

Response to Douglas P. Horne, Author:

**INSIDE THE ASSASSINATION RECORD REVIEW BOARD, Volume IV**  
**Chapter 14: The Zapruder Film Mystery (p1185 - p1377)**

Notice: This response contains several images from the Zapruder film and copies. The following applies to all such images. ***"Zapruder Film: Copyright 1967 (renewed 1995) The Sixth Floor Museum at Dealey Plaza. All rights reserved.***

Identification of Selected Issues and Comments: (Sequentially numbered for reference)

*Note to recipients of copies of this response. Most issues that follow are a tête-à-tête with Doug to rebuff some of the criticism he has for several parts of my report to the ARRB - in a sense, a little correction of twisting or fabrication of fact. The key issue is whether or not the Zapruder in-camera original film could have been altered as he professes. For my response to that important consideration, you may wish to skip to **Issues 13 thru 16.***

Note: Doug, **it is my belief** that the aggregate of your arguments do more to support authentication than they do to establish a realistic sequence of issues and events that would allow the purported alteration.

**ISSUES:**

**1. Zavada's Obvious Bias (p1186)**

Throughout your chapter you refer to my "*natural bias*" verifying that you have forgotten my film technology tutorials to you. I entered the analysis program with my background and a ***technical bias*** that the 8mm films were probably authentic. Narrow gauge films had no history of being used as printing masters to be supplemented with optical effects; the equipment for precise film positioning and repositioning needed to accomplish such a task from an 8mm width film was extremely limited or didn't exist. Further, the B&H amateur camera used was not capable of registering and repositioning the film as precisely required for subsequent optical effects.

**2. Zavada failed to state that the film was authentic. (p1187)**

You wrote: "*There was no final conclusion in the report, which summarized Zavada's findings in one paragraph (for Zavada to have certified the films authenticity) rather he noted throughout the report the film's characteristics as being consistent with authenticity.*"

My report did not contain a statement or certification of authenticity for one simple reason! ARRB requested – through you - that 'NO' statement of authenticity be provided: by me (Rollie Zavada) or by Kodak.

### 3. Zavada's report received late. (p1188+)

There are about five references, plus your interviews on *Coast-to-Coast* (11/30/09) and *Black Op Radio* that my report was received too late to critique.

*You wrote: "Rollie would not finish his report until September 25, 1998, five days before the ARRB ceased operations, which allowed us no time to pursue any further evidentiary leads when the report was received in Washington on or about September 28, 1998, the same day as our 'sunset' press conference at the National Archives."*

I am truly surprised you stated the receipt date: "*allowed us no time to pursue any further evidentiary leads*". You were Kodak's designated contact with the ARRB and in that role served as mentor and reviewer of our activities. Consequently you were aware of my plan of action, testing activity, results and problems on a continuing basis. Further, in my August 17, 1998 cover letter to you, I provided complete drafts of Studies 1, 2 and 3 and extracts of text and photographic supplements of Study 4. (Necessary for ARRB and DOJ review of proposed photographic supplementary material.) By receipt of these drafts, you could review all of the detailed content of my report prior to publication - except for a small part of chapter 4, primarily addressing the septum line issue. Consequently, only the formal report with its covering library reference was provided on September 25<sup>th</sup>. Instead of the complete report being available to you six weeks prior to shutdown, what if it arrived months earlier? You do not identify what: "*further evidentiary leads*" you would have encouraged.

You also fail to inform your readership of the tremendous complexity introduced by LMH Co. (established by Zapruder's heirs) in their challenge to demand copyright license before any of the photographs I had taken could be used in the Kodak report. The AARB initially supported LMH Co's desire to extract a restrictive and potentially expensive license in order to complete my work. You called it a standard "boiler plate" contract and encouraged us to accept. Kodak appropriately refused and all work to complete the detailed report ceased during July and August. It was necessary for me to retrieve all photographs from supporting interviewees and then to provide Kodak all negatives, prints and extracted computer data (for Kodak - ***in safe keeping***) and certify that I possessed no copyright protected photographs of Zapruder's film material.

You were aware that the consequence of that action forced me to begin rewriting my report using only those B&W photographs from the Warren Commission for edge print identification and to provide analogous edge print data from my vintage 8mm film material - a truly disastrous approach

to a meaningful report of a specific film. This represented almost two months of wasted effort before the DOJ, in late August, ruled that my report photographs represented "fair use". Understand that it required a significant effort to reconstitute a meaningful study before the closing date – BUT IT GOT DONE! – And you received an "off-the-radar" personal copy or two. (1186)

In my own interest as a consultant, I subsequently protected Kodak and myself by personally obtaining a written copyright license from LMH Co. for my report.

### **Beginning at page 1252, your Chapter Develops "Indicators Inconsistent With the Film's Authenticity"**

#### **4. Emulsion Side Base Side Conventions Revisited (p1253)**

*"Frank Sloan volunteered independently that on a first generation contact print, that base (or shiny) side should be "up" when the image is correctly oriented.".* Then you say: *"This is no trivial matter, for the extant Zapruder film in the Archives reads through the base (or shiny side) and all three 'first generation' copies examined by Rollie Zavada read correctly through the emulsion (or dull side) of the film. I did not get a degree in film at USC or UCLA, so am not qualified to resolve this dispute.*

Frank Sloan's boss, Bruce Jamieson et al, properly identified the reversal film original and first generation print emulsion orientation several times. As you wrote, *"This is no trivial matter,"* rather it is an important message you convey to your readership about your inability to comprehend fundamental film technology and basic laboratory practices. Why introduce fog and confusion to your readers when you know better? (Note: The Assn of Cinema & Video Labs Handbook is on the web; see: *"A and B Wind Emulsion Positions"* for an impartial reference.)

#### **5. Should the Images Between the Sprocket Holes on the Camera Original Film Have Been Copied onto the Contact Prints Exposed at the Jamieson Lab? (p1254)**

*The fact that they are masked out caused Zavada-who as a matter of natural bias always assumed that both the extant film in the Archives and the Secret Service copies were authentic - to infer that the 'picture only' aperture was selected by the printer operator at the Jamieson film lab. Yet Jamieson had initially recalled that picture plus soundtrack (i.e., what he called 'full frame aperture) had' been selected when Zapruder's film was copied--and that furthermore, this was the standard operating procedure in his laboratory. (p1256)*

It is important to note that when we refer to a SOP (standard operating procedure) for a laboratory, we must also recognize what their principal production output would be. Jameson's lab served the industrial audiovisual market with 16 mm **sound** motion picture films made with single row perforated film stock. Therefore it is understandable that picture with accompanying sound area aperture settings would be standard practice. However, when we are dealing with double row perforated 16 mm film – i.e. silent film (with 8mm pitch), it would not be appropriate to include the sound track printing aperture because of the possibility of introducing fog or light flair into other areas of the film through the row of perforations now over the sound track aperture. This would not have been a prudent operator decision for printing a critically important film. This is why, in subsequent discussions with Bruce Jamison, I reported that we concluded, and he confirmed, that picture only aperture had been selected on their Bell & Howell model J. printer for the Zapruder original.

#### **6. Rollie Zavada Could Not Replicate the Septum Line Seen in the Intersprocket Area of the Zapruder Home Movie Through Empirical Testing (1259)**

The goal of our empirical testing was not to exactly duplicate Jamieson's printer margin. What we accomplished was to identify how the printer sprocket could be uniquely undercut (between the drive teeth) to allow light piped diverted printer light to reach a slit opening to allow the margin information to be printed concurrently with the picture area. (Note that we concluded that the optional outboard margin printer was not used.) The amount of undercut would establish the width of the septum line; hence Jamieson's 1959 septum line indicated the common undercut concept but, of course, it was not the identical printer sprocket. (Because printer sprockets wear and require periodic replacement, the one in Kodak's vintage Model J was not undercut to allow margin exposure. See study 3, p11 and 12, and Figures 3-2 and 3-5)

The uniqueness of the margin septum line and its width therefore became a valuable Jamieson printer "signature", which identifies their same day printing of three copies.

#### **7. The Edge Printer Lights at the Kodak Processing Plant May have Been Turned Off During Developing of the Camera Original Film, Meaning That Today's 'First Generation' Copies Exhibit An 'Impossible' Double Registration of the Dallas Processing Edge Print (p1262)**

You go on to report: *"I will quote below Kenny Anderson's statements from his letter to Zavada, etc".* However Doug, you chose only selected parts of his letter convenient to your thesis, and *"may have been turned off"* is an assumption.

