O: STANDARDS FOR FILMING AND EVALUATION (14 Mar 1994)

TOPICS

MATERIALS NEEDED

1. Xerox Test Chart
2. Whiteboard
3. Densitometer
4. Microscope

TERMS

Background density:
(1) The lightness or darkness of a negative image on microfilm
(2) The light-stopping ability of an image, or the relative darkness of an image area.

Background density is a very important issue in microfilm evaluation.

Base plus fog density:
The density of the unexposed area of film (the clear part).

Categories 1 & 2 of microfilm evaluation:
Two levels of strictness in microfilm evaluation. Category 1 requires that all exposures on the rolls of microfilm meet the standard without exception. Category 2 allows for some leniency or variance from the standard. (See pages O-3 and O-4.)

Contrast:
How clearly writing stands out from its background. (Bold versus faded.)

Density aim point:

Optimum background density for a field test strip of microfilm. Used to determine the best exposure setting. (Kodak's aim point might be 1.05 for example.)

Density variation:

The difference in densities as measured from exposure to exposure or across a given exposure. It is usually caused by failure to adjust lights when filming, incorrect blocking of a book, varying colors in the filmed material, damaged documents, voltage fluctuation or poor calibration of the control unit.

Evaluation:

The process of inspecting microfilm for photographic quality and readability.

Generation:

One of the successive stages of photographic reproduction from an original or master. The first generation is the camera negative film. Copies made from this first generation are second-generation. Copies made from the second generation, or intermediate, are third-generation, etc.

Genealogical Society of Utah
Filming and Evaluation Standard
Category 1
1 November 1993

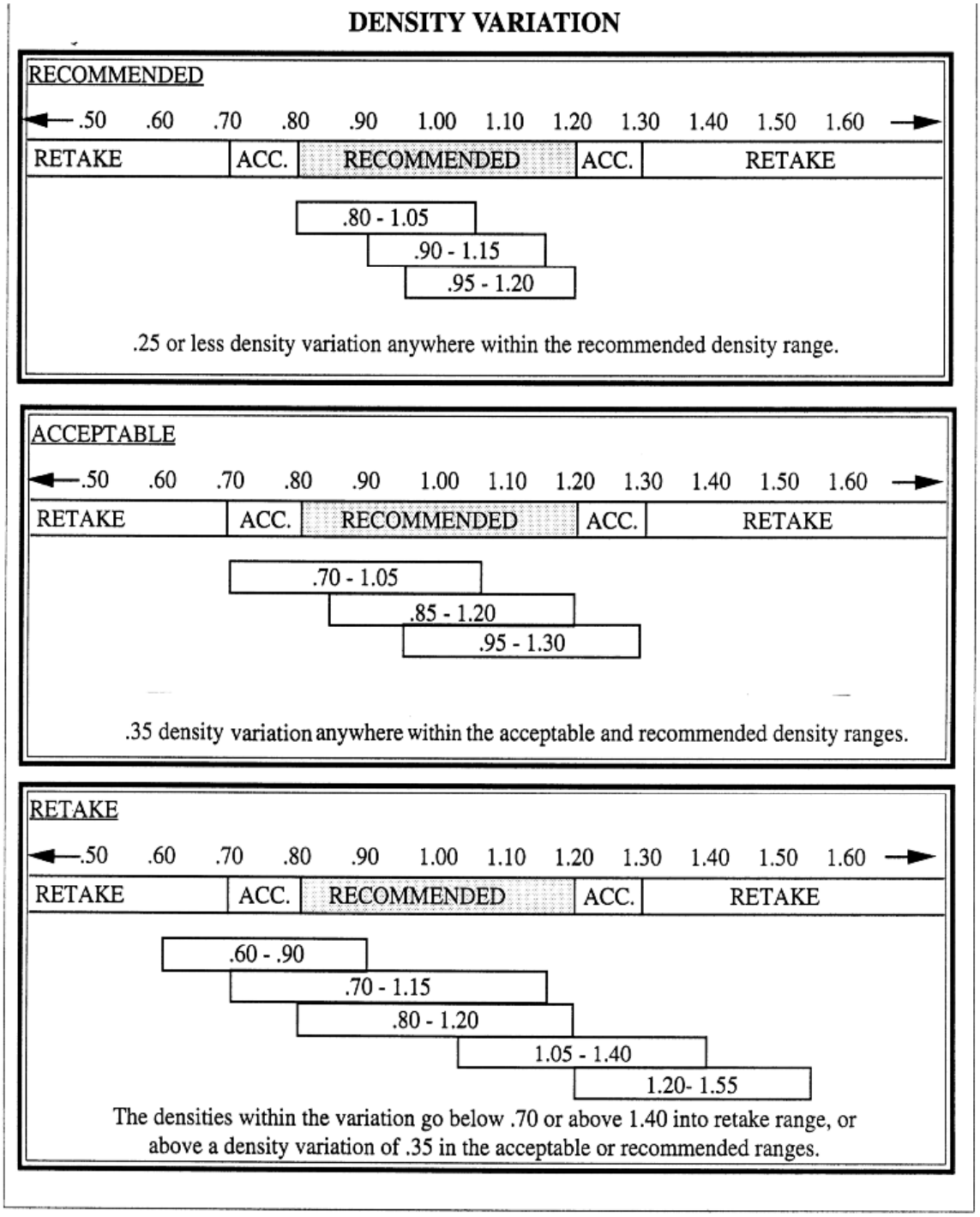
Quality Check Points	**Recommended** Quality Is Ideal If:	**Unacceptable** Retakes Normally Required If:
Density Group 1/Good Contrast Density Variation Background Density Aim point (MRE tests)	 .30 or less .80-1.30 1.15	 above .30 below .80 or above 1.30
Density Group 2/Medium Contrast Density Variation Background Density Aim point (MRE tests)	 .25 or less .80-1.20 1.05 (Kodak film)	 above .25 below .80 or above 1.20
Density Group 3/Poor Contrast Density Variation Background Density Aim point (MRE tests)	 .20 or less .80-1.10 1.05*	 above .20 below .80 or above 1.10
Base plus fog density	.07 or less	Above .07
Resolution and Image Quality	2mm character height 5.6 pattern minimum or 1mm character height 11.0 pattern minimum and Readable at a glance through four generations	2mm character height 5.0 pattern or lower or 1mm character height 10.0 pattern or lower and Not readable through four generations
Missing or Covered Information	All information present and readable	Information missing or obscured

