

**adsorbed gas:** Natural gas that is physically bound to the surfaces of the reservoir rock.

**anaerobic:** Conditions that exist only in the absence of oxygen.

**anisotropy:** A characteristic of certain rocks wherein certain properties, such as permeability, exhibit different values when measured along axes in different directions.

**anticline:** A fold, generally convex upward, whose core contains stratigraphically older rocks.

**associated dissolved gas:** Natural gas that occurs together with oil in a reservoir, either dissolved in the oil (dissolved gas) or as a gas cap above the oil (associated gas).

**blanket formations:** Thin gas-bearing formations that take the form of one or several stacked layers extending laterally over a wide area.

**borehole shooting:** A method of stimulating increased gas flow by detonating explosives inside the borehole of a well.

**cleat:** The pervasive, vertically oriented natural fracture system in coal seams.

**coal seam (coalbed) methane:** Natural gas formed as a byproduct of the coal formation process and trapped in the coal seam.

**combination trap:** A trap for oil or gas that has both structural and stratigraphic elements.

**deviated drilling:** Drilling that has been deliberately angled away from the vertical.

**Devonian shale gas:** Gas trapped in the shales of Devonian age located in the Eastern United States, primarily in the Appalachian, Michigan, and Illinois basins.

**extension test:** A well drilled to extend the areal limits of a partially developed pool. May sometimes become a new pool discovery well. Also known as outpost well.

**fault:** A sudden displacement of rock strata along a fracture.

**field:** Composed of a single pool or multiple pools that are grouped on or related to a single structural and/or stratigraphic feature.

**formation:** A rock mass composed of individual beds or units with similar physical characteristics or origin.

**formation damage:** A reduction in permeability caused by drilling, fracturing, or producing a well—e.g., by the plugging of pores by water-sensitive clays dislodged or caused to swell by water-based fracture fluids or drilling fluids.

**formation water:** Water present in a water-bearing formation under natural conditions, as opposed to introduced fluids, such as drilling mud.

**infill drilling:** Drilling at a smaller spacing than called for in the original development plan, designed to speed up production and/or increase ultimate recovery.

**interference:** A condition whereby adjacent wells in a field are close enough together that their areas of (pressure) influence overlap, generally reducing “per well” gas recovery below the level that would be obtained with an isolated well.

**lens:** An individual reservoir in a tight lenticular formation (see below), often oval in cross-section.

**lenticular formation:** A thick formation containing large numbers of small, separate, lens-like reservoirs interspersed with impermeable shales or coal.

**lineament:** A linear feature of the Earth’s surface that may reveal a subsurface feature such as a fault.

**log, well log:** Measurements of the physical properties of a reservoir, taken while drilling, generally by lowering measurement devices down the well bore.

**massive hydraulic fracturing (MHD):** Creation of large, manmade fractures in reservoir rock by pumping fluids into a well under high pressures. “Frac” jobs generally are considered “massive” when the volume of fluid used is 100,000 gallons or more, but there is no universally accepted criterion.

**methane:** The primary constituent of natural gas, the gaseous hydrocarbon  $\text{CH}_4$ .

**natural fracture system:** A series of fractures, often aligned in some way, created by natural processes.

**new field wildcat:** A well drilled in search of oil or gas in a geological structural feature or environment that has never before been proven productive.

**new pool wildcat:** Well drilled in search of pools above (shallower pool test), below (deeper pool test), or outside the areal limits of already known pools in fields that have already been proven productive. May sometimes become an extension well.

**nonassociated gas:** Natural gas that occurs in a reservoir without oil.

**outpost well:** See extension test.

**pay:** A rock stratum or zone that yields oil or gas.

**permeable:** Having the property or capacity of a porous rock, sediment, or soil for transmitting a fluid; it is a measure of the relative ease of fluid flow under unequal pressure.

**petroleum:** A general term for all naturally occurring hydrocarbons, whether gaseous, liquid, or solid.

**play:** A rock formation or group of formations within a sedimentary basin with geologic characteristics similar to those that have been proven productive. A play serves as a planning unit around which an exploration program can be constructed. May also refer to the exploratory effort, often following a significant discovery, that uses a geologic idea to determine where petroleum can be found.

**pool:** A subsurface accumulation of oil and/or gas in porous and permeable rock, having its own isolated pressure system. Theoretically, a single well could drain a pool. Also known as a reservoir.

**porosity:** The percentage of the bulk volume of a rock or soil that is occupied by interstices (gaps between the particles that compose the rock), whether isolated or connected.

**proppant:** Small particles of a hard material (sand, bauxite, etc.) that are suspended in fracturing fluid, to be left behind when the fluid is removed to prevent the created fractures from closing under the pressure exerted by the overlying rock.

**prospect:** An area that is a potential site of economically recoverable petroleum accumulation based on preliminary exploration.

**province:** A region in which a number of oil and gas pools and fields occur in a similar or related geological environment.

**reserves:** The portion of the total gas resource base that has been identified by drilling and estimated directly by engineering measurements, and that is recoverable at current prices and technology.

**reservoir:** See *pool*.

**reservoir rock:** Any porous and permeable rock that yields oil or gas. Sandstone, limestone, and dolomite are the most common reservoir rocks, but gas accumulation in the fractures of less permeable rocks also occurs.

**resources:** The total amount of oil or gas that remains to be produced in the future. Generally does not include oil or gas in such small deposits or under such difficult conditions that it is not expected to

be produced at any foreseeable price/technology combination.

**secondary migration:** The movement of fluids within the permeable reservoir rocks that eventually leads to the segregation of oil and gas into accumulations in certain parts of these rocks.

**sedimentary basin:** A low area in the Earth's crust, caused by Earth movements, in which sediments have accumulated.

**sedimentation:** The act or process of forming or accumulating sediment in layers, including such processes as the separation of rock particles from the material from which the sediment is derived, the transportation of these particles to the site of deposition, the actual deposition or settling of the particles, the chemical or other changes occurring in the sediment, and the ultimate consolidation of the sediment into solid rock.

**source rock:** Sedimentary rock in which organic material under pressure, heat, and time was transformed to liquid or gaseous hydrocarbons. Source rock is usually shale or limestone.

**stimulation:** Any process that mechanically or chemically disturbs the reservoir rock in order to increase gas flow to the well.

**stratigraphic trap:** A trap for oil or gas, resulting from changes in rock type, porosity, or permeability, that occurs as a result of the sedimentation process rather than structural deformation.

**structural trap:** A trap for oil or gas resulting from folding, faulting, or other deformation of the Earth.

**thermal maturity:** The extent to which the organic matter in sedimentary rocks has been "cracked"—broken into simpler molecules—by heat.

**trap:** Any barrier to the upward movement of oil or gas that allows either or both to accumulate. A trap includes a reservoir rock and an overlying impermeable roof rock; the contact between these is concave, as viewed from below. See also stratigraphic, structural, and combination traps.