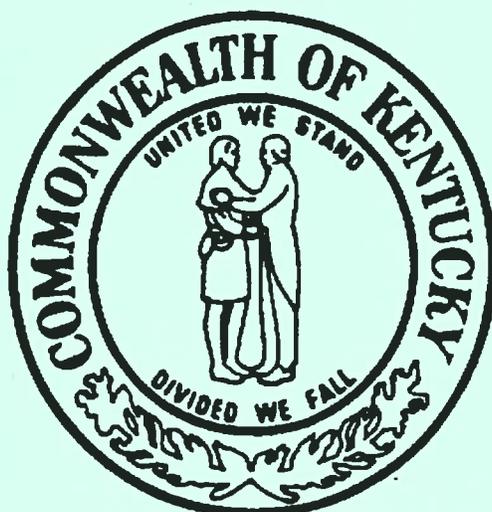


**REGULATIONS GOVERNING  
CERTIFICATION OF BLASTERS  
AND  
USE OF EXPLOSIVES**



**AUGUST, 2002**

**TAKEN FROM CHAPTER 405 OF THE KENTUCKY  
ADMINISTRATIVE REGULATIONS PROMULGATED BY  
THE DEPARTMENT FOR SURFACE MINING  
RECLAMATION AND ENFORCEMENT**

EC-44

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## NOTE

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Division of Mine Reclamation and Enforcement  
Explosives and Blasting Branch  
2 Hudson Hollow Road  
Frankfort, KY 40601

ATTN: Blaster Certification Program

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Surface Mining Reclamation and Enforcement

**405 KAR 7:070. Certification of blasters.**

Effective Date: September 10, 1987

**Section 1. Blasting operations to be conducted under the direction of a certified blaster.**

- (1) As used in this regulation, the following terms shall have the indicated meanings:
  - (a) "Blaster" means a person who is directly responsible for surface blasting operations in surface coal mining and reclamation operations or coal exploration operations.
  - (b) "Surface blasting operations" means the on-site storage, transportation, and use of explosives in association with coal exploration operations, surface mining activities, and surface disturbances of underground mining activities. The term shall be interpreted broadly and shall encompass activities including, but not limited to, the design of individual blasts, the implementation of blast designs, the initiation of blasts, the monitoring of airblast and ground vibration, and the use of protective measures such as access control and warning and all-clear signals.
- (2) Each permittee and each person conducting coal exploration operations shall have all surface blasting operations incident to surface coal mining and reclamation operations and coal exploration operations conducted under the direction of a blaster certified in accordance with this regulation. Notwithstanding the exemption in 405 KAR 7:030, Section 1, this section shall also apply to permittees of operations with an affected area of two (2) acres or less.

**Section 2. Requirements for certification.**

- (1) A person desiring to become certified under this regulation shall file an application upon a form furnished by the cabinet. This application shall identify the applicant's name, address, telephone number, and place of employment; shall contain the information required by subsections (2) through (7) of this section; and shall contain such additional information as the cabinet deems necessary for the purposes of this regulation. The application shall be submitted to the central office of the department's Division of Field Services, located in Frankfort, Kentucky, accompanied by a fee of twenty-five (25) dollars.
- (2) The applicant shall demonstrate that he or she has received training in the technical aspects of blasting operations and Kentucky and federal laws and regulations governing the storage, transportation, and use of explosives by completing a training course approved by the cabinet. This course shall provide training and discuss practical applications of the topics listed in subsection (5) of this section.
- (3) The applicant shall demonstrate that he or she holds a valid Kentucky Blaster's License issued by the Kentucky Department of Mines and Minerals.

(4) The application shall include at least two (2) letters of reference on forms provided by the cabinet. Each of these letters shall be from a person who has employed the applicant in blasting operations, from the applicant's supervisor while employed in blasting operations, or from a licensed blaster who has worked with the applicant in blasting operations. The letters shall indicate that the applicant has exhibited a pattern of conduct consistent with the acceptance of responsibility for blasting operations.

(5) The applicant shall pass a written examination on the technical aspects of blasting and Kentucky and federal laws and regulations governing the storage, use, and transportation of explosives. The examination shall cover, at a minimum, the following topics:

- (a) Explosives, including:
  - 1. Selection of the type of explosive to be used;
  - 2. Determination of the properties of explosives which will produce desired results at an acceptable level of risk; and
  - 3. Handling, transportation, and storage of explosives.
- (b) Blast designs, including:
  - 1. Geologic and topographic considerations;
  - 2. Design of a blast hole, with critical dimensions;
  - 3. Pattern design, field layout, and timing of blast holes; and
  - 4. Field applications.
- (c) Loading blast holes, including priming and boosting.
- (d) Initiation systems and blasting machines.
- (e) Blasting vibrations, airblast, and flyrock, including:
  - 1. Monitoring techniques; and
  - 2. Methods to control adverse effects.
- (f) Secondary blasting applications.
- (g) Current federal and Kentucky rules applicable to the storage, transportation, and use of explosives.
- (h) Blast records.
- (i) Schedules.

- (j) Preblasting surveys, including:
  - 1. Availability;
  - 2. Coverage; and
  - 3. Use of in blast design.
- (k) Blast-plan requirements.
- (l) Certification and training.
- (m) Signs, warning signals, and site control.
- (n) Unpredictable hazards, including:
  - 1. Lightning;
  - 2. Stray currents;
  - 3. Radio waves; and
  - 4. Misfires.

(6) Any person who fails the examination discussed in subsection (5) of this section may retake it after thirty (30) days; provided however, any person failing the examination twice may not retake it until after completing an approved training course and filing a new application.

(7)(a) Upon receipt of an application for certification, the cabinet shall review the application and promptly notify the applicant, in writing, as to the application's completeness.

1. If the application is incomplete, the notification shall specify the application's deficiencies. The applicant may then submit, or cause to be submitted, documentation of test results, verification of training, letters of reference, or any other information necessary to correct the cited deficiencies. The applicant shall have three (3) months, beginning on the date on which the notification of incompleteness is mailed or otherwise delivered to the applicant, during which the deficiencies may be corrected. If the deficiencies are not corrected during this three (3)-month period, the application file shall be closed and, at the cabinet's discretion, discarded. Once the application file has been closed, the certification shall not be issued unless and until a new application is submitted pursuant to subsection (1) of this section and compliance is demonstrated with all applicable requirements of this regulation.

2. If the application is complete, the notification shall either be accompanied by the issued certificate or it shall state that the cabinet is verifying information pursuant to paragraph (b) of this subsection. After any such verification is performed and the cabinet is satisfied that all applicable requirements of this regulation have been met, the cabinet shall promptly issue the certification.

(b)1. The cabinet may, at its discretion, verify any of the information contained in the application. If, as a result of any such verification effort, the cabinet determines that the applicant has knowingly caused falsified or misrepresented information to be submitted in the application, the cabinet shall deny certification and the applicant shall be ineligible to re-apply for certification for at least a one (1)-year period.

2. After the period of ineligibility defined pursuant to subparagraph 1 of this paragraph, certification may only be granted if a new application is submitted pursuant to subsection (1) of this section. All of the information contained in the application shall be provided anew: this shall include new letters of reference pursuant to subsection (4) of this section; documentation that the applicant has been retrained pursuant to subsection (2) of this section and retested pursuant to subsection (5) of this section; and a demonstration, pursuant to subsection (3) of this section, that the applicant holds a valid Blaster's License issued by the Kentucky Department of Mines and Minerals.

(8)(a) The cabinet shall issue a blaster certification to any applicant who meets the requirements of subsections (1) through (7) of this section, except the cabinet shall deny certification if the applicant cannot reasonably be expected to conduct himself or herself in a manner consistent with the acceptance of responsibility for blasting operations. The cabinet shall make determinations regarding issuance or denial of the certification based upon the blaster's actions during any prior term of certification, the information contained in the application, and any other pertinent information that is available to the cabinet.

(b) The certification shall be issued for a term of three (3) years.

(9) Any person aggrieved by a determination under this section may request a formal hearing in accordance with 405 KAR 7:092, Section 9.

