

OVERLAND PASS PIPELINE PROJECT

BLASTING PLAN

DRAFT

DRAFT

Prepared by:

Natural Resource Group, Inc.

March 2006

**OVERLAND PASS PIPELINE PROJECT
BLASTING PLAN
TABLE OF CONTENTS**

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION	1
2.0 OBJECTIVE	1
3.0 GENERAL REQUIREMENTS	1
4.0 PRE-BLASTING REQUIREMENTS	1
5.0 SITE-SPECIFIC BLASTING PLANS	2
6.0 MONITORING.....	3
7.0 LIMITS ON PEAK PARTICLE VELOCITY	3
8.0 SAFETY	4
8.1 Protection of Aboveground and Underground Structures.....	4
8.2 Protection of Personnel.....	6
8.3 Protection of Threatened and Endangered Species.....	9
8.4 Lightning Hazard	9
9.0 IN-WATER BLASTING	9
10.0 STORAGE REQUIREMENTS	10
11.0 GENERAL BLASTING PROCEDURE	11

LIST OF TABLES

TABLE 1 Overland Pass Pipeline Project Water Wells Within 200 Feet of Construction Work Areas

1.0 INTRODUCTION

This Blasting Plan outlines the procedures and safety measures that the Contractor will adhere to while implementing blasting activities along the pipeline right-of-way during construction of Overland Pass Pipeline Company LLC's (Overland Pass') Overland Pass Pipeline Project. The Contractor will be required to submit a Blasting Specification Plan to Overland Pass that is consistent with the provisions in this Blasting Plan.

2.0 OBJECTIVE

This Blasting Plan is intended to identify blasting procedures, including safety, use, storage, and transportation of explosives that are consistent with minimum safety requirements as defined by federal (e.g., Title 27 CFR 181 - Commerce in Explosives, Title 49 CFR 177 - Carriage by Public Highway, Title 29 CFR 1926.900 et seq. sub-part U - Safety and Health Regulations for Construction - Blasting and Use of Explosives, Title 29 CFR 1910.109 – Explosives and Blasting Agents OSHA), 29 CFR 1926.900-General Provisions and Sections 901, 902 and 904-911, state, and local regulations. Additionally this plan is intended to address environmental aspects of blasting activities, and to identify areas of concern along the proposed pipeline route.

3.0 GENERAL REQUIREMENTS

Blasting operations shall be conducted by or under the direct and constant supervision of personnel legally licensed and certified to perform such activity in the jurisdiction where blasting occurs. Prior to any blasting activities, the contractor shall provide Overland Pass with appropriate information documenting the experience, licenses, and permits associated with blasting personnel.

Blasting-related operations including obtaining, transporting, storing, handling, loading, detonating, and disposing of blasting material, drilling, and ground-motion monitoring shall comply with applicable federal, state, and local regulations, permit conditions and the construction contract.

Blasting for grade or trench excavation shall be used only after other reasonable means of excavation have been used and are unsuccessful in achieving the required results. Overland Pass may specify locations (e.g., foreign line crossings, nearby structures) where consolidated rock shall be removed by approved mechanical equipment such as rock-trenching machines, rock saws, hydraulic rams, or jack hammers in lieu of blasting.

Before blasting, a site-specific Blasting Specification Plan must be submitted by the Contractor to Overland Pass for approval. The site-specific blasting plan must be reviewed by an engineer representing Overland Pass. The engineer will analyze the data to determine the combined stress level of each affected pipeline and will make recommendations and/or forward approval to Overland Pass before blasting may commence.

Drilling and blasting shall be done with an Overland Pass Environmental Inspector (EI) present. The EI's approval is required to proceed prior to each blast. Approval does not relieve the Contractor from responsibility or liability.

4.0 PRE-BLASTING REQUIREMENTS

Prior to the initiation of blasting operations, the Contractor shall comply with the following:

- The Contractor will obtain all required federal, state, and local permits relating to the transportation, storage, handling, loading, and detonation of explosives.
- The Contractor shall place all necessary “one calls” 48 hours prior to construction where one-call system(s) are in place.
- The Contractor shall be responsible for the protection of existing underground facilities.
- Before performing any right-of-way work, the Contractor shall verify to Overland Pass that all property owners have been notified of the impending construction.
- The Contractor shall submit its Blasting Plan for approval five days in advance of each seven work day period.

