PPDM Well Status and Classification V 2 – 2016

The Professional Petroleum Data Management (PPDM) Association is the global, not-for-profit society within the petroleum industry that provides leadership for the professionalization of petroleum data management through the development and dissemination of best practices and standards, education programs, certification programs and professional development opportunities.

PPDM represents and supports the needs of operating companies, regulators, software vendors, data vendors, consulting companies and data management professionals around the globe. Through the PPDM Association, petroleum data experts gather together worldwide in a collaborative, round table approach to engineer business driven, pragmatic data management standards that meet industry needs.

Professional Petroleum Data Management Association ("PPDM™")
Terms and Conditions (the "Terms and Conditions")

The PPDM™'s supply of products and/or services to the user (the "User") are subject to the following Terms and Conditions which are deemed to be accepted by the User upon the User making any use of, or receiving any benefit from, the PPDM™'s products and/or services, which may include, without limiting the nature and kind of products and/or services to be provided: the establishment of standards through the use of models, schema, spatial enabling and reference values; products in the form of guides, sample data and technical specifications; the right to use the trademarks of the PPDM™; and services in the nature of publication, education, compliance and certification.

The following Terms and Conditions shall apply to the User:

1. Any rights and limitation set out in any license agreement entered into between the User and the PPDM™ in connection with the products and/or services shall be in addition to these Terms and Conditions.
2. Any right granted to the User by the PPDM™ to use any trademark of the PPDM™ is subject to the direct control and rules of use provided by the PPDM™ from time to time which right shall cease no later than the date upon which notification is provided by the PPDM™ to the User advising that the right has ceased, or the date the User ceases to be a member of the PPDM™.
3. The User acknowledges that all at all times, all products and/or services and their accompanying supporting material, are, and remain, the intellectual property of the PPDM™ with all rights reserved for the benefit of the PPDM ™.

EXCEPT AS SPECIFICALLY PROVIDED IN THESE TERMS AND CONDITIONS, ANY PRODUCTS AND/OR SERVICES PROVIDED BY THE PPDM™ ARE PROVIDED "AS IS", AND THE PPDM™ DISCLAIMS ANY REPRESENTATIONS, WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING THOSE OF PERFORMANCE OR MECHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OR THOSE ARISING OUT OF A COURSE OF DEALING OR USAGE OF TRADE, WITH RESPECT TO ITS PRODUCTS AND/OR SERVICES, AND DO NOT WARRANT THAT THE FUNCTIONS OR THE OPERATION OR THE CONTENT OF ITS PRODUCTS AND/OR SERVICES WILL BE:

- UNINTERRUPTED OR ERROR FREE;
- ACCESSIBILE;
- FREE FROM CONTENT WHICH MAY BE DEEMED TO BE PRIVATE UNDER THE LAWS OF THE PROVINCE OF ALBERTA OR THE COUNTRY OF CANADA;
- COMPLETE;
- CURRENT.

THE PPDM™ SHALL NOT BE RESPONSIBLE OR LIABLE FOR ANY AND ALL ITEMS, STATEMENTS OR CONTENT TRANSMITTED, POSTED OR RECEIVED ON ITS SYSTEMS OR ANY OTHER SYSTEMS, OR FOR MONITORING THE SAME. THE PPDM™'S ENTIRE LIABILITY, REGARDLESS OF THE NUMBER OF CLAIMS, IN CONTRACT, TORT OR OTHER THEORY OF LAW, INCLUDING WITHOUT LIMITATION, NEGLIGENCE OR OTHERWISE, AND THE USER'S EXCLUSIVE REMEDY SHALL BE, AT THE OPTION OF THE PPDM™:

- TO EITHER REFUND THE LESSER OF THE AMOUNT THE USER PAID TO THE PPDM™ UNDER THE LATEST MEMBERSHIP APPLICATION OR THE FEES PAID BY THE USER FOR THE PARTICULAR PRODUCT AND/OR SERVICE PROVIDED; OR,
- TO PROVIDE THE USER WITH CORRECTED ITEMS
- PROVIDED THAT THE PPDM™ IS NOTIFIED OF ANY CLAIM WITHIN NINETY (90) DAYS FROM THE DATE ON WHICH THE CLAIM ARISES.

IN NO EVENT WILL THE PPDM™ BE LIABLE TO THE USER FOR ANY INDIRECT CONSEQUENTIAL, PUNITIVE OR SPECIAL DAMAGES OF THE USER OR OF ANY THIRD PARTY CLAIMED AGAINST THE USER, HOWSOEVER CAUSED, INCLUDING BUT NOT LIMITED TO, ANY LOST PROFITS, LOST REVENUE, LOST SAVINGS, LOSS OF USE OR LACK OF AVAILABILITY OF FACILITIES INCLUDING COMPUTER RESOURCES, ROUTERS AND STORED DATA, SPECIAL, INCIDENTAL, PUNITIVE, EXEMPLARY, AGGRAVATED, ECONOMIC OR CONSEQUENTIAL DAMAGES, CONTRIBUTION OR INDEMNITY ARISING OUT OF THE USE, OR INABILITY TO USE THE PRODUCTS AND/OR SERVICES OR DELIVERABLES, IF ANY, PROVIDED UNDER THESE TERMS AND CONDITIONS, OR FOR CLAIM BY ANY OTHER PERSON EVEN IF THE PPDM™ OR ANY OF ITS LAWFUL CONTRACTORS, OR EMPLOYEES HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR CLAIM.

IN NO EVENT WILL THE PPDM™ BE LIABLE TO THE USER FOR DAMAGES OR LOSSES ARISING FROM ANY THIRD PARTY, OR FOR DAMAGES OR LOSSES CAUSED BY THE USER, OR THEIR RESPECTIVE EMPLOYEES, CONTRACTORS OR SUBCONTRACTORS, OR FOR OTHER EVENTS BEYOND THE REASONABLE CONTROL OF THE PPDM™.

