The Canadian Well Identification System Standard
An Identifier for Petroleum Industry Wells in Canada

The PPDM Association is a not-for-profit data management professional society that collaborates with industry to develop Professional Data Management standards for the Petroleum Industry.
EXECUTIVE SUMMARY

The Canadian Well Identification System (CWIS) is designed by and for the petroleum industry in Canada. Its three related identifiers recognize every well, wellbore and well reporting stream. It is intended chiefly for databases and computer systems that support business processes for all stakeholders.

Business processes and decisions require comprehensive and accurate information delivered in a timely manner. A standard system of coded identifiers enables a data management system to fulfill this function. With the CWIS identifiers, every data item about every well can be managed from creation to delivery to archive for the benefit of all stakeholders.

The Canadian Unique Well Identifier (UWI) system, widely used for more than 40 years, is inadequate for managing databases of complex wells now and into the future. In the CWIS system, the UWI will be maintained to manage legacy data and systems.

This document presents the CWIS standard. Various supporting materials are also available to explain the business and technical needs for well identifiers and to assist with the adoption and maintenance of the standard.
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With special thanks to the many others who contributed their time and expertise to the success of this industry-led project.
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DEFINITIONS

Where capitalized in this document, the terms are defined here. The definitions for well components are based on the PPDM baseline definitions called *What Is A Well?* (WIAW).\(^1\)

Authority
The government or its agency (e.g. regulatory body) that implements the Standard and assigns and maintains the CWIS Identifiers within its jurisdiction.

Authority Code
The first two characters of a CWIS identifier representing the Authority assigning the CWIS identifier.

Canadian Association of Petroleum Producers (CAPP)
The Canadian Association of Petroleum Producers represents companies that explore for, develop and produce natural gas and crude oil throughout Canada. Through working closely with members, governments, communities and stakeholders, CAPP analyzes key oil and gas issues and represents member interests nationally in all of Canada's provinces and territories. CAPP also strives to achieve consensus on industry codes of practice and operating guidelines that meet or exceed government standards.

Canadian Well Identification System (CWIS)
The Canadian Well Identification System is the standard defined in this document for assigning and maintaining well identifiers that work in conjunction with the current UWI.

Identifier (ID)
A unique and permanent value assigned to each instance in a class of objects.

Professional Petroleum Data Management (PPDM) Association
The Professional Petroleum Data Management Association is a global, not-for-profit professional society of data managers that collaborates with industry experts to develop data management standards for the petroleum exploration and production industry.

Standard
The specifications for the Canadian Well Identification System (CWIS).

Unique Well Identifier (UWI)
The Canadian version of a Unique Well Identifier, developed by the Canadian Petroleum Association\(^2\) in 1965 and widely used, with variations, by most of the Canadian petroleum industry, including governments.

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Well
A proposed or actual drilled hole in the ground designed to exchange (or facilitate the exchange of) fluids between a subsurface reservoir and the surface (or another reservoir), or to enable the detection and measurement of rock properties. Every well has a single Well Origin.

Well ID
The CWIS unique identifier that is assigned to a Well.

Well Identification System
A structured assembly of criteria, methodology and facility for assigning and maintaining a set of well identifiers.

Well Origin
The location on the surface of the earth or sea bed where the drill bit is planned to or does penetrate the earth to establish or rework a Well.

Well Reporting ID
The CWIS unique identifier that is assigned to a Well Reporting Stream.

Well Reporting Stream
A conceptual stream of fluids assigned on the basis of business requirements.

Wellbore
A proposed or actual path of drilled footage from the Well Origin to a terminating point (bottom/end).

Wellbore ID
The CWIS unique identifier that is assigned to a Wellbore.
INTRODUCTION

Background
In 1965, the Canadian Petroleum Association (now the Canadian Association of Petroleum Producers, CAPP) developed the Canadian Unique Well Identifier (UWI). The UWI was assigned retroactively to historical records and to all new wells. It is widely used, albeit with minor variations, in most of Canada. A revision of the UWI standard by CAPP in 2000 made some changes that apply to wells off the east coast of Canada.

