



## **SHARED SUCCESS**

### **First Fully Retrievable ESP System With full wellbore access upon removal via Slickline or**

#### **Coil**

**Where:** Nikaitchuq Oilfield, Oliktok Point, on Alaska's North Slope.

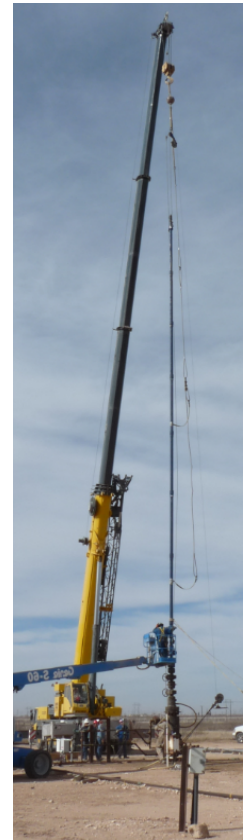
**What:** Oil Wells drilled to vertical depths of 4,000 feet and horizontally to 21,000 feet.

**When:** August 2011

**Why:** 220 million barrels of oil in a remote location, inclement weather and strict regulations, combine to make this a challenging place for a large Alaskan operator to develop economically recoverable oil. Their 26 wells in this region produce viscous oils laden with flour- like solids. The use of Electrical Submersible Pumps (ESP) gives them the necessary lift control; however the issues of high arctic rig costs and the limited rig availability for tubing conveyed ESP work overs necessitated a viable alternative. They had been using Through Tubing Conveyed (TTC) ESPs. The ability to remove and replace the pumps via coil tubing or Slickline was essential due to the expected shorter mean time between failure of the pumps (about half that of the remaining ESP string). As the project moved forward, they were also concerned about failures in other, permanently deployed, components of the string.

**The Solution:** Artificial Lift Company offered a differentiated solution to what was currently available through this large operator's mainstream ESP suppliers. Artificial Lift Company was tasked with supplying a system in which the entire ESP string could be removed and reinstalled through 4.5" tubing. Factoring in the additional benefits of high efficiency, lightweight and compact permanent magnet motors, as well as the prospect of saving on numerous rig workovers, this operator decided that an initial installation was in order.

**Action:** Artificial Lift Company installed a Slickline deployed system for this operator in August of 2011. Faced with a deadline of five weeks for installation of both outer and inner completion components, Alaska team members worked quickly and secured the necessary equipment. Artificial Lift Company's Field Service Technicians partnered with the operator's Alaska staff on the North Slope and the installation was completed over two days. Landed at 10,700 feet MD and 3,500 feet TVD, Artificial Lift Company used a combination of low profile, side pocket electrical wet connectors for the three-phase AC. The balance of the ESP string was comprised of Artificial Lift Company's proprietary Permanent Magnet Motors (PMM) and pumps sources by the operator that were appropriate for their flow and solids handling needs. Seven days later, on 9 September 2011, the ESP system and Drive and Sensor equipment were commissioned, and oil was produced within hours of start up. Over subsequent days, the motor speed was adjusted to enable achievement and maintenance of the operator's target drawdown.



**Artificial Lift Company's ESP systems** are engineering breakthroughs that incorporate leading-edge technology in PMM equipment. With a higher power density, lower power consumption, and the ability to run off of industry standard Variable Speed Drives (Variable Frequency Drives) they are the future in reliable and efficient ESP Systems. The PMM technology ensures that the motors will outlast the pumps. The side pocket wet connects allow well operators the ability to conduct through tubing intervention, and Artificial Lift Company systems also enable live well retrieval of the components (with Slickline Lubricators). When this large Alaskan operator factored in safety and environmental considerations, the value of Rigless ESPs became very evident.

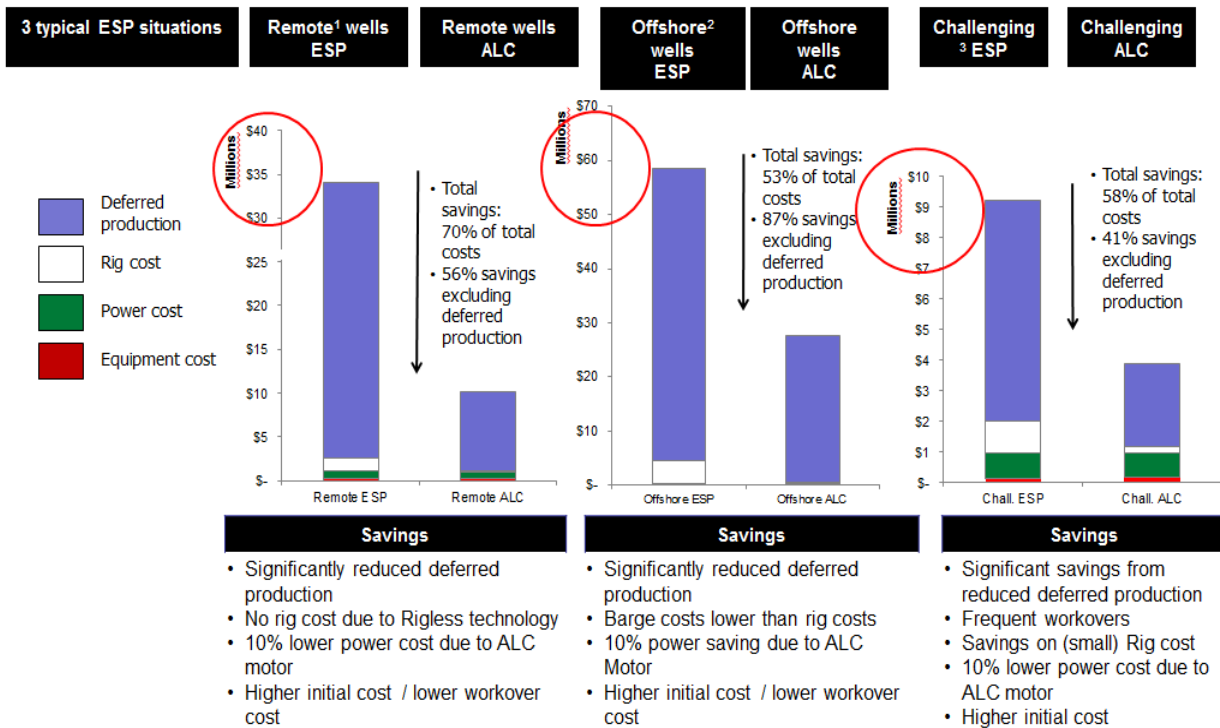
**Compact Motor**

- **Length:** Each module 4.6' (1.40M)/Motor
- **Weight:** Each module 114lbs (52kg)
- **Power:** 67HP (50kW) /Motor 398V, 105A, 3600rpm (120Hz)/Motor
- **Max Power:** 400HP (300kW)



**Low Profile – Side Pocket Wet Connector**

- (5KV, 5,000psi, 150°C / 302°F, 125Amp)
- Protected from wellbore debris or Intervention equipment damage
- All “smart” parts deployed with ESP
- Multi mates and de-mates



\* Oil: \$60USD/Barrel