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ADMINISTRATIVE LAW DIVISION

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NOTICE OF AN EMERGENCY AMENDMENT TO AN EMERGENCY RULE

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DATE EMERGENCY RULE WAS ORIGINALLY FILED: May 13, 1988
IS THIS THE FIRST EMERGENCY AMENDMENT TO THE ORIGINALLY FILED EMERGENCY RULE:
<u>No</u>
IS THIS THE SECOND EMERGENCY AMENDMENT TO THE ORIGINALLY FILED EMERGENCY RULE:
Yes
DATE OF FIRST EMERGENCY AMENDMENT:June 7, 1988
· •
SERIES NUMBER OF RULE: 10 TITLE OF RULE Rules & Regulations
Governing Roof Control
THE ATTACHED IS AN EMERGENCY AMENDMENT TO AN EXISTING EMERGENCY RULE. THIS
EMERGENCY AMENDMENT BECOMES EFFECTIVE UPON FILING.
Roser T. Hall Administrator

SECRETANY OF STATE

WEST VIRGINIA LEGISLATIVE RULE DEPARTMENT OF ENERGY TITLE 38 SERIES 10

TITLE: Rules and Regulations Governing Roof Control

Type of Rule: Legislative

Section 38-10-1 General.

- 1.1 Scope. This series sets forth requirements for controlling roof, face, and ribs, including coal or rock bursts, in underground coal mines. Roof control systems installed prior to the effective date of this series are not affected so long as the support system continues to effectively control the roof, face, and ribs.
- 1.2 Applicability. These rules and regulations apply to all underground mining operations throughout the State of West Virginia as they relate to control of mine roof, face, and ribs.
- 1.3 Authority. West Virginia Code 22-1-15 and 22A-1A-2
 - 1.4 Filing Date. May 6, 1988
 - 1.5 Effective Date.
- 1.6 Repeal of Former Rule This legislative rule repeals West Virginia rules and regulations governing roof control, Title 38, Series 10, filed with the Office of the Secretary of State on December 16, 1986, passed by the West Virginia Legislature March 12, 1988, and became effective May 1, 1988.
- 38-10-2 <u>Definitions</u>: As used in these regulations, unless used in a context that clearly requires a different meaning, the term:
- 2.1 <u>Pillar recovery</u> means any reduction in pillar size during retreat mining.

38-10-3 Protection from falls of roof, face, and ribs.

- (a) The roof, face, and ribs of areas where persons work or travel shall be supported or otherwise controlled to protect persons from hazards related to falls of the roof, face, or ribs and coal or rock bursts.
- (b) No person shall work or travel under unsupported roof unless in accordance with this series.

38-10-4 Mining methods.

- (a) The method of mining shall not expose any person to hazards caused by excessive widths of rooms, crosscuts and entries, or faulty pillar recovery methods. Pillar dimensions shall be compatible with effective control of the roof, face, and ribs and coal or rck bursts.
- (b) A sightline or other method of directional control shall be used to maintain the projected direction of mining in entries, rooms, crosscuts, and pillar splits.
- (c) A sidecut shall be started only from an area that is supported in accordance with the roof control plan.
- (d) A working face shall not be mined through into an unsupported area of active workings, except when the unsupported area is inaccessible.
 - (e) Additional roof support shall be installed where:
- (1) The width of the opening specified in the roof control plan is exceeded by more than twelve (12) inches; and
- (2) The distance over which the excessive width exists is more than five (5) feet.
- (f) The diameter of finishing bits shall be within a tolerance of plus or minus 0.030 inch of the manufacturer's recommended hole diameter for the anchor used.
- (g) When separate finishing bits are used, they shall be distinguishable from other bits.

(h) Tensioned roof holts:

(1) Roof bolts that provide support by creating a beam of laminated strata shall be at least thirty (30) inches long.

Roof bolts that provide support by suspending the roof from overlying stronger strata shall be long enough to anchor at least twelve (12) inches into the stronger strata.