THESE TERMS AND CONDITIONS SHALL SURVIVE THE TERMINATION AND/OR EXPIRY OF THE USER'S MEMBERSHIP IN THE PPDM™.

FOR PURPOSES OF PARAGRAPHS 4, 5, 6 AND 7 OF THESE TERMS AND CONDITIONS, THE TERM "USER" MAY INCLUDE, AS THE CASE MAY BE, ANY OR ALL OF THE USER, ITS DIRECTORS, OFFICERS, EMPLOYEES, AGENTS, AFFILIATED OR SUBSIDIRY BUSINESSES OR ANY THIRD-PARTIES TO WHOM THE USER HAS GIVEN ACCESS TO THE PRODUCTS AND SERVICES OF THE PPDM™.

FOR PURPOSES OF PARAGRAPHS 4, 5, 6 AND 7 OF THESE TERMS AND CONDITIONS, PPDM™ SHALL INCLUDE ANY OR ALL OF ITS DIRECTORS, OFFICERS, EMPLOYEES, AGENTS, CONTRACTORS OR OTHER INDIVIDUALS AFFILIATED WITH THE PPDM™, AS THE CASE MAY BE.

These Terms and Conditions are to be governed and interpreted under the laws of the Province of Alberta and the laws of Canada applicable therein, and any and all disputes arising out of these Terms and Conditions, their performance, breach, enforcement, existence or validity, any failure of the parties to reach agreement with respect to matters provided for in these Terms and Conditions and all matters of dispute relating to the rights and obligations of the parties, which cannot be amicably resolved, even if only one of the parties declares that there is a difference, will be referred to and finally settled by private and confidential binding arbitration held in Alberta and governed by Alberta law pursuant to the Alberta Arbitration Act if the User is a party created under the laws of Canada or any province or territory of Canada; or the Arbitration Rules of the United Nations Commission of International Trade Law (UNCITRAL) if the User is a party outside of Canada.

The following arbitration procedures shall apply, notwithstanding whether the arbitration is governed by the Alberta Arbitration Act or UNCITRAL:

- the place of arbitration shall be Calgary, Alberta;
- the Arbitration tribunal shall consist of one (1) arbitrator;
- the Courts of the Province of Alberta shall be the appointing authority in accordance with UNCITRAL Rules;
- the language to be used in the arbitral proceedings shall be English;
- the Arbitrator shall be a person who is legally trained and who has experience in the information technology field in Canada and is independent of either party; and,
- the decision of the arbitration court shall be final and binding upon each of the parties.

Except as otherwise provided herein, all notices must be in writing to the PPDM™ at Bankers Hall, P.O. Box 22155, Calgary, Alberta, T2P 4J5 and to the User at the most recent address in the PPDM™'s records. Notices shall be deemed delivered three business days after posting in the Canadian postal system, or one business day if delivered via courier.

By using this documentation, you are deemed to have accepted these terms and conditions.

Well Status and Classification Facets

Well status values often contain more than one kind of information. These complex values can be broken down into atomic, well defined specific information facets. Each facet contains values that are standardized, defined and queryable.

Each facet describes one property of an object

- ➔ Facets contain values that are mutually exclusive with values in other facets
- ➔ Facets may be hierarchical in nature (they may be granular)
- ➔ By combining information from many facets, users can group wells for many key functions
- ➔ Facets can be represented on a map through standard symbol sets

Well status and classification helps users describe wells so that people can find the right set of wells based on one or more common criteria (such as the kind of fluid produced, or whether a well is producing or still in construction). While this information is usually derivable from a good data store, well status information provides us with helpful shortcuts.

In PPDM 3.9, users may decompose complex well status values into their constituent facets using R_WELL_STATUS_XREF. When this is complete, the complex values obtained from regulators or data vendors can be stored with each well or well component and decomposed as needed through query into R_WELL_STATUS_XREF.

About the PPDM Association

The Professional Petroleum Data Management (PPDM) Association is a global, not-for-profit society within the petroleum industry that provides leadership for the professionalization of petroleum data management through the development and dissemination of best practices and standards, education programs, certification programs and professional development opportunities. PPDM represents and supports the needs of operating companies, regulators, software vendors, data vendors, consulting companies and data management professionals around the globe.

Through the PPDM Association, petroleum data experts gather together worldwide in a collaborative, round table approach to engineer business driven, pragmatic data management standards that meet industry needs. Key standards include the Public Petroleum

Fluid Direction

Fluid Direction is the sense of movement at the wellhead stream. The Fluid Direction can change over the life of the well.

Facet Value	Facet Definition
Inflow	Inflow is the sense of movement at the wellhead stream as fluids penetrate into the wellbore from the surface.
Outflow	Outflow is the sense of movement at the wellhead stream as fluids from downhole is extracted from the reservoir and moved to the surface.
Static	Static is the sense of equilibrium where there is no movement of fluids at the wellhead stream.
Cyclic	Cyclic is the sense of movement in a wellhead stream where the well is capable of both producing and injecting, and rotates between these on a frequent basis. A Cyclical well does not require regulatory approvals to change between producing & injecting.

Fluid Type

Fluid Type is the physical fluid(s) that can be attributed to any well component. Qualifiers allow for further description. Two qualifiers are used - Composition and Abundance.

The value of Fluid Type can change over the life cycle of a well.