In his letter of July 24, 1997, Kenny wrote:

*"In the early afternoon on the day of the Kennedy assassination, I was told by Mr. Chamberlain to set up a processing machine for some special film the secret service would bring in. I did so. Sometime later a Secret Service agent with a roll of film was brought to me. (I cannot comment on any handling of the film before this).*

*I took the agent and the roll of film into the processing room. There the single roll of was fed into the #2 processing machine by B. Davis (deceased). Davis, the agent and myself stayed in the darkroom until the film entered the dry cabinet. The agent and I then went to the dry alley. The lights in the drying cabinet were turned off so we could not view the film.*

*When the roll of film reached take off, I removed it **and gave it to the agent.***

*No Film was removed from the roll at the processing operation.*

***I Am not sure if the edge printer was off or on** (for some reason I think the agent requested we turn it off)." The request is acknowledged by Kenny, but his doubt rather than action is confirmed. Addendum A1-13.*

In your own analysis of what took place at the Kodak processing laboratory, you reported that Agent Sorrels departed before processing of the original was completed. No other secret service agent was reported to be present and we know that Phil Chamberlain had control of the film after processing and projected it for Zapruder and a dozen lab personnel. The significant and critical review of Kenny's statement (above) came not from me, but from Blair and Chamberlain as Phil said he would have been notified if a departure from standard practice occurred. (Note: It was not unusual for the dry cabinet lights to be turned off when processing films for law enforcement purposes to protect an operator from viewing evidence.) Note also that on Sunday, Kenny was involved with the processing of the Charles Bronson 8mm assassination film with FBI Agent Newsom and its subsequent viewing at 3PM. We must accept that it is difficult to develop positive conclusions with less than clear testimony decades later.

Also note. The Dallas processing lab edge print identification on the original was confirmed with a print-through onto the Jamieson copies

subsequently processed with normal SOP (print lights on) after Kenny's work trick ended and no secret service agent was present – proof of edge printer lights "ON".

**8. Zavada Initially Concluded That the Camera Original Zapruder Film Had Been Slit<sup>1</sup> at the Kodak Plant in Dallas; However, Subsequent to Locating Three Black & White Duplicates of Film at the Sixth Floor Museum in 2000, He Has Overruled His Original Witnesses and Has Decided That The Camera Original Film Was Not Slit After All (p1277)**

Doug, you are reformatting a discussion interview with Phil Chamberlain and Dick Blair to support your premise with a verbal conclusion rather than with supplemental factual information. The title to that section was: *"Our discussion developed the most probable sequence of events for the processing of the Zapruder films as follows:" (Study 1, p26&27)*

However there are some significant recollections. After the copies were processed at least one copy was slit to 8mm and shown to Zapruder and a few lab personnel and Phil recalled: *"This time, we slit and spliced the films and put them on regular 8mm projection spools, and once again trooped to the conference room -- this time to see the film at its normal size and speed, and several times, if we wished! Those of us in the lab realized that the duplicate (the slit roll chosen) was soft, or fuzzy compared to the original, but really of good quality considering the circumstances."* (Attachment A1-11, p5)

This recollection establishes, (by viewing a lower image quality assessment), that a least one Jamieson copy was slit. What of the remaining copies and original?

Phil had also reported that: *"Early on Saturday, two FBI agents showed up, with one of the copies of the Zapruder film. I don't know how they were aware of the existence of the film, or how they obtained the copy. Erwin Pattist, who was then the Quality Control Supervisor, and I set up a Kodak Analyst projector that runs both backwards and forwards, and can stop to examine individual frames, etc. For nearly an hour we ran the projector as the FBI agents counted the frames between Zapruder's flinches at each shot, cursed the street sign that obscured the view during a crucial moment, exclaimed as bullets impacted -- and like us, theorized...etc"*

The above recollection by Phil Chamberlain indicates that the FBI had an unslit 16mm wide double 8mm copy. The Analyst Projector is a 16mm

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<sup>1</sup> The term "slit" is used throughout, but the term "split" is also correct for converting double 8 to 8mm.

Projector, and the frame-by-frame analysis described could not have been accomplished with then existing 8mm projectors.

We also know from the information you supplied, that a "16mm width double 8mm film", presumably a Secret Service Dallas copy, was received at the NPIC Saturday night in Washington.

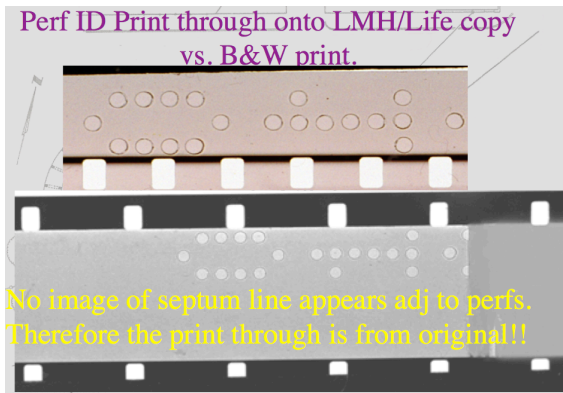
The statements indicating that all films were split to 8mm was initially suspect. During my first visit to NARA in 1996, I reported that I had viewed an unslit double 8mm (16mm width) Secret Service copy of the Zapruder film or subsequent generation copy. (Attachment A1-3 of Study 1) In response, ARRB (you) and NARA informed me that *a 16mm double 8mm print did not exist and my memory during our brief visit was in error!* Now, at last, I am exonerated as you publish a much-needed clarification on p1265 as: *"The misidentified film had been listed by the Archives as a Time-Life copy. Rollie himself had earlier reported extensively on this misidentification .....The misidentified film was unslit, and examination of the film revealed poor image quality, as well as manufacturer's edge print, etc"*

**Subsequently I did conclude Kodak did not slit the Zapruder original because –**

In March 2000, I was asked to examine film materials returned to the Zapruder family by *Time-Life* in 1975 and subsequently donated to the Sixth Floor Museum in 1999. We now had the third Jamieson copy available for study together with two 16mm negative copies of the double 8mm original and a corresponding dirty dupe identified by Museum curator Gary Mack. (Purportedly printed by Allied Laboratory in Chicago Nov. 24 or 25 1963.)(Film box available)

By analyzing the perforated lab identification of the Jamieson copy compared to a print-through of the identification number on the Allied negative, we can conclude that Zapruder did not allow his valuable original to be slit. The original film is what Zapruder's contract stipulates he provided to *Time* for \$50,000.

I believe the resulting double 8mm Allied Laboratory negative became the source of selected images (called-out with tabs) for the assassination sequence photos in *Life*, November 29, 1963. (See photo of proof below)



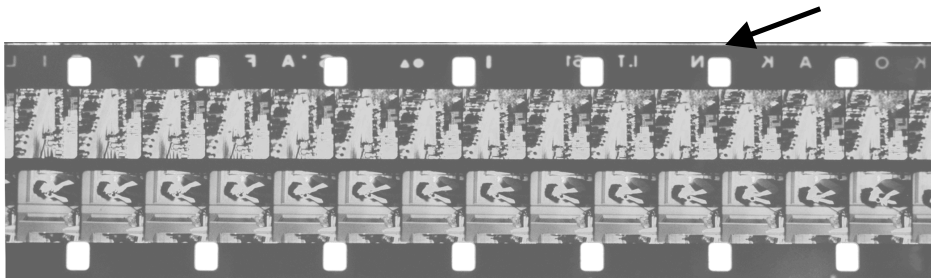
*Time* B&W (Dirty Dupe) copy made by Allied in Chicago does not contain a septum line, which allows us to conclude that the negative is a direct copy of the Zapruder camera original. Note: the emulsion orientation is also proper.



Note: "callout tab" on negative copy to identify a selected image for printing in Nov. 29<sup>th</sup> issue of *Life*.

In this collection of materials containing the B&W negative dupes, I also viewed and a splice-free "Dirty Dupe"<sup>2</sup> in unslit double 8mm width format.

Note that the arrow identifies the stock used to print the "Dirty Dupe" as the same negative material "N" edge print as used for the other two double-eight negative rolls. There are NO Splices in the Dirty Dupe copy.



<sup>2</sup> The term "Dirty Dupe" is common in the motion picture industry referring to a positive print that was struck (printed) at the same time (as an extra copy) as the working negative(s) were printed. One dupe - the negative was processed as a negative for editing and the second dupe (also on the same negative stock) was processed as a reversal to yield poor - but easily identifiable - positive images to aid in visualizing the negative frames.

