



Purpose

This practice bulletin clarifies *authentication* and *validation* requirements for *professional work products* (PWP) created by the upstream oil and gas industry (“industry”). It focuses on well drilling and well completion activities, as these activities represent significant, pre-mitigation risk exposure to human health, the environment, expenditure, industry reputation, and regulatory compliance.

Specifically, this bulletin clarifies what constitutes PWP for this industry and how PWP are authenticated and validated to meet the [Authenticating Professional Work Products](#) practice standard requirements.

The italicized terms throughout this bulletin are defined in the APEGA practice standard [Authenticating Professional Work Products](#).

Contributors

APEGA thanks the *licensed professionals* who contributed to this practice bulletin for their time and commitment towards protecting the public interest. At the time this bulletin was completed, the contributors were members of the following associations:

- the Explorers and Producers Association of Canada
- the Canadian Association of Petroleum Producers
- the Petroleum Services Association of Canada
- the Canadian Association of Oilwell Drilling Contractors

Background

Despite the magnitude of upstream oil and gas industry development activity in Alberta, *authentication* and *validation* of PWP is not consistent across *permit holders*. Reasons for this include the use of numerous industry-recommended practices, prescriptive and actively enforced regulations from the Alberta Energy Regulator, and the need for clarity on *authentication* and *validation* requirements given the uncertainty inherent with subsurface conditions and activity.

Discussion

This section outlines three approaches for *licensed professionals* to define, authenticate, and validate PWP. These approaches are not exhaustive, and therefore, *licensed professionals* must always use their professional judgment as to what constitutes PWP and how to appropriately authenticate and validate them. Regardless of the approach used, *authentication* and *validation* must be completed in accordance with the *permit holder’s Professional Practice Management Plan (PPMP)* and meet the intent of the [Authenticating Professional Work Products](#) practice standard.

The following three approaches are acceptable methods for meeting the intent of the standard. When using and deviating from a templated (reusable) document, which is authenticated and validated, additional consideration for *authentication* and *validation* is required.

- 1. Individual Well Design** – a detailed operational and engineering plan for constructing or completing a well or defining specific changes to a particular well. These plans have many unique elements. Each well involves a range of known or estimated input parameters and is completed by individuals with specific expertise based on considerable prior experience. The operating company is responsible to authenticate and validate *PWPs* that are not otherwise authenticated and validated by the service providers.
- 2. Basis of Design Standards** – a set of specific, quantitative design criteria that can be safely and appropriately applied, and used repeatedly, across a *permit holder* for a geological play, region, or otherwise similar conditions (design inputs). For example, a *permit holder* would use this method of document *authentication* and *validation* as a program template for all wells within a multi-well drilling development. Basis of design standards could include multiple sections that are authenticated and validated by *licensed professionals* with the relevant skills and expertise.
- 3. Corporate Standards** – one or more sets of specific, quantitative design criteria to be applied across the *permit holder* for a technical facet of a well’s engineering and operation. For example, a *permit holder* would use this method of document *authentication* and *validation* as a template for all product or service specifications, regardless of where a specific well is drilled within the *permit holder’s* portfolio. For example, a *permit holder* must specify that it will only ever use a specific grade of casing for all drilling operations across multiple plays or basins.

Certain circumstances may require significant deviation from a *permit holder’s* authenticated and validated individual well design, basis of design standards, or corporate standards. The deviation must be documented through a management of change process referenced from, or outlined in, the PPMP. The deviation must be authenticated, validated, and handled similarly to the appropriate design standards themselves.

The contents of authenticated and validated *PWPs* in this context will change given the breadth of well designs across Alberta. *Licensed professionals* will consider the many common elements that are part of the design process for well drilling and well completions. Examples of these elements are outlined in Appendix A and Appendix B, respectively.

Appendix A – Example Design Elements for Well Drilling

Below are examples of design elements that require *authentication* and *validation* individually or that may be authenticated and validated as a component of one of the three methods outlined in this document. This is not an exhaustive list—*licensed professionals* must use their professional judgment as to what specific elements require *authentication* and *validation*.

Geological Design Criteria

- Subsurface hazard assessment

Well Planning

- H₂S risk assessment and H₂S release rates—directional plan
- Anti-collision

Well Design

- Casing design factors and what load cases are evaluated
- Cementing
- Non-API (American Petroleum Institute) wellhead (i.e., thermal)
- Special considerations (such as under-balanced drilling, managed pressure drilling, and exploration wells)

Well Control

- Barriers
- Drilling fluid
- Fracture communication or fracture-driven interaction

Appendix B – Example Design Elements for Well Completions

Below are examples of design elements that require *authentication* and *validation* individually or that may be authenticated and validated as a component of one of the three methods outlined in this document. This is not an exhaustive list—*licensed professionals* must use their professional judgment as to what specific elements require *authentication* and *validation*.

Reservoir Design Criteria

- Review geological and geomechanical logs

Well Planning

- H₂S Risk Assessment and H₂S release rates
- Offset well review and fracture-driven interaction
- Reservoir pressure
- Frac planning zone

Well Design

- Frac water compatibility and logistics
- Frac program design (i.e., maximum treating pressures and pumping equipment capabilities)
- Tubular, packer, and bridge plug specifications (pressure and metallurgy)

Well Control

- Wellhead design and selection
- Frac head and manifold
- Frac pump shutdowns
- Emergency shutdown logic
- Fracture communication or fracture-driven interaction
- Barriers (pressure, flow containment, and specification changes)