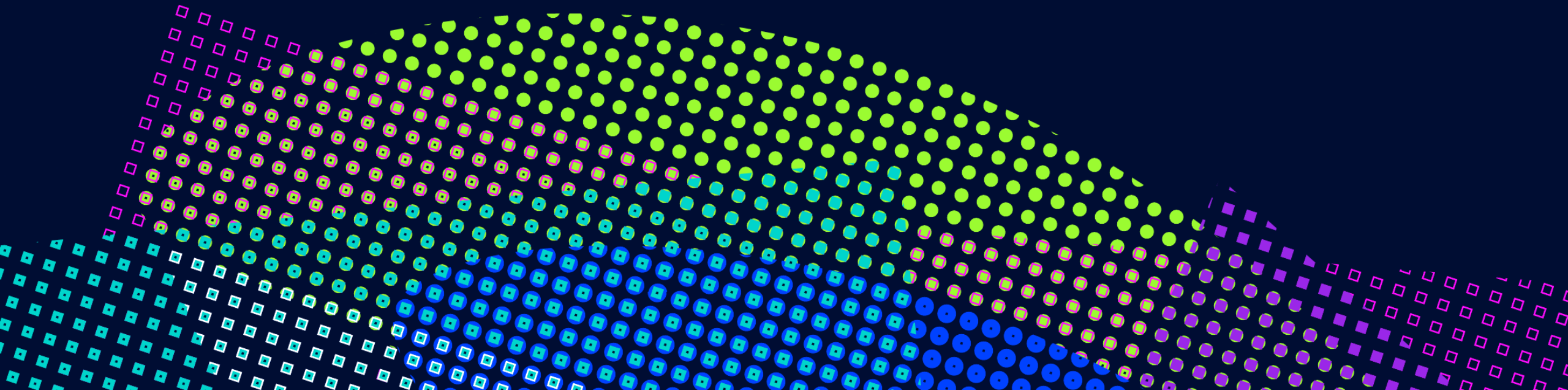
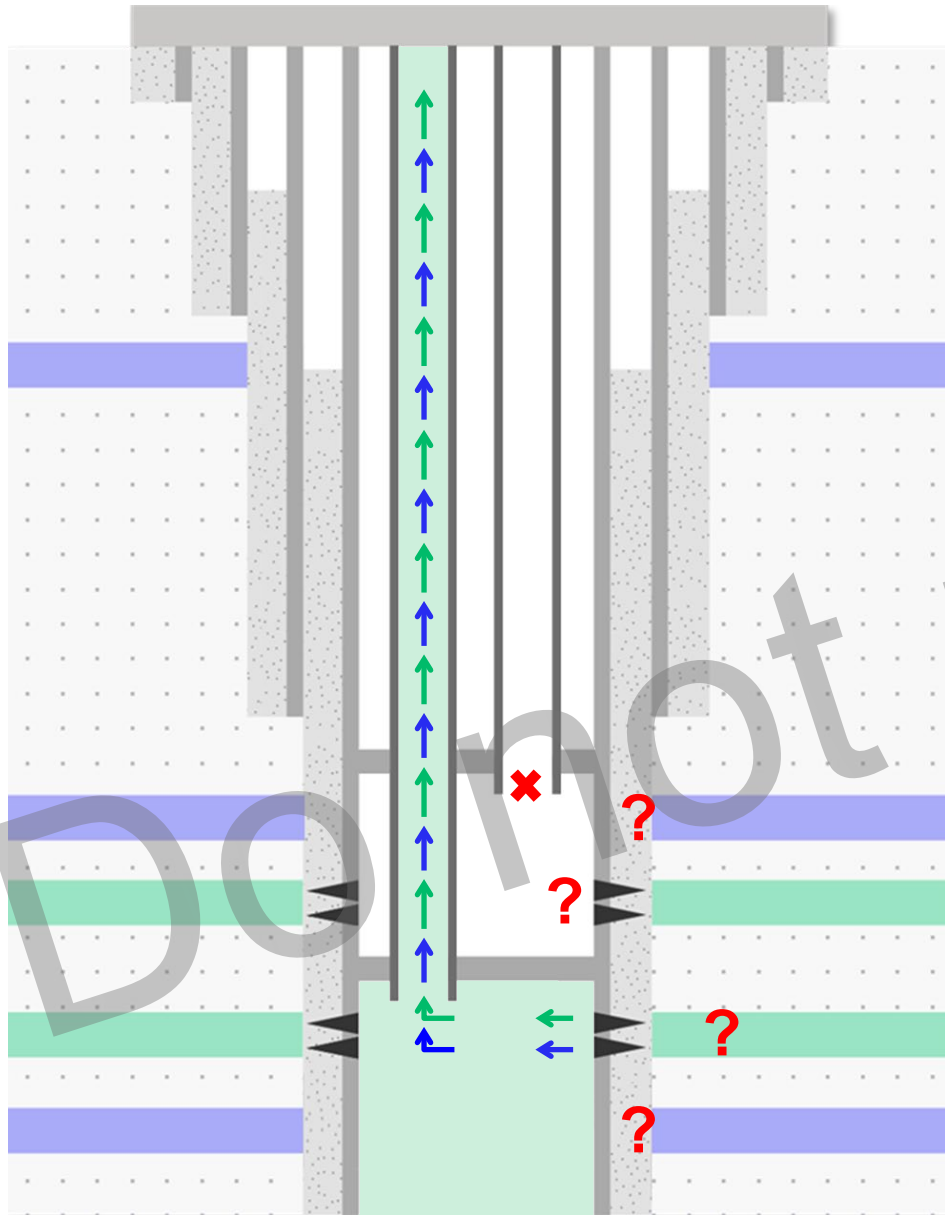


