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Appendix A to the

'Report on an academic infrastructure for the Mediterranean EEZ and oil and gas related research and education in Israel'

The Norwegian model for cooperation between oil industry and academia

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Introduction

The first oil in Norway was discovered in 1969, and a few years later the field development started. Prior to this, the government had decided to invite foreign oil companies to explore and develop any oil or gas that might be found on the Norwegian continental shelf. Norway has a tradition for a high tax level, and the oil industry was certainly not an exception. Today, the tax on oil or gas production is 78%, and this guarantees that the major part of the income from the oil industry remains in Norway. Without doubt, the government is the largest capital owner in Norway, due to this high tax level. There are however, some features related to this tax system that is designed to stimulate research and development: For instance, if a company invests in such activities (research or development) they can deduce the costs related to this. This is a major driver for new technologies being tested out in Norway, and explains the willingness to perform field tests in the North Sea. From my own field, which is geophysics, I can mention that the first life of field seismic system (LOFS) designed to monitor production changes was installed by BP at the Valhall field in 2003. The tax reduction system surely makes it attractive for companies to invest in new and unproven technologies. This also leads to more willingness to invest money in PhD research projects and other academic research.

Oil industry in Norway

Statoil is the biggest oil company and Norway, and the government owns more than 50 % of the shares. There are several other small Norwegian oil companies. Today, there are approximately 50 oil companies that have been approved by the government for exploration and production in Norway. Several of these are international majors, like BP, Shell, ExxonMobil, Total, Eni and Chevron. In addition to the oil companies there are a variety of contractor companies

present, such as Schlumberger, Halliburton, BakerHughes, PGS, CGGVeritas and Aker Solutions. As for the oil companies, the contractor segment is also characterized by several mid- size and small companies. Several of these companies are local or strongly influenced by Norwegians.

Academia in Norway

4-5 years after oil was discovered in Norway, a petroleum curriculum was developed at NTNU in Trondheim. Several professors from various countries helped to initiate this curriculum. Other universities like Oslo and Bergen, extended their curriculum within geosciences in the direction of petroleum education. However, in Trondheim it was decided to cover the full value chain from drilling, production, reservoir engineering and geosciences in one study program. 20-30 years later, Stavanger (which is the oil capital in Norway) developed a similar curriculum to meet the growing demand by the oil industry.

In 1991 NTNU decided to use English for teaching, and this increased the student recruitment significantly. Today NTNU enrolls approximately 65 Norwegian students per year within petroleum, and in addition to this approximately 20-30 foreign students. This study program is a full MSc study, and it is not an option to do a BSc study. Currently, there are approximately 70 PhD students enrolled at NTNU in Trondheim. Other universities that offer similar education are the universities in Oslo, Bergen, Stavanger and Tromsø. There is both competition (with regards to recruitment of students, research money and scientific production) and cooperation between the Norwegian universities. Examples of cooperation are development of common courses (for instance field courses and some PhD courses), common research projects and so on.

Research institutes

Norway has a long tradition for research institutes, and the petroleum industry is no exception. Two of the best known is Sintef Petroleum in Trondheim and Iris in Stavanger. Within geophysics, Norsar outside Oslo is another such research institute. The direct governmental support to these institutes is minor, which means that they have to sell their research projects to external customers to finance the research. Within geosciences, the Norwegian Geological Survey receives more direct financial support due to the clear governmental responsibilities that this survey has. There are some cooperation between research institutes and academia, however, this varies slightly between various disciplines and is of course related to whether there are common interests and focus areas.

The Norwegian Research Council

The Norwegian Research Council is an important governmental institution that is responsible for selecting good and prospective research projects both within academia and the research institute sector. Over the last decade there has been a development from several small projects and programs into larger, more focused research topics. One of the current research programs is the Petromaks, where most of the petroleum research is funded. In addition to this, the new focus on environmental and climate research has led to a huge research program within this field. For the petroleum research people, especially storage of CO₂ has become a key topic for this new type of environmental related research. The competition for research grants from the Norwegian Research Council is hard, and therefore the universities have to fund their own research to a fairly large degree. From 2000, the Norwegian Research Council has established several centers for excellent research.

Today, there are approximately 20-30 such centers within all disciplines, ranging from mathematics to medicine and social sciences. There are 2-3 such centers that are related to petroleum research. These centers receive support for a period of 8-10 years. This means that they do not have to apply for research money during this period, so that they can focus on research.

Examples of cooperation between academia and industry

Since Statoil is the most influential oil company in Norway, there has always been a close cooperation between the Norwegian universities and Statoil. Today, this cooperation is defined under a common "Academic agreement". For NTNU, this means approximately 20 MNOK (3.5 MUSD) that is used for education (especially field courses), PhD projects, direct sponsorship to professorships, such as adjunct professors within specified topics, and research travels for professors. All projects within this agreement need approval from a board that is composed of both Statoil and university employees.

Another example of a long-term cooperation is the support from TOTAL. They have supported several PhD projects for a long time at NTNU, and in addition to this, they have supported several activities that lead to increased exchange of personnel and students between Norway and France.

The Petroleum Department at NTNU has agreements with more than 10 companies, in addition to several agreements within international universities.