Wellbore Plugging and Abandonment

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Foreword

This document was prepared with input from oil and gas operators, drilling contractors, service companies, and consultants. Guidance is provided to accomplish the following:

— permanently abandon wells;

— place wells on inactive status (temporary abandonment).

Permanent abandonment is performed when there is no further utility for a wellbore by sealing the wellbore against fluid migration.

A well is placed on inactive status when there are plans for future utility of the wellbore. Temporary abandonment is performed by sealing the wellbore for the anticipated time of inactivity.

The purpose of this document is to address wellbore plugging and abandonment practices. The primary goals are protection of useable water sources, isolation of hydrocarbon bearing or water injection intervals, prevent any leakage to the surface, and prevention of unintended cross flow. Topics discussed include cementing practices and the placement of well barriers. This document does not address regulatory requirements nor surface reclamation.

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1 Scope

1.1 General Considerations

This document provides guidance for the design, placement, and verification of cement plugs in wells to be temporarily or permanently abandoned, as well as remediation and verification of annular barriers. Wells temporarily abandoned (suspended) are intended to be re-entered in the future. The placement of barriers may depend on whether the well is to be temporarily or permanently abandoned.

The information in this document is general in nature. Wellbore plugging and abandonment practices will vary with regulatory requirements, well type, and purpose. Sound engineering and operational practices should be applied to each wellbore plugging operation. Cement plug lengths are not considered in this document.

1.2 Well Construction and Abandonment Practices

This document assumes that generally accepted well construction practices were followed during the installation of the cemented casings.

As specified in API 65-2, properly designed casing strings cemented in place provide multiple barriers during well operations.

Abandonment barriers may include those placed:

— across any exposed casing/liner shoe;

— in open hole;

— above perforated intervals in cased hole;

— at points where casing has been removed;

— across liner tops;

— above and below usable water sources;

— above or below hydrocarbon bearing zones or other potential flow zones;

— at the surface or mudline.

See Figure 1 for an example of a permanent well abandonment.