

## Analysis of Selected Photographic Evidence

### *Attachments - Studies 1 - 4*

*Included to Supplement the Analysis of Selected Photographic Evidence*

#### *STUDY 1 - Edge Print Analysis of the Zapruder Original Movie Film and Secret Service Copies*

*Reference Documents<sup>1</sup> Received from the ARRB<sup>2</sup>:*

| <u>File Number</u> | <u>Subject</u>   |
|--------------------|--|
| A1-1               | <i>Memorandum, Doug Horne to David Marwell and Jeremy Gunn, dated April 9, 1997. Re: Examination of Zapruder films held by the National Archives. (6 pages plus 15 Attachments). Note; only attachments pertinent to Study 1 are appended.</i> |
| A1-1A              | <i>Attachment 1 of Memorandum, affidavits supplied with Zapruder letter to Jackson.</i>  |
| A1-1A (1)          | <i>Kodak processing and numbering of KII 8mm film as 0183, affidavit signed by Phillip Chamberlain.</i>  |
| A1-1A (2)          | <i>Printing of Zapruder 8mm KII film by the JAMIESON film company, affidavit signed by Frank Sloan.</i>  |
| A1-1A (3-5)        | <i>Processing and numbering of Zapruder Kodachrome II prints as 0185, 0186 &amp; 0187, Kodak affidavits signed by Tom Nulty.</i>   |
| A1-1B              | <i>Attachment 2 of Memorandum, letter Zapruder to Jackson 11/25/63, confirming he took the 8mm film of the Assassination and had it processed.</i>   |
| A1-1C              | <i>Attachment 5 of Memorandum, Hand drawn "film map" of Zapruder film and copies (2 pages).</i>  |

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<sup>1</sup> Supplied to Kodak by the Assassination Records Review Board (ARRB)

<sup>2</sup> With the exception of those documents listed, all correspondence to/from the ARRB by/to Kodak or R. Zavada as consultant, shall be made available for the record by the ARRB.

- A1-1D            *Attachment 7 of Memorandum*, tabulated description of Zapruder film copies at National Archives, March 31, 1997, draft by D. Horne (3 pages).
- A1-1E            *Attachment 10 of Memorandum*, US Secret Service memo dated January 22, 1964, from Agent Sorrels, Dallas, to Inspector Melley, regarding his actions November 22, 1963, and contact with A. Zapruder and Kodak.
- A1-1F            *Attachment 13 of Memorandum*, "Film Map" of Secret Service Copy 1, prepared by D. Horne
- A1-1G            *Attachment 14 of Memorandum*, "Film Map of Secret Service Copy 2", prepared by D. Horne.
- A1-2             Selected extracts from exhibit 885 of the *HEARINGS Before the President's Commission on the Assassination of President Kennedy*, Executive Order 11130 and S.J. Res. 137, 88<sup>th</sup> Congress, Volume XVIII.

*Correspondence Pertaining to Study 1*

- A1-3             *Follow-up Report* of meeting with members of the Assassination Records Review Board, by R. J. Zavada, 19 December 1996. (10 pages)
- A1-4             Letter of January 7, 1997 from James Milch to Dr. David Marwell transmitting the *Follow-up Report* by R. J. Zavada to ARRB.
- A1-5             Letter of January 9, 1997 by R. J. Zavada, to provide correction to *Follow-up Report* ,A1-3, by adding edge print information for EKTACHROME E3 film.
- A1-6             Letter of February 6, 1997 from David Marwell to James Milch acknowledging receipt of Zavada report, noting and correcting two misstatements, and requesting cost estimates for a proposed plan of work.

*Letters Sent:*

- A1-7             Letter of June 29, 1997 to five former management employees of Kodak Dallas Processing Laboratory requesting edge print and film handling information.