Diagnosing flow and integrity challenges in dual completions

Vasily Skutin, Principal Domain Champion, TGT
March 2021

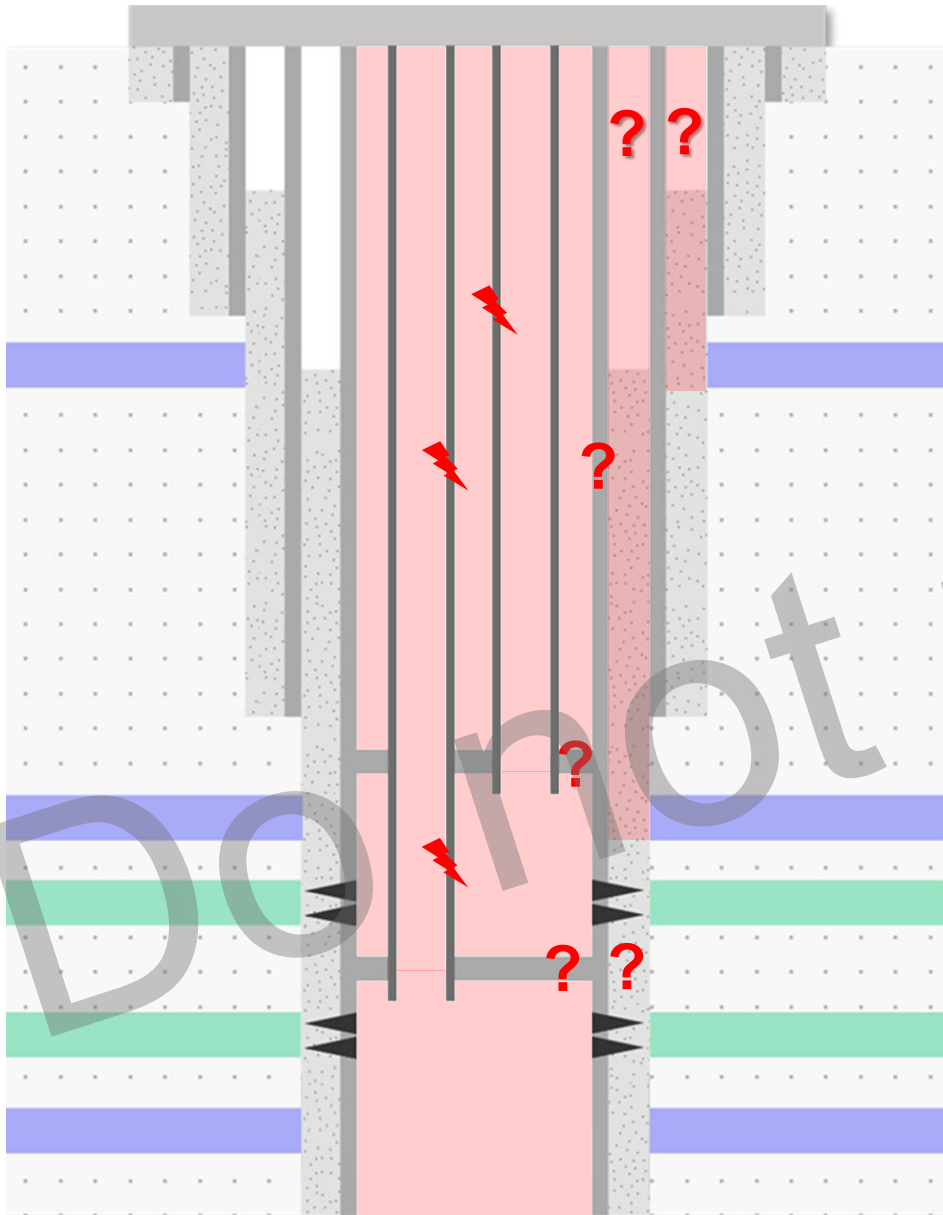


Conventional Production Logging ('Spinners')