As the industry has evolved in the years since the introduction of the UWI, the limitations of this identification system have become an impediment to the effective management of well information. Wells are more complex (Figure 1), data volumes are increasing rapidly, analytical tools require access to the full spectrum of data in digital formats and stakeholders recognize the importance of managing their data as a business asset. Moreover, there are greater demands for well information for technical and business analysis within the industry, and from other government sectors and the public.

Figure 1: An Example of a Complex Multilateral Well

In response to the industry’s need to overcome the limitations of the UWI, a work group representing governments, data vendors and well operators in western Canada developed this new Standard for well identification. The project was endorsed by the western Authorities, CAPP and several stakeholder companies and facilitated by the PPDM Association. The charter for the work group, specifying the goals, process and deliverables, is available from PPDM.
Purpose of a Standard Identifier
A Standard is an established norm or requirement for a product or process, usually to ensure identical properties or meaning. A standard Identifier, therefore, allows information to be captured, stored, retrieved and exchanged without loss of content or corruption of meaning.

All aspects of the industry’s activities with Wells involve information creation and exchange. For example, the well operator sends information to its own systems, to the government and to its partners. The government disseminates information both internally and externally. Technical and business systems create processes and exchange data.

Identifiers are essential for managing these exchange processes. Without standard Identifiers, each transaction must include a process of translation between the private identifiers.

The Standard is designed for the petroleum industry of Canada. This includes wells for service, disposal, core test and stratigraphic test and wells to supply water for petroleum production operations. The CWIS may also be assigned to other wells (e.g. coal, sulphur, potash), provided this use does not violate the uniqueness and integrity of the Identifiers for the petroleum industry.

Business Requirements
The business requirements for well identification were determined by stakeholder interviews conducted by PPDM in 2012 and by discussion within the work group. The chief business requirements for a Well Identification System are:

- Continuity and reliability of the data on the well(s) of interest. Ideally, nothing is missed, transposed or confused and no extraneous data is added.
- Efficiency (time, cost, certainty) in data exchange to/from business/technical applications.
- Cost/benefit value of adopting a new standard for identification, data exchange and archiving well records. The value in the data supports successful business decisions and mitigation of risks.
- Realistic costs for revisions to software and regulations.
- Business stability through the implementation period and beyond.
- Coordination among stakeholders (including Authorities) to minimize the transition impact and shorten the timeline. Software and business processes have to stay in conformity with regulations, etc.
- Training effectiveness for the staff of all stakeholders. CWIS adoption requires some change in the work methods of geoscientists, business analysts, programmers, engineers, data managers, etc.
- Management of well data as a corporate asset.
THE WELL IDENTIFICATION SYSTEM

Design Considerations
The work group determined that the existing UWI system could not adequately serve all business requirements. Therefore, a new Well Identification System was developed. In the new system, the UWI continues to exist as an attribute and is expected to be reviewed independently in each jurisdiction to serve unique and local business needs.

In theory, any and all information items about a Well could be assigned its own unique Identifier. However, this is neither practical nor necessary. All the information in a Well can be efficiently “tagged” and retrieved with only three Identifiers.

- The Well ID identifies a Well. Most information is filed and retrieved according to the Well from which it came or to which it relates.
- The Wellbore ID identifies a Wellbore. All downhole measurements and construction, including tests and completions, can be located by depth interval and time interval within the Wellbore.
- The Well Reporting ID identifies a Well Reporting Stream for which the Authority requires information. These fluid streams are of vital interest to all parties in a Well and to governments. The Well Reporting ID is the Identifier to enable management of all the information about a Well's productivity.

![Diagram of Well Identification System](image)

Figure 2: The Relationship of Identifiers to Well Components

The terms Well, Well Origin, Wellbore and Well Reporting Stream are defined in the Definitions section. The relationship to the UWI system is discussed in Appendix 1.
The Canadian Well Identification System Standard

**Principles**
The design of the [Standard](#) and the recommendations for creating Identifiers are guided by several principles. Where possible, the Standard is independent of any stakeholder’s business processes.