* Experience has shown that lower-contrast documents respond better at lower densities. A lower aim point is used to accomplished this.

Genealogical Society of Utah
Filming and Evaluation Standard
Category 2
1 November 1993

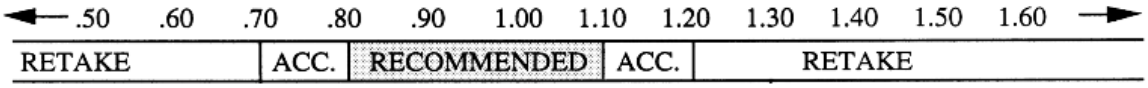
Quality Check Points	**Recommended**	**Acceptable**	**Unacceptable**
	Quality Is Ideal If:	Corrective Feedback Will Be Given If:	Retakes Normally Required If:
Density Group 1/Good Contrast Density Variation Background Density Aim point (MRE tests)	 .30 or less .80-1.30 1.15	 .31-.40 .70-.791.31-1.40 (low)(high)	 Above .40 Below .70 - Above 1.40
Density Group 2/Medium Contrast Density Variation Background Density Aim point (MRE tests)	 .25 or less .80-1.20 1.05 (Kodak)	 .26-.35 .70-.79 1.21-1.30 (low) (high)	 Above .35 Below .70- Above 1.30
Density Group 3/Poor Contrast Density Variation Background Density Aim point (MRE tests)	 .20 or less .80-1.10 1.05*	 .21-.30 .70-.791.11-1.20 (low)(high)	 Above .30 Below .70- Above 1.20
Base plus fog density	.07 or less	.08-.10	Above .10
Resolution and Image Quality	2mm character height 5.6 pattern minimum or 1mm character height 11.0 pattern minimum and Readable at a glance through four generations	2mm character height 3.6–5.0 pattern or 1mm character height 7.1–10.0 pattern and Readable with effort through four generations	2mm character height 3.2 pattern or below or 1mm character height 6.3 pattern or below and Not readable with effort through four generations
Missing or Covered Information	All information present and readable	Insignificant information obscured	Significant information missing or obscured

