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## “My God, They Are Going to Kill Us All”

Two of the most controversial issues in the assassination are whether Oswald could fire three shots in the necessary time and if the nearly whole bullet, Warren Commission Exhibit 399, found on the stretcher at Parkland Hospital could have passed through the President, out his neck, and then caused all of Governor Connally's wounds.

The Warren Commission and the House Select Committee did the best they could with photo and computer technology as it existed in 1964 and 1978. However, scientific advances within the past five years allow significant enhancements of the Zapruder film, as well as scale re-creations using computer animation, which were unavailable to the government panels. As a result, it is now possible to settle the question of the timing of Oswald's shots and to pinpoint the moment when both Kennedy and Connally were struck with a precision previously unattainable.\*

\*At Dealey Plaza, more than 510 photographs that directly relate to the assassination were taken by some seventy-five photographers, but the Zapruder film is by far the most useful in determining what happened, since it records the entire period of the shooting. This chapter is based primarily on the latest computer enhancements of that film. They include one done by Dr. Michael West, a medical examiner in Mississippi, together with Johann Rush, the journalist who filmed Oswald during his Fair Play for Cuba demonstration at the New Orleans Trade Mart; and another completed by Failure Analysis Associates, a prominent firm specializing in computer

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The first issue is the timing. In 1964, the FBI's test-firing of Oswald's Carcano determined that a minimum of 2.25 to 2.3 seconds was necessary between shots to operate the bolt and re-aim.<sup>1</sup> Since the first bullet was already in the rifle's chamber and ready to fire, that meant Oswald had to operate the bolt action twice (just as Harold Norman heard on the fifth floor). According to the Warren Commission, the fastest he could have fired all three shots was 4.5 seconds. However, that minimum time is now out of date. CBS reconstructed the shooting for a 1975 documentary. Eleven volunteer marksmen took turns firing clips of three bullets at a moving target. None of them had dry practice runs with the Carcano's bolt action, as Oswald had had almost daily while in New Orleans. Yet the times ranged from 4.1 seconds, almost half a second faster than what the Warren Commission thought was possible, to slightly more than 6 seconds, with the average being 5.6 seconds, and two out of three hits on the target.<sup>2</sup> Based on its 1977 reconstruction tests, the House Select Committee lowered the time between shots on the Carcano to 1.66 seconds, with the shooter hitting all the targets.<sup>3</sup> This reduced the time necessary for three effective shots to 3.3 seconds.

The time necessary to operate the Carcano must be compared to the Zapruder film, which serves as a time clock for the assassination. The FBI concluded that Zapruder's camera operated at 18.3 frames a second.\* By figuring when the first and last shots

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reconstructions for lawsuits. The Failure Analysis work is an extensive undertaking involving 3-D scale generations of Dealey Plaza, physical mock-ups of the presidential car, and stand-in models for the President and Governor, all to determine trajectory angles and the feasibility of one bullet causing both sets of wounds. Failure Analysis also re-created experiments with the 6.5mm ammunition, using more updated information than was available to the Warren Commission, to further test the "single-bullet theory" and the condition of the missile.

\*Zapruder said the film in his camera was fully wound when he started filming the motorcade. The FBI's 1964 tests determined that in the first 30 seconds of operation, Zapruder's camera ran between 18 to 18.5 frames per second, with the average at 18.3. While that is a 3 percent variance, it is statistically unimportant when determining the reaction times of Kennedy and Connally to their bullet wounds. The figure 18.3 is used by all researchers.

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