Monday, October 7, 2019

HGS & GSH Joint General Dinner Meeting

Norris Conference Centers • 816 Town and Country Blvd #210
Social Hour 5:30–6:30 p.m.
Dinner 6:30–7:30 p.m.

Cost: $40 Preregistered members; $45 non-members/walk-ups

To guarantee a seat, pre-register on the GSH website & pre-pay by credit card.
Pre-registration without payment will not be accepted.
Walk-ups may pay at the door if extra seats are available.

If you are an Active or Associate Member who is unemployed and would like to attend this meeting, please call the HGS office for a discounted registration cost. We are also seeking members to volunteer at the registration desk for this and other events.

Carl Watkins
CGG GeoSolutions

Joint Dinner with GSH

Plates to Prospects: Integration of Data at Multiple Scales to Enhance Exploration, with Insights from the Deepwater Fold and Thrust Belts Offshore Northeastern Mexico

As deep-water exploration continues to gradually emerge from a relative lull in activity, the challenges to success remain as complex as ever. In the new reality of more limited exploration budgets and increased scrutiny, there is a greater requirement to extract maximum value from all available data spanning multiple disciplines and scales. Truly integrated approaches to exploration workflows represent one way of addressing this problem.

The recent relaxation and opening of Mexico to international exploration represents both challenge and opportunity. The challenges to deep-water exploration stem from a wide variety of technical, economic and political risks. The opportunities are clearly large, with an enormous exploration footprint and large structures in an area with a proven and prolific petroleum system. Significant advances in imaging below salt and shale have been a critical step that, when linked to the adoption of an integrated geoscience approach, have allowed us to address these problems. In addition to the geophysical challenges surrounding salt, shale provides an additional challenge. Deformation is extremely complex in the deep waters often displaying disharmonic shortening across stacked detachment levels of salt and shale. As we look to understand the continuity of prolific play fairways such as the Wilcox, Frio and Vicksburg, understanding the origin, timing and distribution of the deep-water fold-belts is essential.

Deep-water fold-belts are inherently related to base of the paleo-slope and/or bathymetry of the detachment surface. Using the latest seismic data, calibrated to the regional stratigraphic framework, these fold-belts have been mapped, allowing their timing and distribution to be known. Further interpretation and integration with potential field data show their origin to be closely related to the underlying rift structure. The adoption of this fully integrated approach has helped to illuminate their origin, timing and evolution. The results have direct implications for source rock development, preservation and maturity as well as all other elements of the petroleum system including reservoir.

Deep-water exploration in Mexico targets Tertiary siliciclastic deposits from a variety of hinterland sources around the periphery of the Gulf of Mexico. With only limited well penetrations in the offshore and much of the play fairway below salt, the wider geologic context becomes important for de-risking plays. Consideration of the entire depositional system is therefore important when de-risking reservoir presence and quality for exploration. An integrated approach to stratigraphic architecture, detailed depositional process evaluation and regional mapping all play an important role. The seismic data are invaluable in extending detailed reservoir and play level understanding away from the limited well control. This has enabled us to address the large scale depositional polarities that help to answer fundamental questions related to regional exploration potential in frontier parts of deep-water Mexico and also to propose some new ones. ■

Biographical Sketch

Carl Watkins graduated with a degree in Geology and Geography and did his PhD at Oxford Polytechnic working on the sedimentology, palaeogeomorphology and basin fill of the North Pyrenean Basin in SW France. He joined Robertson in 1991 and worked as a sedimentologist and reservoir geologist on projects ranging from frontier exploration in far eastern Russia to detailed reservoir characterization and modeling studies in Norway, North Africa, SE Asia, and the Americas. After managing several large integrated studies, including a 2007 study of the Russian and Norwegian Barents Sea, and developing novel techniques in drainage network and hinterland analysis, he joined the senior management team of Robertson in 2011, then part of Fugro.

Following the acquisition of Fugro's geoscience arm by CGG in 2013 Carl took an expanded role covering business development and marketing for CGG's GeoConsulting group, whilst finding ways to keep his technical expertise sharp. Carl currently works for CGG's MultiClient and New Ventures with responsibility for business development within the GeoSolutions Group. His focus is on identifying and realizing incremental value by combining leading geoscience expertise with CGG's extensive seismic library to address clients sub-surface problems.