

Microfilming and Digital Imaging of Public Records: A Procedural Guide

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1.0 Introduction

The Kentucky Department for Libraries and Archives (KDLA), through its Archives and Records Management Division (ARMD), is required by KRS 171.450 (1)(c) to establish standards and procedures for recording public records and for the reproduction of those records. Under KRS 171.410-740, KDLA is specifically charged with the management and preservation of public records, regardless of the medium on which the record is recorded.

As part of an efficient records management program and for reasons of security, many public agencies choose to convert bulky paper records to a microform or digitized optical image format. Once microfilmed according to the procedures in this guide and approved by the State Archivist and Records Administrator, some paper records may be destroyed. The microfilm then becomes the official record. Careful steps must be taken to ensure preservation of this film and the recorded information. Public records reproduced on microfilm, when done according to standards approved by ARMD, are admissible as evidence in any judicial or administrative proceeding (See KRS 422.105).

Quality Assurance Specialists from ARMD's Micrographics and Digital Imaging Branch (Micrographics) inspect the silver halide master of all Kentucky public records microfilmed, whether produced by a public or private agency. Once approved, these silver halide masters will be stored in KDLA's secure and environmentally controlled vault. Microfilm that fails to meet an acceptable standard will be rejected, and agencies will be required to refile the material.

1.1 Definitions

Aperture Card: A card with a rectangular opening(s) specifically prepared for the mounting or insertion of microfilm. It is a machine-processable card of standard dimensions into which microfilm frames can be inserted.

Blip: Image mark placed under an image; can be one of three different sizes.

Certification: The act of being authorized (formally certified by the Department for Libraries and Archives and recognized by the State Archives and Records Commission) to film Kentucky public records.

Density: The measure of film opacity or degree of gray.

Filing Unit: The logical grouping of a set of similar records in the same series, such as case folder, deed book, bundle, etc.

Film Format:

Cine Mode: Images arranged on microfilm with bottom of one image above the top of the next.

Comic Mode: Images arranged on microfilm from left to right, as in a comic strip.

Film Type:

16mm: Microfilm which is 16mm in width is commonly used to film documents up to 8½ x 14.

35mm: Microfilm which is 35mm in width is commonly used to film documents larger than 8½ x 14.

Flow Camera: Rotary camera.

Microfiche: A transparent sheet of film on which micro-images are arranged in a grid pattern. A heading and number large enough to be read without magnification normally appear at the top of the microfiche in a space reserved for this purpose.

Planetary Camera: One in which the film plane and base are stationary.

Quality Control: The act of checking microfilm to ensure that it conforms to standards in this procedural guide.

Technical: Reading of density, resolution, residual thiosulfate, and checking for any other abnormalities apparent on the film.

Informational: Checking to ensure that information on the title target matches the record filmed and that the records transmittal is accurate.

Records Retention Schedule: A schedule is a list of each record type, or “record series,” created by a public agency, representing a comprehensive inventory of the information holdings of a publicly funded agency.

Record series: A record series is a file unit or group of documents related to a particular subject or function, resulting from the same activity, having a common form, or having another relationship in their creation, receipt or use.

Reduction ratio: The number of times a document is reduced in size during microfilming.

Regional Administrator (RA): An employee of KDLA’s Local Records Branch, who provides professional assistance to local public agencies in specific regions of the state.

Resolution: The clarity or clearness of film, used to determine the ability of the micro-photographic system to record fine detail.

Resolution Target/Test Chart: Used to read resolution of each roll of microfilm.

Rotary Camera: One in which the microfilm and documents are in motion when the image is captured.

Splice: A joint made by welding two pieces of microfilm together so they will function as a single piece when passing through a microfilm reader. Splicing is used to correct errors and should only be done in the clear leader at the beginning of the roll of microfilm.

Targets: Used to identify and clearly convey descriptive information to the user about the roll and record microfilmed.

Thiosulfate: A chemical used in developing microfilm.

Transmittal: A transfer document that contains information about what was filmed, where the records are from, and where and for how long the film is stored.

2.0 Micrographics Laboratory Certification Requirements

Microfilm service providers who consistently adhere to state requirements and strict national standards from the Association for Information and Image Management (AIIM), the National Institute of Standards and Technology (NIST), and the American National Standards Institute (ANSI) are certified each year by KDLA and recognized by the State Archives and Records Commission. Certification is for a one-year period and must be renewed annually. ARMD evaluates each certified laboratory in the following areas:

1. Compliance with ARMD standards for film formatting, including the proper use of microfilm targets and proper splicing.
2. Compliance with ARMD requirements that the original silver halide master of all microfilm produced be deposited with ARMD.
3. Compliance with appropriate procedures to ensure microfilm quality evaluation, including:
 - A. Compliance with accepted standards for film resolution and density.
 - B. Compliance with accepted standards assuring minimal thiosulfate.
 - C. Compliance with ARMD procedures for the transfer and evaluation of public records.

To receive laboratory certification, an agency must consistently produce microfilm of an archival standard and adhere to the following requirements:

- A. The agency/applicant must send a formal letter applying for Laboratory Certification to the Micrographics Quality Assurance (MQA) Specialist, ARMD. This letter should include the name of the agency, the date the laboratory will begin to send film strips for testing, and the name of a laboratory contact person.

- B. Upon receipt of the application, ARMD will send the agency materials with which to begin the certification process, including targets and testing schedule. The purchase of the resolution charts will be the responsibility of the applicant.

The following film strips must be sent and must pass all tests for six consecutive months before certification will be awarded:

- A. One 8-inch film strip clear of images or fog
B. One film strip with the following images appearing:
- Resolution chart
 - Plain white sheet of paper
 - Camera operator's target or agency letterhead sheet providing agency name, date film was processed, reduction ratio used to film the test strip, and name of laboratory contact person

These microfilm strips must be sent to the MQA Specialist for testing by the 15th of each month or the next workday following the 15th. A copy of the testing dates is available upon request. The test strips should be mailed as soon as possible after processing occurs in order to complete tests within the fourteen-day time frame required for thiosulfate residue testing. The closer to the testing date the test strip is processed, the more accurate the test results are.

