Tennessee Archives Management Advisory

2000

ARCHIVAL STANDARDS FOR COMPUTER OUTPUT MICROFILM (COM) FOR ARCHIVAL RETENTION

This advisory provides state and local government offices information needed to assure optimal survival of records indefinitely into the future. It is issued to guide agencies on the use and value of computer output microfilm—hereinafter referred to as "COM." COM is a *desirable* component of any electronic information processing and management system for state and local government offices, and it is a *necessary* component for the creation of archival-quality film records for long-term and permanent retention.[1]

Introduction of electronic information systems poses a hard choice. Modern office operations require high-speed, large-volume processing. Archives require permanent survival of material and evidential integrity of records. In present electronic systems, permanence is either neglected or sacrificed for large-volume, high-speed efficiency. Standards to assure permanence are being developed but are not yet fully translated into operational specifications for operating systems.

- COM—if you cannot retain ink-and-paper copies—is the recommended solution.
- COM is generated by commercially-available information processing hardware and software that is integral to a primary information processing and management system.[2]
- COM that is properly prepared and kept according to archival standards is the medium and means recommended to offer the best chance of having both the efficiency of electronic systems and the permanence that archival retention requires.

Accordingly, this advisory provides guidance to county officials and others who wish to invest in electronic systems for their records processing and who also wish to be confident that records which should be kept permanently will have the best chance for survival.

Assurances:

Those who, in purchasing systems from vendors, can insist on systems that also produce computer-output-microfilm that meets the following standards may have confidence that their records will survive.

Tennessee State Library and Archives (TSLA) welcomes for permanent retention any computer output microfilm of permanent records that meets these standards.

Warnings:

Government offices that do NOT exercise strict quality control and contract compliance control to meet these standards CANNOT assure their citizens and taxpayers that the records will survive for long-term future use.

TSLA will NOT accept for deposit and permanent retention any computer-output-microfilm that does NOT meet these standards.

1.0 Authority

These standards are established under authority of Tennessee Code Annotated § 10-7-404(d)(1), which authorizes the Secretary of State as supervisor of the state library and archives to "promulgate regulations regarding the approved technology, standards, and procedures for reproducing public records . . . which shall be followed by county officers, department heads, and the county public records commission." With respect to state agencies, the standards are not binding, but they are highly recommended by the state library and archives.

2.0 Application:

These standards apply to all series of public records that

- are generated in electronic information systems and copied onto computer output microfilm (COM) and that
- have been appraised and authorized for long-term or permanent retention by a duly constituted state, county, or municipal public records commission.[3]

Such long-term or permanent records are hereinafter referred to as "archival records".

3.0 General Requirements:

When archival records are to be maintained on microfilm, including computer output microfilm, the silver gelatin original camera-image microfilm is to be the permanent archival security copy. Only this film-construction offers the probability of survival for centuries if properly stored and maintained.[4]

Thermally-processed film shall not be used as the archival security copy. Diazo film, vesicular film, and other alternative media shall not be used for archival records.

The permanent archival security copy should be deposited into the Tennessee State Library and Archives for permanent retention, where it will be accepted for deposit if and

only if it is inspected and found to meet these standards.

The original camera-image microfilm shall not be used for reference. It may be used to create a single, master reference copy or to create a copy-master, second-generation negative copy from which numerous reference copies may be made.

4.0 Film Standards:
Archival records generated on COM in Tennessee government offices shall conform to the COM and other microform standards of the American National Standards Institute (ANSI), including but not limited to those cited below, or their current editions.[5] See especially,

ANSI/AIIM MS48-1999	*American National Standard for Information and Image Management—Recommended Practices Microfilming Public Records on Silver Halide Film*
ANSI/AIIM TR13-1998	*Technical Report—Preservation of Microforms in an Active Environment—Guideline*
AIIM TR26-1993	*Technical Report—Resolution as it Relates to Photographic and Electronic Imaging*

5.0 Microfilm Stock
The film stock used to make permanent archival security photographic records, whether by COM or any other means, shall be safety-based permanent record film [silver-halide in gelatin on a polyester base] as specified in

ANSI/NAPM IT9.6 [ANSI/ISO 543]	*Imaging Materials—Photographic Films—Specifications for Safety Film*
ANSI/NAPM IT9.1	*Imaging Materials—Processed Silver-Gelatin Type Black-and-White Film—Specifications for Stability*

6.0 Filming Procedures
6.1 Procedures to be followed in establishing and operating a COM program shall conform to standards set down in

ANSI/AIIM MS1—1996:	*Recommended Practice for Alpha-numeric Computer-Output Microforms—Operational Policies for Inspection and Quality Control*
AIIM MS28-1987	*Alphanumeric COM Quality Test Slide*
AIIM MS43-1988	*Recommended Practice for Operational Procedures or Inspection and Quality Control of Duplicate Microforms of Documents and Microforms from COM*

6.2 Micro-images, not only the first-generation, camera-image negative, but also

including second- or third-generation copies intended for reference use, shall contain all the significant record detail of each record in the data base as to content, structure, and content, and they shall be easily read and reproduced.

6.3 Micro-images of the records shall be arranged, identified, and indexed so that any component of the records can be located with reasonable ease.

