Hydraulic Fracturing Operations—Well Construction and Integrity Guidelines

Upstream Segment

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1 Scope

The purpose of this guidance document is to provide guidance and highlight industry recommended practices for well construction and integrity for wells that will be hydraulically fractured. The guidance provided here will help to ensure that shallow groundwater aquifers and the environment will be protected, while also enabling economically viable development of oil and natural gas resources. This document is intended to apply equally to wells in either vertical, directional, or horizontal configurations.

Many aspects of drilling, completing, and operating oil and natural gas wells are not addressed in this document but are the subject of other API documents and industry literature (see Bibliography). Companies should always consider these documents, as applicable, in planning their operations.

Maintaining well integrity is a key design principle and design feature of all oil and gas production wells. Maintaining well integrity is essential for the two following reasons.

1) To isolate the internal conduit of the well from the surface and subsurface environment. This is critical in protecting the environment, including the groundwater, and in enabling well drilling and production.

2) To isolate and contain the well's produced fluid to a production conduit within the well.

Although there is some variability in the details of well construction because of varying geologic, environmental, and operational settings, the basic practices in constructing a reliable well are similar. These practices are the result of operators gaining knowledge based on years of experience and technology development and improvement. These experiences and practices are communicated and shared via academic training, professional and trade associations, extensive literature and documents and, very importantly, industry standards and recommended practices.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API Specification 5B, *Specification for Threading, Gauging, and Thread Inspection of Casing, Tubing, and Line Pipe Threads*

API Specification 5CT/ISO 11960, *Specification for Casing and Tubing*

API Specification 10A/ISO 10426-1, *Specification for Cements and Materials for Well Cementing*

API Recommended Practice 10B-2/ISO 10426-2, *Recommended Practice for Testing Well Cements*

API Recommended Practice 10D-2/ISO 10427-2, *Recommended Practice for Centralizer Placement and Stop Collar Testing*

API Technical Report 10TR1, *Cement Sheath Evaluation*

API Technical Report 10TR4, *Technical Report on Considerations Regarding Selection of Centralizers for Primary Cementing Operations*