Fluid Abundance Qualifier	Comment (all Fluid Types may use these values)
Primary	The fluid is the most abundant within the fluid type.
Secondary	The fluid contained within the sample is the second most abundant type contained with in the fluid type.
Show	Hydrocarbons exist in a quantity that will create a Skim on top of water
Trace	Minute quantity of hydrocarbons are present

Facet Value	Facet Definition
Bitumen	Bitumen is crude oil produced from Oil Sands and is a naturally occurring mixture which is heavy and extremely viscous. The Bitumen produced from Oil Sands requires special technology to produce and must be treated before it can be used by refineries to produce usable fuels. Bitumen has a measured API gravity < 10.0.
Condensate	Condensate is a natural gas mixture which exists in a liquid state with a low vapor pressure compared with natural gasoline and liquid petroleum gas (LPG). Condensate is mainly composed of propane, butane, pentane and heavier hydrocarbon fractions.
Gas	Gas is a substance which exists in a non-solid or non-liquid state under normal temperates and pressues. It possesses perfect molecular mobility and the property of indefinite expansion and is lighter than oil or water. Gas is recovered from an underground reservoir in which the hydrocarbon system is gaseous and is in a gaseous state when its volume is measured or estimated.

Component Fluid Detail Qualifier	Comment
Acid Gas	**Acid Gas** is a poisonous and corrosive gas mixture consisting of hydrogen sulfide and carbon dioxide in varying concentrations.
Butane	**Butane** (C4H10) is a hydrocarbon gas made up of the molecular structure of 4 Carbon atoms and 10 Hydrogen atoms.

C5H12 - Pentane Plus	**Pentane Plus** is a hydrocarbon gas made up of the molecular structure of 5 Carbon atoms and 12 Hydrogen atoms plus higher molecular weight hydrocarbons, also known as C5+.
Carbon Dioxide	**Carbon Dioxide** (C02) is a pure gaseous or liquid compound chemically composed of 1 Carbon atom and 2 oxygen atoms.
Coalbed Methane	**Coalbed Methane** (C1H4) is natural gas that is contained in coal-bearing reservoirs, rather than the more common sandstone reservoirs.
Ethane	**Ethane** (C2H6) is a hydrocarbon gas made up of the molecular structure of 2 Carbon atoms and 6 Hydrogen atoms.
Ethane Plus	**Ethane Plus** is a hydrocarbon gas made up of the molecular structure of 2 Carbon atoms and 6 Hydrogen atoms plus higher molecular weight hydrocarbons, also known as C2+.
Gas Condensate	**Condensate** is a natural gas mixture which exists in a liquid state with a low vapor pressure compared with natural gasoline and liquid petroleum gas (LPG). Condensate is mainly composed of propane, butane, pentane and heavier hydrocarbon fractions.
Liquid Petroleum Gas	**Liquid Petroleum Gas** (LPG) is a natural gas mixture composed of mainly ethane, propane, and butanes, with small amounts of pentanes plus (C5+) in any combination. The fluid is usually gaseous under atmospheric conditions but becomes a liquid under pressure.
Methane	**Methane** (C1H4) is the lightest and most abundant of the hydrocarbon gases and the principal component of natural gas.
Miscible	**Miscible** gas is a natural gas mixture
Pentane	**Pentane** (C5H12) is a hydrocarbon gas made up of the molecular structure of 5 Carbon atoms and 12 Hydrogen atoms.
Propane	**Propane** (C3H8) is a hydrocarbon gas made up of the molecular structure of 3 Carbon atoms and 8 Hydrogen atoms.

Gas Hydrate	Gas Hydrate is an ice-like crystalline solid formed from a mixture of water and natural gas, usually methane. They occur in the pore spaces of sediments, and may form cements, nodes or layers.
Gas & Condensate	Gas & Condensate is a mixture of both fluids in quantities which are commercial. Each company is expected to have their own specifics around the definition for Gas & Condensate
Mineral	Mineral production resulting from well or other operations, including sulphur and uranium.

Component Fluid Detail Qualifier	Comment
Sulphur	**Sulphur** is a crystalline nonmetal element that is either mined or extracted from Hydrogen Sulfide gas (H2S) through the Claus Process.
Uranium	**Uranium** is the chemical element of atomic number 92, a gray, dense radioactive metal used as a fuel in nuclear reactors.

Non Hydrocarbon Gas	Non-Hydrocarbon gas is Gas which does not contain hydrocarbons and generally is not flamable under normal circumstances. Includes Nitrogen, Oxygen and Helium

Component Fluid Detail Qualifier	Comment
Air	**Air** is a mixture of colourless, tasteless, invisible gases that surround the earth and are composed of mainly nitrogen and oxygen molecules.
H2S	Hydrogen Sulfide (**H2S**) is a colorless, transparent gas with a characteristic of a rotten-egg odor at low concentrations and not detectable by odor at high concentrations. **H2S** gas is an extremely toxic gas at concentrations greater than 10 ppm. Chemical symbol:is H2S, Specific Gravity: 1.192 (heavier than air).
Helium	**Helium** is a colorless, odorless, tasteless, non-toxic, inert monatomic gas produced as a byproduct in certain oil and gas reservoirs.
Hydrogen	Hydrogen is the chemical element with atomic number 1. It is represented by the symbol **H**. With an atomic weight of 1.00794 u, hydrogen is the lightest and most abundant chemical element.
Nitrogen	Used in various well treatments, **Nitrogen** is colorless, odorless, tasteless and mostly inert diatomic gas at standard conditions.

Oxygen	**Oxygen** gas (dioxygen) is a colorless, odorless, tasteless diatomic gas with the formula O2.

Oil

Oil is a viscous, combustible, liquid at ordinary temperatures with a chemical compostion of hydrogen and carbon. Oil is insoluble in water but soluble in ether or alcohol. Oil is recovered at a well from an underground reservoir in which the hydrocarbon system is liquid or exhibits a bubble point on reduction of pressure. Oil is between gas and water in the hydrocarbon column.

