, if any, was placed on the back of President Kennedy -- the stand-in for President Kennedy?

Mr. Kelley. There was a chalk mark placed on his coat, in this area here.

Mr. Specter. And what did that chalk mark represent?

Mr. Kelley. That represented the entry point of the shot which wounded the President.

Mr. Specter. And how was the location for that mark fixed or determined?

Mr. Kelley. That was fixed from the photographs of a medical drawing that was made by the physicians and the people at Parkland and an examination of the coat which the President was wearing at the time.

Mr. Specter. As to the drawing, was that not the drawing made by the autopsy surgeons from Bethesda Naval Hospital?

Mr. Kelley. Bethesda Naval.

Mr. McCloy. Not Parkland, as I understand it?

Mr. Specter. No, sir, not Parkland, because as the record will show, the President was not turned over at Parkland.

Mr. Kelley. I was shown a drawing of -- that was prepared by some medical technicians indicating the point of entry.

Mr. Specter. Permit me to show you Commission Exhibit 385, which has heretofore been marked and introduced into evidence, and I ask you if that is the drawing that you were shown as the basis for the marking of the wound on the back of the President!

CONFIDENTIAL

neck.

Mr. Kelley. Yes.

Mr. Specter. And the record will show, may it please the Commission, that this was made by the autopsy surgeons at Bethesda.

And was there any marking placed on the back of Governor Connally?

Mr. Kelley. Yes, there was a marking placed on the back of his coat in the area where the medical testimony had indicated the bullet had entered Governor Connally.

Mr. Specter. And what coat was worn by the stand-in for Governor Connally?

Mr. Kelley. It was the coat that Governor Connally was wearing at the time he was injured.

Mr. Specter. And was the chalk circle emplaced around the hole which appeared on the back of that coat garment?

Mr. Kelley. It was.

Mr. Specter. Were certain tests made by the Secret Service shortly after the day of the assassination?

Mr. Kelley. Yes.

Mr. Specter. And were those tests reduced to photographs which were compiled in an album?

Mr. Kelley. -- Yes -- in Commission Exhibit No. 88, we took some photographs of the scene of the assassination on December 5, 1963, from the window of the Texas School Book

CONFIDENTIAL

6677

Depository, and from the street.

Mr. Specter. The number which you refer to bears Commission Exhibit No. 88, which is an index which was given for internal Commission document filing, but it has not been marked as a Commission exhibit.

I would now like to mark it Commission Exhibit 875 and move for its admission into evidence.

The Chairman. It may be admitted.

(The document referred to was marked Commission Exhibit 875 for identification, and received in evidence.)

Mr. Specter. Does a photograph in that group show the condition of the foliage of the trees in the vicinity where the assassination occurred?

Mr. Kelley. Yes.

Mr. Specter. And is there --

Mr. Dulles. One question.

This photograph was taken, though, several weeks later, wasn't it?

Mr. Kelley. On December 5th.

Mr. Dulles. That was two weeks later.

Mr. Kelley. Two weeks later, yes, sir.

Mr. Dulles. So the foliage would presumably be somewhat less in that picture, would it not, than it was on November 22nd?

Mr. Kelley. No -- actually, the foliage hadn't changed very much even in the latest tests we are making.

CONFIDENTIAL

The Chairman. It was an evergreen?

Mr. Kelley. It was an oak tree, Mr. Chief Justice, I have been told the foliage doesn't change much during the year. They call it pine oak. Some people call it a life oak. But the people down there I talked to said it was called a pine oak.

Mr. Specter. And did you observe the foliage on the tree on May 24th?

Mr. Kelley. I did, sir.

Mr. Specter. And would you state the relative condition of that foliage, as contrasted with the photographs you have before you taken on December 5th?

Mr. Kelley. It was very similar, practically the same.

Mr. Specter. And the description which you have just given applies to a large oak tree which intervened between a point on the sixth floor of the Texas School Book Depository Building and any automobile which would have been driven down the center lane of Elm Street in a westerly direction?

Mr. Kelley. Yes, sir.

Mr. Specter. Mr. Chief Justice, the purpose of having Inspector Kelley testify was just to set the scene.

That completes our questions of him.

The Chairman. Very well.

Thank you, Inspector Kelley.

Mr. Specter. The next witness will be Inspector Gauthier.

CONFIDENTIAL

TESTIMONY OF LEO J. GAUTHIER

Mr. Specter. Would you state your full name for the record, please?

Mr. Gauthier. Leo J. Gauthier.

Mr. Specter. And by whom are you employed, sir?

Mr. Gauthier. The Federal Bureau of Investigation.

Mr. Specter. And what is your rank with the Federal Bureau of Investigation?

Mr. Gauthier. Inspector. I am in charge of the Bureau's exhibit section, where we prepare investigative aids, consisting of diagrams, charts, maps, three-dimensional exhibits, in connection with the presentation of cases in court.

Mr. Specter. How long have you been employed by the Federal Bureau of Investigation?

Mr. Gauthier. Twenty-nine years.

Mr. Specter. Did you have occasion to reconstruct certain models to scale in connection with the investigation on the assassination of President Kennedy?

Mr. Gauthier. Yes, I did.

Mr. Specter. And what model reproduction, if any, did you make of the scene of the assassination itself?

Mr. Gauthier. The ~~assassination~~ data, concerning the ~~scene~~ <sup>EXHIBITS SECTION</sup> of the assassination, was developed by the Bureau ~~myself~~, including myself, at the site on December 2, 3, and 4 of 1963. From this data we ~~could have~~ built a three-dimensional exhibit

CONFIDENTIAL



one-quarter of an inch to the foot. It contained the pertinent details of the site, including street lights, catch basin, ~~the~~ concrete structures in the area, <sup>INCLUDING</sup> ~~the~~ buildings, ~~the~~ grades, ~~along with~~ scale models of the cars that comprised the motorcade, <sup>consisting of</sup> ~~including~~ the police lead car, the Presidential car, the follow-up car, the Lincoln open car ~~that~~ the Vice President was ~~riding~~ riding in, and the ~~follow-up car behind~~ <sup>follow-up</sup> the Vice Presidential car.

Mr. Specter. On the model of the scene itself, Mr. Gauthier, did you reproduce a portion of the scene which is depicted in Commission Exhibit No. 876?

Mr. Gauthier. Yes, I did.

Mr. Specter. Handing you that Commission Exhibit number, I will ask you to describe what it represents in toto.

Mr. Gauthier. This is an aerial view of the site known as ~~DEALEY~~ DEALEY Plaza, in Dallas, Texas.

It indicates the large buildings that surround this area. They are numbered one through eleven. It indicates the main streets -- Commerce, Main, and Elm Street, and the roadways through the plaza, including the triple underpass.

Mr. Specter. I now hand you a document which has been marked as Commission Exhibit No. 877 and ask you if that document was obtained by you in connection with the survey for the model which you prepared.

Mr. Gauthier. Yes. This is a description of ~~Dealey~~ DEALEY Plaza.

**CONFIDENTIAL**

stating the historical background and the physical description.

Mr. Specter. I move at this time for the admission into evidence of Exhibits 876 and 877.

The Chairman. They may be admitted.

(The documents referred to were marked Commission Exhibits 876 and 877 for identification, and received in evidence.)

Mr. Specter. Inspector, I now hand you two photographs marked as Commission Exhibit Nos. 878 and 879 and ask you to state what those depict.

(The documents referred to were marked Commission Exhibits 878 and 879 for identification.)

Mr. Gauthier. Commission Exhibit No. 878 is a view of the scale model looking towards the northeast with the Texas School Book Depository ~~Buildings~~ in the background, together with the Daltex Building, and a portion of the Dallas County Court House. It includes the pergola to the left, and the pericycle structure on the right with the reflecting pool in the immediate background.

It also shows the roadway through the Plaza, which is an extension of Elm Street, upon which appears miniature scale models of the vehicles in the motorcade.

Mr. Dylles. What motorcade is this?

Mr. Gauthier. We are depicting the Presidential motorcade at the time of the assassination, the motorcade that passed that area.

**CONFIDENTIAL**

Mr. Dulles. And this was done on what day?

Mr. Gauthier. Our data to build this was compiled on December 2, 3, and 4. It took about five weeks to prepare this ~~EXHIBIT~~ <sup>EXHIBIT</sup> in Washington, ~~the week~~.

Mr. Specter. Would you now describe what is shown on the photograph?

Mr. Gauthier. Commission Exhibit No. 879 is a view of the scale model looking towards the southwest <sup>in the direction of</sup> ~~the~~ the triple underpass, from <sup>a</sup> ~~the relative~~ position on the sixth floor <sup>out of the</sup> ~~the~~ southeast corner window.

Mr. Specter. I now hand you two additional photographs marked as Commission Exhibit 880 and 881, and ask you to state what they represent.

(The documents referred to were marked Commission Exhibits 880 and 881 for identification.)

Mr. Gauthier. Commission Exhibit No. 880 is a scale dimension view of the sixth floor looking towards the southeast corner of the Texas School Book <sup>Depository</sup> ~~Building~~.

Mr. Specter. And in the corner of that photograph is the area depicted which has been described as the possible site of the rifleman?

Mr. Gauthier. That is correct.

Mr. Specter. Will you now describe what Exhibit 881 shows?

Mr. Gauthier. Commission Exhibit No. 881 is a three-dimension view of the Dallas Police Department Garage, showing the jail

CONFIDENTIAL

6683

office and the ramps leading down from Main Street and  
Commerce Street. Position of the ramps are ~~small~~<sup>scale</sup> models  
of an armored van and two police squad cars. There are also  
miniature mock-ups of individuals -- representing ~~positions~~<sup>position of people</sup>  
in this area of the basement garage.

Mr. Specter. And what is depicted in that model,  
if any?

Mr. Gauthier. This represents the arrangement, physical  
arrangement in the basement at the time Lee Harvey Oswald  
~~was~~<sup>walked</sup> cut from the elevator through the jail office onto  
the basement ramp.

Mr. Specter. And where have these models been maintained  
since the time they were prepared by the Commission?

~~Mr. Gauthier. These models were delivered to the Commission --~~

Mr. Specter. Prepared by the F.B. I. -- pardon me.

Mr. Gauthier. The models were delivered to the <sup>PRESIDENTIAL</sup> Commission's  
~~building~~<sup>AND INSTALLED IN THE</sup> exhibits room on the first floor, on  
January 20, 1964.

Mr. Specter. Mr. Chief Justice, I now move for the admission  
into evidence of the photographs 878, 879, 880, and 881.

The Chairman. They may be admitted.

(The documents heretofore marked for identification as  
Commission Exhibits 878, 879, 880 and 881, were received in  
evidence.)

Mr. Specter. Did you participate in the on-site tests made

CONFIDENTIAL

in Dallas?

Mr. Gauthier. I did.

Mr. Specter. Was a survey made of the scene used to record some of the results of that on-site testing?

Mr. Gauthier. Yes.

Mr. Specter. And by whom was the survey made?

Mr. Gauthier. The survey was made on May 24, 1964, by Robert H. West, County Surveyor, a licensed State land surveyor, located at 160 County Court House, Dallas, Texas.

Mr. Specter. Have you brought the tracing of that survey with you today?

Mr. Gauthier. I have, yes.

Mr. Specter. And have you brought a cardboard reproduction of that?

Mr. Gauthier. ✓ A copy ~~of that~~ made from the tracing, Yes.

Mr. Specter. Would you produce the cardboard copy made from the tracing for the inspection of the Commission at this time, please?

Would you produce the tracing at this time, please?

Mr. Gauthier. Yes.

The tracing is wrapped ~~in here~~, and ~~it is~~ sealed *in this container*

Mr. Specter. Without breaking the seal, I will ask you if the cardboard which has been set up here -- may the record show it is a large cardboard. I will ask you for the dimensions in just a minute.

Does the printing on the cardboard represent an exact duplication of the tracing which you have in your hand?

Mr. Gauthier. Yes.

Mr. Specter. May it please the Commission, we will mark the tracing 882, and not take it out, since the cardboard represents it, and place Commission Exhibit No. 883 on the cardboard drawing itself, and I would like to move for the admission into evidence of both of Exhibits 882 and 883.

The Chairman. They may be admitted.

(The documents referred to were marked Commission Exhibits 882 and 883 for identification, and received in evidence.)

Mr. Specter. Will you now describe what Exhibit 883 is, Inspector Gauthier, indicating, first of all, the approximate size of the cardboard?

Mr. Gauthier. This is a copy of the tracing measuring 40 inches in width, 72 inches in length. It is made <sup>to</sup> on a scale of one inch equals 10 feet, ~~in other words, 10 feet in every inch.~~

From the data compiled on that day by the surveyor, this tracing was prepared.

The area is bounded on the north by the Texas School Book Depository Building, and on further here by railroad property.

Mr. Specter. Indicating a general westerly direction from the School Book Depository Building?

Mr. Gauthier. Yes, I am <sup>POINTING</sup> ~~pointing~~ towards the west.

On the east it is bounded by Houston Street.

On the south by Main, which is a roadway going through  
DEALEY  
Dealey Plaza.

And on the west by the triple underpass.

Located on this plat map are ~~per~~ street lights accurately located, a catch basin, certain trees, location of the <sup>SE</sup> trees, the delineation of the concrete pergola, which you see here on the photograph, the outer boundaries of the pericycle, and the reflecting pool -- locating exactly the window in the Texas School Book ~~Building~~, <sup>Depository</sup> in the southeast corner, and also a tabulation of the measurements and angles that the surveyor has compiled from certain positions identified for him on the street by an ~~observation~~ <sup>OBSERVATION</sup> from this window, an ~~observation~~ <sup>OBSERVATION</sup> from the position of Mr. Zapruder --

Mr. Specter. When you say this window, which window did you mean?

Mr. Gauthier. The window on the sixth floor of the Texas School Book ~~Building~~, <sup>Depository</sup> the one in the southeast corner, the furthest window.

Mr. Specter. And when you identify the Zapruder position, what did you mean by that?

Mr. Gauthier. This is a concrete abutment of the pergola, located in the area upon which Zapruder was standing at the time the movies were made.

(At this point, Senator Cooper entered the hearing room.)

(At this point, Representative Ford withdrew from the hearing room.)

Mr. Specter. Are there any other positions noted on the diagram that you have been describing showing where other movies were made?

Mr. Gauthier. Yes.

(At this point, Chief Justice Warren withdrew from the hearing room.)

Mr. Gauthier. We also locate the position of Mr. Nix, who also made movies of the motorcade at certain points on the roadway.

Mr. Specter. On what street was Mr. Nix standing?

Mr. Gauthier. I am pointing now to the south side of Main Street, approximately in front of the concrete pylon of the south pericycle structure. That is a short distance from the intersection of Main and Houston.

Mr. Specter. A short distance west of the intersection?

Mr. Gauthier. West.

Mr. Specter. And what other position is shown of the situs of a movie tear?

Mr. Gauthier. We have another position here by Mrs. Mary Muchmore, who made movies of the motorcade movement along the Elm Street roadway on November 22, 1963.

Mr. Specter. I now refer to the exhibit which I have marked as Commission Exhibit No. 10. What figures are contained



thereon.

(The document referred to was marked Commission Exhibit 884 for identification.)

Mr. Gauthier. This is a copy of a tabulation which appears on the plat map. It contains certain positions marked as frame numbers. It indicates elevations ~~and~~ a column dealing with ~~the~~ angle <sup>of</sup> sight ~~angle~~ from ~~the~~ <sup>the frame</sup> positions to the window and horizontal line.

It also contains angles of sight, ~~the~~ <sup>the</sup> degree of sight and distances from these positions to a point on the top of the bridge, handrail height.

Mr. Specter. May it please the Commission, that concludes the description of the general setting.

I would like to move now at this time for the admission into evidence of Exhibit 884, which constitutes all of the exhibits used heretofore.

Mr. McCloy. It may be admitted.

(The document heretofore marked for identification as Commission Exhibit 884, was received in evidence.)

Mr. Specter. May it please the Commission, that completes the testimony of Inspector Gauthier.

I would like to call Mr. Shancyfelt.

Mr. McCloy. Mr. Shancyfelt?

## CONFIDENTIAL

## TESTIMONY OF LYNDAL L. SHANEYFELT

Mr. Specter. Would you state your full name for the record, please?

Mr. Shaneyfelt. Yes. Lyndal L. Shaneyfelt.

Mr. Specter. By whom are you employed?

Mr. Shaneyfelt. I am employed as a Special Agent of the Federal Bureau of Investigation.

Mr. Specter. And how long have you been so employed?

Mr. Shaneyfelt. <sup>Forty-four</sup> ~~Twenty-four~~ years.

Mr. Specter. What are your duties, in a general way?

Mr. Shaneyfelt. I am assigned to the F.B.I. Laboratory, as a document examiner, and photographic expert.

Mr. Specter. During the course of those duties, have you had occasion to make a traffic analysis of certain movies which purport to have been taken of the assassination?

Mr. Shaneyfelt. Yes, I have.

Mr. Specter. What movies have you examined?

Mr. Shaneyfelt. I have examined a roll of 8 millimeter motion pictures made by Mr. Abraham Zapruder of Dallas, Texas, that he took on November 22nd, of the assassination of President Kennedy.

Mr. Specter. Can you outline in a general way how the movies taken by Mr. Zapruder came into your possession?

Mr. Shaneyfelt. Yes. Mr. Zapruder, on realizing what he had in his photographs, took them immediately to a local Dallas

processing plant, had three copies made. He turned two copies of these movies over to representatives of the Secret Service.

The original and other copy he sold to Life Magazine.

The F.B.I. was given one of the copies by the Secret Service. The Secret Service loaned a copy to us long enough for us to make a copy for our use, which we did, and this copy is the one that I have been examining.

Mr. Specter. At any time in the course of the examination of the Zapruder film, was the original of that movie obtained?

Mr. Shaneyfelt. Yes, it was. On February 25, Mr. Herbert Orth, who is the assistant chief of the Life Magazine Photographic Laboratory, provided the original of the Zapruder film for review by the Commission representatives and representatives of the F.B.I. and Secret Service here in the Commission building.

Mr. Specter. And what was the reason for his making that original available?

Mr. Shaneyfelt. Life Magazine was reluctant to release the original because of the value. So he brought it down personally and projected it for us and allowed us to run through it several times, studying the original.

Mr. Specter. Was that because the copies were indistinct on certain important particulars?

Mr. Shaneyfelt. That is correct. The original had considerably more detail and more there to study than any of the copies, since

## CONFIDENTIAL

in the photographic process and when you copy you lose some detail.

Mr. Specter. And subsequently, were slides made from the original of the Zapruder film?

Mr. Shaneyfelt. Yes. Since it was not practical to stop the projector when using the original of the Zapruder film, because of the possibility of damage to the film, Mr. Orth volunteered to prepare ~~from the original~~, 35 millimeter color slides directly from the original movie of all of the pertinent frames of the assassination which <sup>were</sup> ~~was~~ determined to be frames 171 through frame 434.

Mr. Specter. Would you outline what you mean by frames, please?

Mr. Shaneyfelt. Yes. In motion picture films, the actual motion picture film consists of consecutive pictures that are made in rapid succession, each one being a separate exposure. And as the camera runs, it films these, and <sup>when</sup> they are projected fast enough on the screen ~~that~~ you cannot have the sense <sup>action</sup> of them being individual pictures, but you have the sense <sup>action</sup> of seeing the movement -- even though they are individual little pictures on the film. So each one of these little pictures on the film is called a frame.