CATEGORY 2 - GROUP 2/MEDIUM CONTRAST



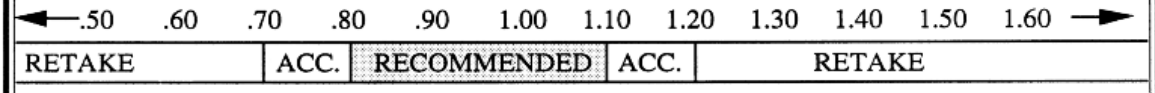
CATEGORY 2

GROUP 3/POOR CONTRAST



DENSITY VARIATION

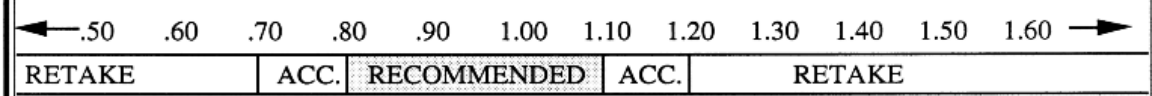
RECOMMENDED



.80 - 1.00
.90 - 1.10

.20 or less density variation anywhere within the recommended density range.

ACCEPTABLE



.70 - .90
.80 - 1.10
.90 - 1.20

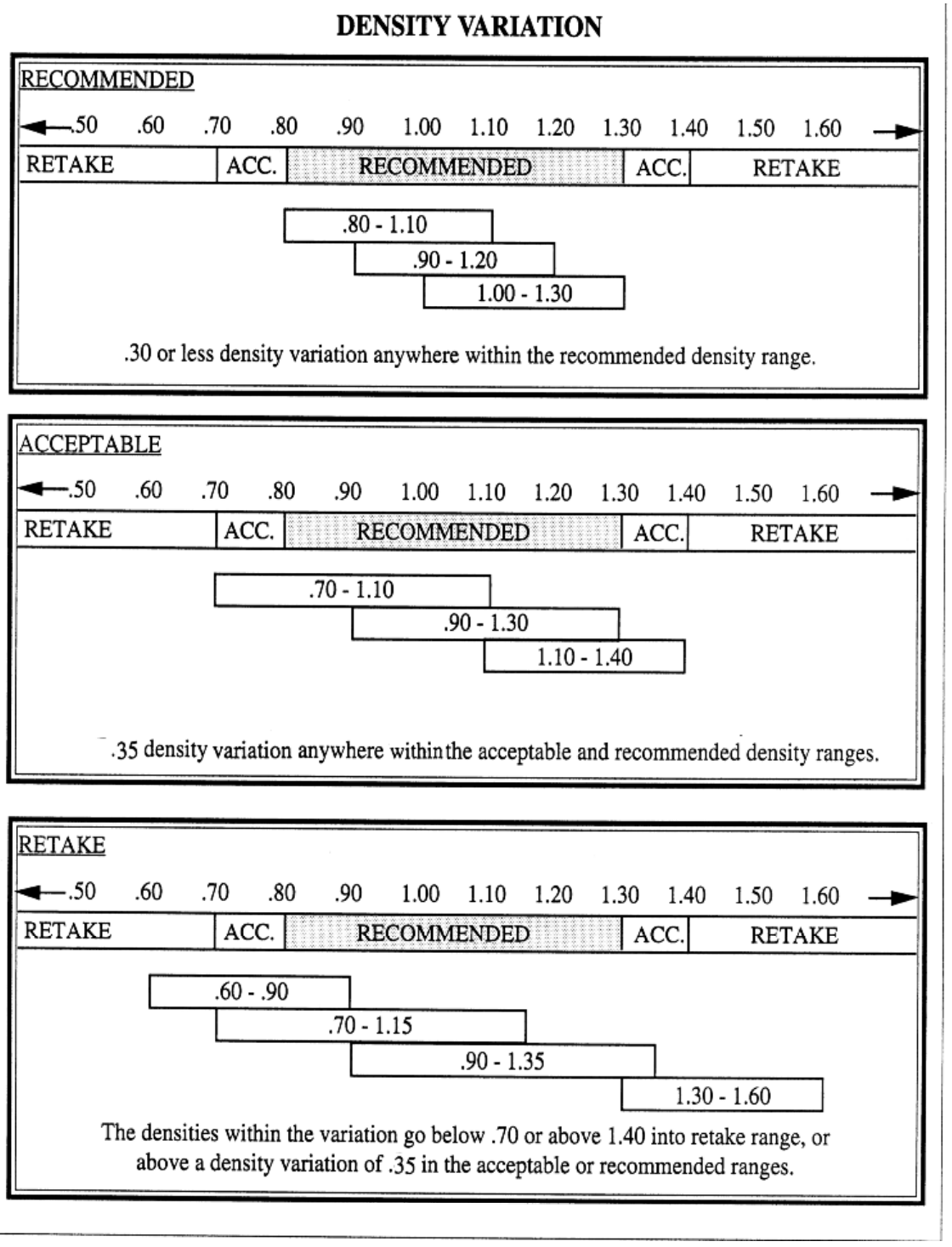
.21 to .30 density variation anywhere within the recommended density range.
.30 density variation anywhere within the acceptable and recommended density ranges.

