Offshore Energy Edition

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Welcome to Issue 72, our Offshore Energy edition.

My first taste of the oil business was some 32 years ago when I ran a long-bed lathe repairing male and female connections on deep-hole collars and pipe in central Michigan during the afternoon shift, while my day-job was finishing a Master; yet being laid-off on Christmas Eve in 1981 from the former helped focus the finish line for the latter in ever clearing terms.

My second taste of the oil business was a few days later when a chance scholarly argument with my North Korean mentor forced me to rethink my thesis in record time, and an off-hand second-chance chat with another professor specializing in Latin American studies afforded me a new topic, that being the consideration of Mexican policies toward transnational corporations in the petroleum industry; concluding some months later with the apocryphal finale that in the end, she would be required to open her doors to foreign investment and technology in order to keep up with the rest of the world.

Last spring, Mexico edged toward letting foreign oil firms invest in its national oil company, Pemex, when its ruling party, PRI, took a step toward opening its state oil company to outsiders; a move that could eventually allow US and other foreign oil firms to drill south of the border. As the Los Angeles Times opined: “For Mexicans, the issue is deeply emotional as well as politically charged. The country nationalized its industry in 1938 in response to decades of perceived exploitation by foreign oil interests. Ever since, most Mexicans have considered public ownership of the country’s most lucrative natural resource to be a cornerstone of their sovereignty.”

Will the changes in Mexico portend larger regional changes in the world’s oil industry? And if so, how will that impact our niche submarine cable space?

Maybe I should accomplish a new thesis. Check back with me around 2045 for the definitive answer…
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The Undersea Cable Report 2013
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Outlook: Oil & Gas

Stephen Jarvis
A new study indicates the state of the oil and gas industry is perfectly healthy.

“It wasn’t long ago that some in America thought we were coming to the end of our energy options ... that we faced a future based on scarcity of resources that meant rising prices and costs that could wreak havoc on our economy. Today, we face a far different future: one in which the U.S. is the world’s largest producer of natural gas and could soon be the largest producer of petroleum.”

This was a key statement made by Jack Gerard, president and CEO of the American Petroleum Institute (API), during a press conference announcing the results of a recently completed study on the American oil and gas industry.

API is a “national trade association that represents all segments of America’s technology-driven oil and natural gas industry” according to Carlton Carroll, API Spokesman.

The study, which was performed by PricewaterCoopers (PwC), examines the contributions made between 2009 and 2011 to American employment. It shows that, despite the economic recession that has affected so many industries, the amount of jobs provided by the industry increased by 600 thousand, totalling at 9.8 million jobs. The industry also supported 8% of the U.S. economy in 2011.

“This energy revolution is great news for every taxpayer, consumer, motorist, and business in America,” Gerard said. “As today’s study shows, game-changing innovations in hydraulic fracturing and horizontal drilling are creating hundreds of thousands of new jobs every year.”

The resistance the oil and gas industry has shown to the recession is international. New projects have been announced by major companies and are going into implementation globally. This is especially true for offshore projects, opening up the market for telecoms companies to provide connectivity to uncharted territory.

However, in America the industry could be doing even better, according to Gerard. Policy is a continued hindrance to industry growth.
“The federal government prohibits energy development on 87% of federally-controlled off shore areas,” Gerard said. “Even while energy exploration on state and private property has created thousands of jobs, new permits on federal land declined 36% from 2008 to 2012.”

Policy in America still severely limits offshore development near to shore. Instead, new projects are located in far deeper areas. Greg Berlocher, who regularly does business in the industry, said that these policies have become even stricter since the BP Deepwater Horizon oil spill. Additional requirements for record keeping and new oversight have been implemented.

Elsewhere, policy is changing in a very different direction. Mexico has recently announced a new energy reform that would allow non-national companies to bid on oil and gas projects in deep water areas.

Mexico has reportedly large, untapped oil reserves, which may soon be open for development. If the new reform passes, companies will be able to bid on new projects to develop these wells and refine the oil that is taken. As with the Mexican national oil company Petróleos Mexicanos (Pemex), all of

Mexico has announced a new energy reform that would allow non-national companies to bid on oil and gas projects in deep water areas.

The new reform that is currently going to vote in the Mexican state congresses will open the oil industry to more than Petróleos Mexicanos (Pemex), the national oil company, for the first time since Mexico nationalized the industry in 1938.

“Mexico has gone through a series of reforms,” said Raul Magallanes, whose law firm deals in Telecoms out of Houston, TX. “A few months ago the telecommunications reform passed. Next is the energy reform which is in the works at the moment.”

