

1.0 PURPOSE

This document establishes criteria to be followed by applicants when acquiring illumination data (light survey data) in their darkroom for use with a STE application.

2.0 SCOPE

This criteria applies to all STE applications for mining machines and longwall systems when light data is to be submitted as part of the application. This criteria does not apply to applications submitted using the Crewstation Analysis Program (CAP) to acquire light survey data.

3.0 REFERENCES

- 3.1. "Standard Application Procedure for Statement of Test and Evaluation (STE) for Mining Machines and Longwall Systems".
- 3.2. "Standard Application Procedures When Using the MSHA CAP Computer Program to Acquire Light Survey Data Required for STE Applications"

4.0 DEFINITIONS

- 4.1 Mock-up - A construction simulating a mining machine or mining equipment.
- 4.2 Light Data Survey Drawing - A drawing that shows actual light data readings for all the required areas to be illuminated.

5.0 CRITERIA

- 5.1. The technical illumination requirements for mine lighting are listed in Title 30 CFR, Part 75.1719 and in the "Handbook of Underground Coal Mine Illumination Requirements".
- 5.2. Before an applicant can submit light survey data using this procedure, MSHA will evaluate the applicant's light lab and their procedures for acquiring illumination data under this criteria. This evaluation is based upon the requirements listed in the Federal Register VOL. 41, No. 64-April 1, 1976, page 14110.
- 5.3. Once these procedures have been accepted by MSHA, the applicant shall maintain on file with the A&CC documentation including the characteristics

of the darkroom and the procedures used to acquire the data. The procedures shall include the following:

- 5.3.1. The construction of the mock-up.
- 5.3.2. Fixture placement, lamp warm-up, lamp burn-in voltage regulation, and other testing parameters that MSHA deems necessary to insure accuracy in acquiring the illumination data.
- 5.3.3. The method of angling the photometer sensing head to maximize measurements, method for establishing the 2 feet by 2 feet square grids needed for taking measurements, criteria for establishing when and where readings are to be taken or where averages must be shown, and method of maintaining photometer calibration.

5.4. Procedure

A light data survey drawing is required to insure that any 4 square foot area of required illumination surface can be averaged to obtain at least two 2.0 footcandles. The following methods/procedures shall be followed when recording illumination data in the darkroom:

5.4.1. Instrumentation for incident light readings:

- 5.4.1.1. An incident photometer shall be used to take measurements.
- 5.4.1.2. The incident photometer shall be calibrated as specified in 30 CFR Part 75.1719-3(d). The incident photometer shall also be cosine corrected to a 15° or greater acceptance angle.

5.4.2. Procedures for incident measurements:

- 5.4.2.1. Measurements will be taken on all surfaces required to be lighted by the technical requirements referred to in Section 5.1. These surfaces must be located at a distance not less than that specified in Section 5.1.
- 5.4.2.2. The ceiling, walls, and floor shall be divided into grids, measuring 2 feet by 2 feet. Measurements shall be taken at the point of all intersecting lines. Measurements on the floor shall start one foot from the surface of the mining equipment. The sensing head of the photometer may be angled for maximum readings.

5.4.3. Each light data survey drawing must contain the following:

- 5.4.3.1. 6.3.1 A complete set of all measurements taken.
- 5.4.3.2. 6.3.2 Reflectance of all interior surfaces.
- 5.4.3.3. 6.3.3 Photometer type and model number and date last calibrated.
- 5.4.3.4. 6.3.4 Room temperature.
- 5.4.3.5. 6.3.5 The signature of a responsible official.
- 5.4.4. The simulated workplace (Darkroom) shall meet the following requirements:
 - 5.4.4.1. Exterior light shall be excluded. An incident photometer shall measure less than 0.1 footcandles (fc) for all areas within the darkroom.
 - 5.4.4.2. All interior surfaces, except the floor, shall be black and have a reflectance of less than 5 percent. The floor reflectance shall be less than 10 percent.
 - 5.4.4.3. The darkroom shall provide adequate space to test complete machines or mock-ups of machines.