

# MEMORANDUM

August 6, 1996 (Revised)

To: Jeremy Gunn

From: Doug Horne

Subject: Rationale for Having an Independent Third Party Examine the Authenticity of the Zapruder Film

A number of indices support the possibility that the Zapruder film of the JFK assassination may have been altered. Some of these indicators are merely circumstantial, and some are related directly to the optical characteristics of the film itself. The purpose of this memo is not to conclusively argue or persuade whether or not such alteration really occurred, but rather to justify a high-priority examination of the film's authenticity by an expert independent third party possessed of the necessary expertise to scientifically examine and report on as many of these leads and speculations as possible. Details are provided below:

## A. Circumstantial evidence of possible film alteration:

(1) The leader with the unique number "0183" perforated into it which was attached to the film on 11/22/63 is not attached to the film today (based on ARRB's 8/02/96 examination in the Archives).

(2) Numerous eyewitnesses to the assassination in Dealey Plaza contemporaneously told police and newspapers on 11/22/63, or testified in 1964 to the Warren Commission, that the limousine stopped during the shooting, yet this is not seen on the film today--instead, the Zapruder film merely shows the limousine slowing down.

(3) The descriptions of President Kennedy's head wounds, as contemporaneously reported by Dealey Plaza, motorcade and Parkland hospital witnesses, were consistently of a posterior skull wound in the occipital-parietal area--yet the Zapruder film shows a different head wound, namely, a large, superior, right-parietal head wound to the President; and the posterior portion of President Kennedy's head appears to be quite dark in the film frames following the fatal wounding.

(4) The extremely rapid head turns of the limousine's driver (seen between frames 302-303, and 316-317) are anatomically impossible, according to some researchers, and are de facto evidence that frames have been removed from the Zapruder film.

B. Optically observed features in the film itself which may bring into question the film's authenticity:

(1) "Blurless frames" (in between the Stemmons freeway sign and the head shot, e.g., frames 303, 305-307, and 309-310) are said by some students of the film to be an impossibility if it is true that the limousine never came to a complete stop; that is, that since the limousine is moving, and many observers in the background are not, that either the limousine or the background should be out of focus at any one moment as portrayed on the recorded image, depending on whether the camera is panning or stationary, but that *both* the limousine and background cannot be in focus at the same time. It has been argued that the apparent presence of frames in the film in which both the moving limousine and the background are in focus in the same frame is de facto evidence that the limousine did come to a complete stop at one point--and that since the limousine does not stop as the Zapruder motion picture film is viewed today, that the presence of these frames is evidence that the film has been tampered with.

(2) Author's observation: Presence of the "inertial effect" at one point in the film (where it is expected to be present) and its apparent absence at another point in the film (where it is also expected to be present) may be optical evidence of frames having been removed. [The "inertial effect," as explained by Mr. Mayn at the National Archives, is improper exposure and skewed color balance which occurs in the recorded film image anywhere from 3-6 frames after the shutter starts operating, caused by the camera not yet being up to proper speed, and the shutter sometimes not yet opening the proper amount.] This effect was observed where the scenes in the film change from medium shots of Dealey Plaza bystanders just prior to the motorcade, to the lead motorcycles turning the corner at Elm and Houston and proceeding down Elm street: the first 4-5 frames of film in this area appeared yellowish in color and overexposed, when the author examined the film at NARA on 8/02/96. However, the inertial effect was not observed by the author when the scene changes again, from the lead motorcycle escort to the limousine which suddenly and dramatically appears in the film on Elm street, having already negotiated the Elm-Houston turn: at this point, one would expect to see the inertial effect repeated, but this observer did not see evidence of the inertial effect at this location on the film. Its absence at this point in the film may be evidence of frames having been removed, since it should be impossible to start an 8 mm format home-movie camera of 1963 vintage without such an effect being recorded.

(3) Author's observation: The quality of the recorded image between the sprocket holes is of a markedly different optical character than the remainder of the image in each frame. The author observed on 8/02/96 that the image content between the sprocket holes, although contiguous with the image in the remainder of each frame, has a different optical texture than the remainder of the image in the rest of each frame outside the sprocket holes: namely, that it exhibits a "silvery" tint overlaid onto the color image, and that the intensity of the portion of the color image between the sprocket holes is markedly subdued, when compared to the extremely bright color intensity in the remainder of each frame. This difference in color balance gives the lay person viewing individual frames of the film the subjective impression of a "boundary layer" between the sprocket-hole portion of each frame and the projected (i.e., "normal") portion of each frame. The author could not help but wonder whether this observed phenomenon was evidence of an altered, duplicated and "reconstructed" new 8 mm film, represented to be the "camera original," but which bears traces of reconstruction along the border normally masked out of duplicate copies by most optical printers. (On the other hand, if this phenomenon of a different color balance and image texture in the sprocket hole area of each frame has an innocent explanation based on the design of the camera shutter, or the relationship of the lens with the extreme edge of the film plane, then this should be scientifically demonstrated and explained so that improper speculation about its meaning does not continue.)<sup>1</sup>

**Recommendations:** ARRB should request that an independent third party examine the perceived optical abnormalities discussed in subparagraphs B (1)-(3) above, to determine, to the extent possible with today's technology, whether they bear on the authenticity of the Zapruder film in the National

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<sup>1</sup>One possible test of the authenticity of the images recorded between the sprocket holes on the Zapruder film would be to compare the color balance, color intensity, and image quality of the sprocket hole images on the assassination portion of Zapruder's home movie with the domestic scenes on the other half of his film. (The domestic scenes are of a baby sitting on grass, and of an adult woman using the telephone, and are spliced onto the assassination portion of the film on the same reel in the National Archives.) Another obvious test would be to expose test film (1963 Kodachrome II vintage if available, and if not, whatever film is available today that is most similar to Kodachrome II) in Zapruder's Model 414 PD Bell and Howell Zoomatic Director Series camera as a "control" experiment, and then compare the quality and characteristics of the image between the sprocket holes in the "control" film with that in Zapruder's film of the assassination.

Archives which has been represented since 1963 to be the “camera original.”

Providing Kodak believes there are techniques applicable to testing the authenticity of the Zapruder film, I recommend that ARRB discuss these issues with Kodak when both sides meet to hold informal discussions on film testing issues in the near future.