We now had evidence that Phil Chamberlain's comments that all four rolls of double 8mm KODACHROME processed by the Dallas Lab on November 22 were slit to 8mm width is NOT TRUE, and my viewing of a Secret Service double 8mm copy at NARA in 1996 adds to the analysis to



confirm this fact. Then, in what format were the original and three Jamieson copies (slit or unslit?) when Zapruder departed the Kodak Dallas Processing Laboratories?

When Stolley of Time-Life first negotiated with Zapruder to gain media rights to the original, we can reasonably conclude that the term "*required return of the original print*" stated in the written agreement referred to the camera original and not a Jamieson copy. That unslit original was printed by Allied in Chicago, Saturday November 23<sup>rd</sup> or Sunday the 24<sup>th</sup>, in order to meet the prepress make-up requirements for the November 29<sup>th</sup> issue of *Life*. (Possibly printed Monday or Tuesday November 25<sup>th</sup> or 26<sup>th</sup>.)

Slitting A; B; Cs. **A.** One copy was slit as Zapruder projected it at Kodak and then for the interested newsmen on Saturday morning. (1- slit); **B.** The FBI visited the Kodak Dallas Laboratory also on Saturday morning to view the Secret Service loaned unslit copy on an Analyst 16mm projector. (1- unslit); **C.** You report the Jamieson copy that was received by the NPIC late Friday night required opening a photo shop to acquire an 8mm projector. (1- slit) Therefore it is highly probable that two Jamieson copies were slit Friday afternoon and that the original and one copy remained unslit. The SS/FBI Jamieson copy was sent to Washington Saturday with the request that three copies be made and two returned to Dallas.

**Now try this scenario:** The unslit Jamieson copy (borrowed by the FBI and viewed at Kodak Dallas lab) is sent to Washington, D.C., by C. D. DeLoach using a commercial flight the evening of the 23<sup>rd</sup> and met by the FBI in Baltimore. (See your "*Major Chain of Custody Discrepancy*" paragraph p1220.) The FBI communiqué requests copies be made. After FBI viewing, Mr. Smith couriered the film to the closest KODACHROME II printing and necessary processing source -- Kodak Rochester (no K14 process in Washington) to have rush copies made. Because this activity is secret, at that time, his secure contact at Kodak for the services needed is through the CIA project at Hawkeye Plant. After the films are copied and processed, he returns to Washington and the NPIC.

The Jamieson copy and a 2<sup>nd</sup> generation copy are hand delivered to McMahon at NPIC Sunday night, by Smith, for Briefing Board prints (p1241). Per McMahon's interview with you<sup>3</sup>, **a copy** is projected as 16mm double 8mm, and another double 8 film (the Jameson double 8mm copy) that he believes is the 'original' is enlarged 40X (about 5X7 in.) to make internegatives for subsequent briefing board printing.

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<sup>3</sup> <http://www.assassinationsscience.com/johncostella/jfk/horne-mcmahon-interview.mp3>

Then McMahon makes a **critical observation** – he reports that as part of the procedure for critical focus, a portion of the film is enlarged 400X “as if we were looking through a microscope”. You questioned, “grain” and McMahon provides you with an excellent tutorial on KODACHROME image structure – **no grain seen**! I contend that if the film were altered, as you profess, the grain structure of the required intermediate films would be easily seen at 400X! Therefore, the image structure confirms that McMahon was using the unslit Jamieson – same day - copy for the Briefing Board prints – not an altered substitute ‘original’!



**9. The ‘Full Flush Left’ Intersprocket Image Penetration Found on Today’s Extant film” Could Not be Consistently or Fully Replicated by Rolie Zavada in Empirical Film Tests etc. (p1282)**

I have never fully comprehended why my empirical camera tests results, which do include portions showing full perf area penetration (e.g. clip of Dallas ‘97 test) became the basis for you, et al. to conclude the Zapruder film was altered. My tests were designed to and did identify certain camera characteristics consistent with those found on the film exposed in Zapruder’s B&H 414PD camera. The range of camera settings was purposely varied.

A practical test in Zapruder’s camera would have been ideal. That possibility was discouraged at the onset for my pro bono study of the camera characteristics by NARA and endorsed by ARRB.

In ARRB’s Feb. ‘97 letter to Kodak detailing our plan of work, and the subsequent meeting at Kodak, **we were encouraged to obtain and test a comparable camera rather than use Zapruder’s camera held by NARA.**

It was that decision by ARRB (to obtain and test a comparable camera) that forced me to seek the use of a B&H 414 camera from the George Eastman House collection. That request was unsuccessful and led me to make my

own fortunate purchases on the used camera market with the luck of three cameras within 210 serial numbers of Zapruder's camera – possibly manufactured the same day.

You subsequently spend several pages relating to your desire to conduct a practical test with Zapruder's camera in Dallas. (p1286-1287) You correctly state that ARRB did not wish to pay for my trip. Because the camera study was my personal contribution, Kodak also was not willing to foot the bill. I had already paid my own way to Dallas to conduct a camera test just months earlier and had a family situation that made it difficult to consider a trip within the requested timeframe. The compromise as you report was to send ARRB one of my cameras to film the scenario of the event.

I provided you (ARRB) a B&H 414PD camera with a loaded "light-struck" practice roll of film, **wound ready to test** with the instruction manual to encourage and allow repeated familiarity trials before attempting to load and shoot with the provided fresh roll of KODACHROME II daylight film.

You wrote: *"Investigation revealed that Samoluk (who had never been trained by Zavada) did not know the camera had to be physically wound! It never jammed, as he had believed. **It never jammed at all; it had simply never been wound by Rolie prior to shipment.**"*

Doug, your memory is fading, as this quote is simply not true and your shifting blame for a failed test that was high on your priority list. I believe ARRB tasked the project to someone who apparently was very naive with photo equipment and didn't exercise just a little effort to learn the simple tasks required. He wasted a week of testing/familiarity opportunity while the camera was with him in Washington and obviously didn't review the accompanying instruction manual or give me a call! For the record: I also don't believe you could have gained permission from Steve Tilley to use the Zapruder camera.

Near the conclusion of my testing program, Steve Tilley of NARA denied three requests to perform simple practical testing, although I designed one test so I wouldn't have to even touch the Zapruder camera!

**10. His expertise is very limited: he is a retired film chemist who expended considerable effort to become self-taught in how the Zapruder camera operated--but he was not, and is not, an expert in special effects, and he did not conduct an investigation into image content in the Zapruder film. (p1290)**

You are well aware that my motion picture expertise extends well beyond emulsion chemistry. You may not know that I have knowledge of film dimensions and printer gates and movements; and also the tools needed for in-camera and optical effects. FYI, you may wish to review my article on the fundamental film dimensional technology requirements for potentially using 16mm films for special effects production in "*Challenges to the Concept of Cancellation*" SMPTE Journal, December 1981, Vol 90, pages 1173-1183.

You criticize that I did not conduct an image content evaluation of the Zapruder film. However, it is not until your parenthetical addendum comment (p1353) that you inform your readers that the omission was an initial and specific contractual constraint in the work agreement developed between Kodak and the ARRB. (Also confirmed in your interview on Black OP Radio, 12/10/09.)

**11. Or in his 'cooking of the books' in his Zapruder film authenticity study, was Rollie acting as an agent of the company that ran the "Hawkeye Plant"..... The Secret Service agent who delivered the 16 mm wide, unslit double 8 film to McMahon on Sunday night told him it had come from "Hawkeyeworks" in Rochester, the code name of a highly classified CIA film lab at the main Kodak industrial facility in Rochester; etc. (p1293)**

We are now aware that at the time period of the assassination a component of the highly secret Cold War CIA/USAF satellite reconnaissance "Project Corona" was housed at the Kodak Hawkeye Plant. This project's secrecy level no doubt prompted the cautions expressed to the ARRB during your interviews – if *Corona* was the "code word" expunged from the Homer McMahon interview by ARRB. (p1323). Corona satellite cameras used special thin-based 70mm wide B&W film processed by Kodak after capsule recovery. Kodak designed and built 10-20-40X Precision Enlargers capable of enlarging small elements of the original film up to 40 times in order to provide larger prints for display and briefing. The completed equipment was delivered to various government installations for use by the photo-interpreters and analysts. (See Brugioni's reference to satellite imagery film, p1333)

I could not "*act as a agent*" to withhold information as I was not aware of any government activities conducted at the Hawkeye Plant during the time period of my Zapruder film study or prior. In recent discussions with principles in the Corona Project, none are aware of a motion picture film entering the lab; further; it was reported to me that the Corona Project lab had no motion picture or color film processing capability.