The film strips must pass the following three tests in order to meet certification requirements:

2.1 Thiosulfate residue content

When not completely removed by washing during processing, such residue can consume the film's emulsion and result in permanent damage. Archival microfilm must be free of this harmful chemical residue to ensure the film's longevity and to avoid deterioration of the film's emulsion through spotting or "measles". Microforms shall be processed so that the residual thiosulfate ion concentration will not exceed 1.4 grams per square centimeter in a clear area when using methylene blue test methods.

2.2 Density

Measurements are taken to ensure proper densities of micro-images in readers or for making subsequent generations of film. If the image density is too light or too dark, the film cannot be duplicated at a readable level. Background density is tested on the resolution chart and white clear area of targets. The acceptable density range for this test is from .70 to 1.30. A reading of .69 or below, 1.31 or above, or that is unable to be viewed on a standard microfilm reader will not meet ARMD requirements.

2.3 Resolution

The original microfilm must meet resolution standards, because film loses at least 12% of its clarity with each duplication. Resolution tests shall be performed using the NIST (www.nist.org) 1010a Microcopy Resolution Test Chart or equivalent. Resolution Test Charts degrade over time and must be replaced. If an MQA Specialist encounters a degraded chart in the course of quality assurance procedures, the specialist will advise certified laboratories that their charts need to be replaced. The resolution reading is obtained using the line direction method with a 50x to 150x magnification microscope after distinguishing the smallest pattern block that can be resolved for each pattern on the chart. All readings are added together, the total divided by the number of patterns, then multiplied by the camera reduction used. The acceptable minimum is 100 lines per millimeter (lpm). Below 100 lines per millimeter is unacceptable.

When all requirements listed above are met, the agency's official Laboratory Certification will be presented at the next quarterly meeting of the State Archives and Records Commission. If certification is completed prior to the scheduled Commission meeting, a formal letter will be sent to the agency stating that it has met all requirements and its laboratory is certified.

To maintain laboratory certification, the test strips must be sent each month and must pass the thiosulfate, density, and resolution tests. If a laboratory, once certified, will be inactive for one month, a letter stating that the laboratory was not active for that particular month must be sent to the MQA Specialist, ARMD in lieu of the test strips. This must be done each month the agency is inactive.

If an agency fails to meet any of the standards over a ninety-day period, ARMD will decertify the agency by a written notice.

Microfilm produced by or for public agencies is evaluated for quality in density, resolution, chemical residue, and format. A random check of the density is made throughout each roll of film. Images that do not meet the density requirement may cause the entire roll to fail quality evaluation or to require retakes. The resolution, as read from both the front and end charts, should meet the 100 lpm requirement. Proper formatting is outlined in Section. 4.0.

3.0 Security Storage of Microfilm

ARMD provides free storage in its specially equipped, climate controlled vault to ensure that information contained on archival film will remain permanently available for research or administrative use.

The original silver halide master microfilm (negative or positive) must be provided to ARMD at no cost for security storage. Only wet process silver halide film will be accepted for storage.

ARMD will test the security copy of the film for resolution and density. If the film is in microfiche format, it must be provided in archival storage boxes; if filmed in 35mm or 16mm roll format, it must be provided in inert plastic boxes, with labels affixed to the outside. ARMD will randomly inspect security film every two years for mold, spots, or other evidence of deterioration.

The security copy will not be used as a research copy. A research copy, however, may be produced from the film if an agency, when forwarding film, grants permission for the duplication of its film for research purposes by indicating on the transmittal. Security film might also be used for duplication when a work copy is lost or damaged. In cases where duplicate copies of the same microfilm are required more than once, a master silver halide duplicate will be made and all subsequent copies will be made from this duping master.

In testing microfilm stored in the security vault, ARMD will follow ANSI standards.

4.0 Micrographics Procedural Requirements

4.1 Proper targeting

Proper identification targets must appear on each roll of film. Standard targets ensure ready access to information contained on the film and that filmed information is a reliable copy that is legally admissible as evidence in a court of law. All targets are furnished free of charge to certified vendors by the Micrographics Branch, ARMD. The lab or agency is responsible for obtaining all resolution charts. Targets will be provided to those currently working toward certification. Only targets furnished by ARMD will be accepted for public records filming. Targets should not be cut or altered in any way other than completing the blanks.

The following ARMD targets must always be used. Except for the Resolution Test Chart, targets will be furnished by ARMD. Use a bold tipped black marking pen and print clearly to complete targets. Sample targets are in Appendix A. (Do not use these when filming; they are samples only!)

Target 1 – Resolution Test Chart

Target 1(a) – used with planetary cameras or

Target 1(b) – used with rotary cameras

The Resolution Test Chart can be purchased from AIIM (<http://www.aiim.org/>). Laboratories must not use the printed illustration included in this guide for making tests.

Target 2 – Camera Operator's Certificate and Certificate of Authenticity

Identifies the agency for which filming is being done, agency or certified laboratory doing the filming, date of filming, reduction ratio, and camera operator's printed name and signature, certifying that the microphotographs on the film are true and accurate reproductions of the original records.

Target 3 – Title Target

Includes name of agency whose records are being filmed, exact title of record (with any variant title on second line) as listed in the agency's Records Retention Schedule, series number, inclusive dates, index

information, and filming arrangement (information on the sequence in which materials were filmed, i.e., chronological, numerical, alphabetical by first letter of last name, etc.). The Comments section should include notes on anything unusual or different about the record being filmed, or anything that might set it apart and that needs to be brought to the attention of the reader of the film.

Target 4 – Begin and Roll No.

The roll number is assigned by the camera operator.

Target 5 – Continued and Roll No.

Used instead of the Begin and Roll No. Target when a roll begins in the middle of a case file. The roll number is assigned by the camera operator.

Target 6 – End of Book

Used at the end of each book filmed.

Target 7 – End of Roll

Used at the end of each roll filmed.

Target 8 – To be Continued

Used when a file or book is not completed on one roll. The End of Roll Target is filmed after this target.