RETAKE

.60 - .90
.70 - 1.05
.90 - 1.30
1.10 - 1.50

The densities within the variation go below .70 or above 1.40 into retake range, or above a density variation of .30 in the acceptable or recommended ranges.

CATEGORY 2
GROUP 1/GOOD CONTRAST



EXPLANATION OF STANDARDS

The Genealogical Society of Utah's guidelines give these three standards::

- *Recommended*
- *Acceptable (but substandard)*
- *Unacceptable*

Recommended

We prefer that filming stay within the *recommended* guidelines, which are derived from existing national and international standards.

Note: Filming quality below Recommended guidelines normally results in corrective feedback to the camera operator, and it sometimes requires retakes.

Acceptable (but substandard)

The *acceptable* (*substandard*) guidelines are based on the Genealogical Society of Utah's testing and experience. They are *temporary allowances* given to the operator or laboratory for when film is useable but not ideal. Corrective feedback is given so that the operator or lab can make the corrections needed to bring the filming to within the *recommended* guidelines.

The Genealogical Society of Utah added the *acceptable (substandard)* level to help prevent retakes by supplying corrective feedback before problems become serious enough to warrant them. In many cases, the camera operator or lab must respond to the feedback, indicating what action was taken (such as an equipment adjustment or the use of a special target) and the date or roll number when that action was taken.

Note: On the chart on page O-3, the dotted line between the acceptable and unacceptable guidelines also indicates that retakes may be required in either category. A film's range of acceptability may be extended based on a review by evaluation, quality, and technical support personnel. Also, as necessary, with input from field managers, camera operators, record custodians, and so forth.

Unacceptable

The *unacceptable* limits are the points at which retakes are normally required to replace unusable film.

DENSITY GROUPS

Density groups help operators select the appropriate requirements for the type of documents they are filming. These groups are based on experience; however, some exceptions may be

necessary. Most documents may be microfilmed at a lower density; but poor quality documents might not turn out legible at higher densities.

There are three density groups:

- Density Group **1**/Good contrast
- Density Group **2**/Medium Contrast
- Density Group **3**/Poor contrast

The Genealogical Society of Utah prefers to use Density Group **2**/Medium Contrast for most of its filming. Occasionally, such as when documents match the *No. 3 Pencil line* on the *Xerox Test Chart* (see page O-15), the documents are filmed *at Density Group **3**/Poor Contrast.*

Note: An operator identifies the density group by placing the appropriate number (1, 2 or 3) in the upper left corner of the title board. Normally a 2 is placed there, and the film is evaluated according to Density Group 2 standards. If no number is found there, it will be assumed that Group 2 was intended and it will be evaluated accordingly.

