OTTER CREEK MINE
EXHIBIT 310A: BLASTING PLAN

1.0 Introduction

The blasting plan for the Otter Creek Mine is intended to demonstrate that all blasting activity is in compliance with the Administrative Rules of Montana (ARM 17.24.310, ARM 17.24.621 through 626 and ARM 17.24.1260 through 1263), administered by the Montana Department of Environmental Quality (MDEQ), and includes the information requested in ARM 17.24.310.

2.0 Blasting Methods

Blasting is employed to fragment overburden to prepare it for excavation and to fragment coal to enable loading onto trucks. Ammonium Nitrate and Fuel Oil (ANFO) and emulsion are the primary blasting agents. Priming utilizes detonating cord downline and cast primers; deeper holes may be double primed. Blasts are initiated using a nonelectric (Nonel) lead line, and tied together at the surface using either a detonating cord and delay system or Nonel trunk line delay system. Delays of varying length are used to limit the amount of explosive detonated during any eight millisecond period. Stemming consists of drill cuttings and varies in height depending on blast hole depth and powder factor. The pattern typically is tied in and detonated using either a chevron or a rectangular pattern, but this may vary depending on specific circumstances.

2.1 Overburden Blasting

Overburden blasting may employ conventional or cast blasting methods. In conventional overburden blasting, holes are drilled vertically, and the blast is designed solely to fragment the overburden, while in cast blasting, in addition to overburden fragmentation, the blast is designed to move material from the highwall to the adjacent empty pit by the force of the blast, thereby reducing the volume of material to be moved by dragline or mobile equipment. Overburden blasting may utilize ANFO or emulsion or a combination of the two.

2.1.1 Conventional Blasting

Conventional blasting is used for box cuts, shallow overburden (typically 100 feet or less), pre-stripping and interburden (parting). Conventional overburden blasting typically utilizes the following parameters:

- Drill pattern: 40 x 35 feet;
- Blast hole diameter: 12 ¼ inches;
- Blast hole depth: Up to 80 feet;
- Number of holes per blast: Variable; and
- Powder factor: 0.4 – 0.8 lbs/bcy.

2.1.2 Cast Blasting

Cast blasting is utilized in deeper overburden (over 80 feet) where pit geometry is conducive to moving a significant portion of the overburden volume into the adjacent empty pit using the force of the blast. Blast holes are drilled at an angle generally parallel to the highwall slope of 70 degrees (0.4h:1v). Dragline efficiency is enhanced by reducing the volume of overburden to be moved, and lowering the dragline bench elevation to reduce overburden rehandle. Typical parameters for cast blasting are:

- Drill Pattern: 35 x 30 feet;
- Blast hole Diameter: 12 ¼ inches;
- Blast hole depth: Over 80 feet;
- Number of holes per blast: Variable; and
- Powder factor: 0.8 to 1.2 lbs/bcy.

2.2 Coal Blasting

Coal drilling and blasting may include the full seam thickness or individual benches of lesser thickness where necessary for quality management or where partings must be removed. Coal is more friable than overburden so less force is required for fragmentation. Typical coal blasting parameters are:

- Drill Pattern: 30 x 30 feet;
- Blast hole Diameter: 12 ¼ inches; Check to verify diameter

- Blast hole depth: Up to 70 feet;
- Number of holes per blast: Variable; and
- Powder factor: 0.25 to 0.50 lbs/bcy.

Blasting Agent: Emulsion, ANFO or a blend of both agents

3.0 ARM 17.24.621 General Requirements

Use of explosives is conducted in compliance with all applicable state and federal laws. Access to the blasting area is regulated at all times when loading and blasting operations are in progress and until the shot area is inspected and cleared after detonation. Blasting areas are clearly marked by signs reading "Blasting Area" within 50 feet of any road in the permit area and within 100 feet of any public road right-of-way. Signs are posted at all public entrances to the active mine area. They read:

WARNING! EXPLOSIVES IN USE
Blast Warning Signals:
10 minute blast warning: 15 second wail
1 minute blast warning: 15 second yelp
All clear signal: 15 second wail
Roads near blasting areas are posted with “Blasting Area” signs

Blasting signals are audible within a range of one-half mile from the point of the blast. Each person who resides or works within one-half mile of the permit area is notified of the meaning of the signals.