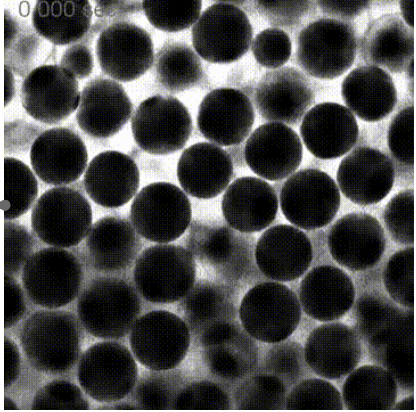
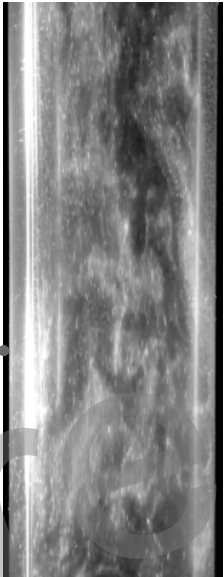
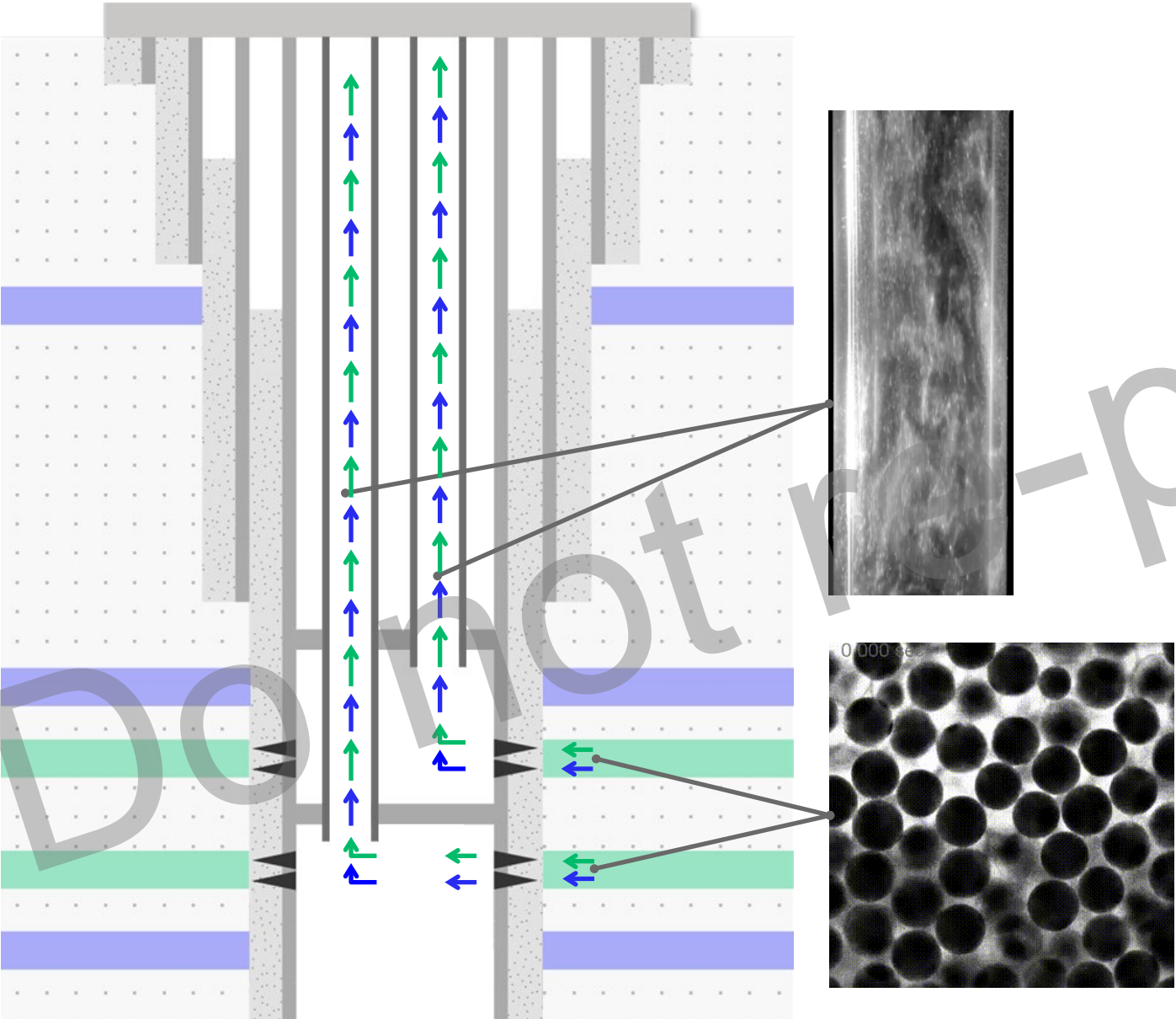
- ✓ Borehole flow profile for long string (below tubing end)
- ✗ Short String Production Profile
- ✗ Unwanted production zones
- ✗ Active subunits of targeted reservoir

Conventional Integrity Logging

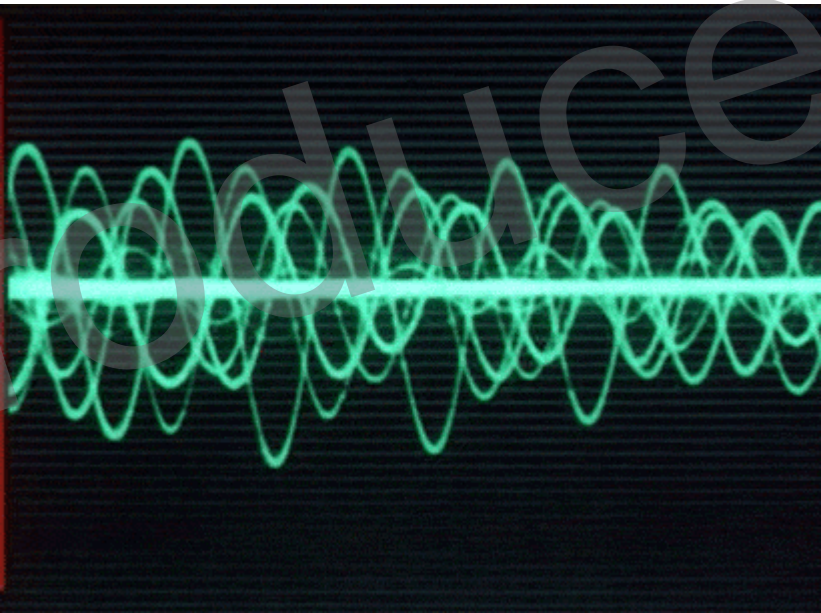


- ✓ A-annulus pressure through tubing leak (if leak rate is sufficient)
- ✓ Communication between long & short string through tubing leak (if leak rate is sufficient)
- ✗ Packer integrity
- ✗ Production casing leak
- ✗ Communication pathway between long & short string
- ✗ Source of sustained annulus pressure in B&C annuli

