The future of changing liabilities and effective subsea asset management

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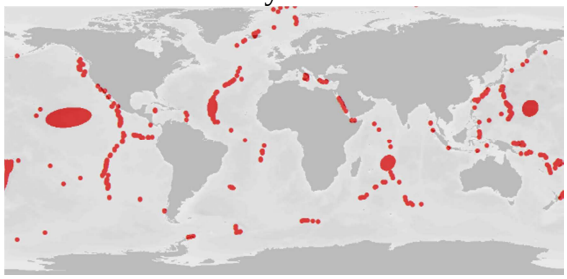
Abstract: Deepwater seabed mining is set to become a commercial reality and other established offshore industries are pushing into deep water. Countering this the scale of environmentally protected areas is rapidly increasing. As a result the liabilities associated with both in-service and out-of-service subsea telecommunication assets is becoming increasingly complex and wide ranging. With this in mind enhanced management and tracking of subsea cable assets should be considered critically important for both system owners and the cable industry as a whole.

1. INTRODUCTION

Deepwater seabed mining is looking likely to become a commercial reality in the next decade and environmentally protected areas in Areas Beyond National Jurisdictions (ABNJs) are now a hot topic. These new concerns, combined with the increasing number of seabed users pushing further offshore and into deeper waters, means the liabilities associated with both in service and out of service subsea telecommunication assets is becoming increasingly complex. The liabilities range from regulatory through economic to environmental. With increased demand on the seabed in deeper waters the liabilities are being expanded into new areas which previously represented limited concern. Combined with this existing legislation and liabilities in previously understood regions are being updated to reflect increased pressure on seabed use (spatial and environmental) and to increase revenue return. This paper will focus on recent changes in legislation and liabilities and provide an overview of some of the main areas of concern and new challenges faced by system installers, owners and maintainers. It will also discuss, from a cable owner's perspective, the importance of enhancing subsea asset management in order to respond efficiently to these new challenges.

2. THE DEEP WATER PUSH

The established offshore industries, such as oil and gas, are already exploring deeper waters. For example, the Shell Stones field in the Gulf of Mexico is about to push past the 2800 m water depth mark [1] and the offshore wind industry is also trialling turbines in water depths in excess of 200 m [2]. Whilst the new sector of deep sea mining is looking to commence operations in the 1000-1500 m depth range in the next couple of years [3]. Figure 1 illustrates the areas of interest for deep sea mining industries which are primarily around fracture zones and hydrothermal vents.



● = Areas of interest for deep sea mining

Figure 1: The global spread of areas of interest for deep sea mining [4][5].

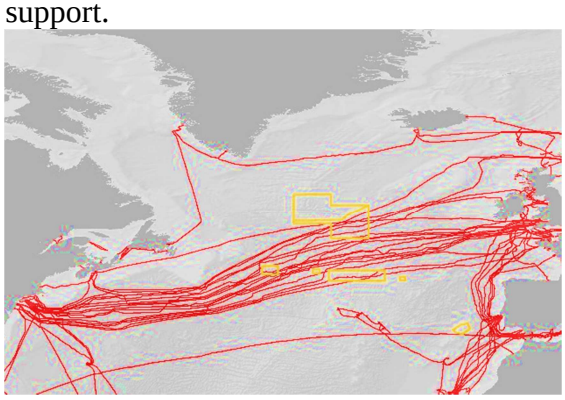
In deep water all of these industries require significant areas of the seabed for

equipment and vessel anchoring which will increasingly conflict with submarine cable routing. There have already been cases of seabed concession licensees requesting that new cables are routed around rather than through blocks. Examples of this include off Mumbai where the Oil and National Gas Corporation requested a new cable to deviate over 100 km around concession blocks rather than follow the path of the many existing in-service systems (fortunately this request was not enforced) and off Colombia, where a concession holder enforced a specific route through a concession to avoid large areas designated for future exploration and production activity. This situation is a trend that is only likely to become increasingly common as demands on the seabed increase. Whilst cable protection methodologies and practices are unlikely to need changing significantly as a result of other industries moving into deep water, cross industry and sector management and tracking of subsea asset locations is going to become increasingly important both for in service and out of service assets. The importance of this will be discussed later in the paper.

3. NEW AND CHANGING LEGISLATION

The International Seabed Authority (ISA) is set to reach a major milestone this year with the presentation of regulations associated with the exploitation of seabed resource to its council. Whilst this means agreed regulations are still some way off and this will be a first step of many, now is a critical time for ensuring the future long-term security of submarine cables through continued and enhanced engagement with the ISA in order to influence and shape new regulations.