- (2) Test holes, spaced at intervals specified in the roof control plan, shall be drilled to a depth of at least twelve (12) inches above the anchorage horizon of mechanically anchored tensioned bolts being used. When a test hole indicates that bolts would not anchor in competent strata, corrective action shall be taken.
- (3) The installed torque or tension ranges for roof bolts as specified in the roof control plan shall maintain the integrity of the support system and shall not exceed the yield point of the roof bolt nor anchorage capacity of the strata.
- (4) In each roof bolting cycle, the actual torque or tension of the first tensioned roof bolt installed with each drill head shall be measured immediately after it is installed. Thereafter, for each drill head used, at least one roof bolt out of every four installed shall be measured for actual torque or tension. If the torque or tension of any of the roof bolts measured is not within the range specified in the roof control plan, corrective action shall be taken.
- (5) In working places from which coal is produced during any portion of a twenty-four (24) hour period, the actual torque or tension on at least one out of every ten previously installed mechanically anchored tensioned roof bolts shall be measured from the outby corner of the last open crosscut to the face in each advancing section. Corrective action shall be taken if the majority of the bolts measured:
- (A) Do not maintain at least seventy (70) percent of the minimum torque or tension specified in the roof control plan, fifty (50) percent if the roof bolt plates bear against wood; or
- (B) Have exceeded the maximum specified torque or tension by fifty (50) percent.
- (6) The mine operator or a person designated by the operator shall certify by signature and date that measurements required by Subsection (h)(5) of this section have been made. This certification shall be maintained for at least one year and shall be made available to an authorized representative of the Director of the Division of Health, Safety and Training and representatives of the miners.

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(7) Tensioned roof bolts installed in the roof support pattern shall not be used to anchor trailing cables or used for any other purpose that could affect the tension of the bolt. Hanging trailing cables, line brattice, telephone lines, or other similar devices which do not place sudden loads on the bolts are permitted.

38-10-5 Roof Bolting.

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- (a) For roof bolts and accessories addressed in ASTM F432-83, "Standard Specification for Roof and Rock Bolts and Accessories", the mine operator shall:
- (1) Obtain a manufacturer's certification that the material was manufactured and tested in accordance with the specifications of ASTM F432-83; and
- (2) Make this certification available to an authorized representative of the Director of the Division of Health, Safety and Training.
- (b) Roof bolts and accessories not addressed in ASTM F432-83 may be used provided they:
- (1) Have been successful in supporting the roof in an area of a coal mine with similar strata, opening dimensions, and roof stresses; or
- (2) Have been tested and shown to be effective for supporting the roof in an area of the affected mine which has similar strata, opening dimensions and roof stresses as the area where the roof bolts are to be used. During the test process, access to the test area shall be limited to persons necessary to conduct the test.
- (c) (1) A bearing plate shall be firmly installed with each roof bolt.
- (2) Bearing plates used directly against the mine roof shall be at least six (6) inches square or the equivalent, except that where the mine roof is firm and not susceptible to sloughing, bearing plates five (5) inches square or the equivalent may be used.
- (3) Bearing plates used with wood or metal materials shall be at least four (4) inches square or the equivalent.

- (4) Wooden materials that are used between a bearing plate and the mine roof in areas which will exist for three (3) years or more shall be treated to minimize deterioration.
- (d) (1) When washers are used with roof bolts, the washers shall conform to the shape of the roof bolt head and bearing plate.
- (2) Angle compensative devices shall be used to compensate for the angle when tensioned roof bolts are installed at angles greater than five (5) degrees from the perpendicular to the bearing plate.
- (e) Non-tensioned grouted roof bolts. The first non-tensioned grouted roof bolt installed during each roof bolting cycle shall be tested during or immediately after the first row of bolts has been installed, If the bolt tested does not withstand at least one hundred fifty (150) foot-pounds of torque without rotating in the hole, corrective action shall be taken.
- 38-10-6 <u>Installation of roof support using mining machines with integral roof bolters</u>. When roof bolts are installed by a continuous mining machine with integral roof bolting equipment:
- (a) The distance between roof bolts shall not exceed ten (10) feet crosswise.
- (b) Roof bolts to be installed nine (9) feet or more apart shall be installed with a wooden crossbar at least three (3) inches thick and eight (8) inches wide, or material which provides equivalent support.
- (c) Roof bolts to be installed more than eight (8) feet but less than nine (9) feet apart shall be installed with a wooden plank at least two (2) inches thick and eight (8) inches wide, or material which provides equivalent support.

38-10-7 _Conventional roof support.