Component Fluid Detail Qualifier	Comment
Bitumous	**Bitumous** oil is crude oil with a measured API gravity < 10.0.
Fine Light	**Fine Light** oil is crude oil with a measured API gravity > 45.0.
Heavy	**Heavy** oil is crude oil with a measured API gravity > 9.9 and < 22.3.
Light	**Light** oil is crude oil with a measured API gravity > 31.1 and < 40.0.
Medium	**Medium** oil is crude oil with a measured API gravity > 22.2 and < 31.2.
Naphtha	**Naphtha** is a colourless and highly volatile, flammable liquid hydrocarbon intermediate product, product between gasoline and benzine formed from the distillation of crude oil. Naphthas are used as a solvent, fuel, etc
Premium Light	**Premium Light** oil is crude oil with a measured API gravity > 39.9 and < 45.1.
Sour Crude	**Sour Crude** is oil with a measured sulfur content greater than (>) 0.5%
Sweet Crude	**Sweet Crude is** oil with a measured sulfur content less than (<) 0.5%.

	Synthetic Crude	**Synthetic Crude** oil is an output from a bitumen/extra heavy oil upgrader facility used in connection with oil sand production. In some cases, it may refer also to shale oil–the output from an oil shale pyrolysis. Typically it is low in sulfur and has an API gravity around 30.
Oil & Condensate	Oil & Condensate is a mixture of both fluids in quantities which are commercial. Each company is expected to have their own specifics around the definition for Oil & Condensate	
Oil & Gas	Oil & Gas is a mixture of both fluids in quantities which are commercial. Each company is expected to have their own specifics around the definition for Oil & Gas.	
Steam	Steam is water that exists at temperatures above 100 degrees Celius or 212 degrees Farenheit and is in a a gaseous state.	
Sour Gas	Sour gas designation is given to gas production that contains H2S. A common concentration is 5.7 mg of H2S per cubic meter of natural gas, or 4ppm by volume understandard temperature and pressure. Regulatory variations may exist.	
Water	Water is a transparent, odorless, tasteless liquid,with the chemical composition of two atoms of hydrogen and one atom of oxygen (H2O) freezing at 32°F or 0°C and boiling at 212°F or 100°C. Water is heavier than oil or gas.	
	Component Fluid Detail Qualifier	**Comment**
	Alkaline Water	**Alkaline** water is a water based fluid which has more hydroxyl ions (OH-) than hydrogen ions (H+) and pH greater than 7.
	Brackish	**Brackish** water has a salinity generally measured between 0.5 and 30.0 parts per thousand (ppt). The specific range of salinity may vary by agency.
	Brine	**Brine** water has a salinity measured greater than (>) 50.0 parts per thousand (ppt)
	Combination	**Combination** water is water of differing salinity measurements
	Fresh	**Fresh** water has a salinity measured less than (<) 0.5 parts per thousand (ppt)
	Salt	**Salt** Water salinity measured between 30.1 and 50.0 parts per thousand (ppt)

	Source	**Source** water is water that originates in the reservoir as opposed to water that has been deposited into the well - reservoir for treatment or injection purposes.
	Steam	**Steam** is water which has been heated > 100 degrees Celius and exists in a gaseous state. **Steam** is commonly used to stimulate the flow of oil with very low API gravity.
	Waste	**Waste** water is a nonpotable, unwanted fluid comprised of water and remnants of other compounds (treatment fluids or production by-products).
WAG	Water Alternating Gas (WAG)	
WAS	Water Alternating Steam (WAS)	

Play Type

Play Type is a set of subsurface conditions conducive to the prospectivity of hydrocarbons. A Play Type is specific to a portion of the earth subsurface, but the same play type may exist in various parts of the earth. The value of the Play Type of may change over the life cycle of the well if the Role of the well changes or a different formation is completed.

Facet Value	Facet Definition
Conventional	A Conventional Play Type describes an intention or development to produce hydrocarbons from a typical, porous and permeable reservoir.
Shale Gas	A Shale Gas Play Type describes an intention or development to produce hydrocarbons from shale, using special methods to release the hydrocarbons from the very low permeabilty fine, grained mud rock.
Oil Sands, In Situ	An In-Situ Oil Sands Play Type describes an intention or development to produce bitumen or very heavy oil from a sand reservoir, using special technology to mobilize the oil with heat or solvent.
Oil Sands, Mineable	An Mineable Oil Sands Play Type describes an intention or development to produce bitumen or very heavy oil from a sand reservoir, using surface mining techniques.
Coalbed Methane	A Coalbed Methane Play Type describes an intention or development to produce natural gas from the impermeable matrix of coal beds.
Tight Sand	A Tight Sand Play Type describes an intention or development to produce natural gas from a low-permeability reservoir using special completion intervention and stimulation techniques.
Geothermal	A Play Type of Geothermal describes a transfer natural subsurface thermal energy to the surface in a fluid medium.
Carbon Dioxide	A Carbon Dioxide Play Type describes an intention or development to produce carbon dioxide gas from a reservoir. (For example Jackson Dome CO2 field in Mississippi)
Gas Hydrate	A Gas Hydrate Play type describes an intention to produce hydrocarbons from a crystalline solid consisting of gas molecules (usually Methane) surronded by a cage of water molecules. Gas Hydrates occur adundantly in nature, in Artic regions and in sediments.
Sub-Salt	A Sub-Salt play type descibes an intention to produce hydrocarbons from reserviors that are buried under salt domes.

Role

Role is the current purpose the well fulfills today. The value of Role may change over the life cycle of the well.

Facet Value	Facet Definition	
Produce	A Role of Produce is to extract hydrocarbons, or other commercial products from a reservoir including minerals.	
Inject	A Role of Inject is to force fluids into the reservoir to enhanced recovery of hydrocarbons in the reservoir.	
	Role Qualifier	**Comment**
	Non-conventional	A Role of Inject with a Qualifier of Non-conventional means that less common injectants are used to stimulate the reservoir.
Cycle	A Role is Cycle allows a well to alternate between the ROLES of Produce and Inject on a frequent basis. A Cyclical well does not require regulatory approvals to change between producing & injecting.	
Service	A well with a Role of Service provides maintenance and monitoring; including but not limited to fluid monitoring, blowout relief, borehole re-acquisition. A Service well is not necessarily an E&P well.	
	Role Qualifier	**Comment**
	Supply	A Role of Service with a Qualifier of Supply Well means that the well is for the purpose furbishing fluids for production and injection operations / consumption.
	Storage	A Role of Service with a Qualifier of Storage allows the injection of a fluid into a reservoir with the intention of subsequent recovery and reuse.
	Disposal	A Role of Service with a Qualifier of Disposal is for the permanent emplacement of a waste fluid into the reservoir.

