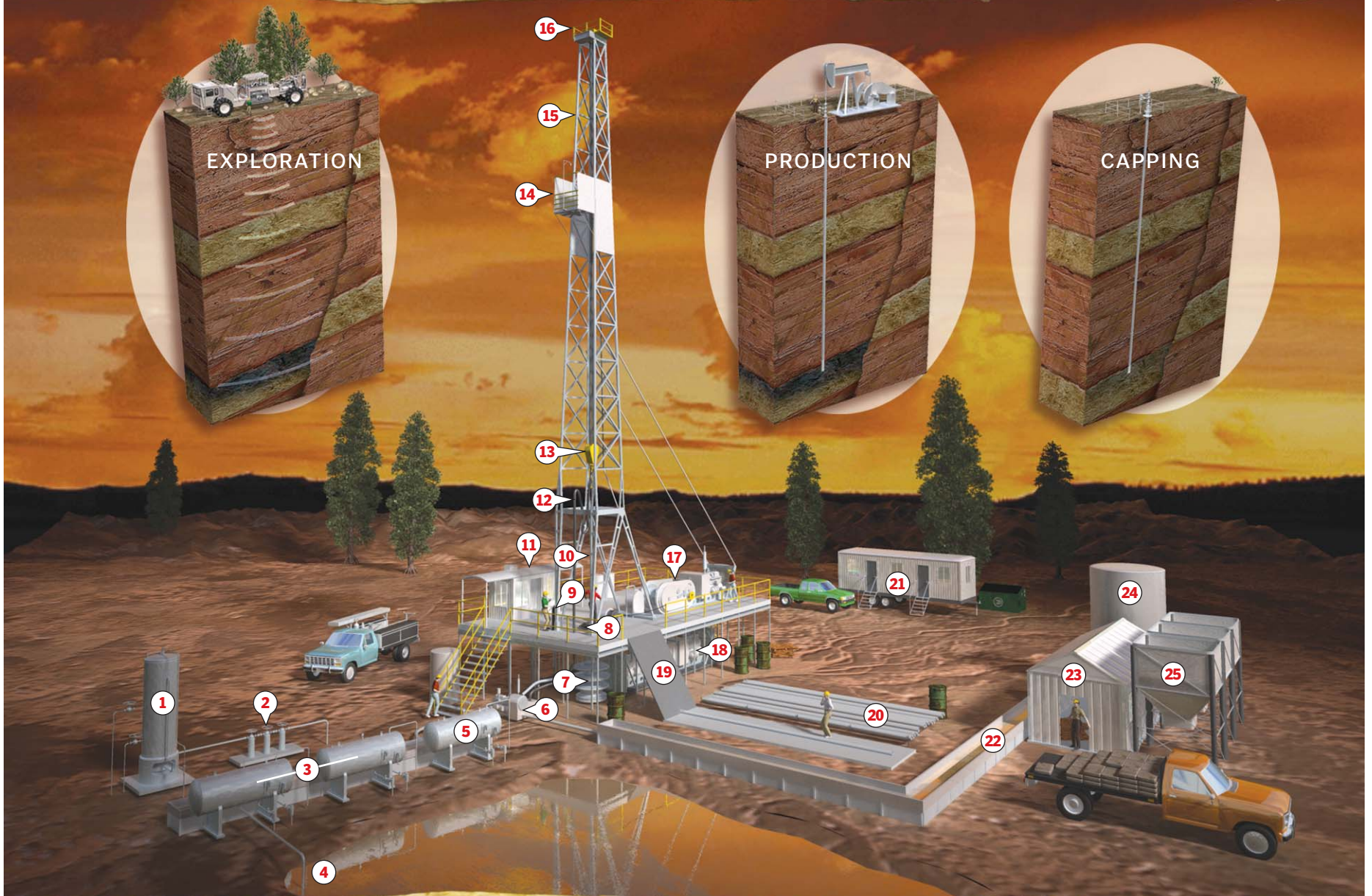


At the drill site — the cutting edge of the gas boom

Parts of a typical rotary drilling rig operation

- 1 **Mud-gas separator:** In some cases, natural gas must go through a liquid gas separator to remove suspended oil and water.
- 2 **Choke manifold:** Controls the rate of flow of the gas or oil from the drill site to a storage facility.
- 3 **Desander/desilter:** Used mud carrying bits of rock back to the surface is filtered to remove particles before being returned to the reserve pit.
- 4 **Reserve (mud) pit:** Mud that has been filtered to remove particles is sent here for reuse.
- 5 **Degasser:** Liquid hydrocarbons dissolved in natural gas under pressure are called condensate. When the gas is removed from the ground and pressure is reduced, the liquid hydrocarbons are released and must be removed by a degasser.
- 6 **Mud pump:** Powers the circulating mud system. The mud cools the drill bit and removes cuttings from the hole.
- 7 **Blowout preventer:** Prevents the sudden escape of oil or gas from a well caused by uncontrolled high pressure, usually occurring during drilling.
- 8 **Rotary table:** The drill pipe is turned at the surface by the rotary table.
- 9 **Driller's console:** Controls the operation of the drawworks, the system of cables and pulleys used to run pipe into the hole and to pull pipe from the well.
- 10 **Kelly:** The square pipe used to transfer rotational energy from the motors to the round drill pipe.
- 11 **Doghouse:** Covered area where logs and records may be kept during drilling.
- 12 **Rotary hose:** Delivers clean mud from the mud pump to the drill pipe.
- 13 **Traveling block:** A large pulley wheel suspended from the derrick by the drilling line that is connected directly to the swivel, which holds the drill string, the drill pipe being sent into the hole.
- 14 **Monkeyboard:** Elevated surface for workers positioning drill pipe to be added to the drill string or to be removed when replacing a drill bit.
- 15 **Derrick:** The tall steel structure framework over a drilled hole, used to support the boring equipment.
- 16 **Crown block:** A set of pulley wheels at the top of the derrick through which the drilling line passes several times, looping between the crown and block.
- 17 **Drawworks:** A large drum onto which a large diameter cable is wound. The cable is called the drilling line.
- 18 **Engines and generators:** Large diesel engines provide power for hoisting, rotating and the circulation system. Diesel electric rigs use an electric motor at the rotary table.