## 12. REASONS TO DOUBT THE ZAPRUDER FILM'S AUTHENTICITY BASED UPON IMAGE CONTENT (p1294)

You list witness recollections of both the actual event and of those who viewed the 8mm film in Zapruder's office as being different from what is seen on the Zapruder film held by NARA.

The discrepancies can be summarized briefly, in part coming from:

Recollections to the witnessed event not depicted in the film content:  
Limousine turn onto Elm Street; limousine brief stop; exit debris leaving the back of the head and Parkland doctor depiction of head wound location.

Recollections derived from viewing Zapruder's copy of the film projected Saturday as: Seeing the head snap violently forward and seeing brain tissue/debris exiting the back of the head.

Specific film frame image anomalies interpreted as "evidence" of alteration:  
Stemmons Freeway sign position or edge; exit wound or "blob" on right frontal lobe of the head; duration of "spray" forward from head wound; stop/restart scene filming of motorcycle lead – then to limousine without fog or first-frame overexposure; bystanders not blurred by panning with limousine travel; etc.

### MYSTERIOUS BLOBS

You make reference to Dr. Rod Ryan's review of "mysterious blobs" on JFK's face in frame Z313, and following, as reported on page 160 of Noel Twyman's book *Bloody Treason*. His comments are reported, as: "*it did not look as if it had been done with traveling matte inserts, but rather **it looked as if the blobs had been painted in***".



For perspective, we need take note of the fact that these interviews were conducted in 1995 and copies of the Zapruder film were not readily available. In June 1999, following the submission of my ARRB report, NARA assembled a group of industry experts to act as a sub group of the Preservation Committee and make recommendations of what could to be done to preserve the Zapruder 8mm film. The evening before the meeting

I had dinner with Rod, Richard Trask and Chuck Bard. Part of our conversation centered on the authenticity of the Zapruder film and Rod's comments published by Twyman.

Rod mentioned that he was quite uncomfortable with Twyman's reporting, but that when presented with black and white prints of selected scenes he reported what he believed he saw. He acknowledged it would be very difficult to alter the film at that time.

At lunch break of the sub group had an opportunity to view the original Zapruder 8mm film. This was my fourth "hands-on" viewing and Rod's first. We both carefully examined the film including microscopically. I challenged Rod to identify any evidence of alteration. Essentially he accepted that the film appeared authentic and that he would not challenge NARA's position that it was.

I contend, however, the fundamental issue rests with the technology and logistics of whether or not it was possible to alter the Zapruder original film and substitute an undetectable facsimile. If unaltered, as I believe, the "in-camera" original resides at NARA, and the film is the unimpeachable witness to the assassination. Perceived inconsistencies of content are anomalies that may be difficult or impossible to explain. My analysis, to convince you, et al, that alteration was impossible follows below. There is reiteration of some comments previously made to ensure closure.

**13. You expound about the possibility of alteration in a section: "Was the Technology Available in 1963 to Alter the Zapruder Film by Removing the Car Stop and Exit Debris Leaving President Kennedy's Head; ... etc." (p1308) Supplemented with a working eight-step hypothesis. (p1242)**

You then reference several researchers interpretations of "HOW" alteration was achieved. Methodologies referenced include; 35mm blowups, traveling mattes, matte insertions, painting on glass or cells and a requisite: *"that the process camera used for the final step in the creation of an altered Zapruder film must have been a Bell and Howell 414 model camera set in the animation mode."* (p1313) Later, you conclude that because *"Many days or perhaps even several weeks, would be required to complete traveling matte work on the Zapruder film"*, (a second alteration step?) *and could have been accomplished between November 25<sup>th</sup> and January 27<sup>th</sup> when the film was first shown to the Warren Commission staff as a motion picture.'*

You identify your primary reference sources to support alteration as the presentation by David Healy "*HOW THE FILM WAS EDITED*" at Jim Fetzer's May 2003 conference and Professor Fielding's book *The Technique of SPECIAL EFFECTS Cinematography*.

In my early discussions with David Healy, and as noted in his paper, he was not aware of the daylight loading procedure of the Zapruder camera and misidentified the film types and was not knowledgeable about the types of films used in post-production. Therefore David's analysis appears to follow the mindset of other proponents of alteration that they were working in a *professional film* content/reproduction special effects capability environment. Nothing could be further from the truth as the amateur 8mm film original introduced insurmountable constraints to the purported special optical effects changes.

**13A. You develop a chronology of events following the development of the Zapruder original and Jamieson copies at Kodak's Dallas Laboratory as: (p1323+)**

1. Original and copies are slit to 8mm and one copy viewed as 8mm.
2. Agent Sorrels receives two copies – Zapruder assists and delivers one for a USAF flight to Washington, NPIC Friday night the 22nd.
3. Zapruder did possess the original through Saturday morning when he sold it to Richard Stolley of Time/Life. Life then flew it to Chicago late Saturday afternoon the 23<sup>rd</sup> for viewing/printing. However you believe after negotiations, LIFE willingly (or unwillingly) cooperated with federal officials to divert the original film to Washington. (p1240)
4. Dino Brugioni<sup>4</sup>, is convinced he received a 8mm "original" Saturday night the 23<sup>rd</sup> for the making of briefing boards.
5. Next night, Sunday the 24<sup>th</sup>, Homer McMahon<sup>5</sup> is also convinced he receives Zapruder "original", but as 16mm double 8mm unslit for the making of a second (independent?) set of briefing boards.
6. You conclude that this represents *prima facie* evidence that the film was altered Sunday and the double 8mm film McMahon received was masquerading as the "original".
7. You are convinced that Dino Brugioni knew he was handling the "original" because of his credentials and from his interview with Janney: "*I know it was an original because we all put on white gloves.*" (p1329) Further determination that the film was the original was "*how nervous the two Secret Service agents were about how the film was handled by the NPIC staff –.*" (p1233)

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<sup>4</sup> A former senior official at the CIA's National Photographic Interpretation Center (NPIC). He was an [imagery analyst](#) and also served as NPIC's Chief of Information.

<sup>5</sup> Head of NPIC color lab in 1963

8. You profess that the "original" film was viewed in Washington on Saturday and during the repeated analytical viewings it was determined what needed to be done to alter the film. The film was then flown to Rochester "Hawkeye Works" where there was about nine hours available Sunday to complete the minimum immediate alteration needed.
9. Your interviews confirm that the Zapruder film was **not copied as a motion picture at NPIC**. (p1224) You further state that Kodak did not have the special enlarging equipment needed, (40X) and that is why the film went to CIA's NPIC. (Note; precision 40X enlarger should have been available as it was a Kodak designed key component of the Corona Project. RZ)
10. You conclude that because two "different" briefing boards were developed – by separate compartmentalized teams - one from an 8mm film ("original") – Saturday - and a second from a double 8mm film (an "adjusted original") – Sunday night +, that an alteration to the 8mm "original" took place at CIA's Kodak Hawkeye Plant on Sunday the 24<sup>th</sup>. The CIA's Kodak-staffed lab in Rochester would have had most of the day (probably about 9 or 10 hours), using an optical printer such as an Oxberry to remove whatever was objectionable in the film - most likely the car stop and the rear-of-head exit debris; and to add to the film whatever was desired, such as a large, painted-on exit wound generally consistent with the enlarged, altered head wound depicted in the autopsy photos which were developed the day before. (p1241)
11. Then, three KODACHROME IIA copies would need to be made from the new 'original' to replicate and replace the three Jamieson "same-day" copies made in Dallas. These newly minted copies (masquerading as 'first generation' – now third to fifth generation) must consequently be exchanged for the original Jamieson "same day" copies.
12. The new 'original', as double 8mm, would concurrently be used to generate the three black-and-white; 16 mm unslit versions of the Zapruder film discovered in 2000 after the LMH Company's film holdings were transferred to the Sixth Floor Museum.
13. You also hypothesize that when LIFE paid the additional \$100,000 to Zapruder, (for the motion picture rights) it was in fact "hush money" in exchange for his silence that his original had been altered.

