1.0 PURPOSE

This document establishes the Mine Safety and Health Administration's (MSHA) Criteria (CRI) for the use of the Crewstation Analysis Program (CAP) to acquire light survey data for STE applications.

2.0 SCOPE

2.1. This CRI applies to all new Basic and Generic STEs, and applications submitted under the Revised Approval Modification Program (RAMP) for mining machines and longwall mining systems.

2.2. These procedures apply to all applications for acceptance of STEs using the Crewstation Analysis Program (CAP) to acquire light survey data, in lieu of light survey data acquired from a MSHA approved darkroom.

3.0 REFERENCES

3.1. Standard Application Procedure for Statement of Test and Evaluation (STE) for Mining Machines and Longwall Mining Systems (ASAP2023) This document should be referenced for application procedures not specifically related to the use of the Crewstation Analysis Program (CAP).

3.2. Criteria for Acquiring Illumination Data in STE Applicant's Darkroom (ACRI2002).

3.3. Standard Test Procedure to Collect ISO-Footcandle Illumination Curves at Independent Light Laboratories (ASTP2050).

3.4. Approval and Certification Center Cancellation Policy (APOL1009).

4.0 DEFINITIONS

4.1. Applicant/Light Fixture Manufacturer - the organization that manufactures a lighting fixture and constructs a lighting arrangement for a STE submittal.

4.2. Light Data Survey - A survey (drawing) that shows light data readings in all the required areas to be illuminated; to ensure that any four (4) square foot area of required illumination surface can be averaged to obtain at least two (2) footcandles.

4.3. ISO-footcandle Curve - A plot about a light source, in which the footcandle values are the same.

4.4. LUMREG - A (CAP) utility used to convert luminaire profile data into the regression equations needed by the CAP software. This utility is part of the CAP software program.

4.5. Unregistered/Unauthorized Program - STE evaluation software that does not contain a serial number on the listing maintained by MSHA, or a copy of the program that has been changed or altered, inconsistent with the Approval and Certification Center's (A&CC) software.

5.0 CRITERIA

5.1. The method used to evaluate lighting systems for the requirements of 30 CFR Part 75.1719, covered under an STE, is to take actual light readings on machines underground or on mockups in an A&CC accepted darkroom.

5.2. In addition to the above method, the CAP computer software may be used to conduct a lighting analysis. The use of this CAP computer program will be restricted to those uses and methods described in this document. Should the applicant find these procedures too restrictive, they may choose to use the method stated in 5.1. A registered copy of this program is available for a fee from National Institute for Occupational Safety and Health, (NIOSH), P.O. Box 18070, Cochrans Mill Road, Pittsburgh, PA 15236

6.0 PROCEDURES - CAP Computer Usage

6.1. The CAP Computer Program may be used to evaluate lighting for STE applications. The program shall be used without modifications, except for the addition of luminaire ISO-footcandle curves. The program, as received by the applicant, will not contain any ISO-footcandle curves (note: the program may contain lamp profiles that are to be used for demonstration purposes and not STE applications). It is up to the lighting manufacturer to acquire these curves as explained in Section 6.5. An exact copy of the curves will be provided, at no cost to the A&CC, for their use in evaluating the subject manufacturer's STE applications.

6.2. If an STE application is received by the A&CC that contains light data generated by an unauthorized/unregistered program, the application will

be canceled, and the applicant will be charged for the time spent on the application.

6.3. Identifying the use of a registered version of the CAP Program

The version level of the computer program used shall always be entered on the application where indicated. The CAP program may be updated or revised as MSHA/A&CC deems appropriate.

6.4. Use of the CAP

6.4.1. The CAP requires the use of ISO-footcandle illumination curves. These curves can only be acquired from an independent light laboratory (see Section 6.5).

6.4.2. Illumination data generated by the computer program will be accepted in STE applications, in lieu of darkroom/underground generated data. All other documents supporting the STE application are still required.

6.4.3. A hard copy of the form generated by the CAP computer program titled, STE Illumination Analysis, must be submitted with the application. The computer program gives the option of a Short Form or a Long Form printout of the STE Illumination Analysis data. Since this short form has been programmed to contain all appropriate information, no other light survey data information needs to be submitted; however, the long form (also computer generated) shall be submitted upon request. Appendix A is a sample of the Short Form printout and analysis data.

