

WELL CONSTRUCTION



Lease Site Preparation

A standard single well **lease site** for conventional oil or gas will typically affect a surface area measuring 100 metres by 100 metres. The lease site will typically hold the drilling rig and additional equipment along with supervisory accommodation and material storage. Once drilling is completed and the well is connected to the pipeline, a portion of the lease area can be reclaimed to minimize surface disturbance.

To prepare for initial drilling, the lease site is leveled, if necessary, with a bulldozer and/or grader, with careful consideration given to buried pipelines and utilities, as well as proximity to surface water features. The scale and duration of lease site preparation is site-specific.

Preliminary Surface Preparation

As part of any oil or gas well, a conductor hole and surface hole are required as part of the entire wellbore. Commonly, a **rathole** and/or a **mousehole** are drilled prior to the actual drilling of the well to reservoir depth. A conductor hole, also referred to as a "starter hole" is a large diameter hole, lined with steel pipe which varies in depth, and is used to house the **BOP (Blow Out Preventer)**. These are either done by the portable rig that drills the conductor hole, or can be done by the primary rig after rigging-up. The surface hole is drilled and lined with steel casing and cement to isolate potential shallow groundwater aquifers from the wellbore.



Blow Out Preventer (BOP)

Drilling

During assembly of the drilling rig, some equipment may be handled and set with crane, rig up trucks, or forklift, depending on the size of the rig. The substructure is assembled, pinned (bottled) together, leveled, and tied into other rig components. Once the substructure is set in place, installing the power system and raising the derrick begins and additional drilling and auxiliary equipment are set into place before a final inspection is done. The entire process of rigging-up can take one or two days.

TERMINOLOGY

Lease site: An area of surface land on which exploration or production activity occurs.

Rathole: a hole lying below the rig floor, 30 to 35 feet deep, lined with casing into which the kelly is placed when hoisting operations are in progress.

Mousehole: a shallow borehole under the rig floor, usually lined with pipe, into which joints of drill pipe are temporarily placed during drilling operations.

BOP (Blow Out Preventer): A large valve at the top of a well that may be closed if the drilling crew loses control of formation fluids. By closing this valve (usually operated remotely) the drilling crew can regain control of the well and reservoir.

Kelly: A long square or hexagonal steel bar with a hole drilled through the middle for a fluid path. The kelly is used to transmit rotary motion from the rotary table or kelly bushing to the drillstring, while allowing the drillstring to be lowered or raised during rotation.

