

Appendix 2

Using Distance Learning Methods For Petroleum Industry Technical Training In Baku, Azerbaijan*

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BP Exploration on behalf of its partners through the Azerbaijan International Oil Company, have been tasked with developing several world-class petroleum fields in the Caspian Sea. These fields contain billions of barrels of crude oil and trillions of cubic feet of natural gas. Activities incorporated into this development cover construction of offshore drilling and production facilities, pipelines, storage facilities and the drilling and completion of hundreds of wells.

As can be imagined, there is a great fiscal responsibility placed on BP to manage such a project. To do this effectively, many expatriate engineers, geoscientists and business support specialists have been brought into Azerbaijan to help deliver this project within budget and on time.

A major role of these expatriate staff is to ensure that BP develops

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the workforce of the future to keep in line with aspirations of 90% nationalisation by the year 2013, as outlined in the Production Sharing Agreement. Organisational Capability Development is the term used for this and covers activities such as Recruitment, Training, Personal Development, Succession Planning etc.

Recently it was recognised that the source of staff needed to fulfil our requirements came mainly from recent graduates. With this in mind BP has focussed efforts on maximising the benefits from this resource pool. A rigorous recruitment process is in place, focussing on areas of interest such as English Language skills, technical awareness, mathematical skills etc., followed by technical and behavioural interviews.

Education in Azerbaijan, especially in the Petroleum sector, has historically been very strong. In fact Azerbaijan trained most of the Petroleum Professionals in the Former Soviet Union. However, in recent years since independence, funds for further education have been minimal especially in the Petroleum sector of tertiary education. BP has recognised there may be limitations to the foundations of the more technical disciplines and has introduced several measures designed to target some of these limitation for young employees in the fields of Drilling & Completion Engineering.

The following article attempts to describe how a new approach to Distance Learning is being offered to our Challenge and Early Development stage engineers in Baku.

BP - University Links

At an early stage of this project the need for a strong, quality driven, Azeri university partner was paramount to the success of this project. Khazar University was chosen as it was perceived that it had strong leadership and an expansionary goal based on International Relations, International Standards and a willingness to deal with industry in less bureaucratic manner than most.

In fact Khazar University has identified quality assurance as a cornerstone of its development since its foundation in 1991. Programmes of co-operation with the University of California in Los Angeles (UCLA), Georgia State University (Atlanta) and the University of Michigan (Ann Arbor) have led Khazar to adopt the American accreditation procedure and indicators, including the internal evaluation system. Additionally the University has also studied the accreditation experiences of the Middle East Technical University, which is recently accredited by the European University Association (EUA) and the Accreditation Board of Engineering and Technology (ABET). The University has already conducted two internal evaluations and currently developing the third internal evaluation system.

This international exposure set Khazar University up to be a successful partner going forward with a programme of enhanced learning for BP Drilling & Completions Engineers.

Distance Learning

Distance Learning is a requirement for the Challenge Pathway (an early development plan) and a decision was made in Baku to apply this with more rigor than solely utilising available Web/CD-rom based teaching methods. All too often these methods are not utilised or followed through, as it's easy for other distractions to influence the learner. This scheme involves class room training followed by 3 months of "Supported Problem Based Learning" culminating (if desired) in an official exam offering credits from a UK based University MSc. in Petroleum Engineering.

The proposal is to offer BP Petroleum related Engineers the opportunity to replace previously accepted training in specific discipline relevant material with similar material from a Distance Learning MSc but affiliated and accredited to Heriot Watt University in Scotland under the guidance of both Khazar and Heriot Watt for ongoing tuition of the engineers.

Issue

The MSc. In Petroleum Engineering historically offered as a 1 year in-house course by Heriot Watt University covers many of the compulsory modules of training for the following disciplines:

- Drilling Engineering
- Completion Engineering
- Petroleum Engineering
- Reservoir Engineering

Modules covered by the post-graduate degree are as follows:

- Drilling Engineering
- Petroleum Geoscience
- Production Technology (2 modules)
- Reservoir Engineering (3 modules)
- Petroleum Log Analysis
- Introduction to Petroleum Economics
- A Group Field Development Project
- An individual Research Project

These modules cover at least 5 of the required learning activities within each of the Challenge Pathways. Heriot Watt, in conjunction with it's officially recognised Approved Support Centre (Khazar University) now offers a more sophisticated method of teaching within its Distance Learning MSc course to BP on a local Azerbaijan basis.

This approach can be encompassed into the working routine of the Challenger / Early Development engineer without having to attend specific training at the Heriot Watt University, so complementing their on the job training experience. Assessment is

an integral part of any Tertiary Institutes approach to learning and is offered through an end of module exam in Baku under the auspices of Heriot Watt University in conjunction with the British Council.

However, for the Challenger, once embedded into a working team, assessment of training is not a normal part of learning. In fact for a drilling engineer, the only assessed part of training, on an on-going basis, is the Well Control examination, required every 2 years. Many modules of training are offered and courses attended without BP being fully aware of levels of understanding and potential competency following this training.

This MSc. method offers the opportunity for young engineers to commence their learning within BP via on-the-job training in combination with a University approach to assessed learning which delivers not only the assurance of learning to BP management but could lead to the attainment of a Western accredited MSc. within the early years of employment with BP (the remainder of modules will be supported by BP, but completed following Challenge Graduation - to be explained later in this document).