	Relief	A role of Service with a Qualifier of Relief is assigned to a well that is drilled to intersect an oil or gas well that has experienced a blowout. Heavy (dense) drilling mud followed by cement may be pumped down the relief well in order to stop the flow from the reservoir in the damaged well.
Minerals	A Mineral well is a non E&P well for extracting an inorganic substance that can be disolved or carried with in a fluid. For example, elemental sulphur is melted by hot water and brought to the surface through a wellbore with compressed air (Frasch method)	
No Current Role	A Role of No Current Role is used when the well has no current purpose. For example, the well is plugged and abandoned.	
Research	A Research well is a well drilled to gather subsurface information without the intention or permission to discover or produce hydrocarbon reserves. The information may include stratigraphy, drilling, or evaluation of new technologies.	
	Role Qualifier	**Comment**
	Strat Hole	A Role of Research with a Qualifier of Strat Hole is to provide information about the stratigraphy of an area. A Strat hole is usually drilled under a permit that does not grant mineral or production rights.
Observation	An Observation well is drilled to facilitate the monitoring of other wells or the reservoir.	

Trajectory

The Trajectory Type is the general geometry of the wellbore relative to the vertical plane.

The value of Trajectory Type does not change over the life cycle of the well.

Facet Value	Facet Definition
Vertical	A wellbore path drilled into the earth with the intent to remain at 0 degrees and does not intentionally exceed an inclination of 5 degrees from vertical at any measured survey point in the wellbore. Although a Vertical Wellbore may have some natural drift, the target is beneath the well origin and the top and bottom hole are intended to have the same location. A wellbore path may deviate more than 5 degrees, for example, because of the dip of a drilled formation. The intended trajectory of a wellbore may not be part of its permanent record, so the final trajectory should be used in classifying the wellbore. A Vertical wellbore is often the first or main wellbore in a wellset.
Directional	A wellbore path that is drilled into the earth and is guided, purposeful, and deliberately steered with greater than 5 degrees deviation is a Directional wellbore. A wellbore path may deviate 5 or more degrees, for example, because of the dip of a drilled formation. If the intention or actual final result was to drill a directional well, this facet value should be used.
Horizontal	A wellbore path that is drilled into the earth and is guided, purposeful, and deliberately steered at a constant angle or varying angle in the target formation with an angle greater than 80 degrees from vertical.

Role Qualifier	Comment
S-Shaped	A wellbore path that is drilled into the earth and is guided and purposeful, deliberately steered and undulates in and out of the reservoir is a S-Shaped wellbore.

Regulatory Life Cycle Phase

The Regulatory Life Cycle is described as a collection of activities and conditions that are grouped according to their significance to the regulators.

Facet Value	Facet Definition
Reg Proposal	The initial submission of the application is when the first knowledge of a well is obtained by the regulators. Regulators may enter a well into their tracking systems at the proposal stage, or at the approval stage. Later submissions for deepenings, plugbacks or well conversions may also be shown as proposals.
Reg Review	During the review of the application, many branches of workflows occur within the agency. Within some agencies' databases, multiple status codes for the "planned well" exist on each application.
Reg Disposition	At the conclusion of the Reviewing phase, the permit will be either Approved, Withdrawn or Denied

Regulatory Life Cycle Phase Qualifier	Comment
Reg Approved	Applications that are approved become "virtual wells" within the agency's database. The regulator considers the "virtual well" a real wellbore until either the permit expires or the operator notifies the agency that the well will not be constructed. The virtual well will impact any future applications just like a physical wellbore and therefore the importance of an approved but not built status is important for the regulators.
Reg Denied	For those permits that fail to meet the requirements of the regulatory agency, the Denied value will be applied. This will include those applications that were cancelled, or otherwise pulled from consideration of the formal review process. In some cases, the regulatory agency may retain information about this application for reporting or mapping.
Reg Withdrawn	For those applications that are withdrawn by the applicant, usually the operator.

Reg Never Committed	Many agencies have specific statuses that take into consideration the "virtual wells" that never materialize. The regulators often have statuses that are assigned to these records in the database. The regulator expects a well to be constructed, and when either the approved application expires or the operator fails to construct the well, a status is assigned showing that no activity took place.

Reg Construction

All work activities that operators may do on a well. The regulators are in possession of documentation that the well is undergoing activity involving non-production equipment, usually dealing with drilling or completion activities. The majority of these wells have never been placed into an operational status before.

Regulatory Life Cycle Phase Qualifier	Comment
Reg Spud	Designates the first time a drill bit breaks the ground for the well
Reg Drill	Defines that the rig is working on the wellbore
Reg Case	Signifies the activity of placing steel pipe in the well to prevent the wall of the hole from caving in
Reg Test	The activity involved in ensuring there are no leaks in the pipe or casing
Reg Core	The process of cutting a vertical, cylindrical sample of the formations encountered as a well is drilled
Reg Stimulate	Any process undertaken to enlarge old channels or to create new ones in the producing formation of a well
Reg Perforate	Pierced the casing wall and cement of a wellbore to provide holes through which formation fluids may enter
Reg Workover	The performance of one or more of a variety of remedial operations on a producing well to try to increase production