**Section 3. Renewal of certification.** Subject to the provisions of this section, certified blasters shall have the right to successive renewal of their certifications.

(1)(a) Applications for certification renewal shall be submitted on forms provided by the cabinet. Each such application shall identify the applicant's name, address, telephone number, and place of employment; shall contain the information required by subsection (3) of this section; and shall contain such additional information as the cabinet deems necessary for the purposes of this regulation. The application shall be submitted to the central office of the department's Division of Field Services, located in Frankfort, Kentucky, and shall be accompanied by a renewal fee of ten (10) dollars, plus any reexamination fee required pursuant to subsection (3) of this section. The renewal application shall not be submitted more than ninety (90) days prior to certification expiration.

(b)1. The cabinet shall neither accept nor process the renewal application of a blaster who does not hold a valid Kentucky Blaster's License, whose certification is revoked, or whose certification is suspended pursuant to Section 4(2)(b) of this regulation. If a blaster's certification is suspended pursuant to an order rendered under Section 4(4)(b)3 or (5) of this regulation, a

renewal application will be accepted and processed only in accordance with Section 9(2)(a)2 and only if the term and conditions of the suspension have been met.

2. If an application for renewal is submitted and, prior to renewal, the certification is suspended, revoked, or otherwise invalidated, the renewal application shall be rendered null and void and shall be returned to the applicant.

(2)(a)1. If the blaster seeking renewal desires for his or her certification not to lapse, the renewal application must be submitted sixty (60) or more days prior to the expiration date identified on the blaster's certificate. For applications which are so submitted, the cabinet shall renew the certification, deny the renewal request, or withdraw the renewal request for submission of additional information pursuant to subsection (1)(a) of this section, prior to the date of the certification's expiration. A blaster who submits a renewal application pursuant to this subparagraph shall be eligible for an extension of his or her certification pursuant to subparagraph 2 of this paragraph, should such an extension be necessary and justified as provided for in that subparagraph.

2. If the blaster has submitted a renewal application sixty (60) or more days prior to the expiration date identified on the blaster's certificate, and if the cabinet has not taken final action on the application by the certificate's expiration date, the cabinet may postpone expiration of certification, in order to lessen the likelihood of a lapse in certification during the interim period between the expiration date identified on the certificate and issuance of the renewed certification. Such postponement shall be granted by written letter signed by the director of the department's Division of Field Services and shall delay certification expiration for a period of sixty (60) days. A postponement pursuant to this subparagraph may only be granted once per renewal application and may only be granted if:

a. Through no fault of the certified blaster, the cabinet has not taken final action on the renewal request as of the expiration date identified on the blaster's certificate; and

b. The blaster is making a good faith effort to obtain renewal.

(b) If the blaster desiring renewal fails to submit his or her renewal application sixty (60) or more days prior to the expiration date identified on the certificate, the certification may only be renewed if the renewal application, complete with all information necessary for the cabinet to grant the renewal, is submitted prior to certification expiration or within ninety (90) days following certification expiration. However, if the application is so submitted, the certification shall be considered to have lapsed during any interim period between expiration of the certificate and issuance of the renewed certificate. Blasters who apply for renewal pursuant to this paragraph shall not be eligible for postponement of certification expiration pursuant to paragraph (a)2 of this subsection.

(c) If the blaster fails to comply with the requirements of paragraph (a) or (b) of this subsection, he or she may be recertified only by re-applying for certification under Section 2 of this regulation. All of the information contained in an application for recertification shall be provided anew: this shall include new letters of reference pursuant to Section 2(4) of this regulation; documentation that the applicant has been retrained pursuant to Section 2(2) of this

regulation and retested pursuant to Section 2(5) of this regulation; and a demonstration, pursuant to Section 2(3) of this regulation, that the applicant holds a valid Blaster's License issued by the Kentucky Department of Mines and Minerals. The blaster's certification shall be considered to have lapsed during the interim period between expiration of the certificate and issuance of the following certificate. Blasters who apply for recertification pursuant to this paragraph shall not be eligible for postponement of certification expiration pursuant to paragraph (a)<sup>2</sup> of this subsection.

(3)(a) The applicant for certification renewal shall:

1. Demonstrate that he or she has worked in blasting operations associated with surface coal mining and reclamation operations and/or coal exploration operations, in a manner that demonstrates the blaster's competency, during at least one and one-half years of the three (3) years prior to the expiration date identified on the certificate; or

2. Demonstrate that he or she has:

a. Worked, in a manner that demonstrates the blaster's competency, during at least one and one-half years of the three (3) years prior to the expiration date identified on the certificate in blasting operations associated with road construction, non-coal mining, or other activities that involve blasting techniques similar to those associated with surface coal mining and reclamation operations and/or coal exploration operations;

b. Retaken and passed a written examination on the cabinet's laws and regulations pertaining to the use of explosives; and

c. Submitted a reexamination fee of fifteen (15) dollars; or

3. Retake and pass the written examination specified in Section 2(5) of this regulation and submit a reexamination fee of fifteen (15) dollars; provided however, consecutive renewals pursuant to this subparagraph shall not be granted without the applicant for renewal being retrained pursuant to Section 2(2) of this regulation.

(b) In addition to submitting the documentation required pursuant to paragraph (a) of this subsection, each applicant for renewal shall demonstrate that he or she holds a valid Kentucky Blaster's License issued by the Kentucky Department of Mines and Minerals.

(4) The provisions of Section 2(7)(b) of this regulation shall apply to applicants for renewal pursuant to this section.

(5)(a) The cabinet shall renew the certification of any blaster who meets the requirements of subsections (1) through (4) of this section, except the cabinet shall deny renewal if the blaster cannot reasonably be expected to conduct himself or herself in a manner consistent with the acceptance of responsibility for blasting operations. The cabinet shall make determinations regarding issuance or denial of the renewal based upon the applicant's actions during the most recent term of certification, the information contained in the renewal application, and any other pertinent information.

(b) The term of a renewed certification shall be three (3) years.

(6) A blaster's certification shall expire on the expiration date identified on his or her most recent certificate, unless expiration of certification has been postponed pursuant to subsection (2)(a)2 of this section.

(7) Any person aggrieved by a determination under this section may request a formal hearing in accordance with 405 KAR 7:092, Section 9.

#### **Section 4. Suspension and revocation.**

(1) For the purposes of this section, a blaster shall be considered to be in violation if he or she:

(a) Fails to comply with any order of the cabinet;

(b) Handles or uses explosives while under the influence of alcohol, narcotics, or other dangerous drugs, or uses same in the workplace;

(c) Violates any provision of federal explosives laws or regulations or Kentucky's explosives laws or regulations;

(d) Provides false information or a misrepresentation to obtain certification; or

(e) Fails to comply with the conditions of certification specified in Section 6 of this regulation.

(2)(a)1. Unless the cabinet immediately suspends certification pursuant to paragraph (b) of this subsection, the cabinet shall evaluate the following when the cabinet determines that a blaster is or has been in violation:

a. Whether well-founded blasting procedures and reasonable precautions were used in endeavoring to prevent the violation;

b. The seriousness of the violation;

c. The history of the blaster's performance;

d. The existence of any information suggesting that the blaster willfully committed or caused the violation; and

e. Any other pertinent information.

2. Subsequent to conducting the evaluation required by subparagraph 1 of this paragraph, and based upon and commensurate with the results of that evaluation, the cabinet shall issue a written notice to the blaster if the cabinet has reason to believe that he or she willfully committed or caused the violation, or if the cabinet otherwise determines that suspension or revocation of certification is warranted. The written notice shall advise the blaster

of the provision(s) of which he or she was in violation and shall advise him or her that the cabinet intends to seek suspension or revocation of the certification.

(b) When the cabinet determines that a blaster is or has been in violation, the cabinet shall issue an order immediately suspending the blaster's certification if further blasting operations conducted by or under the direction of the blaster may reasonably be expected to constitute an imminent danger to the health and safety of the public or cause significant, imminent environmental harm.