5.0 SITE-SPECIFIC BLASTING PLANS

The Contractor’s site-specific blasting plan shall include at a minimum the following information:

- explosive type, product name and size, weight per unit, and density;
- delay type, sequence, and delay;
- use of non-electrical initiation systems for all blasting operations;
- stemming material and tamping method;
- hole depth, diameter, and pattern;
- explosive depth, distribution, and maximum charge and weight per delay;
- number of holes per delay;
- dates and hours of conducting blasting;
- distance and orientation to nearest aboveground structure;
- distance and orientation to nearest underground structure, including pipeline;
- procedures for:
 - storing, handling, transporting, loading, and firing explosives;
 - fire prevention;
 - inspections after each blast;
 - misfires, flyrock and noise prevention;
 - stray current accidental-detonation prevention;
 - signs and flagmen;
 - warning signals prior to each blast;
 - where the pipeline route:
 - parallels or crosses an electrical transmission corridor, cable or pipeline;
 - parallels or crosses a highway or road;
 - within or adjacent to treed areas;
 - material details of store license, its issuing authority, and validity period
 - parallels or crosses an electrical transmission corridor, cable or pipeline;
 - parallels or crosses a highway or road;
 - within or adjacent to treed areas;

- approaches within 200 feet of a water well or spring; and
- approaches within 1,000 feet of any residence, building or occupied structure;
- notification and to whom it was issued prior to blasting, and
- disposal of waste blasting material;
- schedule identifying when blasting would occur within each waterbody greater than 10 feet wide, or within any designated coldwater fishery.
- seismograph company, names, equipment and sensor location;
- copies of all required federal, state, and local permits;
- blasters name, company, copy of license, and statement of qualifications;
- magazine type and locations for explosives and detonating caps;
- typical rock type and geology structure (solid, layered, or fractured); and
- pipeline location (milepost and stationing), and applicable alignment sheet numbers.

The procedures set forth in the Contractor's blasting plan shall include a minimum of five (5) test shots not exceeding 20 feet each in length, monitored with three (3) channel seismographs. Data from the test shots shall be used by the contractor to establish standard shot in terms of pounds of explosive per delay. Production shot procedures and delays shall be identical to the test shot procedures and delays. Test shots are required for each major change in geology, change in explosive manufacturer or change in explosive grade, as determined by Overland Pass. The blast area shall be examined for indications of excessive overbreak, cracking or ground displacement (block movement). The contractor shall immediately suspend blasting operations and review the blasting procedures if overbreak or ground cracks extending one-half (1/2) the distance to the edge of the permanent right-of-way occurs.

6.0 MONITORING

During blasting operations the contractor will be required to monitor operations in the following manner:

- The Contractor shall provide seismographic equipment to measure the peak particle velocity (PPV) of all blasts in the vertical, horizontal, and longitudinal directions. Seismic monitoring can only be discontinued if a) the blasting schedule and blasting performance consistently produce PPVs at the pipeline that are lower than the maximum allowable limit and b) a Overland Pass representative provides written authorization.
- The contractor shall measure the peak particle velocity at the adjacent pipeline; at any water wells, potable springs, and at any above ground structure within 200 feet of the blasting.
- The contractor shall complete the Blasting Log Record (Attachment 1) immediately after each blast and submit a copy to an Overland Pass representative.

7.0 LIMITS ON PEAK PARTICLE VELOCITY

The contractor is limited to a specified peak particle velocity of 4 inches/sec measured adjacent to an underground pipeline that will be subject to approval by an Overland Pass representative.

For any aboveground structure (including water wells), the peak particle velocity shall not exceed 1.5 inches/sec.

For all aboveground facilities within 200 feet of the blasting, the contractor shall provide additional seismograph equipment to determine the PPV at the aboveground facility. If the measured peak particle velocity at an existing pipeline or other structure exceeds the above limits, the contractor shall stop blasting activities immediately and notify Overland Pass. The Blasting Plan must be modified to reduce the peak particle velocity prior to any further blasting.

Note: Limits on peak particle velocity for surface structures are based on studies which established the limits at which plaster in homes will crack. The primary purpose of the limit is to prevent damage to homes. The Overland Pass EI may increase the limit for other structures such as steel transmission line towers, as appropriate. Overland Pass' EIs may approve higher velocities for given site-specific conditions in advance.

