GeoConvention 2015
GEOSCIENCE
new horizons
Telus Convention Centre • 4-8 May 2015 • Calgary, AB Canada

The Canadian Well Identification System

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Summary

The Canadian Well Identification System (CWIS) is defined in a standard published by the Professional Petroleum Data Management (PPDM) Association. It has three related identifiers: Well ID, Wellbore ID and Well Reporting ID. The new standard is intended to replace the main data management functions of the Canadian UWI but the UWI has a continuing role, especially for the end-user communities.

Introduction

The Unique Well Identifier, developed in 1965, is widely used in Canada but is not suitable for the complexities of drilling and completion that have evolved in the last decade. A new system was created by an industry group representing operators, governments and data vendors in western Canada. Saskatchewan, in 2015, will be the first jurisdiction to implement the CWIS standard.

Need and Response

The main limitations of the UWI are: 1) it is not permanent, 2) it identifies well events but not the parent well, and 3) it does not distinguish between drilling events and completion events. Some other weaknesses are due to differences in processes and systems among the various regulators. Nevertheless, the new standard envisions a continuing role for the UWI in the end-user communities.

The Canadian Well Identification System (CWIS) has three related identifiers (Fig.1): Well ID, Wellbore ID and Well Reporting ID. Each assigned identifier is permanent and unique; these two properties are essential for data management systems. Every well and wellbore is identified. Every real or virtual fluid stream required for regulatory reporting is identified. The identity of the parent well is assured because the Well ID is a component of the other two identifiers. If adopted, the CWIS identifiers would be applied to all historical and future wells.

To assign an identifier, PPDM's *What Is A Well?* baseline definitions are used to recognize a unique well, wellbore or well reporting stream. In summary, a "well" includes all subsurface components sharing a unique "well origin" (penetration of the earth surface or seabed). A "wellbore" is a drilled path from the well origin to a terminating point (bottom/end). A "well reporting stream" is a derived stream of fluids to support the allocation and aggregation of volumes; this can represent the production (injection) from (into) a completion.

	Identifier Construction				
Description	**Authority Code**	**Well Number**	**Compo-nent Type**	**Compo-nent Value**	**Identifier example**
Well ID	AB	1597532			AB1597532
Wellbore ID	AB	1597532	B	001	AB1597532B001
Well Reporting ID	AB	1597532	V	001	AB1597532V001

Figure 1: Construction of the CWIS identifiers.

The CWIS is designed to deliver several important improvements to the management of Canadian well data. It reduces the risks of poor decisions caused by lost, misplaced, inaccessible or unknown data. It reduces the expense of processing UWI amendments and the related risk of misplacing data. It enables clear identification of every wellbore and maintains the parent-child relationship in multileg wells. It simplifies the identification of complex multi-stage and multi-lateral completions. It provides a single trusted identifier for a well at the surface and thereby reduces the uncertainties for field personnel and for stakeholders outside the oil and gas industry (e.g. municipal governments, emergency response services, landowners and the general public).

The asset value of high quality well data, and the costs associated with assuring timely availability, are the business drivers behind the CWIS Standard. Many stakeholders who rely on well data are unaware of these costs. They may implicitly trust the data and assume they have all the relevant data at their fingertips. But their confidence is misplaced if they do not understand the data management process or have assurance that the process is effective for their needs. Data governance practices vary throughout the oil and gas industry; many organizations do not explicitly acknowledge information as a value corporate asset or place a dollar value on their data management practices. Many companies rely on their data vendor for the completeness, quality and timeliness of their well data but fail to relate the cost of this service to the quality of their business decisions and risk mitigation.