NOTE: If retakes, records additions, or corrections are necessary, the following ARMD targets must be used:

Target 9 – Start of Retake

Includes roll number, title of record series, date, signature of camera operator, and laboratory doing filming.

Target 10 – End of Retake

Target 11 – Start of Records Additions

Includes roll number, title of records being added to roll, date, signature of camera operator, and laboratory doing filming.

Targets 12 – End of Records Additions

Target 13 – Correction

This target should be filmed immediately following a filming mistake or a possible filming mistake, followed by the proper filming.

A. Required targets

The following six targets are always necessary on each roll. Additional targets may be necessary in filming some records. These targets must be in the proper order (although they may be filmed side by side, two to a frame, on 35mm film). Each is followed by the page number of the sample target.

1. Resolution Test Chart – Planetary or Rotary, followed by a filmed blank white sheet of paper
2. Camera Operator's Certificate and Certificate of Authenticity
3. Title Target
4. Begin and Roll No. or Continued and Roll No., if appropriate
5. End of Roll or To be Continued, if appropriate, followed by a filmed blank white sheet of paper
6. Resolution Test Chart – Planetary or Rotary

The Camera Operator's Certificate and Certificate of Authenticity should be completed by the camera operator. The roll number should be assigned by the camera operator on either the Begin and Roll No. Target or the Continued and Roll No. Target depending on which is necessary.

B. Local Records targets

For Local Records grant projects, roll numbers are assigned by the vendor and should begin with number 1 and continue sequentially through the project. (Do not start over with number 1 when the series changes.) The Title Target must be completed only by a ARMD Regional Administrator. When more

than one book is contained on a roll, additional Title Targets, Begin and Roll No., and End of Book Targets are necessary for each book; no other targets should be repeated.

The required targets for more than one book on a roll or filming loose documents are:

Bound Book Filming

1. Resolution Test Chart, followed by a filmed blank page
2. Camera Operator's Certificate and Certificate of Authenticity
3. Title Target
4. Begin and Roll No.
5. End of Book, followed by a filmed blank white sheet of paper
6. Title Target
7. Begin and Roll No.
8. End of Book
9. Title Target
10. Begin and Roll No.
11. End of Book, followed by a filmed blank white sheet of paper
12. End of Roll
13. Resolution Test Chart

Loose Document/Case File Filming

1. Resolution Test Chart, followed by a filmed blank page
2. Camera Operator's Certificate and Certificate of Authenticity
3. Title Target
4. Begin and Roll No.
5. End of Roll, followed by a filmed blank white sheet of paper
6. Resolution Test Chart

Additional Targets

The only other targets that may be used are Correction Targets, Side Targets or Filming Notes, Retake Targets, Records Additions Targets, and Continuation Targets.

Correction Target

This target should be filmed immediately following a filming mistake, or a possible filming mistake, and followed by the proper filming. The correction targets should not be filmed on top of the original documents. Either remove the original or use white paper to cover the original. For example, this target should be used when:

- an object covered the item to be filmed in whole or in part
- the wrong page was filmed
- a page was filmed out of focus, or
- a page was filmed upside down

Side Targets or Filming Notes

These targets are used to explain any abnormality on any specific page in the record being filmed. They should only be used on a page where a particular problem actually exists, not as a default target on every page. They indicate to the user that the problem is with the record, not the camera, film, or camera operator. These targets are furnished by ARMD. If filming on a planetary camera, a small side target (approximately 1" x 2"), or filming note reflecting the condition of the record, should be filmed on the periphery of the image containing the record on which an abnormality occurs, preferably parallel to the writing on the record. These targets should not cover any or all of the document itself. If records are being filmed on a rotary camera, print the target on a white sheet of paper and film it in front of the page to which it pertains. Examples of notes in these types of targets are:

Ink Spots
Blurred Record
Insert Affixed to Page

Damaged Record
Faded Record
Book Bound too Tightly

Photostatic Copy Present
Original Features Cut Text

When pages of a book are missing or numbered incorrectly, a target made by the lab should be filmed where the problem occurs. This target should be filmed between pages of the document (not at the bottom of a page) and may be up to the size of the record pages being filmed. For example, these targets might read:

- Pages 10 – 20 Missing
- Pages Numbered 10 – 20 Are Out of Order

- Pages 45 – 51 Misnumbered
- No Pages 18 – 19
- Pages 405 – 450 Are Blank
- Pages 25 – 26 Are Glued Together

This indicates that the pages are filmed in the order in which they appear in the book. Use of these side targets or filming notes will avert the need for ARMD to request unnecessary retakes.

Continuation Targets

These targets can only be used when filming one record (book, folder, etc.) that is too long to fit on one roll of film. In such a case, the To be Continued Target replaces the End of Roll Target on the first roll and the Continued and Roll No. Target replaces the Begin and Roll No. Target on the second roll. (All other targets remain the same.) These targets are not to be used when more than one book is filmed on a roll and the last book exceeds the space available on the roll. In such a case, use a Records Additions Target. These continuation targets are not used in local records filming.

Records Additions Targets

These targets are used when additional information, which formed part of the original record, but was not filmed with that record, is located. For local records microfilming, the part being added must be less than one whole book. These targets, the Start of Records Additions and the End of Records Additions, are furnished by ARMD and completed by the camera operator. The records additions may be filmed at the end of the corresponding roll if they are discovered before the roll is removed from the camera. It is more often the case that they are filmed on a separate roll and spliced to the original. (All splicing is to be done by ARMD.) A record addition or retake must be able to fit on the reel to which it will be spliced. Roll numbers for both records additions and retakes must be the same as the original roll to which they will be spliced. The information and target order is the same as for retakes. (Note that the roll number is at the top of the target.)

Retake Targets

The Start of Retake Target and End of Retake Target are used in refilming unsatisfactory images on the original roll, such as illegible images or missed pages. These targets are furnished by ARMD and completed by the camera operator. The following information must be entered on the Start of Retake Target:

1. Resolution Chart
2. Filmed blank white sheet of paper
3. Roll Number (to which the retake will be spliced)
4. Title of Record Series
5. Date
6. Signature of Camera Operator
7. Name of Micrographics Laboratory doing filming

The End of Retake Target should be filmed after the last document being refilmed.