6.4.4. No information from the applicant will be accepted, other than the LUMREG software utility program containing ISO-footcandle illumination curves. The applicant must take all precautions to ensure "computer viruses" are not contained within the software submitted.

6.4.5. The A&CC will evaluate each STE application using the computer generated STE Illumination Analysis (short/long) form hard copy. For quality control purposes, at the A&CC's discretion, some applications will also be evaluated on the A&CC computer, and the results will be compared to the applicant's submittal. Applicants will be responsible for any discrepancies resulting from this evaluation.

6.4.6. If a discrepancy is noted, as in Section 6.4.5, the applicant may request assistance from the National Institute for Occupational Safety & Health (NIOSH) to ensure that a properly functioning program is being used and that the applicant is using the program properly. Until the applicant's results are verified, it will be assumed that the A&CC computer program is correct.

6.5. Generating ISO-footcandle Curves for use with the CAP Program

6.5.1. The A&CC will maintain a Standard Test Procedure (ASTP2050), titled "Standard Test Procedure to Collect ISO-footcandle Illumination Curves at Independent Light Laboratories," for obtaining luminaire ISO-footcandle illumination curves at independent light laboratories.

6.5.2. A list of accepted independent light laboratories is available to the applicant upon request from the A&CC, 765 Technology Drive, Triadelphia, WV 26059.) The A&CC will make every attempt to maintain an updated list; however, the applicant should confirm an independent light lab's continued participation in this program.

6.5.3. ISO-footcandle illumination curves must only be generated at independent light laboratories listed with the A&CC.

6.5.4. ISO-footcandle illumination curves may not be acquired in the lighting fixture manufacturer's darkroom.

6.5.5. The A&CC reserves the right to have an investigator present at the independent light lab when ISO-footcandle curves are being generated. The applicant must make the necessary arrangements with the lab. The manufacturer will be responsible for all fees and costs involved in generating the ISO-footcandle curves.

6.5.6. The manufacturer of the lighting fixture is the sole party permitted to acquire ISO-footcandle curves from the independent light laboratories that are to be used in STE applications. Lighting fixtures, from other manufacturers, will not be accepted in STE applications using computer generated illumination data, unless the lighting fixture manufacturer gives written permission to the A&CC. To avoid confusion and mass documentation, the allowance must be a “blanket permission" and not be specific to an STE application.

6.5.7. No STE applications will be accepted that use a combination of darkroom generated and computer generated illumination data.

Appendix A

STE ILLUMINATION ANALYSIS

FILE CREATED: DATE - 01/28/108 TIME - 21:40:43

STE SOFTWARE LINKED ON: 4-24-1996
CAP VERSION: 1.3
CAP SERIAL NO.: CAP009

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Applicant: New Age Coal Company
Applicant Address: 234 E. Main Street
Morgantown, WV

Applicant Representative: Mr. Gary Smith

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DIMENSIONAL INFORMATION:
STE ILLUMINATION ANALYSIS SHEET X-Y-Z FIXTURE LOCATIONS
ALL DIMENSION WILL BE AVERAGED TO THE NEAREST WHOLE NUMBER WHEN
SHOWN ON THE STE MACHINE LAYOUT DRAWING.
EXAMPLE: STE ILLUMINATION ANALYSIS SHEET (X = 21.75)(Y = 16.38)(Z = -8.25)
STE MACHINE LAYOUT DRAWING (X = 22) (Y = 16) (Z = -8)
NOTE: MACHINE CENTER LOCATION IS ON THE Y AXIS
X OUT BLOCKS ON AN ILLUMINATION PANEL = NO LUMINATION REQUIRED

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ENVIRONMENT FILE: 080101
MACHINE TYPE: ROOF
MACHINE NAME: 080101
MACHINE: LENGTH - 196.00 WIDTH - 90.00 HEIGHT - 47.00