8.0 SAFETY

8.1 Protection of Aboveground and Underground Structures

The Contractor will exercise control to prevent damage to aboveground and underground structures including buildings, pipelines, utilities, springs, and water wells. The Contractor will implement the following procedures:

- Within 30 days of placing the pipeline facilities in service, Overland Pass will file a report with BLM that identifies all water supply wells/systems damaged by construction, how they were repaired, including a discussion of any complaints concerning well yield or water quality, and how each problem was resolved.
- If blasting occurs within 200 feet of identified water well or potable springs, water flow performance, and water quality testing will be conducted before blasting. If the water well is damaged, either the well owner will be compensated for damages or a new well will be provided. Overland Pass will provide an alternative potable water supply to the landowner until repairs occur. Locations of water wells or systems within 200 feet of blasting activities are located on Overland Pass' construction alignment sheets and included in Table 1 below.
- If blasting occurs within 200 feet of any aboveground structures, the Contractor and Overland Pass representative will inspect structures before and after blasting. In the unlikely event that damage occurs to an aboveground structure, the owner will be compensated.
- The contractor shall be responsible for all damage claims resulting from blasting.
- Blasting will not be not allowed within 15 feet of an existing pipeline, unless authorized by Overland Pass.
- Holes which have contained explosive material shall not be re-drilled. Holes shall not be drilled where danger exists of intersecting another hole containing explosive material.
- Blasting mats or padding shall be used on all shots where necessary to prevent scattering of loose rock onto adjacent property and to prevent damage to nearby structures and overhead utilities.
- Blasting shall not begin until occupants of nearby buildings, stores, residences, places of business, places of public gathering, and farmers have been notified by the contractor sufficiently in advance to protect personnel, property, and livestock. The contractor shall notify all such occupants at least 48 hours prior to blasting.

- Blasting in or near environmentally sensitive areas such as streams and wildlife areas may include additional restrictions as described in the BLM’s Record of Decision.
- All blasting shall be subject to the following limitations.
 - Maximum peak particle velocity of 12.0 in./sec. in any of three mutually perpendicular axes, measured at the lesser distance of the nearest facility or the edge of the permanent easement.
 - Maximum drill size shall be 2.5 inches unless approved by Overland Pass.
 - Maximum quantity of explosive per delay shall be governed by the recorded measurements as influenced by work site conditions.
 - Explosive agents and ignition methods shall be approved by Overland Pass. Anfo and other free flowing explosives and blasting agents are not acceptable and shall not be used.
 - Drill holes shall not be left loaded overnight.
 - Good stemming material to be used in all holes.
- The drilling pattern shall be set in a manner to achieve smaller rock fragmentation (maximum 1 foot in diameter) in order to use as much as possible of the blasted rock as backfill material after the pipe has been padded in accordance with the specifications. The proposed drilling pattern shall be submitted for approval by Overland Pass.
- Under pipeline crossings and all other areas where drilling and blasting is required within 15 feet of existing or third-party facilities:
 - Drill holes shall be reduced to a maximum of 2 inches or less in diameter.
 - The number of holes per blast shall be limited to three unless otherwise approved by Overland Pass.
 - Appropriate timing restrictions (i.e. between 2:00 and 4:00 PM).

TABLE 1			
Overland Pass Pipeline Project Water Wells Within 200 Feet of Construction Work Areas			
State/Milepost	County	Approximate Distance (feet) from Construction Workspace	Direction From Construction Workspace
Wyoming			
0.4a	Lincoln	151	West
0.4a	Lincoln	151	West
122.9	Sweetwater	0	
124.5	Sweetwater	10	North
145.0	Carbon	167	North
145.0	Carbon	167	North
145.0	Carbon	167	North
147.4	Carbon	58	South
194.0	Carbon	73	South
253.1	Albany	134	Southwest
258.8	Albany	102	West
260.7	Albany	43	East
268.6	Albany	63	Northeast
277.2	Albany	15	Northeast

