

## **CHAPTER 69-05.2-17**

### **PERFORMANCE STANDARDS - USE OF EXPLOSIVES**

#### **Section**

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#### **69-05.2-17-01. Performance standards - Use of explosives - General requirements.**

1. Operators shall comply with all applicable local and state laws in the use of explosives.
2. Blasts that use five pounds [2.27 kilograms] or less of explosive or blasting agent are subject to all requirements of this chapter except those of section 69-05.2-17-03.
3. All blasting operations must be conducted under the direction of a certified blaster. Each person responsible for blasting operations shall possess a valid certification as required by North Dakota Century Code section 38-14.1-24.
4. Blaster certificates must be carried by blasters or be on file at the mine office during blasting operations.
5. A blaster and at least one other person shall be present at the firing of a blast.
6. Persons responsible for blasting operations shall be familiar with the blasting plan and site-specific performance standards, and give direction and on-the-job training to persons who are not certified and who are assigned to the blasting crew or assist in the use of explosives.
7. Blast design.
  - a. An anticipated blast design must be submitted to the commission if blasting operations will be conducted within:
    - (1) One thousand feet [304.8 meters] of any building used as a dwelling, public building, school, church, or community or institutional building outside the permit area; or
    - (2) Five hundred feet [152.4 meters] of an active or abandoned underground mine.
  - b. The blast design may be presented as part of the permit application or at a time, before the blast, approved by the commission.
  - c. The blast design must contain sketches of the drill patterns, delay periods, and decking and shall indicate the type and amount of explosives to be used, critical dimensions, and the location and general description of the structures to be protected as well as a discussion of the design factors to be used, which protect the public and meet the applicable airblast, flyrock, and ground vibration standards in section 69-05.2-17-05.
  - d. The blast design must be prepared and signed by a certified blaster.
  - e. The commission may require changes to the design submitted.

**History:** Effective August 1, 1980; amended effective April 1, 1985; May 1, 1990; May 1, 1992.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-24

**69-05.2-17-02. Performance standards - Use of explosives - Preblasting survey.**

1. Each operator shall notify in writing, at least thirty days before blasting, all residents and owners of manmade dwellings or structures located within one mile [1.61 kilometers] of the permit area how to request a preblasting survey.
2. On request to the commission by a resident or owner of a dwelling or structure located within one mile [1.61 kilometers] of any part of the permit area, the operator shall promptly conduct a preblasting survey of the dwelling or structure and promptly submit a report of the survey to the commission and requester. Any preblasting survey requested more than ten days before blasting must be completed before blasting is initiated. Additions or renovations to a surveyed structure must be surveyed upon request to the commission.
3. The survey must determine the condition of the dwelling or structure and document any preblasting damage and other physical factors that could reasonably be affected by the blasting. Assessments of structures such as pipes, cables, transmission lines, and wells and other water systems must be limited to surface condition and other readily available data. Special attention must be given to the preblasting condition of wells and other water systems used for human, animal, or agricultural purposes and to the quantity and quality of the water.
4. The written survey report must be prepared and signed by the person who conducted it. The report may recommend special conditions or proposed adjustments to the blasting procedure which should be incorporated into the blasting plan. The requester may notify the permittee and commission in writing of specific areas of disagreement with the survey results.

**History:** Effective August 1, 1980; amended effective May 1, 1990; October 1, 1994.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-24

**69-05.2-17-03. Performance standards - Use of explosives - Public notice of blasting schedule.**

1. Blasting schedule publication. Each operator shall:
  - a. Publish the blasting schedule required by subdivision a of subsection 13 of North Dakota Century Code section 38-14.1-24 at least ten days, but not more than twenty days, before beginning a blasting program in which blasts that use more than five pounds [2.27 kilograms] of explosive or blasting agent are detonated.
  - b. Distribute copies of the schedule by mail to local governments, public utilities, and each residence within one-half mile [0.85 kilometers] of the blasting site described in the schedule.
  - c. Republish and redistribute the schedule every twelve months, or more frequently if necessary to meet the requirements of subsection 2.
  - d. Republish and redistribute a revised blasting schedule at least ten days but not more than twenty days before blasting whenever the area covered by the schedule changes or the actual time periods for blasting significantly differ from the prior announcement.
2. Blasting schedule contents:
  - a. A schedule may not be so general as to cover the entire permit area or all working hours, but identify the location of the blasting sites and the periods when blasting will occur.

