
Today's talent – tomorrow's energy: employing geography, Earth and environmental scientists

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Abstract

As major suppliers within the global energy mix, companies within the oil and gas industry need geographers, earth and environment scientists to carry out critical roles throughout the activities that make up the industry's lifecycle, from exploration, through production, to ultimately the decommissioning of installations. This paper explores the range of opportunities for GEES graduates to apply their knowledge and skills, not only in oil and gas contexts, but also to show the cross-over into wind and wave energy that have comparable requirements. It is based on the presentation delivered, and subsequent discussion at the GEES Subject Centre Conference, July 2008, themed on employability, employer engagement and enterprise. The

majority of questions from the floor were focussed on the how GEES graduates 'fit' into the Oil and Gas Industry.

The Energy Industry and GEES graduates

The continuing global demand for energy means the requirement for people with the skills and knowledge to drive the innovative solutions that will be critical to meeting them, continues to grow. As major suppliers within the global energy mix, companies within the oil and gas industry need geographers, earth and environmental scientists to carry out critical roles throughout the activities that make up the industry's lifecycle.



A typical North Sea Oil Rig

To more effectively play its part in this challenge of increasing the feedstock and throughput of new talent into the sector, the Oil and Gas Industry has created the Oil and Gas Academy.

Providing the focus: OPITO - The Oil & Gas Academy

For the first time, there is a focal point where the whole industry can come together to identify their workforce issues, set an agenda and agree what action should be taken. OPITO - The Oil & Gas Academy's (The Academy) work is informed by industry expertise and reflects the employers' issues and priorities. It works on issues that affect the whole industry, promoting collective solutions, as well as recognising the need to develop and implement sector, regional, technical and functionally specific programmes. The Academy provides a sharper, clearer focus on delivering a much greater return on the time, money and effort the industry invests in learning and skills development of both its existing workforce, and the potential talent it requires to remain successful now and in the future.

Focussing on industry needs, The Academy involves:

- Finding out & understanding employers' needs**
- Operations** – end to end across the supply chain onshore & offshore
- Competent individuals** – through quality assured learning routes
- Unique model** - owned and led by industry
- Standards** for safety and technical effectiveness
- Systematic and transparent action** based on consultation and evidence
- Independent** – with close links to employers across the supply chain
- Not for Profit**, but revenue generating, providing sustainability
- Global Alliance Partners**

What sorts of people are needed?

The Oil and Gas Industry

As part of the global energy mix and with demand for oil and gas increasing, and with greater care being taken of our natural resources, the oil industry faces a challenging and exciting future - one that is going to test its ingenuity and expertise to the full. This means that the oil and gas industry is truly global and offers a variety of job opportunities both onshore and offshore.

Major areas of opportunity within the Oil and Gas Industry



Oil industry geoscientists studying geological maps

Geoscience

Geoscientists, including geologists, geophysicists and petrophysicists, are responsible for finding commercially viable oil and gas reserves by assessing the characteristics and constraints of the earth's subsurface. They can be involved in the exploration and appraisal of new areas, feasibility studies and field development planning for established/discovered fields, and optimising recovery of producing fields.

Working in integrated teams with colleagues in Petroleum, Wells and Production Engineering, geoscientists can expect to be involved in:

- Planning 3D seismic acquisition, processing and interpreting seismic data
- Creating advanced geological models of the subsurface
- Defining the reservoir properties
- Planning (location and trajectory) development wells
- Developing innovative ways to access remaining reserves.

Engineering

Engineers from a wide range of technical disciplines are required for the oil and gas industry, coming from a mix of engineering backgrounds including mechanical, civil, rotating equipment, electrical, instrument, materials, corrosion and process control. They are involved with everything from well tubing, process plants and refineries to pipelines and tankers, and can expect to be involved in projects from early conceptual design onwards, including:

- The design and concept selection of new on/offshore facilities
- Maintaining and optimising existing on/offshore facilities

- Ensuring safe, reliable and environmentally responsible operations for internal and external customers around the globe.