In the past 20 years or so, new technologies have created a vast array and volume of new types of well data and the demand to have it all delivered to the digital workspace in a short time. The essential role of an identifier in any database is to index and track each data item. This is especially important for data that is exchanged between systems, such as when reported to the regulator or shared between business partners. The UWI design did not anticipate these evolving needs. Many wells now have more than one wellbore, each of which requires a drilling event UWI that is assigned only when the regulator receives the information from the operator. Where a wellbore is not vertical, the location information component of the UWI must be verified by processing a directional survey; if the bottom is not where predicted, a UWI amendment is issued. The review and amendment is usually several weeks after the finished drilling date; this time lag is another data quality problem. Figure 2 shows the growth in directional and horizontal wells and the corresponding increase in the frequency of UWI amendments (about 300% in the past 15 years). Some of these amendments are caused by the recalculation of the bottomhole location; others are new UWIs assigned to multiple wellbores or completions.

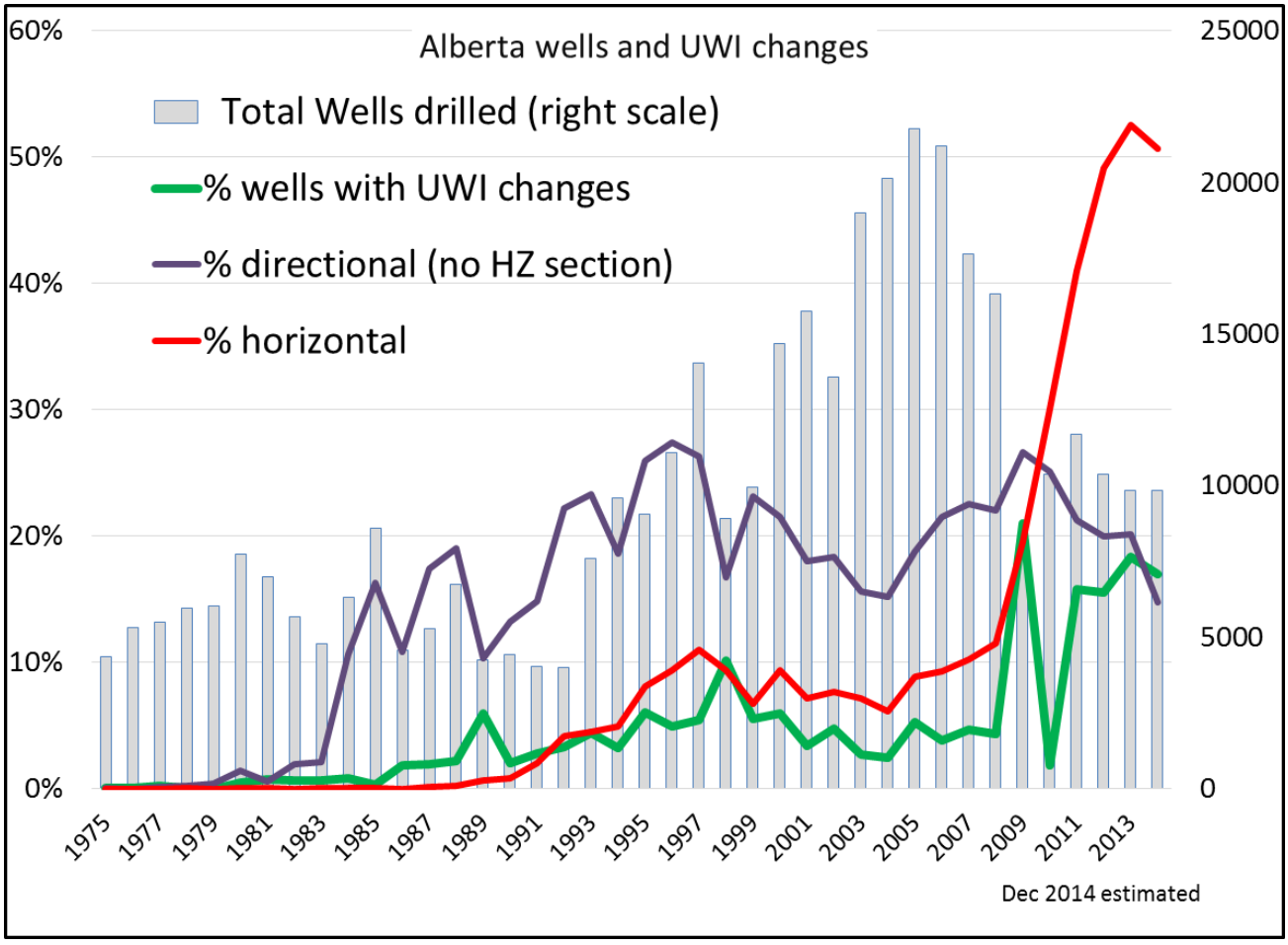

Figure 2: Alberta wells, well types and UWI assignments. Last 5 weeks of 2014 are estimated.

Example

The standard does not dictate the business processes of the regulators other than to urge that the identifiers be assigned as early as possible. Nevertheless, this example suggests the best practice to create the CWIS identifiers.

The system that issues the drilling authorization (e.g. well licence) creates the Well ID, assigning the next available 7-digit number. The system that receives the drilling and completion data from each operator assigns the Wellbore ID and Well Reporting ID in the sequence the data is received. Once the Well ID is issued, the operator can anticipate the Wellbore ID and Well Reporting ID and use it internally even before reporting to the regulator. This allows the identifiers to be attached to well logs, cores, tour sheets, etc. as they are created.