4.2 Local Records filming requirements only

When retakes are needed for pages from one book on a roll, only one Start of Retake and End of Retake Target is needed. When retakes are needed from several books on the same roll, they must be refilmed on the same roll to eliminate multiple splices on a roll. If any retake image is bad, all retakes for that roll fail and must be refilmed because a retake of a retake is not acceptable.

The following order should be observed for retakes from multiple books on the same roll, and, for different rolls:

- Resolution Test Chart
- Start of Retake Target (film retake for first book on the first roll here)
- End of Retake Target
- Start of Retake Target (film retake for the second book on the first roll here)
- End of Retake Target (space about 12 inches)
- Resolution Test Chart
- Start of Retake Target (film retakes for the first book on the second roll here)
- End of Retake Target

As shown above, retakes for different rolls may be filmed on the same roll if about 12 inches of blank film is left between them to facilitate splicing. Retakes for different rolls may be filmed on separate rolls, if preferred.

ARMD will provide targets to the vendors. Contact ARMD if applicable target does not exist.

A. Filming Requirements

Reduction Ratio

If a reduction ratio selected is greater than 35X using both 16mm microfilm and a large planetary camera (e.g.: Kodak MRD2/30), the microfilm service provider must get written authorization from the Local Records Branch Manager, ARMD, KDLA, before proceeding with a Local Records grant project.

Photostats

All photostats filmed on a planetary camera require a minimum of two (2) varying exposures to compensate for inconsistencies in copy quality and to capture any information written in the margin, such as marginal releases. If projects include photostats, the vendor should anticipate this extra cost and film space when preparing a bid.

Splitting Books

Records must be filmed as they are targeted. A book will not be split between rolls unless it is too long to fit on a single roll (See Continuation Targets). If a book will not fit on the roll or if the camera runs out of film, a records addition should be done for the remainder of the book. By planning ahead, records additions for this purpose can usually be avoided.

Filming Order

To ensure that local records are filmed in the proper (original) order, the Local Records Regional Administrator will complete all title targets on-site, determining original order or filming sequence and numbering the title targets in that sequence. The numbers will be placed at the lower right corner of the target. A corresponding number will be placed on the appropriate record (i.e., book, drawer, box) using a temporary paper strip for this purpose. Any deviations from standard recording practices, filing order, arrangement, or other special conditions will be described on the Title Target. These notes will be transcribed onto the catalog/transmittal documents.

Filming Inserts and Oversize Pages

All inserts and oversized pages must be filmed in their original place and sequence within a record. When possible, a plain white sheet of paper should be placed behind the insert being filmed. Anything under or on the back of inserts should also be filmed. Oversize pages and foldouts, such as maps and plats, should be filmed using multiple shots, when necessary, to capture the entire page. A slight overlap of shots should be used to aid in comprehension and reconstruction. When filming an insert, use a side target to indicate the special character of the record being filmed.

Blips or Image Location Marks

A blip, also known as an image location mark or document mark, is an optical mark, usually rectangular, within the recording area below or above the image on a roll of microfilm. It is used for counting images or frames automatically.

Blipping Instructions

Targets

1. Each Title Target gets a two-level blip.
2. Each Start of Retake and Start of Records Additions Target gets a two-level blip.
3. No other target gets a blip.

Pages or Documents

1. Each image/frame, including inserts and indexes, gets a single-level blip.
2. Each retake and record addition image/frame gets a single-level blip, whether the page or document is numbered or not.
3. When filming multiple images of the same page or document, put the blip only on the first image.
4. Blip documents after corrections.

Photostats

When filming photostats, film the darker shot first in order to get the blip dark enough to be read on automated readers.

Density

The density of the blips must be at least a .8 in order to be easily recognized by the microfilm reader.

Blip

Blips specified in the Local Records grant agreement will be checked to ensure adherence to the agreement specifications. Blips must conform to size and placement standards explained in ANSI/NMA MS8-1979, Revision of ANSI PH5.20-1974, NMA NS8-1974. The relative position of the blip to the document must be consistent throughout a roll.

1. Place all blips at the leading edge of the image/frame in the lower left blip channel.
2. The blip channel must be free of all other images.
3. The retrieval scheme will be explained in the agreement and must be adhered to or the film will not be accepted.

5.0 Microfilm Formats

The film type and film format must be as specified in the Local Records grant agreement.

Emulsion Scratches

Physical removal of blips using a razor blade (or other abrasive object) will render the roll unacceptable. Emulsion scratches that might call into question the information on the film will require retakes. Film must meet all requirements listed in this section in order to pass quality inspection. Any roll that fails to pass is returned to the vendor for refilming, with a written explanation.

Miscellaneous Requirements

Foreign objects, including light streaks, other pages appearing in the frame, (especially when obscuring information), and illegible images may cause rejection of the film or require retakes. ARMD will make the final determination in such cases.

Film Editing

Film should be edited by the vendor, page by page, on a film reader that will not scratch the emulsion. Some items to look for include:

- blurred pages
- missing/out-of-order pages
- folded/wrinkled pages
- emulsion scratches
- foreign objects
- light streaks

The film should be rolled on the reel with the emulsion side on the inside. When unwound, the blips should be on the inside face of the film.

Roll Boxes

All microfilm rolls must be sent in individual inert plastic boxes only. Specifications for such boxes are available from ARMD.

All boxes, including those for retakes and records additions, must have labels with the following identifying information typed on them. (This information should match that on the Title Target and transmittal exactly.)

The label should include:

1. Roll Number
2. Agency Name
3. Series Title/Unit Identifiers (book numbers, letters, etc.)
4. Year Span of Records on Roll

SAMPLE TOP LABEL

Franklin County Roll No. 12345 Deed Books A - C 1850 - 1875

Appropriate size labels should be used. Labels should not tape the box closed or inhibit its opening. These labels must use permanent adhesive. Rolls without labels specified as above, will be returned to the vendor to be corrected.