(c)1. Regardless of whether the cabinet pursues recourse against the blaster pursuant to paragraph (a) or (b) of this subsection, if the cabinet determines that a blaster is or has been in violation, the cabinet shall retain a description of the violation, a description of the procedures used in evaluating the violation, the conclusion which was reached as a result of the evaluation, and any supporting information which was used in reaching the conclusion. This documentation shall be used in compiling a history of the blaster's performance for use pursuant to paragraph (a) of this subsection and Sections 2(8) and 3(5) of this regulation.

2. When a violation is placed on a blaster's record pursuant to subparagraph 1 of this paragraph, the cabinet shall issue a written statement to the blaster advising him or her of the documented violation. The blaster shall be allowed to challenge the fact of the violation, or his or her responsibility for same, in accordance with the provisions of 405 KAR 7:092 Section 6 or 7.

(3)(a) Notices issued pursuant to subsection (2)(a)2 of this section, blaster suspension orders issued pursuant to subsection (2)(b) of this section, statements issued pursuant to subsection (2)(c)2 of this section, and orders of the Secretary rendered pursuant to subsections (4)(b)3 and (5) of this section shall be served promptly after issuance. Service to the blaster shall be made by hand; by certified mail, return receipt requested; or by registered mail. A copy of each order and each notice shall also be mailed or otherwise delivered to the Kentucky Department of Mines and Minerals. In addition, if the order suspends or revokes certification, a copy of the order shall be mailed or otherwise delivered to the blaster's employer as documented in the cabinet's files and to any other person who, to the best knowledge of the cabinet, employs the blaster as a certified blaster.

(b) Service, whether by hand or by mail, shall be complete upon tender of the order, notice, or statement and shall not be deemed incomplete because of refusal to accept. Moreover, service by mail shall not be deemed incomplete because of failure to claim the document prior to its return to the cabinet by the U.S. Postal Service, nor shall it be deemed incomplete because of the U.S. Postal Service's inability to deliver a document which has been properly addressed with the intended recipient's most recent address known to the cabinet. Service by mail to the blaster shall be addressed to the permanent address shown on the certification or renewal application, or if the blaster has submitted notice of an address change pursuant to Section 7 of this regulation, to such other address as is known to the cabinet.

(4) The following provisions shall apply to suspension orders issued pursuant to subsection (2)(b) of this section:

(a) Upon issuance of the suspension order, all rights and privileges granted by certification shall be suspended until the order is vacated or the certification is restored in accordance with an order of the Secretary; however, the blaster shall not be required to surrender his or her certificate unless and until the Secretary renders an order requiring revocation or further suspension.

(b) Unless vacated, the suspension order shall be adjudicated in accordance with the following:

1. A hearing shall be scheduled upon issuance of the suspension order. This hearing shall be scheduled to be held within ten (10) working days of issuance of the order. The blaster shall be promptly notified, in accordance with 405 KAR 7:091 Section 5, of the time, date, and location of the scheduled hearing.

2. The chief hearing officer or any other designated hearing officer shall preside over the hearing, and except as otherwise specified or provided for in this paragraph, the hearing shall be conducted pursuant to the provisions of 405 KAR 7:092, Section 5. Within five (5) working days following the hearing, the hearing officer shall issue a report on the findings of fact and conclusions of law concerning the violation.

3. The provisions of 405 KAR 7:091, Section 3 shall apply to the filing of exceptions to the hearing office's report, and the final order of the Secretary concerning the violation shall be issued forthwith.

4. The time schedule for adjudication as specified in subparagraphs 1 and 2 of this paragraph may be extended by the cabinet upon written request by the blaster to whom the suspension order was issued.

(c) Prior to the hearing held pursuant to paragraph (b) of this subsection, a suspension order determined to have been issued in error may be vacated by the director of the Division of Field Services.

(d) The forms on which blaster suspension orders are issued shall be at the discretion of the cabinet and may include the forms used pursuant to 405 KAR 12:020.

(5) Upon issuance of a notice pursuant to subsection (2)(a)2 of this section, the cabinet shall schedule a formal hearing for review of the violation. This hearing shall be held pursuant to 405 KAR 7:092, Section 5.

(6)(a) Orders of the Secretary rendered pursuant to subsections (4)(b)3 and (5) of this section may suspend or revoke the blaster's certification and may carry requirements for additional training or testing or other appropriate corrective measures; provided however, if the violation was caused or committed willfully, suspension or revocation of certification shall be obligatory.

(b) The termination date of a suspension shall be specified in the order or the suspension shall be for an indefinite period contingent upon completion of required remedial action. An order for revocation shall specify the ending date of the period during which the

blaster will be ineligible for reinstatement, with said period exceeding the minimum required by Section 9(1) of this regulation if appropriate.

(c) The term and conditions of each order rendered by the Secretary pursuant to subsection (4)(b)3 or (5) of this section shall be commensurate with the pertinent factors surrounding the blaster and the violation(s). These factors may include, but not necessarily be limited to, the seriousness of the violation(s), the blaster's culpability for the violation(s), the history of the blaster's performance, and whether the blaster took reasonable care in determining that the operation would be in compliance with applicable laws and regulations.

(d)1. Upon service of a suspension or revocation order rendered pursuant to subsection (4)(b)3 or (5) of this section, the blaster shall surrender the suspended or revoked certificate to the cabinet in accordance with subparagraph 2 of this paragraph. All rights and privileges granted by certification shall be suspended or revoked in accordance with the term and conditions of the order.

2. If the suspension or revocation order is hand delivered by a cabinet representative, the suspended or revoked certificate shall be immediately surrendered to the representative delivering the order. If the order is served by certified or registered mail, the certificate shall be immediately delivered and surrendered to the department's appropriate regional office.

(7)(a) If the blaster's Kentucky Blaster's License expires, is revoked, or otherwise lapses or becomes invalid during the term of certification, in accordance with Section 6(5) of this regulation the blaster's certification shall automatically be rendered invalid. Once the certification has been rendered invalid, the certificate shall immediately be delivered and surrendered to the department's appropriate regional office. The certificate shall only be returned and certification reinstated after the blaster has demonstrated, and the cabinet has found, that the blaster once again holds a valid Kentucky Blaster's License.

(b) The provisions of paragraph (a) of this subsection shall apply automatically, and issuance of a notice or a suspension order pursuant to subsection (2) of this section shall not be required in order to invalidate a blaster's certification pursuant to Section 6(5) of this regulation.

**Section 5. Protection of certification.** Certified blasters shall take every reasonable precaution to protect their certificates from loss, theft, or unauthorized duplication. Any such occurrence shall be immediately reported to the cabinet.

**Section 6. Conditions.** The following are conditions for maintaining certification:

(1)(a) His or her Kentucky Blaster's License, his or her Kentucky Blaster Certificate, and at least one (1) other form of identification shall be carried by the certified blaster during blasting operations. If the blaster is operating under a postponement of certification expiration rendered pursuant to Section 3(2)(a)2 of this regulation, the blaster shall also carry the letter granting the postponement.

(b) A certified blaster shall immediately exhibit his or her certificate, Kentucky Blaster's License, letter postponing expiration of certification (if applicable), and one (1) other form of identification to any authorized representative of the cabinet or OSM upon request.

(2) Blasters' certifications shall not be assigned or transferred.

(3) Certified blasters shall not delegate their responsibilities to any persons who are not certified blasters.

(4) The certified blaster who is responsible for conducting blasting operations shall provide direction and on-the-job training to non-certified persons who are assigned to his or her blasting crew or who assist in the storage, use, or transportation of explosives incident to the blasting operations.

(5) Each certified blaster shall hold a valid Kentucky Blaster's License throughout the term of the certification.

**Section 7. Change of information.** A certified blaster shall submit written notification to the cabinet whenever there is a change in his or her name, address, telephone number, or place of employment. Such notifications shall be submitted to the central office of the department's Division of Field Services, located in Frankfort, Kentucky, within thirty (30) days of the change.