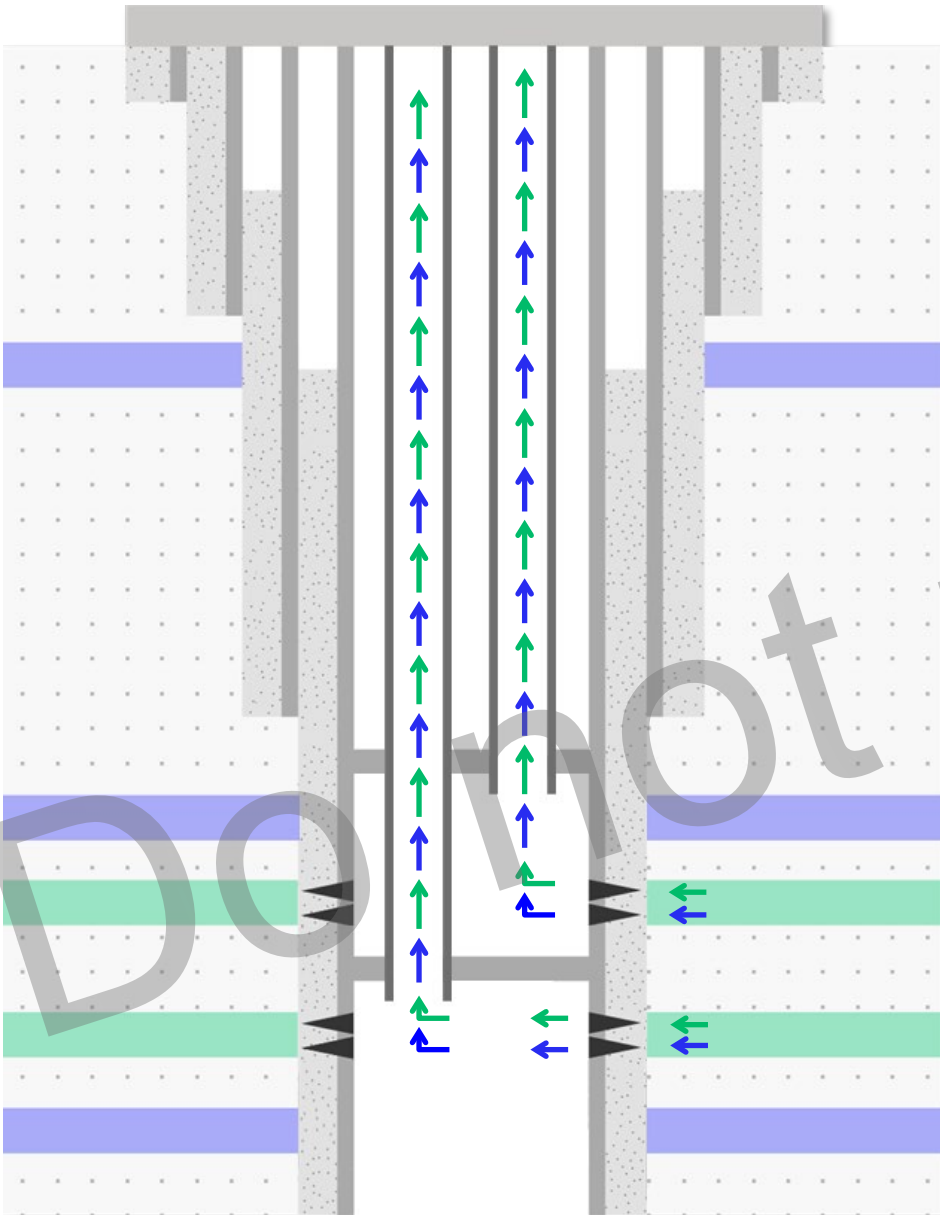
Through-barrier diagnostics: acoustic flow sensing