The new telecoms reform opens up foreign investment. Up till now, investment was limited to 49%. It’s been now opened up to 100%, except in broadcast media.

On the other hand, this energy reform would allow for companies
the product will be owned by the government. However, the company will own a substantial share of the profit.

This may mark a considerable shift in where the world looks for its great demand for oil.

“There’s more interest in deep water oil, since oil is over $100 a barrel,” Berlocher said. “You’re not going to invest a billion dollars in a well that would produce natural gas which is at a fairly low price... Natural gas is going to be part of it. It’s more of a by-product than a driver.”

According to Berlocher, oil continues to be the driving force in the industry, despite the recent rising demand for natural gas as a cheaper alternative.

Despite this, companies are shifting to accommodate this rising demand.

In the Browse Basin, in West Australia, Shell has created the first floating liquefied natural gas (FLNG) facility, which will produce and export at least 5.3 million tons per annum. The project is now preparing to begin production.

INPEX’s Ichthys project, also located in the Browse Basin, has entered the construction phase as of 2012. Resources for the Ichthys field are estimated at 12.8 trillion cubic feet of gas and 527

to do business in Mexico by directly bidding on projects.

“The transnational (companies) will not invest in Pemex,” explained Antonio Torres Minutti, director of Magallanes and Associates out of Guadalajara, Mexico.

Instead, international companies will be allowed to bid on new projects with the government. If won, the company would develop the oil well as with any other job. The difference would be that after the oil is refined all product would be the property of the state. The company would instead own a share of the profit. The share of the profit may be roughly 50%, according to Minutti.

According to Minutti, these drastic changes to policy are because the expertise and resources to drill for and refine these wells can no longer be found in the nation.

“Mexico has not invested one peso in infrastructure (for oil refinement) in 30 years,” Minutti said. The government has resorted to other means to meet the nation’s energy demands.
“Mexico is importing all that gas from Asia and the United States,” Minutti said. Because of these costs, long term investments that would allow them access to their own reserves.

“To be able to tap into the natural resources, (Mexico) needs to bring in expertise,” Magallanes said. This, however, is not an easy decision to make.

“It is hard for Mexico,” Minutti said. Involving other countries and global corporations is something Mexico has avoided for many years.

“The problem,” Minutti said, “is the profits will be outside the country.” Despite the benefits of lowered cost for gas, a large portion of the profit won’t go back into the Mexican economy with this new policy. This has, however, been considered a necessary price.

The reform will need a majority vote among the states to be passed. The time that takes varies, and it’s unknown when this new policy will be implemented.

million barrels of condensate. At the moment, operational life of the project is estimated at 40 years.

New projects like these will create new opportunities for telecoms companies.

As of now, fiber is still the preferred method of connecting to offshore platforms and rigs. In some ways there are still overwhelming advantages to using a cable system versus satellite or microwave options.

New methods of applying the technology have also increased its worth. One of the best examples of this is the 1,159 km fiber loop developed by BP to connect eight platforms in the Gulf of Mexico. It provides necessary high bandwidth, while reducing the dangers of losing connection due to the depth of the cable and that data can flow in either direction back to the shore.

“The deep water fiber loop is now kind of the backbone there,” Berlocher said. “It’s now starting to pick up steam.” However, this isn’t to say there isn’t competition.

“One of the biggest challenges (for the cable industry) is going to be the new O3b satellite system,” Berlocher said. O3b stands for the Other Three Billion

![Graph of Offshore Fiber Added - Km](image)
people who make up the world population without internet access. O3b Networks have launched new, low-orbit satellite with a significantly lower latency.

“These are very, very high throughput satellites, providing some fairly inexpensive bandwidth compare to traditional satellites,” Berlocher said.

The new satellite system is making its presence known in industries where mobility and isolation are factors, like for cruise lines. This makes it a possible contender for business with deep water oil platforms since it negates the cost of laying new fiber to the remote location. This proves even truer for offshore rigs, which may alter position.

The demand for oil and gas hasn’t diminished. It’s still one of the greatest sources of energy on the planet. And one of the only ways for companies to meet this demand is to take advantage of new sources of oil and gas in new locations. The growing number of offshore projects is a growing market for telecoms companies, and submarine fiber systems still offer the widest array of advantages. Handled right, the demand for new cables can only increase with the demand for oil and gas.