Then I become confused as your analysis of alteration wavers when discussing film swaps, you add a footnote 27: *"We simply do not yet know enough about which aspects of the film have been altered---or how they were altered -- to assess exactly what was done at 'Hawkeyeworks' on Sunday, November 24<sup>th</sup> 1963. All we can say for sure is that some alterations were conducted at that highly classified facility in Rochester,*



*and that the revised product was delivered to the CIA's NPIC Sunday night for the production of briefing boards from selected frames – etc.” (p1341)*

However a few pages later when you “dismantle” Professor David Wrone, you confidently write: *“Actually, the weight of all available evidence today is that the CIA not only attempted, but succeeded in altering the Zapruder film at the “Hawkeye Plant” in Rochester, New York. The car stop associated with the head shot(s), and the debris seen leaving the rear of President Kennedy’s head in Dealey Plaza, were both removed; the large blowout in the right-rear of the posterior skull was blacked and a false wound was crudely painted on the right-front side of the head, as seen the altered film. ....and.....*

*The altered 16 mm wide, unslit masquerading as an ‘original’ on Sunday night was created at the CIA’s classified film lab at Kodak’s headquarters and main industrial facility in New York, which according to Dino Brugioni, “could do anything.” (p1344)*

**13B. As a simple concise outline summary let me repeat what it is you are asking your readers to believe:**

- Zapruder film copy is studied alerting SS/CIA that “changes” are needed to coincide with autopsy findings,
- The Zapruder 8mm ‘original’ is diverted from *TIME/LIFE*’s possession to NPIC where briefing panel internegatives and prints are made,
- The 8mm ‘original’ is flown to Rochester Hawkeye Works CIA lab.
- The original is altered: to remove exit rearward debris and evidence of posterior head wound, and add right frontal lobe wound, skull flap and forward tissue spray. Limousine stop corrected.
- The adjusted 8mm assassination sequence (side B) is oriented with the family/office lady scenes (side A) to replicate a double 8mm unslit “out-of-camera” ‘original’ on KODACHROME II daylight balance film.
- Three copies are made on KODACHROME IIA to replace Jamison copies.
- Three copies are printed on 16mm negative film, two processed as negative and one as reversal and flown to LIFE in Chicago.
- A second set of briefing boards is made from the altered double 8 original.
- The required exchanges of altered films for originals are completed.

To accomplish the alteration you profess that: *“All that one would have needed was a good, state-of-the-art optical printer facility, and laboratory technicians matte artists experienced in the ‘black arts’ Hollywood.” (p1339)*

#### **14. Per My Studies and Investigation, I Contend that the Zapruder Original Film Could NOT be Altered as You have Claimed or in Any Other Manner.**

I have always believed that there are many film technology and time constraints that preclude the Zapruder film from having been altered and then reproduced as an undetectable KODACHROME II facsimile of the original. With the challenges to authenticity based on image content being the subject of Professor Fetzner's May 2003 conference, I decided to reinforce my process film technology knowledge and background by visiting professor Raymond Fielding at the Florida State University and to review with him copies of the Zapruder film and selected still frames. Our conclusion following a lengthy discussion was that it would not be possible to introduce significant scene content changes without producing easily detectable artifacts.

Subsequently in the fall of 2006, when David Healy was requesting a web interchange of information, I submitted his chapter *"HOW THE FILM WAS EDITED"* and my analysis to Professor Fielding for review and received comments that included: *"You may quote me if you wish in saying that (1) I agree with your interpretation of the data and evidence available and with the conclusions that you have reached, including questions of technical feasibility and the time line involved, (2) in my judgment there is no way in which manipulation of these images could have been achieved satisfactorily in 1963 with the technology then available, (3) if such an attempt at image manipulation of the footage had occurred in 1963 the results could not possibly have survived professional scrutiny, and (4) challenges regarding the authenticity of the NARA footage and assertions of image manipulation, as are suggested by Mr. Healy in the document you sent me, are technically naïve."*

Therefore, the following lengthy review regarding the impossibility of altering the original film and reproducing it as an undetectable facsimile on KODACHROME II daylight film stock must be worth my effort "for the record" to provide my closure to the alteration issue. My analysis described below has been reviewed and concurred to by Professor Raymond Fielding. This dissertation follows as several sub parts with references to your comments and conclusions.

#### **15. Constraints That Preclude Alteration Of The Zapruder 8mm Film as Described in Chapter 14**

There is no known film production history that would provide a technology reference for the use of an 8mm KODACHROME II camera film as a printing master to allow subsequent significant optical special effects into selected scenes and then reconstitute the adjusted images on to an 8mm

KODACHROME II daylight film 'indistinguishable' from the camera original. Typically, laboratory practices deal with camera original negative films as the primary material for a host of post-production applications to yield a positive projectable print.

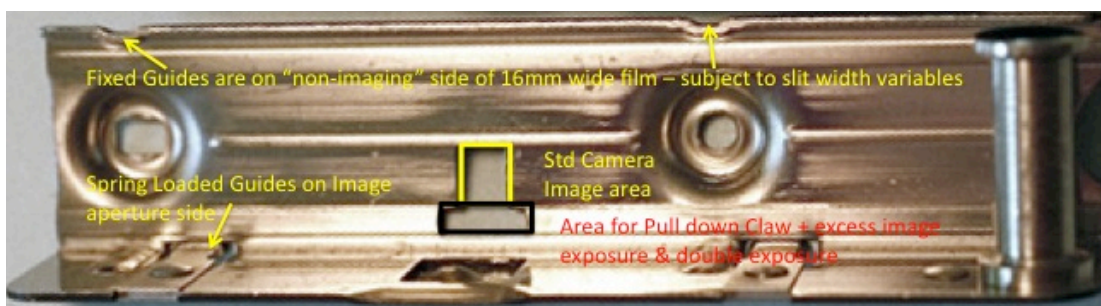
The magnitude of this issue – 8mm original > postproduction added/deleted image effects > reconstituted 8mm 'original' - mandates that we re-examine and address a number of detailed sub-parts to support a non-alteration conclusion. It's like a game of "what-if" to identify the scope of special optical effects that would be required to achieve the purported alteration, and in doing so expose the multiple constraints, including venue and time, which make your professed alteration impossible.

#### The Hollywood "frame-of-mind".

If *Superman* can be made to fly, surely the "effects magicians" of Hollywood can easily alter the home movie of the assassination of JFK! The problem of this mind-set is that it fails to acknowledge that a Hollywood or other film production requiring postproduction optical effects is a product of a carefully planned and executed script in advance. The key subject matter, foreground and background scene content, camera image focus, depths of field, masks or mattes, etc. are carefully executed ahead of time and incorporated into the camera film that becomes the optical master. A key fundamental issue is that the image size and format follow established standards for each step of the operation. Printer projector gates and film transport shuttles (with appropriate pitch and positioning pins) are available and interchangeable. The system is mechanically and artistically flexible to meet multiple optical special effects needs. A family of motion picture film materials is available as needed.

#### Reality - The Zapruder 8mm Film Scene Content Was Not Planned.

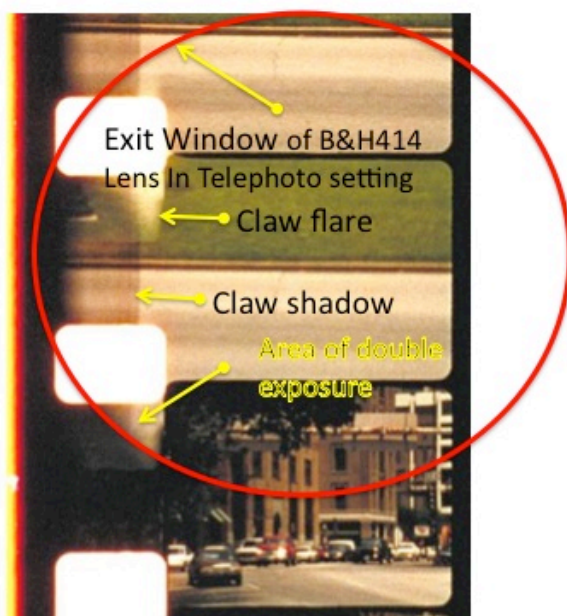
The camera was handheld, unsteady, panned to follow the limousine causing bystanders and background to be blurred and Zapruder jerked as reflex reaction to rifle shot reports or other stimuli. As an unplanned capture of a significant event with an amateur 8mm camera, it has none of the flexibility of 35mm or wider camera film image structure and established postproduction practices. It introduces a host of camera image and artifact constraints because of the camera design and type of camera film used. You note in your chapter that alteration would demand the use of an optical printer to blowup to 35mm, followed by an animation stand for frame-by-frame cell art or matte work from a positive print. You fail to add; a custom 0.150 in. pitch transport shuttle for the printer projector, custom apertures (to project and capture the image between the perforations to the edge of the film), full immersion wet gate for an initial blowup to 35mm, a camera with a custom aperture and a shuttle displaced from the aperture area for reconstituting the image as 8mm.