A similar scenario is being played out in ABNJ with increasingly large Marine Protected Areas (MPA) being developed and creating new challenges beyond those highlighted by Toombs and Carryer's 2010 SubOptic paper "Jurisdictional creep and the retreat of UNCLOS". Smaller MPAs have existed in ABNJ for some time; Figure 2 illustrates seven such areas created in 2010. At the time of designation eight in service cables crossed the MPAs. This number has recently increased to ten, yet the presence of these MPAs is still a surprise to some cable owners six years after designation. The scale and number of new MPAs now being proposed has a significant potential to impact on new cable routing and existing system repair operations. The Sargasso Sea, which has been termed a "fundamentally important area" in the United Nations (UN) First Global Integrated Marine Assessment [8], is one of the larger ABNJ that is currently being reviewed for increased protection and regulation. This is of great significance to the cable industry as it covers an area of approximately 5 million square kilometres and has several existing cable systems running through it. The cable industry has already positively engaged with the Sargasso Sea Commission to good effect but similar efforts will be required increasingly often and will need appropriate resourcing and industry support.



□= MPAs in ABNJ

Figure 2: ABNJ MPAs and existing cables [6] [7]

The development of new MPAs in both ABNJ and national waters is being driven by Aichi Biodiversity Target 11 which seeks to achieve a global MPA coverage of 10% for marine and coastal areas by 2020 [9]. Data from 2014 indicated that globally MPAs covered 10.9% of Territorial Waters (TW), 8.4% of waters within national jurisdictions (0-200 Nm) and just 0.25% in ABNJs. This equates to a global MPA coverage of 3.4% for marine and coastal areas [9]. Therefore the scope of the increase in MPAs between now and 2020 is huge if the Aichi target is to be met. The scope of this increase is well illustrated by the UK government's announcement in January this year that 23 new Marine Conservation Zones would be created. This takes the area of English protected waters up to nearly 21,000 square kilometres or 20% [10]. The UN's recently published First Global Integrated Marine Assessment raised the need for coastal states to draw on the available knowledge and data in the submarine cable industry to help plan and make decisions on cable routing as well as resolving the conflicting demands of the cable industry with the other parties involved in an area [8]. One example of where this knowledge sharing is in early stages is with the OSPAR commission who in their 2012 Guidelines on Best Environmental Practice in Cable Laying and Operation noted that "since there is sufficient evidence that the placement and operation of submarine cables may affect the marine environment, the precautionary principle should be applied and appropriate mitigation measures should be taken" [11]. This is a statement that is now being picked up by other stakeholders and more broadly applied without distinction between cable types (power vs telecommunications). Another example is the need to provide input into the work currently ongoing in the development of an internationally legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of ABNJ [12]. With these changes looming there is an important need to continue, and expand on, the existing work done by the cable industry to educate regulatory bodies and other key stakeholder about the very low environmental impact of submarine telecommunication cables [13] as well as emphasising the critical nature of the infrastructure being provided. This will become increasingly necessary if the industry is to be allowed anywhere near the freedom it has had in the past for routing cables.

4. SUBSEA ASSET MANAGEMENT

New industries are pushing into deeper water and increasing levels of environmental protection being applied to larger and larger areas of the world's oceans and seabed. This means that management of both in service and out of service subsea assets is becoming increasingly important. Submarine cable licences and permits often include requirements for cable removal at the end of a system's life; in the past this requirement has rarely been enforced or voluntarily carried out. But now, with increasing pressures on the seabed, there is widely expected to be increasing incidences of requests for the removal of out of service assets being made by regulatory bodies.

The proactive removal of cables is also likely to become more common in congested areas to remove companies' liabilities, especially where higher value assets are being installed such as power export cables or wind farms and array cables. Some regulatory bodies in charge of setting and collecting fees for the occupation of the seabed are also looking to change the criteria used to calculate their fees. An example of this is the UK's

Crown Estate who are in the process of reviewing their licencing terms and conditions and have been exploring new fee structures and charging mechanisms. Such changes may provide a new reason for system owners to actively remove out of service cables to reduce OPEX and future liabilities.

