

UNITED STATES GOVERNMENT

# Memorandum

*Craeger*

TO : The Record

FROM : Chief, Data Services

SUBJECT: EDC Film Storage

DATE: July 27, 1988

## I. Background

Over 2.6 million frames of Landsat imagery and 6.2 million frames of aerial/space photography are held by EDC. In addition, nearly 5 million images are referenced on microfilm and 72,000 photo index negatives are stored.

Space-Saver shelving units for roll film occupy 2,736 square feet in the Data Management Section. In addition, 125.5 square feet are used for storage of large photo-index negatives and microfilm, and 38 feet of floor-to-ceiling shelves are used to store 10-inch by 14-inch negatives. The Photographic Laboratory uses 441 square feet to store Landsat negatives and color composites. Thus total film storage space at EDC is 3,302 square feet plus the 38 feet of floor to ceiling cabinets.

Since 1981, EDC has contracted with Parker Transfer & Storage for offsite storage of satellite and aerial films. Until 1985, this offsite facility was primarily used for storage of multiple copies of Landsat, NASA/Ames, and USGS originals. In 1985, EDC received several thousand rolls of NASA/JSC original film which was sent to the offsite facility. In addition, 2,000 film rolls of Antarctic aerial photography and 400 rolls of 70 mm NASA/JSC film were sent offsite to provide additional space for incoming film.

In 1986, the Photographic Laboratory reached capacity for storage of Landsat 4/5 film and older acquisitions were moved to Data Management. Data Management is using 4 1/2 shelving bays (2 ft. by 15 ft. each) for Landsat 4/5 storage, and an additional 150,000 chips are stored offsite.

Both the Photographic Laboratory and Data Management storage areas at EDC are now at capacity. Older holdings must be removed from the EDC facility and stored offsite to make room for new receipts.



Current offsite space is 900 square feet in which we store 3,300 boxes containing about 34,000 film rolls and 150,000 Landsat negatives. Photographs held at the offsite facility include up to four copies of Landsat 70 mm (P-1, P-3, N-2, N-4) black-and-white photography; NASA JSC/Ames original aerial photography/space data; Landsat microfilm and 9-inch by 9-inch chips; and combinations of original and duplicate USGS, SLAR, COE, and BLM photography in roll format. The rate of growth for offsite storage is estimated at 500 boxes (1,000 rolls of film and 50,000 Landsat negatives) yearly. As the Parker space can hold about 3,500 boxes, and we currently store 3,300 boxes, we are within 6 months of filling that space up. Parker has informed us that they can accommodate more film, at an addition cost, however.

## II. Standards for Environmental Conditions in Film Archives

When several film types are to be stored within the same area, the American National Standards Institute recommends a relative humidity range of 30 to 50% (30% optimum) and temperature range of 63° to 70°F. Maximum temperature for short-term storage should not exceed 90°F, and a maximum temperature for extended periods should not exceed 75°F. The relative humidity during short-term storage should not exceed 60% nor be lower than 30%. Cycling of temperature or humidity should be avoided.

A storage temperature of 35°F or below and humidity of 25 to 30% is recommended for color film, however procedures required for conditioning the film for storage in sealed containers and/or the cost of regulating humidity at low temperatures is often prohibitive.

Conditions which are the most damaging to photographic materials are temperatures over 75°F coupled with relative humidity greater than 60%. Dampness accelerates the effect of any residual processing chemicals that happen to be in the material, and 60% relative humidity or higher causes fungus growth and may eventually destroy gelatin coatings, distort images, or affect color dyes and density. According to tests by Kodak, at 60% relative humidity, dye fade occurs twice as fast as at 40% relative humidity.

## III. Current Environmental Control in EDC Film Archives

The temperature and humidity of the Data Management storage area has been monitored for the past several years. These records reveal an inability of our equipment to maintain relative humidity at a desirable level. At the end of March 1988, for example the relative humidity was 36%, and it climbed to over 60% by June 1988. Generally, temperatures have been acceptable but occasionally are too high.

A temperature and relative humidity reading was taken at the offsite facility June 17, 1988, when the outside temperature was 101°F. The reading was within specifications at 74°F and 54% relative humidity.

IV. Recommendations

- A. Plans for additional film storage space must recognize that our space requirements will continue to increase in the future. Thus any new storage areas must be able to accommodate what is currently stored offsite plus that expected to arrive over the next 5 to 10 years.
- B. We should continue to monitor environmental conditions in Data Management and do a more thorough long-term monitoring of the offsite storage area. In addition, conditions in any prospective storage areas should be recorded over at least a few weeks before any film storage decisions are made.
- C. We must recognize that conditions in the Data Management film storage area do not meet recommended specifications. In the future we should strive to design/select film storage areas that can be maintained with temperatures below 70°F and relative humidity below 40%. In particular, film archives should be separated from employee work areas and heat/moisture generating equipment.
- D. As funds are available, we should consider modifying the Data Management archive area to isolate it from the work areas and to add or modify heating and air conditioning equipment to permit better maintenance of acceptable environmental conditions.

  
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