TABLE 1

**Overland Pass Pipeline Project
Water Wells Within 200 Feet of Construction Work Areas**

State/Milepost	County	Approximate Distance (feet) from Construction Workspace	Direction From Construction Workspace
280.0	Albany	0	
286.2	Albany	167	West
289.3	Albany	130	West
293.4	Albany	122	South
308.4	Laramie	115	South
320.7	Laramie	44	North
Colorado			
329.2	Weld	139	Northeast
335.1	Weld	8	South
356.1	Weld	122	Southwest
379.5	Weld	139	North
411.5	Logan	184	South
414.7	Logan	197	North
414.8	Logan	152	North
415.5	Logan	192	South
424.0	Washington	79	Northeast
453.5	Yuma	123	Southwest
454.9	Yuma	152	Southwest
454.9	Yuma	152	Southwest
459.6	Yuma	18	Northeast
468.1	Yuma	98	Northeast
475.7	Yuma	84	Southwest
482.3	Yuma	54	Northeast
Kansas			
521.4	Cheyenne	60	Southwest
523.5	Cheyenne	67	Southwest
530.8	Rawlins	155	Northeast
541.7	Rawlins	136	Northeast
550.7	Thomas	34	Northeast
564.3	Thomas	22	Southwest
597.5	Sheridan	79	Northeast
650.8	Ellis	64	South
656.8	Ellis	48	North
695.3	Barton	135	North
711.1	Ellsworth	2	South
714.6	Ellsworth	21	North
715.7	Ellsworth	89	South
715.8	Ellsworth	24	North
735.7	Rice	21	Southwest

8.2 Protection of Personnel

The Contractor shall include in its procedures all federal, state, county, and local safety requirements for blasting. The Contractor's procedures shall address, as a minimum, the following requirements:

- Only authorized, qualified, and experienced personnel shall handle explosives.
- No explosive material shall be located where they may be exposed to flame, excessive heat, sparks, or impact. Smoking, firearms, matches, open flames, and heat-and-spark-producing devices shall be prohibited in or near explosive magazines or while explosives are being handled, transported, or used.
- A code of blasting signals shall be established, posted in conspicuous places and utilized during blasting operations. Employee training shall be conducted on the use and implementation of the code.
- The contractor shall use every reasonable precaution including, but not limited to, visual and audible warning signals, warning signs, flag person, and barricades to ensure personnel safety.
- Warning signs, with lettering a minimum of 4 inches in height on a contrasting background, will be erected and maintained at all approaches to the blast area.
- Flaggers will be stationed on all roadways passing within 1,000 feet of the blast area to stop all traffic during blasting operations.
- All personnel not involved in the actual detonation shall stand back at least 1,000 feet and workers involved in the actual detonation shall stand back at least 650 feet from the time the blast signal is given until the “ALL CLEAR” has been sounded.
- No loaded holes shall be left unattended or unprotected. No explosives or blasting agent shall be abandoned. No loaded holes shall be left overnight.
- In the case of a misfire, the blaster shall provide proper safeguards for personnel until the misfire has been re-blasted or safely removed.
- The exposed areas of the blast will be matted wherever practicable. In cases where such a procedure is not deemed to be feasible, an alternative procedure must be submitted for review by Overland Pass and the site in question must be visited and examined by the consultant before any approval is granted.
- Overland Pass may employ two-way radios for communication between vehicles and office facilities. The contractor shall advise Overland Pass and other pipeline contractors of any need to cease use of such equipment during blasting activities.
- All loading and blasting activity shall cease and personnel in and around the blast area will retreat to a position of safety during the approach and progress of an electrical storm irrespective of the type of explosives or initiation system used. This is a major safety precaution and will always be observed. All explosive materials, all electrical initiation systems, and all non-electric initiation systems are susceptible to premature initiation by lightning.
- Previous blast areas must be inspected to verify the absence of misfires. No drilling may commence until such inspection occurs. If a misfire occurs adjacent to a hole to be drilled, the misfire will be cleared by the blaster using whatever techniques are called for by the situation prior to commencement of drilling. If a misfire occurs at some distance from the drilling area, drilling may be stopped while clearing preparations are underway. When the misfire is to be cleared by reshooting, drilling will be shutdown and personnel evacuated to a place of safety prior to detonation.
- All transportation of explosives will be in accordance with applicable federal, state, and local laws and regulations. Vehicles used to transport explosives shall be in proper

working condition and equipped with tight wooden or non-sparking metal floor and sides. If explosives are carried in an open-bodied truck, they will be covered with a waterproof and flame-resistant tarpaulin. Wiring will be fully insulated to prevent short-circuiting and at least two (2) fire extinguishers will be carried. The truck will be plainly marked to identify its cargo so that the public may be adequately warned. Metal, flammable, or corrosive substances will not be transported in the same vehicle with explosives. There will be no smoking and unauthorized or unnecessary personnel will not be allowed in the vehicle. Loading and unloading of explosives will be done carefully by competent, qualified personnel.