**Section 8. Reciprocity.** For any person who is a certified blaster under OSM's blaster certification program or under any OSM approved state blaster certification program, the submission of satisfactory documentation demonstrating that he or she is so certified shall be considered an adequate demonstration of compliance with Section 2(2), (4), and (5). However, compliance with Section 2(1) and (3) shall occur prior to obtaining certification pursuant to this regulation.

#### **Section 9. Reinstatement.**

(1) Reinstatement following revocation. Unless a longer term is specified in the Secretary's revocation order, during the one (1)-year period following issuance of the order the blaster shall not be eligible for reinstatement of certification. After this period of ineligibility, certification shall only be reinstated after re-applying for certification pursuant to Section 2 of this regulation. All of the information contained in the application shall be provided anew: this shall include new letters of reference pursuant to Section 2(4) of this regulation; documentation that the applicant has been retrained pursuant to Section 2(2) of this regulation and retested pursuant to Section 2(5) of this regulation; and a demonstration, pursuant to Section 2(3) of this regulation, that the applicant holds a valid Blaster's License issued by the Kentucky Department of Mines and Minerals. In addition to containing such information, the application must demonstrate, and the cabinet must find, that the conditions that led to the revocation have been corrected and are not likely to reoccur. When these requirements have been met, the cabinet may reissue the blaster certification.

(2) Reinstatement following suspension.

(a)1. Following suspension of certification pursuant to an order of the Secretary, certification shall be reinstated only upon a demonstration by the blaster that he or she has met the term and conditions of the suspension.

2. The cabinet shall not reinstate a certification which has expired solely upon a demonstration that the requirements of subparagraph 1 of this paragraph have been met. If the certification expires during the suspension period, in order to have certification reinstated without re-applying under Section 2 of this regulation, a renewal application must be submitted within thirty (30) days of meeting the term and conditions of the suspension; provided however, if the order suspending certification does not specify a termination date for the suspension, the remedial measures prescribed in the order must be completed within one (1) year following certification expiration to qualify for reinstatement through the renewal process. Renewal applications filed for reinstatement shall contain the information required by subparagraph 1 of this paragraph and the information and fees required by Section 3(1)(a) of this regulation. Failure to submit a renewal application within these constraints will result in certification being reinstated only if, in addition to complying with subparagraph 1 of this paragraph, the application requirements of Section 2 of this regulation are met, with all of the information contained in the application being provided anew: this shall include new letters of reference pursuant to Section 2(4) of this regulation; documentation that the applicant has been retrained pursuant to Section 2(2) of this regulation and retested pursuant to Section 2(5) of this regulation; and a demonstration, pursuant to Section 2(3) of this regulation, that the applicant holds a valid Blaster's License issued by the Kentucky Department of Mines and Minerals.

(b) After the demonstrations required by paragraph (a) of this subsection have been made and the cabinet is satisfied as to the adequacy of the demonstrations, the cabinet shall either return the surrendered certificate, renewed if applicable, or shall tender to the blaster the reissued certificate. The surrendered or reissued certificate shall be accompanied by a notice of reinstatement.

**Section 10. Delegation to Department of Mines and Minerals.** The cabinet and the Kentucky Department of Mines and Minerals may enter into agreements whereby the Department of Mines and Minerals may administer part or all of this regulation.

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Surface Mining Reclamation and Enforcement

**405 KAR 8:030. Surface coal mining permits.**

Effective Date: June 24, 1992

**Section 26. MRP; blasting.**

(1) Each application shall contain a blasting plan for the proposed permit area explaining how the applicant intends to comply with the requirements of 405 KAR 16:120. This plan shall include, at a minimum, information setting forth the limitations the permittee will meet with regard to ground vibration and airblast, the bases for the ground vibration and airblast limitations, and the methods to be applied in controlling the adverse effects of blasting operations.

(2) Each application shall contain a description of the systems to be used to monitor compliance with the standards for ground vibration and airblast including identification of the types, capabilities, and sensitivities of blast monitoring equipment and identification of the monitoring procedures and locations.

(3) Blasting operations within 500 feet of active underground mines require approval of the cabinet, MSHA, and the Kentucky Department of Mines and Minerals.

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Surface Mining Reclamation and Enforcement

**405 KAR 16:030. Signs and markers.**  
Effective Date: January 6, 1983

**Section 1. Specifications.** Signs and markers required under this chapter shall:

- (1) Be posted and maintained by the permittee;
- (2) Be of a uniform design throughout the operation that can be easily seen and read;
- (3) Be made of durable material; and
- (4) Conform to local ordinances and codes.

**Section 2. Duration of maintenance.** Signs and markers shall be maintained during the conduct of all activities to which they pertain.

**Section 3. Mine and permit identification signs.**

(1) Identification signs shall be displayed at each point of access to the permit area from public roads.

(2) Signs shall show the name, business address, and telephone number of the permittee and the person, if any, who conducts the surface mining activities on behalf of the permittee and the identification number of the current permit authorizing surface mining activities under KRS Chapter 350.

(3) Signs shall be retained and maintained until after the release of all bonds for the permit area.

**Section 4. Perimeter markers.** The perimeter of a permit area shall be clearly marked before the beginning of surface mining activities.

**Section 5. Buffer zone markers.** Buffer zones as required under 405 KAR 16:060, Section 11, shall be marked along their boundaries.

**Section 6. Blasting signs.** If blasting is conducted incident to surface mining activities, the permittee shall:

405 KAR 16:030

(1) Conspicuously display signs reading "Blasting Area" along the edge of any blasting area that comes within fifty (50) feet of any road within the permit area, or within 100 feet of any public road right of way.

(2) Prevent unauthorized entry to the immediate vicinity of charged holes by guarding or by conspicuous posting or flagging of the immediate vicinity.

(3) Place at all entrances to the permit area from public roads or highways conspicuous signs which state "Warning! Explosives in Use," which clearly explain the blast warning and all clear signals that are in use and which explain the marking of blast areas and charged holes within the permit area.

**Section 7. Topsoil markers.** Where topsoil or other vegetation- supporting material is segregated and stockpiled as required under 405 KAR 16:050, Section 3, the stockpiled material shall be clearly marked.

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Surface Mining Reclamation and Enforcement

**405 KAR 16:120. Use of explosives.**  
Effective Date: December 13, 1988

**Section 1. General requirements.**

(1) Each permittee and person who conducts blasting operations shall comply with all applicable local, state, and federal laws and regulations in the use of explosives.

(2) Blasts that use more than five (5) pounds of explosives or blasting agents shall be conducted according to the schedule required by Section 3.

(3) Each permittee shall have all blasting operations conducted under the direction of a blaster certified in accordance with 405 KAR 7:070. A certified blaster and at least one (1) other person shall be present at the firing of a blast. Persons responsible for blasting operations at a blasting site shall be familiar with the blasting plan and site-specific performance standards.

(4)(a) An anticipated blast design shall be submitted if blasting operations will be conducted within:

1. 1,000 feet of any building used as a dwelling; public building; school; church; or commercial, community, or institutional building outside the permit area; or

2. 500 feet of an active or abandoned underground mine.

(b) The blast design shall be presented as part of the permit application or shall be submitted to the department's appropriate regional office at least thirty (30) days prior to initiation of the blast.

(c) The blast design shall contain sketches of the drill patterns, delay periods, and decking; shall indicate the types and amounts of explosives to be used, critical dimensions, and the locations of structures to be protected; shall include a general description of structures to be protected; and shall contain a discussion of design factors to be used, which protect the public and meet the applicable airblast, flyrock, and ground vibration standards in this regulation.

(d) The blast design shall be prepared and signed by a certified blaster.

(e) The cabinet may require changes to the design submitted in order to ensure compliance with KRS Chapter 350; SMCRA; and Title 405, Chapters 7 through 24.

**Section 2. Preblasting survey.**

405 KAR 16:120

(1) At least thirty (30) days before initiation of blasting, the permittee shall notify, in writing, all residents or owners of dwellings or other structures located within one-half mile of the permit area how to request a preblasting survey in accordance with subsection (2) of this section.