Mr. Specter. And how did you number the frames?

Mr. Shaneyfelt. I ~~we~~ numbered the frames on the Zapruder film beginning with number 1 at the assassination portion of his film.

He did have on his film some photographs of a personal nature that we disregarded, and started at the first frame of his motion picture that was made there on Elm Street of the assassination.

Mr. Specter. And what was happening at the time of Frame 1?

Mr. Shaneyfelt. At the time of Frame 1, the police motorcycle lead portion of the parade is in view, and that goes for several frames.)

~~and~~ then he stopped his camera, feeling that it might be some time before the Presidential car came into view,

Then when the Presidential car rounded the corner and came into view, he started his camera again, and kept it running throughout the route down Elm Street until the car went out of sight on his right.

Mr. Specter. What other movies have been examined by you in the course of this analysis?

Mr. Shaneyfelt. An amateur 8 millimeter motion picture film made by a Mr. Orville Nix of Dallas, Texas, has been examined. Mr. Nix was standing on the corner of Houston ~~and~~

~~Streets, I believe, I am sorry, he was standing on the corner~~  
~~and~~ and Main Street, photographing the motorcade as it came down Main Street and turned right into Houston Street.

Mr. Specter. Would you explain briefly how you ascertained the location of Mr. Nix when he took those movies?

Mr. Shaneyfelt. Yes. At the time Mr. Nix took his movies

of the motorcade coming down Main Street, he was standing on the corner, and photographed them turning the corner and going down ~~Main~~ Houston Street.

Mr. Specter. You are now indicating the southwest corner of Houston and Main?

Mr. Shaneyfelt. Yes, southwest corner. After he heard the shots, he hurried down along the curb of Main Street, but did not remember exactly where he was standing. On the basis of his motion pictures, we were able to analyze the pictures using his camera, and on the 23rd of May of this year, during the survey preparatory to the reenactment, we re-established this point by viewing pictures taken from his motion pictures at varying angles across here in order to re-establish the point where he was standing, based on the relationship of this street light to other items in the background of the photograph.

Mr. Specter. When you say this point, you mean the point of the Nix position?

Mr. Shaneyfelt. Yes.

Mr. Specter. And when you say this street light, you are referring to a street lamp on the opposite side of Main Street?

Mr. Shaneyfelt. That is correct.

Mr. Specter. Would you outline in a general way how you obtained the copy of the Nix film?

Mr. Shaneyfelt. Yes.

The Nix film was obtained as a result of a notice that the

F.B.I. gave to processing plants in the Dallas area, that the F.B.I. would be interested in obtaining or knowing about any film ~~that~~ they processed that had anything on it relating to the assassination.

And, as a result of this, we learned of the Mix film and arranged to obtain a copy of it.

Mr. Specter. Did you analyze any other film in connection with this inquiry?

Mr. Shaneyfelt. Yes. <sup>I</sup> analyzed a film that was eight millimeter motion picture film taken by Mrs. Mary Muchmore of Dallas, Texas.

Mr. Specter. How did you obtain a copy of that film?

Mr. Shaneyfelt. Our first ~~knowledge~~ knowledge of this came as a result of a review of the book "Four Days" which covers the assassination period, in which representatives of the F.B.I. noted a ~~picture taken~~ colored picture taken from a motion picture film that did not match either the Mix film or the Zapruder film.

Once we established that, then we investigated and learned that it was made by Mrs. Mary Muchmore, and was at that time in the possession of United Press International in New York, and made arrangements for them to furnish us with a copy of the Muchmore film. That is the copy that <sup>I</sup> used for examination.

Mr. Specter. Where was Mrs. Muchmore standing at the time she took those movies?

## CONFIDENTIAL

Mr. Shaneyfelt. Mrs. Muchmore was standing along Houston Street, close to the corner of Main, on the ~~east~~<sup>west</sup> side of Houston Street, ~~mainly close to Main.~~

Mr. Specter. Northeast corner of Main and Houston?

Mr. Shaneyfelt. Yes. And photographed the motorcade as it came --

Mr. Specter. That is the northwest corner?

Mr. Shaneyfelt. And photographed the --

Mr. Specter. You are indicating a corner which is the northwest corner?

Mr. Shaneyfelt. Standing on the ~~northwest corner,~~  
and photographed the motorcade as it came down Main, turned into Houston, and <sup>proceeded</sup> down Houston.

She says that when she heard the shots, she panicked, and did not take any further pictures.

But a review of her film shows pictures of the assassination route, the motorcade going down Elm Street, beginning just before the shot that hit the President in the head, and continuing a short period after that.

Since she did not remember taking the pictures, we then, in the same manner we established Mr. Nix's position, by checking the photograph in relation to objects in the background, established her position along this structure that is marked on the map and found that she had come from the curb over to this point --

Mr. Specter. Indicating a position on Exhibit 883



marked "Buchmore Position."

Mr. Shaneyfelt. That is correct.

And this we ~~is~~ established as her position when she photographed ~~that~~ <sup>a</sup> portion of the assassination, motorcade.

Mr. Specter. Would you elaborate just a bit more on how you ascertained that position from fixed points in the background of the movie?

Mr. Shaneyfelt. Yes. We take a frame of the motion picture that is close to the beginning and a picture that is close to the end, and made a still photograph of those. We then established ~~a position along the suspected area~~, and try to line up the ~~positions of~~ objects close to where ~~we~~ <sup>we</sup> are standing ~~with~~ <sup>with</sup> objects in the background, so that they are in relation to each other as they are in the picture.

~~You~~ <sup>Then we</sup> take the other picture from farther ~~down~~ <sup>along</sup> the motion picture film, and do the same thing, and where those two lines intersect is where she had to be standing.

Mr. Specter. You draw two straight lines through two objects that you line up on each of those pictures, and at the intersection point of those two lines is the calculated position of the ~~film team~~ <sup>camera</sup>?

Mr. Shaneyfelt. That is correct.

Mr. Specter. And was that same system used to ascertain the position of Mr. 'Nix?

Mr. Shaneyfelt. That is correct.

CONFIDENTIAL

Mr. Specter ( . . . ) how did you ascertain <sup>the</sup> position of Mr. Zapruder?

Mr. Shaneyfelt. Mr. Zapruder's position was known, as he was on the top of the abutment along Elm Street -- he stated that he was <sup>standing</sup> on this abutment, ~~standing on the abutment~~. And there is relatively no room to move around there, other than to stand there. It is about two feet wide by three to four feet deep.

(At this point, Representative Ford entered the hearing room.)

Mr. Shaneyfelt. And aside from that, we checked that position against his photographs and determined that that was in fact correct.

Mr. Specter. Was the position of Mr. Zapruder confirmed through the use of any other film?

Mr. Shaneyfelt. Yes. In Mr. Nix's motion picture films you can see Mr. Zapruder standing on the abutment.

Senator Cooper. May I ask a question there?

After you had made those calculations to establish the position of Mrs. Muchmore and Mr. Nix and Mr. Zapruder, did you then identify those positions to the three and ask them whether or not it corresponded -- your findings corresponded with their recollection as to where they were standing?

Mr. Shaneyfelt. We did not do that, no. Mr. Nix, I might say, did state that <sup>you</sup> went down along this side -- the south

CONFIDENTIAL

side of Main Street, along the curb, and it generally conforms to where he stated he went, but he could not place the exact position.

We did, by this study.

Senator Cooper. Mr. Zapruder's position was established by another photograph?

Mr. Shaneyfelt. That is correct.

Mr. Dulles. Do I understand you correctly that Mrs. Muchmore didn't realize she had taken the later pictures that appear?

Mr. Shaneyfelt. According to her statement, she said after hearing the shots, she panicked, and didn't take any more pictures.

Mr. Dulles. You think she did?

Mr. Shaneyfelt. On the film there are pictures.

Mr. Specter. Was the position of Mrs. Muchmore and Mr. Nix ascertained through a geometric calculation, lining up as you have just described?

Mr. Shaneyfelt. Well, it is actually a geometric calculation, although no strings were drawn or no lines were drawn. It is a matter of standing in a position out there with Mr. Nix's camera, and viewing the two different photographs we had selected, until we arrived at a point that matched.

Mr. Specter. Was there reasonable mathematical certainty in that alignment, within the limits of your observations of their pictures?

CONFIDENTIAL

Mr. Shaneyfelt.

Mr. Specter. Did Mr. [redacted] himself point out his location on the abutment as depicted on 833?

Mr. Shaneyfelt. That is correct.

Mr. Specter. Now, how many occasions were you a participant in an analysis of these various films which you have just described?

Mr. Shaneyfelt. Seven.

Mr. Specter. And when was the first time that you were a participant in such an analysis?

Mr. Shaneyfelt. On January 27, 1964.

Mr. Specter. And who else has been with you at the time you analyzed those films -- just stating in a general way without identifying each person present on each of the occasions?

Mr. Shaneyfelt. Yes. On most occasions, Mr. Gauthier of the F.B.I. was present, I was present, Mr. <sup>Mailey</sup> ~~Mailey~~ of the F.B.I. was present. ~~Mr. Kelley from Secret Service~~ -- Inspector Kelley from Secret Service, and Mr. John Howlett from Secret Service.)

Representatives of the Commission were always present -- normally Mr. Redlich, Mr. Specter, Mr. Eisenberg were ~~normally~~

~~present.~~ present.)

On several occasions Mr. Pall and Mr. Belin were present. Mr. Rankin was present on some occasions.

I believe Mr. McCloy was present on one occasion.

CONFIDENTIAL

Various representatives of the Commission were present.

Mr. Specter. And how long did these analysis sessions ordinarily last?

Mr. Shaneyfelt. They would normally last most of the day, about all day.

Mr. Specter. And what would be done during the course of those analytical sessions?

Shaneyfelt. In each case we would take the film and run it through regular speed, slow motion, we would stop it on individual frames and study it frame by frame, trying to see in the photographs anything that would give any indication of a shot hitting its mark, a reaction of the President, a reaction of Mr. Connally or Mrs. Connally, a reaction of the Secret Service agents, reaction of people in the crowd, relating it to all the things that we felt were important.

When we obtained the photos from Life Magazine, we went through those very thoroughly, because they gave so much more detail and <sup>were</sup> so much clearer and analyzed again all these things about the reaction of the President and Mr. Connally, trying to ascertain where he was reacting ~~to~~ -- where either one was reacting to being hit.

Of course the only shot that is readily apparent in any of the films, and it appears in the Zapruder, the Mix and the Hickman films, is the shot that hit the President in the head.

Mr. Specter. Why do you say that is readily apparent?

CONFIDENTIAL

6701

Mr. Shaneyfelt. Because on the film there is practically an explosion of his head ~~with particles flying~~, and this is obviously the shot that hit the President in the head. It is very apparent from the photograph.

Mr. Specter. Now, were any others present at any time, such as witnesses who appeared before the Commission, during the analysis sessions on these films and slides?

Mr. Shaneyfelt. Yes.

On April 14th representatives of the Commission, F.B.I., and doctors -- Dr. Hume of the Navy, who is at Bethesda, Commander Boswell from the U.S. Navy Medical School at Bethesda, Colonel Fink, Chief of the Wound Ballistics Pathology of the Armed Forces Institute of Pathology,

Mr. Specter. Are these the autopsy surgeons?

Mr. Shaneyfelt. Yes. That is my understanding. Dr. Olivier, from Edgewood Arsenal. Dr. Light, from Edgewood Arsenal, were present also with Dr. Hume and the others, on April 14th.

Mr. Specter. Did any individuals who were present at the motorcade itself ever have an opportunity to view the films, and slides?

Mr. Shaneyfelt. Yes. On April 21 films were again viewed by representatives of the Commission and the F.B.I., and at that time Drs. Gregory and Shaw from Parkland Hospital in Dallas were available, Dr. Light, Olivier, and a Dr. Dolce, and Governor and Mrs. Connally were present.

CONFIDENTIAL

And at all of the viewings, they were again reviewed frame by frame, studied by the doctors to tie it in with their findings, studied by the Parkland doctors, and studied by the Connally's, to try to tie in where the shots occurred along the film.

Mr. Specter. I now hand you an album which has been marked as Commission Exhibit No. 885.

(The document referred to was marked Commission Exhibit 885 for identification.)

Mr. Specter. I ask you to state what that album depicts.

Mr. Shaneyfelt. ~~This is an album that I prepared of black and white photographs made of ~~all~~ of the frames in the ~~Zapruder film~~. I retract that ~~not all of the frames, but~~ the majority of the frames in the Zapruder film --~~

Mr. Specter. Starting with what frame number?

Mr. Shaneyfelt. Starting with Frame 171, going through Frame 334.

Mr. Specter. And why did you start with Frame 171?

Mr. Shaneyfelt. This is the ~~frame~~ ~~this is the~~ frame that the slides start from. This was an arbitrary frame number that was decided on as being far enough back to include the area that we wanted to study.

Mr. Specter. Is that a frame where President Kennedy comes into full view after the motorcade turns left off of Houston onto Elm Street?

CONFIDENTIAL

Mr. Shaneyfelt. Yes, ~~yes~~.

Mr. Specter. And how was the ending point of that frame sequence, being number 33<sup>1</sup>/<sub>2</sub>, fixed?

Mr. Shaneyfelt. It was fixed as several frames past the shot that hit the President in the head. Frame 313 is the frame showing the shot ~~to~~ <sup>at the ending point is</sup> the President's head, and ~~it ends~~ <sup>at 33<sup>1</sup>/<sub>2</sub>.</sup>

Mr. Specter. Are there any other photographs in that album in addition to the Zapruder frames?

Mr. Shaneyfelt. Yes, there are. There are six photographs selected at random from the Nix film, including Frame 24, which is a frame depicting the shot to the head of the President, and there are three photographs picked at random from the Muchmore film, including Frame 42, which is the frame depicting the head shot. These are the pictures that were used in establishing the location of the Nix and Muchmore cameras on location in Dallas. Frame 10, which is the first one of the Nix series, <sup>in the book</sup> is the one showing Mr. Zapruder standing on the projection.

Mr. Specter. And where was the viewing of the films and slides undertaken?

Mr. Shaneyfelt. They have been <sup>viewed</sup> ~~made~~ here at the Commission-- all those in addition to the ones I have made <sup>personally</sup> ~~made~~ in the F.B.I. Laboratory.

Mr. Specter. And was that down on the first floor of the building here?

CONFIDENTIAL



Mr. Shaneyfelt. That is correct.

Mr. Specter. And was there any model available or adjacent to the area where the films were shown for use in recreating or reconstructing the assassination events?

Mr. Shaneyfelt. Yes, the model was available and used.

Mr. Specter. Is that the model which has been described earlier this afternoon by Inspector Gauthier?

Mr. Shaneyfelt. That is correct.

Mr. Specter. Were you present on May 24 in Dallas, Texas?

Mr. Shaneyfelt. Yes.

Mr. Specter. And what, if anything, was done at the site of the assassination on that date?

Mr. Shaneyfelt. On May 24, 1963, representatives of the Commission, Secret Service and the D.D. re-enacted the assassination, relocated specific locations of the car on the street based on the motion pictures, and in general staged a re-enactment.

Mr. Specter. Who was present at that time representing the Commission?

Mr. Shaneyfelt. The Commission was represented by Mr. Rankin, Mr. Specter, and Mr. Redlich.

Mr. Specter. And who was present at that time from the F.B.I.?

Mr. Shaneyfelt. I was present, Inspector Gauthier was present, Inspector J. R. Malley was present, Special Agent R. A. Frazier was present, with some aides, assistants.

Mr. Specter. Other aides from the F.B.I. were also present?

CONFIDENTIAL

Mr. Shaneyfelt. Yes. In addition, there were several agents from the Dallas office of the Federal Bureau of Investigation who assisted.

Mr. Specter. And were there representatives of the Secret Service participating in that on-site testing?

Mr. Shaneyfelt. Yes, there were. Inspector Kelley was present, Agent John Howlett was present, the driver of the car, ~~the~~ Secret Service agent whose name I do not recall, --

Mr. Specter. George Hickey?

Mr. Shaneyfelt. That is correct.

Mr. Specter. And at what time did the on-site test start?

Mr. Shaneyfelt. They started at 6 o'clock Sunday morning.

Mr. Specter. Why was that time selected?

Mr. Shaneyfelt. The time was selected because of the traffic in the area. The Dallas Police Department recommended that that would be the most logical time to do it, ~~because~~ the least problem with traffic.

Mr. Specter. At what time did the on-site tests conclude?

Mr. Shaneyfelt. They concluded about 1 o'clock, 12:45 to 1 o'clock.

Mr. Specter. Was there any subsequent testing done in Dallas on that day?

Mr. Shaneyfelt. Yes, there was.

Mr. Specter. And where was that testing undertaken?

Mr. Shaneyfelt. There was some testing done in a railway

express agency garage nearby the assassination site.

Mr. Specter. At what time did that start?

Mr. Shaneyfelt. That started at 3 p.m., and lasted until 5:30 p.m.

Mr. Specter. Where were the various individuals positioned who participated in these on-site tests at the outset, at, say, 6 a.m., on the 24th of May?

Mr. Shaneyfelt. At the very beginning, at 6 a.m., Mr. Martin and Mr. Specter were in the sixth floor window of the Texas School Book Depository Building, which is the southeast corner of the building, sixth floor window, which was referred to as our control point, and where we had the master radio control for the other units.

Mr. Redlich was on the street with the car. At the car on the street were the occupants of the car, the Secret Service driver, Mr. Hickey, an agent from the F.B.I, who handled radio contact with control, Agents Anderson and Williams in the President's and Connolly's seats, Mr. Gauthier and his aide, a surveyor, and I, were all on the ground in the vicinity of the car.

Agent Frazier was in the window of the book building at the control point with the rifle that was found at the window following the assassination.

Mr. Specter. Now, was that rifle found at the window or in another location on the sixth floor?

CONFIDENTIAL

Mr. Shaneyfelt. In [redacted] on the sixth floor.

Mr. Specter. And the [redacted] other Carcano Rifle which was heretofore identified as Commission Exhibit No. 139?

Mr. Shaneyfelt. That [redacted]

Mr. Specter. And where were you positioned on most of the occasions at the time of the in-situ tests?

Mr. Shaneyfelt. For the first portion of them, I was at the car in the street, and at the position of Mr. Zapruder, the position from which he took his pictures.

Mr. Specter. What communications were available, if any, among the participants at the various locations heretofore described?

Mr. Shaneyfelt. We had radio contact between all points.

Mr. Specter. What was the starting position of the car at the most easterly position on Elm Street, immediately after turning off Houston Street?

Mr. Shaneyfelt. The first position we established that morning was Frame 161.

Mr. Specter. Was there not a position established prior in sequence to Frame 161, specifically that designated as position A?

Mr. Shaneyfelt. That was actually <sup>established</sup> ~~position~~ later. ~~A position on earlier position.~~ But the first one to be actually located was 161. And we went back later and positioned Point A.

Mr. Specter. Well, let's start with the position which is in the most easterly point on Elm Street, which I believe would

CONFIDENTIAL

be position A, would it not?