6.4 All densities shall be consistent throughout the microfilm as measured by a densitometer calibrated with a step tablet and shall conform to the following standards:

1. background density on the original camera-image negative microfilm shall exceed 1.8;
2. background density on the positive microfilm shall *not* exceed 0.35;
3. base-plus-fog density of unexposed, processed, clear-base film shall *not* exceed 0.10;
4. when a tinted base film is used, the density shall *not* exceed 0.3

6.5 Each microfilm shall have eye-readable titling, which may be programmed into the filming process by the information system that produces the film. The images at the beginning of each roll of film shall include:

- office of origin—the institution/agency and subordinate units whose records are to be found on the film
- record series—title of each discrete functional series of records that are to be found on the film
- inclusive content information—a brief description of the date spans and or content span of the records in each series
- date of filming—date on which the filming was completed
- creator of the film—the office, agency, or function and the information system that created the film
- sequential numbering of film rolls—each roll of film shall be assigned a serial number—usually consisting of four digits for the year in which the film was produced and a one-up sequential serial number unique to each roll of film
- certificate of integrity and authenticity—a statement by the office that produces the film that the film is complete and that every record that is required by a records disposition authorization to be retained for future reference is represented by an image or images on the film.

7.0 Processing

7.1 Processing must be either conventional or full reversal, utilizing a developer and fixer. Processors shall be certified by the manufacturer to be capable of producing archival quality processed film as required by ANSI/NAPM IT9.17: *Photography—Determination of Residual Thiosulfate and Other Related Chemicals in Processed Photographic Materials—Methods Using Iodine-Amylose, Methylene Blue, and Silver Sulfide.*

7.2 Certification for archival-quality processing shall be based on the methylene blue test analysis. Processed microfilm must have an optimum concentration of greater than zero but shall not exceed .014 grams per square millimeter in a clear film area. The film product of in-house processing shall be tested and certified once every two weeks or as deemed necessary by the Tennessee State Library and Archives. Processing services performed off-site shall include a provision requiring that the methylene blue test shall be performed on film product once every 24 hours.

7.3 A certificate documenting that the microfilm product has routinely and consistently passed the methylene blue test shall be sent at least once a year to the Restoration and Reproduction Section of the Tennessee State Library and Archives. The certificate shall contain the name of the agency whose film was processed, the date of processing, the date of the methylene blue test, and the signature of the person who did the test.

8. Handling and Inspection

8.1 The total microfilming system shall be evaluated to ensure that micro-images conforming to the standards are produced. The final reproduction, whether film or hard copy print from the film, must be retrievable, readable, and reproducible.

8.2 Clean, lint-free, white cotton or nylon gloves shall be worn when handling the film. Food, smoking, and other contaminants shall not be allowed in microfilming areas.

8.3 Original, camera-image microfilm shall be handled only during inspection procedures and when generating an intermediate (second-generation) master. In systems that generate two (2) camera-image microfilms, one shall be designated as the archival camera-image microfilm and shall not be used for duplication, loaded into a cartridge or inserted into a viewer. In systems that generate a single camera-image microfilm, the film shall be used only for inspection and the production of an intermediate master. Further reference copies shall be made only from the intermediate master and not from the original, archival, camera-image film.[6]

9.0 Storage

9.1 Original, camera-image film shall be transferred to the Restoration and Reproduction Section of the Tennessee State Library and Archives promptly after its creation. The transfer report/receipt shall verify that the film is complete and accurate and that it has passed the required methylene blue test.

9.2 Each film roll shall be placed on a spool and in an enclosure that is free of acids and peroxides and that meet the standards found in ANSI/NAPM IT9.2: *Imaging Media—Photographic Processed Films, Plates, and Papers—Filing Enclosures and Storage Containers*.

9.3 Camera microfilm shall be stored according to ANSI/NAPM IT9.11: *Imaging*

Media—Processed Safety Photographic Film—Storage.

9.4 At approximately two-year intervals, a sample of randomly-selected rolls of microfilm in storage shall be inspected according to ANSI/AIIM MS45-1990: *Recommended Practice for Inspection of Stored Silver-Gelatin Microforms for Evidence of Deterioration*.

10.0 References

ANSI/AIIM standards are copyright publications and must be obtained from their publishers. Catalogs of standards and the standards themselves may be obtained from

Association for Information and Image Management (AIIM)
Standards and Technology Department
1100 Wayne Avenue, Suite 1100
Silver Spring, MD 20910

American National Standards Institute (ANSI)
11 West 42nd Street
New York, NY 10036

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[1] This guidance is based on similar guidance found in standards for computer output microfilm set by The Library of Virginia. The Tennessee State Library and Archives is grateful to The Library of Virginia for making the standards generally available.

[2] TSLA is not permitted to recommend any particular vendor or vendors, so the burden is on government agencies to write careful specifications and exercise strict quality control and contract performance control.

[3] Long-term retention is herein considered to be any term greater than ten (10) years up to and including one hundred (100) years. Permanent retention means retention and survival of the material and evidential integrity of a record indefinitely, with the intent that the record shall survive for centuries rather than mere decades.

[4] See ANSI/AIIM TR13-1998, section 8, on the life expectancy (LE) ratings of various types of film.

[5] ANSI standards are often expressed as a joint standard with the Association for Information and Image Management (AIIM) and/or the International Standards Organization (ISO). Standards are revised and updated from time to time.

[6] The life expectancy (LE) rating of any film depends in large part upon its being handled as little as possible, upon its being stored in stable environmental conditions that meet ANSI storage standards for films. See ANSI/NAPM9.11-1993: *Imaging Materials—Photographic Films—Storage*.