(2) A resident or owner of a dwelling or other structure within one-half mile of any part of the permit area may request a preblasting survey. This request shall be made in writing directly to the permittee or to the cabinet which shall promptly notify the permittee. The permittee shall promptly conduct a preblasting survey of the dwelling or structure. If a structure is renovated, modified, or added to subsequent to a preblasting survey, then, upon request a survey of such additions and renovations shall be performed in accordance with this section.

(3) The survey shall determine the condition of the dwelling or structure and document any preblasting damage and other physical conditions that could reasonably be affected by the blasting. Structures such as pipelines, cables, transmission lines and cisterns, wells, and other water systems warrant special attention; however, the assessment of these structures may be limited to surface condition and readily available data unless additional data are specifically required by the cabinet.

(4) A written report of the survey shall be promptly prepared and signed by the person who conducted the survey. The report may include recommendations of any special conditions or proposed adjustments to the blasting procedure which should be incorporated into the blasting plan to prevent damage. If the resident or structure owner or his representative accompanies the surveyor, the report shall contain the name of such person. Copies of the report shall be promptly provided to the person requesting the survey and to the cabinet. If the person requesting the survey disagrees with the results of the survey, he or she may submit, in writing to both the permittee and the cabinet, a detailed description of the specific areas of disagreement. The cabinet may require additional measures to ensure that adequate and accurate information is included in the preblasting survey and to ensure compliance with the requirements of this regulation.

(5) Any surveys requested more than ten (10) days before the planned initiation of blasting shall be completed by the permittee before the initiation of blasting.

### **Section 3. Public notice of blasting schedule.**

(1) Blasting schedule publication.

(a) Each permittee shall publish a blasting schedule at least ten (10) days, but not more than thirty (30) days, before beginning a blasting program in which blasts that use more than five (5) pounds of explosives or blasting agents are detonated. The blasting schedule shall be published in a newspaper of general circulation in the locality of the blasting site.

(b) Copies of the schedule shall be distributed in accordance with the time frame specified in paragraph (a) of this subsection to the appropriate department regional office, to

local governments and public utilities, and to each residence within one-half mile of the blasting site described in the schedule.

(c) The permittee shall republish and redistribute the schedule at least every twelve (12) months and revise, republish, and redistribute the schedule at least ten (10) days, but not more than thirty (30) days, before blasting whenever the area covered by the schedule changes, the actual time periods for blasting significantly differ from those identified in the prior announcement, or the permittee changes the types or patterns of warning or all-clear signals identified in the prior schedule.

(2) Blasting schedule contents. The blasting schedule shall contain at a minimum:

- (a) The name, address, and telephone number of the permittee;
- (b) Identification of the specific areas in which blasting will take place;
- (c) Identification of the dates and time periods when explosives are to be detonated;
- (d) Identification of the methods to be used to control access to the blasting area; and
- (e) Identification of the types and patterns of audible warnings and all-clear signals to be used before and after blasting.

#### **Section 4. Surface blasting requirements.**

(1) General requirements.

(a) The permittee shall conduct blasting operations at times approved by the cabinet and announced in the blasting schedule. The cabinet may limit the area covered, timing, and sequence of blasting as listed in the schedule, if such limitations are necessary and reasonable in order to protect the public health and safety or welfare.

(b) All blasting shall be conducted between sunrise and sunset. The cabinet may specify more restrictive time periods based on public requests or other relevant information and according to the need to adequately protect the public from adverse noise and other impacts. Blasting may, however, be conducted between sunset and sunrise if:

1. A blast that has been prepared during the day must be delayed due to the occurrence of an unavoidable hazardous condition and cannot be delayed until the next day because a potential safety hazard could result that cannot be adequately mitigated;

2. Prior approval for conducting the blasting between sunset and sunrise is obtained from the Kentucky Department of Mines and Minerals; and

3. A complete written report of blasting at night is filed by the permittee with the cabinet not later than three (3) days after the night blasting, not including Saturdays, Sundays, or

legal holidays. The report shall include a detailed description of the reasons for the delay in blasting including why the blast could not be held over to the next day, identification of the time at which the blast was actually conducted, a description of the warning notices given, and a copy of the blast record required by Section 6.

(c) **Unscheduled blasts may be conducted only where public or operator health and safety so require and for emergency blasting actions. When a permittee conducts an unscheduled blast, the permittee, using audible signals, shall notify all persons within one-half mile of the blasting site and document the reason for the unscheduled blast in accordance with Section 6(20).**

(d) **The use of a charge weight of explosives in excess of 40,000 pounds in any blast shall not occur without a valid permit for such blasting from the Kentucky Department of Mines and Minerals. Such a permit shall be present at the blast site while such blasting is being conducted.**

(2) **Warnings. Warning and all-clear signals of different character or pattern that are audible within a range of one-half (1/2) mile from the point of the blast shall be given. Each person within the permit area and each person who resides or regularly works within one-half (1/2) mile of the permit area shall be notified of the meanings of the signals as identified in the blasting schedule through appropriate communications. These notifications shall be periodically delivered or otherwise communicated to such persons in a manner which can reasonably be expected to inform such persons of the meanings of the signals. Delivery or other appropriate communication of the meanings of such signals to the head of a household or to the person in charge of a place of business shall constitute sufficient notification of the meanings of such signals to all persons at such household or place of business. Each permittee shall maintain signs in accordance with 405 KAR 16:030, Section 6.**

(3) **Access control. Access to the blasting area shall be controlled to prevent the presence of livestock or unauthorized personnel during blasting until the blaster has reasonably determined:**

(a) **That no unusual circumstances, such as imminent slides or undetonated charges, exist; and**

(b) **That access to and travel in or through the blasting area can be safely resumed.**

(4) **Airblast.**

(a) **Airblast shall be controlled so that it does not exceed the values specified in Appendix A of this regulation at any dwelling; public building; school; church; or commercial, community, or institutional building outside the permit area except as provided in subsection (8) of this section.**

(b) **In all cases except those involving the use of C-weighted, slow-response devices, the measuring systems used shall have a flat frequency response of at least 200 Hz at the upper**

end. The C-weighted shall be measured with a Type I sound level meter that meets the standard American National Standards Institute (ANSI) S1.4-1971 specifications.

(c) If necessary to prevent damage, the cabinet shall specify lower maximum allowable airblast levels than those in Appendix A of this regulation for use in the vicinity of a specific blasting operation.

(d)1. To evaluate compliance with the airblast standards of this regulation, throughout blasting operations the permittee shall periodically monitor compliance with the airblast standards.

2. Monitoring pursuant to this paragraph shall be deemed "periodic" if at least three (3) consecutive blasts are monitored one time during the period of January through June and one time during the period of July through December; provided however:

a. The cabinet may approve or require an alternative frequency if deemed appropriate based on site conditions, the anticipated blast design, the proposed blasting plan, and any other pertinent information available to the cabinet. A plan for less frequent airblast monitoring shall be deemed approved if the plan is specified as a condition of permit issuance or is specified in the approved permit application and not modified by a condition of permit issuance. A plan for more frequent airblast monitoring shall be established in the approved permit application, as a condition of permit issuance, or after permit issuance in accordance with subparagraph 3 of this paragraph.

b. If detonation of explosives did not occur during the designated monitoring period, airblast monitoring need not be conducted during that period.

3. Subsequent to permit issuance, the cabinet may require airblast measurements of any or all blasts and may specify the locations of such measurements.

4. The results of all airblast monitoring shall be recorded in accordance with Section 6 of this regulation.

(5) Flyrock. Flyrock, including blasted material traveling along the ground, shall not be cast from the blasting site more than half the distance to the nearest dwelling; public building; school; church; commercial, community, or institutional building; or any occupied structure and in no case beyond the boundary of the permit area or beyond the area of regulated access required under subsection (3) of this section.

(6) Prevention of adverse impacts. Blasting shall be conducted to prevent injury to persons; damage to public and private properties outside the permit area; adverse impacts on any underground mine; changes in the courses, channels, and availability of surface waters outside the permit area; and alterations of the ground water flow systems and ground water availability outside the permit area.

(7) Ground vibration.

