

Remediation of Wellbores above Established Storage Caverns

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Abstract

With the increased demand for hydrocarbon gas storage, many operators are tasked with maintaining the functionality of aging storage wells to minimize development and construction costs of a new wellbore or cavern. Many of these older storage wells can develop casing integrity issues that prevent them from being used. This paper illustrates the creative application of alternative remediation fluids and processes from other sectors of the oil and gas industry to repair and return these wells to a functioning condition.

The difficult constraints applied to hydrocarbon storage facilities require zero leak-off measured with a gaseous fluid, generally nitrogen. The tight pass/fail criteria makes repairing a leak difficult, as conventional methods of repairing leaks within the industry have limited success rates of accomplishing zero leak-off or require costly remedial operations. If the well is incapable of being repaired, costly operations, such as drilling a new storage well or a complete plug and abandonment, might be necessary. The use of custom-designed fluids has allowed the successful repair of multiple casing leaks without the use of mechanical devices to seal the leaks and achieved zero leak-off. These custom-designed fluids, once placed and allowed to cure, exhibit superior mechanical and elastic properties compared to conventional remedial fluids.

These repairs can allow operators to return wells to active service without the incurred cost of alternative remediation practices or constructing a new wellbore.

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