B&H 414PD Camera Gate and Claw Aperture and Fixed and Spring Loaded Film Guides

The non-professional positioning of the intermittent claw adjacent to the image being captured was a convenient design compromise permitting magazine load mechanisms to be compatible with daylight load roll film. This methodology introduced several image anomalies that must be transferred or maintained in a substitute altered 'original' film. The projector for the 8mm camera film could not have a compatible intermittent location, adjacent to the projected image, because of the constraint of the projectable image area-limiting aperture. Consequently the projector head of an optical printer or animation stand are equally restricted and image position, using 8mm or double 8mm film, is subject to perforation pitch tolerance variability from the displaced image positioning perforation.

Notwithstanding, you believe that the image content could be altered, based on Healey's guidelines and Fielding's reference textbook; and that "Hawkeyeworks" in Rochester, run for the CIA by Kodak, seems to have "fit-the-bill" as a facility. You write: As Dino Brugioni put it in 2009 to Peter Janney; at "Hawkeyeworks" they "could do almost anything." (p1326)



### Reviewing The Derived Camera Images.

A few frame clips will ensure the readership of my reply a full comprehension of the multiple image capture artifacts confronting any laboratory attempting adjustment to selected frame(s) and reconstituting a film as a substitute 'original'.

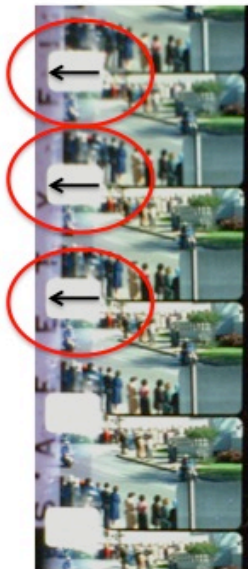
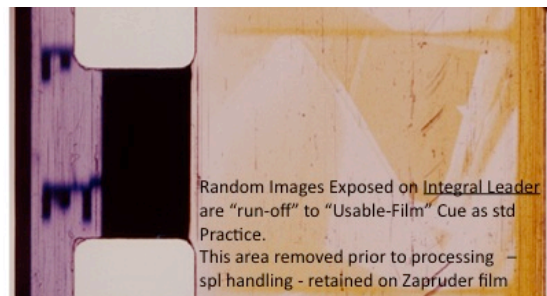
As described in Study 4 of my report, the area of the exit window (red) of the camera lens at the telephoto setting, allowed scene information to

be recorded in the aperture area between the perforations because of the cutout space for the intermittent claw . This lens characteristic, the claw, and shuttle mechanism introduced artifacts that are distinguishable camera characteristics.



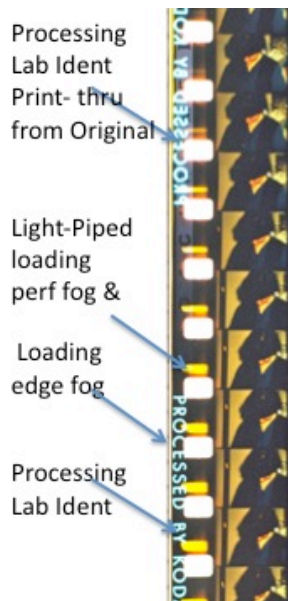
The first frame fog characteristic of the Zapruder camera added another artifact to be considered in any alteration attempt. Note that fogged area very distinctly replicates the camera aperture and claw cutout. The other scene anomalies described in the test scene above are shown in the first couple of frames of the limousine sequence.

Any alteration attempt must also consider untypical random imagery obtained during the daylight loading of the camera and "runoff" to the start filming camera cue. The special processing handling at Dallas precluded removing this leader.



Film product identification (type/date/source) is incorporated onto all amateur and professional film products as part of the manufacturing process. This edge code printing is continuous without cue mark. Because the extracting of image information to simulate an original mandates capturing the full frame area plus the area beyond and between the perforations to the edge of the film, using any stock product would superimpose the captured edge information onto the "new" rawstock. Obtaining and using a special strip derived from a wide strip requires special atypical slitting and perforating and would leave detectable printing inconsistency along an extension of the frame line (at arrows). Scene image information is also captured in the product code background.





Daylight loading in the B&H camera introduces a multitude of artifacts. As shown in this copy of side A; the artifact of light piping through the perforations extends beyond complete fog of the integral leader. This daylight load characteristic would need to be accounted for in trying to simulate the original. Near both ends of the double 8mm roll, loading light also fogged a fine line along the outer edge.

When replicating the Jamieson copies, the processing lab edge code must be incorporated into both the altered 'original' and the derived copies. Because these codes already exist on the original and "same-day" copies, would they be excised or transposed? Then follows the challenging question of where will the 'sanitized'

KODACHROME II daylight 'original' and KODACHROME IIA 'substitute dupes' receive their required K12 process? Substituting a Dallas Laboratory processing edge print would require multiple steps at a separate facility to make the stencil, time for substitution and involve special technicians.

### What Was Considered Objectionable In The Film, Deemed Critical and Required Alteration?

You wrote: *"....to remove whatever was objectionable in the film - most likely the car stop and the rear-of-head exit debris; and to add to the film whatever was desired, such as a large, painted-on exit wound generally consistent with the enlarged, altered head wound depicted in the autopsy photos which were developed the day before."* (p1241)



First step would be to blow up the 8mm to 35mm. A reference is the work of Moses Weisman for *TIME* using an Oxberry Optical Printer, full immersion wet gate and a custom shuttle.

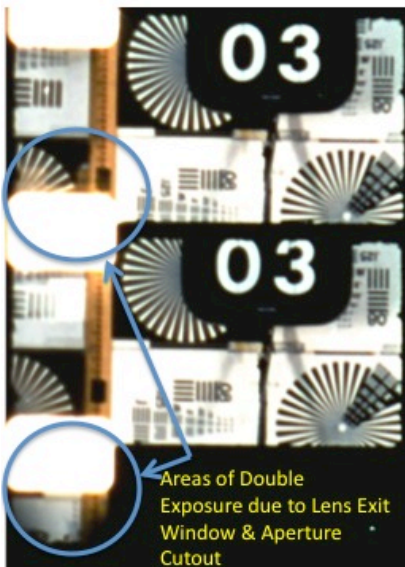
Moses was forced to use Eastman Color Negative (ECN) for film speed because of the low light level transmitted from the small 8mm frame. In the

reference frame, note that the standard 35mm image area did not allow inclusion of intersprocket images along the perforated edge of the 8mm film.

If a custom aperture is used to capture the full edge-to-edge image, we now capture the full scene information plus the Intersprocket area and the accompanying artifacts and edge print constraints listed above – however the double exposure area at the inside corners of the perforations as shown above and from the bench test are NOT included.



In the professional environment it is normal to focus on controlling or adjusting the principle subject matter, but with images from the Zapruder amateur camera, you must also deal with the edge print and the anomalies between the perforations. Trying to split the total area into the “minimum camera image area” and “remaining area” to address the edge print and other artifacts independently would introduce an easily detectable interface where the two image components would be merged and would require the relative impossibility of obtaining correctly perforated rawstock without any manufacturing codes.



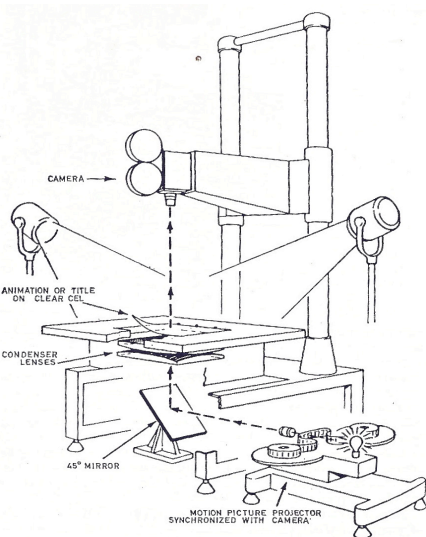
For focus, in this analysis, consider the challenge to a purported alteration of the headshot and surrounding frames.

The correction you believe was attained required multiple actions on the part of the technicians complicated by a subject in motion with a blurred background as well as significantly motion blurred primary subjects. You do offer an abbreviated approach when you relate:

*"In my view, if no traditional traveling mattes were employed, and if the principal changes made were optical frame excisions of the exit debris leaving the head (using a step printer), and aerial imaging artwork altering the head wound(s), it just might have been possible to accomplish the necessary minimal changes to the film in one working day, providing sufficient skilled labor was available."* (p1340)

Lets address the above statement with the objective of providing a brief review for comprehension of the complexity of the multiple steps involved rather than a detailed optical effects image - purported content - sanitizing script.