Transmittal forms are furnished by ARMD and completed by the vendor. Transmittals must be typed. (See Appendix B)

Shipping Film to ARMD

All film from one project should be shipped at one time, unless ARMD is notified in advance that the project is large, and will be sent in partial shipments. All shipments of microfilm should be sent to ARMD with a shipping statement, completed transmittals, and, when the shipment is complete, a copy of the invoice. (Transmittals are not shipping statements.) Rolls and transmittals should be packed in sequential order.

Shipping statements should include the following information:

1. Vendor Name
2. County or City Name (agency that created the records)
3. Total Number of Original Rolls
4. Total Number of Retake and/or Records Additions Rolls
5. Titles and Book Numbers (ex: Deed Books A-Z, Will Books A-M)
6. Partial or Complete Shipment

Splicing

All splicing of records additions, retakes, and leaders will be done by the Micrographics Branch, ARMD.

Quality Control

Every roll of film is inspected by the Micrographics Quality Assurance staff for technical and informational quality control. Film must meet all requirements listed in this section in order to pass quality inspection. Any roll that fails is returned to the vendor with a written explanation and must be refiled. Film is also returned if the correct procedures for transmittals, shipping, and boxes are not followed. An acceptance letter will be sent from ARMD after a complete shipment passes all tests.

Payment Release

A written statement of approval authorizing payment for film contracted by a local official will be issued by the Local Records Branch, ARMD, only after the security microfilm is received by ARMD, passes quality control, and is accepted for storage.

The formats described in ANSI Standard MS14-1978, Specifications for 16mm and 35mm Microfilms in Roll Form, shall be used for microfilming source documents on roll film.

5.1 Microfiche

Standards for computer output microfiche are outlined in ANSI/NMA MS1-1981, Practice for Operational Practices/Inspection and Quality Control for Alphanumeric Computer Output Microform and ANSI-NMA MS2-1978, Format and Coding for Computer Output Microfilm (COM).

Dry silver COM films are not approved as archival and will not be accepted for security storage.

All permanent public records should be filmed on wet process, silver halide film. ARMD will accept silver halide copy film produced from the original dry silver COM film as a permanent record. If the processing is of the reversal type, it must be full photographic reversal, i.e., develop, bleach, expose, redevelop, fix, and wash.

For each record series being filmed, the fiche heading strip should display a consecutive fiche number. This number should be left-justified on the heading strip.

Microfiche from hardcopy records

- A. The agency may use a preferred arrangement on the eye readable title.
- B. The first frame (row one, column one) of each fiche must be the ARMD supplied Title Target filled out appropriately.
- C. The second frame (row one, column two) must be a Resolution Test Chart (NB1010 or equal).
- D. The last fiche produced in a production run must have a Title Target, Camera Operator's Certificate and Certificate of Authenticity, a target attesting to the date span, and a target showing the inclusive fiche numbers of this particular run.
- E. The ARMD target fiche will be filed with the original fiche in the microfilm storage vault and used to authenticate the fiche, in case of any legal question.

COM generated Microfiche

NOTE: Since there is no method for putting a ARMD Title Target on this film, a target is not required to be filmed.

- A. A ARMD Title Target will be filled out and shipped with the fiche when it is sent to ARMD for storage.
- B. The person who requested the fiche must be the individual who signs the Microfilm Quality Evaluation form that attests that all the records were filmed in their entirety.
- C. These two forms will remain with the transmittal throughout its life.
- D. These two forms will be used to attest to the legality and completeness of the microfiche in case it would ever come into question.

Microfiche is not used in any roll format and it is not stored in ARMD's microfilm vault in a roll format. All fiche are cut into individual segments, which are normally 4" x 6" and stored in metal cabinets in the vault. No Begin and Roll No. and End Targets are necessary on microfiche.

5.2 Aperture cards

Aperture cards in their original form are not archival. The card stock is acidic and will eventually deteriorate. The glue, which holds the film chips in the card, is also acidic. It will eventually ruin the original film, and can lose its adhesiveness, causing the film to become separated from the card, jeopardizing file integrity. The file integrity of an aperture card system is hard to maintain since a lost or stolen card destroys the validity of the file.

This medium must be reformatted before it can be stored in an archival environment. When dealing with a project involving aperture cards, please contact ARMD for the latest requirements for reformatting.

5.3 Blips or image location marks

All images on 16mm film should be blipped with at least a single-level blip. The size of the single-level blip is explained in ANSI/NMA MS8-1979, Revision of ANSI PH5.20-1974, NMA MS8-1974.

For large planetary filming (such as that done for KDLA Local Records grant projects), the second-level blip will be exactly twice as wide as the single-level blip on the film; the tri-level blip, if needed, will be three times as wide as the single-level blip. On rotary cameras and newer small tabletop planetary cameras, the equipment automatically calibrates the blip size.

Prior to filming in 16mm format, the size, number, and placement of the blips on the film will be determined according to the retrieval scheme required. Once the placement (the relative position of the blip to the document) is determined, it must be consistent throughout the roll. If the leading edge is the chosen blip position, all blips must be in that location. Operators shall not alternate blip locations between the leading and trailing edge.

For specific instructions for blip placement in Local Records grant projects, see Section 4.2.

6.0 Microfilm Quality Control Inspection

Reasons for Failure to Pass Microfilm Quality Control

Density (permissible range – .70 to 1.30)

-page out of range

-extreme uneven density on a page

Resolution (minimum allowed – 100 lpm)

- target not filmed at front and end
- front or end target below standard
- non-ARMD resolution test chart
- wrong resolution test chart (rotary/planetary)

Camera Operator's Certificate and Certificate of Authenticity

- target missing
- missing information
- non-ARMD target
- out of order

Title Target

- missing first title target
- missing other than first title target
- missing or incorrect information
- non-ARMD target
- illegible

Begin and Roll No./End Targets

- target missing
- non-ARMD target
- wrong location

Continued and Roll No./To be Continued Targets

- used incorrectly

Start/End of Retake Targets

- either target missing
- incorrect target used
- incorrect or missing information
- illegible

Start/End of Records Additions Targets

- either target missing
- incorrect target used
- illegible
- missing or incorrect information (needs title, agency, pages, roll no., authenticity complete)

Correction Target

- target missing
- wrong location

Side Targets or Filming Notes

- used incorrectly
- used where not needed

Blips (Image Location Marks) **

- not as specified in grant or other instructions
- wrong size
- incorrect placement
- extra/missing blips

Damaged Film

- chemical or water spots on film
- holes, tears, severe creases
- emulsion scratches

Foreign Objects Filmed (ex: dirt, hands, paper, keys, bugs, clips, etc.)