Mr. Shaneyfelt. Yes.

Mr. Specter. Have you a photographic exhibit depicting that position?

Mr. Shaneyfelt. Yes. In each of the positions that we established, we used, insofar as possible, the Zapruder pictures to establish the position, or we established it from the window, and made photographs from the position Mr. Zapruder was standing in.

This chart has been marked as Commission Exhibit 885.

(The document referred to was marked Commission Exhibit 886 for identification.)

Mr. Shaneyfelt. This shows the photograph that was made from the point where Zapruder was standing <sup>looking</sup> towards the car, and is a point that we have designated as Position A because it is in a position that did not appear on the Zapruder film.

The Zapruder film does not start until the car gets farther down Elm Street.

Mr. Specter. What is that exhibit number?

Mr. Shaneyfelt. 886.

Mr. Specter. And why was that location selected for the position of the car?

Mr. Shaneyfelt. That location was selected as the first point at which a person could see through the window of the Book Building at our control and could have gotten a shot at the

## CONFIDENTIAL

President after the car had rounded the corner from Houston to Elm.

Mr. Specter. And what position is Station C?

Mr. Shaneyfelt. Station C is <sup>on</sup> a line drawn along the west curb line of Houston Street in a direct line, and Station C is at a point along that line that is in line with where the car would have turned coming around that corner. It is on a line which is an extension of the west curb line of Houston Street.

Mr. Dulles. Where is Position A on that chart?

Mr. Shaneyfelt. Position A is here.

Mr. McCloy. That is before you get to the tree?

Mr. Shaneyfelt. Yes. He isn't under the tree yet.

Mr. Specter. And what occupant, if any, in the car is Position A sighted on for measuring purposes?

Mr. Shaneyfelt. All of the photographs made through the rifle sight that are shown on the exhibit in the lower left-hand corner were sighted on the spot that was simulating the spot where the President was wounded in the neck. The chalk mark is on the back of the coat.

Mr. Specter. When you say that Position A is the first position at which President Kennedy was in view of the marksman from the southeast window on the sixth floor of the School Book Depository Building, you mean by that the first position where the marksman saw the rear of the President's stand-in?

Mr. Shaneyfelt. That is correct.

Mr. Specter. So the first position where the marksman could focus in on a point where the point of entry on the President's neck.

Mr. Shaneyfelt. That is correct.

Mr. Specter. Could the marksman then have taken a shot at the President at any prior position and have struck him with the point of entry on that spot, on the base of the President's neck?

Mr. Shaneyfelt. I don't quite understand the question.

Mr. Specter. Was there any prior position, that is a position before Position A, where the marksman from the sixth floor could have fired the weapon and have struck the President at the known point of entry at the base of the back of his neck?

Mr. Shaneyfelt. No, because as the car moves back, you lose sight of the chalk mark on the back of his coat.

Mr. Specter. And what is the distance between that point on the President and Station C?

Mr. Shaneyfelt. That is 44 feet from Station C.

91.6 feet to the rifle in the window from the actual chalk mark on the coat. All measurements were made <sup>to</sup> ~~on~~ the chalk mark ~~on the coat.~~ on the coat.

Mr. Specter. On the coat of the President?

Mr. Shaneyfelt. That is correct.

Mr. Specter. The President's stand-in?

Mr. Shaneyfelt. Right. The angle to the rifle in the window

was 40 degrees and 0 minutes **CONFIDENTIAL**

Mr. Specter. And what is the other angle?

Mr. Shaneyfelt. The distance to the overpass was 447 feet,  
and the angle to the overpass was <sup>minus 27 degrees,</sup> 27 minutes; *that is, 27 minutes below the horizontal.*

Senator Cooper. May I ask a question there?

How did you establish the location of the rifle in making these calculations?

Mr. Shaneyfelt. The location of the rifle was established on the basis of other testimony and information furnished to us by the Commission, photographs taken by the Dallas Police Department immediately after the assassination, the known opening of the window.

It was an estimation of where the rifle most likely was, based on the knowledge that the bullet had through testimony.

Mr. Specter. Senator Cooper, Mr. Frazier is present and has been sworn, and he is going to testify that. He could do it at this time, to pinpoint the location.

Senator Cooper. I think you should make a note of that, and go ahead with this witness.

Mr. Specter. Fine.

We will proceed then with this witness and Mr. Frazier will testify in due course.

Mr. Shaneyfelt. I might say that this position was determined by Mr. Frazier in the window. We moved the car around until he told us from the window, viewing through the rifle, the point where



CONFIDENTIAL

He wanted the car to stop. And he was the one in the window  
that told us where the point A was. Once he established that,  
we then photographed it.

Mr. Dulles. Could he see the mark on the back of the coat  
from the window?

Mr. Shaneyfelt. Yes. Through the rifle scope, he could  
see the mark.

Mr. Spector. Does the picture designated "Photograph  
through Rifle Scope" depict the actual view of the rifleman  
of the actual Mannlicher Garcano weapon?

Mr. Shaneyfelt. That is correct, is Point A.

Mr. Spector Cooper. When Mr. Brazier testifies, then, will he  
correlate this photograph with a frame from photographs taken  
of the actual motorcade at the time of the assassination?

Mr. Shaneyfelt. No. We cannot correlate this with a frame  
of the motion picture because ~~the motion picture~~ Mr. Zapruder  
didn't start taking pictures until the car had passed this point.

So we, therefore, on this frame and for the next two or  
three points, have no picture from Mr. Zapruder, since he wasn't  
taking pictures at that time.

Mr. Dulles. Off the record.

(Discussion off the record.)

Mr. Dulles. Back on the record.

Do I understand that you are not suggesting that a shot was  
fired at this point A, but this was the first point

CONFIDENTIAL

where this particular witness's back could have been obtained?

Mr. Shaneyfelt. That is correct. It is only an arbitrary point showing the first possible shot that could have entered the President's coat at this chalk mark.

Rep. Ford. What criteria did you use for determining that you could see the chalk mark? Was the criteria a part of a whole of the chalk mark?

Mr. Shaneyfelt. The actual manner in which it was set up -- let me see if this answers your question. As we moved the car around, Mr. Frasier <sup>was</sup> in the window looking through the actual ~~scope~~ scope of the rifle, and <sup>could</sup> see very clearly the President or the man taking the President's place, as the car moved <sup>d</sup> around.

And the instant that he ~~was~~ <sup>could</sup> see that chalk mark is the point where he radioed to us to stop the car, and is the first point at which <sup>a</sup> ~~the~~ shot could be fired that would go <sup>in</sup> ~~to~~ where the chalk mark is <sup>located</sup>.

Mr. Dulles. And that is Point A?

Mr. Shaneyfelt. That is Point A.

Does that answer your question?

Rep. Ford. I think it does.

Is that picture in the lower left-hand corner of Exhibit 836 an actual photograph taken through the sight of the weapon that was allegedly used in the assassination?

CONFIDENTIAL

Mr. Shaneyfelt. That is correct.

Rep. Ford. And the way we see there is through that sight?

Mr. Shaneyfelt. That is correct. And that is exactly what an individual looking through the sight would see.

Mr. Specter. Then a person like the rifleman see the entire back of the President as well as the specific chain mark, as depicted on the exhibit?

Mr. Shaneyfelt. He would not only a portion of the back.

Mr. Specter. And the portion which he could not see is that which is below the seat level?

Mr. Shaneyfelt. Yes.

Mr. Dulles. You didn't say the President's stand in, did you?

Mr. Specter. Yes -- stand-in.

Mr. Shaneyfelt, for the purposes of illustration would you produce the photograph at this time showing the mounting of the motion picture camera on the weapon found on the sixth floor?

I now hand you a photograph which is being marked as Commission Exhibit No. 887 and ask you to state for the record who that is a picture of. And what else is in the photograph.

(The document referred to was marked Commission Exhibit 887 for identification.)

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Mr. Shaneyfelt. Commission Exhibit 837 is a picture of me that was taken on May 24, 1964. My location was <sup>at</sup> the 6th floor window of the Texas School Book Depository that we have ~~been~~ designated as our control point. I have the rifle that ~~is~~ <sup>is</sup> ~~the~~ the assassination rifle mounted on a tripod, and on the rifle is mounted an ~~Ariflex~~ <sup>ARIFLEX</sup> 16mm motion picture camera, that is aligned to take photographs through the telescopic ~~scope~~ <sup>sight</sup>.

<sup>Ariflex</sup>  
This ~~Ariflex~~ motion picture camera is commonly known as a reflex camera in that, as you view through the view finder a prism allows you to view directly through the lens system as you are taking your photographs so that as I took the photographs looking into the view finder I was also looking through the scope and seeing the actual image that was being recorded on the film.

Mr. Specter. Was the view recorded on the film as shown on 838 the actual view which would have been seen had you been looking through the telescope of the Mannlicher Carcano itself?

Mr. Shaneyfelt. Yes.

Mr. Specter. How did you determine the level and angle at which to hold the rifle?

Mr. Shaneyfelt. I placed the rifle in the approximate position based on prior knowledge of where the boxes were stacked and the elevation of the window and other information that was furnished to me by representatives of the Commission.

Mr. Specter. You used the same boxes, did you, that the

CONFIDENTIAL

assassin had used?

Mr. Shaneyfelt. No. I did not.

Mr. Specter. Were those boxes used by Mr. Frazier.

Mr. Shaneyfelt. They were used by Mr. Frazier and used in making the measurements. I had to use a tripod because of the weight of the camera and placed the elevation of the rifle at <sup>an</sup> approximate height <sup>in a</sup> ~~at~~ position as though the boxes were there.

Mr. Specter. Was Mr. Frazier present at the time you positioned the rifle on the tripod?

Mr. Shaneyfelt. Yes, he was.

Mr. Specter. Did he assist in describing for you or did <sup>you</sup> have an opportunity to observe the way he held a rifle to ascertain the approximate position of the rifle at that time?

Mr. Shaneyfelt. That is correct.

Mr. Specter. May it please the Commission, we will with Mr. Frazier indicate the reasons he held the rifle in the way he did to approximate the way we believe it was held at the time of the assassination.

What is the next position which has been depicted on one of your exhibits, please.

Mr. Shaneyfelt. The next position that we established <sup>during</sup> ~~during~~ the re-enactment is frame 161 of the Suprunder motion picture film.

Specter. Permit me to remark that if you would as Exhibit

CONFIDENTIAL

No. 288.

(Commission Exhibit No. 288 was marked for identification.)

Mr. Shaneyfelt. This position which has been designated ~~X~~ by us as frame 161 and as Commission Exhibit 288, was established as the last position that the car could be in where the rifleman in the window could get a clear shot of the President in the car before the car went under the covering of the trees.

Mr. Specter. How was that position located, from the ground or from the 6th floor?

Mr. Shaneyfelt. This was positioned by Mr. Frazier in the 6th floor <sup>window</sup>. In addition we knew from the Zapruder photographs the relative position of the car in the street as related to the curb and the guidelines or the lane lines.

Following those lane lines we then moved the car down to a point where Mr. Frazier indicated to us <sup>that it</sup> was the last point at which he could get a clear shot <sup>we</sup> and stopped the car there.

Mr. Specter. How did you then select the appropriate frame from the Zapruder film?

Mr. Shaneyfelt. After Mr. Frazier had stationed the car at this point, I then went to the position of Mr. Zapruder. Based on his motion pictures, a comparison of the photograph that we made with the photograph <sup>from</sup> of the film, ~~I~~ <sup>I</sup> was able to state that because of the relative position of the car in the street and in relation to other objects in the background, ~~it~~ <sup>it</sup> corresponded to frame 281 of the motion picture.

CONFIDENTIAL

6718

Mr. Specter. Do you have on 888 a reproduction of frame 161?

Mr. Shaneyfelt. Yes. The upper lefthand corner is a reproduction of ~~the~~ frame 161 of the Zapruder motion picture. The picture on the upper right is a photograph that I made with a speed graphic camera from Zapruder's position of the car re-established in that location.

The photograph in the ~~lower right hand corner~~

~~Mr. Specter. Lower lefthand corner?~~

~~Mr. Shaneyfelt.~~ Lower lefthand corner, is a photograph of the view through the rifle scope that Mr. Frazier saw at the time he positioned the car there. This is the view that you would obtain from looking through the rifle <sup>scope from</sup> the 6th floor window.

Mr. Specter. Was the automobile in exactly the same position at the time of the taking of the "photograph through rifle scope" and the "photograph from re-enactment,"?

Mr. Shaneyfelt. Yes, approximately the same. We went through all stations with Mr. Frazier in the window and I took photographs from Mr. Zapruder's position, and once establishing a frame position, <sup>we</sup> marked it clearly in the street, ~~and~~ After we had taken all of the photographs from Zapruder's position, we then took the car back, and <sup>I</sup> ~~we~~ went to the 6th floor window and mounted the motion picture camera, <sup>and</sup> ~~and~~ these photographs were made by rolling the car in the same position based on the marks we had in the street so it was as accurately <sup>as possible</sup> as could be done, in.

the same position.

Mr. Dulles. There is no one sitting in that right-hand corner of the rear seat, is there in that picture?

Mr. Shaneyfelt. Yes, the person taking President Kennedy's place is sitting in the back seat.

Mr. Dulles. Yes, I see it. It is rather hard to see through the trees.

Mr. Shaneyfelt. Yes. We moved it up to a point where the chalk mark was just about to disappear on the street.

Mr. Dulles. I don't think I see the chalk mark maybe one can.

Mr. Shaneyfelt. It may be covered by the crosshair of the rifle scope.

Rep. Ford. In that picture photographed through the rifle scope on 888 a man standing in for Governor Connally is also in the car, is he not?

Mr. Shaneyfelt. That is correct.

He is mostly hidden by the tree.

Mr. Dulles. Yes, I see.

Mr. Specter. Was there any difference between the position of President Kennedy's stand-in and the position of President Kennedy on the day of the assassination by virtue of any difference in the automobiles in which each rode?

Mr. Shaneyfelt. Yes. Because of the difference in the automobiles there was a variation of ten inches<sup>a</sup> vertical distance of



CONFIDENTIAL

6720

ten inches that had to be considered. The stand-in for President Kennedy was sitting ten inches higher and the stand-in for Governor Connally was sitting ten inches higher than the President and Governor Connally were sitting and we took this into account in our calculations.

Mr. Specter. Was any allowance then made in the photographing of the first point or rather last point at which the spot was visible on the back of the coat of President Kennedy's stand-in before passing under the Oak tree?

Mr. Shaneyfelt. Yes, there was. ~~We~~ After establishing this position where, represented by frame 161, where the chalk mark was about to disappear under the tree, we established a point ten inches below that as the actual point where President Kennedy would have had a chalk mark on his back or where the wound would have been in the car that was ten inches lower and we rolled the car then sufficiently ~~far enough~~ <sup>forward</sup> ahead to re-establish the position that the chalk mark would be in at its last clear shot before going under the tree, based on this ten inches ~~lower~~, and this gave us frame 166 of the Zapruder film.

Mr. Specter. What Commission Exhibit number has been affixed to that?

Mr. Shaneyfelt. This is Commission No. 889.

(Commission Exhibit No. 889 was marked for identification.)

Mr. Dulles. Is that ten inches difference due to the difference in the two cars?

Mr. Shaneyfelt. That is correct.

Mr. Dulles. That is the President's -- the car the President was in and the car you had to use for this particular test?

Mr. Shaneyfelt. That is correct.

Mr. Specter. On Exhibit 889, is the car in the same position on the "photograph through rifle scope" as it is on "photograph from re-enactment"?

Mr. Shaneyfelt. That is correct, the same position.

Mr. Specter. And what is the comparison between the photograph from Zapruder film on that Exhibit 889 and the photograph from re-enactment?

Mr. Shaneyfelt. The car is in the same position relative to the surrounding area in both the re-enactment photograph and the Zapruder photograph.

Incidentally, the position that was used throughout all of the positioning of the car was the President's <sup>his</sup> placement, ~~in~~ in the photograph, and this will be clearer in some of the later photographs, ~~but~~ if the President's head was directly under a stop sign or a street sign or whatever, in the background, this was then the way we positioned the car with the person standing in for the President directly below or slightly to the side or directly below the stop sign and so on, so all of the calculations were based upon the position of the President.

Mr. Specter. Before leaving 161 finally, would you recite the distances which appear from the various points on that exhibit?

CONFIDENTIAL

6732

Mr. Shaneyfelt. Yes.

At the position that has been designated as frame 161, and appears on Commission Exhibit 888, the distance from the wound mark on a stand-in for President Kennedy to station C was 94.7 feet.

The distance to the rifle in the window was 137.4 feet, the angle to the window was 26 degrees 58 minutes based on the horizontal line, the distance to the overpass was 392.4 feet, and the angle to the overpass was <sup>minus zero degrees,</sup> 7 minutes.

Mr. Specter. Are all angles calculated there, based on the horizontal?

Mr. Shaneyfelt. Yes.

Mr. Specter. Was there any street angle taken into consideration in the calculations here?

Mr. Shaneyfelt. Yes. There is a 3 degree street grade that has to be deducted from the angle to the window to determine the actual angle from the street to the window as opposed to the horizon.

Mr. Specter. Will you now --

Mr. Dulles. Frame 161 is 3 degrees on 161?

Mr. Shaneyfelt. Three degrees all along Elm Street.

Mr. Dulles. All along. What applies to all of these different pictures, is that correct?

Mr. Shaneyfelt. That is correct.

Mr. Specter. Would you now read the same statistical data

CONFIDENTIAL

from frame 166 on Exhibit ~~3~~ please?

Mr. Shaneyfelt. Yes.

~~Distance to station C~~ From the chalk mark on the back of the stand-in for President Kennedy, to station C is 95.6 feet, the distance <sup>to</sup> rifle <sup>in</sup> window, 138.2 feet, the angle to rifle in window based on <sup>the horizontal</sup> window ~~is~~ 26 degrees 52 minutes.)

Distance to overpass is 391.5 feet. The angle to the overpass is <sup>minus zero</sup> ~~no~~ degrees 7 minutes.

Mr. Specter. Did the back of President Kennedy ever come into view at any time while he was passing through the foliage of the oak tree?

Mr. Shaneyfelt. Yes.

Mr. Specter. What frame number was ascertained with respect to that position?

Mr. Shaneyfelt. This was determined to be frame 185. There is a slight opening in the tree, <sup>where</sup> as the car passed under the tree, where a shot could have been fired that would have <sup>passed</sup> ~~missed~~ <sup>through this opening in</sup> the tree. This again was positioned on the basis of Mr. Frazier in the window looking through the rifle scope and telling us on the street where to stop the car at the point where he could get a shot through the trees.

Mr. Specter. What Commission Exhibit number has been assigned to frame 185?

Mr. Shaneyfelt. This is Commission No. 890, frame 185.

Mr. Specter. Is the photograph through rifle scope <sup>taken with</sup> ~~taking~~

CONFIDENTIAL

the position of the car at the same place as photograph from re-enactment?

Mr. Shaneyfelt. That is correct.

Mr. Specter. And is the photograph from re-enactment in the same position, as close as you could make it to the photograph from Zapruder's film?

Mr. Shaneyfelt. That is correct.

Mr. Specter. Will you read the statistical data from frame 185?