Group 1/Good Contrast

Density Group 1 should be used only at the record donor's request. Use this density group for —

- High quality, high contrast printed books, periodicals, and black type,
    - Documents with bold type,
    - Documents with bold, well-defined handwriting.

These types of documents appear as *A* levels on the Genealogical Society of Utah-modified Xerox Test Chart (see page O-15 at the back of this chapter).

Group 2/Medium Contrast

Use this density group for—

- Documents of mixed quality. (Both good and poor contrast writing together.)
    - Aged documents that have not been misused or damaged,
    - Documents with typed, printed or hand written characters,
    - Some colored documents with colored inks.

These types of documents appear as levels *D*, *F, and H* on the *Xerox Test Chart* (see page O-15 at the back of this chapter).

Group 3/Poor Contrast

Use this density Group for—

- Low -contrast manuscripts,
    - Documents with characters typed with a worn ribbon,
    - Poorly printed documents
    - Documents with faded ink, water damage, etc.

These types of documents appear as levels *C* and *G* on the *Xerox Test Chart* (see page O-15 at the back of this chapter).

Note: Levels *B* and *E* on the *Xerox Test Chart* are not used.

QUALITY CHECK POINTS

Microfilm evaluation standards have six quality check points:

1. Density variation
2. Background density
3. Base plus fog density
4. Resolution
5. Image Quality
6. Missing or covered information

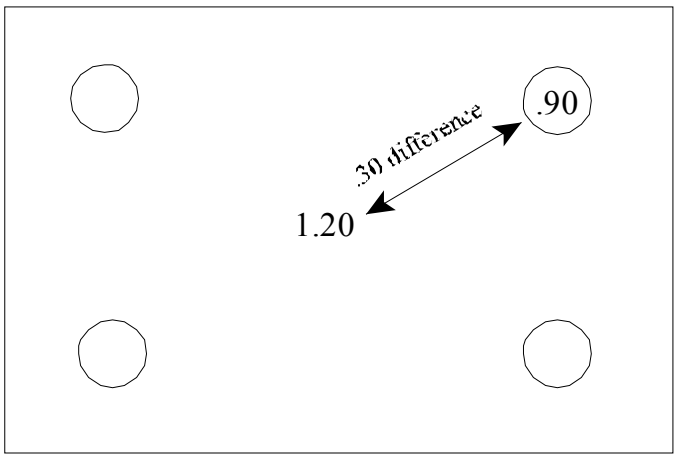
DENSITY VARIATION

Density variation is the difference in densities as measured from frame to frame or within a given frame (never to exceed .35). Density variation can describe either of these two conditions, and each should be reported separately.

Density variation problems can be caused by failure to adjust lights properly, by unbalanced light distribution, by incorrect blocking and clamping of books, by varying colors within the filmed material, by damaged documents, by shiny or laminated pages, or by unstable voltage.

Density variation standard (See page O-4) is the maximum density variation either between the frames, or within a frame on the roll of film (the density range). For example if the highest density recorded is 1.20 and the lowest is .90, the density variation is .30 see (O-5.) *Example A*. These standards are important for the printability of the film. It is important that all images in a roll or in a microfiche have densities that may be duplicated at a single duplicator exposure setting.

The Camera lights should be balanced so that the whiteboard variation is no greater than .20 from center to corner, and all corners should be with in .20.