**Guiding Principles for All Identifiers**
- Every ID is unique.
- Every ID is permanent.
- Every ID is assigned only by the relevant Authority.
- The IDs should not enforce a time sequence (drilling, approval, issue, etc.).
- The value of the ID implies no temporal order.

**Guiding Principles for Well IDs**
- Every Well has a Well ID.
- Every physical Well Origin has one and only one Well ID.
- Re-entry into the same Well Origin has the same Well ID as the existing Well.

**Guiding Principles for Wellbore IDs**
- Every Wellbore has a Wellbore ID.
- Every Wellbore is associated with one Well ID.

**Guiding Principles for Well Reporting IDs**
- Every Well Reporting Stream has a Well Reporting ID.
- Every Well Reporting ID is associated with one Well ID.

**Construction**
Each Identifier is constructed in a similar way and is designed to be permanent and unique. The Wellbore ID and Well Reporting ID contain explicit reference to the parent Well ID. Each Identifier is the key to all the data about the object including, in most cases, one or more UWIs. See Appendix 1 for details of the relationship of CWIS and UWI.

The **Well Identifier** consists of two parts.
- Authority Code, see Figure 3
- Well number

<table>
<thead>
<tr>
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<th>1 – 2</th>
<th>3 – 9</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Authority Code</td>
<td>Well number</td>
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<tr>
<td>Example:</td>
<td>AB</td>
<td>0123456</td>
</tr>
</tbody>
</table>

Table 1: Structure of the Well Identifier
The Wellbore Identifier consists of three parts.

- Well ID
- Component type code
- Component value

<table>
<thead>
<tr>
<th>Positions:</th>
<th>1-9</th>
<th>10</th>
<th>11-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>Well ID</td>
<td>Component type code</td>
<td>Component value</td>
</tr>
<tr>
<td>Example:</td>
<td>AB0123456</td>
<td>B</td>
<td>001</td>
</tr>
</tbody>
</table>

Table 2: Structure of the Wellbore Identifier

The Well Reporting Identifier consists of three parts.

- Well ID
- Component type code
- Component value

<table>
<thead>
<tr>
<th>Positions:</th>
<th>1-9</th>
<th>10</th>
<th>11-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>Well ID</td>
<td>Component type code</td>
<td>Component value</td>
</tr>
<tr>
<td>Example:</td>
<td>AB0123456</td>
<td>V</td>
<td>001</td>
</tr>
</tbody>
</table>

Table 3: Structure of the Well Reporting Identifier

The Authority Code consists of two characters representing a regulatory jurisdiction at the time that the Well ID is assigned. If jurisdiction subsequently changes, the Identifier does not change. See Figure 3, the Authority Codes section, for the list of codes.

The Well number is seven digits. A well number is assigned to each Well. Every well number must be unique within a jurisdiction. When combined with the Authority Code, every Well in Canada is uniquely identified. The Standard applies no temporal order to the sequence of the well number.

The component type code is a visual indicator for the component. The character must be in uppercase. The Standard prescribes the following letters and reserves all others for future use.

- **B** = Wellbore
- **V** = Well Reporting Stream

The component value is three digits. Every component value must be unique within a component type. Leading zeros are significant and must be preserved. The Standard applies no temporal order or significance to the sequence of the component value.
GUIDELINES

The Standard defines the Identifiers. Although each Authority controls its own business processes, the greatest benefits of a standard system come when it is used consistently. Among these benefits are accuracy and confidence in the retrieval and exchange of well information. Adherence to the following recommendations will promote consistent use.

New Wells

Recognizing a Well

- A new Well Origin, proposed or actual, constitutes a new Well.
- If a Well is junked while drilling, and the rig is skidded to spud again, a new Well Origin is created. See Figure 8.
- Re-entry does not create a new Well Origin and therefore it is not a new Well.

Assigning a Well ID

- The Authority assigns a Well ID to each Well.
- Every well licence (well authorization, drilling permit) must have a Well ID.
- Every Well must be assigned a Well ID when the Well is authorized.