	Reg Re-entry	The act of entering a plugged well for the purpose of utilizing said well for the production of oil or gas for the disposal of fluids therein, for a service well, or for the salvaging of tubing or casing therefrom
Reg Operational	The documents have been processed at the regulatory agency to validate that the well is ready to perform its stated intent. The well is meeting all intended goals for the operator. For the regulator, knowing the actual purpose of a well and confirming adherence to the rules of operation mark the well as being in phase three of the well life cycle, which equates to Producing in the BLCP. Utilizing a broad based term like this allows acceptance of service wells along with other wells that may have been required by orders or rules.	
Reg Temporary Cessation	The status of the well demonstrates to the regulator that the operator has ceased operational activities but abandonment is not intended. During normal operations, the well may have periods where the operator makes the decision to close the well or shut it in for economic or other reasons.	
	Regulatory Life Cycle Phase Qualifier	**Comment**
	Reg Temporary Abandonment	A well that is not capable of production, and in which operations have been abandoned temporarily. The length of time that this status may apply varies between agencies.
	Reg Shutin	A well that is capable of production, but in which operations have been discontinued temporarily. This may be done for economic reasons, distribution reasons etc.
Reg Abandoned	All wells will eventually face their end of life, and at that time, the operator must begin the process of plugging and abandonment. Every regulatory agency defines a process for the abandonment practice, up to and concluding with final reclamation. As this process takes place over a period, the agencies have developed codes to demonstrate the progress towards final reclamation.	
Reg Reclaimed	The documentation showing that the operator has properly plugged the well and reclaimed the land, and fulfilled all other requirements in the rules. Not all regulatory agencies have created specific codes for reclaimed wells, but most agencies track these wells.	

Reg Orphaned	The regulator has knowledge of an abandoned well site but there is no documentation of who the responsible party is. The regulating agency attempts to find an alternate use or operator and may place on a list to obtain resource to cover the cost of plugging. Some agencies may refer to these as "idle wells".
Reg Unknown	The regulator does not have enough documentation to provide information on the well and where it is within the Regulatory Life Cycle. These wells have been entered into the databases from a variety of sources, and due to limiting resources, remain mysteries to the staff. The agencies have created codes to allow the mystery wells to exist until more documentation is located to better understand these wells.

Wellbore Status

Wellbore Status is the condition of the wellbore at any particular point in time. The Wellbore Status is meant to be a slowly changing attribute that measures milestones in the Business Life Cycle Phases. The Wellbore status or change in the Wellbore status constitutes the culmination of a significant event that is performed to or on a Wellbore throughout its major lifecycle phases.

Facet Value	Facet Definition
Location	Location is the status of a wellbore commencing from the date of conception to date the well is spud.
Drilled	Drilling is the status of a wellbore commencing from rig being moved onsite, the well being spudded and drilled, to the time a decision is made to complete or not to complete.
Drilled and Cased	Drilled and Cased is the status of a wellbore when drilling operations have been finished, the rig has been moved offsite and the wellbore is ready to be completed. The well is left in an interim stable condition - the casing is intact (IE not damaged or perforated) and the well is capped at the surface. This is a temporary state of short duration, the well only exists in this staus while decisions are being made.
Completed	Completing is the status of a wellbore when the downhole equipment is being installed and the well is being prepared for service
Producer	Producing is the status of a wellbore during the phase where liquids or gas is being extracted from the wellbore.
Injector	Injecting is the status of a wellbore during the situation where liquids or gas is being pumped into the wellbore.
Shut In	Shut In is a the status of a wellbore that is in a temporary phase in which the production is briefly halted for economic or operating reasons. Shutting in involves closing valves or shutting off pumps that are required for production or injection.

Suspended	Suspended is the status of a wellbore whose operations have been halted for a significant period of time or in a manner that requires significant effort for the resumption of activities. The wellbore can be plugged downhole and fluids injected on top of the plug in order to create a temporary seal to prevent hydrocarbon leakage. Regulatory definitions often govern resumption of production relative to the risks involved. The surface equipment remains in place. Suspended is never the final status of a well.
Abandoned	Abandoned is the status of a wellbore when the operator is walking away, with no intention of returning to the well. All operations and activities are terminated. Legally, Abandoned should be a short term staus as procedures are underway to permanently plug and seal all of its wellbores (not always the case).
Contributing Production	Contributing production is the status of a wellbore when the hydrocarbon production from this wellbore contributes to an assigned production volume for another well or wellbore. For example: In multi leg CBM wells, individual wellbores drain into the main producing wellbore. Or in wells(wellbores) that produce from multiple zones the production is comingled.
Producer & Injector	Producing & Injecting is the status of the wellbore that alternatley produces and injects fluid into a wellbore.
Plugged	A well that has been prepared to be closed permanently, usually after either analysis determines there is insufficient hydrocarbon potential to complete the well, or after production operations have drained the reservoir.

Well Status

Well Status is an overall summary state of a Well comprising a Wellbore or group of Wellbores with the same Well Origin. If all of the component Wellbores are not active relative to company specific business rules, then the Well is considered in-active. If any of the component Wellbores have some type of activity, then the Well status is considered to be active. The value of Well Status may change infrequently as a well progresses through its lifecycle.

Facet Value	Facet Definition
Active	Active is the status of a well once operations facilities installation is complete and the well is capable of intended purpose.
In-Active	In-Active is the status of a well when it is incapable of producing hydrocarbons and is not fulfilling any other purpose.
Plugged and Abandoned	Plugged and Abandoned is the status of an abandoned well once all final regulatory/jurisdictional inspections and approvals have been obtained verifying that its wellbores have been plugged in such a way or manner as to prevent the migration of oil, gas, salt water, or other substance from one stratum to another and that all required down hole equipment is removed and surface reparations to the wellsite have been completed.
Reclaimed	Site reparations have been completed and the well site is returned to its natural state.