- A1-8 Letter of August 8 to five former management employees of Kodak Dallas Processing Laboratory reporting the minutes of the July 28 breakfast meeting and requesting input to the interpretation of events.
- A1-\_\_ Copies of correspondence exchanged by E-mail with Richard Blair -- for efficiency are combined with "Letters Received", A1-12.
- A1-9 Letter of June 18, 1998 to D. Horne of the ARRB requesting clarification of footage values reported in his "Film Map" of the Zapruder film and its copies.
- A1-10 Cover letter of June 29, 1998 to five former management employees of Kodak Dallas Processing Laboratory transmitting June 26 draft of Study 1, Part 3 and requesting confirmation or corrections.

*Letters Received:*

- A1-11 Mr. Phillip Chamberlain's manuscript depicting events related to the handling and processing of the Zapruder films by Kodak in 1963. Original was written in the late 1970's. Cover note stipulates that he added footnote revisions following June 1997 discussions with Zavada and Blair.
- A1-12 Series of short E-mail messages between R. Zavada and Dick Blair coordinating information and activity on Dallas Laboratory processing markings.
- A1-13 Letter received from John K. Anderson about his recollection of events related to the processing of the Zapruder films - in response to my June 29, 1997 letter and telephone request for information.
- A1- Note: The brief responses to my June 29 letter requesting review and corrections to 6/26 Draft of Part-3 are reported in the text.

*Telephone Interviews:*

- A1-14 Compendious notes of telephone conversations with former Dallas Laboratory processing personnel.

*STUDY 2 - Edge Print Analysis and Supporting Technical Information of two 35mm films provided to the ARRB by Robert Groden.*

*Reference Documents:*

- A2-1            *EASTMAN Professional Motion Picture Films*, Kodak Publication H1, CAT 155 280. Note: This is a bound publication of 108 pages and may be provided separately.
- A2-2            Hall, Jack P. FILM PRINTING, BLACK AND WHITE AND COLOR, PROCEEDINGS, Laboratory Handling of Long Films, SMPTE 1971, pp. 141-158.
- A2-3            Schmit, Joseph W. OPTICAL PRINTING TECHNIQUE, PROCEEDINGS, Laboratory Handling of Long Films, SMPTE 1971, pp. 159-178.  
(Note: Excellent bibliographical references.)

*Letters Sent:*

- A2-4            Letter of November 7, 1997 to Mr. Moses Weitzman requesting assistance in the analysis of blow-up printing of Nix and Muchmore 8mm films.
- A2-5            Letter of February 5, 1998 to Mr. Moses Weitzman requesting his review of a draft of the content of our discussions.
- A2-6            Letter of July 6, 1998 to Mr. Moses Weitzman requesting his review of my "final" draft of the content Study 2 - Nix film blow-up including an edited synopsis of our discussions. (Received telephone approval.)

*Letters Received:*

- A2-7            Mr. Moses Weitzman's March 24, 1998 response to my 2/5/98 letter including copies of four letters he authored regarding the 35mm blow-up of the Zapruder original.
- A2-7A        Weitzman to Richter McBride Productions Inc. 2/2/90
- A2-7B        Weitzman to Richter Productions Inc. 6/22/90
- A2-7C        Weitzman to Robert Groden 6/22/90
- A2-7D        Weitzman to Richter Productions, Inc. 7/11/90

*Telephone Interviews:*

- A2-8            Synopsis of the two telephone conversations I had with Mr. Weitzman regarding the Nix and Muchmore 35mm blow-ups.

## *STUDY 3 - Initial Motion Picture Printing of the Zapruder 8mm Original Movie Film*

### *Reference Documents:*

- A3-1 Operator's Manual, Bell & Howell 16mm Standard Semi-Automatic Continuous Film Printer, Design 5205, Model J.
- A3-2 Extract of Shop Manual, No. 70302 (Jan. 1959), Figure 41, Back Shutter and Sprocket Assembly and Parts List, pp.58-60.
- A3-3 Bell & Howell Motion Picture Printers and Accessories Price List, October 1957. (See p.3 reference to margin printing assembly, Part No. 030086)
- A3-4 Brochure for Margin Printing Assembly showing picture of feed sprocket margin printing assembly.
- A3-5 Instruction for Field Installation of Margin Printing Kit. (See photos of components.)
- A3-6 Bell & Howell Brochure describing the Model JM Printer.

