

A CASE HISTORY OF THE THREADED COUPLING PRODUCTION CASING FAILURE IN GAS CAVERNS— PART 2: WELL REPAIR, TESTING, AND RETURN TO SERVICE

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ABSTRACT

The production casings in three of the four Enterprise Products compressed gas storage wells in the Boling salt dome were found to have significant casing coupling partings for several hundred feet above the production casing shoes. A program was developed to repair the wells. The well repair procedure for each of three wells included milling a section from the original 13 $\frac{3}{8}$ -inch-diameter production casing and cementing a 10 $\frac{3}{4}$ -inch welded liner. A two-stage Mechanical Integrity Test (MIT) was designed to test the integrity of the newly installed cemented liner and to ensure that any gas flow path from the cavern wellbore had been intercepted by the milled section.

This paper describes the well repair, the postrepair well testing procedure, and results. The paper also presents a summary of lessons learned from a gas cavern design standpoint as well as from a well repair perspective.

Keywords: gas storage caverns, well casing, threaded connections, casing damage, casing repair, MIT