

Recommended Practice for the Design of Solution-mined Underground Storage Facilities

API RECOMMENDED PRACTICE 1114
SECOND EDITION, JANUARY 2013



AMERICAN PETROLEUM INSTITUTE

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Downstream Segment

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Recommended Practice for the Design of Solution-mined Underground Storage Facilities

1 Scope

This recommended practice (RP) provides basic guidance on the design and development of new solution-mined underground storage facilities. It is based on the accumulated knowledge and experience of geologists, engineers, and other personnel in the petroleum industry. Users of this guide are reminded that no publication of this type can be complete nor can any written document be substituted for qualified, site-specific engineering analysis.

All aspects of solution-mined underground storage are covered, including selecting an appropriate site, physically developing the cavern, and testing and commissioning the cavern. Additionally, a section on post and abandonment practices is included.

This RP does not apply to caverns used for natural gas storage, waste disposal purposes, caverns which are mechanically mined, depleted petroleum reserve cavities, or other underground storage systems which are not solution-mined.

See API 1115 for guidance in the operation of solution-mined underground storage facilities.

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 Recommended Practice 5A3, *Recommended Practice on Thread Compounds for Casing, Tubing, and Line Pipe*

API Recommended Practice 5C1, *Recommended Practice for Care and Use of Casing and Tubing*

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

API Specification 6A, *Specification for Wellhead and Christmas Tree Equipment*

API Standard 1104, *Welding of Pipelines and Related Facilities*

API Recommended Practice 1115, *Recommended Practice on the Operation of Solution-Mined Underground Storage Facilities*

ASME¹, *Boiler and Pressure Vessel Code*, Section IX, "Welding and Brazing Qualifications"

3 Terms and Definitions

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

3.1 Marketing material

A fluid less dense than water and incapable of dissolving salt.

NOTE This is usually a light hydrocarbon liquid injected as a protective barrier between the solution-mining brine and casing-salt interface is usually used to control cavern development.

¹ ASME International, 3 Park Avenue, New York, New York 10016-5990, www.asme.org.