

# GasMigrationAdvisor

## Evaluate risk and choose the best solution for gas migration control

### The importance of risk evaluation

A primary cause of annular gas migration during gas well cementing is underbalanced hydrostatic fluid pressure in the annulus relative to pore pressure in the gas-bearing zone. When this state exists before the slurry has set, the integrity of the cement can be compromised.

GasMigrationAdvisor\* software is designed to evaluate the risk severity of gas migration based on the pressure decay limit (PDL). PDL is a measurement of how far the cement slurry setting process will advance before hydrostatic pressure decreases below reservoir pressure, allowing gas to migrate into the annulus.

GasMigrationAdvisor software can evaluate gas migration severity in two modes: simple mode, using only the wellbore/casing fluid placement configuration and reservoir pore pressure, or detailed mode, using comprehensive data input from CemCADE\* cementing design and evaluation software, including fluid placement, well geometry, and WELLCLEAN II\* simulation.

Based on the data input, this software calculates the PDL and estimates the global gas migration severity risk, taking mud removal efficiency into consideration. When multiple gas zones are being evaluated, the software automatically defines global severity risk based on the zone with the highest risk level.

### Applications

- Evaluate gas migration severity in gas well cementing operations
- Recommend appropriate cementing system to mitigate gas migration risks

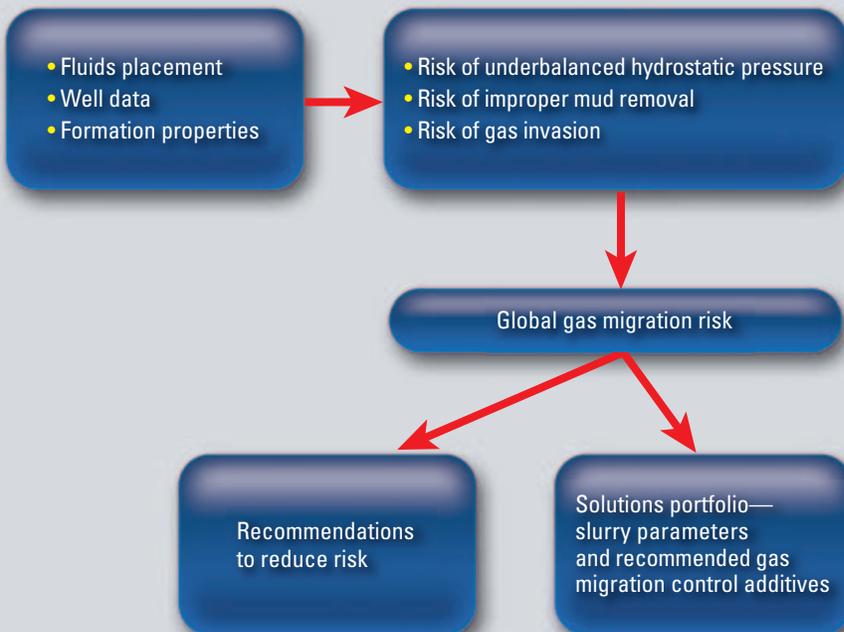
### Benefits

- Make decisions based on risk
- Manage cost better through fit-for-purpose solutions
- Anticipate and address changes that can occur during cementing operations through sensitivity analysis

### Features

- Separate modes for first-approach evaluation using minimal input and complex evaluation using comprehensive data
- Full communication with CemCADE cementing design and evaluation software
- Chemical matrix solution validated by cement hydration analyzer

Using GasMigrationAdvisor software, all relevant data are input and the key risk factors are evaluated so that the most fit-for-purpose solution can be selected.



GasMigrationAdvisor software has the capability to perform a sensitivity analysis of gas migration risk.



Once the software assigns a global gas migration risk, Schlumberger engineers recommend how to reduce risk with

- placement process design
- optimized pumping schedules
- the appropriate slurry and additives.

### The value of identifying the proper solution

Comprehensive risk evaluation allows solutions to be selected based on realistic consideration of risk mitigation and cost controls. Fit-for-purpose solutions enable costs to be managed better.

Further, solutions have been validated in the identified risk environment, and changes in the execution phase can be anticipated and planned for to ensure proper zonal isolation.

Schlumberger technology provides optimal, cost-effective solutions to prevent gas migration problems.

Risk variables assessed by GasMigrationAdvisor software include pressures in the formation, openhole excess, and slurry, drilling fluid, and washer/spacer properties, including position.