Mr. Shaneyfelt. Yes, from the <sup>point</sup> position of the chalk on the back of the stand-in for the President <sup>at</sup> to position 185 to station C is 114.8 feet, the distance to rifle <sup>in</sup> window is 154.9 feet,

The angle to rifle in window based on horizontal is 24 degrees 14 minutes, distance to overpass is 372.5 feet.

The angle to the overpass is zero degrees three minutes; <sup>about horizontal.</sup>

Mr. Specter. Was there any adjustment made for the difference in the height of the automobiles on the location where the back of the President's stand-in was visible through the tree?

Mr. Shaneyfelt. Yes, there was an adjustment made for the ten inch differential <sup>in</sup> for the heights because of the different cars, and this was established as frame 186.

Mr. Specter. What Commission exhibit number is affixed to frame 186?

Mr. Shaneyfelt. Commission Exhibit No. 891.

Mr. Specter. On 891 is the car in the same position that

photograph through rifle scope and photograph from re-enactment?

Mr. Shaneyfelt. That is correct.

Mr. Specter. Are the cars on those two pictures in the same positions on all of the frames which you are going to show this afternoon?

Mr. Shaneyfelt. That is correct.

Mr. Specter. In the photograph from Zapruder film, does that photograph from Zapruder film show the Presidential automobile to be in the same position or as close to the same position as you could make it as is the replica car in the photograph from re-enactment?

Mr. Shaneyfelt. That is correct.

Mr. Specter. Will you read the statistical data from 186, please?

Mr. Shaneyfelt. Yes.

At ~~point from~~ 186 position the distance from the chalk mark on the back of the stand-in for the President was 116.3 feet from the station C. It was 156.3 feet ~~from the window,~~ <sup>to</sup> the rifle in the window.)

The angle to the rifle in the window was 24 degrees 3 minutes based on the horizontal. Distance to the overpass was 371.7 feet. The angle to the overpass is zero degrees 3 minutes.

Mr. Specter. Was the position ascertained where the chalk spot on the back of President Kennedy's coat was first visible from the 6th floor window through the telescopic sight?

**CONFIDENTIAL**

Mr. Shaneyfelt. That is correct.

Mr. Dulles. This is after passing the tree.

Mr. Shaneyfelt. Yes.

Mr. Specter. After passing out from under the oak tree.

Mr. Shaneyfelt. Yes.

Mr. Specter. What frame did that turn out to be?

Mr. Shaneyfelt. That was frame 207.

Mr. Specter. Do you have an exhibit depicting the same photographic sequence on frame 207?

Mr. Shaneyfelt. Yes, I do.

Mr. Specter. What Commission Exhibit number has been affixed to that frame?

Mr. Shaneyfelt. Commission Exhibit No. 892.

Mr. Specter. Is the car in the same position on photograph through rifle scope and photograph from re-enactment on that exhibit?

Mr. Shaneyfelt. Yes.

Mr. Specter. Is the car in the same position, as closely as you could make it on the photograph from re-enactment and photograph from Zapruder film?

Mr. Shaneyfelt. That is correct.

Mr. Specter. Will you now read the statistical data from that exhibit?

Mr. Shaneyfelt. Yes.

Distance from the chalk mark on the back of the stand-in for

**CONFIDENTIAL**

the President to the station C is 136.6 feet.)

Distance to rifle in the window is 174.9 feet. The angle to the rifle in the window based on the horizontal is 21 degrees 50 minutes. The distance to the overpass is 350.9 feet, and the angle to the overpass is zero degrees 12 minutes.

This is on frame 207, Commission 892.

Mr. Specter. Was an adjustment made on that position for the heights of the automobiles?

Mr. Shaneyfelt. Yes.

Mr. Specter. What was the adjustment made for the first view that the marksman had of the President's stand-in coming out from under the tree?

Mr. Shaneyfelt. That is frame 210 and has been marked as Commission Exhibit No. 893 and represents the ten-inch adjustment for the difference in the height of the car as compared with frame 207.

Mr. Specter. Is the layout of frame 210 exactly the same as that for 207 and 185 that you have already testified about?

Mr. Shaneyfelt. That is correct.

Mr. Specter. In viewing the films on the frames preceding 210, what was President Kennedy doing?

Mr. Shaneyfelt. He <sup>was</sup> waving to the crowd, and in some frames it is obvious that he <sup>was</sup> smiling, you can actually see a happy expression on his face and his hand --

Mr. Dulles. Which way is he turning, to the left or to the



CONFIDENTIAL

right?

Mr. Shaneyfelt. He is looking toward the crowd to his right during most of that area, he is looking slightly to his right. His arm is up on the side and his hand is in a wave in approximately this position and he appears to be smiling.

Mr. Specter. What is the latest frame count where, to your eye it appears that he is showing no reaction to any possible shot?

Mr. Shaneyfelt. Apparently-- I would like to explain a little bit, that at frames in the vicinity of <sup>200</sup>215 to <sup>210</sup>218 he is <sup>obviously</sup> obviously still waving, and there is no marked change.

*delete*

~~Mr. Specter. You say 215 to 210?~~

~~Mr. Shaneyfelt. Yes, in that general area.~~

~~Mr. Dulles. Is 215 to 210 or 210 to 215?~~

~~Mr. Shaneyfelt. As he is coming toward me, yes, 210 to 215, yes, I am sorry, 210 to 215 there is very little difference in his appearance from what it was back beyond 210, he is waving.~~

~~Mr. Specter. Will you take a look at Exhibit 885 to double-check yourself on that, please?~~

~~Mr. Shaneyfelt. I was going the wrong way, you are right.~~

~~I was~~ ~~correctly~~ ~~framed~~ that in the area from approximately ~~200~~ <sup>200</sup> to 205 he is ~~still~~, his hand is still in a waving position, he is still turned slightly toward the crowd, and there has been no change in his position that would signify anything occurring

unusual, I see nothing in the frames to arouse my suspicion

about his movements, up through ~~in~~ the areas from 200 on and as he disappears behind the signboard, there is no change.

Now, ~~at~~ 205 is the last frame, 205 and 206 are the last frames ~~where we see any of him~~ where we see the cuff of his coat showing above the signboard indicating his hand is still up generally in a wave.

From there on the frames are too blurry as his head disappears you can't really see any expression on his face. You can't see any change. It is all consistent as he moves in behind the signboard.

Mr. Specter. When you say "signboard" what do you mean by that, Mr. Shaneyfelt?

Mr. Shaneyfelt. I refer to the sign that is between the photographer, Mr. Zapruder, and the Presidential car.

Rep. Ford. Not any sign post between the rifleman and the President?

Mr. Shaneyfelt. No. This is a sign between the cameraman and the President. So that we are unable to see his reaction, if any.

Mr. Specter. What is the frame at which Governor Connally first emerges from behind the sign you just described?

Mr. Shaneyfelt. That is frame 222.

Mr. Specter. Have you prepared a model demonstration on frame 222?

Mr. Shaneyfelt. Yes, I have.

CONFIDENTIAL

6730

Mr. Specter. What Commission Exhibit number has just been affixed on that frame?

Mr. Shaneyfelt. Frame 222 has been given Commission Exhibit No. 894.

Mr. Specter. Was the location of the automobile fixed from the window or from the street on frame 222?

Mr. Shaneyfelt. ~~On~~ On frame 222, the position of the automobile was fixed from the street, based on the photograph from the Zapruder film.

Mr. Specter. Are the various photographs on that frame and the various distances the same in terms of general layout as the prior exhibit you testified to?

Mr. Shaneyfelt. That is correct.

Mr. Specter. What is the first frame at which President Kennedy is visible coming from behind that sign?

Mr. Shaneyfelt. This is frame 225.

Mr. Specter. What Commission exhibit has been affixed to frame 225?

Mr. Shaneyfelt. Frame 225 has been assigned Commission Exhibit No. 895.

Mr. Specter. What, if anything, is detectable from a view of the Zapruder film frame 225 as to the positions or reaction of President Kennedy?

Mr. Shaneyfelt. <sup>NY</sup> Frame 225 there appears to be a reaction on the part of the President. This is --

CONFIDENTIAL

CONFIDENTIAL

6731

Mr. Specter. Describe specifically what movement he is making in that picture or what his position is?

Mr. Shaneyfelt. In frame 225 his hand is down, his right hand that was waving is down, and has been brought down as though it were reaching for his lapel or his throat. The other hand, his left hand is on his lapel but rather high, coming as though it were coming up, and he is beginning to go into a hunched position.

Mr. Specter. When you say beginning to go into a hunched position is that apparent to you from viewing the motion picture and slides from the frames which succeed frame 225?

Mr. Shaneyfelt. That is primarily apparent from the motion picture because of the two or three or four frames that show as he emerges from the sign.

There is, in the motion picture, you see the President reaching for his coat lapels and going into <sup>to</sup> a hunched <sup>id</sup> position, leaning forward and lowering his head.

Mr. McCloy. That doesn't exist in 225 yet, does it?

Mr. Shaneyfelt. It is just beginning in frame 225. That is, frame 225 is the first view we have of the President.

Mr. McCloy. Out past the sign.

Mr. Shaneyfelt. As he comes out from behind the sign that obstructs the cameraman from the President.

Mr. Dulles. But there is no obstruction from the 6th floor window?

CONFIDENTIAL

0134

Mr. Shane. Yes, no obstruction at this point. There is no obstruction from the 6th floor window from the time they leave the tree until they disappear down toward the triple overpass.

Mr. Specter. Do the photographs on 225 depict the same circumstances as those depicted on the prior exhibits?

Mr. Shaneyfelt. That is correct.

Mr. Specter. And do the measurements on 225 cover the same subjects as those covered on prior exhibits?

Mr. Shaneyfelt. That is correct.

Mr. Specter. What is the angle from the rifle to the spot on the President's back on Exhibit 210, please?

Mr. Shaneyfelt. On frame 210, the angle from the rifle <sup>in</sup> to the window, based on the horizon is 21 degrees 34 minutes.

Mr. Specter. That is from the rifle to what, Mr. Shaneyfelt.

Mr. Shaneyfelt. From the rifle to the chalk mark on the back of the stand-in for the President.

Mr. Specter. What is the same angle at frame 225?

Mr. Shaneyfelt. It is 20 degrees 11 minutes.

Mr. Specter. Those angles are computed to the horizontal?

Mr. Shaneyfelt. That is correct.

Mr. Specter. What is the range of distance from frame, from the position of the car, frame 210 to the position of the car in frame 225?

Mr. Shaneyfelt. That is ~~15 feet, 15.1 feet~~ no, 14.9 feet.

CONFIDENTIAL

Between frame 210 and frame 225.

Mr. Specter. What is the position of President Kennedy at frame 210 with respect to position C.

Mr. Shaneyfelt. President Kennedy is 138.9 feet from Station G at frame 210.

Mr. Specter. Station C.

Mr. Shaneyfelt. Yes, station C to President Kennedy on frame 210 is 138.9 feet.

Mr. Specter. What is the distance between station C and President Kennedy at frame 225?

Mr. Shaneyfelt. That is 153.8 feet.

Mr. Specter. Was the car further positioned at frame 231?

Mr. Shaneyfelt. Yes, it was.

Mr. Specter. What Commission exhibit number are we affixing to that?

Mr. Shaneyfelt. That is Commission Exhibit 896.

Mr. Specter. Are the photographs and measurements on 896 the same layout as those affixed to prior exhibits?

Mr. Shaneyfelt. That is correct.

Mr. Specter. Was the automobile stopped at frame 235 and similar photographs and measurements taken?

Mr. Shaneyfelt. That is correct.

Mr. Specter. What exhibit number is affixed to frame 235.

Mr. Shaneyfelt. Exhibit 897.

Mr. Specter. Was the automobile again stopped at frame 240

CONFIDENTIAL

with measurements and photographs taken similar to those in prior exhibits?

Mr. Shaneyfelt. Yes, it was. What is correct.

Mr. Specter. What Commission exhibit number is affixed to that frame?

Mr. Shaneyfelt. No. 838.

Mr. Specter. Was the automobile again stopped at frame 249 with similar photographs and measurements taken?

Mr. Shaneyfelt. That is correct.

Mr. Specter. And what Commission exhibit number is given to those calculations and photographs on frame 249?

Mr. Shaneyfelt. Commission Exhibit 899.

Mr. Specter. Now, as to frame 249, that is how many frames beyond the first point at which the spot on President Kennedy's back was visible after he passed out from under the oak tree?

Mr. Shaneyfelt. That is 249?

Mr. Specter. Yes.

Mr. Shaneyfelt. It is 42.

Mr. Specter. And does a 42 frame count approximately have any significance with respect to firing time on the Mannlicher Carcano rifle?

Mr. Shaneyfelt. Yes, we have established that the Zapruder motion picture camera operates at an average speed of 18.3 frames per second. And we have been advised that the minimum time for firing the rifle in successive shots is approximately two and

CONFIDENTIAL

a quarter seconds. So this gives us then a figure of two and a quarter seconds of frames; at 18.3 <sup>this</sup> gives us this figure of 41 to 42 frames.

Rep. Ford. Would you repeat that again, please.

Mr. Shaneyfelt. The camera operates at a speed of 18.3 frames per second. So that in two and a quarter seconds it would run through about 42, 41 to 42 frames.

Rep. Ford. Then the firing of the rifle, repeat that again?

Mr. Shaneyfelt. <sup>As to</sup> the firing of the rifle, we have been <sup>well aimed</sup> advised that the minimum time for getting off two successive shots on the rifle is approximately two and a quarter seconds. That is the basis for using this 41 to 42 frames to establish two points in the film where two successive quick shots could have been fired.

Rep. Ford. That is with one shot and then the firing.

Mr. Shaneyfelt. Work the bolt and fire another one.

Mr. Specter. At frame 249 was Governor Connally in a position where he could have taken a shot with the bullet entering at the point immediately to the left under his right armpit with the bullet then going through and exiting at a point immediately under his right nipple, *assuming the bullet followed an undeflected path;*

Mr. Shaneyfelt. No, <sup>continued</sup> if the bullet ~~traveled~~ in a straight ~~line~~ path.

Governor Connally has begun to turn in his seat around in this manner, in such a way, turn to his right so that his body is in a position that a shot fired from the 6th floor window



portedly

could not have passed through the path that it took through his body, *if the bullet followed a straight, undeflected path. However, I have no personal knowledge that it was undeflected.*

Mr. Dulles. I don't quite get that. You mean because of his having turned this way, the shot that was then -- had then been fired and apparently had hit the President could not have gone through him at that point?

*under the stated conditions.*

Mr. Shaneyfelt. That is correct. *Even a shot that hit the President, could not have gone through a shot coming from the 6th floor window, because the window is almost directly behind the automobile at that time and the Governor's position was in a position where it couldn't have come in. *the bullet* *gone through his body in the manner that it reportedly did.**

It would have come in through his shoulder and out through the other shoulder, *in that manner* *she was lined up with the window, if it followed an undeflected path.*

Mr. Specter. So you say it could have gone through him but it could not have passed through him with the angle of entry as disclosed in the Parkland Hospital records and described by Dr. Shaw?

Mr. Shaneyfelt. That is correct, *if it followed a straight path.*

Mr. Specter. And exiting immediately under his right nipple, again as described in the hospital records at Parkland and by Dr. Shaw.

Mr. Shaneyfelt. That is correct.

Mr. Specter. Have those points of entry and exit been made available to you in your analysis of this situation?

Mr. Shaneyfelt. Yes, they have.

Mr. Specter. Could you elaborate just a little further on the observations and reasoning which you have undertaken to come to the conclusion which you have just expressed?

Mr. Shaneyfelt. We are speaking of frame 249, are we?

Mr. Specter. Yes, sir, 249.

Mr. Shaneyfelt. Could I see that exhibit?

The photograph in the lower left corner of Commission Exhibit 899 is the photograph taken through the scope of the rifle in the 6th floor window when the car was stationed in this frame number position. It is noted from this photograph that the rifle is not quite directly behind the car but very nearly directly behind the car.

Governor Connally's body is turned. We have duplicated the position in the Zapruder photographs of Governor Connally and the President in the re-enactment photograph as nearly as possible, duplicated the same body position, and from the 6th floor window then you see <sup>can from the photographs</sup> that the Governor's body is turned to the Governor's right in such a fashion that <sup>an undeflected</sup> shot would not go through in the path as described by the Parkland doctors.

Mr. McCloy. I don't quite follow that yet. The President has been shot at 249, according to your theory.

Mr. Shaneyfelt. Yes.

Mr. McCloy. Might he not also have been shot at some earlier frames in -- the indications are the reactions are shown consider-

ably ahead of that frame.

Mr. Shaneyfelt. That is correct.

Mr. McCloy. So, for example, at 237 and at 237 Governor Connally hasn't turned to the right.

Mr. Dulles. But a shot has been fired at this time.

Mr. McCloy. But a shot has been fired at that time.

Mr. Shaneyfelt. Yes.

Mr. McCloy. So at that point he could have been hit, Governor Connally could have been hit.

Mr. Shaneyfelt. Yes, Governor Connally could have been hit by frame 238.

Mr. McCloy. But your point is when he gets further along, he couldn't have been hit, let's say at 249 in the same spot where he was hit.

Mr. Shaneyfelt. That is correct, *again provided the bullet is undeflected.*

Mr. McCloy. Yes.

Mr. Dulles. He made the turn later than those frames you have been discussing at the time apparently of the first shot at the President. .

Mr. McCloy. Yes. The first shot, but according to these frames, the first shot hit the President considerably before this.

Mr. Shaneyfelt. Yes, ~~yes~~

Mr. McCloy. And at a time again when Governor Connally's back was square to the window.

Mr. Shaneyfelt. Well, not exactly square. I believe he was

CONFIDENTIAL

turned slightly to the right as he went behind the sign.

Mr. McCloy. Take 231.

Mr. Shaneyfelt. Yes.

Mr. McCloy. There the President has got his hands up as you put it to his throat.

Mr. Shaneyfelt. Yes.

Mr. McCloy. And here is Connally facing to the front.

Mr. Shaneyfelt. Yes.

Mr. McCloy. So at that point a bullet coming through the President's throat could have hit Connally in the spot where it did hit Connally.

Mr. Shaneyfelt. I am going to defer that question to Mr. Frazier who is in the window with the rifle scope and made a more thorough study of the possible path of the bullet. But he is straight in the car in 231.

Mr. McCloy. But your testimony is in 248 -- 249 Connally couldn't have been hit from this window in the position where he was sitting.

Mr. Shaneyfelt. That is correct, *on the basis stated*

Mr. Dulles. But you would have then the problem you would think if Connally had been hit at the same time would have reacted in the same way and not reacted much later as these pictures show.

Mr. McCloy. That is right.

Mr. Dulles. Because the wounds would have been inflicted

CONFIDENTIAL

CONFIDENTIAL

6740

Mr. McCloy. That is what puzzles me.

Mr. Dulles. That is what puzzles me.

Sen. Cooper. Would you identify the frame in which Governor Connally started turning to his right?

Mr. Shaneyfelt. I will say that as -- in the motion picture -- as the car comes -- behind the signboard, the Governor is turned slightly to his right in this manner. This would be in the first frame, in frame 222, he is turned just slightly to his right, and from there on he turns almost square, straight on with the car momentarily, and there is a jerking motion there at one point in the film about there, at which time he starts to turn this way and continues to turn.

