Measurement of Produced Water for Custody Transfer

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Introduction

This technical report (TR) provides users with information available for use in applying metering technology to achieve produced water measurement uncertainties of better than or equal to ± 5.0 % of reading unless otherwise agreed to by contractual parties or regulatory agency. It is not intended to serve as a standard or recommended practice and instances where recommendations occur, it is provided for consideration, rather than establishing an industry practice.

Produced water quantity (mass or volume) does not necessarily require temperature or pressure correction to standard conditions. However, temperature and pressure can be measured for alternate purposes (e.g., safety, ancillary information). Note that generally accepted correction tables do not exist for temperature and pressure correction in produced water. Refer to API *MPMS* Chapter 20.1 for more information.

This TR is not intended to cover produced water quality, emulsions, separator/allocation measurement, or temperature and pressure corrections.

Measurement of Produced Water for Custody Transfer

1 Scope

This technical report provides information available for use in dynamic quantity measurement of produced water. This technical report provides additional considerations for the design, selection, and maintenance of a produced water measurement system for custody transfer applications.

2 Normative References

There are no normative references for this document.

3 Terms and Definitions

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

3.1
produced water
A fluid from oil and natural gas wells that primarily consists of formation water and may include injection water and other naturally occurring and added compounds, solids, and constituents.

3.2
flow assurance
The act of ensuring successful flow of the fluid stream from reservoir to the point of sale.

3.3
calibration
A set of operations which establish, under specified conditions, the relationship between the values indicated by a measuring device and the corresponding known values indicated when using a suitable measuring standard.

3.4
verification
The process or procedure of comparing an instrument to a reference standard to ensure its indication or registration is in satisfactorily close agreement, without making an adjustment.

3.5
flow meter diagnostics
Hardware, software, or firmware internal or external to a flow meter for the purpose of monitoring, analyzing, or identifying functionality, status, or performance of the flow meter.

3.6
gross volume
GV
The actual volume of fluids at flowing temperature and pressure.

4 Selection of Methods for Dynamic Measurement Quantity Determination Using Available Equipment

4.1 Measurement Considerations

Selecting the best measurement technology to be used for custody transfer of produced water requires the user to consider the technology best suited for the application and the manufacturer's recommendation for use. Table 1 includes some considerations.