========== GLARE SHIELDS ==========

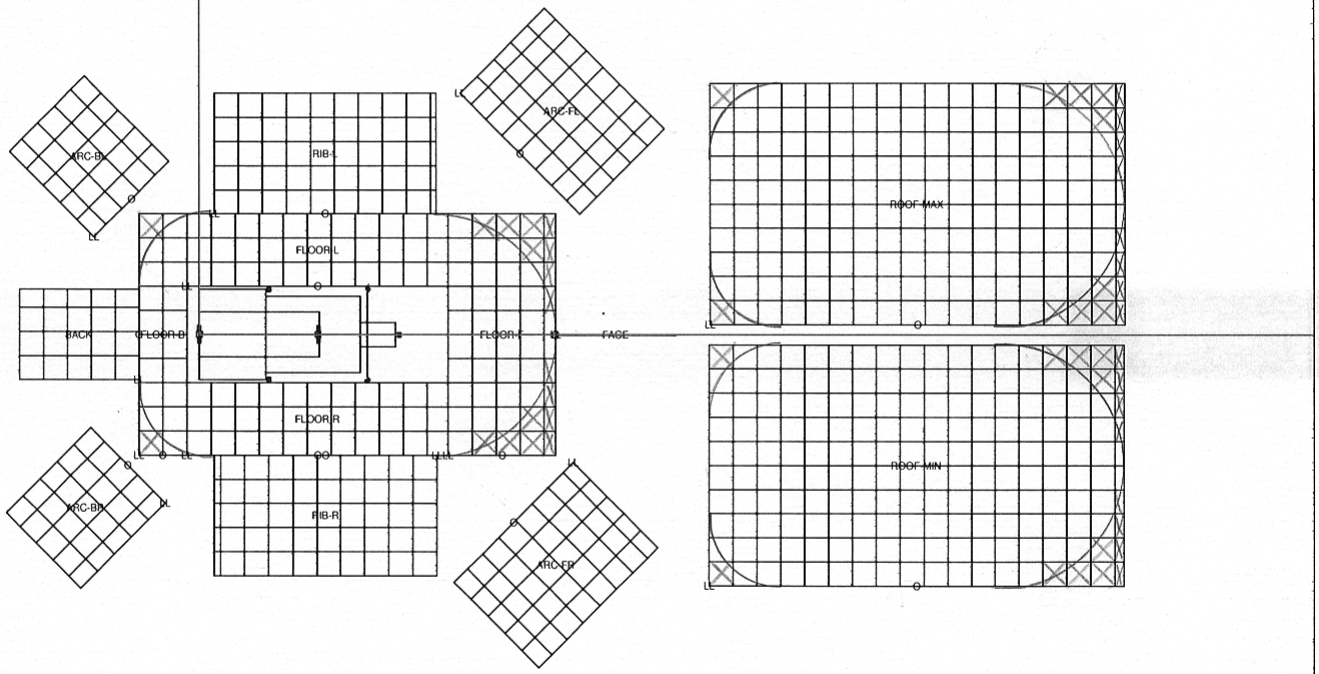
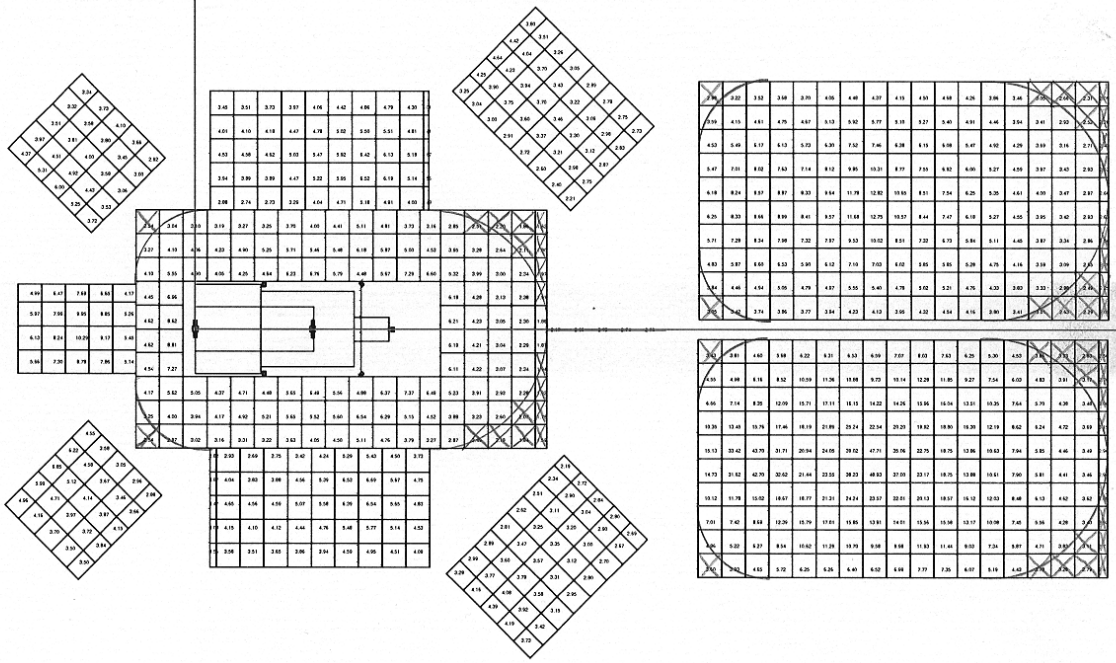
	ORIGIN			ROTATION			SIZE		ON/
NAME	X	Y	Z	ALPHA	THETA	BETA	LENGTH	WIDTH	OFF
SHIELD1	168.00	0.00	0.00	90.0	0.0	0.0	85.00	40.00	ON

