

HYDRO INTERNATIONAL INTERVIEWS

ANDY HILL

Survey is Means for Preventing Damage to Nature



Andy Hill is key-note speaker at OI 10 in London and convening the Hydrography and Geophysics track of the conference. As Marine Geohazards Technical Authority at BP he states that the company undertakes hydrographic surveys to ensure safety, integrity and protection of the environment in all its operations.

Mr. Hill, as convener of the Hydrography and Geophysics theme at the OI Conference in London this year, can you tell us about the scope of the sessions?

We have split the theme up into three separate sections: we will have a session on AUV applications and developments, a series of papers on sonar sensor developments, and then close with two papers addressing efficiencies in data handling and presentation. The AUV theme has papers from Shell on their experiences with AUVs in Nigeria, and papers

by contractors on their experiences with low logistics AUV application and on applications and experiences from a range of different vehicles. Finally, we have a paper on the development approach to a completely new type of vehicle. The session on sonars will cover various new types of sonar sensor including Synthetic Aperture Sonar, or SAS, a new multi-beam system and side-scans. Lastly we will have two papers on efficiency of data handling and presentation. All in all I think this will be a session well worth attending and encourage people to attend.

You are the Marine Geohazards Technical Authority for BP. Can you tell us why you decided on this career, how it relates to survey and how you joined BP.

In High School I wanted to join the Royal Navy Hydrographic Service but sadly my eyesight was not good enough, so I continued to take a first degree in Maritime Studies in Cardiff, UK. That led to a second degree in Marine Geology and Geophysics at UCL and a job with Geoteam in Aberdeen in the early 1980s - a boom time for the offshore site survey industry in NW Europe. After six years of varied experience, both offshore and onshore, I was recruited by BP to provide geophysical input into delivery of their site surveys. These were controlled by BP's Survey Division at the time, so I was interviewed and recruited by BP's Chief Surveyor Alan Haugh. That was 22 years ago! Since then I have worked on a rich variety of Survey and Site Investigation projects for BP around the world and been based in the UK, the US and Azerbaijan. Despite the disappointment of bad eyesight over thirty years ago I have been very lucky in the projects I have been able to work on around the world.

While serving for BP in Azerbaijan you carried out a number of hydrographic surveys and geophysical site investigations in the Caspian Sea. Can you summarise the main aim of those surveys? What were the peculiarities of the geophysical investigations versus the hydrographic surveys?

The aim of the work we undertook in Azerbaijan is similar to work BP carries out elsewhere. Fundamentally we undertook these surveys to ensure the safety of our operations, the integrity of our facilities, and the protection of the environment. Simply encapsulated our aim is "No accidents, no harm to people and no damage to the environment." In the Caspian this was no exception, and the surveys that were undertaken covered a multitude of requirements from precise bathymetric surveys of harbours, quayside areas and harbour channels for assurance purposes prior to load out and tow out of jackets and integrated decks, to large-scale geophysical site investigation of full field areas to support field development planning and drilling safety in water depths to around 600m.

You do however touch on an interesting point of where hydrographic survey finishes and geophysical investigation begins. I like to think that there is no real boundary but rather just phases of the spectrum of total survey requirements - after all, in hydrographic survey we use sound energy, as do seismic surveys, it is just the power and frequency of the tools that differ - while the positioning requirements remain integral to all survey types. So I would not say there is any peculiarity between the objectives and it is essential that hydrographic and geophysical works are delivered in an integrated manner.

Are the IHO standards useful for the oil industry or is a totally different approach required?

As mentioned, the needs of individual projects may require the job specifications to exceed the IHO norm. For example, precise bathymetric surveying of a nearshore pipeline trenching project may require nearshore data to be delivered with a DTM cell size of 0.25m or better to ensure the narrow trench is both broad, deep and level enough along its axis prior to pipe lay, while post lay surveys of the pipe in trench may require even greater accuracy to image, say a 14" pipeline in the trench and ensure it is not in suspension. However,

generically, the IHO standards for hydrographic surveys are observed and adhered to in industry surveys.

You are an expert in the Autonomous Underwater Vehicles techniques. Could you tell us which sensors give best results in the various types of investigation?

Well let's start at the beginning and work down - which inevitably means that geophysical sensors come last! First and foremost we need to know where the AUV is, or has been. As ever, any data you acquire is worthless if you do not know where it came from in the first place. So an integrated inertial package is vital and some form of external aiding to prevent, or correct for inertial drift over the duration of a dive. An acoustic communication device that can provide remote positional information either in to, or out from, the AUV when submerged is desirable. Once the integrated navigation issues have been addressed you can look to bolt on hydrographic and geophysical sensing packages. The norm here would be swath bathymetry, dual-channel side-scan sonar and sub-bottom profiler. Lastly, there are other remote sensing sensors under consideration such as gravity meters and magnetometers. More recently, however, we are beginning to see visual sensors making a commercial presence in the payload with either forward-looking videos or high resolution strobe synchronised downward-looking still cameras. All of these sensors have their value and obviously that value is dependent on the type of operation that you are using the vehicle for. Naturally, the more sensors permanently installed or added in a simple modular fashion, the greater the flexibility of vehicle application.

BP is particularly involved in preserving the environment. This is carried out by monitoring the status of seabed quality nearby the exploitation areas. How are BP surveyors involved in this task?

BP surveyors are directly involved in the delivery of environmental monitoring and baseline surveys around the world. The drivers behind these are variable. At the initial stage of exploration operations the task is to define the presence of any sensitive seabed environments, such as seagrass areas, coral reefs, fish spawning grounds, deep water cold water corals, or chemosynthetic communities. Our aim is simply to identify these and then leave them untouched by our operations: be it initial exploratory drilling or later field development operations. Once production is started surveying involves monitoring around installations to ensure no changes to the environment. This is achieved by direct sampling and requires careful positioning of cores.

What are the possibilities for young people to become surveyors and to find stable employment in an organisation like BP? What would you say to them?

Like many oil companies BP is faced with some significant issues in the demographics of our workforce that is forcing us to urgently seek to renew our skills base. This means that we need to actively recruit Surveyors at the graduate level - on a global basis. I am pleased to say that BP has realised the critical need for renewal and growth of our global Surveyor workforce and thus we have a four year recruitment in place to achieve this.

So my message to young people considering a career as a surveyor in the oil industry is that the importance of the survey is recognised, there is a future for you in the industry and that a career providing exciting and varied opportunities around the world on and offshore, in shallow and in deep water can be offered. Despite much recent news and debate there is plenty of oil and gas left to be developed in the world - certainly more than enough to support an exciting and lengthy career!