Business Interest

Business Interest is a facet that describes why the company spends time, effort, and manpower keeping tabs on an entity, managing the data associated with an entity, and/or includes that entity in its decision-making processes. Business Interest attempts to answer the question, "Why does the company care anything about this well or wellbore entity?" Business Interest is at the well or wellbore level (or both). A well or wellbore will only have 1 value for Business Interest - it is assumed and stipulated that a company that has a financial interest in a well also has an obligatory and a petrotechnical interest, etc. So these values are meant to be mutually exclusive and ranked in importance. The value assigned is the highest rank that properly describes the business interest.

Facet Value	Facet Definition
Financial Interest	Financial Interest is the classification when the well affects the company's income statement; IE. the well has current revenue or operating expenses. Financial Interest assumes the business also has an Obligatory Interest and a Technical Interest in the entity.
Obligatory Interest	Obligatory Interest is the classification when the business has a non-financial interest in the entity but there is some other type of business obligation that obliges the company to monitor an entity. Obligatory Interest assumes the business also has a Technical Interest.
Technical Interest	Technical Interest is the classification when the business has a scientific, geotechnical, and/or operational interest in the entity, and uses information from and about the entity in decision-making processes or monitors the entity as it relates to entities in which it has a financial interest.

Exceptional Interest	Exceptional Interest is the classification when the business has a very distinct, but unusual interest in the well. For example: a company may operate a well but have no direct financial interest or equity in the well or the well's performance. Or a company may have evaluated a well but decided not to proceed (therefore currently having no financial or technical interest but the company would have data and knowledge pertaining to the well.) Exceptional in this context does NOT mean that the interest is high, just that the interest is an exception to all other values of Business Interest.
No Interest	No Interest is the default classification and signifys the business has no interest in the entity. Data purchased from commercial vendors will generally include all wells in the world and may be potentially stored within the corporate well database with a Business Interest of "No Interest". The company uses no corporate resources or effort to manage or care for these wells.

Business Intention

Business Intention is the approved business purpose of the well at the start of the Drilling phase. The value of Business Intention does not change over the life cycle of the well unless the Business Life Cycle reverts to the Planning phase. The purpose of this facet is to evaluate the results of the initial Business Intention against the Outcome facet. Did you do what you said you were going to.

Every AFE would need a Business Intention and Outcome. (NOTE use requires a versioning mechanism)

Facet Value	Facet Definition
Exploration	An Exploration well is drilled into an unproven area to determine and evaluate the hydrocarbon potential and production capabilities of a previously undeveloped area or zone.
Appraisal	An Appraisal well is drilled into an formation shown to be potentially productive by an earlier well, and is used to obtain more information about the reservoir. An Appraisal well can also be known as a Delineation well.
Extend	A Business Intention of Extend describes a well drilled to search for additional pools, or to extend the limits of a known pool by searching nearby in the same interval.
Develop	A well classed as Develop is drilled into an area or zone already proven to be productive, in order to assist in the recovery of hydrocarbons. This definition includes service wells.

Business Life Cycle Phase

Business Life Cycle Phase is a collection of activities and conditions, that are grouped according to business significance, describing where an E&P asset (in this case a well) is at within its progressive history. Phases are related to business significance and are not related to time.

Business Life Cycle Phase is relevant for wells that the E&P company has a Business Interest in.

The value of the Business Life Cycle Phase is expected to change in a predictable manner as the well progresses through out its history and may reoccur as various operations are executed.

Facet Value	Facet Definition
Planning	Planning is the collection of activities for proposing and designing a well, and obtaining necessary regulatory & management approvals.

Business Life Cycle Phase Qualifier	Comment
Approved	Approved from the perspective of the business.
Proposed	Proposed from the perspective of the business.
Denied	Denied from the perspective of the business.
Cancelled	Cancelled from the perspective of the business.

Drilling	Drilling is the collection of activities that occur during the time period a well is being constucted, beginning with the receipt of all regulatory and management approvals. Drilling includes site construction and drilling the wellbore, and ends with the initiation of a completion activity or abandonment. The drilling phase persists through any delay or suspension of drilling operations and while waiting on approvals for completions or abandonment.

Completing	Completing is the collection of activities in a WELL or WELL SET, where drilling operations are complete, the rig has been removed and the well is ready for or undergoing installation of down hole equipment required to prepare the well for producing.
Producing	Producing is the collection of activities when the well is performing its intended role; fluids are brought to the surface or are injected into the earth. The Producing phase usually has the longest duration in time of any of the Business Life Cycle phases. The Producing phase may include periods where the well is temporarily Shut In.
Disposing	Disposing is the collection of activities that occur when the Business is Disposing of the E&P asset (the well) and the well is permanently abandoned or sold. At the completion of the Disposing phase, the E&P company no longer has any financial or obligatory investment in the Well.

Lahee Class

Lahee Class is a traditional, commonly accepted, standard scheme used to categorize wells by the general degree of risk assumed by the operator at the time of drilling.

The Lahee classification system was adopted by industry in 1944 to categorize wells by the general degree of risk assumed by the operator. Of the 5 exploratory classes, the new-field wildcat represents the highest level of risk and the outpost (extension) represents the lowest risk. A well classed as a development well is lower in risk than any of the exploratory wells.
The value of Lahee Class does not change over the life cycle of the well.

Facet Value	Facet Definition
New-Field Wildcat	A Lahee classification of New-Field Wildcat describes an exploratory well drilled to search for an occurrence of hydrocarbon at a relatively considerable distance outside the limits of known pools of hydrocarbon, as those limits were understood at the time.
New-Pool Wildcat	A Lahee classification of New-Pool Wildcat describes an exploratory well drilled to search for additional pools of hydrocarbon in close proximity and at the same stratigraphic level as known pools.
Deeper-Pool	A Lahee classification of Deeper-Pool Wildcat describes an exploratory well drilled to search for additional pools of hydrocarbon in close proximity to known pools of hydrocarbon but at a deeper stratigraphic levels.
Shallower-Pool	A Lahee classification of Shallower-Pool Wildcat describes an exploratory well drilled to search for additional pools of hydrocarbon in close proximity to known pools, but at a shallower stratigraphic levels.
Extension	A Lahee classification of Outpost Wildcat describes an exploratory well drilled to search for additional pools, or to extend the limits of a known pool by searching nearby in the same interval.
Development	A Development well is drilled into an area already proven to be capable of production, in order to assist in recovery of hydrocarbons.