- (a) When conventional roof support materials are used as the only means of support:
- (1) The width of any opening shall not exceed twenty (20) feet;
- (2) The spacing of roadway roof support shall not exceed five (5) feet;

- (3) (A) Supports shall be installed to within five (5) feet of the uncut face;
- (B) When supports nearest the face must be removed to facilitate the operation of face equipment, equivalent temporary support shall be installed prior to removing the supports;
- (4) Straight roadways shall not exceed sixteen (16) feet wide where full overhead support is used and fourteen (14) feet wide where only posts are used;
- (5) Curved roadways shall not exceed sixteen (16) feet wide; and
- (6) The roof at the entrance of all openings along travelways which are no longer needed for storing supplies or for travel of equipment shall be supported by extending the line of support across the opening.
- (b) Conventional roof support materials shall meet the following specifications:
- (1) The minimum diameter of cross-sectional area of wooden posts shall be as follows:

Post length (in inches)	Diameter of round posts (in inches)	Cross-sectional area of split posts(in square inches)
60 or less	4	13
Over 60 to 84	5	20
Over 84 to 108	6	28
Over 106 to 132	/	39 -
Over 132 to 156	8	50
Over 156 to 180	9	64
Over 180 to 204	10	7 9
Over 204 to 228	11	9 5
Over 228	1 2	113

(2) Wooden materials used for support shall have the following dimensions:

- (A) Cap blocks and footings shall have flat sides and be at least two (2) inches thick, four (4) inches wide and twelve (12) inches long.
- (B) Crossbars shall have a minimum cross-sectional area of twenty-four (24) square inches and be at least three (3) inches thick.
- (C) Planks shall be at least six (6) inches wide and one (1) inch thick.
- (3) Cribbing materials shall have at least two (2) parallel flat sides.
- (c) A cluster of two or more posts that provide equivalent strength may be used to meet the requirements of paragraph (b)(1) of this section, except that no post shall have a diameter less than four (4) inches or have a cross-sectional area less than thirteen (13) square inches.
- (d) Materials other than wood used for support shall have support strength at least equivalent to wooden material meeting the applicable provisions of this section.
- (e) Posts and jacks shall be tightly installed on solid footings.
- (f) When posts are installed under roof susceptible to sloughing a cap block, plank, crossbar, or materials that are equally effective shall be placed between the post and the roof.
- (g) Blocks used for lagging between the roof and crossbars shall be spaced to distribute the load.
- (h) Jacks used for roof support shall be used with at least thirty-six (36) square inches of roof bearing surface.
- 38-10-8 Pillar recovery. Pillar recovery shall be conducted in the following manner, unless otherwise specified in the roof control plan:
- (a) Full and partial pillar recovery shall not be conducted on the same pillar line, except where physical conditions such as unstable floor or roof, falls of roof, oil and gas well barriers or surface subsidence require that pillars be left in place.
 - (b) Before mining is started in a pillar split or lift:

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- (1) At least two rows of breaker posts or equivalent support shall be installed:
- (A) As close to the initial intended breakline as practicable; and
- (B) Across each opening leading into an area where full or partial pillar extraction has been completed.
- (2) A row of roadside-radius (turn) posts or equivalent support shall be installed leading into the split or lift.
 - (c) Before mining is started on a final stump:
- (1) At least two (2) rows of posts or equivalent support shall be installed on not more than four (4)- foot centers on each side of the roadway; and
- (2) Only one (1) open roadway, which shall not exceed sixteen (16) feet wide, shall lead from solid pillars to the final stump of a pillar. Where posts are used as the sole means of roof support, the width of the roadway shall not exceed fourteen (14) feet.
- (d) During open-end pillar extraction, at least two (2) rows of breaker posts or equivalent support shall be installed on not more than four (4)- foot centers. These supports shall be installed between the lift to be started and the area where pillars have been extracted. These supports shall be maintained to within seven (7) feet of the face and the width of the roadway shall not exceed sixteen (16) feet. Where posts are used as the sole means of roof support, the width of the roadway shall not exceed fourteen (14) feet.
- 38-10-9 <u>Warning devices</u>. Except during the installation of roof supports, the end of permanent roof support shall be posted with a readily visible warning, or a physical barrier shall be installed to impede travel beyond permanent support.
- 38-10-10 Manual installation of temporary support.

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- (a) When manually installing temporary support, only persons engaged in installing the support shall proceed beyond permanent support.
- (b) When manually installing temporary supports, the first temporary support shall be set no more than five (5) feet from a

permanent roof support and the rib. All temporary supports shall be set so that the person installing the supports remains between the temporary support being set and two other supports which shall be no more than five (5) feet from the support being installed. Each temporary support shall be completely installed prior to installing the next temporary support.