Example A

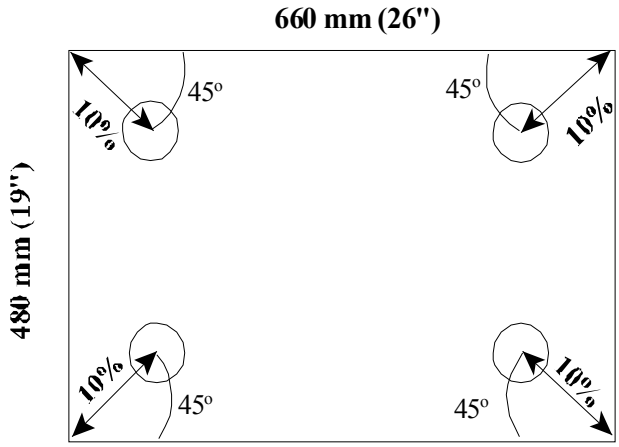
WHITEBOARD AND HOW IT RELATES TO DENSITY VARIATION

The exposed whiteboard is a tool used to determine the light distribution of a camera system. The light distribution as measured on the whiteboard will be continued on each exposure of the film. Example if there is a .20 difference on the whiteboard there will be a minimum of .20 (variation could be higher depending on the condition of the document) difference on each exposure.

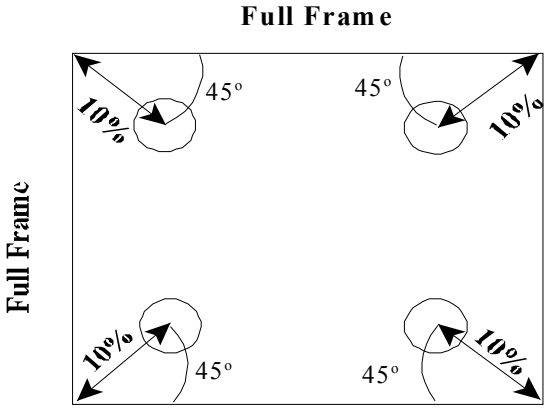
WHITEBOARD

- The standard size of the whiteboard should be 480x660mm (19x26 inches.)
- It should be made of rigid material with a dull finish and white in color.
- **It must be kept clean.**
- To help with communication and to insure greater accuracy the whiteboard **may** be marked with circles. This will aid evaluation in taking density readings in the same location as the camera operator.

The circles should be drawn 10% in (of the diagonal) from each corner. On the standard size whiteboard this would be Approximately 7.5mm (3 inches). **Do not draw a circle in the middle.** The size of the circle is to be 90mm (3.5 inches) for a reduction of 42:1, 40mm (1.5 inches) for reduction of 16:1 *Example B.* Filming at smaller reductions, where the whiteboard can not be filmed in its entirety, the circles are to be drawn 10% from each corner of the frame area and should be no larger than 40mm (1.5 inches) *Example C.* If the reduction is increased, the circles must be erased and redrawn.



Example B



Example C

Note: Whiteboards may be ordered along with other camera operator supply items.

FILMING THE WHITEBOARD

1. Begin by balancing the camera lights (B-18) using the Sekonic light meter.

- The whiteboard is to be filmed full frame. If using a 35mm camera with an adjustable framer, it should be wide open.

- The whiteboard should be filmed at an exposure setting so the density in the center of the frame will be in the middle of the standard density range selected.

WHITEBOARD AND DENSITY VARIATION

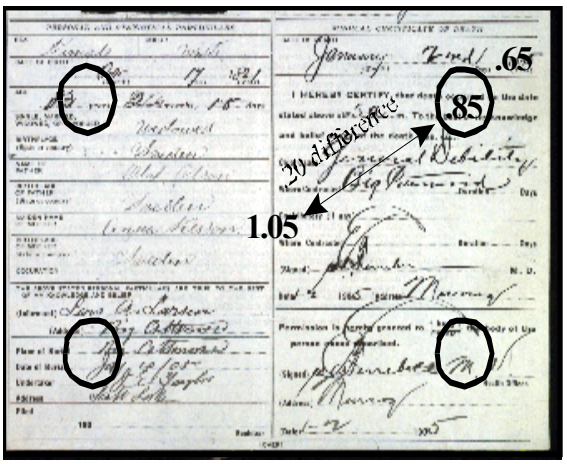
Evaluation will first determine if the white board is in balance (within .20.) Next, they check to see if

the density of the whiteboard is in the middle of the standard density range (1.0.) Corrective feedback will be given if they are not.