### *Letters Sent by R. Zavada:*

- A3-7 October 8, 1997 to Bruce Jamieson (caution: the question of intended compliance with PH22.48 did not prove to be significant).
- A3-8 November 4, 1997, to John Ehrenberg, President, BPH, Inc.
- A3-9 November 7, 1997, to John Ehrenberg, follow-up to November 4, letter.
- A3-10 November 12, 1997, letter to Dr. Rod Ryan
- A3-11 November 25, 1997, to Bruce Jamieson, regarding septum line.

- A3-12 April 6, 1998, letter to Blain Baker, et al, requesting background and assistance.
- A3-13 May 27, 1998, letter to Richard Sidener requesting background search.
- A3-14 June 3, 1998, letter to Blain Baker et al, follow-up to April 6 letter.
- A3-15 July 22, 1998, letter to Peter Eaves et al. Expanded request for assistance on Model J Printer.
- A3-16 August 5, 1998, letter to Professor Farmer regarding septum line.

*Letters Received:*

- A3-17 October 21, 1997, from Bruce Jamieson regarding septum line.
- A3-18 November 20, 1997, from Bruce Jamieson.
- A3-19 April 21, 1998, from Bruce Jamieson.
- A3-20 November 13, 1997, from John Ehrenberg with drawing 031173,
- A3-21 April 26, 1998, Hand written note from Bob Colburn.
- A3-22 April 29, 1998, from Blain Baker regarding the possible location of the Jamieson Model J Printer.
- A3-23 June 26, 1998, letter from Richard Sidener
- A3-24 August 1, 1998, letter from Professor Farmer regarding margin printing and printers in USC archives.
- A3-25 August 18, 1998, letter from Processor Farmer, follow-up to August 1; 1998, letter.
- A3-26 August 21, 1998, letter from Ted Wilson regarding a possible source of the Septum line.
- A3-27 August 25, 1998, letter from Malcolm Townsley regarding comments on the printing of the Zapruder original.

## STUDY 4 – Bell & Howell Director Series 414PD 8mm Movie Camera

### *Reference Documents*

- A4 – 1            Bell & Howell Instruction Booklet for Model 414-414P 8mm Movie Camera.
- A4 – 2            Patent No. 3,044,347, July 17, 1962, D. M. MacMillin, Control for Multi-Speed Camera.
- A4 – 3            Patent No. 3,059,533, October 23, 1962, F. W. Mellberg, Zoom Lens.
- A4 – 4            Patent No. 3,074,317, January 22, 1963, A. Cox, et al, Zoom Lens
- A4 – 5            Patent No. 3,200,411, August 10, 1965, M. G. Townsley, Motion Picture Cameras.
- A4 – 6            Patent No. 2,153,142, April 4, 1939, H. N. Fairbanks, Film Advancing Mechanism for Motion Picture Apparatus.
- A4 – 7            La Rue, M. W., Jr., Bagby, J. P., Bushman, S. F., Freeland, S. R., MacMillin, D. M. "A Direct Drive Iris Control." Journal of the SMPTE, Volume 67, September 1958, pp. 600-604.
- A4 – 8            MacMillin, David M. "Improved Automatic Exposure Control." Journal of the SMPTE Volume 71, September 1958, pp. 510-511.