LUMINAIRES

NAME	MODEL	LOCATION X	LOCATION Y	LOCATION Z	ROTATION ALPHA	ROTATION THETA	ROTATION BETA	ON/ OFF
3A	04435	119.00	0.00	50.00	270.0	180.0	45.0	ON
3B	04435	0.00	0.00	50.00	90.0	180.0	45.0	ON
2B	04438	169.00	45.00	32.00	225.0	270.0	0.0	ON
2C	04438	169.00	-45.00	32.00	315.0	270.0	0.0	ON
2D	04438	70.00	45.00	32.00	0.0	270.0	0.0	ON
2E	04438	70.00	-45.00	32.00	180.0	270.0	0.0	ON
2A	04438	200.00	0.00	32.00	0.0	90.0	0.0	ON

MEASUREMENT PANELS

NAME	ORIGIN X	ORIGIN Y	ORIGIN Z	ROTATION ALPHA	ROTATION THETA	ROTATION BETA	SIZE LENGTH	SIZE WIDTH	ON/ OFF	SPACING
RIB-L	126.07	120.00	0.00	0.0	0.0	0.0	221.79	120.00	ON	24.0
ARC-BL	15.17	44.83	0.00	90.0	0.0	0.0	106.30	120.00	ON	24.0
FLOOR-B	-36.00	-120.00	0.00	0.0	90.0	0.0	48.00	240.00	ON	24.0
FLOOR-F	303.00	-120.00	0.00	0.0	90.0	0.0	108.00	240.00	ON	24.0
FLOOR-L	118.50	48.00	0.00	0.0	90.0	0.0	261.00	72.00	ON	24.0
FLOOR-R	118.50	-120.00	0.00	0.0	90.0	0.0	261.00	72.00	ON	24.0
ROOF-MIN	148.50	-120.00	62.00	0.0	90.0	0.0	417.00	240.00	ON	24.0
ROOF-MAX	148.50	-120.00	120.00	0.0	90.0	0.0	417.00	240.00	ON	24.0
FACE	357.00	-0.39	0.00	270.0	0.0	0.0	0.71	120.00	ON	24.0
RIB-R	126.33	-120.00	0.00	180.0	0.0	0.0	222.84	120.00	ON	24.0
BACK	-60.00	-0.13	0.00	90.0	0.0	0.0	89.92	120.00	ON	24.0
ARC-FL	236.96	-0.04	0.00	0.0	0.0	0.0	169.76	120.00	ON	24.0
ARC-FR	237.75	-0.75	0.00	270.0	0.0	0.0	168.65	120.00	ON	24.0
ARC-BR	14.91	-45.09	0.00	180.0	0.0	0.0	105.94	120.00	ON	24.0


ARC-BL
RIB-L
ARC-FL
FLOOR-L
BACK
FLOOR-B
FLOOR-F
FACE
FLOOR-R
ARC-BR
RIB-R
ARC-FR
ROOF-MAX
ROOF-MIN

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