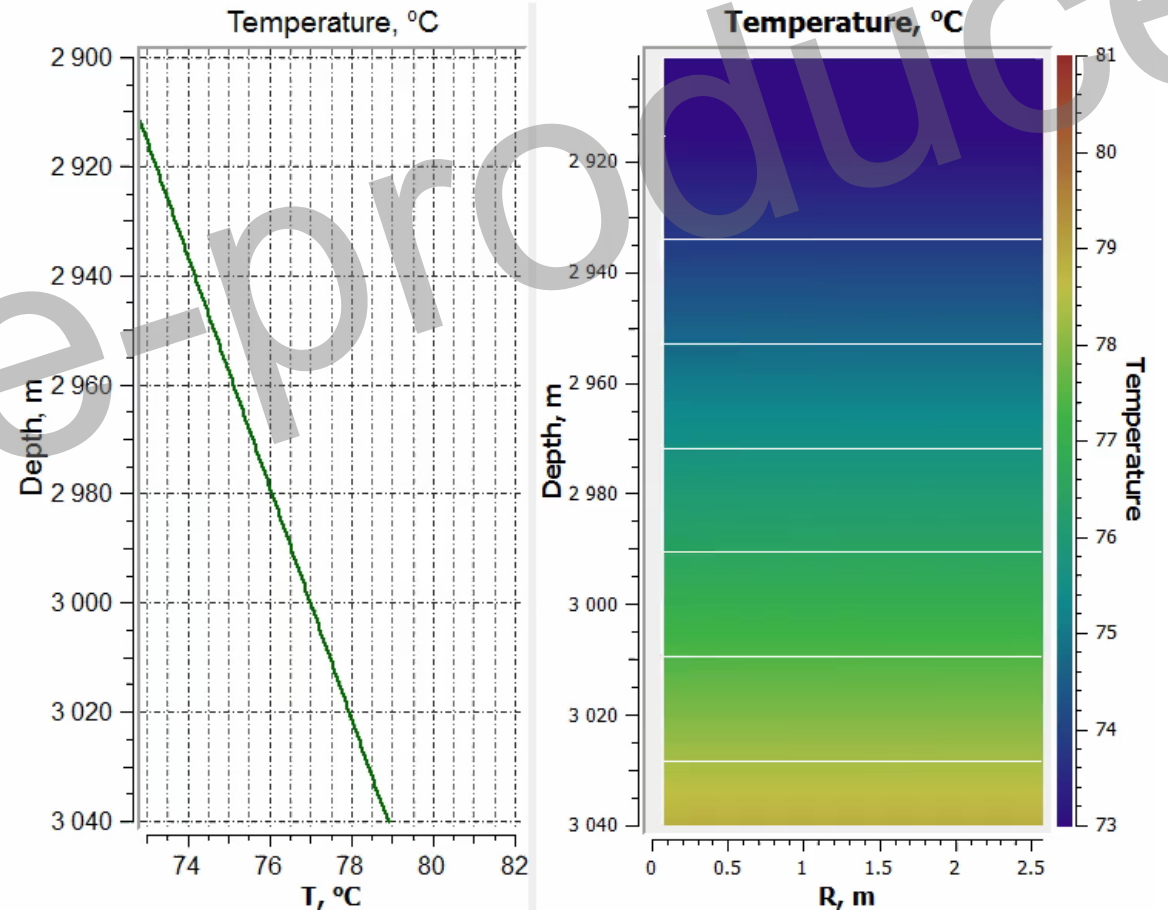
Flow generates the sound



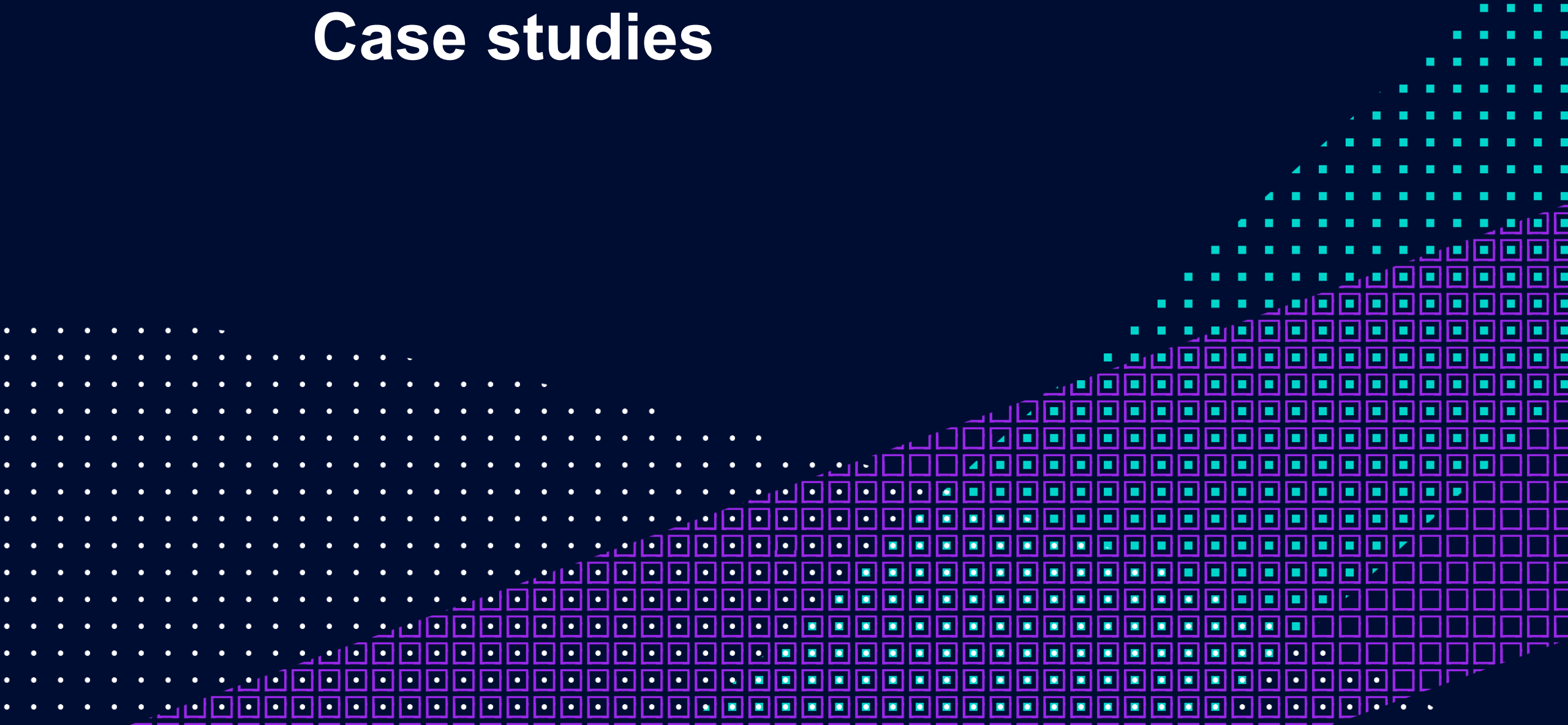
Through-barrier diagnostics: temperature flow quantification