- 19 **Pipe ramp**
- 20 **Pipe rack**
- 21 **Tool pusher's quarters:** The tool pusher is often provided with a small mobile home on the well site to remain at the drilling operation for days at a time in the event of problems.
- 22 **Mud pits**
- 23 **Mud house:** Mud is a mixture of water and a special clay called bentonite. The mud is usually mixed on site and then recycled.
- 24 **Water tank:** Mud is usually transported dry and mixed with water at the drill site.
- 25 **Bulk mud components storage:** Bentonite gives the mud viscosity to lift the cuttings from the hole. Other special chemicals can be added to the mud to control salinity and pH (acidity or alkalinity) levels.



Crew of a rotary drilling rig

The tool pusher, also known as a drilling engineer or production engineer: The drilling company provides a supervisor for the rig while the well is being drilled. The tool pusher is generally in charge of the drilling rig and is in charge of every moving part of the rig.

Because of the critical nature of this type of supervision for around-the-clock drilling operations, the tool pusher is often provided with a small mobile home on the well site to remain at the drilling operation for days at a time in the event

of problems.

The driller: The driller is directly in charge of the four- or five-person rig crew and generally operates the draw-works, the system of cables and pulleys used to run pipe into the hole and to pull pipe from the well.

The derrick worker: The derrick worker works high above the floor when the pipe is being pulled or run during regular operations. When the rig is drilling, the derrick worker supervises and assists the

two floor workers in maintaining the cleanliness of the rig.

The floor workers: There are two floor workers on the rig floor while pulling and running pipe. These personnel are also referred to as floor hands or roughnecks. The floor workers are generally the least experienced members of the crew.

Motorman: If the rig has a five-person crew, the fifth individual may be called the motor worker or motorman, who is responsible for maintaining the engines.

Company representative: The senior member of the crew, such as the tool pusher, or another person will serve as the official representative of the oil operator. The company representative oversees every aspect of the operation from building the road to being sure that the casing is available when it is needed to the delivery and installation of the wellhead and Christmas tree, an arrangement of pipe valves that control the flow of oil and gas.