Stephen Jarvis is a freelance writer in the Washington D.C. area. He has published articles and done editorial work with several publications including Submarine Telecoms Forum. Also, he has been a speaker for the Popular Culture Association / American Culture Association National Conference.
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Innovative repeater and turnkey solutions for new subsea cable builds. Let’s talk about how we help our customers develop and improve their long-haul submarine infrastructure.

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U.S. Fracking Threatens Russia’s Energy Dominance
The ongoing “shale revolution” in U.S. oil and gas production could prompt Russian President Vladimir Putin to institute economic and political reforms that would ultimately undermine his regime, experts say.

Putin largely relied on oil and gas production to fuel economic expansion during his first two presidential terms from 2000 to 2008. Hydrocarbons accounted for half of Russia’s GDP growth since 2000, according to a May report by Leon Aron, resident scholar and director of Russian studies at the American Enterprise Institute.

Russia is one of the two largest oil producers in the world, responsible for 12 percent of global oil output, and the world’s leader in natural gas production, accounting for 20 percent of global gas output.

However, there are signs that Russia’s energy dominance is increasingly vulnerable. Russian energy giant Gazprom has lost more than $280 billion in market value since 2008. Experts on the country’s economy and governance attribute the decline to U.S. investment in the innovative oil and gas extraction technique of hydraulic fracturing, or “fracking,” which dampened U.S. demand for imports and exerted downward pressure on global gas prices and Gazprom’s profits.

Russia’s overall economic growth slumped to just 1.2 percent in the second quarter, significantly lower than the economic ministry’s forecast of 1.9 percent.

“Russia’s business model for development over the next decade is trashed,” said Donald N. Jensen,
resident fellow at the Johns Hopkins School of Advanced International Studies’ Center for Transatlantic Relations, in an interview.

Fracking—the injection of a mixture of sand, chemicals, and water into shale rock formations to extract oil and gas—has positioned the United States to become a top energy exporter. April marked the sixth consecutive month for the U.S. as the world’s leading petroleum producer. The World Energy Outlook’s 2012 report estimated that the United States will become a net exporter of natural gas by 2020 and energy independent by 2035.

Russia has been slow to respond, Jensen said. Gazprom CEO Alexei Miller called the discovery of extensive gas deposits in shale rock a “myth” in 2010, adding that it would not displace conventional gas. The state-controlled company accounts for 78 percent of Russia’s gas output and has been widely condemned by transparency advocates for its corruption and mismanagement.

Jensen also noted that the abundance of natural gas in the United States induced Middle Eastern countries to redirect their tankers toward Europe, enabling countries like Germany to bargain with Gazprom and others for lower prices. Gazprom’s exports to Europe decreased by 8 percent in 2012 to the lowest level in a decade.

“The Europeans have a lot more wiggle room in terms of the kinds of deals they can get,” Jensen said.

The European Commission also initiated antitrust proceedings against Gazprom to investigate allegations of price fixing, which could further erode the company’s market share in Europe. Other oil and gas importers, including Ukraine and China, have begun to explore their own sizable shale resources.

Unlike Russia’s oil companies, which were privatized in the 1990s to spur technological improvements and better manage the pace of production, Gazprom has retained a monopoly on the country’s gas development and exports. The company has suffered from the increased supply and lower prices of gas worldwide, scuttling an “unprofitable” project last year to produce natural gas exports for the United States from the Arctic Barents Sea, Aron wrote in his AEI report.
Russia might also be running out of “cheap oil,” Aron wrote, noting that remaining oil reserves are located in “more remote” regions such as the Arctic’s continental shelf and the edges of Siberia.

Additionally, Russian oil companies are effectively taxed at a 70 percent rate—compared to a 2011 rate of 42-43 percent for Chevron and ExxonMobil in the U.S. This discourages innovation and technological updates, Aron said.

Russia’s economy has stagnated before because of energy troubles. Some economists posit that a decline in oil production was actually the chief cause of the Soviet Union’s demise.

Soviet oil production decreased by 40 percent between 1988 and 1989 from a high of about 12 million barrels of oil produced per day to a low of about 7 million barrels, resulting in a 90 percent devaluation of the Soviet currency, according to a 2011 post for Business Insider by Douglas Reynolds, professor of energy economics at the University of Alaska Fairbanks.

“It is clear why the Soviet Union rose to prominence as it was able to produce so much cheap oil upon which to base its economy. Oil smoothed out Soviet inefficiency. However, the Soviet Union fell when its oil production fell and it no longer had cheap, high quality energy,” Reynolds wrote.

