



Hydraulic Fracturing
Glossary of Terms & Processes
California Department of Conservation

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***italicized definitions need to be approved by subject expert.*

Total dissolved solids: the total amount of mobile charged ions, including minerals, salts or metals dissolved in a given volume of water.

Well stimulation (p2)n: any of several operations used to increase the permeability of an oil or gas bearing formation, such as acidizing or fracturing. See acidize.

acidize v: to inject acid into a formation or wellbore for the purpose dissolving scale buildup in the wellbore or a small portion of the rock in order to increase its permeability.

Surface casing (p2) n: see surface pipe.

surface pipe n: the first string of casing (after the conductor pipe) that is set in a well. It varies in length from a few hundred to several thousand feet (meters).

Annulus (p2) n: the space around a pipe in a well bore, sometimes termed the annular space.

Corrosive zones (p2): geological formations whose fluid is capable of corroding casing, tubing and other metal objects in a well.

Mechanical integrity (p2): A measure of a well casing (including its cement job), tubing and packer to contain fluid without leaking.

API Well Number (p3, p7): A unique well identifier assigned as defined in API (American Petroleum Institute) Bulletin D12A, as amended. The API Well Numbers are assigned by the appropriate state or federal regulatory agency.

True vertical depth (p3): The vertical distance from a point in the well (usually the current or final depth) to the surface.

Measured depth:

Productive horizon (p3): The areal limit of an oil or gas bearing formation.

Casing string n: the entire length of all the joints of casing run in a well.

Tubing strings: the entire length of all the joints of tubing run in a well.

“Shall be rigged up as designed” (p3): I have no idea of what this means. If I had to guess, I would say that it means that the frac job is performed with no changes from the approved proposal. (M. Woods)

Downstream (p3): In the direction of flow, where the fluid flows after it passes through the location in question.

Radial cement evaluation log (p3): A continuous log created by running a sonic transmitter and receiver down a well to determine the quality of the cement bond between the well and the formations outside of the well.

Other cement evaluation method (p3): Other method to determine the quality of the cement bond between the well and the formations outside of the well.

Production casing (p4) n: the last string of casing set in a well, inside of which is usually suspended a tubing string.

Projected fracture height growth (p4): A pre-determination of the fracture length based upon the proposed fracture stimulation program.

Faults active/inactive (p4): Active faults are those that have moved in recent geologic time and are currently under stress; inactive faults have not moved in the recent past and are under little or no stress.

Permeability (p4) n: 1. a measure of the ease with which a fluid flows through the connecting pore spaces of a given medium or formation. The unit of measurement is the millidarcy. 2. fluid conductivity of a porous medium. 3. ability of a fluid to flow within the interconnected pore network of a porous medium.

Young’s Modulus (p4): A measure of the stiffness of an elastic material, defined as the ratio of the stress along an axis over the strain along that axis.

Poisson’s Ratio (p4): The negative ratio of the stretch or contraction that is perpendicular to an applied force divided by the stretch or contraction in the direction of the force.

Surface injection pressure (p4): The pressure of a fluid being injected into a well, measured not at the depth of the injection interval, but at the surface.

Slurry rate (p4): The injection rate in units of volume per time of the liquid cement/water mixture.

Proppant concentration (p4): The concentration of the propping agent per volume of water.

propping agent n: also known as proppant, a granular substance (sand grains, aluminum pellets, or other material) that is carried in suspension by the fracturing fluid and that serves to keep the cracks open when fracturing fluid is withdrawn after a fracture treatment.

Fluid rate (p4): The rate of fluid flow from or into a well, measured in units of volume or velocity per unit of time.

Annuli pressures (p4): Pressure in the space between the tubing and the casing, above the packer.

API rated minimum internal yield (p5): The burst pressure of a casing, tubing or drill pipe calculated by a formula based upon the yield strength of the metal, diameter of and wall thickness of the casing, tubing or drill pipe, published in API Bulletin 5C3 1985.

Shut in (p5) v. to close the valves on a well so that it stops producing or injecting. **Note: In the text of the proposed regulations, "shut in" should not have a hyphen when used in this context. (M. Woods)**

Perforated interval (p5): The measured depths from the top perforation to the bottom perforation in a continuous interval.

Perforate v: to pierce the casing wall and cement of a wellbore to provide holes through which formation fluids may enter or to provide holes in the casing so that materials may be introduced into the annulus between the casing and the wall of the borehole. Perforating is accomplished by lowering into the well a perforating gun, or perforator.

Casing shoe (p5) n: see guide shoe.

Guide shoe n: 1. a short, heavy, cylindrical section of steel filled with concrete and rounded at the bottom, which is placed at the end of the casing string. It prevents the casing from snagging on irregularities in the borehole as it is lowered.

Non-freshwater fluids (p5): Fluids with a TDS of greater than 3000 parts-per-million (ppm).

Authorized vs unauthorized release (p5): Authorized means intentional and with permission; unauthorized means either unintentional or without permission.

Fluid flowback volume (p6): The volume of fluid that flows back from a well after a hydraulic fracture stimulation when the pressure at the surface is released.

Collapse strength of casing (p6): The pressure necessary to collapse a well casing, tubing or drill pipe, which can be calculated from the yield strength of the metal and diameter of and wall thickness of the casing, tubing or drill pipe.

Annular valve (p6): A valve on the wellhead of a well that is connected to the space between the tubing and the casing.

Intermediate casing (p6):

Intermediate casing string n: the string of casing set in a well after the surface casing but before production casing is set to keep the hole from caving and to seal off formations. In deep wells, one or more intermediate strings may be required.

General Coordinate System NAD83 (p7): North American Datum of 1983 (NAD83) is an earth-centered coordinate system using latitude and longitude that is based on the Geodetic Reference System of 1980, and is accurate to within two meters.

CAS numbers (p7): unique numerical identifiers assigned by the Chemical Abstracts Service to every chemical described in the open scientific literature.

Carrier fluid (p7): the fluid in which the proppant, gel and other chemicals is transported to the formation.

Reverse engineering (p8): the process of taking an end product and, through analysis of its structure, function, and operation, creating a process to produce it.