- No sparking metal tools will be used to open kegs or wooden cases of explosives. Metallic slitters will be used to open fiberboard cases, provided the metallic stiller does not come in contact with the metallic fasteners of the case. There will be no smoking, no matches, no open lights, or other fire or flame nearby while handling or using explosives. Explosives will not be placed where they are subject to flame, excessive heat, sparks, or impact. Partial cases or packages of explosives will be reclosed after use. No explosives will be carried in the pockets or clothing of personnel. The wires of an electric blasting cap shall not be tampered with in any way. Wires will not be uncoiled. The use of electric blasting caps will not be permitted during dust storms or near any other source of large charges of static electricity. Uncoiling of the wires or use of electric caps will not be permitted near radio-frequency transmitters. The firing circuit will be completely insulated from the ground or other conductors.
- No electric wires or cables of any kind will be permitted near electric blasting caps or other explosives except at the time and for the purpose of firing the blast. All electric-blasting caps, either singly or when connected in a series circuit, will be tested using a blasting galvanometer specifically designed for the purpose. Electric blasting caps made by more than one manufacturer or electric blasting caps made by the same manufacturer will not be used in the same circuit unless approved by the manufacturer. No attempt will be made to fire a circuit of electric blasting caps with less than the minimum current specified by the manufacturer. All wires to be connected will be bright and clean. All electric blasting cap wires will be short-circuited until ready to fire.
- No blast will be fired without a positive signal from the person in charge. This person will have made certain that all surplus explosives are in a safe place; all persons, vehicles, and/or boats are at a safe distance; and adequate warning has been given. Adequate warning of a blast will consist of but not be limited to the following:
 - Notification of the day and time given to BLM, railroads, highway departments, city engineer, county sheriff, etc. Notification must be given at least 48 hours prior to blasting.
 - Notification of homeowners nearby
 - Stopping vehicular and/or pedestrian traffic near the blast site
 - Signal given by an air horn, whistle or similar device using standard warning signals
- Only authorized and necessary personnel will be present where explosives are being handled or used.
- Condition of the hole will be checked with a wooden tamping pole prior to loading. Surplus explosives will not be stacked near working areas during loading. Detonating fans will be cut from spool before loading the balance of charge into the hole. No

explosives will be forced into a bore hole past an obstruction. Loading will be done by a blaster holding a valid license or by personnel under his direct supervision.

- Fly-rock leaving the right-of-way in such areas shall be collected immediately and disposed of at disposal sites approved by Overland Pass. This work shall not be left to the cleanup crew.

8.3 Protection of Threatened and Endangered Species

A qualified project biologist will survey the proposed blasting zone identified by the pipeline contractor immediately in advance of any drilling or blasting. After completion of blasting and removal of rock/spoil, active burrow entrances will be checked to ensure that they are open and the animals released. Burrow systems of threatened or endangered species will be permanently staked and flagged. After completion of blasting and removal of rock/spoil, active burrow entrances will be checked to ensure that they are open.

8.4 Lightning Hazard

A risk of accidental detonation caused by lightning strikes exists at any time the workplace is experiencing an electrical storm and there are loaded holes on site. If this hazard is judged to exist by the Environmental Inspector, work shall discontinue at all operations and workers will be moved to secure positions away from the loaded holes when an approaching storm front is within 5 miles. Furthermore, workers shall not return to the work site until the storm has passed and the closest point of lightning activity has moved at least 5 miles beyond the drilling area.

Overland Pass shall have on site approved lightning detectors (model SD-2508 manufactured by Electronics Div. of S.D.I. International, Model 350 manufactured by Thomas Instruments Inc., Skyscan Lighting Detector manufactured by Skyscan Technologies or equivalent) capable of measuring the degree of electrical activity as a storm approaches, and the distance to the storm front from the instrument on the right-of-way.

In any event, no holes shall be drilled within the specified distances from any loaded hole required by the applicable regulation of the Department of Labor in the province where the work is located.

9.0 IN-WATER BLASTING

Underwater blasting is not anticipated to be required for the Overland Pass Pipeline Project. However, in the event it is required, the following shall be the minimum requirements for in-water blasting. The pipeline contractor shall develop a detailed blast plan for in-water blasting. If in-water blasting is required, all applicable parts of non-water blasting shall apply.

Blast holes will be held open by some device, such as wooden plugs, sleeves, casings extending above the water surface, or other suitable methods submitted to and approved by Overland Pass. All holes to be shot at the same time will be loaded immediately prior to blasting. Loading will be by means of a nonsparking metal loading tube or similar device. Water resistant electric blasting caps will be used except at power line locations.