The 8mm original; blowup by optical printer to 35mm master negative; then contact printed as a master positive, would



be projected in an animation stand to provide for an aerial image at the same plane as the artwork.

- Precision art work will be required to: make multiple frame-by-frame pin-registered high contrast hand-drawn holdback traveling mattes to; delete the posterior head exit wound, and, to delete the rearward brain matter spray. (Note: Image content hypothesized but never seen)
- Counter mattes would then need to be developed to allow insertion of image content analogous to "expected scene content" and replace the extracted brain matter rearward spray and correct the posterior shape of the President Kennedy's head.





- No real-time scene information is available to fill-in each counter matte. Because it is necessary to add parts of the limousine, the curb and lawn, some detailed and some blurred, it becomes necessary to animate hand painted corresponding scene components.
- The insertion of an anterior head wound (In Frame 313+ You say is purportedly added to comply with autopsy findings) and addition of the four or so frames of blood/brain spray would require hand-painted transparent animation cells developed concurrently with the holdback mattes referenced above.

All of the image artwork, mattes and photography are not accomplished on a one-shot "we-did-it-right" the first time. Process photography requires test and retest to achieve the desired effects objective. These tests take time and require accessibility of a number of film processes and could not be achieved in the nine to ten hours you indicate available for 'sanitizing' the original to obtain an undetectable KODACHROME II substitute double 8mm 'original'.

Further you insist that the original was slit to 8mm, thus requiring a separate duplication/recapture process to make the substitute 'original' delivered to NPIC Sunday night a double 8mm. This action also requires capturing side A and re-rendering all of the inter-perforation anomalies described above using a custom designed camera and dealing with the **"PROCESSED BY KODAK D NOV 63"** identification.

As mentioned above, you believe *"that the process camera used for the final step in the creation of an altered Zapruder film must have been a Bell and Howell 414 model home movie camera set in the animation mode."* (p1313)



This assumption is unrealistic for a host of reasons:

- The zoom lens was integral with the camera body and not interchangeable,
- The short focal length was 6 feet,
- The lens had significant spherical aberration, especially at the wide aperture openings required,
- The "exit window" required to achieve inter-perforation images required telephoto setting, and an insufficient exit window to ensure results within

- the required full penetration of perforation area.
- The viewfinder was insufficient in providing the exact film area being captured including adjustments for parallax.
- The shutter speed was fixed at 1/40 sec placing all exposure light control at the printer's projector.
- As noted earlier the film gate positioning and claw pull down precluded the needed precise positioning/repositioning.

### Postproduction Films; Their Resolution, Color, Contrast Handling And Processing,

Simply stated, to achieve special optical effects, it is necessary to begin with a printing master that is a part of a "*family of film types*". Kodak designed camera original color films to work compatibly with laboratory intermediate films and print films as spectral dye "sets". (Status A, reversal and Status M, negative/positive.)<sup>6</sup> Professional camera negative films were never viewed directly and their transmission spectrum matched the spectral sensitivity of intermediate (and print) films and the transmission dye set of the intermediate films matched the spectral sensitivity of the final print films. The print films dye transmission had reasonable visual response with arc (or if printed properly) with tungsten projection.

In the case of the Zapruder film, the spectral sensitivity of a daylight camera original KODACHROME II reversal film was balanced for about 5900 deg. Kelvin with nominally parallel curves having gammas of about 1.8. Because it was a reversal (i.e. it yielded a positive image) the spectral transmission characteristics of the dyes were designed for visual response when projected with 32-3400 deg Kelvin illumination. (Status A) The film was not designed for printing response so that its dye set would match the spectral sensitivity of laboratory intermediate negative or positive films. A reversal duplicating film was available (Status A), but that was for direct simple copies, and not intended to be used as an optical intermediate.

The methodology proposed to achieve purported optical manipulation suggests a 35mm blowup to EASTMAN color Internegative Film 5270 or a camera negative film; EASTMAN Color Negative Film 5251 - both current at that time. (Note in 1967 Moses Weitzman was forced to use ECN, for his TIME/LIFE blowups because 5270 was too slow for

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<sup>6</sup> Status A densitometry is intended for the evaluation of reversal camera original and print materials that will be visually evaluated. Status M densitometry introduces a degree of crosstalk and spectral selectivity that more approximates a generalized photographic spectral sensitivity, thus this densitometry is used to evaluate preprint materials.

his printer light.) The use of internegative film, even in 35mm format could incur some graininess. The use of either would incur image structure degradation. The faster camera negative would incur a significant and easily detectable level of graininess. Both these stocks were available at the time and had a contrast of about 0.6.

Color fidelity degradation: The use of internegative film would cause a loss of color fidelity (desaturation) as internegative film employed Status M sensitivities (for printing from the Status M image dyes of EKTACHROME Commercial Film 7255, for which it was designed) while KODACHROME II Film, from which the Zapruder film would be printed, employed Status A image dyes, thus incurring a print-through color sensitivity mismatch.

To allow working with a projected color master positive film, it would be necessary to print onto EASTMAN Color Print Film 5385, which had a contrast of 2.8. Depending on the special effect methodology you purport, two or more intermediate steps would have to occur before the third or fifth step of printing down to a 'substitute' 8mm KODACHROME II daylight 'original'. The film's daylight sensitivity, contrast and spectral characteristics do not render it receptive for use as a "print" medium.

Contrast Increase. The total system contrast increase even in the simple 3-step approach would be about 5.0. KII original, 1.8; to blowup negative, 0.6; master positive 2.8; and print down to simulated 'original' KII daylight, 1.8, yielding  $(1.8 \times 0.6 \times 2.8 \times 1.8) =$  a contrast of 5.4. Repeating the master positive/negative or intermediate process would further increase the unacceptable contrast buildup. With color negative and positive films, attempts to reduce the contrast by reducing the time of development would cause crossed-curves, which would be visible as highlight/shadow color changes in the print-through. The Kodachrome K12 Process could not be adjusted to change the contrast.

A further complication in the derived alteration equation is that the final result is "printed" onto KODACHROME II daylight<sup>7</sup> raw stock. Any off-the-shelf source of the film would not suffice, because it inherently has the appropriate manufacturing markings and would already contain: product type, code, date and strip number and **"S°AFETY FILM"**, in part accomplished when the strips are slit from the wide master coating roll. A suitable alternate film source was not

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<sup>7</sup> The EI is 25 for daylight, but reduced two f stops for tungsten to daylight filter correction.  
Zavada's Open Letter Response to Doug Horne's Chapter 14

identified – however David Healey unrealistically believed that an unmarked KODACHROME movie film was readily available.

Next comes the K12 Process and first adding the perforated (0183) customer identification code and processing laboratory printed **"PROCESSED BY KODAK D NOV 63"** identification on the A side of the role (as it exists on the print through of the two NARA held SS 1&2 copies) to replicate Kodak Dallas processing. Then the sanitized 'original' is NOT going to be slit to 8mm width!

Making three copies. Assuming, as noted, a substitute 'original' is created, you then profess in 13A – 11 above, that it is used to produce three double 8mm copies on KODACHROME IIA film to replace the Jamieson "same-day" copies. In the duplication process we now introduce some interesting constraints, characteristics and illogic!



The Jamieson copies, SS1&2 at NARA show a bracketed exposure series. If the two copies were viewed prior to alteration of the 'original', and you contended that the Jamieson

Laboratory printed "one-light" (p1265-1270), the two secret service copies should have had the same density! Why then would the perpetrators of alteration "bracket" exposures of their replacement copies when the switch was intended to provide an undetectable replacement of the copies provided to the Secret Service by Zapruder?

In your discussion of the septum line, (p1259 – 1262) you refer to "*flawed logic*" in the analysis provided in my report. Yet you expect us to believe that the perpetrators of the altered film were able to replicate the desired width septum line on side A when printing the three copies using a B&H Model J with an undercut-printing sprocket, or outboard margin printer on the first try!

Then there is the choice of slitting the double 8 copies to 8mm or not. Zapruder has a copy in Dallas through Monday. His replacement copy requires slitting and we know McMahon at NPIC received double 8mm films Sunday night, from Smith, for Briefing Board prints.