Mr. Dulles. Jerky motion in Connally in the film.

Mr. Shaneyfelt. There is -- it may be merely where he stopped turning and started turning this way. It is hard to analyze.

Mr. Dulles. What I wanted to get at whether it was Connally who made the jerky motion or there was something in the film that was jerky. You can't tell.

Mr. Shaneyfelt. You can't tell that.

Mr. McCloy. Certainly the film is jerky at that point. I mean there is a big blur.

Mr. Shaneyfelt. He does turn.

Mr. McCloy. Just before and after that.

Rep. Ford. But isn't it apparent in those pictures that

CONFIDENTIAL

6741

after a slight hesitation Governor Connally's body turns more violently than the President's body?

Mr. Shaneyfelt. Yes.

Rep. Ford. The President's only reaction is a motion to his throat or to his neck with his hands.

Mr. Shaneyfelt. That is correct.

Rep. Ford. Whereas Governor Connally actually turns his body rather sharply?

Mr. Shaneyfelt. Yes. He turns ~~as he comes~~ as they go ~~in the~~ behind the signboard, he turns this way and he is turning a little bit this way and as he comes out of the signboard he is facing slightly to the right, comes around ~~straight on~~ and ~~then he~~ turns to his left straight on, and then he turns to his right, continues to turn around and falls over in Mrs. Connally's lap.

But in the motion picture it is a continuous movement as he goes around and falls.

Sen. Cooper. Will you again answer my question which I asked and hasn't been answered and I say with all respect, in what frame did Governor Connally begin to turn to the right after he had placed his position straightforward as you have testified.

Mr. Shaneyfelt. I am sorry. That starts approximately

233 to 234  
233 234

Sen. Cooper. In what frame does the photograph show or in what frame is it shown that President Kennedy had moved his hands

to his throat?

CONFIDENTIAL

CONFIDENTIAL

6742

Mr. Shaneyfelt. That shows on frame ~~26~~ it is clearer on frame 226, 225 is the frame where you first see him, and frame

~~26.~~

Mr. Dulles. How many frames between those two?

Mr. Shaneyfelt. From 26 to 33, seven, ~~eight~~. That would be a fraction of a second in time.

That is less than a half second.

Rep. Ford. It can be contended that based on these photographs of films that the first shot apparently was fired in frames 220 to 224, in that area.

Mr. Shaneyfelt. Yes, ~~yes~~. I think you have to go back even to 210 because of reaction times; <sup>we</sup> you don't know reaction times. But I would say between 210 and 225 because at 225 we have the President reacting.

So, in that 15 frames there ~~it is probably closer to, well,~~ ~~it is just, you can't~~ it is behind the signboard, we can't see what is happening.

Mr. Dulles. What frame first shows him with his hands at his throat?

Mr. Shaneyfelt. 225, 226.

Mr. McCloy. 225, it is not too clear. It is much more pronounced in the next frame in where he puts his both hands to his throat, such as that.

Mr. Dulles. And Mrs. Kennedy has apparently turned around and looking at him.

CONFIDENTIAL

6743

Mr. McCloy. One hand may be coming down from waving in 225.

Mr. Dulles. That is his left hand there -- no, it is his right hand, your right. His right hand.

Rep. Ford. Then based on the mathematics of how quickly a second shot could be fired the second shot would be fired in approximately what frame?

If you assume ~~the~~ the first shot is from 210 to 224.

Mr. Shaneyfelt. It would be ~~242 to 252, ~~the~~ 252~~  
<sup>266</sup> to ~~268~~, ~~down~~ down in there.

Rep. Ford. That would be the elapsed time of that which would be what?

Mr. Shaneyfelt. Two and a quarter seconds.

Rep. Ford. Two and a quarter seconds.

Mr. Shaneyfelt. That is the very quickest.

Mr. Specter. On fixing the range from frames 210 to 225, where the President was first struck, did you take frame 210 because that was the first point after the President had passed ~~out~~ from under the oak tree?

Mr. Shaneyfelt. Yes. That is the first point ~~from this~~, and although we are able to see in the films that there is no apparent reaction from the President from <sup>205</sup> ~~210~~ to <sup>210</sup> ~~205~~ and as he disappears ~~from~~ behind the signboard, we cannot estimate the reaction time.

Mr. Specter. When you say reaction time you mean?

Mr. Shaneyfelt. Of the President?

CONFIDENTIAL



CONFIDENTIAL

6744

Mr. Specter. Reaction time <sup>frame</sup> ~~of~~ 205.

Rep. Ford. To 210?

Mr. Shaneyfelt. Yes.

Rep. Ford. But there at frame 210 that is the first point at which the marksman had a clear shot after the President passed out from under the tree.

Mr. Shaneyfelt. That is correct.

Rep. Ford. Then you select frame 225 as the outside limit of the shot which struck the President because that is where you first observe a reaction by the President when he comes out from behind the sign.

Mr. Shaneyfelt. That is correct.

Mr. Dulles. What frames are blanked out because of the sign?

Mr. Shaneyfelt. The President, the last we get any scene of him at all, and this is just the very <sup>Top of his</sup> head is <sup>210</sup> ~~205~~, about ~~205~~.

Mr. Dulles. <sup>210</sup> 205 to two what is blanked out?

Mr. Shaneyfelt. 225.

Mr. Dulles. To 225 is blanked out?

Mr. Shaneyfelt. Yes, that is <sup>15</sup> ~~25~~ frames.

Mr. McCloy. <sup>224</sup> ~~204~~ he just begins to appear.

Mr. Shaneyfelt. Yes.

Mr. McCloy. I don't think if you assume the President was hit at 225 and I don't think that is clear at all. I think it begins to get clear about 227 that he had been hit, that the

reaction really develops. But I think that 225 it may very well be that he has not been hit because his hand isn't at his throat, he may be just moving from the position of waving.

Mr. Dulles. But that is about a tenth of a second.

Mr. McCloy. Yes, it is a very short time entirely. But I don't think the frame unequivocally shows the reaction to the bullet at 225. I think it does unequivocally show it at 226 and 227.

Mr. Shaneyfelt. That is correct.

Mr. Specter. Perhaps an additional question on the added clarity of the slide itself as a point of reaction would be in order for Mr. Shaneyfelt, and then may I say parenthetically that we want to have the Commission see these slides this afternoon.

We have them prepared to show them to you so that you can observe for yourself what we are bringing to you through the witness to give you a frame of reference and an orientation.

Mr. Shaneyfelt, then what was your impression as to the disclosure by frame 225 as you viewed it most recently this morning, with respect to a possible reaction on the frame made from the original Zapruder film?

Mr. Shaneyfelt. It is my feeling that at frames 225, 226 and 227 you are having a reaction. You have a split second there, and at 225 the reaction is barely discernible, more discernible on the film and the slides than the reproduction you have here but it has to be considered in the light of the motion picture you see as he starts this reaction, and the reaction is by

CONFIDENTIAL

6746

frame, frame by frame in either the slides or pictures is clearly ~~apparent in 225, and barely apparent in 226~~ clearly apparent in 226, and barely apparent in 225.

Mr. Specter. Now, was frame 249 selected as a situs for calculations on the possible construction that President Kennedy was struck in the back at the first point unadjusted at which he emerged from the tree, to wit, frame 207, with an additional calculation of 42 frames giving the approximately two and a quarter seconds for the firing of a second shot to determine through this one means and this one means only of checking or determination whether there was time for the rifleman to have operated the bolt, assuming he made a shot at 207, and to have made another shot at the earliest possible time at 249.

Mr. Shaneyfelt. That was the basis for the selection of frame 249, yes.

Mr. Specter. Now, going back just a moment, was frame 231 selected as a basis for analysis as the first frame after 225 because Governor Connally expressed the opinion when he viewed the frames that he thought he was hit by or at frame 231.

Mr. Shaneyfelt. That is correct.

Mr. Specter. And was frame 235 selected as a basis of analysis because that was one point at which a number of the viewers, including staff and agents of the FBI and Secret Service thought that might be the last frame at which Governor Connally had turned enough to the right to still take a shot and have the

CONFIDENTIAL

bullet pass through his body from the 6th floor window at the

angle described in the medical reports and by his doctors.

Mr. Shaneyfelt. That is correct <sup>on the basis of an undeflected path,</sup> That is the frame that

the doctors selected as the frame beyond which he could not have received this shot and have it travel in the path that it <sup>reportedly</sup> traveled.

Mr. Specter. Was frame 240 selected for analysis as being the absolutely last time, based on the observations of those whom you have described as seeing the films that the Governor could have conceivably taken a shot from the 6th floor window and have it pass through the body of the Governor in the way described in the medical reports and by the Governor's doctors?

Mr. Shaneyfelt. That is correct.

Mr. Specter. Was the analysis made on the ability of the Governor to take the shot from one of the positions described based on the position he took in that particular frame in accordance with the amount of turn to the right which he had made at that particular time?

Mr. Shaneyfelt. Yes.

Mr. Specter. Was there a still photograph known as AP photograph which was taken at the time of the assassination or a view seconds thereafter studied by you and others in connection with the analysis that you have been describing.

Mr. Shaneyfelt. Yes, there was.

Mr. Specter. Was the simulated automobile placed in the same position as the Presidential automobile was in when the photo-

CONFIDENTIAL

6748

graph was made by the AP photographer as closely as it could be positioned at the time of the re-enactment?

Mr. Shaneyfelt. That is correct.

Mr. Specter. What Commission Exhibit number is attached to the photographs of that AP shot and the re-enactment picture?

Mr. Shaneyfelt. That is Commission Exhibit No. 900.

Mr. Specter. Would you describe what photographs appear then on Commission Exhibit 900?

Mr. Shaneyfelt. On Commission Exhibit 900, the top photograph is a photograph purportedly made by an AP photographer shortly after one of the shots. It depicts the side of the Governor's head, the left side of the Governor's head, his ear is visible, he has turned considerably. It depicts the President's hands touching his lapels, and a portion of the President's face.

Secret Service agents on the followup car are seen also. The Texas School Book building in the background.

The re-enactment photograph was made after positioning the car by looking at the photograph, based on the position of the car as related to the lane line in the street, as related to the position of the building, the column of the building and so on to re-establish the location.

We also re-established in re-enactment the position of the agent taking Governor Connally's position in the car used in the re-enactment and the position of President Kennedy to closely approximate the actual photograph made by the AP, Associated

CONFIDENTIAL

CONFIDENTIAL

6749

Press. This was then studied, the car in this position was then studied, from the Zapruder position, and was determined to be frame 255.

Mr. Specter. Was an exhibit prepared then on frame 255?

Mr. Shaneyfelt. That is correct.

Mr. Specter. What Commission exhibit number is affixed to frame 255?

Mr. Shaneyfelt. Exhibit 901.

Mr. Specter. Does that have the same layout of photographs and measurements as on frames 225, 222 and those which preceded them.

Mr. Shaneyfelt. Yes, it has. It has the Zapruder photographs, the matching re-enactment photograph, and the photograph through the rifle scope along with the measurements and the angles.

Mr. Specter. On the AP photograph shown on Commission Exhibit No. 900, what reaction, if any, do you observe by the Secret Service agents on the followup car?

Mr. Shaneyfelt. The Secret Service agents on the right-hand of the followup car are looking back and to their right. The one to the front on the left-hand side of the car is looking generally toward the President.

The one in back of him on the left fender is looking slightly to his right.

Rep. Ford. What is the distance on frame 255 between the

CONFIDENTIAL

President and the rifle?

Mr. Shaneyfelt. The distance to the rifle in the window is 218 feet. This is frame 255, which is well past the sign-board, well past 249 which is the last frame we considered.

Mr. McCloy. Well past the first evidence of reaction?

Mr. Shaneyfelt. Yes.

Mr. McCloy. On the part of the President to a shot.

Mr. Shaneyfelt. Well past, and past the point in the film where Governor Connally states he has been hit.

Mr. McCloy. Was that simulated car placed in any other position to duplicate still a subsequent frame?

Mr. Shaneyfelt. Yes.

The frame No. 313 which is the frame that records the shot to the President's head was recorded as frame 313 and was re-established during re-enactment.

Mr. Specter. What Commission number has been affixed to frame 313?

Mr. Shaneyfelt. Commission Exhibit 902.

Mr. Specter. Is this frame, Exhibit organized in a somewhat different fashion from the prior frame exhibits?

Mr. Shaneyfelt. That is correct.

Mr. Specter. Will you start with the photograph in the upper left-hand corner and describe for the Commissioners, please, each photograph or picture which appears thereon and what it represents?

Mr. Shaneyfelt. Yes.

I might state first that all of the other photographs were re-established on the basis of the Zapruder film using reference points in the background of the pictures.

As is apparent here from the photograph of the Zapruder frame 313 there are no reference points. There is just a grassy plot. So there is no reference point on which we can re-establish the position of the car in the roadway.

For this reason it was necessary to use the Nix film of the head shot and the <sup>M</sup>uch more film of the head shot to establish this position in the road.

The right-hand photograph represents ~~a~~ frame 24 from the Nix film, and is the frame that depicts the shot to the head. We used Mr. Nix's camera and a print of this picture and stood in the <sup>visually</sup> determined position of Mr. Nix when he took his photographs, and had them roll the car down to a position so that the President's head was directly under the point where Mr. Zapruder is standing on the projection.

Mr. Specter. You are describing the photograph on which side?

Mr. Shaneyfelt. On the --

Mr. Specter. Of the viewer.

Mr. Shaneyfelt. On the upper left-hand side.

Mr. McCloy. I think you said right.

Mr. Shaneyfelt. The upper left-hand photograph is the photo-



CONFIDENTIAL

6752

graph ~~seen in~~ taken from the frame ~~42~~ 24 of the Nix film.   
The ~~photo~~ photograph on the right, upper right, is the photograph taken at the re-enactment from the position where Mr. Nix was standing. We then proceeded over to the point that we had established as the position of Mrs. Muchmore, and using frame 42, which is a ~~shot~~ <sup>frame</sup> in her film depicting the shot to the head, and using the steps and their relation to the President and the objects in the background in relation to the President as shown in this lower left-hand photograph, which is the Muchmore frame 42 we re-established, we checked the position we had placed the car in, based on the Nix photographs, and found that it conformed and checked out as being in <sup>a</sup> ~~the~~ closely accurate position, ~~or in a fairly accurate position.~~

~~On this basis we then~~ This is the basis used for establishing the position of the car. After we had established that through the Nix and Muchmore films, we then checked it against the Zapruder photograph, which is the second from the top on the left of Commission Exhibit 102, frame 313 which shows the explosion from the top of the President's head. Just to the right of that, second from the top from the right is the photograph made at the re-enactment from Zapruder's position.

We know from studying the films that just two or three frames before frame 313 we can see a little bit of yellow along the curb, and this checks out ~~back up~~ along this area of the photograph from the Zapruder position of the re-enactment is a yellow

CONFIDENTIAL

strip.

Mr. Specter. When you say this area you are referring to the yellow area which appears on the left-hand curb immediately to the rear of the simulated car?

Mr. Shaneyfelt. That is correct, and this, therefore, checks out, this as being a fairly accurate position for the car in frame 313.

The photograph ~~then~~ then, the third down <sup>on</sup> the left is a photograph through the telescope of the rifle, of the car positioned in frame 313.

Mr. McCloy. Would you read off those dimensions from that?

Mr. Shaneyfelt. The dimensions from the surveyor on frame 313 of the distance from the wound <sup>mark</sup> on the President's stand-in to the station C is 230.8 feet.

Distance to the rifle in the window is 265.3 feet. The angle to rifle in window is 15 degrees 21 minutes and this is based on the horizontal.

Distance to the overpass is 260.6 feet, the angle to the overpass is 1 degree 28 minutes.

CONFIDENTIAL

6754

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Mr. Specter. What would the angle be considering the adjustment on the angle of the street?

Mr. Shaneyfelt. It would be less three degrees or 12 degrees 21 minutes approximately.

Mr. Specter. When you say approximately is that because the adjustment is somewhat greater than three degrees?

Mr. Shaneyfelt. Yes.

Mr. Specter. How much is it exactly, if you know?

~~Mr. Shaneyfelt. It is 3.9. It is almost four.~~

~~Mr. Specter. Three degrees nine minutes?~~

Mr. Shaneyfelt. Three degrees nine minutes. ~~Four~~

Mr. Dulles. Would you have to make a similar adjustment to the overpass?

Mr. Shaneyfelt. Yes, because the angle to the overpass is based on the horizontal. The overpass, you would have to add the three degrees, nine minutes.

Mr. Dulles. From the overpass, is this an angle up or angle down?

Mr. Shaneyfelt. This is an angle down.

Mr. Dulles. So it is an angle down in both cases?

Mr. Shaneyfelt. That is correct.

Mr. Specter. When you say that you are reducing the angle of 15 degrees 21 minutes by three degrees and nine minutes to an angle of 12 degrees 12 minutes, is that as the shot passes through the body of the President?

CONFIDENTIAL

Mr. Shaneyfelt. That is correct. It is at that point.

Mr. Specter. How was the speed of the camera ascertained, Mr. Shaneyfelt?

Mr. Shaneyfelt. We obtained from Mr. Zapruder, Mr. Nixon, and Mrs. Muchmore their cameras from the limousine and in the FBI laboratory we exposed film in all these cameras, aiming, focusing the camera on a clock with a large sweep second hand. We then ran the camera at the speed conditions as described by the people who used the cameras. We ran through several tests of film, and then after the film was developed it was studied under magnification, and frames were counted for a period of two to three seconds or for the full running time, and averages were taken.

Mr. Zapruder has stated that his camera was fully wound. Most of the others have stated their cameras were fully wound, so we were able to more or less eliminate the very slow time that occurs when the cameras are approximately run down, and all of these things were taken into consideration and were averaged.

The Zapruder camera was found to run at an average speed of 18.3 frames per second.

The Nixon and Muchmore cameras were both found around ~~2.5 frames per second~~, 18.5 frames per second, ~~1.5 frames per second~~.

Mr. Specter. Were you able to ascertain the speed of the Presidential limousine at the time of the assassination?

Mr. Shaneyfelt. Yes. Because we were able to determine the

speed of the camera, and thereby accurately determine the length of time it takes for a specific number of frames to run through the camera at this 18.3 frames per second, and having located these frame positions in the street, we took the farthest distant points we had in the Zapruder film which <sup>were</sup> ~~was~~ frame 161 <sup>and</sup> ~~through~~ frame 313.

This was found to run (elapsed time from the film standpoint which runs at 18.3 frames a second) ~~was~~ for a total of 8.3 seconds.

This distance is 136.1 feet, and this can be calculated then to 11.2 miles per hour.

Mr. Specter. Is that a constant average speed or does that speed reflect any variations in the movement of the car?

Mr. Shaneyfelt. That is the over-all average from <sup>frames</sup> 161 to 313. It does not mean that it was traveling constantly at 11.2, because it was more than likely going faster in some areas and slightly slower in some areas. It is only an average speed over the entire run.

Mr. Dulles. Over the entire run between what points?

Mr. Shaneyfelt. Between frames 161 and 313.

Mr. Dulles. Yes, but where, could you place that on that chart, for example?

Mr. Shaneyfelt. Yes.

Mr. Dulles. And describe the points?