Russia’s current stagnation has even led confidants of Putin to suggest breaking up Gazprom, Aron reported. Igor Sechin, president of Rosneft, Russia’s largest oil producer, has lobbied for loosening Gazprom’s grip on production and proposed natural gas exports to Asia from Arctic fields. Putin has also proposed tax incentives for exploring offshore oil reserves, but has been reluctant to act.

“Among the most destabilizing consequences of the continuing dependence on oil and gas will be the Kremlin’s declining ability to secure the elites’ loyalty,” Aron wrote.

“Fiercely protective of their share of the politically apportioned riches of Russia’s state capitalism, powerful...
clans will squabble to secure the same share of a diminishing pie, in the process threatening the stability of the regime.”

Putin has likely resisted modernization of Russia’s energy economy because of the alternatives, according to Aron’s report. Less dependence on oil and gas revenue would translate into cuts to subsidies for Russia’s poorer regions, sharp reductions in military spending, and fewer tax breaks for the state’s “pet projects.”

“If fully implemented, such reforms will erode the Kremlin’s control over the economy, courts, and, inevitably, politics,” Aron wrote. Some of those reforms might already be taking place. The New York Times reported Thursday that Putin’s regime has begun to release some of the more than 110,000 people incarcerated for “economic crimes” in Russia’s infamous prison camps, particularly white-collar businessmen, in a move to combat anemic economic growth.

However, Jensen cautioned that Putin’s main concern is the optics of his regime.

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However, Jensen cautioned that Putin’s main concern is the optics of his regime.

“Put in wants to soften the appearance of power, but he also wants to maintain power,” he said. “I wouldn’t take it too seriously.”

Russia’s economic free fall will likely complicate Putin’s efforts to showcase his country at the G-20 summit next month in St. Petersburg. President Barack Obama has announced that he will not meet with Putin one-on-one ahead of the summit, citing the countries’ “lack of progress” on issues such as missile defense, human rights, and the granting of asylum to NSA leaker Edward Snowden.

Daniel Wiser is a Washington Free Beacon staff writer covering the global struggle for democracy and human rights.

Amsterdam, the Netherlands - July 22, 2013: A collection of newspapers with pictures and publications of Edward Snowden (29) an American contractor for the US National Security Agency and former employee of the CIA. (Photo by Lya Cattel)
Submarine Cables
The Handbook of Law and Policy

Edited by Douglas R. Burnett, Robert C. Beckman, and Tara M. Davenport

Submarine fiber optic cables are critical communications infrastructure for States around the world. They are laid on the seabed, are often no bigger than a garden hose, and transmit immense amounts of data across oceans. These cables are the backbone of the internet and phone services and underpin core State interests, such as the finance sector, shipping, commerce and banking industries. Without the capacity to transmit and receive data via submarine cables, the economic security of States would be severely compromised. Despite the fact that 95 per cent of all data and telecommunications between States are transmitted via submarine cables, there is little understanding of how these cables operate. As a result some States have developed policies and laws that undermine the integrity of international telecommunications systems. Submarine Cables: The Handbook of Law and Policy provides a one-stop-shop of essential information relating to the international governance of submarine cables. The Handbook is a unique collaboration between international lawyers and experts from the submarine cable industry. It provides a practical insight into the law and policy issues that affect the protection of submarine cables, as well as the laying, maintenance and operation of such cables. In addition, the law and policy issues in relation to other special purpose cables, such as power cables, marine scientific research cables, military cables, and offshore energy cables, are also addressed.

More information and details at www.brill.com/submarine-cables
NASA, Astro Technology Develop Offshore Fiber-Optic Technology

Karen Boman
A new fiber optic monitoring system developed through collaboration between Houston-based Astro Technology Inc. and the National Aeronautics and Space Administration (NASA) was deployed earlier this year on two oil platforms offshore West Africa.

The Tendon Tension Monitoring System (TTMS), which utilizes a fiber-optic strain gauge system and a series of sensor clamps to measure the tension on subsea risers and pipelines, was installed in March on two platforms at the Okume complex for Hess Corporation’s subsidiary Hess-Equatorial Guinea.

Sixteen TTMS clamps were installed by commercial divers using an underwater adhesive test at NASA’s Johnson Space Center. Fiber-optic cables were then routed from the clamps to a control room aboard each platform. The system monitors stress along the platform’s four legs and streams the data in real time, enabling operators to make immediate adjustments to maintain the stability of the platform.