- objects possibly obscuring information
- not obscuring information, but excessive or distracting

Film Size and Format **

- wrong film size according to grant
- wrong format according to grant

Documents

- blurred (any portion)
- not completely filmed (out of frame, covered, folded, document image cut off, wrinkled, etc.)
- illegible
- missing pages
- filmed out of order
- light/dark streaks
- upside down

Photostat Documents

- less than 2 shots of each page
- no exposure adjustment evident between the 2 shots
- has 2 shots but too dark/light or illegible

Other

- not silver halide original film
- more than one record series filmed on one roll
- one book partially filmed on two rolls
- wrong documents filmed (according to title target)
- wrong documents filmed (according to grant) **
- books filmed out of order

Transmittals

- missing
- not typed
- information doesn't match film
- information out of order
- information missing (including index information)
- notes about abnormality of records missing (ex: no book J, etc.)
- more than one record series on a page
- more than one front page per record series per project

Box Labels

- missing
- not typed
- missing information (top: agency, title, book no., roll no., date span, side used for specific listing of books)
- extra information (ex: filming date) **

Shipping Statement **

- missing
- doesn't match shipment
- missing information

Grant Evaluation **

- doesn't match records filmed
- all listed weren't filmed

** Pertains only to Local Records grant projects.

7.0 Transfer, Evaluation, and Destruction of Public Records

7.1 Records microfilmed, processed, and duplicated by ARMD, with a security copy of the film being retained by ARMD.

Agency

1. Arranges the records in correct order.
2. Removes all paper clips, staples, etc.
(NOTE: Failure to adhere to steps 1 and/or 2 may result in additional charges to the agency or the materials returned to the agency for correction.)
3. Prepares a list (by Records Retention Schedule series number, series title, and date span) identifying records to be filmed.
4. Notifies the Micrographics Branch, ARMD that records are ready for filming and arranges for the records transfer.

Local / State Records Branches, ARMD

5. Prepares targets for the records to be filmed.

Micrographics Branch, ARMD

6. Films the records; processes, tests, duplicates the film.
7. Prepares the Catalog Listing, Labels, Microfilm Quality Evaluation form, and Records Destruction Certificate, if applicable.
8. Records test results on Microfilm Quality Evaluation form.
9. Prepares a Transmittal for security microfilm if:
 - A. Microfilmed records are to be destroyed or
 - B. 42 rolls have been transferred or
 - C. Microfilm agreement has been completed or
 - D. Annually in December (if none of the above have occurred)
10. Returns duplicate use film and Catalog Listing to the agency.
11. Routes the security microfilm within the Branch, to the ARMD microfilm vault, and notes location on Transmittal. Gives Transmittal, Microfilm Quality Evaluation form, and Records Destruction Certificate, if applicable, to the State Records Branch, ARMD.

State Records Branch, ARMD

12. Gives the Microfilm Quality Evaluation form to the State Archivist and Records Administrator for signature. (If hardcopy records are not to be destroyed, attaches the form to the Transmittal after approval.)
13. Returns the agency locator copy of the Transmittal to the agency.
14. Returns the third sheet of the Records Destruction Certificate, a copy of the Microfilm Quality Evaluation form, and notification of pending destruction of the hardcopy records to the agency. If nothing is heard from the agency within allotted time, give the Records Destruction Certificate to the Micrographics Branch, ARMD.

Micrographics Branch, ARMD

15. Destroys the records, signs and dates the Records Destruction Certificate. Returns the signed and dated certificate to the State Records Branch, ARMD.

NOTE: When the hardcopy is to be retained after microfilming, it may be returned to the agency or accessioned by ARMD in the normal manner.

7.2 Microfilm produced by the agency and sent to ARMD for processing and/or duplication and security microfilm storage

Agency

1. Each film container must be labeled with the Records Retention Schedule series number of the records filmed. Permanent and non-permanent records cannot be filmed on the same roll without prior written permission of ARMD.
2. Prepares film and sends it to ARMD.

Micrographics Branch, ARMD

3. Processes and/or duplicates the film.
4. Sends the duplicate use film to the agency.

Agency

5. Prepares and sends to ARMD a Transmittal for security microfilm (including a roll by roll listing) if:
 - A. Microfilmed records are to be destroyed or
 - B. 10 rolls have been transferred or
 - C. Microfilm agreement has been completed or
 - D. Annually in December (if none of the above have occurred)
6. Completes the agency section of the Microfilm Quality Evaluation form and sends it to ARMD.

Micrographics Branch, ARMD

7. Tests the microfilm for quality. (If microfilm quality is not acceptable, the film is returned to the agency and this procedure is aborted.) Completes the ARMD section of the Microfilm Quality Evaluation form.
8. Places the security microfilm in the vault and notes the location on the Transmittal. Gives the Transmittal and Microfilm Quality Evaluation form to the State Records Branch, ARMD.

State Records Branch, ARMD

9. Gives the Microfilm Quality Evaluation form to the State Archivist and Records Administrator for signature.
10. Sends the Microfilm Quality Evaluation form and agency locator copy of the Transmittal to the agency.

Agency

11. Destroys the hardcopy of the microfilmed records if approved on the Microfilm Quality Evaluation form.
12. Completes the Records Destruction Certificate and retains the third sheet for its agency file. Sends the approved Microfilm Quality Evaluation form and the top two sheets of the Records Destruction Certificate to the State Records Branch, ARMD.

