Development of A Caspian Giant: Chirag-Azeri Field

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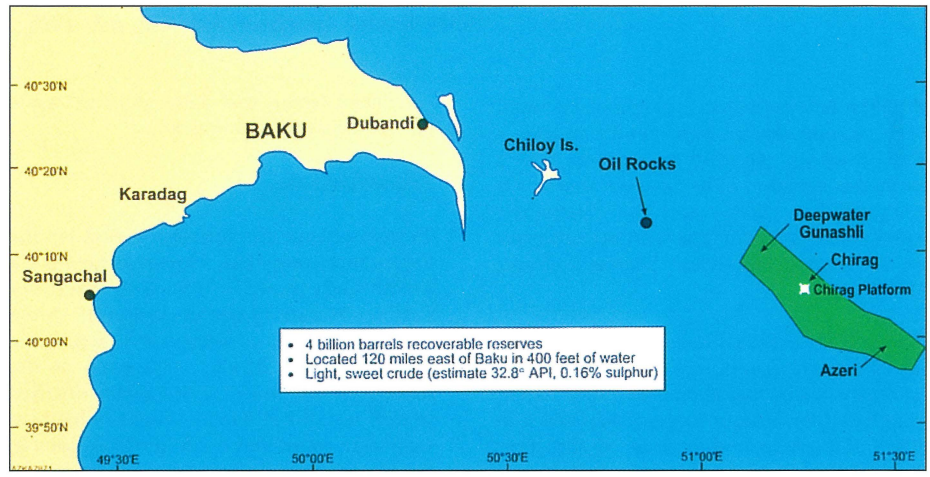
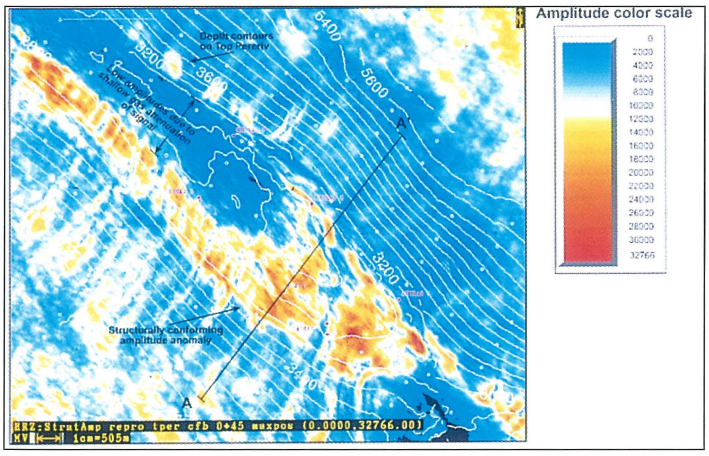
On November 7, 1998 Azerbaijan had been exporting oil to the 'West' for one year.

The first development in one of the world's most significant hydrocarbon provinces is now establishing a track record. The exported oil comes from the Gunashli-Chirag-Azeri field complex which is located 85 km southeast of the Apsheron Peninsula in the South Caspian Sea. More than 12 billion BOE are trapped within an elongate, northwest to southeast trending anticlinal Pliocene reservoir, which is approximately 40 km in length.

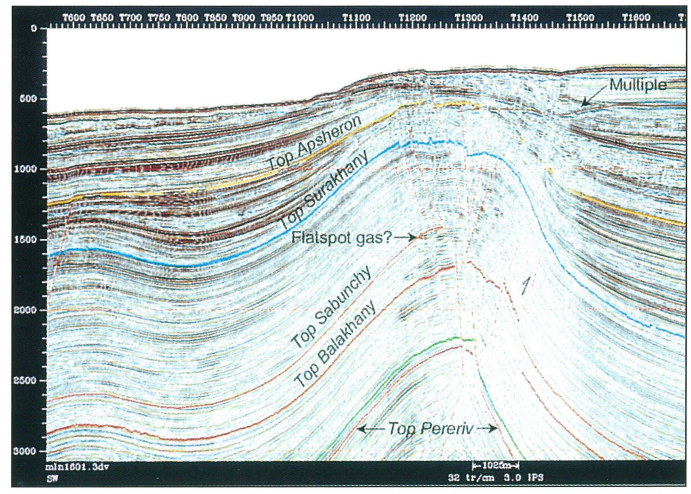
Sparse pre-existing well data and 2D seismic data gave limited insight into the likely reservoir performance of this huge structure. An accelerated development program resulted in the first 3D acquisition in the region. Post



Location map of Azeri, Chirag and Deepwater Gunashli Field.



Amplitude map of upper Pereriv Formation in Chirag Field.



Chirag Field (example of shallow gas effect on amplitude).

processing and data analysis during an initial two year period has achieved various degrees of success in this unique oil province.

The interpretation has been predominantly geophysical, making the acquisition and processing of good quality seismic data critical in order to ultimately obtain accurate drilling depth predictions. Much of the geophysical effort, other than structural mapping, has been directed towards amplitude and coherency analysis plus AVO prediction and correct depth positioning. A brief overview of these techniques is presented in this paper.

The geological knowledge of the reservoir formations has been improved through the study of cores in appraisal wells, which have been gathered using soft sediment coring techniques. Challenges include hole stability and accurate pore pressure prediction in top/intermediate hole sections teeming with mud volcanoes and shallow gas.

The present and future will see the use and application of pre-stack migrated seismic data to allow better structural imaging and depth conversion, and detailed investigation into encouraging seismic amplitude variation. The seismic work program will continue to be directed at optimising management of the reservoir as the first developed segment heads towards plateau.

Biography

Michael Hession graduated with a Ph.D in geophysics from the University of Wales (UK) in 1987. He joined British Petroleum's International Division as a review geophysicist. In 1987, Dr Hession worked for BP in Europe, North America, South East Asia and the Former Soviet Union in both exploration and development projects. From 1995 he was seconded to the BP-Exxon led

First 3D seismic acquisition in the Caspian Sea.

consortium AIOC in the role of Chief Geophysicist in Baku, Azerbaijan. He later became subsurface project leader for the development/production of the Chirag field, bringing the first major western oil project in the FSU to both plateau and export.

In 1998 he joined Woodside Energy in Perth Australia as Project Leader for Middle East and Africa assets.