Flow generates temperature disturbance



Case studies

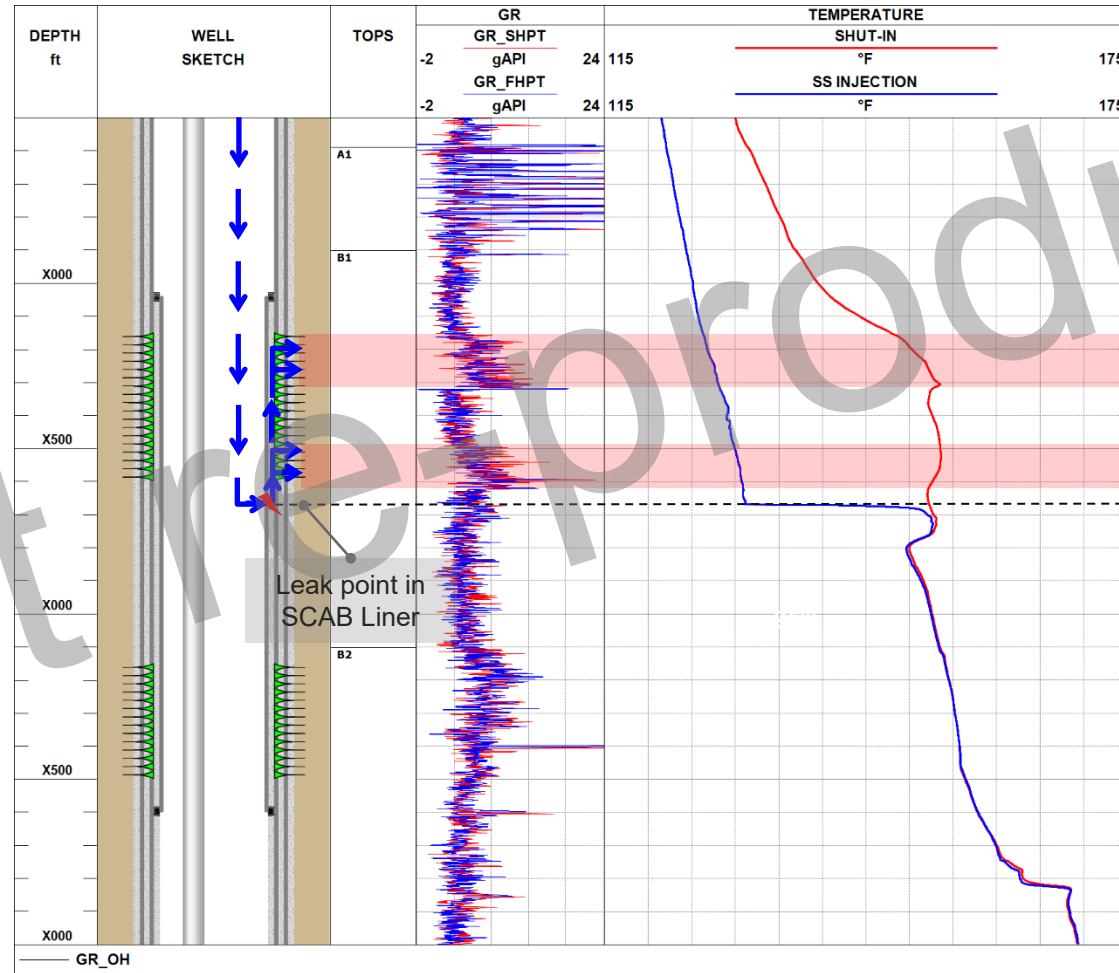


Case Study #1 – Seal Integrity

Leak in SCAB Liner

Challenge

Pressure test failed after isolating SS perforated interval.



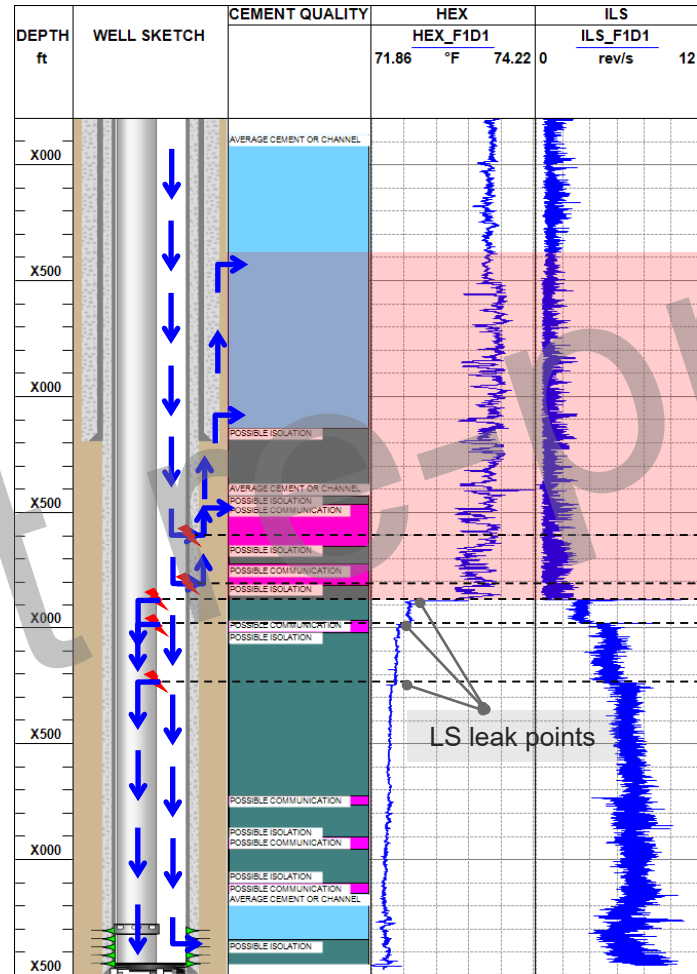
Location Middle East
Well type Gas Injector

Case Study #2 – Seal Integrity

Communication between strings and out of zone injection

Challenge

Nearby producers were suffering from lack in pressure support.