Explosives used under water will have waterproof paper shells or otherwise be protected from the effects of water. The type of explosive, size of charges, sequence of firing, etc. will be selected to minimize shock wave stresses on aquatic life adjacent to the blasting area.

Where specified, the contractor shall furnish the necessary labor and equipment to employ air bubble curtains at water crossings for the protection of existing pipelines, wildlife or other facilities. In the case of river, creek or lake crossings, any necessary blasting operations shall be carried out in such a manner that they conform in all respects with the limitations, requirements and procedures required by the authority having jurisdiction. Explosives used for river, lake or creek crossings shall be non-sympathetically propagating explosives and shall be approved by Overland Pass.

Rock removed from major water crossings where it is necessary to use marine-type techniques and drill through a casing (as determined by Overland Pass) shall qualify as marine rock.

Notifications will be made to all appropriate resource agencies.

10.0 STORAGE REQUIREMENTS

Explosive materials shall not be stored on federal land without prior written permission from the affected federal agency. Copies of this permission shall be posted on each magazine and copy given to the Overland Pass Construction Manager.

All explosives, blasting agents, and initiation devices shall be stored in locked magazines that have been located, constructed, approved, and licensed in accordance with local, state, and federal regulations. Magazines shall be dry, well ventilated, reasonably cool (painting of the exterior with a reflective color) bullet and fire resistant and kept clean.

Initiation devices shall not be stored in the same box, container, or magazine with other explosives. Explosives, blasting agents or initiation devices shall not be stored in wet or damp areas; near oil, gasoline, cleaning solvents; near sources of heat radiators, steam pipes, stoves, etc. No metal or metal tools shall be stored in the magazine. There shall be no smoking, matches, open lights, or other fire or flame inside or within 50 feet of storage magazines or explosive materials. The loading and unloading of explosive materials into or out of the magazine shall be done in a business-like manner with no loitering, horseplay, or prank playing.

Magazines shall be kept locked at all times unless explosives are being delivered or removed by authorized personnel. Admittance shall be restricted to the magazine keeper, blasting supervisor, or licensed blaster. Magazine construction shall meet the requirements of ATF P5400.7 "Explosives Law and Regulations" (Bureau of Alcohol Tobacco and Fire Arms) and be in accordance with local, state, or federal regulations and the Blasters Handbook.

Accurate and current records shall be kept of the explosive material inventory to ensure that oldest stocks are utilized first, satisfy regulatory requirements and for immediate notification of any loss or theft. Magazine records shall reflect the quantity of explosions removed, the amount returned, and the net quantity used at the blasting site.

When explosive materials are taken from the storage magazine, they shall be kept in the original containers until used. Small quantities of explosive materials may be placed in day boxes, powder chests or detonator boxes. Any explosive material not used at the blast site shall be returned to the storage magazine and replaced in the original container as soon as possible.

Magazine locations shall be in accordance with local, state, or federal regulations. Where no regulations apply, magazines shall be located in accordance with the latest edition of the 175th anniversary edition of the Blaster's Handbook and ATF P5400-7 Explosives Law and Regulations" (Bureau of Alcohol, Tobacco and Eire Arms).

Magazines shall be marked in minimum 3-inch high letters with the words “DANGER - EXPLOSIVES” prominently displayed on all sides and roof.

11.0 GENERAL BLASTING PROCEDURE

The following lists of steps will be performed in all cases. These steps represent a minimum requirement and give a general order to the blasting procedure:

- A safety meeting will be held prior to any blasting activities. Everyone who is involved with the blasting in any form must attend. Safety rules and signaling should be reviewed.
- Warning signs should be erected.
- Lightning detectors should be set up.
- Drilled holes should be measured accurately for depth and location.
- Seismic equipment should be set up to measure velocities near the pipeline and any structures 200 feet or less from blast.
- Distances to any nearby structure (aboveground or belowground) suspected of being less than 200 feet from the blast shall be measured.
- Clear the blasting affected zone.
- Give the warning signal.
- Give the blast signal.
- Detonate the blast.
- After the blaster has checked for misfires and given the “ALL CLEAR” signal, Inspectors will inspect any aboveground or underground facilities for damage.
- Complete the Blasting Log Record (see Attachment 1) (*TO BE COMPLETED*).