Mr. Shaneyfelt. This is frame 161 which is the frame where

they have just gone under the tree, to frame 313 which is the shot to the head. So that it is that distance there which is 136.1 feet.

Mr. Specter. In referring to those points, will you specify what exhibit number you are referring to there?

Mr. Shaneyfelt. This is --

Mr. Dulles. I wonder if we could mark those points on that exhibit?

Mr. Specter. Of course, Mr. Dulles.

That is Commission Exhibit 883, is it not, Mr. Shaneyfelt?

Mr. Shaneyfelt. Yes.

Mr. Specter. Will you take the first point Mr. Dulles has referred to and mark it as point X, I think we already have some letter designations in the early part of the alphabet.

Mr. McCloy. Where is that point? What significance is that point? The first point?

Mr. Specter. This frame 161?

Mr. McCloy. Yes.

Mr. Specter. Is the exact frame we have on the Zapruder film.

Mr. Dulles. It is only to get the speed and distance here.

Mr. McCloy. It has no relation to any shots.

Mr. Dulles. No relation to shots. Speed and distance.

Mr. Specter. It is the exact frame we have where he has a -- well, 161 has been called out also, I believe, with the

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point where the marksman has it, last clear shot of the back of the President's neck before it passes under the tree without adjustment, is that correct, Mr. Shaneyfelt?

Mr. Shaneyfelt. That is correct. What letter designations did you want?

Mr. Specter. Mark 161, frame 161, with the letter designation X, if you will, please.

Mr. Shaneyfelt. And 313?

Mr. Specter. With the letter designation Y.

Mr. McCloy. The record ought to show the two points are the point which you merely calculated the speed at which the car is going, isn't that right?

Mr. Shaneyfelt. That is correct.

Mr. McCloy. Yes.

Mr. Dulles. Between those two points the car went at an average speed of 11.2 miles an hour?

Mr. Shaneyfelt. That is correct. Between point X and Y on Exhibit 883 the speed of the car was determined to be an average speed of 11.2 miles per hour.

Mr. Dulles. How long did the car take to go that distance, do you know, translated into time?

Mr. Shaneyfelt. 8.3 seconds.

Mr. Dulles. 8.3 seconds.

Mr. Specter. What motion pictures, if any, were taken during the reenactment?

CONFIDENTIAL

6759

Mr. Shaneyfelt. During the reenactment the black and white photographs were made from Zapruder's position with a Speedgraphic Camera and we also took motion pictures with Mr. Zapruder's camera from Zapruder's position with the car in the fixed locations as they were established, with the car ~~just~~ stationary in those locations.

After establishing all those points and making these film records of it, we then had the car proceed along that Elm Street route at approximately 11 miles per hour, and filmed it with Mr. Zapruder's camera loaded with color film from Mr. Zapruder's position and simultaneously photographed it with Mr. Nixon's camera from Mr. Nixon's position, and Mrs. Muchmore's camera from Mrs. Muchmore's position, and this was done twice.

(Off the record.)

Mr. Specter. The last question was about what movies and stills you took?

Mr. Shaneyfelt. We ~~didn't~~ <sup>haven't discussed</sup> get them all ~~yet~~.

Mr. Specter. Were any other movies taken or photographs taken in addition to those which you heretofore described?

Mr. Shaneyfelt. Yes. After positioning the car in the street ~~at~~ <sup>at</sup> the specific locations and making the movies with the Zapruder, Nixon and Muchmore cameras with the car running at 11 miles an hour on the route, I then went to the 6th floor window and ~~pointed~~ <sup>mounted</sup> the camera on the rifle and photographs were made with black and white film, motion pictures of the car in the

CONFIDENTIAL



7  
fixed positions from frames 161 through frame positions 313. The car was stopped at each position. The individuals <sup>and</sup> in the car were positioned by Mr. Gauthier on the street, ~~by the car as they appeared in the Eapruder pictures,~~ using the Zapruder pictures again to reposition the individuals in the car, and motion pictures were made of the car sitting in those various positions; after this the car was driven at 11 miles an hour along the route and photographs were made through the rifle scope with a 16 millimeter motion picture camera following the car as a target as the car drove down the assassination route.

Following this, there were three runs made on black and white film. Then color film was loaded in the camera and it was again photographed on color film, 16 millimeter, with the car traveling at 11 miles an hour and the scope of the rifle following the car as the target.

This completed all the photographs that were made at the assassination site.

Mr. Specter. Was a subsequent photograph taken in the garage which you previously identified as the railway express garage?

Mr. Shanoyfelt. That is correct.

Mr. Specter. Will you repeat, even though you have heretofore mentioned them, the angles between the spot on the back of President Kennedy's neck which was marked with a white chalk mark and the muzzle of the rifle when the car was positioned at

frame 201?

Mr. Shaneyfelt. The angle, based on the horizontal at frame 210, to the rifle in the window was 21 degrees 34 minutes.

Mr. Specter. What was the comparable angle at frame 225?

Mr. Shaneyfelt. 20 degrees 11 minutes.

Mr. Specter. So what would be the average angle then between those two points?

Mr. Shaneyfelt. The average angle, allowing for the three degree nine minute street grade results in an average angle between frame 210 and frame 225 of 17 degrees 43 minutes 30 seconds.

Mr. Specter. And that is the average angle from the muzzle to President Kennedy as he sat in the car or President Kennedy's stand-in as he sat in the car?

Mr. Shaneyfelt. That is correct. To the wound entrance.

Mr. Specter. Is the average angle of 17 degrees 43 minutes 30 seconds measured from the muzzle <sup>to</sup> through the President's body as the President would be seated in the car?

Mr. Shaneyfelt. That is, out on the street in those frame positions, yes. It is measured to the point of the wound on the back of the President.

Mr. Specter. I now hand you a photograph which has been marked as Commission Exhibit No. 903 and ask you if you know who the photographer was?

Mr. Shaneyfelt. Yes. I took this photograph.

CONFIDENTIAL

6762

Mr. Specter. When was that photograph taken?

Mr. Shaneyfelt. It was taken Sunday afternoon, May 24, 1964.

Mr. Specter. Is there a white string which is apparent in the background of that photograph?

Mr. Shaneyfelt. That is correct.

Mr. Specter. What is the angle of declination of that string?

Mr. Shaneyfelt. That string was placed along the wall by the surveyor at an angle of 17 degrees 43 minutes and 30 seconds.

Mr. Specter. Did the surveyor make that placement in your presence?

Mr. Shaneyfelt. He did.

Mr. Specter. <sup>were</sup> Where the stand-ins for President Kennedy and Governor Connally positioned in the same relative positions as those occupied by President Kennedy and Governor Connally depicted in the Zapruder films?

Mr. Shaneyfelt. Yes. These positions were approximately the positions of the President and Governor Connally in the Zapruder films in the area around frame 225 as they go behind the <sup>sign</sup> board and as they emerge from the sign board.

Mr. Specter. Was the rod which is held in that photograph positioned at an angle as closely parallel to the white string as it could be positioned?

Mr. Shaneyfelt. Yes.

CONFIDENTIAL

CONFIDENTIAL

6863

10

Mr. Specter. And through what positions did that <sup>rod</sup> ~~rod~~ pass?

Mr. Shaneyfelt. The <sup>rod</sup> ~~rod~~ passed through a position on the back of the stand-in for the President at a point approximating that of the entrance wound, exited along about the knot of the tie or the button ~~of the coat or button~~ of the shirt, and the end of the <sup>rod</sup> ~~rod~~ was inserted in the entrance hole on the back of Governor Connally's coat which was being worn by the stand-in for Governor Connally.

Mr. Specter. And was Governor Connally's stand-in seated in the position where the point of exit would have been below the right nipple at the approximate point described by Governor Connally's doctors?

Mr. Shaneyfelt. That is correct.

Sen. Cooper. May I ask a couple of questions?

Am I correct in assuming that you have made these determinations about the degree of the angle of the trajectory of the bullet at the time the President was struck, locating the position of the President in the car at the time, and the location of the rifle at the time the shots were fired?

Mr. Shaneyfelt. The location of the wound, you mean the angle of the wound?

Sen. Cooper. Yes.

Mr. Shaneyfelt. The angle --

Sen. Cooper. You had to establish the position of the

CONFIDENTIAL

CONFIDENTIAL

6764

President at the time the bullet struck him and the position of the rifle to make a determination about the degree of the angle of the direction?

Mr. Shanoyfelt. That is correct. The positions in the car, their positions in the car were based on the Zapruder film.

Sen. Cooper. And you were able to determine, what you think, very accurately, the position of the President in the car by the films that you have examined?

Mr. Shanoyfelt. Yes.

Sen. Cooper. Then the factor then which is not determinable exactly then is the location of the rifle, is that correct?

Mr. Shanoyfelt. That is correct.

Sen. Cooper. Upon what did you determine the location of the rifle, upon what factors?

Mr. Shanoyfelt. The rifle was positioned in the sixth floor <sup>Window</sup> of the book building where the cartridges were found and was determined on the basis of <sup>information furnished by</sup> representatives of the Commission.

Sen. Cooper. Did you have information about the location of certain boxes that were seen, were found at the window after the shooting occurred?

Mr. Shanoyfelt. That is correct. Yes. We had photographs of the boxes and ~~we knew~~ we were advised of the approximate position <sup>of</sup> the window and how far down the window was, the fact that ~~the rifle was~~ some observers noted <sup>the rifle</sup> sticking out the window.

CONFIDENTIAL

Sen. Cooper. I want to ask you, you did have information from the testimony of witnesses who said they saw the rifle protruding from the window?

Mr. Shaneyfelt. We had this information furnished to us by the Commission.

Sen. Cooper. And those facts, those locations were made known to you and upon that evidence did you locate the rifle in making these calculations?

Mr. Shaneyfelt. That was the basis for the location of the rifle in all of our calculations.

Sen. Cooper. Just one other question: Assuming that there might have been some variation in the location of the rifle, length of the window, the breadth of the window or that the rifle you used was held higher than the rifle might have been, would it have made -- how much variation would it have made, in your judgment, in these calculations you made?

Mr. Shaneyfelt. I don't believe that any movement of the rifle in that specific window would alter our calculations to any appreciable degree if you stay within that window, because our reenactment and our repositioning of the bodies in the car <sup>based</sup> on the photographs is subject to some variation, too, so we have variations throughout.

And <sup>what</sup> ~~that~~ would occur ~~at the window~~ from variations in the position of the rifle at that particular window, I feel would be negligible.

13  
Sen. Cooper. At every point where you made it, hypothetically, at least, made the determination that a particular point the President was struck by a bullet, at that point the car and the President could be seen from the window?

Mr. Shaneyfelt. That is correct.

Sen. Cooper. That is all I want to ask.

Mr. Shaneyfelt. Even under the tree you still could see the car and the President through the tree.

Mr. Specter. Mr. Shaneyfelt, did the surveyers calculate the angle and distance from each position where the simulated car was stopped from the President to the triple overpass, underpass?

Mr. Shaneyfelt. That is correct.

Mr. Specter. And are these figures reproduced in terms of distance to overpass, and angle to overpass on everyone of the exhibits which also depict distance to window, referring to the 6th floor window, an angle to rifle in window?

Mr. Shaneyfelt. Yes, they <sup>are</sup> do. They are on all the exhibits.

Mr. Specter. Now, is there any point on the overpass where the angle to the President's car or the angle to the President stand-in sited in the simulated car, would permit a shot to be fired and to create the wound in the President's neck, which has an angle of decline approximately ~~17 inches based on the~~ 17 degrees, based on the information furnished to you by the medical evidence which we have asked you to assume, where that wound could be inflicted on the President's neck without regard

to the point of entry?

Mr. Shaneyfelt. No. None of the angles from the overpass are anywhere near 17 degrees. They range from frame 161 <sup>at</sup> ~~to~~ minus 7 minutes, from horizontal, to frame 313 which is one degree 28 minutes. None of them are even close to 17 degrees.

Sen. Cooper. From the exhibit that has been introduced ~~what~~ showing the position of the car and the President at the time of the first shot, what was the distance from that point to the overpass?

Mr. Shaneyfelt. The approximate location of the first shot --

Sen. Cooper. Frame what?

Mr. Shaneyfelt. Well, the exact frame has not been established, but it would be in the range from 207 to 225. ~~so frame~~ ~~225~~ <sup>At frame</sup> 207 the distance to the hand rail on a line of sight vision to the wound on the President is 350.9 feet!

At frame 225 the line of sight distance from the hand rail of the overpass to the wound on the President is 334 feet.

Sen. Cooper. What is the distance at those points to the window in the Texas School Book Depository?

Mr. Shaneyfelt. Frame 207 line of sight distance from the wound to the window is 174.9 feet. This distance to the overpass from there is 350.9.

On frame 225, line of sight to the window is 190.8 feet as opposed to the distance to the hand rail on the overpass of



CONFIDENTIAL

676

334.0 feet.

Sen. Cooper. Did you yourself stand at the handrail of the overpass?

Mr. Shaneyfelt. Did I?

Sen. Cooper. Yes.

Mr. Shaneyfelt. No, I did not.

Mr. Specter. What do you mean, Mr. Shaneyfelt, by line of sight?

Mr. Shaneyfelt. Straight line distance.

Rep. Ford. Is that what is calculated by the surveyer?

Mr. Shaneyfelt. That is correct, by Mr. West.

Mr. Specter. Were there members of the testing teams that did go to the hand rail at the triple underpass to make observations?

Mr. Shaneyfelt. Yes, there were.

Mr. Specter. Who were they?

Mr. Shaneyfelt. I am not real sure.

Mr. Specter. Mr. Chairman, those conclude my questions for

Mr. Shaneyfelt.

If it please the Commission, I would like to call Mr. Frazier at this time.

Mr. McCloy. Thank you very much, Mr. Shaneyfelt.

CONFIDENTIAL

## TESTIMONY OF ROBERT A. FRAZIER -- RESUMED

Mr. Specter. Would you write your full name for the record, please?

Mr. Frazier. Robert A. Frazier.

Mr. Specter. Mr. <sup>Frazier</sup>~~Frazier~~, you have appeared before to testify, but will you at this juncture again give us the outline of your occupation and experience?

Mr. Frazier. Yes. I am a Special Agent of the Federal Bureau of Investigation assigned to the FBI Laboratory, Washington, D. C.

I work in the firearms identification unit in the laboratory, making examinations of firearms, bullets, the effects of bullets, trajectories, firing tests, powder pattern tests and various other types of examinations.

(At this point Sen. Cooper left the hearing room.)

Mr. Specter. Have you appeared heretofore before the Commission to testify about examinations which you have conducted of the clothing worn by President Kennedy, the clothing worn by Governor Connally, the examination of the Presidential limousine and certain ballistics information?

Mr. Frazier. Yes, I have.

Mr. Specter. Did you participate in the on-site tests at Dallas on May 24, 1964?

Mr. Frazier. Yes.

Mr. Specter. What was your position during most of the

CONFIDENTIAL

6770

time of those on-site tests?

Mr. Frazier. I was stationed at the window on the 6th floor of the Texas School Book Depository Building at the south-east corner of the building.

Mr. Specter. How far was that window open at the time the tests were being conducted?

Mr. Frazier. I estimated it as approximately one third. It was somewhat less than halfway open.

Mr. Specter. Is the distance depicted on Commission Exhibit 492 which has heretofore been marked ~~identify~~ <sup>and</sup> introduced in evidence? --

Mr. Frazier. Yes, sir.

Mr. Specter. The distance open on that window about the same as that which you had it open at the time these tests were run?

Mr. Frazier. Yes. I would say that this is very close.

~~It was~~ The window was placed according to information already furnished to the Commission as to how much it had been opened at that time.

Mr. Specter. Did you handle the Mannlicher-Carcano rifle during the course of the on-site tests?

Mr. Frazier. Yes, sir.

Mr. Specter. The rifle previously identified as Commission Exhibit 139?

Mr. Frazier. Yes, sir, I did.

CONFIDENTIAL

Mr. Specter. At what position, what was the basis for your positioning of that rifle during those tests?

Mr. Frazier. To position the rifle we selected boxes of the same size and contour as boxes shown in a photograph or rather in two photographs, <sup>reportedly</sup> ~~allegedly~~ taken by the Police Department at Dallas shortly after the assassination.

We placed these boxes in their relative position in front of the window, spacing them from left to right according to the photographs which were furnished to us and also placing them up against the window <sup>with</sup> ~~and~~ one of them resting on the window ledge as it was shown in the photographs.

Mr. Specter. In addition to the placement of the <sup>boxes</sup> ~~boxes~~ were there any other guides which you had for reconstructing the position of the rifle to the way which you believed it to have been held on November 22, 1963?

Mr. Frazier. Yes, sir. There was one physical obstruction in the building which could not be moved consisting of two vertical pipes located just at the left side of the 6th floor window. These prevented me or anyone who was shooting from that window from moving any <sup>a</sup> farther to the left.

The position of the rifle, of course, had to be such that it could be <sup>sighted</sup> ~~sighted~~ out through the window, using the telescopic <sup>Sight</sup> ~~side~~, high enough above the window ledge so that the muzzle of the weapon would clear the window ledge, and low enough in position so that the bottom of the window, which was only partially raised

CONFIDENTIAL

6772

would not interfere with a view through the telescopic <sup>sight</sup> sight, which is approximately two inches higher than the actual bore of the weapon.

Mr. Specter. Did you position the rifle further, based on information provided to you concerning the testimony of certain eye witnesses at the assassination scene concerning what they observed?

Mr. Frazier. Yes, sir. We attempted to put the muzzle of the weapon sufficiently far out the window so it would have been visible from below.

Mr. Specter. Mr. Frazier, referring to Commission Exhibit 886, did you view through the sight as that depicted in photograph through rifle scope on the positioning of the Presidential limousine or the car to simulate the limousine at position A?

Mr. Frazier. Yes, sir. This would be the first position that an individual in that 5th floor window could sight at the car due to the interference of the window ledge of the building and the fact that the angle downward is limited by the partially lowered window.

Mr. Specter. I now refer to Commission Exhibit 888 and ask you if you had the view depicted on the photograph through the rifle scope shown on that exhibit?

Mr. Frazier. Yes, sir. This 888 is frame 161, and is the position at which I had the car stopped just before the spot,   
c and indicating the entrance wound on the back of the President's

CONFIDENTIAL

folks

stand-in, pass into the foliage of the e.

Mr. Specter. I now hand you Exhibits 889, 890 and 891 and ask you if you had the view on each of those depicted in the photograph through rifle scope?

Mr. Frazier. Yes, sir.

Commission ~~889~~ <sup>889</sup> represented by frame 166 is the adjusted position to account for the fact that the Presidential stand-in on May 24 was actually ten inches higher in the air above the street than the President would have been in the Presidential limousine.

Mr. Dulles. Would you explain to us simply how you made those adjustments?

Mr. Frazier. Yes, sir.

Mr. Dulles. I mean how did you get him down ten inches as a practical matter.

Mr. Frazier. They had marked on the back of the President's coat the location of the wound, according to the distance from the top of his head down to the hole in his back as shown <sup>by</sup> the autopsy figures. They then held a ruler, a tape measure up against that, both the back of the ~~President and the back~~ ~~on~~ ~~case no.~~ the Presidential stand-in and the back of the Governor's stand-in, and looking through the scope you could estimate the ten-inch distance down on the automobile.