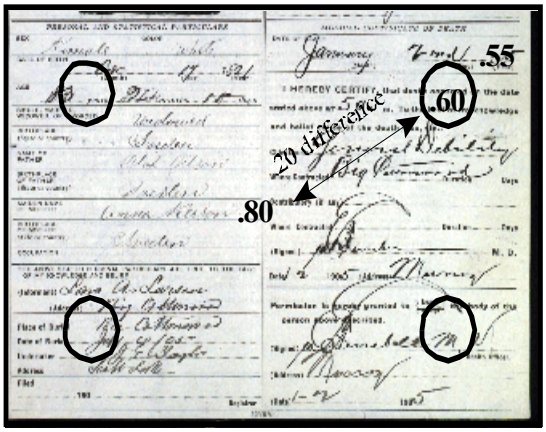
In evaluating the film when the whiteboard is in balance and the center of the exposure (filmed document) is in the middle of the standard density range, the evaluator will only take a reading in the middle of the document image.

Example:

If the center of the exposure is 1.05, and the variation on the whiteboard is .20 the corners of the exposure will drop to .85. If they drop more than that, say to .65 the difference is most likely caused by damage on the document, and the exposure is acceptable. *Example D.*
However, if the center of the exposure is .80 and the corners drop to .60 or below the exposure is unacceptable. *Example E.* **The density in the center of the exposure must support the corners** . By increasing the center to 1.0 the corners would now read .80.



Example D



Example E

Background density

Background density is the lightness or darkness of a negative image on microfilm. See pages O-5 to O-7 for specific standards.

Aim point (for operators only)

The *density aim point* is the optimum background density of an MRE test strip of microfilm. It is used to determine the best exposure setting for filming particular documents. The density aim point is a density that is in the mid-to-high side of the recommended density range.

When evaluating MRE strips, the suggested aim point is 1.05 for Kodak film. This is a starting point, and is only intended to get you close to the correct exposure setting. You will often need to adjust the aim point in actual practice.

Take density measurements in the corners as well as in the center when choosing the aim point, so the density of the frame lies within the density range you choose.

See pages O-5 to O-7 for specific standards.

Base plus fog density

The base plus fog density is the density of the unexposed area of film. This is the clear portion of the film. This base plus fog density increases only when film is--

- Exposed to light outside of the camera,
- Overdeveloped during processing,
- Introduced to high temperature or humidity prior to processing,
- Beyond its expiration date when exposed.
- Exposed to excessive radiation.

If you are using a tinted base film, you need to make adjustments.

Note: Base plus fog standards are not usually difficult to meet using the silver-gelatin camera negative recommended by the Genealogical Society of Utah. The base plus fog density on most of the Society's rolls is between 0.04 and 0.07. Corrective feedback is given between 0.08 and 0.10, so retakes can be avoided.

Resolution

Resolution is the measure of an image's focus or sharpness. To determine the resolution, examine the test patterns on the technical target with a microscope. Note the smallest pattern in which all five individual lines can be distinguished in both directions.

Determining the resolution is somewhat subjective. You should make sure that each time you film a technical target, you have the optimum focus for the camera.

Note: Resolution is measured by evaluators on one frame only and is then tied visually to the image quality of the production roll.

Image quality

The term *image quality* refers to how easily a microfilmed document can be read through four generations (copies of the original camera negative).

Missing or covered information

Ideally no information is missing or covered up. In the *acceptable range*, however, this quality check point is somewhat subjective because the evaluator must determine if the missing information is important. For example, if the corner of a record is folded over, the evaluator compares that record to the records before and after it. If these records do not contain significant information in the same area which is hidden on the folded record, the evaluator can determine that no significant information is missing.

In-frame counter

All film images produced by the Genealogical Society of Utah will include readable, unique in-frame counter numbers. Exceptions to this standard are:

1. The filming contract prohibits the use of in-frame counters.

2. The documents being filmed are so large that an in-frame counter cannot be placed in the framing area.
3. Documented equipment failure. (See procedures in section F.)