

# **POLICY AND GUIDELINES FOR THE RETENTION AND DISPOSITION OF ORIGINAL COUNTY RECORDS COPIED ONTO OPTICAL IMAGING AND DATA STORAGE SYSTEMS**

## **1. Purpose**

Establish and clarify a records management policy for county officers with respect to the retention and ultimate disposition of original records copied onto optical imaging and data storage systems and to records stored on optical disks in order to enable officers to incorporate information retention and retrieval considerations at the earliest possible time into their plans to acquire optical imaging and data storage systems.

## **2. Objectives**

**2.1** To integrate records maintained on optical disks into county records management programs.

**2.2** To provide information needed by county officers to properly evaluate the effect of optical imaging and data storage systems on their operations.

**2.3** To ensure that information stored on optical imaging and data storage systems will be accessible in conformance with records retention and disposition schedules and procedures approved by the County Records Committee.

**2.4** To reduce the risks associated with optical imaging and data storage system hardware and software obsolescence.

## **3. Scope**

Applies to all county officers covered by the County Records Act and by Supreme Court Rule of Judicial Administration Pa. R.J.A. No. 507(a).

## **4. Policy**

**4.1** Records relating to optical imaging and storage systems, including systems documentation, may be disposed of only in accordance with schedules approved by the County Records Committee.

**4.2** Permanent records are those records which have been scheduled for permanent retention either in the original or microform copy by the County Records Committee or by applicable statute and regulation. Long-term records are any records that need to be retained for more than ten years either in the original or microfilm copy.

**4.3** County officers are responsible for making provisions to retain either the original copies of permanently valuable records or making archival security microform copies to serve as a substitute. Archival security microform copies must be created and maintained in conformance with applicable standards approved by the County Records Committee.

**4.4** In those instances where the optical disk is the original medium for records scheduled for permanent retention, such as the procedural or transactional recording of deeds, provisions must be made to retain paper copies of such records or to create archival security microfilm copies of the records. The preferred strategy for ensuring the creation of an archival security microfilm copy would require the retention of the original instrument or a paper copy made from the original instrument, until the film copy has been verified. The use of raster computer output microfilm meeting appropriate standards is acceptable as the security copy (see ANSI/AIIM MS48).

**4.5** With certain exceptions, county officers will not have to make provisions to retain non-permanent records copied onto optical disks in a human-readable format. There are situations which, due to the unusually vital nature of the records or their relatively long retention period, will make it necessary to require the retention of a human-readable copy.

## **5. Optical Imaging and Data Storage Guidelines**

**5.1** A county officer who purchases and operates

an optical imaging and data storage system must provide for **the usability of image and index data** over time by:

**5.1.1 Management.** In order to maintain access to digital information stored on optical media, a county officer must ensure that:

**5.1.1a** All information retention requirements and procedures established by the County Records Committee are addressed during the system planning.

**5.1.1b** Where possible, systems should be built from hardware and software components that conform to non-proprietary and/or commonly accepted standards, and

**5.1.1c** Vendors should deposit a copy of computer source code and associated documentation with the county for use in the event of the vendor's business failure.

**5.1.2 Preservation Strategy.** To ensure that records stored on optical media are preserved, a county officer must:

**5.1.2a** Maintain proper care and handling procedures for optical media by keeping a clean, dust-free environment for all equipment and prohibit eating, drinking or smoking in the area.

**5.1.3 Migration Strategy.** To ensure access to long-term records, a county officer must provide a means to:

**5.1.3a** Upgrade equipment as technology evolves and periodically recopy optical media as required, or

**5.1.3b** Recopy optical media (based upon projected longevity of the optical disk) every ten years, or

**5.1.3c** Transfer data from an obsolete generation of optical technology to a newly emerging generation, in some cases bypassing the generation that is mature, but at risk of becoming obsolete.

**5.1.4 Image File Headers.** The use of proprietary image file headers will make it difficult to ensure the long-term intelligibility of digital images when system upgrades or modifications occur, therefore a county officer must:

**5.1.4a** Require use of a non-proprietary image file header label, or

**5.1.4b** Require the system developer to provide a bridge to a non-proprietary image file header label, or

**5.1.4c** Require the system developer to supply a detailed definition of image file header label structure

**5.1.5 Error Detection and Correction.** The ability to predict the point at which optical media is no longer readable is critical so that media recopying can take place. A county officer must:

**5.1.5a** Specify that the SCSI (Small Computer System Interface - the primary communications interface used in optical systems) command "Write and Verify" is used when writing data to optical media.

