Department of Environmental Protection Bureau of Deep Mine Safety

DOCUMENT NUMBER: 580-2219-003

TITLE: Guidelines for Approving Roof Bolts as Primary Roof Support

EFFECTIVE DATE: April 1, 2002

AUTHORITY: 52 P.S. Sections 701-253(b) and 701-702

POLICY: The Bureau will provide an alternate method as outlined in this technical guidance to evaluate the effectiveness of a roof bolting system

PURPOSE: The purpose of this guidance is to eliminate the risk of an accident while removing conventional timber from a roof bolt test area.

APPLICABILITY: This guidance is applicable to all Deep Mine Safety staff and all underground coal mine operators and personnel.

DISCLAIMER: The policies and procedures herein are not an adjudication or a regulation. There is no intent on the part of the Department to give these rules that weight or deference. This document establishes the framework, within which DEP will exercise its administrative discretion in the future. DEP reserves the discretion to deviate from this policy statement if circumstances warrant.

PAGE LENGTH: 2 pages

LOCATION: Volume 9, Tab 18

PROCEDURES:

- 1) The mine operator will review the proposed plan to install a roof bolt system with the district mine inspector
- 2) The mine operator and the district mine inspector will review any roof bolting systems utilized at nearby areas in the same coal seam or similar geologic conditions.
- 3) The mine operator and the district mine inspector will arrange for a test of the roof bolt system to include the following:
 - a) An evaluation of the competency of the immediate roof strata. This evaluation should include a review of the roof geology, scoping a test hole; and observing the roof drilling characteristics. This will be considered to determine the suitable anchorage zone and the minimum length of bolt.

- b) A pull test will be conducted utilizing a minimum of six (6) bolts.¹ This test will be conducted utilizing the pull test procedures outlined below:
 - Measure and utilize proper roof bolt hole drill bit.
 - Drill hole with correct bit to the proper depth.
 - Install appropriate pull collar and plate on the bolt.
 - Install bolt in the hole and check for proper tension.²
 - Measure and record installed torque. 2
 - Attach the pulling apparatus (hydraulic ram) to the bolt collar, set, align, and zero extensometer.
 - Load ram in one-ton increments and record bolt head displacement for each increment.
 - Continue loading and recording data until the minimum yield point of the bolt is reached.
 - Slowly release pressure on the ram until 1 ton of load is reached. Record the final displacement
 - The final displacement should be less than .250 inches. If the displacement of 10 percent of the bolts is greater than .250 inches, additional testing may be required.
- c) After developing at least one crosscut length utilizing the approved conventional timbering plan in conjunction with the proposed roof bolt plan, the test area will be observed by the District Mine Inspector. The load on the conventional supports and the effectiveness of the roof bolts will be observed and noted.
- d) If the roof bolt test and test area is satisfactory, the District Mine Inspector will grant tentative approval and forward the results, along with a copy of the proposed plan, to the Bureau Director requesting a permit.
- e) All employees involved in the installation of roof bolts will be trained in the proper installation procedures and safety precautions. A record will be maintained of this training.

¹ Pull test for fully grouted resin bolts will be conducted on test bolts that have the top 18 inches of the rod grouted; the remainder of the hole will not be grouted.

² Torque need not be checked or recorded for resin bolts.