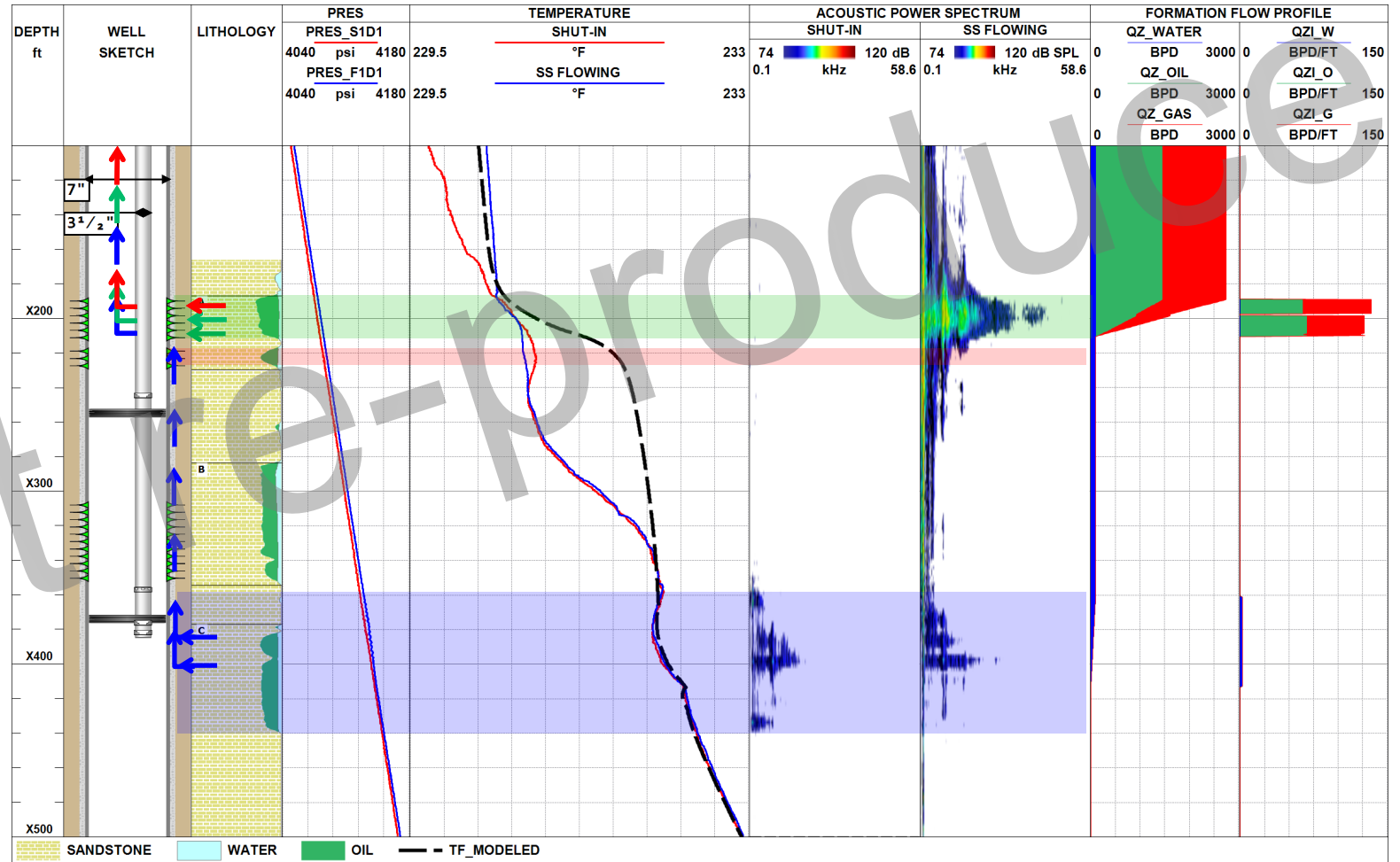
Location Middle East
Well type Water Injector

Case Study #3 – Reservoir Flow

Revealing the water invasion pathway to Short String production

Challenge

WC rapidly increased in SS production after injected water breakthrough in LS



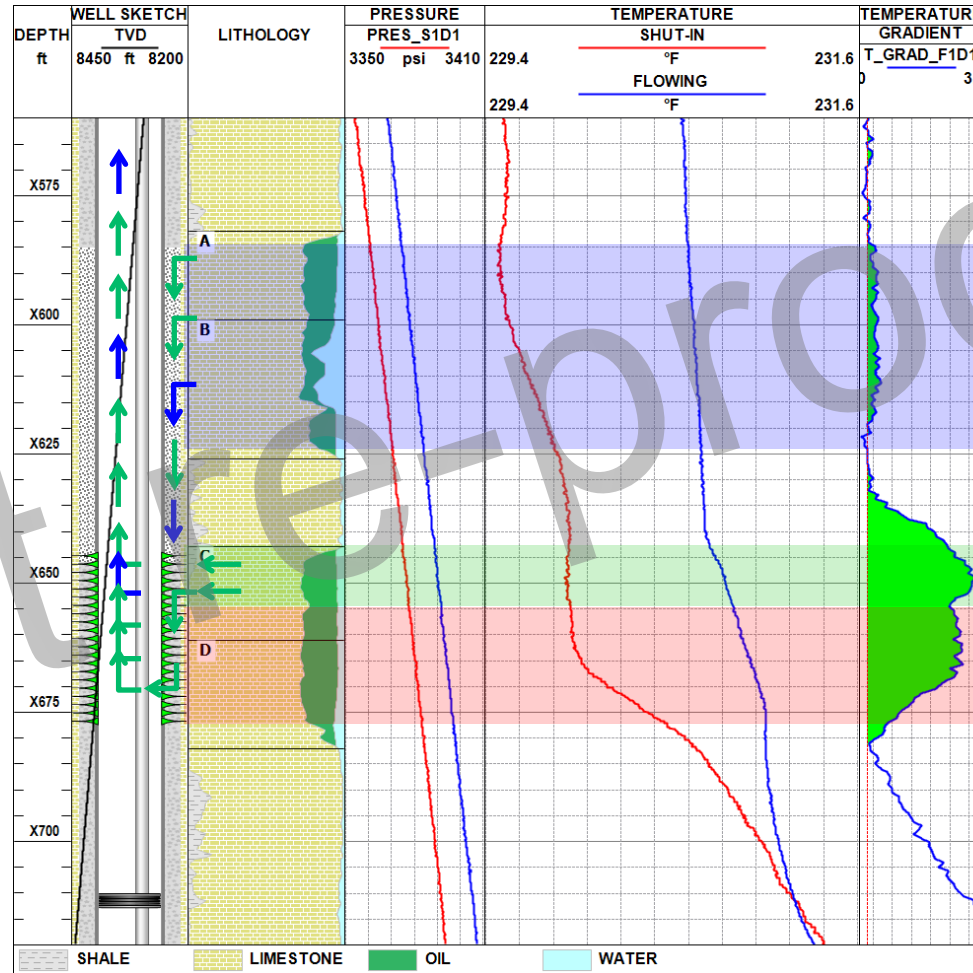
Location Middle East
Well type Dual String Producer

