

Intervention Operations in a Gas Salt Dome Storage Well Using E-Line Conveyed Inflatable Packers  
[SPE 153808 - The Woodlands](#)

Abstract

A Natural Gas Liquid fractionation plant located in Ontario, Canada receives NGL feedstock from local industries in order to produce propane, iso-butane, and condensate. These finished products are stored in horizontal tanks and storage wells/salt caverns located within the chemical plant. One of these gas storage wells required two bridge plugs in order to create a barrier to enable workover operations to be undertaken.

The objective was to load the well with brine in order to perform a logging run and replace the wellhead. There were two challenges involved in this operation: the lack of a workover rig and 'wellbore fluid' for setting an inflatable bridge plug. TAM International's SlikPak™ Plus inflatable bridge plug setting system was the optimal solution because its 'carry fluid' configuration is capable of transporting the necessary inflation fluid to set a bridge plug without a workover rig on location.

An additional challenge had to be overcome as well; both bridge plugs had to pass through a 7.6" (193.4 mm) ID wellhead restriction and inflate inside 13-3/8" (339.7 mm) casing. Therefore, during the first run, the inflatable bridge plug setting system had to carry twenty gallons (75.70 L) of inflation fluid within twelve 3-1/2" (88.9 mm) OD fluid chambers located along the toolstring in order to inflate and set the retrievable bridge plug. The client provided 105 feet (32 m) of lubricator and two cranes in order to perform a safe rig up of the 94 feet (28.65 m) long toolstring. The first bridge plug was successfully set at a depth of 2,040 feet (621.8 m) by stroking the mechanical Pull Intensifier. After the plug was set, the top section of the well was bled off and loaded with brine to enable the usage of the 'wellbore fluid' setting configuration, which successfully set the second bridge plug 31 feet (9.44 m) above the first one.

After the wellhead changeout took place, both bridge plugs were successfully equalized, deflated, and retrieved in order to re-enable gas storage in this well. It is expected that there will be similar operations on a nearby well in the future.

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