

'CGG – Collaborating with Universities and Utilising New Technologies to Ensure the Future of Hydrocarbon Exploration'

In an increasingly complex and challenging environment, CGG is building effective links between academia and industry and utilising new techniques whilst adapting current ones to enhance hydrocarbon exploration success in a world where oil prices are highly volatile. In this environment there is increasing focus on risk reduction and increased exploration efficiency. In synergising the use of newly available technologies, research and an integrated geoscience approach, CGG is ensuring the future of hydrocarbon exploration. We present here the main technical highlights of an early-career geoscientist.

One of these key technologies CGG has utilised to enhance exploration is its broadband acquisition technique, BroadSeis™ and BroadSource™. This state of the art technology brings together a variable depth streamer profile and synchronised multi-level source in one seamless package to deliver a ghost-free broadband solution, with the widest available bandwidth at 2.5-200Hz. This technology is actively enhancing exploration by better defining vertical resolution of subtle stratigraphic traps and pinch-outs, with additional high and low frequencies reducing tuning thickness and wavelet side lobes respectively. Furthermore, the addition of ultra-low frequencies is allowing improved imaging of deep targets, something key in mature basins such as the Central North Sea. This high spec seismic data is then used for research in integrated geoscience projects to enhance exploration.

In addition, CGG brings technical experts together through its collaboration with academic institutes to improve geoscientific knowledge and increase hydrocarbon exploration success. This is commonly concretised by giving access to the latest data for MSc and PhD projects. Such sponsorship ensures academic research is helped by having access to these latest seismic technologies. Furthermore, data provided and project scope is kept in line with industry interest. This year CGG worked with Royal Holloway University of London, providing 3D broadband seismic data for an MSc project. In this case, investigation of the structural evolution on of the Mid-North Sea High northern margin and how it relates to hydrocarbon prospectivity complements current focus of industry bodies such as the OGA's initiatives and the 21st Century Exploration Roadmap project. Complementary to this, a recent project involved PSDM processing and geological interpretation of CGG's Lodestone multi-client dataset in the Southern North Sea, in which seismic, well and gravity data were combined with the latest processing techniques in an integrated geoscience approach to provide as much value as possible and to enhance hydrocarbon exploration in this mature basin.