

## Case study Packer Seal Integrity

# Identifying the cause of sustained annulus pressure helps operator restore safe and secure gas storage



**Location:** West Russia  
**Well type:** Gas storage  
**Reference:** SPE-188656

### Case benefits

- Provided a detailed assessment of the condition of the packer
- Distinguished gas flow in the reservoir from flow associated with an equipment leak
- Identified the source of excess annulus pressure
- Enabled the operator to plan and implement an effective remediation programme

### Challenge

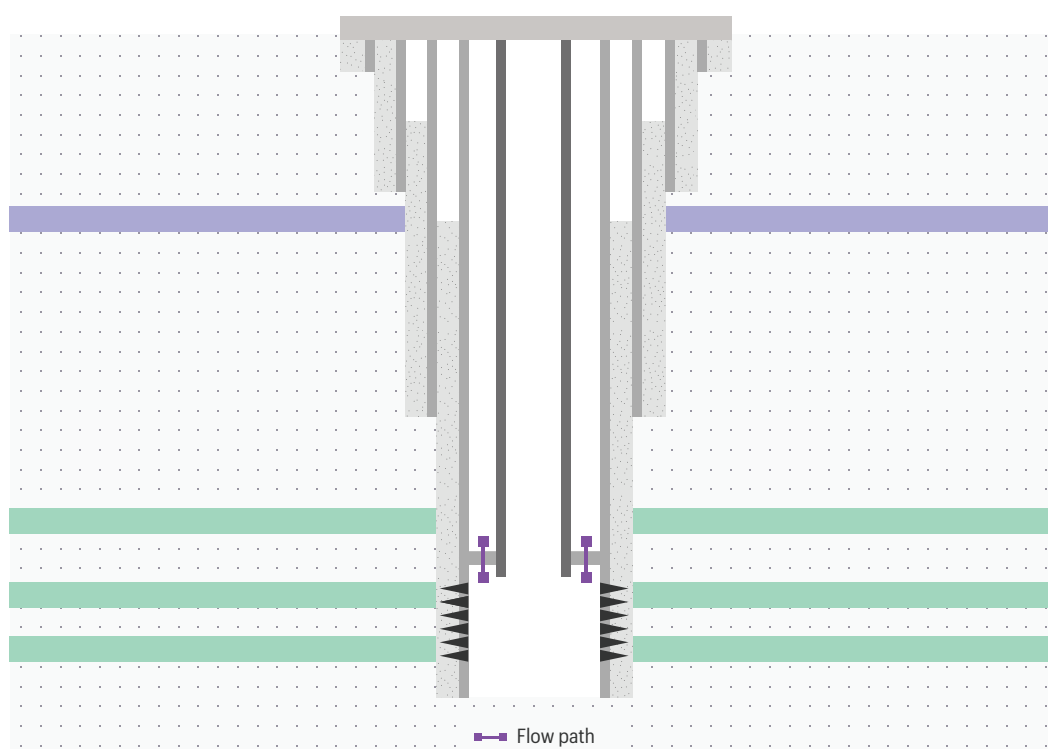
Wells in underground gas storage projects present a wide and varied range of operational and maintenance challenges. Maintaining the integrity of these wells is essential for safe and reliable gas supply.

In this case, a 25-year-old well was affected by sustained annulus pressure; pressure measurements taken at the surface indicated excess pressure (0.5 MPa) in the A-annulus between the 6" in production casing and the 9 5/8" in intermediate casing. The operator needed a reliable method to identify and diagnose sealing integrity challenges, in order to guide remediation and workover decisions.

### Solution

The results were delivered by a combination of True Integrity Seal products, which use, in part, the Chorus acoustic platform. This case study focuses on the results obtained by the Packer Seal Integrity product, which enables a comprehensive diagnosis of packer leaks in the well system and was used to locate the source of sustained pressure in the A-annulus.

The diagnostic programme was performed during winter when gas was being withdrawn from the underground gas storage, under two regimes: during shut-in conditions and during bleed-off from the annulus with excess pressure.



 Packer Seal Integrity example well sketch.

Packer Seal Integrity validates sealing performance of primary barriers

Packer Seal Integrity gives you the clarity and insight needed to manage well system performance more effectively.

## Result

Chorus recorded a high-frequency acoustic signals across Storage Reservoir A (Figure 1) under both shut-in and bleed-off conditions. The True Integrity system identified this as lateral gas flow through the reservoir.

Results from the Packer Seal Integrity product recorded acoustic signals at the packer depths in zones 1 and 2 (and the

Sliding Side Door (SSD) during the bleed-off operation, this indicated that both the packer and SSD were leaking.

Rapid and accurate analysis of the packer and SSD leaks enabled the operator to make informed and precisely targeted remediation decisions, repair the packer and SSD and restore the well to normal operation.

Identifying packer and sliding side door leaks in a 25-year-old well. The acoustic signature in Storage Reservoir A relates to gas flow through the formation. The acoustic signals identified by the Chorus platform at the packer (Zone 1) and the sliding side door (Zone 2) proved to be equipment leaks and the cause of the sustained annulus pressure.