Commercial cable recovery has seen a marked increase in the quantity of cable recovered over the last five years; CRS Holland have estimated that between 2009 and 2015 in excess of 30,000 km of cable was recovered [14]. Whilst so far this industry has focused on the most accessible cables in deep water it is now beginning to recover cables in more congested areas and in shallower water. This means that there is a greater long-term requirement on system owners to have accurate records of their assets and their locations so as to be able to approve works near them (whilst ensuring nothing is accidentally damaged or disturbed). It also means there is likely to be an increasing number of fragmented sections of cable left on the seabed that still have a liability attached to them and therefore still need to be tracked and managed.

All of these scenarios mean that the tracking of assets is becoming ever more important for owners so that liabilities can be accurately identified and their extent assessed. Historically submarine cable assets have been tracked and documented through the use of Route Position Lists (RPLs). These have normally been treated as living documents that are updated throughout the life of a system and even once it is retired. Unfortunately RPL updates are something that in the past has sometimes fallen down system owners list of priorities especially once systems go out of service.

Now, with the increasing pressures on the seabed, there is a real need to ensure all RPLs are kept up to date and that they are maintained as new infrastructure is installed over the cables going forward. RPLs remain the most appropriate means of documenting submarine cable assets and allow the accurate exchange of data between concerned parties when required. However, for companies with a significant number of assets, a Geographical Information System (GIS) is likely to be a cost-effective asset management solution as it can bring with it a number of additional benefits. A simple, carefully implemented, GIS for tracking assets allows quick interrogations of asset locations and potential conflicts with new infrastructure. It can also be used to help calculate costs associated with asset maintenance, removal or licencing.

A simple GIS solution can be implemented using free or low-cost software such as Google Earth. More sophisticated off-the-shelf GIS software, such as ESRI ArcGIS or GeoCable can be used to facilitate in-house RPL updating and preliminary route planning for new systems. A GIS can also be used to integrate spatial data from a wide range of sources, including environmental bodies and that provided by other seabed users. More tailored GIS solutions are available for full cable route planning and implementation but these are not well adapted for larger scale asset tracking.

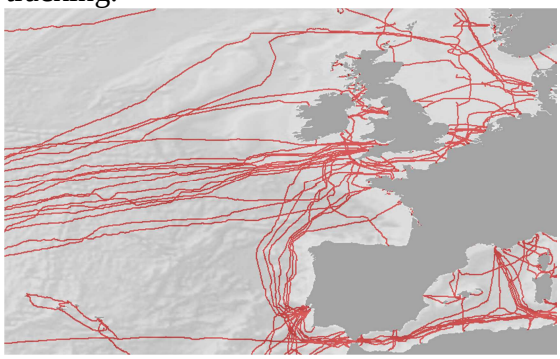


Figure 3: Cable Databases [6]

Whilst ensuring that in-house information is up to date and accessible to those that need it is critical, there is a bigger issue

that needs resolving. The submarine telecoms industry as a whole needs to start looking at a more coherent and better managed way of securely sharing information about installed cable routes between approved stakeholders. At the moment system builders widely use the Global Marine Cable Database (GMCD) but this is not a one stop solution; it is normally supplemented with information from in-house databases, personal data stores, charted information, ICPC email data requests and as a last resort web searches. The GMCD is also not easily accessible for parties outside of the submarine cable industry or for users with small or short term information requirements. The cable industry is not alone or unique in this situation; globally the oil and gas industry doesn't have any kind of industry standard database in place nor does the wind industry. But with increasing congestion on the seabed and multiple industries working in the same area there is a growing need to provide a high quality solution for approved parties to identify the location of seafloor assets. Route data confidentiality and restricting access to any new database represent a significant hurdle to the implementation of a new solution but the potential benefit to the industry, particularly in terms of system security, is significant.

5. Conclusion

Over the coming decade the submarine cable industry is going to experience a step change in the number of external parties that will impact on new cable routing and the maintenance operations for existing systems. This is going to come from new industries pushing into water depths that used to be almost exclusively the domain of the submarine cable industry and from increasing environmental protection of an ever more diverse number of marine habitats. Cable system owners will need to ensure they are abreast of the changing situation around their cable systems and manage their assets more closely to minimise their current and future liabilities.

The continued efforts of the cable industry and its representative bodies to raise awareness with key stakeholders of the critical infrastructure nature of submarine cables and their minimal environmental impact is of great importance.

In order to help mitigate the changing situation from a system owner's perspective it is strongly recommended that they ensure that their system RPLs are kept up to date even after system retirement. From a submarine cable industry perspective it is proposed that the industry as a whole starts investigating and implementing a robust solution to facilitate accurate cataloguing of cable routes and assets and allowing secure data sharing with other approved stakeholders and seabed users.

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