Subsea

A wide range of opportunities exists across the subsea spectrum from the oil and gas operators and large contractors, through to the innovators - the small to medium sized businesses developing cutting edge technology. All of the main engineering disciplines are required in the subsea sector including:

- Engineers with mechanical and structural skills make big contributions to the development of valves, underwater structures, and pipelines.
- Electrical and electronic engineers are involved with control systems.
- Chemical engineers carry out process analysis of the systems to ensure the fluids will flow satisfactorily.
- Engineers of all disciplines get involved in the management that's required to bring hundreds of millions of dollars of equipment together to complete a single oilfield development.



Subsea sector – a Remotely Operated Vehicle (ROV) being deployed to study the underwater environment

Major areas of opportunities in the Oil and Gas Industry for GEES Graduates

- Geologists and geophysicists (Earth scientists)
- Environmental scientists
- Geographers and surveyors

Offshore survey and positioning – one example



Seismic vessel towing streamers that emit signals and map the subsurface

Offshore survey and positioning plays a critical role throughout the entire lifecycle of oil and gas operations, for example:

- Shooting seismic to image the subsurface – precise positioning is vital; Marine Vessel towing streamers that contain hydrophones; air guns emit signals – these travel through water – into the Earth – through strata – return to hydrophones – and are recorded as seismic data
- Seabed surveys to establish: shallow geo-hazards; how flat is the seabed? how hard is the seabed?
- Positioning installations and navigation support
- Pre decommissioning surveys: hazard notification; post decommissioning surveys
- Updating of infrastructure databases

Conclusions

The Oil and Gas industry's activities provide excellent opportunities for GEES graduates, but alongside their technical and discipline knowledge employers in the industry (in common with other industry sectors, including renewable energy) also require an additional set of skills and personal attributes e.g. interpersonal skills, team working, written and oral communication skills and business awareness.

The GEES Conference provided an excellent opportunity for the industry to share its opportunities and challenges with the people in universities who can have a direct impact on the availability of the talent to meet them. To secure the relevant skills sets are available to the industry to match its needs will require the industry to maximise its ability to prepare and source graduates, and also to investigate the possibilities of developing new ways of allowing graduates to join the industry. This will require excellent relationships with academia. Productive partnerships with organisations like the GEES Subject Centre will be critical to achieving this.

Postscript

The test of the value of attendance at any conference from both a personal and industry point of view is the return on investment of participation. The GEES Subject Centre conference has had several concrete outcomes. From the Oil and Gas Academy's perspective, there is now a real understanding of the value that the work the GEES Subject Centre does, in terms of the contribution it can make to The Academy's efforts in preparing and attracting graduates from the GEES disciplines entering the Oil and Gas industry.

This is particularly true for the issues around the employability agenda and how that is already being worked.

A major issue raised at Oil & Gas UK's 'Next Generation' Conference in April 2008 was a challenge about the messages and channels the industry currently uses to communicate to graduates, the opportunities it can offer. Previous industry research has shown that the aspirations and expectations of today's graduates – so called Generation Y - differ significantly from many of those designing and delivering graduate attraction campaigns. As a result of the GEES Subject Centre conference, The Academy has followed up with Professor Paul Redmond to explore the possibility of benefiting from his research. The aim of this is to assist graduate recruitment professionals from oil companies to understand its impact on the way we communicate the opportunities for graduates within the industry.

Similarly, the industry is organising an industry/HE agenda setting 'summit' as part of The Academy's wider education engagement strategy agenda. As a result of the learning from the GEES Subject Centre conference, a major theme will now be to debate and agree action on the issues and mechanisms that can be deployed for the delivery of joint action around employability skills e.g. curriculum design and delivery, delivering employability and learning through work, career management and workplace understanding, key skill development and personal development planning.

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