- (c) All temporary supports shall be placed on no more than five (5)- foot centers.
- (d) Once temporary supports have been installed, work or travel beyond permanent roof support shall be done between temporary supports and the nearest permanent support or between other temporary supports.

38-10-11 Roof testing and scaling.

- (a) A visual examination of the roof, face, and ribs shall be made immediately before any work is started in an area and thereafter as conditions warrant.
- (b) Where the mining height permits and the visual examination does not disclose a hazardous condition, sound and vibration roof tests, or other equivalent tests, shall be made where supports are to be installed. When sound and vibration tests are made, they shall be conducted:
- (1) After the ATRS system is set against the roof and before other support is installed; or
- (2) Prior to manually installing a roof support. This test shall begin under supported roof and progress no further than the location where the next support is to be installed.
- (c) When a hazardous roof, face, or rib condition is detected, the condition shall be corrected before there is any other work or travel in the affected area. If the affected area is left unattended, each entrance to the area shall be posted with a readily visible warning, or a physical barrier shall be installed to impede travel into the area.
- (d) A bar for taking down loose material shall be available in the working place or on all face equipment except haulage equipment. Bars provided for taking down loose material shall be of a length and design that will allow the removal of loose material from a position that will not expose the person performing this work to injury from falling material.

38-10-12 Rehabilitation of areas with unsupported roof.

- (a) Before rehabilitating each area where a roof fall has occurred or the roof has been removed by mining machines or by blasting:
- (1) The mine operator shall establish the clean up and support procedures that will be followed;
- (2) All persons assigned to perform rehabilitation work shall be instructed in the clean-up and support procedures; and
- (3) Ineffective, damaged, or missing roof support at the edge of the area to be rehabilitated shall be replaced or other equivalent support installed.
- (b) All persons who perform rehabilitation work shall be experienced in this work or they shall be supervised by a person experienced in rehabilitation work who is designated by the mine operator.
- (c) Where work is not being performed to rehabilitate an area in active workings where a roof fall has occurred or the roof has been removed by mining machines or by blasting, each entrance to the area shall be supported by at least one row of posts on not more than five (5)- foot centers, or equally effective support.

38-10-13 Roof support removal.

- (a) (1) All persons who perform the work of removing permanent roof supports shall be experienced in this work, or they shall be supervised by a person experienced in removing roof supports who is designated by the mine operator.
- (2) Only persons with at least one (1) year of underground mining experience shall perform permanent roof support removal work.
- (b) A person designated by the mine operator shall, prior to the removal of permanent roof supports, examine the roof conditions in the area where the supports are to be removed.
- (c) Prior to the removal of crossbars, beams, or other similar supports, a row of temporary supports on not more than five (5)- foot centers or equivalent support shall be installed

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across the opening within four (4) feet of the supports being removed. Additional supports shall be installed where necessary to assure safe removal.

- (d) (1) Prior to the removal of roof bolts, temporary support shall be installed as close as practicable to each bolt being removed. After the removal of roof bolts, persons removing the temporary supports shall perform this work from a location under permanent supports which have not been disturbed.
- (2) Roof bolts shall not be removed where full pillar extraction is conducted.
- (e) Each entrance to an area where supports shave been removed shall be posted with a readily visible warning or a physical barrier shall be installed to impede travel into the area.
- (f) Except when supports are removed by persons who are in a remote location under supported roof, no permanent support shall be removed where:
- (1) Roof bolt torque or tension measurements or the condition of conventional support indicate excessive loading;
 - (2) Roof fractures are present; or
- (3) There is any other indication that the roof is structurally weak.
- (g) Except for paragraph (b) of this section, the provisions of this section do not apply to removal of conventional supports for starting crosscuts and pillar splits or lifts.
- 38-10-14 Supplemental support materials, equipment, and tools.
- (a) A supply of supplementary roof support materials and the tools and equipment necessary to install the materials shall be available at a readily accessible location on each working section or within four (4) crosscuts of each working section.
- (b) The quantity of support materials and tools and equipment maintained available in accordance with this section shall be sufficient to support the roof if adverse roof conditions are encountered, or in the event of an accident involving a fall.

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- 38-10-15 Longwall mining systems. For each longwall mining section, the roof control plan shall specify:
- (a) The methods that will be used to maintain a safe travelway out of the section through the tailgate side of the longwall; and
- (b) The procedures that will be followed if a ground failure prevents travel out of the section through the tailgate side of the longwall.