Outcome

Outcome is the result of the operation relative to the Business Intention. The value of Outcome does not change over the Business Life Cycle of the well, unless the Business Life Cycle reverts to the Planning phase and the Business Intention changes. There is a 1:1 correlation between Business Intention and Outcome.

Every AFE would need a Business Intention and Outcome. (NOTE: use will require a versioning mechanism)

Facet Value	Facet Definition
Successful	An Outcome of Successful means that the original Business Intention was met.

Outcome Qualifier	Comment
Discovery	An Outcome of Discovery means that a well has found a new reserve of hydrocarbons, whether or not this was the specific target of the original Business Intention.

Facet Value	Facet Definition
Unsuccessful	An Outcome of Unsuccessful means that hydrocarbons may be present but not in the amount, hydrocarbon type or zone predicted in the original Business Intention.

Outcome Qualifier	Comment
Dry	An Unsuccessful Outcome of DRY means that no significant hydrocarbons were present in the well.
Non-commercial	A Unsuccessful Non-Commercial Outcome means that the original Business Intention was not met, and although hydrocarbons are present, they are not of a quality or quantity to develop at current economic / political consitions

Undetermined

An Outcome of Undetermined means that for some reason (may be financial or technical), the target was not reached and therefore, you don't know if hydrocarbons are present.

Outcome Qualifier	Comment
Abandoned Before Intended TD	An Undetermined Outcome with a Qualifier of Abandoned Before Intended TD means that for financial or technical reason, the intended TD was not reached.
Failure Before Intended TD	An Undetermined Outcome with a Qualifier of Failure Before Intended TD means that for engineering reasons, the intended TD was not reached.
Lost Hole	An Outcome of Lost Hole means that due to an engineering difficulty or drilling failure, the wellbore is abandoned.

Operatorship

Does the information holder [ie . the database owner] hold the primary accountability for the conduct of all activities performed on the well set at the time of classification? The value of Operatorship may change during the life cycle of the well if the accountability for the wellset is transferred to a different company or entity.

Facet Value	Facet Definition
Yes	A well is flagged with a value of "YES" for Operatorship if the business has the primary accountability for the conduct of all activities performed on the well. The well operator is accountable to the regulator and any working partners, and is usually the holder of the well permit. The operator may assign portions of the work to other business associates but remains the responsible party. The Operator of a well directly funds and controls all well operations. Wells that are have a classification of YES in this facet, have a implied Business Interest = Financial Interest.
No	A value of "NO" for Operatorship is the classification for an entity that is not operated. "No" means only that the company does not operate this well; and other aspects of Business Interest can not be implied. No is the default classification for most wells in the public domian, a null value is acceptable.

Well Structure

Well Structure is the geometric relationship of all the wellbores within a well set, relative to each other. The value of Well Structure may change over the life cycle of the well set as new wellbores are drilled that may become part of the well set.

Facet Value	Facet Definition
Simple	A Simple Well Structure has one well origin and one wellbore. It may have multiple geologic targets, but they must all be accessed along the same wellbore. As an exception to the rule of one wellbore, a simple well may have a remedial bypass wellbore, but only if it is plugged and has no retained data (cores, drilling records, etc.) Initial, Reentry, Remedial Sidetrack
Simplex	A Simplex Well Structure has one well origin and more than one wellbore. A simplex well may contain remedial (bypass or deviation correction) wellbores and one or more wellbores deviated to a new target(s). Initial, Reentry, Remedial Sidetrack, Sidetrack
Compound	A Compound Well Structure has an initial simple well and one or more additional wellbores, all sharing the same intended well origin but in reality with different well origins because of re-spud to correct drilling difficulties. It may have multiple geologic targets, but they must all be accessed along the same wellbore. A compound well may have a remedial bypass wellbore, but only if it is plugged and has no associated data (cores, drilling records, etc.) Initial, Re-entry, Remedial Sidetrack, Re-Spud
Complex	A Complex Well Structure has an initial simple, simplex or compound well and one or more additional wellbores, all sharing the same intended well origin but in reality with at least two separate well origins because of re-spud to correct drilling difficulties. It may have remedial (bypass, deviation correction, or blowout relief) wellbores and zero or more wellbores deviated to a new target(s.) Initial, Re-entry, Remedial Sidetrack, Sidetrack, Re-Spud

Network	A Network Well Structure is a well in which component wellbores may start at one or more points on the surface of the earth (*multiple* WELL ORIGINS), are interconnected below the surface of the earth, and may be created for the acquisition of many primary geological targets. A network well may have many surface access points to shared geologic targets. Initial, Re-entry, Remedial Sidetrack, Sidetrack, Re-Spud

Well Reporting Class

Well Reporting Class is the classification by which the well is categorized for regulatory or insurance reporting. It may be derived from the well component fluids according to business rules and regulations of specific regions.

Well Reporting Class can change over the life cycle of a well

Facet Value	Facet Definition
Oil Well	An Oil Well is a well classified for SEC or Insurance purposes as producing Oil. Each company is expected to have their own rules for rollup.
Gas Well	An Gas Well is a well classified for SEC or Insurance purposes as producing Gas Each company is expected to have their own rules for rollup.
Water Well	An Water Well is a well classified for SEC or Insurance purposes as producing Water Each company is expected to have their own rules for rollup.
Service Well	An Service Well is a well classified for SEC or Insurance purposes as monitoring or performing a service.
Other Well	A well which is not producing Oil, Gas or Water is classified as Other Well.