

# Electronic Shut-In Tool (ESIT/Sampler Tool) System Reduces Well Test Duration by 25 to 50%

## Objectives

- Establish an efficient well testing system and identify a cost-effective artificial-lift method in the following initial conditions:
  - Complicated geological structure
  - Asphaltene and paraffin deposits
  - Low permeability
- The area is plagued with issues that affect well testing: Gas- and oil-bearing formations are thin and separated by very narrow distances. Asphaltene and paraffin deposits block the target oil formations and create high skin factor at the wellbore. The formation pressure in oil layers is lower than hydrostatic pressure. Also, many problems had resulted from low permeability values (units or even fractions of mD) and considerable irreducible water saturation values, especially at the clean-up stage.

## Our Approach

- Weatherford provided the customer with two ESIT/Sampler Tools that took samples on day 8 and day 23 of the well test. All operations were performed successfully.
- An ESIT/Sampler Tool was installed using sample-mode technology during well testing in cooperation with custom-designed progressive cavity pump (PCP) and reservoir monitoring system.
- Sequence of operations:
  - Installation of full system: PCP, reservoir monitoring system, electronic programmable sampling tool, drill-stem testing (DST) tools
  - Start of PCP flow to clean up
  - Stopping of PCP and closing the well by DST
  - Bottomhole sampling by ESIT/Sampler Tool in accordance with program

## Value to Client

- The combination of the ESIT/Sampler Tool, reservoir monitoring, and PCP systems provided the client with a cost-efficient and reliable well testing system in the challenging geological structure. The ESIT/Sampler Tool running in sampling mode during well testing enabled taking downhole samples without disrupting PCP and other well operations.
- By using the Weatherford system, the client gained better operability, cost efficiency, and flexibility in use of PCP and reservoir monitoring systems.
- The Weatherford reservoir monitoring system enabled the client to optimize the buildup period, control drawdown, and evaluate zonal contribution. This monitoring system along with the established well test program and management technology reduced the client's well testing duration by 50% for oil intervals and by 25% in gas intervals.



*The Weatherford ESIT/Sampler Tool, reservoir monitoring, and PCP provided a reliable, cost-effective well testing system in a challenging environment.*

### LOCATION

Uray, Russia

### WELL TYPE

Onshore oil and gas wells  
Four vertical exploratory wells  
Two horizontal exploratory wells

### FORMATION

Sandstone

### AVERAGE DEPTH

3,940 ft (1,200 m) for vertical wells  
7,870 ft (2,400 m) for horizontal wells

### RESERVOIR PRESSURE

≤100 atm (subnormal)

### RESERVOIR TEMPERATURE

≤60°C

### PRODUCTS/SERVICES

- Well testing
- ESIT/Sampler Tool
- Reservoir monitoring system
- Progressive cavity pump
- Production optimization