### *SMPTE Developed Standards:*

- A4 – 9            PH 22.17-1965 Dimensions for 16mm Motion-Picture Film, Perforated 8mm, 2R-1500. Vol. 74, p 431, May 1965.
- A4 -10            PH 22.19-1964 Dimensions of 8mm Motion-Picture Camera Aperture Image, Vol. 73, p. 584, July 1964.
- A4 – 11            PH 22.20 Proposed, Dimensions of 8mm Motion-Picture Projected Image, Vol. 73, p. 669, August 1964.

- A4 - 12 PH 22.21-1964 Specifications for Camera Usage of Double Width 8mm Motion-Picture Film, Perforated Two Edges, Vol. 73, p. 1048, Dec. 1964.
- A4 - 13 PH 22.22-1964 Specifications for Projector Usage of 8mm Motion-Picture Film Perforated One Edge, Vol. 73, p. 1048, Dec. 1964.
- A4 - 14 PH 22.48-1965 Location of Printed Area in 16mm Picture and Sound Contact Printing, Vol. 74, p 429, May 1965.
- A4 - 15 PH22 83-1952 Location and Spacing of Edge Numbers on 16mm Motion-Picture Film, Vol. 73, p. 1045, December 1964.
- A4 - 16 Ph 22.107-1964 Dimensions of 8mm Motion-Picture Camera Spools, (25-ft Capacity), Vol. 73, p. 500, June 1964.
- A4 - 17 PH 22.143-1965 Specifications for Length of Film on 8mm Motion-Picture Camera Spool (25-ft Capacity), Vol. 74, p. 432, May 1965.

*Letters Sent:*

- A4 - 18 Letter of February 17, 1998, attempt to locate Malcolm Townsley formerly of Bell & Howell.
- A4 - 19 Letter of March 6, 1998, to Malcolm Townsley et al, making initial contact and explaining project.
- A4 - 20 Camera report sent to Bell & Howell "team", March 6, 1998
- A4 - 21 Letter of March 11, 1998, to Malcolm Townsley, et al, sending articles on three "Modern Tests".
- A4 - 22 Letter of March 13, 1998, to Becton Dickinson, requesting information about David MacMillin.
- A4 - 23 Letter of March 25, 1998, to Malcolm Townsley, et al, regarding first frame over-exposure.

- A4 -24 Letter of March 30, 1998, to Malcolm Townsley et al, notifying inclusion of David MacMillin and Frank Mellberg into the group of advisors on the camera.
- A4 - 25 Letter of June 7, 1998, to Malcolm Townsley et al, requesting review of selected patents and articles.
- A4 - 26 Letter of August 7, 1998, to James Roemer, President and CEO of Bell and Howell Company, requesting permission to incorporate B&H data on Model 4114PD camera in report.

*Letters Received:*

- A4 - 27 Letter of March 14, 1998, from Malcolm Townsley regarding first frame over-exposure.
- A4 - 28 Letter from Frank Mellberg regarding camera study and including three names of former Bell & Howell employees who worked on the camera.
- A4 - 29 Letter of March 20, 1998, from Thomas I. Harris, suggesting contact with Dr. A. Cox.
- A4 - 30 Letter of April 18, 1998, from Rudolf Hartmann who was in charge of Optical Testing in the early '60's.
- A4 - 31 Letter of April 20, 1998, from Malcolm Townsley, regarding over-exposure first frame.
- A4 - 32 Letter of April 29, 1998, from David MacMillin, in reponse to letter of March 6, 1998.
- A4 - 33 Letter of June 14, 1998, from Malcolm Townsley, regarding patents and article references.
- A4 - 34 Letter of July 23, 1998, from Malcolm Townsley, regarding camera mechanism and lens iris pattern.
- A4 - 35 Letter of August 22, 1998, from Harold Miller, regarding speed tests.
- A4 - 36 Letter of August 25, 1998, from Malcolm Townsley, commentary on Zavada draft of August 17, 1998.

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Letter of September 3, 1998, from H. A. D'Ambrosio, Vice President of Bell & Howell, giving permission to speak with retired Bell & Howell engineering staff and to report those recollections.