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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 these 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?

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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 those 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 get~~ ^{haven't discussed} 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} ~~after~~ 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 ^{mounted} ~~pointed~~ the camera on the rifle and photographs were made with black and white film, motion pictures of the car in the

7 fixed positions from frame 161 through frame positions 313.

The car was stopped at each position. The individuals ^{and} in the car were positioned by Mr. Gauthier on the street, ~~by the car~~ ~~they appeared in the Zapruder 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. Shaneyfelt. 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

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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 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.

9 Mr. Spector. When was that photograph taken?

Mr. Shaneyfelt. It was taken Sunday afternoon, May 24, 1964.

Mr. Spector. Is there a white string which is apparent in the background of that photograph?

Mr. Shaneyfelt. That is correct.

Mr. Spector. 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. Spector. Did the surveyor make that placement in your presence?

Mr. Shaneyfelt. He did.

Mr. Spector. ^{were} 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 ^{sign} board and as they emerge from the sign board.

Mr. Spector. 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.

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Mr. Specter. And through what positions did that ^{rod} ~~rod~~ pass?

Mr. Shaneyfelt. The ^{rod} ~~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 ^{rod} ~~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 on the one hand, 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

1 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. Shaneyfelt. 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. Shaneyfelt. Yes.

Sen. Cooper. Then the factor then which is not determinable exactly then is the location of the rifle, is that correct?

Mr. Shaneyfelt. That is correct.

Sen. Cooper. Upon what did you determine the location of the rifle, upon what factors?

Mr. Shaneyfelt. The rifle was positioned in the sixth floor ^{window} of the book building where the cartridges were found and was determined on the basis of ^{information furnished by} 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. Shaneyfelt. That is correct. Yes. We had photographs of the boxes and ~~we~~ we were advised of the approximate position ⁱⁿ of the window and how far down the window was, the fact that ~~the rifle was~~ some observers noted ^{the rifle} sticking out the window.

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 ^{based} on the photographs is subject to some variation, too, so we have variations throughout.

And ^{what} ~~that~~ would occur ~~at the window~~ from variations in the position of the rifle at that particular window, I feel would be negligible.

Sen. Cooper. At every point where you do 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 those 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 ^{are} ~~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 ^{at} a 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~~ ~~207~~ ~~207~~ ~~225~~. ^{at frame} 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

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.

TESTIMONY OF ROBERT A. FRAZIER -- RESUMED

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

Mr. Frazier. Robert A. Frazier.

Mr. Specter. Mr. ^{Frazier} 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

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 southeast 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 ^{and} identify 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.

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, ^{reportedly} ~~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 ^{with} ~~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 ^{boxes} ~~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 ^a ~~far~~ further to the left.

The position of the rifle, of course, had to be such that it could be ^{sighted} ~~seen~~ out through the window, using the telescopic ^{sight} ~~size~~, 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

would not interfere with a view through the telescopic ^{sight} ~~scope~~, 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 6th 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 hand you 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,
end indicating the entrance wound on the back of the President's

fols
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stand-in, pass into the foliage of the tree.

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 ~~899~~⁸⁸⁹ 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 ^{by} 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

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?

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 ^{sighting} ~~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

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 ^{the} 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 stand-in's 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.

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

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 ~~same~~ ^{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 ^{entering} ~~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^e 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

miss the car at all if it had no deviation i. its - 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

Zapruder film which I understand you mention 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 ~~it~~^{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 ^{LOCATION} ~~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 ^{FURTHER} to the front from a position slightly facing

the right ^{THAN} 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 to 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

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 ^{on} ~~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 load 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

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 ~~how~~ ^{there} 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

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 ^{BUT} 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

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 on 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} when you say, would it probably have occurred, then you are asking me for an opinion, - to base my opinion on a whole series

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 ^{occurring} ~~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~~ ^{he is} 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 front, and there is ^{no way} ~~nothing~~ 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 actually

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. Dulles. 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. Frazier. From what I know ^{from} of my examination, that is

true, because I have seen bullets strike small twigs, small objects and ricochet for no apparent reason except they hit and all the pressure is on one side and it turned the bullet and it goes off at an angle.

If there was no deviation in 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~~ ^{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 or

cast doubt on (possibility of a third (ot?

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 ^{ON} 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 ~~169 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.

Rep. Ford. Chairman, may I return 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 ^{you} we make these assumptions and I would say under those conditions only two shots hit the occupants or 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 ~~as~~ ² 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 ^{WAS} ~~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

one shot that was fired that hit the two a... then the lothal 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. 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, ²²² But from frame ~~219~~ 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

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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

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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.

Mr. Dulles. 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.)

(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 ^{going} ~~running~~ down the assassination route I have stained frames in the vicinity of frame ²²² ~~207~~ which is

after
the first clear shot 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-enactment of about three and a half seconds between ²²²207 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} running 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} has been hit ^{by now}. 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-

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 ^{seen} 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.

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~~ I turned the film over. This is position 161. This is ~~a~~ side to side jiggle ^{is} 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.

Mr. McCloy. the head shot.

Mr. Shaneyfelt. This is the position ~~at~~ which the ~~film~~ 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 ^{are} were the ones we shot with ^{the} Nix and Muchmore cameras of this same run from their positions.

Mr. McCloy. Did Nix ^{or} 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

as the President is directly under the white abutment 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 car~~ verified the position as being from that of Mr. Nix.

(Film)

Mr. Spector. Have you now shown us, Mr. Shaneyfelt, all of the movies that we saw, we took in Dallas?

Mr. McCloy. Mrs. Muchmore.

Mr. Spector. 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. Spector. 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.

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 885 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.)