NOTE: If the hardcopy records are not being destroyed, the original Microfilm Quality Evaluation form should be returned to the State Records Branch, ARMD, with a note stating the records are not being destroyed.

NOTE: When the records retention period is 7 years or less, no Microfilm Quality Evaluation form is necessary.

NOTE: When the hardcopy is to be retained after microfilming, it may be retained by the agency or accessioned by ARMD in the normal manner.

7.3 Microfilm produced, processed and duplicated by the agency and sent to ARMD for security microfilm storage. This is applicable for records with retention periods of over seven years with the originals to be destroyed.

Agency

1. Sends the entire shipment of security microfilm, the Microfilm Quality Evaluation form with the agency section completed, and the Transmittal (including a roll by roll listing) for the security microfilm to the Micrographics Branch, ARMD.

Micrographics Branch, ARMD

2. Tests the microfilm for quality. (If microfilm quality is not acceptable, the film is returned to the agency and this procedure is aborted.) Completes the ARMD section of the Microfilm Quality Evaluation form.
3. Places the security microfilm in the vault and notes location on the Transmittal. Gives the Transmittal and Microfilm Quality Evaluation form to the State Records Branch, ARMD.

State Records Branch, ARMD

4. Gives the Microfilm Quality Evaluation form to the State Archivist and Records Administrator for signature.

5. Returns the Microfilm Quality Evaluation form and the agency locator copy of the Transmittal to the agency.

Agency

6. Destroys the hardcopy of the microfilmed records if approved on the Microfilm Quality Evaluation form.
7. Completes the Records Destruction Certificate and retains the third sheet for its agency file. Sends the approved Microfilm Quality Evaluation form and the top two sheets of the Records Destruction Certificate to the State Records Branch, ARMD.

8.0 Digital Imaging

These guidelines for digital imaging are based on, and supported by, Policy Memorandum 99-01, Standards for Conversion of Digital Images to Microfilm Format; and Policy Memorandum 09-01, Storage of Public Records as Scanned Images.

State or local government agencies that use digital imaging systems to maintain records that are scheduled as permanent, according to the State Archives and Records Commission's approved Records Retention Schedules, must comply with the KDLA Policy Memorandum on the Storage of Public Records as Scanned Images, 09-01. This Policy Memorandum states that "public records scheduled as permanent must have manual, eye-readable counterparts," namely paper or microfilm.

In order to comply with this Policy Memorandum, a government agency may produce a paper copy or a microfilm copy of the record. Agencies that do not want to create a paper copy must produce a KDLA approved microfilm copy to provide security for those permanent records. This microfilm must be produced according to the guidelines in this procedural guide. The silver halide master will be maintained by KDLA in security storage.

Microfilm may be produced from the paper record or from digital images, which are transferred to KDLA.

8.1 Formatting files

The required format for the files is a standard Tagged Image File Format (.tif extension). These can be compressed using CCIT Group compression (standard fax compression) only. Multi-page tifs are acceptable, but any that are in excess of 75 pages should be split into separate files to facilitate creation of microfilm.

All files from one series should be segregated from other series, for placement on separate rolls of film. The files should be organized (foldered and in order) as they appear on film. The folder level and the file level will be have blips according to their hierarchical level.

Example: The files for deed books or other logical units should be placed in separate folders by book or other unit to indicate a beginning and ending point for that unit on the film. This will facilitate retrieval from the film.

Folder names must be in lower case. If not in lower case, the sorting order will be compromised when transferring to microfilm. Example: doe, jane.tif

The tif files, particularly those produced from paper larger than 8.5 by 11, must be formatted in portrait rather than landscape orientation (vertical rather than horizontal).

Image file size that exceeds 550 KB for individual pages (not multi-page tifs) can impede file transfer to film.

When digitizing photostatic copies or other negative images (white text on black background), the vendor will reverse the image to a positive image (black text on white background).

Scanned images are to be 300 dpi or greater.

8.2 Indexing files

All digitized images must be accompanied by the corresponding general index. This index will be sent to KDLA in the tif format for transfer to film.

8.3 Verification of files

The vendors are required to verify each image and inform KDLA of all poor quality (illegible) images. This includes rips, folds, missing and/or obscured text, overlaps, etc. Book and page numbers of the poor quality documents will be provided to KDLA by the vendor. KDLA will then be responsible for the inserting of necessary targets.

8.4 Transfer of files

Transfer can be accomplished via CD (CD-R only) or DVD (DVD-R only). KDLA will also accept image files via File Transfer Protocol (FTP). The files can be placed on KDLA's FTP site or KDLA will take the images from an agency's FTP site. Details for this transfer will be provided in the contract for the work.

8.5 Targets and charts

The following charts and targets should be used for microfilm produced from electronic images:

- Resolution Test Chart
- Camera Operator's Certificate and Certificate of Authenticity
- Title Target
- Begin and Roll No.
- End of Roll

KDLA will also include a "Filmed as Received" statement on all microfilm generated from electronic images received from an outside source.

8.6 Imaging procedures

It is critical that agencies have proper scanning procedures in place in order to create an accurate and acceptable microfilmed image and to have the copies accepted as valid documentation of agency transactions. Agencies should incorporate the following elements in their imaging procedures:

A. Accuracy and completeness of records

A process of inspection must be in place to confirm that imaged documents are legible and that no corners of the original documents were folded or obscured during scanning. This process should include systematic quality control and audit procedures, as well as operational oversight by staff with detailed knowledge of the process or system used to produce the records. Resolution and use of gray scale should be appropriate to capture all needed detail within documents. Similarly, scanned images must capture all colors represented in the original documents when needed to interpret or understand the meaning of the original. The accuracy of the indexing process must also be assured through procedures that visually verify indexes after they have been keyed or created through optical character recognition.

B. Audit trails and security

Audit trails documenting who accessed or used the system, when they used it, and what the results of use were must be maintained. Security measures consistent with guidelines and standards provided in Kentucky's Enterprise Architecture and Standards should be adopted and applied.