Transportation of explosives to the mine is by contracted service. On the mine site, the explosives storage facility conforms to Bureau of Alcohol, Tobacco Firearms and Explosives regulations, MSHA regulations, and OSM regulations.

The entire explosives storage facility will be designed and built to the requirements specified in the table of Distances for Storage of Explosives Materials (contained in 27 CFR, Part 555.218).

The general layout of the Powder Magazine area and bulk ANFO storage are illustrated on Exhibit 308C – Mine Facilities.

The designated blasting time schedule for primary blasting of overburden and coal will be from sunrise to sunset daily on a seven day per week basis. The normal blasting time will be between 10:00 a.m. and 4:00 p.m. The occasional use of small amounts of explosives (less than 5.0 lbs) to safely remove plugs from crushers or to safely remove wedges from dragline bucket rigging may occur at night. When emergency conditions exist, blasting may be conducted at times other than those specified in the public blasting notice. Generally, these emergency conditions will be unavoidable hazards such as heavy rain, lightning, tornadoes, and other hazardous atmospheric conditions; or when public or operator safety requires unscheduled detonation. Company personnel are required to be warned orally and audibly prior to blasting. No overburden or coal blasting will be conducted at night unless it is necessary to delay an afternoon blast due to an unavoidable hazardous condition and it cannot be delayed until the next day because of a potential safety hazard that cannot be mitigated. Any blast that must be conducted at night will follow the procedures of ARM 17.24.624(2)(b). An unavoidable blast occurring outside of normal blasting times will be reported to the department within three days with a complete description of the circumstances.

Blasting operations will be conducted by certified personnel with loading crews limited to no more than necessary members. Blasting personnel will have training in the safety, security, and regulatory aspects of their jobs in accordance with ARM 17.24.621(3).

4.0 ARM 17.24.622 Pre-Blasting Survey

At least 30 days before initiation of blasting, Otter Creek Coal, LLC (OCC) will advise all residents or owners of dwellings or other structures within one-half mile of the permit area how to request a pre-blasting survey. Upon request of MDEQ or the owner of a structure(s) that is located within one-half mile of the permit area, a survey of their structure(s) will be conducted as defined in ARM 17.24.622. Any survey requested at least ten days before planned initiation of blasting will be completed before blasting begins. A written report of the survey will be prepared and signed by the person conducting the survey. A copy of the pre-blasting survey

report will be submitted to the person requesting the survey and MDEQ. Existing structures and facilities in and within one-half mile of the permit area are shown on Map 5 – Surface Features.

5.0 ARM 17.24.623 Blasting Schedule

Public notice of a blasting program containing the information in ARM 17.24.623(5) is published once and mailed to each residence within one-half mile of the permit area, local governments and public utilities at least 10 days, but not more than 20 days, prior to initiation of a blasting program. Distribution and advertising of this notice are as follows:

- Advertisement in the Powder River Examiner, Broadus, Montana;
- Mailed notice to the Powder River County Commissioners;
- Mailed notice to Tongue River Power Cooperative; and
- Mailed notice to residences or owners of a man-made dwelling or structure within one-half mile of the blasting sites described in the schedule.

The public notice of the blasting schedule is updated and republished and redistributed at least every 12 months, or sooner in the event of revision of blasting areas or times.

6.0 ARM 17.24.624 Surface Blasting Procedure

All blasting will be conducted between sunrise and sunset at times specified in the blasting schedule, except for emergency situations as previously discussed in Section 3.0, or as otherwise required by the MDEQ based on public requests or other relevant information. The blast warning and all clear signals in use at the Otter Creek Mine, as discussed in Section 3.0 are a part of the standard procedures taught to all mine personnel.

Access to an area possibly subject to flyrock is regulated to protect mine personnel, the public and livestock. This is accomplished by posting guards at entrances to the active blasting area and at prominent observation points when blasting. Guards remain in position until qualified blasting personnel determine that there are no undetonated explosives or other hazards and the all-clear signal is given. In addition, livestock and unauthorized personnel are fenced out of the active mining area. Areas with charged holes are marked with Danger signs.

Air blast is controlled by maintaining adequate stemming in holes and by use of noiseless lead-in line, when practical. Due to the remote location of the mine, distances to inhabited structures and normally favorable atmospheric conditions, airblast is not expected to be a problem at the Otter Creek Mine. OCC will conduct monitoring at least once annually for blasting of overburden, pre-strip and coal to ensure compliance with the airblast standards, and as required by MDEQ.