Assigning a Wellbore ID

- The Authority assigns a Wellbore ID to each Wellbore.
- Every Wellbore must be assigned a Wellbore ID when the Wellbore is authorized.
- If a Well is re-entered and a new Wellbore drilled, a new Wellbore ID is assigned.
- If a Wellbore is deepened or lengthened, the Standard allows each Authority to define the criteria for determining if this creates a new Wellbore. See Figure 10 and Figure 11.

Creating a Well Reporting Stream

- The Authority designates a fluid production or injection flow configuration as a Well Reporting Stream.
- The Authority may also designate a virtual Well Reporting Stream to manage regulatory reporting or any other requirement. This facilitates the allocation of commingled fluid volumes to specific reservoirs and the allocation of volumes to specific legs in a multilateral completion.
- A Well Reporting Stream may be created at any time in a Well’s life.

Assigning a Well Reporting ID

- The Authority assigns a Well Reporting ID to each Well Reporting Stream.
- Every Well Reporting Stream must have a Well Reporting ID.
- If a multilateral Well has a single producing stream, only one Well Reporting ID is assigned unless the Authority requires a different practice. See Figure 13.
Existing Wells
Implementation of the Standard includes assigning Identifiers to all UWIs in the Authority’s master database. There must be a reliable relationship between every UWI and the CWIS Identifiers in order to support records management and database operations. Similarly, cross-reference tables are necessary to support software that relies on the UWI.

Please refer to Appendix 2 for a recommended procedure.

Special Cases
Cancelled Identifier
If a CWIS Identifier is assigned but subsequently cancelled or withdrawn, it must not be used again. This includes an Identifier issued in error and an Identifier assigned in advance for a Well, Wellbore or Well Reporting Stream that is never built. Any reuse violates the design principle that every Identifier must be unique and permanent.

Cancelled or Expired Licence
In the normal requirement of the Standard, a unique Well Origin must have only one Well ID. However, this may cause confusion when comparing a cancelled location with a planned or actual location. On any application to drill, the Well’s surface location (Well Origin) is only an estimate or prediction. The true location of a physical Well Origin cannot be known until the Well has spudded. Therefore, a new Well (if and when licensed) at the same location should be differentiated from a cancelled/expired one by the use of a new Well ID.

Commingling
The commingling (mixing) of fluids from two or more zones is a special situation for identification.

- If two or more producing zones are commingled, one Well Reporting ID is required. However, the Authority may also assign a Well Reporting ID to each zone to record allocations or for other purposes. See Figure 14.
- If two or more production streams are commingled, a new Well Reporting ID must be assigned. See Figure 15.
- If a commingled production stream is segregated, each new stream must be assigned a new Well Reporting ID unless the Authority requires a different practice.

Re-entered Well
A Well may be re-entered for further drilling and/or completion work, even after it has been plugged and abandoned. The Authority may allow this on the existing licence (or authorization) or may issue a new licence. As the Well still has the same Well Origin, the re-entry operations must be associated with the existing Well ID.

Relief Well
If a Well is drilled for the purpose of bringing another Well under control, the relief Wellbore may intersect a Wellbore in the blowout Well. In this case, the configuration may suggest a single complex Well with two Well Origins. However, the Standard requires only one Well ID for each unique Well Origin. Therefore, a relief Well must be considered as a separate and unique Well with its own unique Well ID.
Paired Wells
Some Wells are designed to function as pairs with two or more closely parallel Wellbores. Steam-assisted gravity drainage (SAGD) is one example. The typical well pairs are drilled from a surface pad, with each having its own unique Well Origin. Each Well must therefore have its own Well ID.

ROLES AND RESPONSIBILITIES

Governments or their agencies grant entitlements, authorize and regulate well operations, collect and disseminate well information, levy royalties and taxes, and represent the public interests in all aspects of the petroleum industry. The Identifiers are created by the Authority. Adoption of the Standard is at the discretion of the Authority.