C. Equipment maintenance

An effective maintenance program ensuring that scanners, disks, and other storage devices are properly housed and regularly maintained must be in place. Equipment maintenance logs should be kept to document the occurrence of regular maintenance.

D. Compression algorithms

All images should be stored in or converted to compression formats identified in the Enterprise Architecture and Standards. Currently, the standard requires use of, or an ability to convert to, (formerly CCIT) Group IV .tif.

8.7 Review of systems by ARMD staff

Agencies should review imaging system requirements and contents with appropriate ARMD staff. Staff will examine all elements of scanning procedures and the scheduled records series maintained in the system. Records maintained on the imaging system should follow retentions on an appropriate State

Archives and Records Commission approved Records Retention Schedule. ARMD staff will work to facilitate this review through distribution of a form to be completed by the agency on a regular basis.

8.8 Waiver of eye-readable requirement

State agencies may request to maintain permanent records as digital images without eye-readable backup by petitioning the State Archivist and Records Administrator for a waiver of that requirement. The request must include a list of records series, as found on the applicable State Archives and Records Commission approved Records Retention Schedule, for which the waiver is being sought. ARMD will work with agency staff to review both the elements of the agency's imaging system, per Policy Memorandum 09-01, and the nature of the records in question. The State Archivist and Records Administrator may provide written authorization, if the system and the records are acceptable. This authorization will require the agency staff to review the imaging system and its contents on a regular basis with ARMD.

Appendix A: Sample targets

Appendix B: Transmittals

These are the specific instructions for completing transmittals for Local Records grant projects microfilm. Complete the numbered sections of the transmittal as follows:

1. Agency: Enter the name of the county or city.
2. Unit: Enter the name of the office whose records were microfilmed (county clerk, city clerk, board of council, board of education, etc.).
3. Retention Schedule Date: The date the Records Retention Schedule on which the pertinent record series is found and was approved by the State Archives and Records Commission. If in doubt, contact a regional administrator.
4. Total Containers: Enter the number of rolls for the record series (not for the entire project unless it is all one record series).
5. Destruction Date: Enter the word "none" for Local Records grant projects.
6. Box, Roll, Book, Bundle: Check roll and enter the number for each roll as it appears on the microfilm Begin and Roll No. Target.
7. Series Number: Enter the record series number as written on the Title Target by the regional administrator. For county and city records, the series number begins with an "L" and is followed by four numbers. Contact the regional administrator if it is not on the Title Target.
8. Title of Records: Enter the record title exactly as it was provided to you on the Title Target by the regional administrator, followed by (Indexed) if appropriate.
9. Date Span of Records: Enter for each book on each roll the inclusive dates in years as provided on the Title Target by the regional administrator. Always use all four digits for the year (i.e.: 1940 not '40). Do not include month or day dates here.
10. Local Records Program staff will complete this section.
11. Agency Records Officer Signature: Leave this section blank.
12. Page Numbers (Page 1 of): Enter the total number of pages for this record series. On continuation pages, enter the page number and total number of pages.
13. Additional notes should be added to the transmittal to explain abnormalities in the records being filmed. Such information can usually be found in the Comments section at the bottom of the Title Target.

Appendix C: Microfilm Quality Evaluation form

The ARMD must test microfilm of public records with a retention period of over seven years to ensure all standards are met and correct procedures are followed, before approving destruction of the original records.

The Microfilm Quality Evaluation (form 311) is used to record laboratory test results, deposit of a silver halide master copy with the ARMD, and based on these, approval or disapproval of destruction of original records.

Fill in the data on the form as follows:

Agency: Name of cabinet, department, commission, university, public school district, county, city, etc.

Unit: Name of unit which falls under the agency listed above.

Date: Date the Microfilm Quality Evaluation form is prepared.

1. Roll Number – First and last roll number of the shipment of microfilm (ex: 1-25).
Schedule Date and Series No. – Month and year the current Records Retention Schedule was approved by the State Archives and Records Commission and each series number from the Records Retention Schedule.
Title of Records as on Schedule – Title of the records exactly as shown on the Records Retention Schedule for each series.
Inclusive Dates – Oldest and most recent dates of the records in each series.
2. This section is to be signed and dated by the agency Records Officer or Custodian who certifies the records have been filmed in their entirety and a silver halide copy is stored with the ARMD for security.
3. This entire section is to be completed by the Micrographics Branch, ARMD.
4. After the microfilm is tested, the form will be signed by the State Archivist and Records Administrator, approving or disapproving destruction of the hardcopy records.

After destroying the records (if approval for destruction of the hardcopy records is given), complete a Records Destruction Certificate and remove the third sheet for your files. Send the approved Microfilm Quality Evaluation form and the top two sheets of the Records Destruction Certificate to the State Records Branch, Archives and Records Management Division, Department for Libraries and Archives, 300 Coffee Tree Road, P.O. Box 537, Frankfort, KY 40602.

Appendix D: Microfilm Quality Control Possible Errors with Correction Methods

Possible Errors

Correction Methods

Title Target

- Missing 1st title target
- Missing other than 1st title target
- Missing or incorrect information (if done by RA)**
- Non-ARMD target
- Illegible

- Retake all front targets (will be spliced at front roll)
- Retake title target and book
- QC correct with film marker if possible. If not, add note to transmittal.
- Same as missing target (above)
- Same as missing target (above)

Begin/End Targets

- Target missing
- Non ARMD target
- Wrong location

- QC write in, inform lab
- Pass, give lab more targets
- QC mark out, write in proper place

Continued/To be Continued Targets

- Used incorrectly

- QC correct with marker if possible. If not, retake all front/end targets.

Start/End of Retake Targets

- Either target missing
- Incorrect target used
- Incorrect or missing information
- Illegible

- Refilm entire retake
- Refilm entire retake
- Refilm entire retake
- Refilm entire retake

Start/End of Records Additions Targets

- Either target missing
- Incorrect target used
- Illegible
- Missing or incorrect information (needs title, agency, pages, roll number, authenticity complete)

- Refilm entire records addition
- Refilm entire records addition
- Refilm entire records addition
- Refilm entire records addition. QC can write in missing roll number.

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