

Senator 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.

Representative FORD. Is that what is calculated by the surveyor?

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, 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 Senator 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 onsite tests at Dallas on May 24, 1964?

Mr. FRAZIER. Yes.

Mr. SPECTER. What was your position during most of the time of those onsite tests?

Mr. FRAZIER. I was stationed at the window on the sixth 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 that the distance depicted on Commission Exhibit No. 492, which has heretofore been introduced in evidence?

Mr. FRAZIER. Yes, sir.

Mr. SPECTER. Is 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. 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 onsite tests?

Mr. FRAZIER. Yes, sir.

Mr. SPECTER. The rifle previously identified as Commission Exhibit No. 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 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 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, 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 sixth floor window. These prevented me or anyone who was shooting from that window from moving any further to the left.

The position of the rifle, of course, had to be such that it could be sighted out through the window, using the telescopic sight 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, which is approximately 2 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 eyewitnesses 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 No. 886, did you view through the sight 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 sixth 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 No. 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 Exhibit No. 888 is frame 161, and is the position at which I had the car stopped just before the spot, indicating the entrance wound on the back of the President's stand-in, passed into the foliage of the tree.

Mr. SPECTER. I now hand you Exhibits Nos. 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 No. 889 represented by frame 166 is the adjusted position to account for the fact that the Presidential stand-in on May 24 was actually 10 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 10 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 in the autopsy figures. They then held a ruler, a tape measure up against that, both the back of the Presidential stand-in and the back of the Governor's stand-in, and looking through the scope you could estimate the 10-inch distance down on the automobile.

You could not actually see it on the President's back. But could locate that 10-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 No. 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 sixth 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 Exhibit No. 891, which is marked frame 186, this is the adjusted position to which the car was moved to accommodate the 10-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 time when these photographs were taken and the 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 eyewitness 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 Nos. 892 and 893, and ask you if you observed the views depicted in the "photograph through rifle scope" on each of those exhibits?

Mr. FRAZIER. On Commission Exhibit No. 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 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 No. 893, also marked frame 210, we have the photograph made at the adjusted position to accommodate the 10-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 alinement of President Kennedy's stand-in with Governor Connally's stand-in at frames 207 and 210?

Mr. FRAZIER. They both are in direct alinement 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. Alinement of people?

Mr. SPECTER. Yes, sir.

Mr. FRAZIER. Yes, sir.

Mr. SPECTER. Could Governor Connally have taken a shot in the range of frames 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 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 sixth 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 deflection 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 as a possibility based upon the observations you made and the facts provided to you?

Mr. FRAZIER. Yes, sir.

Mr. SPECTER. All right.

I now hand you Commission Exhibits Nos. 894 and 895 and ask you if you saw the photograph as depicted on the "photograph through 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 No. 895—895 being frame No. 225.

Mr. SPECTER. I now show you Exhibits Nos. 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 No. 896 is also marked frame No. 231, and represents the relative positions of the President's and Governor's stand-in on May 24.

Commission Exhibit No. 897, which is marked frame 235, also represents the positions of the Presidential and Governor's stand-in as I saw it from the sixth floor on that date.

Mr. SPECTER. I now hand you Exhibits Nos. 899, 898, and 901 and ask if you saw the pictures or if your view was the same as "photograph through rifle scope" depicted on those exhibits?

Mr. FRAZIER. Yes; they are. In each case Commission Exhibit No. 898, which is marked frame 240, Commission Exhibit No. 899, which is also marked frame 249, and Commission Exhibit No. 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 onsite tests, that a bullet passed through President Kennedy entering at a velocity of 1,900 feet per second striking 14 centimeters below the right 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 probable, based on the fact 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 yours 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 sight 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 cars shown in each of these photographs which is frame 225 on this end of this series, and frame 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 in 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 such as 1,775 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 floorboards 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 hoods 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. 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 rearview 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 1,500 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 sixth 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 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 frames 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 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 position 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° from the right toward the left. On May 24 in our reconstruction I found that the Governor had turned farther to the front from a position slightly facing the right than 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 frame 235, which is Commission Exhibit No. 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 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 sixth 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 No. 899, he again could not have been hit by a bullet which came from the window on the sixth 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 No. 901 the Governor is turned again too far to the right, and the same situation would hold true as to what we saw in frame 249.

The bullet would have exited too far 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, 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 Exhibit No. 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 6 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 relatively steep downward angle beginning at 40°, whereas the last shot, the downward angle is approximately 17° or 20°, 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 2 feet at the point where the head shot occurred.

So the lead would be constant between 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 frames 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 clearly enough.

Mr. DULLES. Between frames 207 and 225?

Mr. FRAZIER. Yes, sir; approximately frame 207 to approximately frame 225.

Mr. DULLES. Thank you.

Mr. SPECTER. Looking at Exhibit No. 902, 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 Nos. 885 through 903 which constitute all of the photographs referred to by Mr. Shaneyfelt and Mr. Frazier 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° to the right.

Mr. McCLOY. To the right.

Mr. FRAZIER. That is 20° 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. 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 placing 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. 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 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 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 which struck the President in the head. That was at frame 313.

Mr. SPECTER. Frame 313? Yes.

Mr. FRAZIER. Commission Exhibit No. 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 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 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 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 turns the bullet and it goes off at an angle.

If there was no deviation 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° 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 your assumption 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.

Representative FORD. Does that opinion rule out the possibility or 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.

Representative 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?

Representative 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.

Representative 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.

Representative 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 frame 225 to where the President shows a reaction is only a matter of 1 second. He is under the tree in frames 166 until frame 207, which is about 2 seconds. So somewhere in that 3-second interval there may have been a shot—which deflected from a limb or for some other reason and was never discovered.

Representative FORD. Mr. Chairman, may I return to questions that I was asking Mr. Frazier?

Mr. McCLOY. Yes.

Representative FORD. Again making those same assumptions we made a mo-

ment 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 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 inasmuch 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 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 5 to 1 or something of that kind, what would you say, 2 to 1, 3 to 1?

(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 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 2 to 1 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 222 to the last shot of frame 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 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 anytime 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, 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.

Representative 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.

Representative FORD. There would have been no place where such a person could have hidden himself and 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?