Exploration and Production Companies are subject to regulatory requirements, including identification of their wells. They use the Authority’s Identifiers, although they may also use different identifiers for internal purposes.

Data Vendors collect well information from Authorities and other sources and sell the information to their customers. Data vendors may create their own identifiers and/or use the regulatory Identifiers. Their clients often require the well identifiers from every jurisdiction to be normalized to a common format.

Service Providers are subject to the requirements of their customers and the Authorities, including the identification of wells. Service providers therefore use the regulatory Identifiers, although they may also use different identifiers for internal purposes and for delivery of information to their customers.

The PPDM Association is the owner of the Canadian Well Identification System Standard and its name identity (brand). Ownership includes the right and responsibility to maintain the Standard and to revise it when necessary. PPDM makes the Standard’s specification freely available to the industry and the public for the purpose of identifying Wells, Wellbores and Well Reporting Streams in Canada. PPDM does not create or distribute well numbers. PPDM may comment on another entity’s compliance to the Standard, but cannot enforce it.
## Authority Codes

<table>
<thead>
<tr>
<th>Province / Territory</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alberta</td>
<td>AB</td>
</tr>
<tr>
<td>British Columbia (Onshore)</td>
<td>BC</td>
</tr>
<tr>
<td>Manitoba</td>
<td>MB</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>NB</td>
</tr>
<tr>
<td>Newfoundland and Labrador (Onshore)</td>
<td>NL</td>
</tr>
<tr>
<td>Northwest Territories</td>
<td>NT</td>
</tr>
<tr>
<td>Nova Scotia (Onshore)</td>
<td>NS</td>
</tr>
<tr>
<td>Nunavut</td>
<td>NU</td>
</tr>
<tr>
<td>Offshore Arctic</td>
<td>OA</td>
</tr>
<tr>
<td>Offshore British Columbia</td>
<td>OB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Province / Territory</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offshore Gulf of St. Lawrence (Canada)</td>
<td>OG</td>
</tr>
<tr>
<td>Offshore Gulf of St. Lawrence (France)</td>
<td>FR</td>
</tr>
<tr>
<td>Offshore Hudson Bay</td>
<td>OH</td>
</tr>
<tr>
<td>Offshore Newfoundland and Labrador</td>
<td>OF</td>
</tr>
<tr>
<td>Offshore Nova Scotia</td>
<td>OS</td>
</tr>
<tr>
<td>Ontario</td>
<td>ON</td>
</tr>
<tr>
<td>Prince Edward Island</td>
<td>PE</td>
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<td>Quebec</td>
<td>QC</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>SK</td>
</tr>
<tr>
<td>Yukon</td>
<td>YT</td>
</tr>
</tbody>
</table>

![Map of Canada showing provinces and territories](image)

Consult the relevant Authority for precise geographic boundaries.

Figure 3: Authority Codes
ILLUSTRATIONS OF IDENTIFIERS

The figures that follow show how to apply the Canadian Well Identification System Standard to Wells, Wellbores and Well Reporting Streams. The illustrated cases, all hypothetical, can also help in understanding the use of the Standard for more complex and unusual well configurations.

Although consistent use is important for clarity, especially where information is exchanged between parties, the Standard allows an Authority some flexibility in implementation. This is indicated with a note in the following figures.

Where the main purpose of the figure is to show the use of Well ID and/or Wellbore ID, a Well Reporting ID is omitted for simplification. Figure 13, Figure 14 and Figure 15 illustrate the use of the Well Reporting ID as discussed in the text of the Standard.

<table>
<thead>
<tr>
<th>Identifier Construction</th>
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<tr>
<td>Description</td>
</tr>
<tr>
<td>Well ID</td>
</tr>
<tr>
<td>Wellbore ID</td>
</tr>
<tr>
<td>Well Reporting ID</td>
</tr>
</tbody>
</table>

Table 4: Construction of the Canadian Well Identification System Identifiers

A Well ID and at least one Wellbore ID are provided with each authorization. Depending on the Authority’s practice, a Well Reporting ID may also be assigned at any time in a Well’s life.
Vertical Well

Figure 4: A Simple Vertical Well with One Wellbore

A Well always has at least one Wellbore; therefore, at least one Wellbore ID should be assigned at the same time as the Well ID. The Authority should assign the Well ID and Wellbore ID no later than when the authorization for drilling is issued to the operator.

