INTRODUCTION

Unlike submarine fiber optic cables for telecommunications, submarine cable systems for communications and power for offshore oil and gas inter-platform connectivity and for alternative energy in the form of wind farms are relatively new segments to the industry. However, due to the ever-increasing demand for energy, both renewable and non-renewable, there is a great interest in the potential for these types of submarine cables. This Chapter provides an overview of submarine cables used for oil and gas infrastructure and submarine cables used for alternative energy. The issues that will be discussed include the development of these special purpose energy cables, the drivers for the cables, the industry, the legal regime governing these cables and the law and policy challenges that the cables pose.

I. Submarine Cables for Offshore Oil and Gas Infrastructure

The Development of Oil and Gas Submarine Cables

It is estimated that there are more than 6500 offshore oil and gas installations around the world spread across 53 countries in geographically diverse areas. Communications between onshore facilities and offshore oil and gas facilities have historically been a challenge for the oil and gas industry. Offshore oil fields are being located increasingly further from shore and are, as a result, not well

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1 See Energy Systems Research Unit, University of Strathclyde Engineering, available online http://www.esru.strath.ac.uk/EandE/Web_sites/98-9/offshore/platintr.htm (last accessed 1 June 2013).
connected to the telecommunications infrastructures available on land. Further challenges include the fact that there is a limited amount of space for equipment, the potential movement of the structure in bad weather, lack of power and a corrosive environment.

Thirty years ago, communications between offshore facilities and onshore locations was restricted to a two-way radio and daily reports and oilfield workers stationed offshore were virtually cut off from the rest of the world. However, developments in communications technology have meant that the way the offshore industry works has been transformed by improved communications systems. In this regard, there are three technologies utilized by oil and gas companies to facilitate communications, namely, radio frequency such as microwave (including broadband WiMAX (Worldwide Interoperability for Microwave Access)), satellite and submarine fiber optic cables.

The use of radio frequency for communications has been widely utilized in the oil and gas industry and microwave telecommunications technology can offer communications at shorter distances, such as 20–25 miles offshore. If communications need to travel over a longer distance, satellite is the next feasible option, and satellite communications require a “very small aperture terminal at the offshore site; a broadband satellite connection in space; and a teleport onshore.” However, the development of oil fields in deeper waters and the installation of bigger platforms have necessitated communication technology that could travel over longer distances. This has provided a great impetus to the development of submarine fiber optic cables to connect offshore structures.

Early developments took place in the late 1970s when Offshore Telephone deployed a metallic cable network in the Gulf of Mexico and in the mid-1990s when Petrocom deployed the FiberWeb inter-platform system. Both systems failed miserably and were later abandoned.

The first ‘successful’ submarine cable for offshore oil and gas telecommunications to a platform was installed in the

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5 Ibid.
6 Radio Frequency technology includes microwave technology which has been frequently used as a “backbone” for many offshore networks, see Berlocher, supra note 3 at 11.
7 Ibid.
8 “How do Offshore Communications Work?” RIGZONE Insight, supra note 4.
10 See Berlocher, supra note 3, at 12.