- b. The blasting schedule must contain:
  - (1) Identification of the specific areas in which blasting will take place.
  - (2) Days and periods when explosives are to be detonated.
  - (3) Methods used to control access to the blasting area.
  - (4) Types of audible warnings and all-clear signals used before and after blasting.
  - (5) A description of unavoidable hazardous situations referred to in section 69-05.2-17-05 approved by the commission for blasting at times other than those in the schedule.
- 3. Revisions to blasting notices must be submitted to the commission.
- 4. The commission may limit the area covered, timing, and sequence of blasting as listed in the schedule if the limitations are necessary and reasonable to protect public health and safety or welfare.

**History:** Effective August 1, 1980; amended effective May 1, 1990.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-24

**69-05.2-17-04. Performance standards - Use of explosives - Public notice of changes to blasting schedules.**

Repealed effective May 1, 1990.

**69-05.2-17-05. Performance standards - Use of explosives - Surface blasting procedures.**

- 1. All blasting must be conducted between sunrise and sunset, unless nighttime blasting is approved by the commission upon a showing by the operator that the public will be protected from adverse noise and other impacts. The commission may specify more restrictive time periods for blasting.
- 2. Blasting must be conducted at the scheduled times, except in those unavoidable hazardous situations, previously approved by the commission in the permit application, where operator or public safety require unscheduled detonation.
- 3. Warning and all-clear signals of different character that are audible within a range of one-half mile [0.85 kilometers] from the point of the blast must be given. Each person within the permit area and each person who resides or regularly works within one-half mile [0.85 kilometers] of the permit area must be notified of the meaning of the signals through appropriate instructions. Recipients must be periodically and clearly informed of the meaning of the signals. Signs must be maintained according to subsection 6 of section 69-05.2-13-04.
- 4. Access to an area possibly subject to flyrock from blasting must be regulated to protect the public and livestock. Access to the area must be controlled to prevent the presence of livestock or unauthorized personnel during blasting and until an authorized representative of the operator has reasonably determined that:
  - a. There are no unusual circumstances, such as imminent slides or undetonated charges; and
  - b. Access to and travel in or through the area can be safely resumed.

5. Airblast must be controlled so that it does not exceed the values in this subsection at any dwelling, public building, school, church, or commercial or institutional structure, unless the structure is owned by the operator or permittee and is not leased to any other person. If a building owned by the operator or permittee is leased to another person, the lessee may sign a waiver relieving the operator from meeting the airblast limitations of this subsection.

Lower frequency limit of measuring system, 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.

- a. In all cases except the C-weighted, slow response, the measuring systems used must have a flat frequency response of at least two hundred Hz at the upper end. The C-weighted case must be measured with a type 1 sound level meter that meets the standard American national standards institute (ANSI) S1.4-1971 specifications.
  - b. The person who conducts blasting may satisfy the provisions of this subsection by meeting any of the four specifications in the chart in this subsection.
  - c. The operator shall conduct periodic monitoring to ensure compliance with the airblast standards. The commission may require an airblast measurement of any or all blasts, and may specify the location of the measurements.
  - d. If necessary to prevent damage, the commission will specify lower maximum allowable airblast levels than those of this subsection for use in the vicinity of a specific blasting operation.
6. Flyrock, including blasted material traveling along the ground, may not be cast from the blasting vicinity more than half the distance to the nearest dwelling or other occupied structure and in no case beyond the line of property owned or leased by the permittee, or beyond the area of regulated access required under subsection 4.
7. Ground vibrations.
  - a. In all blasting operations, except as authorized in subdivision e, the maximum ground vibration may not exceed the values approved in the blasting plan. The maximum ground vibration for structures listed in subdivision b must be established according to the maximum peak particle velocity limits of subdivision b, the scaled-distance equation of subdivision c, or by the commission under subdivision d. All structures in the vicinity of the blasting area not listed in subdivision b must be protected from damage by a maximum allowable limit on the ground vibration, submitted by the operator in the blasting plan and approved by the commission.
  - b. The maximum ground vibration may not exceed the following limits at the location of any dwelling, public building, school, church, or community or institutional building outside the permit area.