In Figure 3, a fictional well has 3 wellbores (3 unique bottom points). The two lateral legs are producing in a single completion with no subsurface segregation. Each wellbore has its own Wellbore ID and a UWI for the drilling and completion events. The completion activities are recorded by depth and time on the relevant Wellbore ID. The production is reported on the one Well Reporting ID for this well because there is one fluid stream. A completion event UWI may also be assigned if it is required for a legacy production reporting system. If the directional survey shows that the wellbore terminated in a location other than what was planned, the UWI is amended but there is no change to the CWIS identifiers.

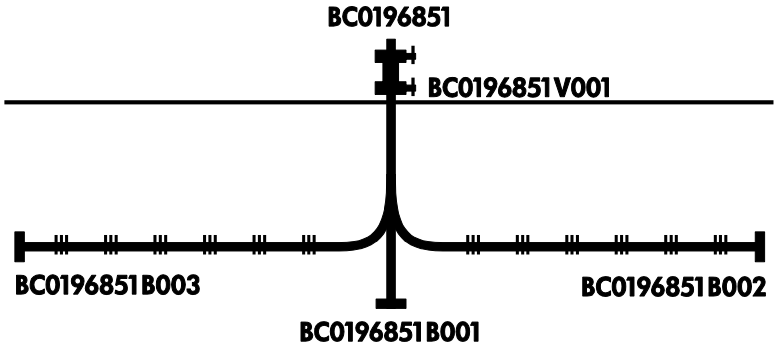

Figure 3: Fictional example of a multilateral producing well.

Conclusions

The CWIS Standard provides the means to elevate the management of Canadian well data. Effective data management reduces costs and risks, increases the availability and quality of data to all the stakeholders and enhances the value of the data as a corporation asset.

Adoption of the CWIS Standard is entirely a decision of each government regulator. The new standard does not remove the UWI.

Acknowledgements

The project to upgrade well identification was initiated in 2012 by Alberta's Energy Resources Conservation Board (now AER) and PPDM and expanded to include the 4 western provinces. The CWIS standard was developed by a work group facilitated by PPDM. It began in 2013 and released two drafts for review by the industry before finalizing Version 1.0 in December 2014. Over 25 people with expertise in well data management and end-user requirements participated in the work group. We acknowledge their dedication and commitment to a consensus solution. We thank their employers for making them available to the work group. We thank the project managers, Jeffrey Bonus and Ingrid Kristel, and all those who provided comments on the drafts. We thank the regulators, operators and data vendors who sponsored the project and provided funds.

References

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