OUR PROJECT PHASES

At Hess, we approach our projects in a defined way. The below phases outline these steps from the earliest stages of identifying a potential project right through to production.

1 IDENTIFYING POTENTIAL

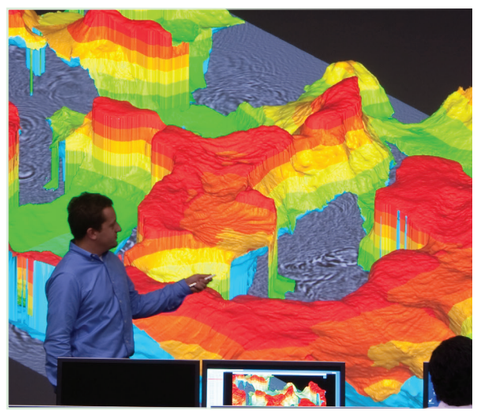
Most of the unconventional formations were discovered many years ago, but it has only been during the past decade that operators have been able to use new horizontal drilling technology to reach untapped resources locked deep within shale rock formations. Engineers and geologists evaluate available subsurface data to better understand the unique characteristics of potential production sites.

2 SECURING THE LEASE

Companies negotiate leases with mineral owners to secure acreage for appraisal. While terms of each lease vary, most allow for the exploration and production of oil and gas for a specified amount of time or as long as there is production in paying quantities. Lease agreements may also provide an upfront payment to the owner in order to secure these rights. If exploration is successful and production begins, the owners under the lease are entitled to a percentage of the oil or gas sales revenue, known as a royalty.

3 PRELIMINARY GEOLOGICAL MODELING

To gain the most comprehensive and accurate picture of a shale formation, a preliminary geographical model is developed and seismic testing is sometimes conducted as part of the process. To gather seismic data, sound waves are bounced off underground shale formations; the time between the reverberations informs scientists about the nature of the geology below. The resulting image is a 3-D map of the shale's hills and valleys, which indicate the sections of rock likely to produce the most hydrocarbons.



4 APPRAISAL – DRILLING WELLS

The Appraisal stage can take as little as several months to a couple of years. When enough information about the land is collected, and if it supports the existence of underlying minerals, drilling begins. For each well, a surface hole is drilled. Wells are lined with multiple layers of steel pipe and encased in cement to isolate fresh water aquifers, preventing fluids or gas in the well from seeping into ground water. Each well is drilled to a depth of more than 6,000 to 10,000 feet, which is more than 4,500 feet below aquifers containing drinking water. Wells are then drilled horizontally for up to two miles from the vertical wellbore.

5 HYDRAULIC FRACTURING

Water is injected under extreme pressure to fracture the rock and stimulate oil or gas to flow out of the shale formation and up to the surface. Multiple stages of hydraulic fracturing can be conducted in each well.

6 PRODUCTION

Until this point in the life of a well, all the pressure created has been trapped in the reservoir. When the pressure is released at the surface, oil and/or natural gas begins to flow. Equipment located on the surface separates the drilling water from the hydrocarbons. The water is stored in tanks, to be recycled for use in other wells or treated and safely disposed of in permitted disposal facilities.