

# MEMORANDUM

April 21, 1997

TO: David Marwell  
Jeremy Gunn

FROM: Doug Horne

SUBJECT: Apparent Anomalies in Zapruder Film When Viewed on Commercial  
CD-ROM Educational Product

1. I recently reviewed David Mantik's letter dated February 22, 1996, and Roy Schaeffer's letter dated March 31, 1997, both about apparent anomalies they perceive when studying the Zapruder film.
2. Both of these independent researchers (Mantik, on page 2 of attachment B; and Schaeffer, on page 7 of his attachment) mention the presence of an anomaly on frame 028 of the Zapruder film--the 28th frame of the lead motorcycle escort sequence. Mantik credits Mr. Schaeffer with its discovery and calls it a "fiducial mark;" Schaeffer calls it a "register mark" which he says looks like a "plus sign."
3. I was interested in studying this reported anomaly because it did not involve any comparison of the film with eyewitness testimony; that is, the anomaly described by these researchers was described as self-contained within the film, and I reasoned, was probably susceptible to scientific testing and analysis by independent, qualified expert observers.
4. Using the commercial CD-ROM product called "JFK Assassination: A Visual Investigation," which has now been reloaded into the ARRB server, I not only discovered the apparent anomaly on Zapruder frame 028 described by Mantik and Schaeffer in their letters to the ARRB, but I also discovered what appears to be the same type of anomaly (i.e., a "plus sign," or "cross-hair") in three other Zapruder frames, namely frames 005, 007, and 011. Because I was unable to print these frames, I have rendered drawings which approximate the image content in each frame, and which render the approximate appearance and location of each apparent anomaly in these frames; they are provided here as attachments.
5. Two of the apparent anomalies can also be viewed in magnified (full-screen) format on the CD-ROM: these are in frames 005 and 011. The apparent artifacts in these two frames, in particular, appear noteworthy *only at full magnification*; but at this level of detail, they appear quite striking, in that they appear indicative of "artificiality" (i.e., 90 degree angles formed by intersecting lines), and appear as though they may be something more than the occasional random "dirt" residue seen throughout the film on almost every frame.

6. Without speculating on the possible meaning, or significance, of apparently man-made artifacts such as “plus signs” or “cross-hairs” on a purportedly camera-original film, I recommend that the ARRB take the following steps to attempt to clarify the nature of the phenomenon described above:

-Ask Kodak to digitally scan and magnify images of frames 005, 007, 011 and 028 on the film identified as the original in the National Archives, and determine whether these apparent anomalies are on the original film at all. (Rationale: they may appear only on whatever copy of the film was used for the imagery in the CD-ROM, or they may be some unknown artifacts created by the CD-ROM manufacturing process.)

-If the apparent anomalies seen on the CD-ROM in frames 005, 007, 011, and 028 are on the original film, Kodak should be asked to conduct an expert analysis, reporting on how they think the anomalies were created--namely, are they dirt or dust; are they something imprinted on the film when it was manufactured or when the edge print was applied; are they artifacts caused in some way by Mr. Zapruder's camera as the film was advanced in the camera; or are they artifacts which cannot be explained by any normal process related to the camera mechanism, or by normal developing associated with home movie film? If so (that is, if they are artificial anomalies normally not seen on home movie film), how did they likely come to appear in the images in these frames, and what does their presence imply?

5. More than most of the leads offered by researchers as purported anomalies in the Zapruder film, these seem particularly amenable to empirical measurements, and dispassionate study by qualified, professional film experts. I feel that the study of the frames cited above should receive a high priority on our list of proposed projects for Kodak.