(a) General. In all blasting operations except as otherwise authorized by subsection (8) of this section, the maximum ground vibration shall not exceed the values approved in the blasting plan required under 405 KAR 8:030. The maximum ground vibration at the location of any dwelling; public building; school; church; or commercial, community, or institutional building outside the permit area shall be established in accordance with either the maximum peak particle velocity limits of paragraph (b), in accordance with the scale-distance equations of paragraph (c), in accordance with the blasting-level equations of paragraph (d), or by the cabinet pursuant to paragraph (e). All other structures in the vicinity of the blasting area, such as water towers, pipelines, and other utilities; tunnels; dams; impoundments; and underground mines shall be protected from damage by establishment of a maximum allowable limit on the ground vibration proposed by the applicant in the blasting plan and approved by the cabinet.

(b) Maximum peak particle velocity. The maximum ground vibration shall not exceed the limits established in Appendix B of this regulation at the location of any dwelling; public building; school; church; or commercial, community, or institutional building outside the permit area. Seismographic records shall be recorded for each blast.

(c) Scale-distance equations.

1. A permittee may use the scale-distance equations of Appendix C of this regulation to determine the allowable charge weight of explosives to be detonated within any eight (8) millisecond period without seismic monitoring.

2. The development of a modified scale-distance factor may be authorized by the cabinet based on a written request by the permittee supported by seismographic records of blasting at the minesite. The modified scale distance factor shall be determined such that the particle velocity of the predicted ground vibration will not exceed the limits established in Appendix B of this regulation at a ninety-five (95) percent confidence level.

(d) Blasting-level equations. A permittee may use the ground vibration limits calculated from the blasting-level equations in Appendix D of this regulation to determine the maximum allowable ground vibration. If the blasting-level equations are used, a seismographic record including both particle velocity and vibration-frequency levels shall be provided for each blast. The method for the analysis of the predominate frequency contained in the blasting records shall be approved by the cabinet before application of this alternative blasting criterion.

(e) The maximum allowable ground vibration shall be reduced by the cabinet beyond the limits of this subsection if the cabinet determines that lower limits are necessary to provide damage protection and ensure compliance with subsection (6) of this section.

(8) The maximum airblast and ground vibration standards of this section shall not apply at the following locations:

(a) At structures owned by the permittee and not leased to another party; and

(b) At structures owned by the permittee and leased to another party, if a written waiver by the lessee is submitted to the cabinet prior to blasting.

### **Section 5. Seismographic measurements.**

(1) The maximum peak particle velocity shall be recorded as either the largest of the peak particle velocities measured in three (3) mutually perpendicular directions or the vector sum thereof.

(2) The cabinet may require a permittee to conduct seismic monitoring of any or all blasts and may specify the location at which such measurements are taken and the degree of detail necessary in the measurement.

**Section 6. Records of blasting operations.** A record of each blast, including any required seismograph reports, shall be retained for at least five (5) years and shall be available for inspection by the cabinet and the public on request. The record shall contain the following data:

- (1) Name of the permittee.
- (2) Location, date, and time of the blast.
- (3) Name, signature, certification number, and license number of the blaster in charge of the blast.
- (4) Identification of and direction and distance, in feet, from the nearest blast hole to the nearest dwelling; public building; school; church; or commercial, community, or institutional building outside the permit area, except those described in Section 4(8).
- (5) Weather conditions, including those which may cause possible adverse blasting effects.
- (6) Type of material blasted.
- (7) Sketches of the blast pattern including number of holes, burden, spacing, decks, and delay pattern.
- (8) Diameter and depth of holes.
- (9) Types of explosives used.
- (10) Total weight of explosives used.
- (11) Total weight of explosives used per hole.
- (12) Maximum weight of explosives detonated within any eight (8) millisecond period.

- (13) Maximum number of holes detonated within any eight (8) millisecond period.
- (14) Type of initiation system.
- (15) Type of circuit.
- (16) Type and length of stemming.
- (17) Mats or other protection used.
- (18) Type of delay detonator and delay periods used.
- (19) Seismographic and airblast records, if used, which include for each record:
  - (a) Type of instrument, sensitivity, and either calibration signal or certification of annual calibration;
  - (b) Exact location of instrument and the date of, time of, and distance from the blast;
  - (c) For seismographic records, the actual seismographic record.
  - (d) Name of the person and firm taking the reading;
  - (e) Name of the person and firm analyzing the seismographic record; and
  - (f) As applicable, vibration and airblast levels recorded.
- (20) Reasons and conditions for each unscheduled blast.

Appendix A of 405 KAR 16:120

Airblast Limitations

Airblast Limitations

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Lower frequency limit of measuring system in Hz ( $\pm 3$ dB)	Maximum level in dB
* 0.1 Hz or lower - flat response. . . 134 peak.	
2 Hz or lower - flat response. . . . 133 peak.	
6 Hz or lower - flat response. . . . 129 peak.	
* C-weighted, slow response. . . . . 105 peak dBC.	

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\* These measuring systems shall be used only when approved by the cabinet.

Appendix B of 405 KAR 16:120

Peak Particle Velocity Limits

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Distance from the blasting site in feet	particle velocity	Maximum allowable peak for ground vibration in inches per second
0 to 300	1.25	
301 to 5,000	1.00	
5,001 and beyond	0.75	

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Appendix C of 405 KAR 16:120

Scale-distance Equations

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Distance (D) from the blasting site in feet	Scale-distance equation
0 to 300	$W = (D/50)^2$
301 to 5,000	$W = (D/55)^2$
5,001 and beyond	$W = (D/65)^2$

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where:  $W$  = the maximum weight of explosives that can be detonated within any eight (8) millisecond period.

$D$  = the distance, in feet, from the blasting site to the nearest protected structure.

Appendix D of 405 KAR 16:120

Blasting-level Equations

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Blasting vibration frequency	Blasting-level equation
$\text{Hz} < 4$	$V = 0.19 \text{ Hz}^{0.9904}$
$4 \leq \text{Hz} \leq 11$	$V = 0.75$
$11 < \text{Hz} < 30$	$V = 0.0719 \text{ Hz}^{0.9776}$
$\text{Hz} \geq 30$	$V = 2.00$

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where: Hz = the blast vibration frequency in hertz

V = the maximum allowable particle velocity in inches per second

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Surface Mining Reclamation and Enforcement

**405 KAR 8:040. Underground coal mining permits.**  
Effective Date: June 24, 1992

**Section 38. MRP; blasting.**

(1) Each application shall contain a blasting plan for the proposed permit area explaining how the applicant intends to comply with the requirements of 405 KAR 18:120. This plan shall include, at a minimum, information setting forth the limitations the permittee will meet with regard to ground vibration and airblast, the bases for the ground vibration and airblast limitations, and the methods to be applied in controlling the adverse effects of blasting operations.

(2) Each application shall contain a description of the systems to be used to monitor compliance with the standards for ground vibration and airblast including the types, capabilities, and sensitivities of blast monitoring equipment and identification of the monitoring procedures and locations.

(3) Blasting operations within 500 feet of active underground mines require approval of the cabinet, MSHA, and the Kentucky Department of Mines and Minerals.

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Surface Mining Reclamation and Enforcement

**405 KAR 18:030. Signs and markers.**  
Effective Date: January 6, 1983

**Section 1. Specifications.** Signs and markers required under this chapter shall:

- (1) Be posted, maintained, and removed by the permittee;
- (2) Be of a uniform design throughout the activities that can be easily seen and read;
- (3) Be made of durable material; and
- (4) Conform to local laws and regulations.

**Section 2. Duration of maintenance.** Signs and markers shall be maintained during all activities to which they pertain.

**Section 3. Mine and permit identification signs.**

- (1) Identification signs shall be displayed at each point of access to the permit area from public roads.
- (2) Signs will show the name, business address, and telephone number of the permittee and the person, if any, who conducts the surface coal mining and reclamation operation on behalf of the permittee and the identification number of the current cabinet permit authorizing underground mining activities under KRS Chapter 350.
- (3) Signs shall be retained and maintained until after the release of all bonds for the permit area.