Okume is located in approximately 1,500 feet of water. The sensors installed were placed at 60 feet and 120 feet below the surface on the tendons of the platforms. However, this technology can be used at all water depths, from shallow to ultra-deepwater, Astro Technology President David Brower told Rigzone.

Astro Technology, which specializes in instrumentation and monitoring technologies with a focus on real-time fiber-optic sensory systems for oil and gas, has successfully used fiber-optic monitoring systems at depths of up to 7,500 feet. The same technology has also been applied in other extreme environments through Astro Technology’s 20-year history. As Astro Technology develops new technologies and applications, it employs testing through a variety of means, Brower noted.

The technology was developed as a result of a Space Act Agreement, which permits NASA to partner with outside organizations to bring NASA expertise,
assets or information to a wider community. Space Act Agreement, which date back to 1958, allows NASA to work with a broad spectrum of partners from all public and private sector disciplines, according to NASA's website.

"Since NASA is a mission-driven Agency and relies heavily on technology, the majority of our Space Act Agreements aim to develop or mature dual-use technologies of relevancy to both NASA and our partner," NASA said on its website.

The project was completed as part of the Clear Gulf Joint Industry Project, which is a partnership between Astro Technology, NASA and the oil and gas industry.

"The Clear Gulf JIP provides us with access to state-of-the-art testing and verification processes that we could not get anywhere else," Brower commented. "In this case, NASA thoroughly tested the underwater adhesive used to connect the sensors to the platform legs, and verified that the technology would operate in a deepwater drilling environment."

"The testing and verification process – completed by a specialized group of engineers at NASA's Johnson Space Center – is just another way to assure our clients that this monitoring system is the right technology for their project," said Brower.

Such precise, real-time monitoring can help prevent accidents that might otherwise lead to production interruptions, environmental damage and fatalities, said Astro Technology President David Brower in a statement.
"The success of this initial installation is good news for the environment, but it's also a win for the entire energy industry," Brower commented, noting that the TTMS is a more cost-effective and reliable alternative to the monitoring systems currently in use on most platforms.

Tendon tension can be monitored through traditional load cells, but the sensors on the TTMS are able to detect much more subtle changes to tension due to tides, wave activity, storms and even routine boat dock operations, Brower added.

Astro Technology will conduct further testing and development at the Johnson Space Center following the initial installation's success.

Karen Boman is a writer for RigZone has more than 10 years of experience covering the upstream oil and gas sector.
To continue from last year, which I was hoping to turn into an annual tradition, I hereby invite you to join me and your industry associates for a social **Submarine Telecom Cable reception** in Miami on the **7th of November**.

There will be no presentations, no booths, no conference, it will simply involve you coming to discuss the industry with your peers whilst enjoying my hospitality. The only cost to you is your time.

I know many planned on being in Miami that week anyway, so I hope the time is still open in your calendars.

To confirm simply **RSVP** to **rsvp@subcablesociety.com** by the **18th October 2013**.

On receiving your RSVP further information will be sent out, then it is simply a case of bringing yourself and spreading the word. The more the merrier.

I look forward to seeing you all for drinks and talks.

All the best

**Stephen Brogarth**
Cable Companies Gearing up for Offshore Renewables

Gregor McPherson
With the growth in offshore renewable energy projects, demand for power cabling is prompting many telecoms cable laying companies to increase the flexibility of their fleets. Gone are the days of dedicated telecoms vessels, today multipurpose vessels are now the norm. This need for a broader handling capability has prompted the development of new cable handling technologies.

Telecoms has dominated the submarine cable laying market for well over a 100 years, and after faltering at the turn of new century will continue to show significant growth to meet the seemingly insatiable demand for higher Internet capacity. It is a fact that telecoms cable storage, handling and deployment techniques have remained largely unchanged for many years. The cable is stored in a basket or cable tank and handling requirements are varied, from high speed installation, joint/repeater handling through to often high tension maintenance provisioning. Typically there is no requirement to prevent twisting of what are invariably small diameter cables, as it is being laid up in a cable tank. Easy to physically handle, it is generally light enough to allow men to walk it into the correctly nested position for ease of subsequent deployment.

