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to reduce drilling time and costs
 to improve rig safety
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SPE Event: OTC - Offshore Technology Conference Reliant Center, Houston, May 6th-9th 2013

Report by Gionata Ferroni, Geolog Technical Manager

Houston is home to the world's largest oilfield conference, the OTC. However, even by its own standard, the 2013 edition was a mammoth one. With over 100,000 delegates, this was the second largest event in its history, and the largest in 30 years.



Fig. 1 - The usual swarm of delegates at the 2013 OTC

More than 2,700 exhibited at the show, 40% of which were from overseas, which made the OTC even more of a global event than it normally is. In particular, a significant presence of Chinese manufacturers required an extension to the conference show floor! Although the show is typically dominated by drilling and production equipment, with large heavy metal tools in display in every corner, the conference was as usual very lively, with almost 300 technical papers being presented, characterized by a high technical standard. The focus of the 2013 OTC was on innovation, particularly in the field of deepwater technology and automation. For this reason, 15 new technologies were acknowledged with Spotlight Awards.

Awarded technologies spanned the breadth of the oil and gas industry:

ABB was awarded for their vessels powered by an energy-optimized direct-current system grid. **FMC** received two awards for their subsea production performance monitoring system and for a subsea multiphase boosting pump system. **Baker Hughes** introduced a new LWD fluid analysis sampling tool. **Welltec** in turn showed their awarded new e-line conveyed well cutter. **Bayou Wasco** was acknowledged for their Subsea Flow Assurance Insulation System.



Fig. 2 - BHI's new LWD fluid sampler.

Statoil introduced an innovative remote-controlled hot tapping solution, consisting of a robot capable of welding a T-piece on to the production pipe.

Along the same lines, **Superior Services** presented a completion rig that uses remote-operated or pre-programmed robotics to control various completion components,

including a snubbing unit and a drilling system. Automation was rewarded also through **ShawCor** Mobile Robotic Cutback System, a new machining technology for insulated pipe and **West Drilling** collected an award for their automated Continuous Motion Drilling Rig.

Since deepwater is the technology frontier, some awards went to solutions dedicated to it: **Reelwell** introduced a dual drill string that enables riserless drilling in 3000 m water depth. **GE oil and gas** lively R&D was also awarded for two innovations, one regarding a transmission and data monitoring system for ROV operations and for a new blind shear ram designed for deepwater well control. Also relevant to the future of deepwater drilling is **SBM** offshore solution for a suspended drilling riser, an apparatus that enables to drill multiple subsea wells consecutively. Finally, Finnish company **Wärtsilä** received an award for their gas recovery system which enables self-sustaining power generation for offshore operation, preventing waste of a valuable source of energy. It would be impossible to report in this limited space the wide variety of relevant technical papers, still a few must be mentioned regarding



Fig. 4 - Wärtsilä's gas-powered generator

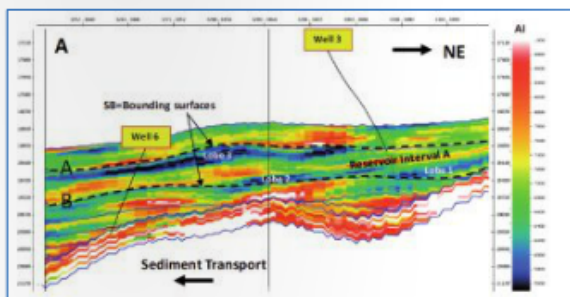


Fig. 3 - Compartmentalized reservoir

two of the main topics, well control and pressure prediction, particularly in deepwater. Jeff Chen from Marathon proposed an integrated approach to tackle reservoir compartmentalization issues in deepwater environments, involving as a minimum a structural analysis, fluid fingerprinting and pressure data (OTC23951). Curtis Cooper, from the always lively Chevron Technology Company presented some direct measurement of turbiditic flow done into the Congo River marine canyon. Some of these measurements were unprecedented and shed new light on the deposition of turbidites (OTC23992). One of the most popular lectures was In Sutton's summary of the official reports on the Macondo incident (OTC24027). It is worthy to note that two of the incident reports included the list of names of those who perished. A reminder that all operations involve real people and that the industry must make sure they return home safely. On the subject of deepwater well control Daan Veenigen from NOV presented processes involved in improving deepwater well control (OTC24062), from wired pipe to realtime downhole pressure and surge/swab measurement and calculation, to independent verification of well control barriers. Managed Pressure Drilling is always a hot topic these days. Al Karimi from the Tulsa University presented a new transient model for accurate

annular pressure prediction while performing well control with an MPD system (OTC24189). A series of papers regarding pore pressure prediction attracted a captive audience. Shell's K.H. Hansen presented a case history (OTC24221) from Australia where the pore pressure predictions were based on resistivity and sonic data, corrected for historical information such as kicks and other drilling events. Alan Huffman and colleagues from Repsol have

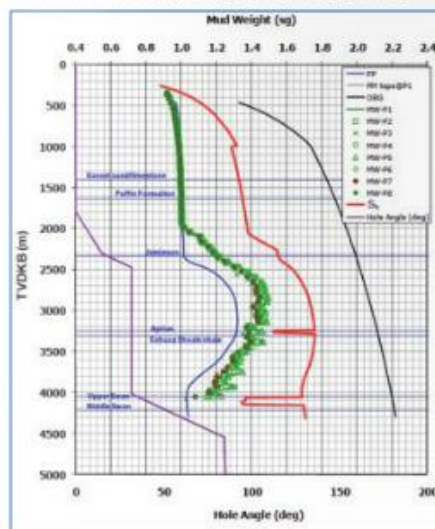


Fig. 5 - A typical well pressure profile (from the Shell paper).

contributed with a paper (OTC24075) discussing a new formation pressure calibration model, that enables to predict pressures at greater depths than was previously feasible. The advanced inversion methods utilized also enabled pressure predictions in mixed lithology sequences. Hess has been very active on the subject

and presented two separate papers: both were from AjJaz Rizvi and others, about the prediction of subsalt pore pressures (OTC24157 and 24159). Based on the analysis of shear and compressional velocities obtained from innovative acoustic methods, the method enabled to tailor pressure calculations to the Gulf of Mexico environment, and to identify a newly calculated normal compaction trend for shales which takes rock physics into account. The result

of Hess' work is a less "user dependent" method, and it has now been tested on almost a hundred wells, with an average pore pressure error lower than 0.5 ppg. Buoyant Towers must also be mentioned since an entire session was dedicated to this new type of drilling and production units, designed for challenging fields. At the OTC Italy was represented by Gianbattista De Ghetto who participated in the panel discussion about future offshore operations and their financial aspects. Amongst the exhibitors, Saipem, Drillmec were flying the Italian flag. Finally, one of the technical papers presented was prepared by the Kuwait national oil company KOC together with Italy's Geolog International. The paper (OTC24002) described the utilization of field-based geochemical rock analysis to support smart multilateral well placement and completion.

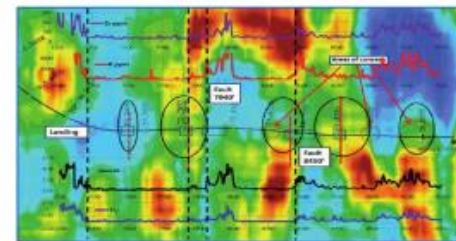


Fig. 6 - Geochemical rock data associated to seismic profile.