

Data Management – a Step Forward in Cable Protection

Catherine S. K. Creese

Naval Seafloor Cable Protection Office
Naval Facilities Engineering Command
Washington, DC
catherine.creese@navy.mil

Abstract— Marine construction activity near existing submarine cables can damage them, leading to interruptions in service and costly repairs. Last minute discovery of submarine cables during marine project planning increases costs and delays projects. Builders of new projects can be unaware of existing cables, unaware of the damage they can cause, or unaware of the impact. While not all marine spatial data can be made available to all project planners, there are ways to improve upon the current practices. A lack of coordination regarding federally planned and authorized projects and cables contributes to risks to existing cables and costs of new construction projects. Better use of curated, discoverable data by agencies could lead to decreased costs and more predictable schedules for new cable projects, and reduce the potential for damage to existing systems.

The views expressed here are solely the author's and do not necessarily reflect the policy of the U.S. Department of Defense (DoD), the U.S. Navy, or its components.

Keywords—submarine cable, data management; discovery

I. INTRODUCTION

Transoceanic telecommunications cables are critical infrastructure, so vital to the United States that their incapacitation or destruction would have a debilitating effect on security and national economic security¹. These submarine cables are critical in ensuring that the United States can communicate domestically and with the rest of the world. They carry over 95% of the United States' international traffic – everything from banking, business, and governmental communications to gaming, movie streaming, and the internet². The cables are robust and networks have been designed to reduce impacts from damage, but they are still susceptible to damage from human uses of the seabed.

Damage to submarine cables from other permitted projects is rare, but consequences can be grave. Sometimes a conflict is discovered at the last minute, before the new construction starts. Whether damage is actually incurred, or is prevented by

a last minute discovery of the existing cable, this conflict can require re-engineering of the new project and almost certainly will delay its construction or cost man hours to sort out a solution. Two recent examples illustrate these last minute discoveries:

- An ocean dredging project was undertaken to alleviate storm damage to a popular beach. The project was in the middle of permitting by local and federal authorities when submarine cables were discovered within the middle of the sand reclamation area. A protest to the permitting agencies by the cable owners prevented damage to the cables³.
- A marine energy project was proposed in an area with multiple submarine cables. The cable owners vigorously opposed the construction on the grounds that it would likely damage the cable or impede future repairs. In the end the increased costs, including time and money for resolution of the conflict, put the energy project on hold⁴.

In both of these cases, the existing cables were charted, but the lack of specificity of available data, the lack of understanding of the impact to the cables, and the timing of the discovery led to these unfortunate impacts to the projects.

Damage to existing cables from ocean construction is often unintentional, unwitting, and preventable. Builders of new projects can be unaware of existing cables, unaware of the damage they can cause by their new project, or unaware of the impact. One might think that a federally permitted and licensed cable would be easily identified by others who wish to build in the same area, but this is not always the case. Instead,

³ Public Notice NAN-2013-00873-EBO, Application of the Suffolk County Department of Public Works for Sand Dredging and Beach Replenishment accessed at <http://www.nan.usace.army.mil/Portals/37/docs/regulatory/publicnotices/2013/Aug2013/NAN-2013-00873-EBO%20SCDPW-Smith%20Point%20County%20Park%20-%20Public%20Notice.pdf> on 06 August 2015

⁴ <http://www.hydroworld.com/articles/2014/10/increased-study-requirements-loss-of-doe-backing-end-admiralty-inlet-tidal-pilot-project.html> accessed on 6 August 2015

¹ <http://www.dhs.gov/what-critical-infrastructure> accessed on 10 August 2015

² CSRIC Working Group 8 Final Report – Protection of Submarine Cables Through Spatial Separation, December 2014, page 1

a lack of coordination regarding federally planned and authorized projects and cables contributes to risks to existing cables and costs of new construction projects.

II. WHY ARE CABLES DAMAGED BY NEW CONSTRUCTION PROJECTS?

Public data on existing cable systems is difficult for developers to identify and access. Data release and discovery is required by various federal and state rules and regulations, including the National Environmental Protection Act (NEPA). These rules and the structures for sharing information vary greatly by federal agency, type of project and even regionally within an agency. In addition to the federal agencies, many projects are governed by state regulations. Each state has different rules governing offshore projects and the amount of information that must be provided during the permitting process and after construction. The result of these complex rules is that there is no uniform requirement to publish cable route position lists (RPL's) or method for doing so.

