

## **SHALLOW WATER ABSHERON PENINSULA: SEISMIC DATA ACQUISITION, PROCESSING AND INTERPRETATION**

N.Abdullayev<sup>1</sup>, G.Riley<sup>1</sup>, A.Javadova<sup>1</sup>, D.Harrison<sup>1</sup>, R.Bakhtiyev<sup>1</sup>, Y.Shikhaliyev<sup>2</sup>

Azerbaijan, BP<sup>1</sup>, SOCAR GGD<sup>2</sup>

BP signed Shallow Water Absheron Peninsula Production Sharing agreement in 2014. One thousand line-km of 2D seismic data was acquired during November and December 2015 by Caspian Geophysical using the SOCAR-owned seismic vessel Gilavar, operating in water depths greater than 10m. In the shallow waters over the license area different solutions were needed to acquire seismic data.

3D Seismic data was acquired between June and December 2016 using BP's Independent Simultaneous Sources (*ISS*<sup>®</sup>) acquisition technique, which allowed the large shallow water area to be covered in a short time. Geokinetics was selected as the contractor to execute seismic acquisition in this shallow water transition zone area. An extensive hazard survey was conducted in advance to assist with the planning and safe execution of seismic operations. The contractor was working closely and jointly with SOCAR G&G division, using seismic personnel and equipment on land, thus helping to optimize acquisition operations and save time.

The BP *ISS*<sup>®</sup> technique enables multiple source vessels to operate simultaneously, allowing for dense shot patterns and achieving high fold data. We have performed these *ISS*<sup>®</sup> surveys on land in Algeria and Libya, on ice in Alaska and in the deep water marine environment in Trinidad. *ISS*<sup>®</sup> gave us large efficiency gains where we could acquire data over short period of time. Productivity was an order of magnitude greater than seen on other TZ projects in Azerbaijan. We used a very large number of cableless recording units (nodes), utilized simultaneously up to 17 vessels, employed hundreds of people in acquisition, and achieved over 10,000 shots (equivalent to 13 sq km) in a single day.

Data processing used BP's high-performance computer centre (HPCC) in Houston, using BP's expertise in full waveform inversion for the velocity model build. Processing included Pre-Stack Time Migration and complex Pre-Stack Depth Migration workflow especially in critical areas where structure is very complicated. Processing flow applied handled the areas of the steep dips very well, and resulted in imaging of superior quality to that previously processed in the vicinity.