Distance (D), from the blasting site, in feet	Maximum allowable peak particle velocity ( $V_{max}$ ) for ground vibration, in inches/second	Scaled-distance factor to be applied without seismic monitoring ( $D_s$ )
0 to 300	1.25	50
301 to 5000	1.00	55
5001 and beyond	0.75	65

A seismographic record must be provided for each blast.

c. Scaled-distance equation.

- (1) An operator may use the scaled-distance equation,  $W=(D/D_s)^2$ , to determine the allowable charge weight of explosives to be detonated in any eight-millisecond period without seismic monitoring, where  $W$  = the maximum weight of explosives in pounds;  $D$  = the distance, in feet, from the blast site to the nearest protected structure; and  $D_s$  = the scaled-distance factor, which may initially be approved by the commission using the values for scaled-distance factor listed in subdivision b.
- (2) The development of a modified scaled-distance factor may be authorized by the commission on receipt of a written request by the operator, supported by seismographic records of blasting at the minesite. The factor must ensure that the particle velocity will not exceed the prescribed maximum allowable peak particle velocity of subdivision b at a ninety-five percent confidence level.

d. The maximum allowable ground vibration will be reduced by the commission beyond the limits otherwise provided by this section if determined necessary to provide damage protection.

e. The maximum airblast and ground-vibration standards of this subsection do not apply at structures owned by the permittee and:

- (1) Not leased to another person.
- (2) Leased to another person if a written waiver by the lessee is submitted to the commission before blasting.

**History:** Effective August 1, 1980; amended effective June 1, 1983; May 1, 1990; May 1, 1992.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-24

**69-05.2-17-06. Performance standards - Use of explosives - Seismographic measurements.**

The commission may require an operator to conduct seismic monitoring of any or all blasts and may specify the location at which the measurements are taken and the degree of detail necessary in the measurement.

**History:** Effective August 1, 1980; amended effective June 1, 1983; May 1, 1990.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-24

#### **69-05.2-17-07. Performance standards - Use of explosives - Records of blasting operations.**

A log of each blast, including any seismograph reports, must be retained at the minesite under subsection 13 of North Dakota Century Code section 38-14.1-24. The log must contain:

1. Name of the operator.
2. Location, date, and time of blast.
3. Name, signature, and certificate number of blaster-in-charge.
4. Direction and distance, in feet [meters], to nearest dwelling, school, church, commercial or institutional building, or other protected structure:
  - a. Not located in the permit area; or
  - b. Not owned or leased by the person who conducts the surface mining activities.
5. Weather conditions, including temperature, wind direction, and approximate velocity.
6. Type of material blasted.
7. Diameter and depth of holes.
8. Types of explosives used.
9. Total weight of explosives used per hole.
10. Maximum weight of explosives detonated within any eight-millisecond period.
11. Maximum number of holes detonated within any eight-millisecond period.
12. Initiation system.
13. Type and length of stemming.
14. Mats or other protections used.
15. Sketch of the blast pattern, including number of holes, burden, spacing, decks, and delay pattern.
16. Seismograph and airblast records, where required, including:
  - a. The calibration signal of the gain setting.
  - b. Seismographic reading, including exact location of seismograph, its distance from the blast, the date and time of the blast, and the vibration levels recorded.
  - c. Name of the person taking the seismograph reading.
  - d. Airblast levels recorded.
  - e. Name of the person and firm analyzing the seismograph report.
17. Reasons and conditions for each unscheduled blast.

**History:** Effective August 1, 1980; amended effective May 1, 1990; March 1, 2004.

**General Authority:** NDCC 38-14.1-03

**Law Implemented:** NDCC 38-14.1-24