Case Study #4 – Reservoir Flow

Revealing the Short String production profiling and source of water identification

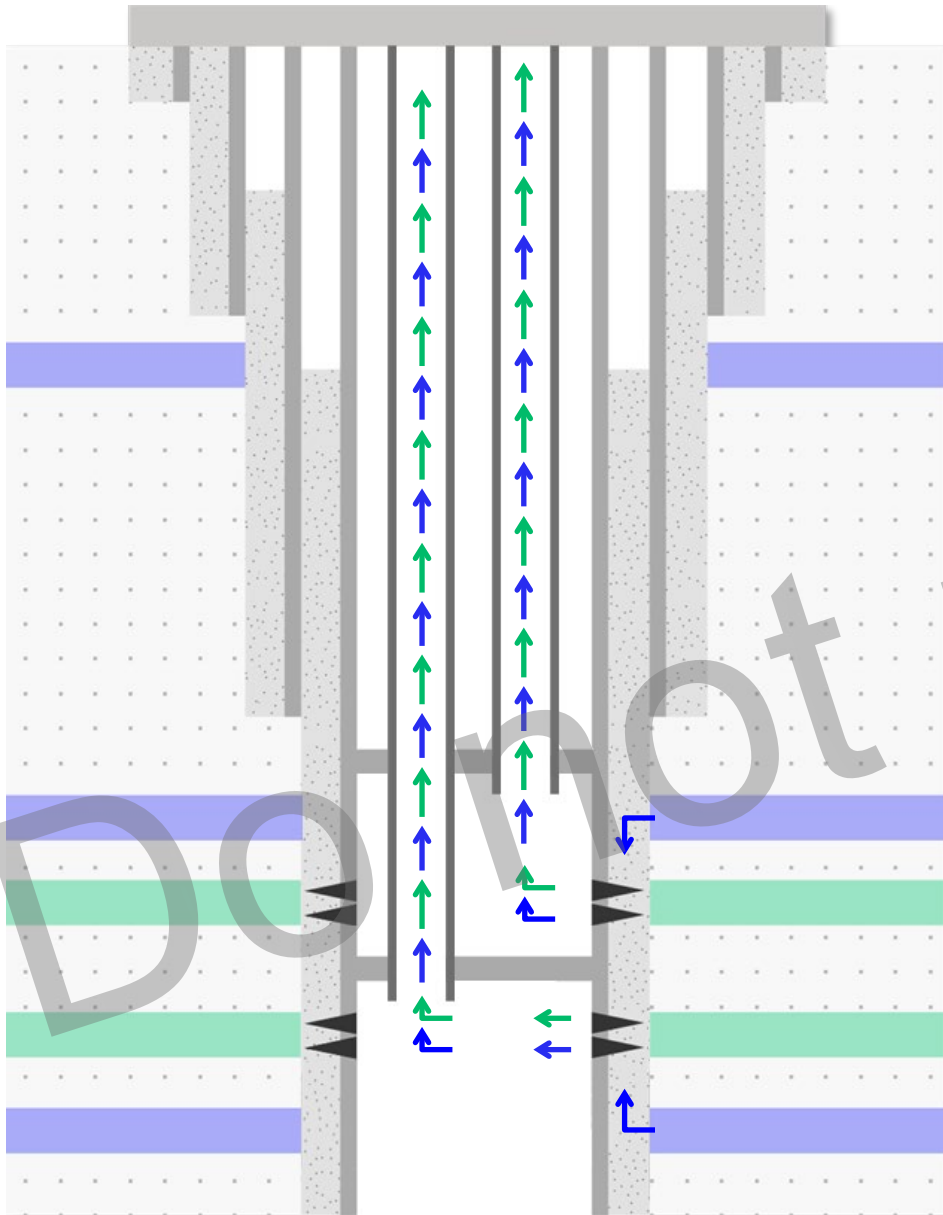
Challenge

WC rapidly increased in SS production.



Location Middle East
Well type Dual String Producer
Reference SPE-182889-MS

Through-barrier Diagnostics Provide Comprehensive Diagnostic Insights



- ✓ Formation flow profile quantification
 - Actual flow thickness
 - Each active zone contribution
- ✓ Unwanted production zones
- ✓ Communication pathway between short and long string
 - Through leaking packer
 - Through leak in long string
 - Behind casing
- ✓ Integrity assessment

Thank you

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