Developments in cable technology and manufacture allowed production of long, unrepeated cable lengths enabling festoon (or single span) cabling systems such that repeaters (or amplifiers) could remain on shore, have in practice had little impact on handling techniques employed. Multi-track cable engines, where one possible exception being better suited to handling the small and slippery PU coated ‘skinny’ cables than traditional wheel engines, were developed. A further notable development during this period was the widening application of cable drum engines (CDEs). Hitherto used to recover up damaged cables, with improvements in load measurement technology, they were increasingly proposed as the sole method of laying as well. While lacking the lay speeds of wheel engines they required less space and therefore could be used on
smaller vessels. The other significant technology change has been the switch to variable speed electric drives in place of hydraulics, allowing greater control of cable laying.

From basket to carousel

Adapting an existing telecoms cable ships to handle power cable brings with it a new set of handling challenges. For a start the power cable is more susceptible to back tensions that telecoms cable. Also it is imperative to prevent the cable twisting. The options are to replace the existing cable tank store with either a carousel or large reel on the ship deck.

The selection of a carousel / turntable or reel is dependent upon: type of vessel and product storage and handling requirements. When cable is stored below deck it means modifying the existing basket or cable store with the installation of a carousel. Power cables are less able to cope with the 5-10Te back tension generally encountered with telecom systems; they are also relatively dense, and have small bend radii. The carousel combines the benefits of a basket – the cable can be stored at zero tension – with the ability to accommodate slight mismatches in linear and rotary speed. It also allows significantly longer lengths of cable to be stored than a reel; thereby maximising the time spent offshore cable laying.

Replacing a basket with a carousel requires the addition of a large loading arm to ensure the cable is stored correctly and to reduce residual cable twist of the cable as it is deployed from the carousel. and onto the seabed. Planning considerations influencing the ease of installation of the carousel include the availability of a circular cable tank and the suitability of the tank top to support the more concentrated loaded, ensuring that the amount of height taken up by the turntable is optimised. Access for personnel to both the storage area and below the floor has to be considered along with cable routing and the hence the loading arm configuration. This latter point is largely determined by
the required minimum bend radius. The required minimum bend radius largely determines this latter point, while the actual loading arm structural design is driven by the cable’s bend stiffness. Additionally, access space for installation will determine the detail of the carousel design.

For example, the recent conversion of a telecoms cable vessel to also handle non-coilable power cable involved taking out the cable tank floor and installing two, large capacity, 3,000 tonne turntables. The two, ‘basket’, turntables have open lattice outer walls, a closed hub and post positions for installing partitions, and are designed to operate at a maximum product linear speed of 1,000m/hr (at core). Loading arms and cable tracks have also been fitted to control the cable’s 4m minimum bend radius, along with all system controls. To save time and cost, the turntables systems were adapted to accommodate the vessel’s existing hydraulic power units (HPUs).

Carousels are not limited to below desk of course, they can also be deck-mounted either on the vessel or on a barge. The advantage of a deck-mounted carousel is that it is easier to increase the storage capacity by lowering the deck, for example, a 9.2 m diameter reel can take 300-400T of cable product. Moreover, it also has the added flexibility of allowing movement of the reel from port to starboard, if necessary. Of course, it is still possible to use the carousel as a basket when required. The ability to partition the basket allows gives greater operational flexibility a. And a positive advantage over a reel system where product is unloaded in reverse of the load sequence.

A recent trend has been the increasing use of modular reels and carousels. These bring another level of flexibility to cable laying, and offshore operations. At one end of the scale, Dutch company Blue Offshore, a specialist marine installation contractor, has opted for a deck-mounted, adaptable modular turntable system. With 9,000 tonnes of carrying capacity in its full 32m configuration, it will be the largest turntable of its type in the world. The design has been fully optimised for
telecom and power cable handling. At the other end of the scale, a 400 tonnes modular turntable for Aberdeen-based Mooring Systems can be readily configured in either ‘reel’ or ‘basket’ modes for handling a wide range of flexible products including cables, umbilicals, dynamic risers and hoses. It is road transportable, allowing it to be delivered anywhere in the UK and loaded onto a ship for immediate use.

Reel Systems

On deck, cable handling systems tend to be mostly reel, provided the cable is able to support some level of back tension. The benefits of using a reel include easier linear/rotary speed matching, lower installed power and generally a simpler lower arrangement. Moreover, by storing under tension there is more control over stiffer cable products. It is cable taken from the reel and the tension optimised by passing the cable through a deck circuit incorporating an adjustable compensator, and finally a cable tensioner before being dispatched overboard via a cable chute.