**Section 4. Perimeter markers.** The perimeter of all areas to be affected by surface operations or facilities shall be clearly marked before the beginning of mining activities.

**Section 5. Buffer zone markers.** Buffer zones required by 405 KAR 18:060, Section 9 shall be clearly marked to prevent disturbance by surface operations and facilities.

**Section 6. Blasting signs.** Permittees shall:

(1) Prevent unauthorized entry to the immediate vicinity of charged holes by guarding or by conspicuous posting or flagging of the immediate vicinity.

(2) Place at all entrances to areas of surface operations and facilities in the permit area, from public roads or highways, conspicuous signs which state "Warning: Explosives in Use."

**Section 7. Topsoil markers.** Where topsoil or other vegetation supporting material is segregated and stockpiled as required under 405 KAR 18:050, Section 3, the stockpiled material shall be clearly marked.

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Surface Mining Reclamation and Enforcement

**405 KAR 18:120. Use of explosives.**

Effective Date: December 13, 1988

**Section 1. General requirements.**

(1) This regulation applies only to surface blasting activities incident to underground mining, including but not limited to, initial rounds of slopes and shafts.

(2) Each permittee and each person who conducts blasting operations shall comply with all applicable local, state, and federal laws and regulations in the use of explosives.

(3) Each permittee shall have all surface blasting operations conducted under the direction of a blaster certified in accordance with 405 KAR 7:070. A certified blaster and at least one (1) other person shall be present at the firing of a blast. Persons responsible for blasting operations at a blasting site shall be familiar with the blasting plan and site-specific performance standards.

(4)(a) An anticipated blast design shall be submitted if blasting operations will be conducted within:

1. 1,000 feet of any building used as a dwelling; public building; school; church; or commercial, community, or institutional building outside the areas affected by surface operations and facilities; or

2. 500 feet of an active or abandoned underground mine.

(b) The blast design shall be presented as part of the permit application or shall be submitted to the department's appropriate regional office at least thirty (30) days prior to initiation of the blast.

(c) The blast design shall contain sketches of the drill patterns, delay periods, and decking; shall indicate the types and amounts of explosives to be used, critical dimensions, and the locations of structures to be protected; shall include a general description of structures to be protected; and shall contain a discussion of design factors to be used, which protect the public and meet the applicable airblast, flyrock, and ground vibration standards in this regulation.

(d) The blast design shall be prepared and signed by a certified blaster.

(e) The cabinet may require changes to the design submitted in order to ensure compliance with KRS Chapter 350; SMCRA; and Title 405, Chapters 7 through 24.

405 KAR 18:120

## **Section 2. Preblasting survey.**

(1) At least thirty (30) days before initiation of blasting, the permittee shall notify, in writing, all residents or owners of dwellings or other structures located within one-half mile of the areas affected by surface operations and facilities how to request a preblasting survey in accordance with subsection (2) of this section.

(2) A resident or owner of a dwelling or other structure within one-half mile of any part of the areas affected by surface operations and facilities may request a preblasting survey. This request shall be made in writing directly to the permittee or to the cabinet which shall promptly notify the permittee. The permittee shall promptly conduct a preblasting survey of the dwelling or structure. If a structure is renovated, modified, or added to subsequent to a preblasting survey, then, upon request a survey of such additions and renovations shall be performed in accordance with this section.

(3) The survey shall determine the condition of the dwelling or structure and document any preblasting damage and other physical conditions that could reasonably be affected by the blasting. Structures such as pipelines, cables, transmission lines and cisterns, wells, and other water systems warrant special attention; however, the assessment of these structures may be limited to surface condition and readily available data unless additional data are specifically required by the cabinet.

(4) A written report of the survey shall be promptly prepared and signed by the person who conducted the survey. The report may include recommendations of any special conditions or proposed adjustments to the blasting procedure which should be incorporated into the blasting plan to prevent damage. If the resident or structure owner or his representative accompanies the surveyor, the report shall contain the name of such person. Copies of the report shall be promptly provided to the person requesting the survey and to the cabinet. If the person requesting the survey disagrees with the results of the survey, he or she may submit, in writing to both the permittee and the cabinet, a detailed description of the specific areas of disagreement. The cabinet may require additional measures to ensure that adequate and accurate information is included in the preblasting survey and to ensure compliance with the requirements of this regulation.

(5) Any surveys requested more than ten (10) days before the planned initiation of blasting shall be completed by the permittee before the initiation of blasting.

## **Section 3. Surface blasting requirements.**

(1) General requirements.

(a) The permittee shall notify, in writing, each residence within one-half mile of the areas affected by surface operations and facilities, the appropriate department regional office, and local governments and public utilities of the proposed times and locations of blasting operations and the characters, patterns, and meanings of the warning and all-clear signals. Such

notice shall be served no less than twenty-four (24) hours and no more than thirty (30) days before blasting will occur.

(b) All blasting shall be conducted between sunrise and sunset. The cabinet may specify more restrictive time periods based on public requests or other relevant information and according to the need to adequately protect the public from adverse noise and other impacts. Blasting may, however, be conducted between sunset and sunrise if:

1. A blast that has been prepared during the day must be delayed due to the occurrence of an unavoidable hazardous condition and cannot be delayed until the next day because a potential safety hazard could result that cannot be adequately mitigated;
2. Prior approval for conducting the blasting between sunset and sunrise is obtained from the Kentucky Department of Mines and Minerals; and
3. A complete written report of blasting at night is filed by the permittee with the cabinet not later than three (3) days after the night blasting, not including Saturdays, Sundays, or legal holidays. The report shall include a detailed description of the reasons for the delay in blasting including why the blasting could not be held over to the next day, identification of the time at which the blast was actually conducted, a description of the warning notices given, and a copy of the blast record required by Section 5.

(c) Unscheduled blasts may be conducted only where public or operator health and safety so require and for emergency blasting actions. When a permittee conducts an unscheduled blast, the permittee, using audible signals, shall notify all persons within one-half mile of the blasting site and document the reason for the unscheduled blast in accordance with Section 5(20).

(d) The use of a charge weight of explosives in excess of 40,000 pounds in any blast shall not occur without a valid permit for such blasting from the Kentucky Department of Mines and Minerals. Such a permit shall be present at the blast site while such blasting is being conducted.

(2) Warnings. Warning and all-clear signals of different character or pattern that are audible within a range of one-half (1/2) mile from the point of the blast shall be given. Each person within the areas affected by surface operations and facilities and each person who resides or regularly works within one-half (1/2) mile of the areas affected by surface operations and facilities shall be notified of the meanings of the signals as identified in the blasting notification required in subsection (1) of this section through appropriate communications. These notifications shall be periodically delivered or otherwise communicated to such persons in a manner which can reasonably be expected to inform such persons of the meanings of the signals. Delivery or other appropriate communication of the meanings of such signals to the head of a household or to the person in charge of a place of business shall constitute sufficient notification of the meanings of such signals to all persons at such household or place of business. Each permittee shall maintain signs in accordance with 405 KAR 18:030, Section 6.

(3) Access control. Access to the blasting area shall be controlled to prevent the presence of livestock or unauthorized personnel during blasting until the blaster has reasonably determined:

(a) That no unusual circumstances, such as imminent slides or undetonated charges, exist; and

(b) That access to and travel in or through the blasting area can be safely resumed.

(4) Airblast.

(a) Airblast shall be controlled so that it does not exceed the values specified in Appendix A of this regulation at any dwelling; public building; school; church; or commercial, community, or institutional building outside the areas affected by surface operations and facilities except as provided in subsection (8) of this section.

(b) In all cases except those involving the use of C-weighted, slow-response devices, the measuring systems used shall have a flat frequency response of at least 200 Hz at the upper end. The C-weighted shall be measured with a Type 1 sound level meter that meets the standard American National Standards Institute (ANSI) S1.4 1971 specifications.

(c) If necessary to prevent damage, the cabinet shall specify lower maximum allowable airblast levels than those in Appendix A of this regulation for use in the vicinity of a specific blasting operation.