38-10-16 Roof control plan.

- (a) (1) Each mine operator shall develop and follow a roof control plan, approved by the Director of the Division of Health, Safety and Training, that is suitable to the prevailing geological conditions, and the mining system to be used at the mine. Additional measures shall be taken to protect persons if unusual hazards are encountered.
- (2) The proposed roof control plan and any revisions to the plan shall be submitted, in writing, to the Director of the Division of Health, Safety and Training. When revisions to a roof control plan are proposed, only the revised pages need to be submitted unless otherwise specified by the Director of the Division of Health, Safety and Training.
- (b) (1) The mine operator will be notified in writing of the approval or denial of approval of a proposed roof control plan or proposed revision.
- (2) When approval of a proposed plan or revision is denied, the deficiencies of the plan or revision and recommended changes will be specified and the mine operator will be afforded an opportunity to discuss the deficiencies and changes with the roof control inspectors or Director of the Division of Health, Safety and Training.
- (3) Before new support materials, devices or systems other than roof bolts and accessories, are used as the only means of roof support, the Director of the Division of Health, Safety and Training may require that their effectiveness be demonstrated by experimental installations.
- (c) No proposed roof control plan or revision to a roof control plan shall be implemented before it is approved.

- (d) Before implementing an approved revision to a roof control plan, all persons who are affected by the revision shall be instructed in its provisions.
- (e) The approved roof control plan and any revisions shall be available to the miners and representative of miners at the mine.
- (f) Existing roof control plans that conflict with this series shall be revised to meet the requirements of this series by September 28, 1988. This paragraph (f) shall expire March 28, 1989.

38-10-17 Roof control plan information.

- (a) The following information shall be included in each roof control plan:
 - (1) The name and address of the company.
- (2) The name, address, mine identification number, and location of the mine.
- (3) The name and title of the company official responsible for the plan.
- (4) A typical columnar section of the mine strata which shall:
- (A) Show the name and the thickness of the coalbed to be mined and any persistent partings;
- (B) Identify the type and show the thickness of each stratum up to and including the main roof above the coalbed and for distance of at least ten (10) feet below the coalbed; and
- (C) Indicate the maximum cover over the area to be mined.
- (5) A description and drawings of the sequence of installation and spacing of supports for each method of mining used.
- (6) When an ATRS system is used, the maximum distance that an ATRS system is to be set beyond the last row of permanent support.

- (7) When tunnel liners or arches are to be used for roof support, specifications and installation procedures for the liners or arches.
- (8) Drawings indicating the planned width of openings, size of pillars, method of pillar recovery, and the sequence of mining pillars.
- (9) A list of all support materials required to be used in the roof, face, and rib control system, including, if roof bolts are to be installed:
- (A) The length, diameter, grade and type of anchorage unit to be used;
 - (B) The drill hole size to be used; and
- (C) The installed torque or tension range for tensioned roof bolts.
- (10) When mechanically anchored tensioned roof bolts are used, the intervals at which test holes will be drilled.
 - (11) A description of the method of protecting persons:
 - (A) From falling material at drift openings; and
- (B) When mining approaches within one hundred fifty (150) feet of an outcrop.
- (b) Each drawing submitted with a roof control plan shall contain a legend explaining all symbols used and shall specify the scale of the drawing which shall not be less than five (5) feet to the inch or more than twenty (20) feet to the inch.
- (c) All roof control plan information, including drawings, shall be submitted on $8\ 1/2$ by 11 inch paper, or paper folded to this size.
- 38-10-18 Roof control plan-approval criteria.
- (a) This section sets forth the criteria that shall be considered on a mine-by-mine basis in the formulation and approval of roof control plans and revisions. Additional measures may be required in plans by the Director of the Division of Health, Safety and Training or authorized representative. Roof control plans that do not conform to the applicable criteria in this section may be approved by the Director of the Division

of Health, Safety and Training or authorized representative, provided that effective control of the roof, face, and ribs can be maintained.

(b) Roof Bolting.

