



west virginia department of environmental protection

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WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OFFICE OF OIL AND GAS

WELL SITE SAFETY PLAN STANDARDS

A site specific Safety Plan shall be submitted with each horizontal well application. Approved Safety Plans should be maintained and available at the drilling rig at all times and provided to the local emergency planning committee for the emergency planning district in which the well work will occur or to the county office of emergency services at least seven days before commencement of well work or site preparation work that involves any disturbance of land. The Safety Plan, once approved, may only be modified upon approval by the Office of Oil and Gas ("Office"). The Safety Plan should include, at a minimum, the following:

Siting Standards

1. A plan view map showing the well location, access road, pits, flare lines, dwellings, and noting the north and prevailing wind directions.
2. An area topographical map showing the well site location.

Safety Plan Standards

1. Safety meetings should be held on-site weekly, at a minimum, and specifically prior to the beginning of drilling, completion, and work-over operations. Meeting attendance should be logged. A check-in and check-out list of all personnel should be maintained during the drilling and completion phases of the operation. The pre-spud meeting should also include the local oil and gas inspector or other designated Office representative.
2. A system for the checking in of personnel and visitors to the drilling location to allow for an accurate headcount of people on the site at any time.
3. An evacuation plan for the removal of personnel from the drilling location and residents from the surrounding area who have the potential to be affected by an emergency.
4. A list of telephone numbers, including twenty-four (24)-hour contact information, for the following entities (which list should also be posted at the well site): the operator, any contractors of the operator, the Department, the local oil and gas inspector, and local emergency response units.
5. A list of all schools and public facilities within a one-mile radius of the proposed well, including telephone numbers for the same.

6. Material Data Safety Sheets (MSDS) for all materials and chemicals on the well site should be readily available and maintained at the well site. The Safety Plan should identify the location of the MSDS and an operator contact for maintaining such information.
7. The operator should work closely with the local first responders to familiarize them with potential incidents that are related to oil and gas development and so that the local first responders have the capability to provide the support necessary for the operator to implement the Well Site Safety Plan.

Wellbore Casing and Cementing Standards

1. A list of anticipated freshwater, saltwater, oil and gas, hydrogen sulfide, thief zones, and high pressure and high volume zones, including their expected depth.
2. A detailed casing and cementing program should be provided. Casing and cement should meet the standards of the American Petroleum Institute (API) and should be of sufficient weight, quantity, and quality to ensure well control and integrity. Casing setting depths and cement quantities should be sufficient to address all zones identified above.

Well Control and Blow-Out Preventer (BOP) Standards

1. A list of all BOP equipment and casing heads, with types, sizes, and ratings utilized and available during drilling, completion, and work-over.
2. The procedure and schedule for testing the BOP stack.
 - a. For the intermediate wellbore drilling phase, the BOP equipment should be pressure and function tested upon initial installation. Annular preventers should be tested to seventy percent (70%) of the rated capacity and ram preventers should be tested to eighty percent (80%) of the rated capacity.
 - b. For the bottom and horizontal wellbore drilling phase, the BOP equipment should be pressure and function tested upon initial installation, weekly, and after each bit trip. Annular preventers should be tested to seventy percent (70%) of the rated capacity and ram preventers should be tested to eighty percent (80%) of the rated capacity.
3. A schedule for BOP equipment installation and operation on the applicable casing string.
4. A list of all personnel with approved well control training and current certification recognized by the International Association of Drilling Contractors (IADC).
5. A detailed record of significant events, including without limitation lost circulation, the presence of hydrogen sulfide gas, fluid entry, kicks, and abnormal pressures. The operator should immediately notify the Office of the presence of hydrogen sulfide gas or any blow-out or significant kick.
6. A schematic and description of the wellhead assembly placed on the well upon completion.

Well Flaring Operations Standards

1. The size, construction, and length of the flare line and the method used to anchor the flare line, along with a description of the choke assembly.
2. The system used for lighting the flare and identification of back-up igniters.
3. All gas diverted through the manifold should be burned. The operator should notify the local fire department immediately prior to lighting the flare, if possible, otherwise, as soon after lighting the flare as reasonably possible.
4. The minimum distance of clearing of flammable material beyond the end of the flare line.
5. The estimated duration of the flaring operation.

Well Killing Standards

1. An inventory of all material that will be on-site for the mixing of mud. The inventory should include the amount of mixed mud, mixed mud weight, amount of additional weighting material (i.e. barite or bentonite), and the volume of water for mixing.
2. The number and type of mixing units that will be utilized for the mixing of mud.
3. The methodology and type of kill procedures as recognized by the IADC.

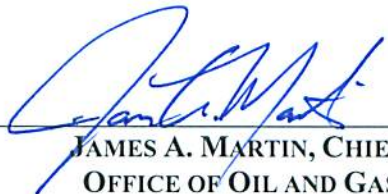
Hydrogen Sulfide Operations Standards

1. The equipment and method used for the monitoring, detection, and warning of the presence of hydrogen sulfide gas during drilling, completion, and work-over operations. The Plan should specify the location of the monitoring and detection equipment.
2. A statement of the training to be provided or that has been provided to all personnel who will be involved in hydrogen sulfide operations.
3. A list of the personal protective equipment (PPE) that will be maintained on the well site.
4. The method that will be used to notify the office of the presence of hydrogen sulfide and how the operator will control access to the same.

Notification and Protection Zones Standards

1. A method of notification to all residents and emergency response personnel who may be affected by specific events during the operation. Such events may include, without limitation, the presence of hydrogen sulfide, blow-outs, and flaring.
2. The operator should establish and maintain protection zones during applicable events and working environments.

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DATE



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OFFICE OF OIL AND GAS