**5.1.5b** Acquire a utility program that monitors the amount of disk space used to relocate data sectors as errors are detected, and

**5.1.5c** Ensure through systems operations procedures that current readability is maintained through periodic copying when the relocation table reaches 70% capacity.

**5.2** County officers must protect **the quality of digital images and data captured and stored by an optical imaging and data storage system**, by providing for:

**5.2.1 Input Quality Control.** Regular equipment maintenance is a necessary process control procedure under which optical imaging and data storage systems should operate. A county officer must:

**5.2.1a** Ensure that the optical system receives periodic maintenance,

**5.2.1b** Ensure that the optical drives are recalibrated annually or more frequently based upon an "hours in use" formula,

**5.2.1c** Ensure that quality control evaluation of each scanned image and related index data is performed prior to writing image data to optical media,

**5.2.1d** Evaluate the scanner quality based on standard procedures recommended in ANSI/AIIM MS44-1988, Recommended Practice for Quality Control of Image Scanners (ANSI- American National Standards Institute). ANSI is composed of representatives from industry, technical societies, consumer organizations and government agencies. AIIM-Association for Information and Image Management (formerly National Micrographics Association - NMA).

**5.2.2 Scanning Density.** Scanning density is vital to ensure image legibility. A county officer must:

**5.2.2a** Employ a scanning density of 200 dots per inch (dpi) for office documents that contain no type fonts smaller than six (6) point,

**5.2.2b** Employ a higher scanning density (300 dpi or 600 dpi) as needed for engineering drawings, maps, and documents with type fonts smaller than six (6) point or significant background detail, and

**5.2.2c** Validate the selected scanning density with actual document tests.

**5.2.3 Scanner Color Spectrum.** Because some digital scanners may not capture the full color spectrum - especially yellow and sepia tones - it is possible to lose significant detail in scanning a document containing certain colors. Therefore, before launching a document conversion project a county officer must:

**5.2.3a** Verify scanner capability and hardware modification requirements by conducting a test of selected documents.

**5.2.4 Gray Scale.** Use of the scale is necessary when scanning continuous tone photographs. A low scanning density is used in this process, which would reduce the quality of other images scanned. Except in circumstances where the characteristics of the original document (i.e., shading, color) are beyond the receiving office's control, a county officer must:

**5.2.4a** Restrict the use of the gray scale to continuous tone photographs except in those instances where the use of the gray scale promotes readability of text documents.

**5.2.5 Image Input Quality.** At this time, there are no objective, empirical indicators of acceptable image quality for digitally scanned images. Therefore a county officer must:

**5.2.5a** Select sample documents based upon levels of legibility (poor to excellent), organize a panel within the office to establish consensus on what settings produce the "best" image for different categories of documents, and use the settings as the operational criteria for acceptable image quality.

**5.2.6 Compression Techniques.** There are two broad categories of compression techniques - proprietary and standard. Proprietary compression techniques tend to be fast and offer higher compression capabilities but the stored images might not be transportable between different systems. Standardized compression techniques, although they may not be as powerful, support image data transfer between systems that otherwise might be incompatible. There are two international standard compression techniques currently available-CCITT Group 3 and Group 4. Therefore a county officer must:

**5.2.6a** Require that digital imaging and data storage systems support the prevailing CCITT standards, but

**5.2.6b** If a proprietary compression technique is unavoidable, require the vendor to specify compression/decompression algorithms that ensure that no information is "lost" during the transmission.

**5.3** County officers must provide for the **continuing functionality of system components**, over time by:

**5.3.1 Open Systems.** Open systems architecture is defined as a systems design approach that permits users to interchange system hardware components with minimal impact on the primary operating software and to upgrade the system over time without risk of data loss. A county officer must:

**5.3.1a** Require an open systems architecture for new optical media applications, or

**5.3.1b** Require vendors to provide a bridge to systems with non-proprietary configurations.

**5.3.2 Backward Compatibility.** Obsolescence of the technology is a major consideration of any imaging or data storage system design. Its impact can be minimized by requiring a backward compatibility - that the optical imaging and data storage system is able to read and convert information written by an older generation of technology to a newer one. Therefore a county officer must:

**5.3.2a** Require system upgrades or new systems to provide backward compatibility to the existing system, or

**5.3.2b** When necessary, require vendors to guarantee conversion of 100 percent of extant image and index data to the new system if such a system cannot provide hardware compatibility.

