

MEMORANDUM

January 23, 1996

TO: Jeremy Gunn

CC: David Marwell

FROM: Doug Horne

SUBJECT: Issues for ARRB to Pursue with Kodak in Response to the Kodak Letter of January 7, 1997

1. Following review of Kodak's letter to ARRB dated January 7, 1997, I recommend ARRB consider further pursuit of the following issues with Kodak:

a. High Priority:

(1) Roll of 120 Film from Autopsy: Digitally scan, and enhance to the greatest extent possible, the 3 extremely dark positive images (apparently post mortem autopsy photographs of President Kennedy) found on the roll of 120 Ektachrome color transparency film which is part of the Kennedy family deed-of-gift (i.e., the autopsy photograph collection); produce varied-exposure reproductions of the enhanced images in the most appropriate imaging format(s), preferably 8" X 10" in size. [Furthermore, ask Kodak whether Earl McDonald's hypothesis--that this is simply a roll of Ektachrome E3 color transparency film which was exposed only to ambient room light (without properly synchronized flash illumination) when the shutter was opened to expose the three images in question, subsequently "flashed" (i.e., intentionally pulled out of the camera and exposed to ambient light), and developed normally--could be valid.]

(2) Zapruder Film (Original): Pending resolution of taking-related issues, digitally scan the original Zapruder film, analyze the image content, and record the digitized film image content on CD ROM for retention in the National Archives. [Types of analysis should include motion-related questions (such as whether or not the image content of certain frames indicates that the Presidential limousine may have stopped on Elm street during the shooting), as well as questions about images of the President's head wounds (e.g., resolving authenticity questions about both the extremely dark imaged areas of the back of the head following frame 313, and the apparent head wound on the right side of the head following frame 313).] Also, ask

Kodak to propose any additional motion-related imaging studies of the digitized Zapruder film which it would consider useful, providing HSCA tests are not repeated.

(3) Film Tests in Zapruder's Camera: Conduct tests using 8 mm film in Zapruder's actual movie camera to test whether the apparent anomalies in the original Zapruder film which were theoretically attributed by Kodak in September 1996 to "claw flare," "vignetting," "development turbidity," and to "first frame inertial-effect" ("blue tint" or "first-frame over-exposure") are duplicated in actual practice when exposing test film in the same camera used to create the Zapruder film. Such tests could address directly many questions regarding the authenticity of the Zapruder film. Kodak may even wish to also use a similar camera from the Eastman House Museum to provide another set of data points; however, I believe that the essential tests must be run with Abraham Zapruder's own movie camera, the same device in which the film at issue was exposed.

(4) Create a new set of uncropped prints of all autopsy images: Create a complete new set of *uncropped* black-and-white and color prints of President Kennedy's autopsy photos, showing the entire frame of each photographic image (with special emphasis on color transparency # 38);

(5) Authenticity of Selected Photographs from President Kennedy's Autopsy: Ask Kodak to digitize and perform analysis on the following photos with the goal being to render judgments, to the extent possible, on authenticity:

Nos. 15, 16, 42, 43: "Wound of entrance in right posterior occipital region"

(6) Authenticity of Head X-rays from President Kennedy's Autopsy: Ask Kodak what can be done to evaluate the authenticity of JFK autopsy x-rays nos. 1-3 (one A-P and two lateral skull x-rays). Such studies should address: whether these three x-rays could be copy films, or whether they can be definitively determined to be originals; the unusual darkness/luminosity of the skull x-rays (when compared to other cadaver skull x-rays); and the significance and/or causation of the unusually high luminosity (implying much higher bone density than the averages from control studies) measured in particular portions of these three x-rays. Any observations or studies made by Kodak, aside from those mentioned above, which would further address perceived optical density anomalies in the JFK skull x-rays, would be useful.

b. Middle Priority:

(1) Kodak technicians should fully analyze a complete set of edge-print information for all NARA copies of the Zapruder film: Ask Kodak to transcribe and fully research all edge-print information from the four 8 mm format copies of the Zapruder film in the National Archives (3 are marked as first-generation copies, and 1 is marked as a second-generation copy).

(2) Kodak technicians should fully analyze a complete set of edge-print information for the Groden Nix and Muchmore prints provided in response to ARRB subpoena: Ask Kodak to transcribe and fully research all edge-print information from the 35 mm format copies of the Nix and Muchmore films loaned to ARRB by Robert Groden.

c. Lowest Priority:

(1) Prepare a Red-to-Black Predictive Study Re: Autopsy Photos: Ask Kodak to prepare a predictive study which would quantitatively predict the expected degree of grey-scale in black-and-white autopsy photos, based on the amount of red in corresponding autopsy color transparency images. (Kodak reps stated this was possible during the September 11, 1996 meeting with ARRB.)

(2) Write a technical report evaluating likelihood of autopsy images being photographs of 3-dimensional objects vs. photographs of other (altered) photographs: During the September 11, 1996 meeting with ARRB staff, both Kodak reps discussed the difficulty of photographing other photographs without a marked contrast buildup occurring, and discussed at some length the "gamma" curve (optical density vs. the logarithm of exposure). A written, technical explanation of these issues should be prepared for the ARRB, along with Kodak's best evaluation as to whether each of the extant autopsy photos is a bonafide image of a 3-dimensional object (i.e., the President's body), or a photograph of *another* (i.e., possibly altered) *photograph*.

3. Tests not recommended:

a. In its report, the analysis already performed by Kodak on the edge-print information from the original Zapruder film at NARA has definitively established that the film stock was finished in Rochester in 1961, and that it is Kodachrome II film. These conclusions are entirely consistent with the receipt trail for this motion picture film, which established as early as 11/22/63 that Zapruder's film was shot on Kodachrome II stock. I see no need to reinforce the results of this edge-print analysis by performing destructive chemical testing on a frame

from the film. (Those who suspect that the Zapruder film in the Archives is not the camera-original, but rather a copy on Kodachrome II of an *altered* original, have never alleged or suspected that anything other than Kodachrome II film stock available in 1963 was used for this purpose, since this argument posits that any altered film would, of necessity, have been made within days or weeks of the assassination; therefore, I believe that chemical testing of any Zapruder frames would be an unnecessary expenditure of resources.)

b. In its report, Kodak's analysis of edge-print markings on the roll of 120 film in the autopsy photographic collection has confirmed that subject film is Ektachrome E3 color positive transparency film, which is entirely consistent with the receipt trail commencing with the 11/22/63 Bethesda memorandum from CAPT Stover to ASAIC Roy Kellerman. Therefore, I do not believe that cutting a cross-section of the film for physical study of exposure/development characteristics is an expenditure that can be justified as essential.

c. I see no need to conduct any further edge-print studies of autopsy photographs, nor does chemical testing of samples taken from autopsy photographs seem necessary for any reason.

4. Some errors were noted in Mr. Zavada's report dated December 19, 1996. The author recommends these be corrected in our response to Kodak, for the purpose of clarifying the record, as follows:

a. On page 4 of the Zavada report, the perforated I.D. numbers on the 3 first generation copies of the Zapruder film are misstated as 0184, 0185, and 0186; in reality the numbers were 0185, 0186, and 0187.

b. On page 5 of the Zavada report, its author refers to post mortem photography of the President as "Dallas Hospital operating room scenes;" this should have read "Bethesda autopsy scenes," since ARRB is unaware of any Parkland Hospital photography from Dallas.

5. I recommend ARRB request that Kodak prepare a cost estimate for all activity described above in paragraph 2; final decisions on actual taskings for Kodak can be reached later following ARRB's receipt of cost estimates, and after Review Board consideration.