Annular Casing Pressure Management for Onshore Wells

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Introduction

This recommended practice is intended to serve as a guide for managing annular casing pressure (ACP) in onshore wells. Onshore wells are subject to the same causes of ACP as wells constructed and operated in offshore environments (discussed in API 90). The architecture of an onshore well is such that it generally provides physical access to each casing annulus at the wellhead.

Wells are designed to permit operation under pressure. The existence of pressure in a contained annular space is only problematic when that pressure exceeds the designed (or de-rated) maximum allowable wellhead operating pressure (MAWOP) or when a change in the pressure indicates a potential loss of well integrity.

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1 Scope

1.1 General

This document is intended to serve as a guide to monitor and manage annular casing pressure (ACP) in onshore wells, including production, injection, observation/monitoring, and storage wells. This document applies to wells that exhibit thermally induced, operator-imposed, or sustained ACP. It includes criteria for establishing diagnostic thresholds (DTs), monitoring, diagnostic testing, and documentation of ACP for onshore wells. Also included is a discussion of risk management considerations that can be used for the evaluation of individual well situations where the annular casing pressure falls outside the established diagnostic thresholds.

This document recognizes that an ACP outside of the established DTs can result in a risk to well integrity. The level of risk presented by ACP depends on many factors, including the design of the well, the performance of barrier systems within the well, the source of the annular casing pressure, and whether there is an indication of annular flow exists. This document provides guidelines in which a broad range of casing annuli that exhibit annular casing pressure can be managed while maintaining well integrity.

1.2 Conditions of Applicability

This document applies to annular casing pressure management in onshore wells during normal operation. In this context, normal operation is considered the operational phase during the life of a well that begins at the end of the well construction process and extends through the initiation of well abandonment operations, excluding any periods of well intervention or workover activities.

The design and construction of wellbores for the prevention of unintended ACP and the management of ACP during drilling, completion, well intervention and workover, and abandonment operations are beyond the scope of this document. The isolation of potential flow zones during well construction (zones that can be the source of sustained annular casing pressure) is addressed in API 65-2. In some cases, the annular casing pressure can be reduced or remediated. The remediation of sustained casing pressure (SCP) is also beyond the scope of this document.

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 applies (including any addenda/errata).

API Technical Report 5C3, *Bulletin on Formulas and Calculations for Casing, Tubing, Drill Pipe and Line Pipe Properties*

API Specification 5CT, *Specification for Casing and Tubing*

API Standard 65-2, *Isolating Potential Flow Zones during Well Construction*

3 Definitions

For the purposes of this document the following terms and definitions apply.

3.1
annulus
The space between the borehole and tubulars or between tubulars, where fluid (liquid and/or gas) can flow.