**5.3.3 Small Computer System Interface.** The Small Computer System Interface (SCSI) is the communications interface used in many optical media systems. It is the primary mechanism that enables drives and other peripheral devices from different manufacturers to communicate with each other. However, since differences between interface standards restrict compatibility, a county officer must:

**5.3.3a** Require system manufacturers and integrators to provide complete documentation about the specific hardware and software SCSI interface used.

**5.3.4 Location of Index Database.** To ensure that the index information will not be lost, a county officer must:

**5.3.4a** For processing purposes, store index data on the system's mass storage device (i.e., hard drive), or

**5.3.4b** For fail-safe indexing, write index data for each optical disk at multiple locations on that disk.

**5.3.5 Technical Documentation.** To ensure that all technical information will be available, a county officer must:

**5.3.5a** Require delivery of a complete set of documentation (including source code, object code, and maintenance documentation) to the organization responsible for operation of an optical media application system, and

**5.3.5b** Document all aspects of the design and use, including administrative procedures for digital imaging, retrieval, and storage; technical system specifications; problems encountered over time; and measures taken to address them, including hardware and software modifications.

**5.4** County officers must provide for **the stability of optical media**, by:

**5.4.1 Recording Performance.** Write once, read many times (WORM) and rewritable optical media recording technologies each offer advantages and disadvantages. The selection of WORM or rewritable recording must be linked to the user's application requirements, available resources, and the level of standardization achieved by the optical media technologies. It is possible that accidental or intentional erasure of data stored on rewritable media could occur and this must be taken into account, particularly when the records have substantial legal, financial, or other long-term value. A county officer must:

**5.4.1a** Require the use of WORM technology for records of long-term legal, financial or archival research value, and

**5.4.1b** Ensure that read/write privileges are carefully controlled and that an audit trail of rewrites is maintained when rewritable technology is used.

**5.4.2 Disk Substrate Composition.** Optical disks are manufactured from a variety of materials. Each substrate offers advantages and disadvantages. Since all three types are likely to outlast the hardware and software components of the full system when they are properly stored, county officers may:

**5.4.2a** Use polycarbonate, tempered glass or aluminum substrates.

**5.4.3 Jukebox System.** A jukebox storage system is not appropriate when simultaneous, on-line access to information is required. Neither is a jukebox storage system required when the access delays and risks inherent in the manual selection, insertion, and refiling of optical disks are acceptable to managers and users. Where it is important to maintain physical control of optical disks during use, a jukebox storage system may be appropriate. Therefore a county officer should use a jukebox only:

**5.4.3a** When rapid access or physical control of numerous optical disks is required, or

**5.4.3b** When a large volume of records is to be stored, or

**5.4.3c** When multiple users or networking to

various offices may dictate its use.

**5.4.4 Durability.** Durability is defined as the shelf life before writing plus the post-write life of the optical disk. To ensure maximum usability, the county officer must:

**5.4.4a** Require the acquisition and use of optical media with a pre-write shelf life of at least five years, and

**5.4.4b** Require the use of optical media with a minimum of post-write life of twenty years based upon accelerated aging tests that apply to specific locations of the media surface.

**5.4.5 Storage Environment.** Optical media should be stored in a protected environment. Therefore a county officer must:

**5.4.5a** Store optical media in areas with stable room temperatures (65 to 75 degrees Fahrenheit) where the relative humidity does not exceed 50 percent and does not fall below 30 percent.

**5.4.5b** Not locate optical systems near areas of electromagnetic radiation, such as transformers, or areas of high radio frequency radiation.

**5.4.5c** Periodically clean optical media to remove dust and other particulates (e.g., fingerprints if media are handled).

**For additional information, contact:**

Pennsylvania Historical and Museum Commission  
Division of Archival and Records Management Services  
350 North Street  
Harrisburg, PA 17120-0090  
(717) 783-9874, (717) 787-3913 or (717) 783-5796

**Officers may wish to contact AIIM for the most recent edition of Technical Report - TR25 The Use of Optical Disks for Public Records and other applicable standards:**

Association for Information and Image Management  
1100 Wayne Avenue, Suite 1100  
Silver Spring, MD 20910  
(301) 587-8202