(d) To evaluate compliance with the airblast standards of this regulation, throughout surface blasting operations the permittee shall periodically monitor compliance with the airblast standards.

2. Monitoring pursuant to this paragraph shall be deemed "periodic" if at least three (3) consecutive blasts are monitored one time during the period of January through June and one time during the period of July through December; provided however:

a. The cabinet may approve or require an alternative frequency if deemed appropriate based on site conditions, the anticipated blast design, the proposed blasting plan, and any other pertinent information available to the cabinet. A plan for less frequent airblast monitoring shall be deemed approved if the plan is specified as a condition of permit issuance or is specified in the approved permit application and not modified by a condition of permit issuance. A plan for more frequent airblast monitoring shall be established in the approved permit application, as a condition of permit issuance, or after permit issuance in accordance with subparagraph 3 of this paragraph.

b. If detonation of explosives did not occur during the designated monitoring period, airblast monitoring need not be conducted during that period.

3. Subsequent to permit issuance, the cabinet may require airblast measurements of any or all blasts and may specify the locations of such measurements.

4. The results of all airblast monitoring shall be recorded in accordance with Section 5 of this regulation.

(5) Flyrock. Flyrock, including blasted material traveling along the ground, shall not be cast from the blasting site more than half the distance to the nearest dwelling; public building; school; church; commercial, community, or institutional building; or any occupied structure and in no case beyond the boundary of the areas affected by surface operations and facilities, or beyond the area of regulated access required under subsection (3) of this section.

(6) Prevention of adverse impacts. Blasting shall be conducted to prevent injury to persons; damage to public and private properties outside the areas affected by surface operations and facilities; adverse impacts on any underground mine; changes in the courses, channels, and availability of surface waters outside the areas affected by surface operations and facilities; and alterations of the ground water flow systems and ground water availability outside the areas affected by surface operations and facilities.

(7) Ground vibration.

(a) General. In all blasting operations except as otherwise authorized by subsection (8) of this section, the maximum ground vibration shall not exceed the values approved in the blasting plan required under 405 KAR 8:040. The maximum ground vibration at the location of any dwelling; public building; school; church; or commercial, community, or institutional building outside the areas affected by surface operations and facilities shall be established in accordance with either the maximum peak particle velocity limits of paragraph (b), in accordance with the scale-distance equations of paragraph (c), in accordance with the blasting-level equations of paragraph (d), or by the cabinet pursuant to paragraph (e). All other structures in the vicinity of the blasting area, such as water towers, pipelines, and other utilities; tunnels; dams; impoundments; and underground mines shall be protected from damage by establishment of a maximum allowable limit on the ground vibration proposed by the applicant in the blasting plan and approved by the cabinet.

(b) Maximum peak particle velocity. The maximum ground vibration shall not exceed the limits established in Appendix B of this regulation at the location of any dwelling; public building; school; church; or commercial, community, or institutional building outside the areas affected by surface operations and facilities. Seismographic records shall be recorded for each blast.

(c) Scale-distance equations.

1. A permittee may use the scale-distance equations of Appendix C of this regulation to determine the allowable charge weight of explosives to be detonated within any eight (8) millisecond period without seismic monitoring.

2. The development of a modified scale-distance factor may be authorized by the cabinet based on a written request by the permittee supported by seismographic records of blasting at the minesite. The modified scale distance factor shall be determined such that the particle velocity of the predicted ground vibration will not exceed the limits established in Appendix B of this regulation at a ninety-five (95) percent confidence level.

(d) Blasting-level equations. A permittee may use the ground vibration limits calculated from the blasting-level equations in Appendix D of this regulation to determine the maximum allowable ground vibration. If the blasting-level equations are used, a seismographic record including both particle velocity and vibration-frequency levels shall be provided for each blast. The method for the analysis of the predominate frequency contained in the blasting records shall be approved by the cabinet before application of this alternative blasting criterion.

(e) The maximum allowable ground vibration shall be reduced by the cabinet beyond the limits of this subsection if the cabinet determines that lower limits are necessary to provide damage protection and ensure compliance with subsection (6) of this section.

(8) The maximum airblast and ground vibration standards of this section shall not apply at the following locations:

- (a) At structures owned by the permittee and not leased to another party; and
- (b) At structures owned by the permittee and leased to another party, if a written waiver by the lessee is submitted to the cabinet prior to blasting.

#### **Section 4. Seismographic measurements.**

(1) The maximum peak particle velocity shall be recorded as either the largest of the peak particle velocities measured in three (3) mutually perpendicular directions or the vector sum thereof.

(2) The cabinet may require a permittee to conduct seismic monitoring of any or all blasts and may specify the location at which such measurements are taken and the degree of detail necessary in the measurement.

**Section 5. Records of blasting operations.** A record of each blast, including any required seismograph reports, shall be retained for at least five (5) years and shall be available for inspection by the cabinet and the public on request. The record shall contain the following data:

- (1) Name of the permittee.
- (2) Location, date, and time of the blast.

(3) Name, signature, certification number, and license number of the blaster in charge of the blast.

(4) Identification of and direction and distance, in feet, from the nearest blast hole to the nearest dwelling; public building; school; church; or commercial, community, or institutional building outside the permit area, except those described in Section 4(8).

(5) Weather conditions, including those which may cause possible adverse blasting effects.

(6) Type of material blasted.

(7) Sketches of the blast pattern including number of holes, burden, spacing, decks, and delay pattern.

(8) Diameter and depth of holes.

(9) Types of explosives used.

(10) Total weight of explosives used.

(11) Total weight of explosives used per hole.

(12) Maximum weight of explosives detonated within any eight (8) millisecond period.

(13) Maximum number of holes detonated within any eight (8) millisecond period.

(14) Type of initiation system.

(15) Type of circuit.

(16) Type and length of stemming.

(17) Mats or other protection used.

(18) Type of delay detonator and delay periods used.

(19) Seismographic and airblast records, if used, which include for each record:

(a) Type of instrument, sensitivity, and either calibration signal or certification of annual calibration;

(b) Exact location of instrument and the date of, time of, and distance from the blast;

(c) For seismographic records, the actual seismographic record.

- (d) Name of the person and firm taking the reading;
- (e) Name of the person and firm analyzing the seismographic record; and
- (f) As applicable, vibration and airblast levels recorded.
- (20) Reasons and conditions for each unscheduled blast.

Appendix A of 405 KAR 18:120

Airblast Limitations

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Lower frequency limit of measuring system in Hz ( $\pm 3$ dB)	Maximum level in dB
* 0.1 Hz or lower - flat response. . . 134 peak. 2 Hz or lower - flat response. . . . 133 peak. 6 Hz or lower - flat response. . . . 129 peak. * C-weighted, slow response. . . . . 105 peak dBC.	

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\* These measuring systems shall be used only when approved by the cabinet.

Appendix B of 405 KAR 16:120

Peak Particle Velocity Limits

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Distance from the blasting site in feet	particle velocity	Maximum allowable peak for ground vibration in inches per second
0 to 300	1.25	
301 to 5,000	1.00	
5,001 and beyond	0.75	

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Appendix C of 405 KAR 16:120

Scale-distance Equations

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Distance (D) from the blasting site in feet	Scale-distance equation
0 to 300 301 to 5,000 5,001 and beyond	$W = (D/50)^2$ $W = (D/55)^2$ $W = (D/65)^2$

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where: W = the maximum weight of explosives that can be detonated within any eight (8) millisecond period.

D = the distance, in feet, from the blasting site to the nearest protected structure.

Appendix D of 405 KAR 16:120

Blasting-level Equations

Blasting vibration frequency	Blasting-level equation
$\text{Hz} < 4$	$V = 0.19 \text{ Hz}^{0.9904}$
$4 \leq \text{Hz} \leq 11$	$V = 0.75$
$11 < \text{Hz} < 30$	$V = 0.0719 \text{ Hz}^{0.9776}$
$\text{Hz} \geq 30$	$V = 2.00$

where: Hz = the blast vibration frequency in hertz

V = the maximum allowable particle velocity in inches per second