**Directional/Deviated Well**

Figure 5: A Simple Directional or Deviated Well

The bottomhole location does not affect any of the Identifiers.
Multiple Wellbores

<table>
<thead>
<tr>
<th>Description</th>
<th>Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well ID</td>
<td>BC0196851</td>
</tr>
<tr>
<td>Wellbore ID</td>
<td>BC0196851B001</td>
</tr>
<tr>
<td>Wellbore ID</td>
<td>BC0196851B002</td>
</tr>
<tr>
<td>Wellbore ID</td>
<td>BC0196851B003</td>
</tr>
</tbody>
</table>

Figure 6: Multiple Wellbores

The first nine characters of each Wellbore ID are identical because these Wellbores all begin at the same Well Origin. The bottomhole location does not affect any of the Identifiers. The component value for each Wellbore ID does not imply the order of drilling unless specified by the Authority.

Bypass

<table>
<thead>
<tr>
<th>Description</th>
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<tr>
<td>Well ID</td>
<td>AB1478523</td>
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<tr>
<td>Wellbore ID</td>
<td>AB1478523B001</td>
</tr>
<tr>
<td>Wellbore ID</td>
<td>AB1478523B002</td>
</tr>
</tbody>
</table>

Figure 7: Bypass

A second Wellbore was drilled to bypass a problem and continue to the original target. The Standard requires that the first Wellbore retain its Wellbore ID because an Identifier must never be changed or reassigned.

Note: If the junked hole is short or has no substantial information, the Authority may ignore it and retain the original Wellbore ID for the bypass.
Skidded Well

![Skidded Well Diagram]

<table>
<thead>
<tr>
<th>Description</th>
<th>Identifier</th>
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<tbody>
<tr>
<td>Well ID</td>
<td>SK0016458</td>
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<tr>
<td>Wellbore ID</td>
<td>SK0016458B001</td>
</tr>
<tr>
<td>Well ID</td>
<td>SK0016499</td>
</tr>
<tr>
<td>Wellbore ID</td>
<td>SK0016499B001</td>
</tr>
</tbody>
</table>

Figure 8: Skidded Well

The initial Well (SK0016458) was junked before reaching the target. The rig was skidded and a new Well (SK0016499) spudded. A new Well ID was assigned to the new Well Origin.
Multi-Well Pad

<table>
<thead>
<tr>
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<tr>
<td>Wellbore ID</td>
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</tr>
</tbody>
</table>

Figure 9: Multi-Well Pad

The section and plan views show three Wells drilled from the same pad, each having separate penetration of the Earth’s surface (Well Origin) and therefore having different Well IDs. Neither the drilling nor reporting sequence is implied within the IDs. However, in this example the well numbers are almost sequential because they were all issued on the same day. The CWIS does not assign an identifier to the pad. These assignment procedures also apply to offshore and SAGD wells. Each Well may also have a Well Reporting ID.
Deepening a Wellbore

This figure shows an existing Well that was re-entered and drilled deeper. Deepening an existing Wellbore creates a new Wellbore (as defined in the Standard), thus requiring a new Wellbore ID.

Note: The assignment is subject to the definition of deepening set by the Authority. For example, the Authority may deem that additional drilling from the bottom of an existing Wellbore is merely an adjustment of total depth and does not create a new Wellbore unless a new formation is penetrated.

<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
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<tr>
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<tr>
<td>Wellbore ID</td>
<td>MB2859746B002</td>
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</table>
Lengthening a Wellbore

Figure 11: Lengthening a Wellbore

This figure shows an existing horizontal Wellbore that was re-entered and extended. Lengthening an existing Wellbore creates a new Wellbore (as defined in the Standard), thus requiring a new Wellbore ID.