Recently a cable handling system has been developed specifically for offshore wind farms in which cable arrays are deployed. The cable is variable diameter: maximum diameter at the furthest wind turbine and narrowest at the wind turbine closest to shore. The reel based system features a segmented reel allowing the different diameter cable to be loaded on to a single reel, thereby significantly reducing the cable handling complexity. In addition, the cable laying involved depositing a loop of cable of the sea bed at the site of each wind turbine. Disengaging the reel control and compensator and lifting the cable from its deck circuit and depositing it overboard achieved this.

Flexible Cable Storage and Handling Systems, more challenges to come

As has been shown, cable storage and handling technology continues to develop to meet the challenges faced by telecoms cable and offshore operators. The key engineering issues when modifying an existing vessel are: height of the reel and the load arm size together with bend stiffness; bend radius - ensuring good control of the product through all 4 corners; line of sight; and simple and intuitive operation. All these issues are amplified when using mobile equipment.

The technology has now developed to the point where we can provide cable handling systems that are highly adaptable and modular, to achieve the optimum conditions for ease of storage and handling during deployment, no matter the type of vessel and cable product.

Gregor McPherson is a professional mechanical engineer, Gregor McPherson holds an MBA from Glasgow University. He has worked in the marine handling equipment sector all his career. Mr McPherson joined Caley Ocean Systems in 1994 and has been Sales and Marketing Director since 2000.
2014 Submarine Telecoms Industry Calendar
Release Date: December 2013
Product Details: [Link]
2014 Submarine Cables of the World Map
Release Date: January 2014
Product Details: [Link]
The Commercial Cable Company’s Maintenance Cableship

Over the last two additions I have written about some of the significant contributions of the Commercial Cable Company (CCC) to trans-Atlantic telegraphy. However, this was not the first time that the CCC has featured in Back Reflection. Some readers may remember that the role played by the CCC cableship Mackay-Bennett in the Titanic disaster in 1912, was described in Issue 61.

While researching the story of the Atlantic Price War, I came across a detailed description of the CS Mackay-Bennett in a book called “Submarine Cable Laying and Repairing” written by H. D. Wilkinson and published as a second edition in 1908. It struck me that the description in Wilkinson’s book would be very close to the arrangements of the vessel when she sailed on that fateful voyage, and that readers may be interested in the layout of a maintenance cable ship that was operating at the beginning of the 20th Century, over 100 years ago. So here it is!

The Cable Ship “Mackay-Bennett.”—This steamer, owned by the Commercial Cable Company of New York, is employed in the maintenance of the Company’s systems in the Atlantic and European waters. The three Atlantic cables of this Company from Ireland to Nova Scotia represent together 6,894 nautical miles (nm), the two from Nova Scotia to the States 1,352nm, and the two European cables connecting Ireland with England and France 839nm, or a total of 9,085nm. Other Atlantic maintenance vessels are the “Minia,” of the Anglo-American Telegraph Company, and the “Pouyer-Quertier,” of the Compagnie Française.

The “Mackay-Bennett,” launched in September, 1884, was built at Govan, on the Clyde, in the yard of Messrs. John Elder and Co., and measures 270ft. by 40ft., by 24ft 6ins by depth moulded. Her tonnage is 1,012.92 net registered and 1,700 gross registered. The illustration (Fig. 192) has been kindly lent by the Company’s General Superintendent in England, Mr. G. H. Bambridge, to whose courtesy the writer is indebted for the accompanying details.

In the design of this steamer special pains have been taken to give her good steering and manoeuvring qualities.
In addition to the usual stern rudder, a second rudder is fixed at the bow inside the line of the stem, which can be worked by a hand-wheel. This very useful addition enables a course to be kept when going astern (frequently required in repair work), in easing strain on cable or in fetching or getting clear of a buoy or splice. Steam steering gear on Messrs. Muir and Caldwell’s system is fitted in the wheel-house aft, and can be operated from either of two wheels, one amidships and one on the poop. A hand-wheel is also fitted aft as a stand-by, giving a third means of steering independent of steam. Her manoeuvring qualities are still further increased by the use of Brown’s patent hydraulic reversing gear, previously referred to.

As the Mackay-Bennett is a twin-screw steamer and Brown’s reversing gear is fitted to each engine, there is not much time lost in turning her round either way. Bilge keels are also fitted which minimise the rolling in heavy weather. The engines are compound surface-condensing, with cylinders 25in. and 50in. diameter. On her trial trip a speed of 12.3 knots was attained, the engines developing 2,190 I.H.P\(^1\). The coalbunker capacity is 750 tons. Three cable tanks are fitted, having a total capacity to loading lines of 385nm or 710 tons of deep-sea cable, 1in. in diameter. The fore tank, No. 1, is 20ft., No. 2 30ft. and No. 3 28ft. in diameter, and the mean diameters of the cones are respectively 6ft. 2in., 7ft. 2in. and 6ft. 2in. The fore and aft tanks can be loaded to a height of 10ft., and the tank amidships to 14ft. At these heights the fore tank holds 60nm, the mid-ships 195nm, and the aft tank 130nm of the above type of cable. The tanks are all in connection with pumps in the engine-room, by means of which they can be flooded with water or discharged, as required.

