



## Silivasu Field, Romania: POLY-PLUS®

***“The 5% KCl/POLY-PLUS system provided the most stable fluid I have seen. The mud properties were very consistent and required little maintenance. Due to the slim-hole technology used, keeping the hole in gauge was very important. This system produced a near-perfect-gauge hole, as shown by the caliper logs.”***

Catalin Ivan – Technical Representative

### Well information

Location: Silivasu Field, Transylvania, Romania  
Spud/completion: June/August 1996  
Intervals drilled:

- 6¾-in. hole for a total of 5,972 ft — from 2,412 to 8,384 ft
- 4¾-in. hole for a total of 889 ft — from 8,384 to 9,287 ft

### The situation

The operator wanted to drill into a very thick zone of claystone using slim-hole technology and a specially designed drilling rig. Differential sticking and bit balling were

expected problems. Depleted sands were expected between claystone layers as well as over-pressured salt intervals below the clay formations.

### The solution

A 5% KCl/POLY-PLUS system was proposed to control the clays, maintain wellbore stability and minimize drilling problems. The

same system would be saturated with NaCl while drilling through the salt intervals.

### The results

- The mud properties were very consistent and required little maintenance.
- API filtrate losses were easily controlled to less than 5 ml/30 min.

- Caliper logs revealed a near-gauge hole.
- The firm cuttings allowed good solids control.

### POLY-PLUS benefits:

- Provides near-gauge hole
- Improves clay inhibition and wellbore stability
- Minimizes differential sticking
- Produces consistent, stable mud properties
- Improves formation evaluation



## The details

The well was spudded with a 6¾-in. bit to drill the pilot hole, a precaution against shallow gas. The spud mud was 2 to 3% KCl with prehydrated M-I GEL®. POLYPAC® UL was used for filtration control, and SPERSENE™ deflocculated the low-gravity solids. The same mud was used to open the pilot hole to 13½-in. to a depth of 341 ft.

A 9⅞-in. interval was drilled with the same mud system. The potassium concentration averaged 2.75 to 3.5%, with the fluid loss controlled from 13 to 15 ml/30 min. The 6¾-in. hole was drilled with a POLY-PLUS/KCl system with 1.4 lb/bbl POLY-PLUS and

35,000 mg/l K<sup>+</sup> concentrations, respectively. This potassium concentration was sufficient to help eliminate bit balling and clays sticking to the shale shaker screens.

The 4¾-in. interval was drilled with a salt-saturated mud. This system included prehydrated M-I GEL and POLY-SAL™ for filtration control and biopolymer for rheology control. Mud density for this interval started at a mud weight of 11.3 lb/gal and was allowed to increase from slugs and weighted pills to 12.1 lb/gal as a consideration toward the anticipated abnormal pressures below the salt.

*This table shows the mud properties at the beginning and end of the 6¾-in. interval.*

Properties	2,412 ft	8,384 ft
Mud weight, lb/gal	9.3	9.8
Funnel viscosity, sec/qt	42	50
Plastic viscosity, cP	10	15
Yield point, lb/100 ft <sup>2</sup>	11	10
Potassium, mg/l	34,125	33,273
API fluid loss, cc/30 min	6.8	5.0

**Questions?  
We'll be glad to  
answer them.**

If you'd like to know more about POLY-PLUS and how it's performing for our other customers, please call the M-I office nearest you.

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