CDA's UKOilandGasData.com and Tertiary Education Institutes

Investment in the North Sea is estimated to be running at £13bn in 2013[1] and predicted to rise higher in 2014 according to the Oil and Gas UK's Economic Report 2013. It is therefore imperative that tertiary education institutes provide prospective workers with the specific skill sets required to fill the anticipated gap in the future labour market. The shortage in skilled personnel is cited as one of the leading challenges for the UK's offshore oil and gas industry.

Although the oil and gas industry has no difficulties in attracting new trainee entrants to the offshore industry, it is important for the long term to sustain a pipeline of school leavers and graduates with STEM (Science, Technology, Engineering and Mathematics) qualifications to the onshore sector. With record levels of investment and high levels of activity on the UKCS, the challenge of increasing the supply of skilled personnel in the industry will not be resolved without the help of tertiary education institutes. The oil and gas industry must therefore support the education sector and encourage them to produce work ready graduates with relevant skills.

The 60 or so oil companies behind CDA (Common Data Access Limited[2]) believe very strongly in helping universities to support their geoscience students by granting them access to the wealth of oil and gas data available through the CDA's system – UKOilandGasData.com[3].

Portsmouth University has recently started teaching Petroleum Engineering as an undergraduate course, and numbers have rapidly swelled to about 80 in the current first year. As the newest participants in UKOilandGasData.com, Portsmouth University hope to benefit in two areas.

Firstly, they are committed to preparing students for the real world. In order to develop their Petrophysics unit to a world class standard, Portsmouth University aspires to work with real well logs rather than just teaching theory and textbook examples. Their aim is to generate students who are ready to produce useful well log interpretations as soon as they start work. To this end, they intend to use log curves from wells stored in UKOilandGasData.com in lectures and exercises. The CDA system has on-line data for over 10,000 released wells which includes 250,000 well log images and almost 100,000 digital well log files. CDA's UKOilandGasData offers Portsmouth University access to a vast amount of useful well data in an accessible and methodical manner resulting in them avoiding having to redirect resources to pull together data.

Secondly, the released well data now available from CDA for the UK Continental Shelf (UKCS) represents an extensive store of information for research and student projects. The data covers many areas as diverse as variation in reservoir quality to investigating emerging pays, such as ultra-tight gas that may have been ignored when the wells were first drilled. By such research the university hopes to provide insights that will be valuable to any interested parties.

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[1] Oil and Gas UK "*Economic Report 2013*" p.8. www.oilandgasuk.co.uk/2013-economic-report.cfm

[2] CDA (www.cdal.com) is an industry-owned, not-for-profit subsidiary of Oil & Gas UK. Through UKOilandGasData.com CDA provides users with information about all the wellbores, seismic surveys, licences, fields and infrastructure on the UK Continental Shelf and provides online or offline access to data for wells and surveys where the user holds these rights.

[3] This new site (launched in November 2013) unifies what was previously DEAL (www.UKDEAL.co.uk) and the CDA Seismic and Well DataStores

A similar concept of preparing students for the real world is shared by the **University of Aberdeen**. They believe in using data that is produced and used by the industry over theoretical or superlative data. They use UKOilandGasData extensively to gather well data, both digital and reports. This data is then fed into various research groups in the department and into teaching.

With regard to classroom teaching, the "real" data provided by CDA allows the students to get experience using the same quality and level of detail that they will use in industry. For example, the University of Aberdeen run simulated licence rounds where they roll back the clock to the 1970's and give their students just the data for the first wells drilled in each block of a quad. This mimics a frontier area and the students then bid on each block. They then use the information held in UKOilandGasData.com to check what fields and reserves they would have found.

For research, the University of Aberdeen use the well data to create large correlation panels with numerous wells without having to approach each individual company, which can be very time-consuming. This has allowed their research to progress faster and be less resource intensive as they are not waiting for data to arrive or chasing individual operators.

CDA's UKOilandGasData has been used extensively in the University of Aberdeen's Triassic mudstones project[4]; some of the correlations they have created from UKOilandGasData can be seen here.

The data from the UKOilandGasData.com is not only used for the more traditional aspects of the oil and gas industry. This is demonstrated by the **University of Edinburgh** who use the UKOilandGasData extensively for their Carbon Capture and Storage (CCS) Master's program and dissertations projects. Furthermore, the university are using UKOilandGasData.com for several on-going PhD projects, focused mainly on CO_2 storage. The use of the UKOilandGasData has directly contributed to the article "*Mechanisms for CO_2 Leakage Prevention – A Global Dataset of Natural Analogues*" being published in the Energy Procedia journal[5].

The University of Edinburgh primarily use UKOilandGasData for CSS projects and research. They predominantly focus on improving estimates of CO_2 storage capacity and determining the suitability of different saline aquifers in the UK North Sea for CO_2 storage. This is an essential initial stage for determining which areas will be suitable for future storage projects and where future efforts should focus on refining this storage capacity. Use of the real data also means that the student projects are directly relevant to improving CO_2 storage capacity estimates of the UKCS, which is a strong motivational factor for them whilst undertaking their dissertation projects.

The advantage of using UKOilandGasData.com for the CCS MSc and PhD projects is that it gives students access to the real well logs and the real data from the UKCS. With the MSc programme in particular, the University of Edinburgh aim to provide training which is directly relevant to future employment in the industry and, undoubtedly, using the industry data is a key component of this.

Heriot-Watt University, describes UKOilandGasData.com as: "… an *invaluable resource to academics and students alike, allowing them unprecedented access to high quality data to aid their research."*

The availability of academic applications licenses means that students undertaking short-term projects, typically non-funded, can benefit from this data which otherwise a lack of resources and time constraints would have rendered impossible. These students are able to build practical skills

[4] "*Triassic Mudstone Project*" www.abdn.ac.uk/tacs
[5] "*Mechanisms for CO_2 Leakage Prevention – A Global Dataset of Natural Analogues*" (2013) http://www.sciencedirect.com/science/article/pii/S1876610213016317

and gain essential experience in petrophysical and geophysical well-log analysis and seismic interpretation. These are key competencies in the oil and gas industry, and will help the students gain employment more readily in this sector.

A wider implication of these studies has been to increase knowledge and understanding of the geology of the UKCS and to create potential recruits to the industry who have a detailed understanding which they can then build on. The North Sea in particular is a mature hydrocarbon province with reserves more difficult to locate and produce. Increases in scientific understanding of the geology have significantly benefited exploration as more subtle traps are located, prolonging the life of an area which still supplies much of the UK's energy needs. As we move towards a period of decreasing energy capacity, this has been recognised as being highly significant with increases in government spending and resources.

Data from CDA's UKOilandGasData.com also permits research into carbon storage in decommissioned North Sea reservoirs and importantly allows such concepts to be fully investigated. A sound understanding of the geology of an area is critical for safe storage and the Seismic data stored in UKOilandGasData.com will become important as it allows carefully analysis of the fault trends which could provide leakage pathways and cannot be appreciated by well and core studies. Storage of excess carbon could help to slow the effects of human-induced atmospheric carbon dioxide increases and the available data will allow this to be done safely.

To conclude, through CDA, industry is contributing to the future of the oil and gas industry by backing a supply of skilled labour. Through supporting education institutes and providing them with a vast amount of real world data free of charge, CDA is helping to simultaneously prepare students for the real world oil and gas industry as well as supporting key research in the industry.