Feature

Heriot Watt University has recently developed a Problem Based approach to MSc. in Petroleum Engineering for Distance Learners.

The format under trial for BP Azerbaijan is as follows:

- A 1 week course of lectures given by a Heriot Watt lecturer in Baku
- Full Module course notes for each engineer.
- 6 sets of Challenge exercises to be completed in teams and assessed through a Web Board linked to a Heriot Watt Tutor in the UK.
- Heriot Watt module exam in Baku.

This approach offers more intensive education in the given module while assessing the student's understanding of the subject matter through the Challenges and the end of module exam. The students need to work as a team during the Challenge period, effectively networking and communicating approaches focussing on the delivery of the required material. Engineers take turns submitting the required information so that communication with Heriot Watt is spread amongst the team.

The following is an example of the Challenge Requests and a Mind Map that are utilised to encourage the engineers to think about all associated processes, equipment and calculations that may go into a given topic of enquiry:

Benefit

Benefits to the engineers are obvious as described above. However, another benefit comes with the link between BP, Heriot Watt University and Khazar University (Baku). Given the mainly narrow focus and theoretical nature of many of the tertiary



education courses BP, as described previously, wanted to create closer ties with a chosen university to ensure we access students with a more rounded educational background. Khazar was chosen to complete this triangular link for several reasons mentioned below:

- A well managed University
- Has introduced western standard curriculum
- Teaches all subjects in English
- Has an Petroleum Engineering & Business undergraduate and MSc. programmes currently running.
- Has a managed Quality Assurance Programme for all University Administration & Curriculum Management.

This University is 13 years old and still in an expansion mode. The Rector - Hamlet Isaxanli - is recognised within the country and

internationally as a forward thinker and is open to such opportunities.

The ultimate goal of this triangular relationship is to utilise the Heriot Watt curriculum with lectures and ongoing tutorial support provided, at a much cheaper cost, by Khazar lecturers. Exams will still be organised and marked by Heriot Watt University and award will be through the same institute.

The current status of this project is that BP has two contracts with the aforementioned educational institutes. BP - Heriot Watt for provision of initial Lectures, Web-board Tutorials and MSc. Module Training Material. BP - Khazar for provision of Tutor Support via the Web-board and face to face with the Baku based engineers and additionally BP currently pays for expenses for a two-week train the trainer experience for those Khazar Lecturers chosen to support the programme.

It is envisaged that sustainable delivery of this educational method will be reached in 2005 where Khazar lecturers will take over the delivery of the Baku based Lectures and the Web-board tutorials, while Heriot Watt will continue to provide the training materials and exams, with a quality assurance overseeing role to ensure that this Distance Delivered MSc. continues with the same quality as it is delivered in the UK.

Proof of Success

10 BP Drilling Engineers have undertaken 3 modules of this MSc. with good results from the assessment exams. Most feel pretty upbeat about their performance. Within 3 years we hope to see the first BP - Heriot Watt - Khazar MSc. degree awarded to a BP engineer. Additionally we hope to see positive influence from this process in a continually modernising degree in Petroleum Engineering at Khazar University.

BP is currently entering into a relationship that should see up to 20 Petroleum Engineering scholarships at Khazar University linked to a continually improving educational process, which up to now they have proven highly achievable.

Scholarship Programme

Following on from the success of this trilateral relationship, BP has decided to utilise Khazar University in the first true Industry Sponsored Scholarship Programme in Azerbaijan. BP will pay for up to 16 undergraduate Petroleum Engineering Scholarships per annum. Khazar will take the role of administrator of the monies and deliverer of a high level education programme. Khazar will also find the top performers in Azerbaijan-wide high schools and jointly we will enter into an initial assessment programme prior to choosing the successful candidates. Through Khazar's proven approach to Quality Control, a method of performance manage-

ment will be developed for all parties involved to ensure the success of this programme going forward.

Additional Khazar University - Industry Links

The university has been a pioneer in Azerbaijan in prioritising the nourishing of relations with industries as an integral part of its development. These help the university to uphold the quality of its programs, faculty, support services and students.

The Centre for Economic and Business Education is intended to support Khazar University in developing relations with industries. The Centre periodically conducts various training seminars and workshops in Economics, Finance, Marketing, Small Business and alternative disciplines, for small and medium entrepreneurs in Baku and other regions of the country.

In October 2003, the School of Economics and Management at Khazar University and the Malaysian Institute of Economic Research (MIER) under the auspices of the Sasakawa Peace Foundation (Japan) launched the project "Corporate Governance in Azerbaijan." The project sets a wide range of goals and purposes, such as: to study the situation before and changes after privatisation in a system or corporate management and objectives of managers in new settings; to compare efficiency of state and private governance at enterprise; to analyse ownership principles and forms; to analyse development of corporate governance; to

study the experience of public enterprise management; to study the principles and methods of the public entrepreneurship.

As a result of this joint research project Khazar University and MIER undertook to prepare recommendations on improvement of management for midsize and large businesses and government entities in Azerbaijan. The project will contribute to the strengthening of relations between Azerbaijan, Malaysia and Japan and promote development of corporate governance in Azerbaijan.