Note: The assignment is subject to the definition of lengthening set by the Authority. “Lengthening” is the same as “deepening,” without regard for the orientation of the hole. See the discussion on Figure 10.
Undrilled Wellbore

![Undrilled Wellbore Diagram]

<table>
<thead>
<tr>
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<tbody>
<tr>
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</tr>
<tr>
<td>Wellbore ID</td>
<td>SK0426852B001</td>
</tr>
<tr>
<td>Wellbore ID</td>
<td>SK0426852B002</td>
</tr>
<tr>
<td>Wellbore ID</td>
<td>SK0426852B003</td>
</tr>
</tbody>
</table>

Figure 12: Undrilled Wellbore

The figure shows a Well that was authorized for three Wellbores, but one was never drilled. Each Wellbore, drilled or not, retains its assigned Wellbore ID regardless of the sequence of drilling. If a Wellbore were planned but not drilled, and the Authority does not require authorization in advance, it would not have a Wellbore ID. If a Wellbore ID is assigned in advance but the Wellbore is not drilled, the ID is cancelled and never reassigned to a different Wellbore.
**Multilateral Producing Well**

![Diagram of Multilateral Producing Well]

<table>
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<tr>
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<tr>
<td>Well Reporting ID</td>
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</tbody>
</table>

Figure 13: Multilateral Producing Well

The two horizontal legs are open for production that is combined in the vertical Wellbore for a single stream at the wellhead. A single Well Reporting ID is assigned because there is only one Well Reporting Stream with two legs that contribute to the single stream of fluids at the wellhead. The Wellbore ID is used to capture the data (depths, zone description, treatments, etc.) specific to each Wellbore, including the vertical pilot hole (strat hole).

**Comminged Producing Well**

![Diagram of Comminged Producing Well]

<table>
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<tr>
<td>Well Reporting ID</td>
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</tbody>
</table>

Figure 14: Comminged Producing Well

Formations A and B are open for production that is combined for a single wellhead stream. Only one Well Reporting ID is needed. The Wellbore ID is used to capture the data (depths, zone description, treatments, etc.).

Note: The Authority’s regulations and practice may require a Well Reporting ID for each contributing formation and another Well Reporting ID for the commingled stream.
Commingled Recompletion

A dual completion Well had segregated production from Formation A and Formation B. Later, it was converted to commingled (unsegregated) production. Each of the original completions has a unique Well Reporting ID. A new Well Reporting ID is assigned for the commingled production.

Note: The Authority’s regulations and practice for Well Reporting IDs may differ from what is shown here.

<table>
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<tr>
<th>Description</th>
<th>Identifier</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>Wellbore ID</td>
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<td>Well Reporting ID</td>
<td>AB0921234V001</td>
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<td>Well Reporting ID</td>
<td>AB0921234V002</td>
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<td>Well Reporting ID</td>
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</tbody>
</table>

Figure 15: Commingled Recompletion
APPENDIX 1: THE CWIS AND UWI IN HARMONY

The UWI is used extensively by industry players (governments, operators, data vendors, etc.). However, the increasing complexity of Wells and the demands for digital access to all well information is straining the capabilities of the UWI system.

The UWI is deeply engrained in Canadian industry. It is affixed to physical records, documents and many other materials (samples, etc.). It is attached to surface facilities and is embedded in contracts and regulations. Many filing systems for physical and digital records are based on the UWI. It is encoded in software and business processes. The UWI is a common means of referring to a Well or a Wellbore or a Well Report Stream in structured data exchange and informal communications. People who work in the industry often rely on the UWI’s embedded meaning. As the industry has evolved over the past four decades, the UWI continues to be an essential data item in spite of its limitations.

The UWI contains a coded description of the general location of the well event. In western Canada, this refers to the bottom of the Wellbore; elsewhere, it refers to the Well Origin (surface). Data managers are the main people who recognize the two biggest problems with the UWI, but the problems affect all stakeholders who rely on accurate information about Wells anywhere in Canada:

- The UWI does not identify an entire Well, only a certain component or event within a Well.
- It is not suitable as the primary Identifier because it can be amended.