Steam cable gear capable of dealing with repairing work in the deepest waters of the Atlantic is fixed both forward and aft. That in the fore part of the ship, used chiefly for grappling and picking-up, has a single drum driven by a double-cylinder engine with inclined cylinders, fitted with clutch for single or double purchase, and a brake for paying-out with the engine thrown

\(^{1}\) I.H.P = Indicated Horse Power
out of gear. The brake is controlled by a hand-wheel and screw. The aft gear is driven by a similar engine with clutch for throwing out of gear when paying-out with the brake. The bow and stern sheaves are fitted underneath the working deck or platform, as in the “Faraday.” The testing room is situated underneath the forward part of the bridge. Lord Kelvin’s sounding air-tube navigational machine and James’s submarine sentry for indicating depths while in motion are carried, and the ship is also supplied with Messrs. Johnson and Phillips’ sounding machine for deep-sea work. For trimming purposes the Mackay-Bennett is built with a special cellular double bottom running the whole length of the vessel, which can be utilised for water ballast to the extent of 300 tons. The equipment of this handsome vessel is completed with an electric lighting plant consisting of two Siemens dynamos, each with a normal output of 90 amperes at 110 volts. These are driven by a pair of Tangye engines, the light being distributed throughout the ship, and night operations are facilitated by deck-light reflectors fitted with six and eight incandescent lamps.

I think readers can see that many things have changed in the design of cableships in the ensuing 129 years since the Mackay Bennett was launched; however, the basic layout remains very much the same and should be recognisable to those readers who are familiar with today’s vessels.

For any readers that are interested in finding out more about the history of cableships, I would recommend to you, the bible of this subject; “Cableships and Submarine Cables” by K R Haigh; Second Edition published in 1978. It is a great pity that there has been no new reference book, on cableships, published over the last 35 years, since during that period many unique vessels have come and gone.
where it’s never been done before
Conferences

Submarine Telecom Cable Reception
7 November 2013
Miami, USA
RSVP

PTC’14
19-22 January 2014
Honolulu, USA
Website

ICPC Planery Meeting
18-20 March 2014
Dubai, UAE
Website
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As you may know, I live on a farm way out in the country. My day begins with milking cows, feeding hogs and watering chickens. After a couple of hours of chores, I come in for a big farm breakfast and then start my computer work for the day. Unfortunately, we have extremely unreliable internet at home, so I often spend a few hours every day at the library. For some reason, the library has a much better connection than I do.

It’s interesting to work at the library. You see a lot of other people hard at work, and sometimes you can engage them in a bit of conversation. Remember conversation, the way that we used to communicate before the internet and cell phones? I’ve also noticed a high percentage of Apple users in Rappahannock County, Virginia. Someone should look into that.

I used to work at the library sometimes before I moved out to the country and bought an internet connection that was as slow as dial-up and as reliable as satellite. We lived within walking distance of an amazing library in Leesburg, Virginia. I used to go up there and write most days. It was nice, but the people weren’t nearly as friendly in the big town as they are out here in the country. Someone should look into that as well.

The interesting thing about libraries, full of hardcover books and the occasional whisper, is that up until just a few years ago, they were the repositories of all human knowledge.

Think about it. Before WikiPedia and Google, libraries were the only place a person could go if they wanted to learn about the Titanic disaster or John Brown's raid on Harpers Ferry. They were the only place where a person could lay their hands on Our Town, East of Eden, Augustine's Confessions and Slaughterhouse Five and a hundred thousand other literary works that span every byte of knowledge acquired by all of the toils of man since the beginning of time. Pretty amazing.

And now that knowledge, all the works of literature and history and science and art, are just seconds away (or quarter hours away at my house) thanks to the internet and its good old backbone, submarine cables. Consider that when you go about your day. These cables that are such a huge part of our lives, they are there not just enable you to do business or download music or tweet pictures of your sandwich, they are there to deliver the mass of human knowledge to every corner of the globe.

And some people don’t believe in miracles.