- (1) Roof bolts should be installed on centers not exceeding five (5) feet lengthwise and crosswise, except as specified in Section 6.
- (2) When tensioned roof bolts are used as a means of roof support, the torque or tension range should be capable of supporting roof bolt loads of at least fifty (50) percent of either the yield point of the bolt or anchorage capacity of the strata, whichever is less.
- (3) Any opening that is more than twenty (20) feet wide should be supported by a combination of roof bolts and conventional supports.
 - (4) In any opening more than twenty (20) feet wide:
- (A) Posts should be installed to limit each roadway to sixteen (16) feet wide where straight and eighteen (18) feet wide where curved; and
- (B) A row of posts should be set for each five (5) feet of space between the roadway posts and the ribs.
- (5) Openings should not be more than thirty (30) feet wide.
- (c) Installation of roof support using mining machines with integral roof bolters.
- (1) Before an intersection or pillar split is started, roof bolts should be installed on at least five (5)- foot centers where the work is performed.
- (2) Where the roof is supported by only two (2) roof bolts crosswise, openings should not be more than sixteen (16) feet wide.

(d) Pillar Recovery.

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- (1) During development, any dimension of a pillar should be at least twenty (20) feet.

- (2) Pillar splits and lifts should not be more than twenty (20) feet wide.
- (3) Breaker posts should be installed on not more than four (4)- foot centers.
- (4) Roadside-radius (turn) posts, or equivalent support, should be installed on not more than four (4)- foot centers leading into each pillar split or lift.
- (5) Before full pillar-recovery is started in areas where roof bolts are used as the only means of roof support and openings are more than sixteen (16) feet wide, at least one (1) row of posts should be installed to limit the roadway width to sixteen (16) feet. These posts should be:
- (A) Extended from the entrance to the split through the intersection outby the pillar in which the split or lift is being made; and
- (B) Spaced on not more than five (5)- foot centers.
- (e) Unsupported openings at intersections. Openings that create an intersection should be permanently supported or at least one (1) row of temporary supports should be installed on not more than five (5)-foot centers across the opening before any other work or travel in the intersection.
 - (f) Longwall mining systems.

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- (1) Systematic supplemental support should be installed throughout:
- (A) The tailgate entry of the first longwall panel prior to any mining; and
- (B) In the proposed tailgate entry of each subsequent panel in advance of the frontal abutment stresses of the panel being mined.
- (2) When a ground failure prevents travel out of the section through the tailgate side of the longwall section, the roof control plan should address:
- (A) Notification of miners that the travelway is blocked;

- (B) Re-instruction of miners regarding escapeways and escape procedures in the event of an emergency;
- (C) Re-instruction of miners on the availability and use of self-contained self-rescue devices or self rescuers;
- (D) Monitoring and evaluation of the air entering the longwall section;
- (E) Location and effectiveness of the two-way communication systems; and
- (F) A means of transportation from the section to the main line.
- (3) The plan provisions addressed by paragraph (g)(2) (f)(2) of this section should remain in effect until a travelway is reestablished on the tailgate side of a longwall section.
- (4) Section 6-threugh-13 18 set out the criteria by which the Director of the Division of Health, Safety and Training will be guided in approving roof control plans on a mine-by-mine basis. Additional measures may be required. Except where otherwise mandated by Court ruling, roof control plans which do not conform to these criteria may be approved providing the operator can satisfy the Director of the Division of Health, Safety and Training that the resultant roof conditions will provide no less than the same measure of protection to the miners.

38-10-19 Evaluation and revision of roof control plan.

- (a) Revisions of the roof control plan shall be proposed by the operator:
- (1) When conditions indicate that the plan is not suitable for controlling the roof, face, ribs, or coal or rock bursts; or
- (2) When accident and injury experience at the mine indicate the plan is inadequate. The accident and injury experience at each mine shall be reviewed at least every six (6) months.
- (b) Each unplanned roof fall and rib fall and coal or rock burst that occurs in the active workings shall be plotted on a mine map if it:

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- (1) Is above the anchorage zone where roof bolts are used;
 - (2) Impairs ventilation;
 - (3) Impedes passage of persons;
- $\mbox{\ensuremath{(4)}}$ Causes miners to be withdrawn from the area affected; or
- (5) Disrupts regular mining activities for more than one (1) hour.
- (c) The mine map of which roof falls are plotted shall be available at the mine site for inspection by authorized representatives of the Director of the Division of Health, Safety and Training and representatives of miners at the mine.
- (d) The roof control plan for each mine shall be reviewed every six (6) months by an authorized representative of the Director of the Division of Health, Safety and Training. This review shall take into consideration any falls of the roof, face, and ribs and the adequacy of the support systems used at the time.