Crude Oil Glossary

Below is a list of terms relating to fluid handling and pumping for crude oil applications, including production, pipeline, tank farm and refinery operations.

API gravity

An arbitrary measure established by the American Petroleum Institute to specify the weight of crude oil per unit volume. It relates specific gravity as follows:

˚API = (141.5/specific gravity) – 131.5

10˚API oil has a specific gravity of 1.0, the same as water.

Note: API gravity is **not** viscosity. Heavy (low API number) crude oils tend to be high viscosity; however, viscosity **must** be known for pump and driver sizing.

Artificial lift

The use of any of the following to lift oil that has naturally flowed to the well bore:

Gas lift

Gas injection into the well.

Sucker-rod pumping

A "string" of rods reciprocated by a balance-beam surface mechanism to bring oil up, using a system of check valves on the end of the string at the bottom of the well.

Down-hole pump

A multistage centrifugal turbine or progressive cavity pump located at the bottom of the well that pushes oil up the well bore. This can be electric, hydraulic or mechanically (using the sucker-rod string) driven.

Associated gas

Gas produced in conjunction with the normal or intended production of crude oil.

BS&W (basic sediment and water)

Present in most crude oil, BS&W is an emulsion of oil, water and sediment. Most crude oil purchasers specify the maximum BS&W content that they will accept, usually only a small fraction of 1 percent, although BS&W up to 3 percent is common for transport.

Christmas tree

The valve manifold at the top of a high-pressure producing well that controls the flow of one or more producing areas from a single well.

Deaerator

A vessel found on a LACT unit that removes free air prior to the meter.

Emulsion

A mixture of fluids, specifically crude oil and water. Usually these emulsions are water in oil. Sometimes, however, they are oil in water, or "reverse emulsions." Breaking a crude oil emulsion to separate the clean oil requires displacing the emulsifier and its film. This allows the water to coalesce into heavier droplets that can drop out of the oil. Emulsions are very stable and will not usually break by themselves. To separate, emulsions must be heated; chemical additives, electrostatic charging and other techniques can also possibly be used.

EOR (enhanced oil recovery)

See tertiary recovery.

FGKO (free-gas knockout)

Same as below. Normally at wellhead location.

FWKO (free-water knockout)

A pressure vessel used to separate free water from degassed crude oil and crude oil-water emulsion. The FWKO is used after the gas separation and before the heater (emulsion) treaters.

Gathering

A term used for the pumping service that brings the flows of a number of producing wells together for subsequent pumping into a pipeline.

LACT unit (lease automatic custody transfer unit)

An automatic measuring system used where oil is measured for sale and transfer to a pipeline.

Pig

A device used to clean the inside of a pipeline or to isolate different products. It resembles a bullet, has an outside diameter about equal to the pipe's inside diameter and may have scrappers or brushes, to help remove deposits. Pigs are "pumped" through the line and removed at clean-out locations.

Pipeline service

A pumping service that usually covers distances of 10 to 50 miles (20 to 90 kilometers). Intermediate pumping stations are the norm on long-distance pipelines.

Primary recovery

The natural oil-field formation pressure sufficient to force oil to the surface; or the use of artificial lift.

Prover

A unit brought to production fields to confirm meter accuracy, usually once per month. A prover is run in parallel with a meter on a LACT unit.

Secondary recovery

Usually refers to water-flooding treatment of the formation, in order to drive reservoir fluids to the well bore.

Separator

A piece of equipment, typically a pressure vessel, used to separate well-stream gas from free liquids.

Shipping

Usually refers to pumping services in which crude oil – with or without water – is pumped ("shipped") from an offshore platform to onshore facilities, via an underwater pipeline.

Sour gas

Natural gas containing relatively large amounts of sulfur or sulfur compounds, usually hydrogen sulfide (H_2S).

Steam flooding

Steam injected under high pressure. Used when water flooding is ineffective.

Tertiary recovery

Methods that tend to alter the condition of the crude oil, so that it will flow to the well bore. Included are various chemical and gas injection methods, as well as thermal methods, such as steam injection and *in situ* combustion.

Water cut

The percentage of water in crude oil, as it comes from the well. If excessively high, the well may be shut down, due to economics.

Water flooding

The injection of water – with or without additives – into separate water-injection wells, in order to drive reservoir fluids to the oil-well bore and improve recovery.

Water treater

A vessel or series of vessels used to break oil-water emulsions, separating produced water from the crude oil. They are frequently "heater treaters," which heat the oil-water mixture and use gravity and mechanical methods to break the emulsion.

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