The river Volga is the longest river in Europe. The majority of its flow comes from melting snow. This leads to a big fluctuation in the river level throughout the year. Reservoirs along the river’s course now help to alleviate spring flooding but the water levels have varied historically from three meters to fifteen meters on the lower Volga. That can make a huge difference when you need to transport a 10,000 ton processing platform along the river.

The Vladimir Filanovsky Offshore Oil Field is a new operation in the northern part of the Caspian Sea, about 50 kilometers offshore, with anticipated reserves of over 150 million tons of oil and 30 billion cubic meters of gas. The infrastructure for this offshore facility, commissioned by Lukoil, consists of an ice-resistant fixed platform, a living quarter’s module platform (LOM-1), a central processing platform (CPP) and a riser’s block (RB) platform, all to be linked by connection bridges.

Construction of these platforms took place at various yards in Astrakhan, in southern European Russia. Mammoet supplied Lukoil’s contractor, Globalstroy, with two heavy duty crawler cranes for the CPP’s construction. Following the construction phase, the platforms needed to be moved by barge along the river Volga to their final destination in the Caspian Sea. Mammoet carried out the jack-up, skid and load-out of the CPP onto its transport barge.

This was the heaviest platform load-out operation of this type in Russia. In addition, this delicate and intricate load-out could only take place during an expected time window of just four days when the Volga’s depth and flow would allow the enormous CPP to be transported down the river on its barge.

Adapting to reality
In 2014 the Volga river levels hit the optimum point for the platform’s transport earlier in the year than expected, before the CPP’s construction was complete. This meant Mammoet had to perform the load-out with the massive platform in an unfinished state. It resulted in a difference between the planned weight and actual weight of the platform at the moment of transport, which also had an impact on the CPP’s center of gravity.

This last minute change of circumstances required Mammoet’s team on the ground to act and deliver. They needed to...
quickly mobilize resources from the global pool of staff and equipment to meet the new schedule and ensure the operation adapted to these new conditions. All the engineering calculations for skidding the CPP and ballasting the transport barge during the load-out were based on a platform weighing 11,264 tons but when the time came, the platform was actually only 9,738 tons. The team immediately set about re-calcultating the load and ballasting requirements to ensure the skidding operation could continue smoothly.

Once the CPP was jacked up and weighed, the team made all the necessary last minute adjustments to prepare for skidding it onto its transport barge. It was mounted on a load-out frame to provide support as it skidded towards the barge and new ballasting calculations were made for each meter the platform would move. The CPP, resting on its frame, was the heaviest platform load-out we had ever executed using a skid system. It needed 34 skid shoes to support and move such a large weight.

The platform was skidded from the quay, over a link bridge, onto the barge. A length of 120 meters of skid track was laid on the quay side and 86 meters on the barge. However, with so many skid shoes under the platform there was very little space to place the push/pull units between them. This required more on the ground ingenuity from the Mammoet team, in the form of a specially designed push/pull unit frame, to get the most propulsion for the skidding operation within the limited space.

The preparations, expertise and adaptability on the ground came together when the platform skidded smoothly onto its transport barge, at the prime moment. It was taken from the construction site, along the Volga, to the oil field in the Caspian Sea where, after installation on its substructure, its construction could be completed.

Project Engineer Feike Brouwer explained to us how the team at Astrakhan made the most efficient use of the push/pull units’ power in a restricted space:

“Normally the push/pull units are placed behind a skid shoe where they push it along the skid track. Due to the restricted space, we had to put some of the push/pull units in front of the skid shoes, resulting in less power for the skidding operation. To maximize the power of the push/pull unit, a frame was inserted around the push/pull unit and attached to the skid shoe. This meant the push/pull unit could push forward on the frame while the frame dragged the skid shoe along the track.”