You could not actually see it on the President's back. But could locate that ten-inch distance as a point which we

CONFIDENTIAL

marked with tape on the automobile itself, both for the Presidential and the Governor's stand-in.

Mr. Dulles. Thank you.

Mr. Frazier. Continuing with Commission Exhibit 890, represented by frame --

Mr. McCloy. Hold that around so I can see it.

Mr. Frazier. -- represented by frame 185, this is the first or rather the only position through the foliage of the tree at which a person from the 6th floor could get a clear shot at the back of the President, and I had the car stopped at this position and then we determined that this was frame 185 from the Zapruder films.

Mr. Dulles. There are no heavy limbs in there of any kind, are there --

Mr. Frazier. No, sir.

Mr. Dulles. -- that would obstruct a bullet?

Mr. Frazier. No, sir.

The tree, it is a live oak tree which retains its leaves all year around, and the limbs at that point are relatively small.

Mr. Dulles. All right.

Mr. Specter. Did you compare the appearance of the foliage on the pictures taken by the Secret Service about which inspector Kelley earlier testified with the appearance of the foliage on May 24?

**CONFIDENTIAL**

Mr. Frazier. Yes, I did.

Mr. Specter. What was that comparison?

Mr. Frazier. They are so nearly identical that you could not really pick out any difference between the foliage and the photograph taken previously in November.

In Commission No. 891, which is marked frame 186, this is the adjusted position to which the car was moved to accommodate the ten-inch distance at which the actual wound in the President would have been located had the car been the actual Presidential limousine rather than the stand-in car.

Mr. Specter. Were you standing, seated or kneeling at the times when these photographs were taken and the <sup>sighting</sup> ~~sighting~~ of the rifle was made by you.

Mr. Frazier. I was actually sitting on a carton with my left elbow resting on the boxes stacked in front of the window.

Mr. Specter. Did that position represent to you the most likely position which the rifleman assumed on November 22, 1963, based upon the positioning of the various boxes?

Mr. Frazier. Yes, sir.

Mr. Specter. And the eye witness accounts as to how far the rifle protruded?

Mr. Frazier. Yes, sir, it was.

Mr. Specter. Now, in all of the frames that you have described up to now, did you position the automobile on the street or give instructions over the radio as to where the automobile ought to

**CONFIDENTIAL**



CONFIDENTIAL

6776

be stopped for those various sightings?

Mr. Frazier. Yes, sir.

Mr. Specter. I now hand you Commission Exhibits 892 and 893, and ask you if you observed the views depicted in the photographs through <sup>the</sup> rifle scope on each of those exhibits?

Mr. Frazier. On Commission Exhibit 892, also marked frame No. 207, the car was moved forward under the tree to the point where the spot on the Presidential <sup>stand-in's</sup> stand-in-back just became visible beyond the foliage of the tree. I had the car stopped at that point so that this photograph could be made, there.

On Commission Exhibit 893, also marked frame 210, we have the photographs made at the adjusted position to accommodate the ten-inch difference in height between the stand-in and the actual position of the wound above the street and on the President's body.

Mr. Specter. What was the alignment of President Kennedy's stand-in with Governor Connally's stand-in at frames 207 and 210?

Mr. Frazier. They both are in direct alignment with the telescopic sight at the window. The Governor is immediately behind the President in the field of view. Was that your question?

Mr. Specter. Yes.

Mr. Frazier. Alignment of people?

Mr. Specter. Yes, sir.

Mr. Frazier. Yes, sir.

## CONFIDENTIAL

Mr. Specter. Could Governor Connally have taken a shot in the range of 207 to 210 which would have traversed his body with the entry and exit points being approximately what they were shown to be through the medical records?

Preliminarily let me ask you if for the record you had seen or had made available to you rather the contents of the medical records showing the point of entry on the back of the Governor and the point of exit on the front side of his chest?

Mr. Frazier. No, sir, I don't recall having seen the medical testimony. However, information has been furnished to me by Commission members as to the relative positions on the back and the front of the Governor.

Mr. Specter. Have you in addition had an opportunity to examine personally the clothing worn by the Governor consisting of his jacket and shirt?

Mr. Frazier. Yes, I have.

Mr. Specter. Based on the Governor's position then in frames 207 and 210, was he lined up so that a bullet fired from the 6th floor would have passed through his body in about the way that the entry and exit holes were described to you?

Mr. Frazier. Yes. I would say that this could have happened at these two frames.

However, this would assume that the path of the bullet through the Governor's body was the same as the path of the bullet before it struck, that is, there was no appreciable deflec-

tion in the body itself. Since I have no actual technical evidence available to me that there was no deflection, I can only say that it is a possibility under the circumstances as set up in these photographs.

Mr. Specter. You would state that then as a possibility based upon the observations you observed and the factors provided to you?

Mr. Frazier. Yes, sir.

Mr. Specter. All right.

I now hand you Commission Exhibit 894 and 895 and ask you if you saw the photograph-as depicted on the photograph through the rifle sight on those exhibits?

Mr. Frazier. Yes, sir.

Commission Exhibit No. 894 is marked frame 222, and the photograph through the scope is the same field which I saw looking through the telescope on May 24, 1964.

This is similarly true of Commission Exhibit 895, 895 being frame number 225.

Mr. Specter. I now show you exhibits 896 and 897 and ask you if the picture shown on photograph through rifle scope is that which you observed at the times those pictures were taken.

Mr. Frazier. Yes, sir. This exhibit 896 is also marked frame number 231, and represents the relative positions of the President's and Governor's stand-in on May 24.

Commission Exhibit 897, which is marked frame 235, also

**CONFIDENTIAL**

represents the positions of the President and Governor's stand-in as I saw it from the 6th floor on that date.

Mr. Specter. I now hand you Exhibits 899, 898 and 901 and ask if you saw the pictures or if your view was the <sup>same</sup> ~~same~~ as photograph through rifle scope depicted on those exhibits?

Mr. Frazier. Yes, they are. In each case Commission 898, which is marked frame 240, Commission 899 which is also marked frame No. 249, and Commission 901 which is also marked frame 255.

In the photographs, through the scope, the individuals representing the President and the Governor are as they were positioned on May 24.

Mr. Specter. Now, assuming certain factors, Mr. Frazier, to wit, that the President and Governor Connally were seated in an open automobile in the approximate positions taken by the President's stand-in and the Governor's stand-in during the on-site tests, that a bullet passed through President Kennedy <sup>entering</sup> ~~entering~~ at a velocity of 1900 feet per second striking 14 centimeters below the mastoid process and 14 centimeters to the left of the right acromion process which is the tip of the right shoulder, that the bullet passed through a fascia channel, hitting no bones, and proceeded in a straight line, exiting through the lower one-third of his neck, passing out of his shirt at the position which you observed personally from your inspection of the President's shirt, nicking the knot on the President's

tie in the way you observed from your examination of that tie, do you have an opinion as to whether it is probably based on the facts which I have asked you to assume, that a bullet could have gone through the President and missed the interior of the limousine and all of its occupants between frames 207 and 225?

Mr. Frazier. I can give you my opinion based on this reconstruction, as I understand your question.

All of these things refer to the reconstruction and assuming particularly that the path of the projectile to the President was also the same path, the same angle as it went through his body and then on, and in that connection, yes.

In my opinion the bullet had to strike in the car, either the car itself or an occupant of the car.

Mr. Specter. And is that a probable opinion of yourself based on what you saw during the tests and the facts I have asked you to assume?

Mr. Frazier. Yes, it is, and in fact, I think it is rather -- it is obvious when you look at the photographs themselves that the crosshair of the telescopic site actually would give you the point of impact of the bullet if the weapon is sighted in and if there is no change in the line of sight, the bullet had to strike the car, shown in each of these photographs which is 225 on this end of this series, and 207 on the other end of the series.

It shows that there would be no chance for the bullet to

## CONFIDENTIAL

miss the car at all if it had no deviation in its path if it had no deflection in its path.

Mr. Specter. Did you have an opportunity to examine the car shortly after the assassination?

Mr. Frazier. Yes, I did, on the early morning of November 23, 1963.

Mr. Specter. The record will show you have testified about it heretofore, but will you again state at this juncture whether or not you found any indication within the car that the interior of the car was struck by a missile proceeding at a high velocity at 1775 feet per second?

Mr. Frazier. No, sir, we found none.

We examined in particular the passenger's section, the rear seat area, of the back of the automobile clear up to the back of the rear seat, the rear seat itself, the floor boards and the back of the front seat, the backs, primarily, of the jump seats, and other areas in the front of the car, the windshield and the chrome and the front hood and fenders and sides of the automobile and we found no evidence of a bullet impact having those characteristics you mentioned.

Mr. Specter. Did you also examine the windshield of the car, interior and exterior?

Mr. Frazier. Yes, sir.

Mr. Specter. And the chrome of the car on the interior and the exterior?

Mr. Frazier. Yes, sir.

Mr. Specter. Did you also examine the front portion of the Presidential limousine?

Mr. Frazier. Yes, we did. That portion, the dashboard below the windshield and the dashboard in the area immediately under that, were particularly examined, because the rest of it would have been shielded from a shot due to the height of the dashboard and the height of the back of the front seat.

Mr. Specter. Was any of the area examined then -- did any of that area examined disclose any impact of such a missile?

Mr. Frazier. No, sir, not of a high velocity. Only the lead area smeared on the inside of the windshield from a relatively light object which struck the inside, and did not even break the inside surface of the glass, and then there was a possible bullet impact area at the top of the chrome to the right of the rear view mirror. This was made by a projectile not having the weight or velocity of a whole bullet moving at -- in the range of a thousand to 1500 feet per second or more.

Mr. Specter. Based on the position of Governor Connally as depicted in the Zapruder slides at frames 222 and 225, could he have taken a shot, assuming the firing point to have been the 6th floor of the Texas School Book Depository Building, which entered and exited from his body in accordance with the known medical evidence?

Mr. Frazier. I have not made a very thorough study of the

CONFIDENTIAL

6783

Zapruder film which I understand you mentioned in this particular question. With reference to the Zapruder film itself--

Mr. Specter. We will take it with reference to the reconstructed positions of Governor Connally in 222 and 225, which you have testified you did observe at the time the measurements and photographs were taken.

Mr. Frazier. I would say, yes, under the conditions that I mentioned previously, that the reconstruction would represent the Governor as <sup>HE</sup> ~~HE~~ was in November, then he could have been struck anywhere in that frame area of from 207 to 225.

Mr. Specter. How about the same question in frames 231, 235, 240 and thereafter?

Mr. Frazier. There is only one <sup>POSITION</sup> ~~condition~~ beyond frame 225 at which the Governor could have been struck, according to the information furnished to me and from my examination of his clothing, ~~that~~ he was struck near the right sleeve seam and ~~that~~ the bullet came out through the inside pocket of his jacket.

At frame 231 the Governor is, as I saw it from the window on that date, turned to the front to such an extent that he could not have been hit at that particular frame.

Mr. Specter. Why not, Mr. Frazier?

Mr. Frazier. The angle through his body, as I measured, it on the coat is approximately 20 degrees from the right towards the left. On May 24 in our reconstruction I found that the Governor had turned <sup>FURTHER</sup> to the front from a position slightly facing



the right <sup>THAN</sup> ~~that~~ he was in at frame 225. He had turned back to the front so that a shot which struck him in this shoulder in the back--

Mr. Specter. Indicating the right shoulder?

Mr. Frazier. Indicating the right shoulder near the seam-- would have come out much further to his right than the actual exit hole described to me as being just under the right nipple.

Mr. Specter. How would the bullet have passed through his body based on his position as shown in frame 235?

Mr. Frazier. In 235, which is Commission Exhibit 897, the Governor in our reconstruction, according to the Zapruder film, was also facing too far, too much towards the front. The angle of the bullet through his body, assuming no deflection, would not have corresponded to the angle through his clothing or torso according to the information furnished from the medical examiners.

Mr. Specter. How about the Governor's position in frame 240?

Mr. Frazier. In frame 240 the Governor again could not have been shot, assuming no deflection of the bullet prior to its striking his body from the window on the 6th floor because he is turned in this case too far to the right.

Now, this obviously indicates that the Governor in between frame 235 and frame 240 has turned from facing completely forward in the car around to the right to the point that a bullet entering his back on the right shoulder area would have exited

**CONFIDENTIAL**

in my opinion (somewhere from his left chest) area rather than from his right chest area.

Mr. Specter. How about the Governor's position at frame 249?

Mr. Frazier. In frame 249 a similar situation exists in that the Governor, as represented by his stand-in in our reconstruction, has turned too far to the right, even further than frame 240, so that in frame 249 represented by Commission Exhibit 899, he again could not have been hit by a bullet which came from the window on the 6th floor, and struck him in an undeflected fashion and passed through his body undeflected.

Mr. Specter. How about frame 255?

Mr. Frazier. On frame 255 which is in Commission Exhibit 901 the Governor is turned again too far to the right, and the same situation would hold true as to what we saw in 249.

The bullet would have exited too far <sup>ON</sup> from his left, on his left side provided there was no deflection between the window and the point of exit from the Governor's body.

Mr. Specter. Mr. Frazier, based on the angles and distances, and speeds of the car and bullet in this situation, what lead would a marksman have to give to strike the moving target, allowing for all of those factors?

Mr. Frazier. The lead would be approximately the same for all of these positions represented by your frame or rather your Commission numbers 888, which is frame 161, all the way up to

frame 313 which I don't have, the Commission's exhibit is No. 902 on frame 313, a lead of six inches above the point of impact would be sufficient to account for the movement of the car during the flight of the bullet.

The fact that the same lead would be necessary at each place is because at the closer frame numbers, the lower frame numbers, 161, 166, 185 and so forth, there is a ~~very~~, relatively steep downward angle beginning at 40 degrees, whereas the last shot, the downward angle is approximately 17 degrees or 20 degrees, in that neighborhood.

Just one thing more, it would require less apparent elevation of the crosshair over the point of impact at the distant target to allow for a further movement of the car of approximately two feet at the point where the head shot occurred.

So the lead would be constant between 5.9 ~~feet~~

~~Mr. Specter. Inches or feet?~~

~~Mr. Frazier. Excuse me, 5.9 inches above the point of impact to 6.3 inches above the point of impact.~~

Mr. Dulles. Have you asked the witness, I was studying these frame pictures, at about what frame he thinks the body of Governor Connally would have been in a position to receive a bullet that would go through the body with this trajectory?

Mr. Specter: Yes, I believe I did.

Mr. Dulles. I wasn't quite clear.

Mr. Frazier. I testified that it would have been in position

CONFIDENTIAL

from anywhere from frame 207 to 225.

However, I cannot limit it to 207 because at that point the car goes back under the foliage and you can't actually see ~~it~~ <sup>there</sup> clearly enough.

Mr. Dulles. Between frames 207 and 225?

Mr. Frazier. Yes, sir.

Approximately 207 to approximately 225.

Mr. Dulles. Thank you.

Mr. Specter. Looking at Exhibit 902 on, frame 313, on the view shown on the photograph through rifle scope, is that the way you saw it at the time of the reconstruction when the car was in that position as shown in that exhibit?

Mr. Frazier. Yes, it is.

Mr. Specter. At this time I move for the admission into evidence of Commission Exhibits 885 through 903 which constitute all of the photographs referred to by Mr. Shaneyfelt and Mr. Frazier during their testimony during their testimony.

(Commission Exhibits Nos. 885 through 903 were marked for identification and received in evidence.)

Mr. McCloy. They may be admitted.

Mr. Specter. That completes the questioning.

Mr. McCloy. As I get it, Mr. Frazier, what you are saying is there is only a certain point at which the bullet could pass through the President could have hit Mr. Connally and that is at a point when he is not sitting full face forward and at a point

CONFIDENTIAL

when he is not too far turned around.

Mr. Frazier. That is exactly right.

Mr. McCloy. Somewhere when he is turning to the right.

Mr. Frazier. He was placed approximately 20 degrees to the right.

Mr. McCloy. To the right.

Mr. Frazier. That is 20 degrees according to my examination of his clothing <sup>BUT</sup> I don't know the exact figures of the angle through his body.

Mr. Specter. I have one additional question.

Mr. Frazier, assuming the factors which I have asked you to accept as true for the purposes of expressing an opinion before as to the flight of the bullet and the straight line penetration through the President's body, considering the point of entry and exit, do you have an opinion as to what probably happened during the interval between frames 207 and 225 as to whether the bullet which passed through the neck of the President entered the Governor's back.

Mr. Frazier. There are a lot of probables in that. First, we have to assume there is absolutely no deflection in the bullet from the time it left the barrel until the time it exited from the Governor's body. That assumes that it has gone through the President's body and through the Governor's body.

I feel that physically this would have been possible because of the positions of the Presidential stand-in and the Governor's

CONFIDENTIAL

6789

stand-in, it would be entirely possible for this to have occurred.

However, I myself don't have any technical evidence which would permit me to say one way or the other, in other words, which would support it as far as my rendering an opinion as an expert, but I would certainly say it was possible, but I don't say that it probably occurred because I don't have the evidence on which to base a statement like that.

Mr. Specter. What evidence is it that you would be missing to assess the probabilities?

Mr. Frazier. We are dealing with hypothetical situations here of replacing people in cars from photographs which are not absolutely accurate. They are two dimensional. They don't give you the third dimension. They are as accurate as you can accurately place the people, but it isn't absolute.

Secondly, we are dealing with the fact that we don't know whether, I don't know technically, whether there was any deviation in the bullet which struck the President in the back, and exited from his front. If there were a few degrees deviation then it may affect my opinion as to whether or not it would have struck the Governor.

We are dealing with an assumed fact that the Governor was in front of the President in such a position that he could have taken it. So when you say, would it probably have occurred, then you are asking me for an opinion, to base my opinion on a whole series

CONFIDENTIAL

CONFIDENTIAL

6790

of hypothetical facts which I can't substantiate.

Mr. McCloy. Let me put it to you in another way: from your best judgment about what you know about this thing what was the sequence of the shots and what was the, who was hit and when in relation to --

Mr. Frazier. I will say this: I have looked at the film and have seen evidence of one shot <sup>occurring</sup> ~~occurring~~ which struck the President in the head. That was at frame 313.

Mr. Specter. 313? Yes.

Mr. Frazier. Commission 902. I have seen evidence in the film of the President with both arms up clutching at his throat, and having examined his clothing and having seen the hole in his shirt and his back, I might assume that ~~the~~ <sup>he is</sup> clutching his throat because a bullet exited from his throat. I don't have the technical knowledge to substantiate that. There was no metal on this hole in <sup>the</sup> ~~the~~ <sup>is</sup> there is <sup>nothing</sup> for me to say from my own examination that it actually was a bullet hole.

Nowhere else in this film have I seen any indication of a bullet striking.

Mr. Specter. The President.

Mr. Frazier. Either the President or the Governor. Because I do not know the reaction time which would exist from the time a bullet struck until someone made a move. It may be a half second, it may be a full second, it may be a tenth of a second. It depends upon the intensity of the pain, and so on.

what happened.