Unless otherwise approved by the MDEQ, blasting will not be conducted within 1000 feet of any dwelling or public, commercial, community, or institutional building. There are no public, commercial, community or institutional buildings in the vicinity of the mine site. There are no disposal wells, petroleum or gas storage facilities, fluid transmission pipelines, gas or oil collection lines, water lines, sewage lines or active underground mines in the vicinity of Otter Creek Mine. Blasting would not be conducted within 500 feet of these structures.

Blasting will be conducted in a manner to prevent injury to persons and damage to property outside the permit area by controlling access to the mine site and blasting areas, and if necessary, limiting blast size and/or a blast design including measures to prevent offsite damage due to fly rock, air blast or vibration. Blasting will be conducted to prevent change in the course, channel, or availability of ground or surface waters outside the permit area.

Peak particle velocities will not exceed the values given in the ARM 17.24.624(11) at any inhabited structure not owned by OCC, and any leased structure for which a waiver has not been obtained. The maximum weight of explosives per eight-millisecond delay is determined by the scale distance factors and this equation.

$$W = (D/SF)^2$$

where: W = Maximum weight of explosives in pounds per eight milliseconds of delay
D = Distance in feet to the nearest structure (not owned or leased by the permittee)
SF = Scale factor (55 for inhabited structures within 301 to 5000 ft. from the blast; 65 for inhabited structures 5001 feet and beyond from the blast)

7.0 ARM 17.24.625 Seismograph Measurements

Seismograph surveys of each blast are not indicated at Otter Creek Mine since there is limited exposure to inhabited structures and other engineered structures and the standard formula for determining the maximum weight of explosives detonated within 8 millisecond period will be used. However, seismograph surveys will be conducted as necessary and in accordance with ARM 17.24.625 to support any proposed modified equation used to determine the weight of explosives per delay, if necessary to protect dwellings or other structures, or as required by the MDEQ.

8.0 ARM 17.24.626 Records of Blasting Operations

A record of each blast, including any seismograph records, will be retained for at least three years and will be available for inspection by MDEQ and the public on request in accordance with ARM 17.24.626. Blasting records will be complete and accurate at the time of inspection, and will contain the following data:

(a) name of the operator – Otter Creek Coal LLC - conducting the blast;

(b) location, date, and time of the blast;

(c) name, signature, and license number of blaster-in-charge;

(d) direction and distance, in feet, from the blast hole nearest to a dwelling, or commercial, public, community, or institutional building either:

(i) not located in the permit area; or

(ii) not owned nor leased by the person who conducts the mining activities.

(e) weather conditions, including temperature, wind direction, and approximate velocity;

(f) type of material blasted;

(g) number of holes, burden, and spacing;

(h) diameter and depth of holes;

(i) types of explosives used;

(j) total weight of explosives used and total weight of explosives used in each hole;

(k) maximum weight of explosives detonated within any eight-millisecond period;

(l) maximum number of holes detonated within any eight-millisecond period;

(m) initiation system;

(n) type and length of stemming;

(o) mats or other protections used;

(p) type of delay detonator and delay periods used;

(q) sketch of the delay pattern;

(r) number of persons in the blasting crew;

(s) seismographic and airblast records, where required, including:

(i) the calibration signal of the gain setting or certification of annual calibration;

(ii) seismographic reading, including exact location of seismograph and its distance from the blast, airblast reading, dates and times of readings;

(iii) name of the person taking the seismograph reading; and

(iv) name of the person and firm analyzing the seismographic record; and

(t) reasons and conditions for each blast occurring outside the time frames published in the blasting schedule.

9.0 ARM 17.24.1260-1263 Certification of Blasters

Blasting operations are conducted under the direction of an individual who has been certified by the MDEQ pursuant to ARM 17.24. 1260-1261, subject to the requirements of ARM 17.24.1262-1263, and who is familiar with the blasting plan and site-specific performance standards at Otter Creek Mine. Responsibility for blasting operations may not be delegated to an individual who is not a certified blaster, and a certified blaster and at least one other person must be present during the detonation of each blast. Persons who are not certified blasters must receive on-the-job training from a certified blaster before assisting in the storage, transportation and use of explosives.