(p1241). However, it is in McMahon's interview with you<sup>8</sup>, that we become aware that two double 8mm copies are received. McMahon relates to you that a copy is projected as 16mm double 8mm, and another double 8 film, that he believes is the 'original', is enlarged 40X (about 5X7 in.) This leaves the third copy to be slit to 8mm.

Mission Impossible - Logistics Required For The Purported Alteration To Have Been Conducted At "Hawkeyeworks"

To accomplish the alteration you profess that: *"All that one would have needed was a good, state-of-the-art optical printer facility, and laboratory technicians matte artists experienced in the 'black arts' Hollywood."* (p1339) However lets expand your summary term, "state-of-the-art optical printer facility" and list a few components needed.

The printing equipment you expected to be immediately available at CIA's Hawkeye Plant (maximum of overnight notice) would probably include:

A Step Optical Printer – single or more likely multi-head including the required components of a: 35mm Camera Head, a 16mm Projector Head, customized for full 8mm edge-to-edge projection, a unique Projector Shuttle customized for 0.1496 in. or shorter perforation pitch, also a 35 mm Projector Head for subsequent matte work.

Animation Stand – Oxberry or equivalent for aerial imaging matte artwork Corresponding Camera and Projector Heads as above.

B&H Model J 16mm contact printer with means of printing margin markings.

Editing equipment – multiple gauges, Haseltine Color Analyzer, densitometer, MP film cleaning capability - etc.  
Cells, cell punch, art materials, etc

Processing Services at-hand or immediately accessible.

- K12 Kodachrome process – with 16 mm racks,
- ECN for Color Negative or Intermediate films – 35mm racks,
- ECP for Color positive – 35mm racks,
- B&W negative process – 16mm racks
- B&W reversal process – 16mm racks,
- B&W high contrast positive process - 35mm racks - matte work

Process Control Sensitometric test strips for each process.

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<sup>8</sup> <http://www.assassinationscience.com/johncostella/jfk/horne-mcmahon-interview.mp3>

The Human Element – laboratory technicians – talent – and matte artists.  
 It is probable that the “Hawkeyeworks” activity focused on laboratory and film technology requirements for CIA satellite reconnaissance. If true, it is highly unlikely that the facility maintained personnel and equipment capable of handling motion picture special effects for a “no notice” rush project. Even if the laboratory technician talent were available, the artistic talent would need to be imported (with rush security clearances). Whatever “Hawkeyeworks” role was, handling 8mm Motion Picture film was going to be unique.

The Time Element – Workflow sequence, sketchy, rough overview –

- 8mm original arrives – Hazeltine analyze exposure/filter pack setup for 35mm blow up negative – clean film, add leaders – 1hour.
- Optical printer projector head does not have an aperture for 8mm<sup>9</sup> or intermittent shuttle for 8mm short pitch of 0.1496 in. Hand positioning becomes the only immediate option – however this represents a task of 500+ frames on Side B and more than 2300 frames on side A. A 16mm gate/shuttle could be modified, but not within the time frame allowed.
- Assume blowup copy of side B on ECI 5270 or ECN 5251. Side A is being blown up to 35mm while side B, as 35mm, is being processed. (ECN Process 45min wet plus load and dry = 1hr 15min if processor on site.)
- Side B as 35mm negative is printed to a color positive ECP 5385 by continuous contact printer if available. (ECP Process 45min wet plus load and dry = 1hr 15min if processing on site.)
- Side B 35mm master positive is placed in animation stand projector for a combination of aerial imaging and cell artwork. Individual frames could be captured interlocked onto 35mm ECI or ECN and backed up and re-projected for necessary cell “self” matte work – then reprinted to ECP before transfer to KII. I note however, you are aware of the time constraint and unrealistically profess that a B&H 414 PD camera could have been used, loaded with custom<sup>10</sup> 8mm KODACHROME II Daylight (p1313), and that the key, back of the head blowout and spray, are removed by “*excising a few frames*”<sup>11</sup>. (Wow, *Got-to-be obvious! RZ*)

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<sup>9</sup> In 1965 I visited Oxberry to have an 8mm aperture made for Super 8 and therefore had investigated availability of 8mm apertures for Acme, Producers Service et al.

<sup>10</sup> Referenced as “custom” because it would have to be slit to 16mm from a wide strip and perforated double 8mm to be free of manufacturing edge markings.

<sup>11</sup> You wrote: *If no traditional traveling mattes were employed, and if the principal changes made were optical frame excisions of the exit debris leaving the head (using a step printer), and aerial*

- Because the camera will require image position and alignment and exposure certification of the cell work, at least a few frames of test exposures are needed on KII Daylight with K12 processing of 1hr 15min min.
- For sake of your "quick limited matte" approach you will need to produce cells for about 30 frames or more, many that the principle subjects are blurred and that will require extra artistic effort. The cell paint will need to dry and the exposure will be single frame. Even at only 10 minutes per cell, that would equal 5- hours.
- Next, a second run through the 8mm camera would be required to add side A, the family scenes and lady at the office, representing 2040 frames plus the integral fogged leader and trailer. With the light levels available and KII daylight filtered EI speed of about 8, 18 fps at 2/40 sec. just won't be possible.
- Next the altered double 8mm KODACHROME 'original' requires K12 processing of 1hr 15min.
- Next the new sanitized 'original' with its 0183 perforation is loaded on a B&H Model J and three KIIA prints are made (using off-the-shelf camera film) with silent aperture setting and with an undercut printer sprocket and diverted printer light (or outboard margin printer).
- Next the three double 8mm KODACHROME IIA copies require K12 processing of 1hr 15min plus 15min extra make-up, break-down handling. If the lab code printer was set as "R" for Rochester, another image reproduction issue is introduced into the equation. Perforation ID is required as 0185,6&7.
- While the copies are processed, three copies are printed with the Model J onto 16 mm B&W negative stock. Two copies are processed as negative (about 30 minutes) and one is processed as reversal (about 45 minutes).

If the CIA lab technicians really hustled did you make the deadline?

• Prep 8mm -	1 - hours
• Blow-up print side B - Proj shuttle/aperture non std	?
• Blow-up print side A	?
• Process ECI or ECN	1.3
• Print and process ECP                      0.3 plus 1.3	1.6
• KII Daylight test exp and align	1.8
• Artwork on cells and expose side B	5.0
• Rethread and exp side A	1.0

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*imaging artwork altering the head wound(s), it just might have been possible to accomplish the necessary minimal changes to the film in one working day, etc, p1340*

Zavada's Open Letter Response to Doug Horne's Chapter 14

May 26, 2010

- K12 process for new 'original' 1.3
- Print and process three copies KIIA 0.3 plus 1.3 1.6
- Print and process three B&W copies, 0.3 plus 0.8 1.1

Doug, ponder the logistics - it just doesn't add up! I have been ultra conservative in time estimates. Even without 35mm traveling matte options, your proposal requires five different processing machines setup with certified chemistry and personnel on a Sunday. At the CP&P Division or Photo Technology (PT) it would represent two or floors of equipment. Only the K12 processing provided daily customer service. All other processing equipment existed for product testing and research and development. Also understand the Hawkeye Plant was separated from CP&P, PT or FTD by more than 2 miles!

The film dry-to-dry "in process" time alone for the required 'quick-and-dirty' approach is 7.6 hours. The alteration goal purported in your chapter is just NOT attainable.

## **16. And in Conclusion.....**

In my lengthy review of Chapter 14 there remain several topics that require correction and clarification - left for another time. Initially I was disappointed that you did not consider me available to openly discuss many of your concerns and interpretations of my work. I now understand that it probably would not have altered the posture and position you have taken.

The very interesting twist to your chapter is that it has done more to ensure the Zapruder film at NARA is authentic rather than altered.

Your interviews with Dino Brugioni and Homer McMahon and their handling of what they interpreted as "original" films, most likely were the Jamieson copies provided to the Secret Service by Zapruder and flown to Washington on successive days. (With the FBI requesting two copies, returned to Dallas, of their viewed double 8 copy.)

Nonetheless, your analysis of those interviews and the conclusions you draw about the briefing boards have provided a tight focus to establish the time frame and possible venue for the purported 'sanitizing' of the Zapruder original. Both reinforce all of the technology and film reproduction constraints to confirm our conclusion that alteration to the 8mm original and its reconstitution, as a 'sanitized' KODACHROME II equivalent, was impossible.



Remember, ***The medium is the message***; and that the form of the medium, 8mm KODACHROME II film, embeds itself with the limitation that it cannot be altered as perceived.

Rollie Zavada  
26 May 2010