And therefore, in looking at the film you can't say a bullet struck right here because he started to move his hands here. It may have been a full second, a half second behind that spot. I would say that two bullets at least struck in the automobile. I cannot say that three bullets did not strike in the automobile from my examination, but it appears, and due to the reconstruction at Dallas, it appears that if the one bullet did strike the President, then it landed in the automobile, and if it landed in the automobile, and we found no evidence of it having hit the car itself, then I say it is possible that it struck the Governor.

Now, as to the sequence of the shots, that one obviously was before the head shot. If there was a third shot fired, I could not tell you from anything I know whether it was the first, the second or the third.

Mr. McCloy. It is possible, according to your analysis of it that the first shot could have gone through the back of the President and exited through the front of his neck, and the second shot could have hit Connally and the third shot could have hit the President?

Mr. Dallas. Where would the first shot have gone under that thesis?

Mr. McCloy. I just say I don't know where it could have gone.

Mr. Brazier. From what I know of my examination, that is



small, because I have seen small twigs, small objects and ricochet for any reason except they hit and all the pressure is on one side. It turned the bullet and it goes off at an angle.

If there was no deviation -- that from the time the bullet left the rifle barrel until the time it exited from the Governor's body, then the physical setup exists for it to have gone through the President, and through the Governor.

Mr. Specter. You mean from the time it exited through the Governor's body?

Mr. Frazier. That is right.

Otherwise, you have nothing to base a conclusion upon. If you have deviation anywhere along the line then you both affect the position at which the Governor could have been shot -- for instance if the bullet entered the Governor's back and immediately took a 20 degree leftward angle, then the Governor could have been shot when he was facing straightforward in the automobile.

Now, I can't tell that, and therefore I can only say that my opinion must be based on the fact that there was not a deviation of the bullet through the President's body and no deviation of the bullet through the Governor's body, no deflection. On that basis then you can say that it is possible for both of them to have been hit with one bullet.

Rep. Ford. Does that opinion rule out the possibility of

**CONFIDENTIAL**

cast doubt on the possibility of a third shot?

Mr. Frazier. It does not rule out the possibility of a third shot. No, sir, because I can only base my opinion on what I saw and my own experience, and that is, that a bullet could have struck the President, if it had deflection in the President's body it could have, and he happened to be in a certain position in the car which would affect the angle, the bullet may have exited from the automobile.

Rep. Ford. As I understood your assumptions there was no deviation and no deflection, and I thought I phrased my question based on your opinion under those facts, it might rule out a third shot.

Mr. Dulles. Do you mean rule out a third shot entirely or just rule out a third shot hitting in the car?

Rep. Ford. Rule out a third shot in one instance or establish the possibility of a third shot that missed everything.

Mr. Frazier. As I understand your question I am now assuming these various factors to exist, that there was no deviation, no change in the path of the bullet.

Rep. Ford. The bullet went through the President and through the Governor.

Mr. Frazier. Yes, then under that premise and the reconstruction showing the position of the car with reference to the path of the bullet, then it is entirely possible that these two individuals were hit with one bullet and that there was not

another bullet that struck in the car, other than the one that struck the President in the back of the head and exited from his head.

Rep. Ford. Under these assumptions there is a possibility there was not a third shot or there was a third shot that missed everything.

Mr. Frazier. That missed everything, yes, sir.

Mr. Dulles. Is there any way of correlating the time of the shot with the position of the car so as to know whether possibly the first shot was fired before the car was out from the tree and it might have hit a branch of the tree and be deflected so it didn't hit the car? If he had fired too soon. I guess it is impossible.

Mr. Frazier. It is possible, I don't have any evidence to support it one way or the other.

Mr. Dulles. Yes.

Mr. Frazier. As to whether or not a limb of the tree may have deflected one shot. However, I think it should be remembered that the frame 207 is just as he exits under the tree; from there to 225 to where the President shows a reaction is only a matter of one second. He is under the tree in frames ~~162 to 207 which is, excuse me, it is frame 166 until frame 207,~~ which is about two seconds. So somewhere in that three-second interval there may have been a shot--which deflected from a limb or for some other reason and was never discovered.

CONFIDENTIAL

679

Rep. Ford. Mr. Chairman, may I return to questions that I was asking Mr. Frazier?

Mr. McCloy. Yes.

Rep. Ford. Again making those same assumptions we made a moment ago, is there any evidence that a third shot hit the car or any occupant of the car?

Mr. Frazier. Assuming all those assumptions we had before, no. I would say that, and again I have not the technical evidence to back this up one way or the other but <sup>you</sup> we make these assumptions and I would say under those conditions only two shots hit the occupants of the car, because the one through the President had to cause Connally's wound otherwise it would have struck somewhere else in the car and it did not strike somewhere else.

Therefore, it had to go through Governor Connally.

And the second shot had to strike the President in the head.

Mr. McCloy. How about these shots you spoke of, one of the fragments, at least, hitting the glass, the windshield and one possibly hitting the chrome. Was there anything, could it have been any fragmentation of the first shot which didn't hit, the first shot that hit the President, let's say, but didn't hit Connally, might that again make the possibility of three shots, one of them hitting the President and fragmenting as you indicated, and a second one hitting Connally, and the third one hitting the President for the lethal shot.

Mr. Frazier. Under that circumstance the bullet exiting from

the President would have had to strike something else in the car to break it up.

Mr. McCloy. Break it up <sup>2</sup>as much as it was broken up?

Mr. Frazier. Yes, sir. There was no evidence that the bullet which exited from the President was in any but complete condition; that is, there was only one hole through the shirt, there was only one hole through his coat or shirt, actually, and the testimony of the medical examiners <sup>WAS</sup> ~~was~~ that it made a relatively straight path through the body.

Mr. Specter. That completes my questions of Mr. Frazier.

Mr. Dulles. Could I ask just one more question?

Mr. Specter. Yes, sir, Mr. Dulles.

Mr. Dulles. There has been a certain amount of testimony indicating there was a longer pause between the report of the first shot or what is believed to be the report, explosion of the first shot and the second and third shots, that is not absolutely unanimous but I would say it is something like five to one or something of that kind, what would you say, two to one, three to one?

(Discussion off the record.)

Mr. Dulles. Is it possible that the assassin attempted to fire when the car was behind the tree or going into the tree, that that shot went astray, and that that accounts for, if there was a longer delay between one and two, that would account for it, and then the lethal shots were fired or the wound, the

## CONFIDENTIAL

one shot that was fired that hit the two and then the lethal shot was fired immediately after? It is speculation.

Mr. McCloy. I think that must be speculation because there certainly is conflicting evidence as to the intervals between the first and the second shot and the second and the third shot.

Mr. Dulles. I think if you will read the testimony you will find it at least two to one except for the people in the car.

Mr. McCloy. Maybe, but what weight do you give these, I don't know. I think that is quite possible that a bullet was deflected by that tree, but there is no evidence whatever of the bullet landing anywhere in the street or among the crowd.

And yet there seems to be no doubt at all that three shots were fired.

Mr. Dulles. That seems to be the evidence.

Mr. McCloy. At least three shots were fired, and probably three shots were fired because of the three shells that were found.

Mr. Dulles. Three shells?

Mr. McCloy. Yes.

Mr. Dulles. We probably won't settle that today.

Mr. Frazier. I don't know how to answer that question except possibly to go back to the frame numbers of the Zapruder film, and you will find they are about equally spaced from frame 161 just before the tree to frame, say, 220, which is just a few frames after the tree, that is 59 or approximately 60

frames, from that point, But from frame 289 to the last shot of 313 is 78 and 13, 91 frames, so there is more time between the second and third than the first and second, assuming that the second one actually occurred and that it occurred at about the middle of that interval

Mr. McCloy. In the middle of that frame, yes. I think that is pretty persuasive.

Mr. Dulles. I didn't quite follow that.

Mr. McCloy. There seemed to be more frames between, going backwards, between the third shot, that is between the time that

Mr. Dulles. The first shot went astray, you don't know whether it was fired. You have no way of getting at that.

(Discussion off the record.)

Mr. McCloy. Thank you very much, Mr. Frazier.

Mr. Specter. I want to call Inspector Kelley for observations from the underpass.

May the record show that Inspector Thomas Kelley has returned to the witness chair.

TESTIMONY OF THOMAS J. KELLEY, -- resumed

Mr. Kelley. Yes, sir.

Mr. Specter. Before we conclude the testimony, Inspector Kelley, I want to ask you if on May 24 you had occasion to go over to the triple underpass and observe the simulated car and occupants drive down Elm Street from Houston Street?

Mr. Kelley. Yes, I accompanied Mr. Redlich and Mr. Specter

**CONFIDENTIAL**

from the Commission on the point on the overpass.

Mr. Specter. From the Commission or from where to the overpass -- pardon me. I understand your sequence there.

What did you observe as to the position of the President's stand-in concerning whether he could have been struck by a bullet which was fired from the top of the triple underpass?

Mr. Kelley. I observed as the car came down Elm street that the President's stand-in was in our view all the time as he was coming down the street from the right-hand side of the car. As the more you moved over to the left of the underpass, the longer the stand-in was in direct view of anybody standing on the overpass.

Mr. Specter. And was the stand-in obstructed by the windshield at any time as the car drove down Elm street?

Mr. Kelley. No, he was not.

However, never at any time was he in a position to take a wound in the throat which from the drawings that have been given me, that I have been shown by the Commission, would he take a wound in the throat which would have exited higher than the throat or in the shoulder.

From the evidence that has been shown previously, the wound in the throat was lower on the President's body than the wound in the shoulder, and --

Mr. Specter. By the wound in the shoulder do you mean the wound in the back of the President's neck, the base of his



neck?

Mr. Kelley. Yes.

Mr. Specter. So, could a shot have been fired from the top of the triple underpass which would have passed through the President's neck, disregarding the medical evidence on point of entry and -- point of entry, which traveled in an upward direction from the front of his neck upward to the back of his neck?

Mr. Kelley. In my judgment, no.

Rep. Ford. If a person were standing where you have indicated you were on that triple overpass, on November 22, he would have been in full view of anybody in the immediate vicinity.

Mr. Kelley. Yes, and there were people on the overpass. There was a policeman on the overpass, there were a number of railroad workmen on the overpass at that time.

Rep. Ford. There would have been no place where such a person could have hidden himself, not been detected?

Mr. Kelley. Not on the overpass.

Mr. Dulles. What were the railway workmen doing on the overpass, were they helping to guard the overpass or just spectators?

Mr. Kelley. No, they were working. There are a great many tracks indicated here.

Mr. Dulles. Yes, I was up there and I remember it very well.

Mr. Kelley. They were doing some repairs on the tracks.

CONFIDENTIAL

Mr. Dulles. I see.

Mr. McCloy. I had the impression there was more than one policeman also guarding up there, at least two, but I maybe wrong. At least there is some testimony.

Mr. Dulles. Do you recall, Mr. Specter, what the testimony is on that the number of policemen on the overpass?

Mr. Specter. I believe there were two officers on the overpass, who said that no shots came from that direction.

Mr. McCloy. No shots came from that direction.

Is that all you wanted?

Mr. Specter. That completes the testimony of Mr. Kelley and all of the individuals this afternoon.

Mr. McCloy. Thank you very much, Mr. Kelley.

(Whereupon, at 6:40 p.m., the Commission recessed to view the films.)

CONFIDENTIAL

6802

(Present: Mr. McCloy, Mr. Dulles, Rep. Ford.)

(6:50 p.m.)

Mr. Specter. May the record now show that the Commission has now reassembled on the first floor of the VFW building where a motion picture projector and slide projector and screen have been set up for viewing of the films.

Mr. Shaneyfelt, what are you going to show us first of all?

Mr. Shaneyfelt. The first film will be the color motion picture made through the rifle scope as the car drove down the assassination route at approximately 11 miles an hour. It will give the view the rifleman had as he aimed the rifle from the 6th floor window of the Book building.

(Film)

Mr. Dulles. Is that going 11 miles per hour?

(Discussion off the record.)

Mr. Shaneyfelt. This film will be the black and white photographs of the car in the fixed still positions in each of the frame numbers described in previous testimony.

In addition the final portion of the film is a run through of the car at 11 miles an hour on three separate runs filmed as the rifleman would have seen the car looking through the rifle.

On the first run of the car <sup>going</sup> ~~running~~ down the assassination route I have stained frames in the vicinity of frame <sup>222</sup> 207 which is

CONFIDENTIAL

CONFIDENTIAL

6803

*after*  
the first clear (not after the tree, I have stained the frame  
at the location of shot 313, which is the second pink flash  
that you will see.

I found in examining the film that this is a shorter span  
of time than in the actual film. It is a span on the re-enact-  
ment of about three and a half seconds between <sup>222</sup>207 and 313. I  
don't mean 207, I mean 222. ~~222 is the first frame to be~~  
~~stained.~~

The second frame stained is 313 but since it is running at  
a faster speed I have also stained a spot that represents  
five seconds which is what the time lapse was between frame  
222 and frame 313 in the actual assassination films.

That will be after the car *driving* scene.

(Film)

Mr. Shaneyfelt. This is the last clear shot and this is  
an adjusted last clear shot before going under the tree. This  
is ~~the shot~~ approximately 185. This is frame 186 which is  
the adjusted shots which would account for a ten-inch variance.

Shot of frame 207, and the adjusted frame which was 210. This  
is frame 222 and you can see the tree is still in the background.

This is 225 now. 231. *At* this point Governor Connally *states he*  
*by now* has been hit. This is 235. 240-- 249-- 255-- and the shot *to*  
~~through~~ the head which is 313.

Mr. Specter. What is this, describe this, Mr. Shaneyfelt.

Mr. Shaneyfelt. This is the run at 11 miles an hour con-

CONFIDENTIAL

6804

taining the pink stain. This is another run at 11 miles an hour. It will give you some idea of the difficulty of tracking a car with a heavy camera mounted on *the rifle*.

Mr. McCloy. You have to sight that with a camera?

Mr. Shaneyfelt. Sighting through a camera.

(Film)

Mr. Redlich. Just as a final thing, Mr. McCloy, would you like to see the Zapruder film?

Mr. McCloy. I think we will take the original Zapruder again, I don't know whether we have anything that is more significant in the black and whites, I am talking about the particular movies of the frames, we have not <sup>seen</sup> even those.

Mr. Shaneyfelt. Yes.

Mr. McCloy. I think we have seen all we need to see with regard to that. What have you got left?

Mr. Shaneyfelt. The original Zapruder film.

Mr. McCloy. We will see that.

Mr. Shaneyfelt. We have the duplication of the Zapruder film re-enactment. The first portion of the reel is the still shots and the last portion is the run through at 11 miles an hour.

Mr. Specter. I think you would find that worth while to see.

Mr. Shaneyfelt. Then we have Nix and Muchmore of the same run.

Mr. McCloy. Let's do those two.

Rep. Ford. First is the original Zapruder.

CONFIDENTIAL

CONFIDENTIAL

6805

Mr. Shaneyfelt. Original Zapruder. This is not the original.  
This is the first copy.

(Film)

Mr. Specter. Will you state for the record what film we  
just saw?

Mr. Shaneyfelt. The film we just viewed is a copy made  
directly from the original Zapruder film of the actual  
assassination.

Mr. Specter. Could you now show us the film which was taken  
at the reconstruction from the Zapruder position?

(Film)

Mr. Shaneyfelt. These films we made in Dallas have been  
developed and left intact and have not been edited in any  
way so there are a lot of blank spaces where we run the leader  
off, and ~~change~~ turned the film over. This is position 161.  
This is a side to side jiggle camera malfunction.

Mr. McCloy. This is 16 mm?

Mr. Shaneyfelt. No, 8mm.

Rep. Ford. Is this from his camera?

Mr. Shaneyfelt. Yes, taken with his camera.

Frame 222, frame 225. This is frame 231.

Rep. Ford. He has a delayed reaction compared to what the  
President did.

Mr. Specter. What frame is this, Mr. Shaneyfelt?

Mr. Shaneyfelt. 313, the head shot.

CONFIDENTIAL

CONFIDENTIAL

6806

Mr. McCloy. the head shot.

Mr. Shaneyfelt. This is the position ~~at~~ which the ~~film~~ which is not duplicated on the Zapruder film. This is running the film out to reload it, ~~to the other side.~~

During that run at 11 miles an hour we made no effort to duplicate the body position because it would have been most difficult to know just when to turn. The only other films we have <sup>are</sup> were the ones we shot with <sup>the</sup> Nix and Muchmore cameras of this same run from their positions.

Mr. McCloy. Did Nix <sup>or</sup> Muchmore get a second shot of the head shot?

Mr. Shaneyfelt. Mrs. Muchmore got the head shot and Mr. Nix got the head shot.

Mr. McCloy. They both got it.

Mr. Shaneyfelt. We have both those films.

Mr. McCloy. We might take a look at it while we are here.

I don't think I have ever seen those. Those are 8mm too.

Mr. Shaneyfelt. Yes.

(Film.)

Mr. Shaneyfelt. This film is the film that was taken by Mr. Orville Nix of the ~~Dallas~~ assassination. This is along Houston street going toward Elm. There was the ~~third shot or~~ the head shot. We will roll it back and run it at slow motion. The head shot shows just a very faint pink

Mr. McCloy. Very soon after this sequence begins. Just

**CONFIDENTIAL**

as the President is directly under the window aboutment in the background. I will try to give you a clue about when it is going to happen, there.

The next film is the film that was exposed in Mr. Nix's camera standing in the position determined to be his camera position at the re-enactment in Dallas, with the car traveling at approximately 11 miles an hour along Elm street.

These films were compared with each other and found to be consistent in the size of the car in the area of the picture and ~~the~~ verified the position as being seen that of Mr. Nix.

(Film)

Mr. Specter. Have you now shown us, Mr. Shaneyfelt, all of the movies that we saw, we took in Dallas?

Mr. McCloy. Mrs. Muchmore.

Mr. Specter. Mrs. Muchmore.

(Film)

Mr. Shaneyfelt. This is the motorcade coming down Main and turning into Houston street.

Mr. McCloy. She didn't know she took that.

Mr. Shaneyfelt. No.

Mr. Specter. Have we now seen all the films from Dallas?

That concludes the films.

Mr. McCloy, for the record, I would like to have the films marked with Commission Exhibit No. 904 identifying the Zapruder copy, that is the copy of the original Zapruder film.

**CONFIDENTIAL**



CONFIDENTIAL

6808

May I say here parenthetically that we do not intend to reproduce all of this in the published record of the Commission since we have extracted the key numbers on Exhibit 895 on the album which shows the frames of the Zapruder film after the President's automobile turns left off of Houston onto Elm but for the permanent archives these films should be made a part of the permanent record.

I would like to have a copy of the original Nix film marked as Commission Exhibit 905. I would like to have the copy of the original Muchmore film marked as Commission Exhibit 906. I would like to have all of the movies which we took at Dallas marked in a group as Commission Exhibit 907.

Mr. McCloy. That is all the movies that were taken on May 24 in Dallas by the test team, so to speak.

Mr. Specter. Right, Commissioner McCloy, marked as 907, and I would like to move formally for the admission in evidence of Exhibit 904 to 907 at this time.

Mr. McCloy. It may be admitted.

(Commission's Exhibits 904, 905, 906 and 907 were marked for identification and received in evidence.)

(Whereupon, at 7:20 p.m., the hearing was recessed subject to call of the Chair.)

CONFIDENTIAL