The UWI identifies Wellbores, completions and some re-entry and abandonment events but does not distinguish between them. The UWI may be amended (replaced by a new UWI) for several reasons, chiefly because of survey information about the bottom location. Some Authorities may also amend a UWI based on the sequence in which related Wellbores are started or finished drilling. In some jurisdictions, “location exception” can carry multiple meanings, which may cause additional changes over time.

The Standard addresses the UWI challenges without removing the UWI from the Canadian scene. The Standard provides a permanent Identifier for every Well, Wellbore and Well Reporting Stream. The UWI will coexist with the new Identifiers.

Assigning UWIs to New Wells
The Standard does not dictate the rules that each Authority uses to assign UWIs. It merely requires that the Authority maintain a cross-reference between UWIs and CWIS Identifiers. However, the following guidance is consistent with current practice in the UWI system.

- Every Wellbore ID has a drilling event UWI.
- Every Well Reporting ID has a UWI. In some cases, this UWI is the same as the drilling event UWI.

The Authorities will continue to assign UWIs to each new Well, even after implementing the new Standard. This will be necessary for many years to support legacy systems and stakeholder expectations.
APPENDIX 2: ASSIGNING CWIS IDENTIFIERS

Implementation of the Standard involves assigning CWIS Identifiers to all UWIs in the databases of the Authority. There must be a reliable relationship between every UWI and the CWIS Identifiers to support records management and database operations. Similarly, cross-reference tables will be necessary to support software that relies on the UWI.

The Well ID is the parent to the other two CWIS Identifiers, as shown in Figure 16. Each Identifier is the key to all other information (attributes) that may be recorded about the object. The UWI system has no parent-child concept beyond the Wellbore. The completion event UWI can be mapped to a Wellbore ID and a Well Reporting ID.

![Diagram of Well ID, Wellbore ID, Well Reporting ID, Drilling UWI, and Completion UWI relationships]

Figure 16: The Relationships between CWIS Identifiers and the UWI

The following logical procedure is offered as an outline, but the actual process design is the responsibility of the database owner. Each Authority has business rules and requirements that influence the assignment of Identifiers.

- Find all Wells (see below for details on this step). Every Well Origin marks a unique Well.
- Assign a Well ID to each Well.
- Find all Wellbores. Every drilling event UWI represents a unique Wellbore.
- Associate each Wellbore with its parent Well (Well ID).
- Assign a Wellbore ID to each Wellbore; the Well ID is the first part of the Wellbore ID.
- Find all Well Reporting Streams. Every completion event UWI (producing/injecting/disposing) represents a unique Well Reporting Stream.
- Associate each Well Reporting Stream with its parent Well.
- Assign a Well Reporting ID to each Well Reporting Stream.
- Find the contributing Wellbore(s) for each Well Reporting Stream. This step may require manual investigation for a multileg completion because all production is typically reported on only one UWI. The contributing Wellbore IDs are attributes of the Well Reporting ID.

The discovery of every unique Well in a database can be a complicated process because the UWI was not designed for this purpose. In simple cases, a Well has only one licence (permit, authorization), only one Wellbore and no more than one producing zone. Otherwise, special efforts are necessary to determine if multiple licences and/or multiple UWIs belong to one Well. The key to the process is the definitions (see above) of Well and Well Origin. In many cases, other attributes of the Well must be employed, especially the licence and the geographic location of the wellhead.
Historical Cancelled and Expired Licences
The Authority’s databases include some licences (well authorizations) that were issued but then cancelled or allowed to expire before drilling commenced. Information about these licences is valuable to the industry and should be made available with appropriate metadata about its cancelled or expired status. However, the assigned Well ID should be unique to the cancelled/expired licence and not used again if another licence is issued for the same location.

The PPDM Association owns and stewards the CWIS Standard. Comments on the design and use of the Standard are always welcome at cwis@ppdm.org.
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