There are no federal regulations that specifically require identification of cables prior to permitting of new construction. While planning in accordance with NEPA can lead to discovery, it is not an easy task with current public resources. There is no managed database for developers or permitting agencies to confirm the locations of cables near project sites. Most offshore cables are reflected in US nautical charts. However, the data on nautical charts is difficult to interpret and is generally insufficient for use in planning nearby work. This is not the fault of the chart developers, but is a product of multiple datasets, intentional obfuscation for security reasons, and out of date information.

Processes are not uniformly in place for early consultation with cable owners. The many existing processes for sharing project information are simply not designed to facilitate communication between agencies or between builders and owners of different projects. Again, there is a reliance on NEPA, which is non-specific in these matters. Because it is difficult for project developers to access public information and there are insufficient requirements for consultation, a developer can invest significant resources in planning a project before discovering critical infrastructure within their project site. The public interest would be better served if there were a way to ensure that enough information is shared early enough to prevent conflict between the new project and the existing cable.

The Federal Communications Commission (FCC) is the primary regulator of international submarine cables. They grant cable landing licenses and coordinate with other federal government processes. While they collect the most information about existing and planned cables, they do not maintain a geographic information system (GIS) with the data. Traditionally their role in protection of cables has been lesser than with the initial construction. Again, there has been a reliance on NEPA, as exercised by the permitting agencies of other projects, to provide sufficient awareness of existing cables.

III. WHAT IS THE CURRENT CABLE DISCOVERY PROCESS?

Cable industry groups, including the International Cable Protection Committee (ICPC) and the North American Submarine Cable Association (NASCA), have developed self-help methods for sharing information about projects and are vigilant in identifying construction that is to occur in the vicinity of existing cables. Specifically, the ICPC has developed a series of recommendations to help members deal with recurring issues in methodical ways. Both groups rely on publically available information regarding new projects or the willingness of developers to voluntarily share information, and the network of cable owners for sharing amongst themselves. These groups are private, requiring membership and therefore the information sharing is limited.

Over the last few years, there has been an increasing level of information sharing between agencies like the Department of Energy, the Federal Energy Regulatory Commission, the Bureau of Ocean Energy Management (BOEM) and Department of Defense. Still, each collects only the data required for its own process, and each maintains it on a separate system. There is not a process that requires sharing of geographical data between federal agencies or between federal and state agencies, nor is there a shared location where curated (managed) information on cables can be accessed. Information sharing is the product of personal networks developed by the people doing the work and is at risk of breaking down as those individuals move to other positions.

The Department of Defense has the Naval Seafloor Cable Protection Office (NSCPO). The NSCPO maintains a cable database. It is composed of commercially available cable data, information on government cables, and other data collected, categorized, and curated. It is a very comprehensive data set, but again, it relies on information made available or provided during a permitting process. This information is available to other government agencies but is limited by licensing terms and conditions to protect the proprietary nature of the data. With few exceptions, there is no formal process by which non-cable projects are required to check with the NSCPO during the early stages of their planning process. When a new cable is proposed for construction on the US continental shelf, the NSCPO requests that route to validate it against existing cables and various DoD security concerns. However, checking with the NSCPO is not mandated by any rules regarding licensing of new cables or other projects.

Unlike these standalone agency databases is the Marine Cadastre. The Marine Cadastre is a joint product of the U.S. Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Management and the U.S. Department of the Interior's Bureau of Ocean Energy Management (BOEM)⁵. It is a collection of data and a web publishing service for others who curate their own data. It has been in existence for nearly 10 years, and has developed into a very comprehensive collection of offshore information. However, the downloadable layer of cable data on the Cadastre is taken from NOAA's nautical charts, and is therefore subject to all of the inaccuracies described earlier.

⁵ <http://marinecadastre.gov/> accessed on 6 August 2015

NASCA and NOAA have recently made more cable data available, including contact information for both NASCA and the individual cable owners. The new data layer has been modified from the original RPL's in order to maintain security and the preserve the proprietary nature of the information. And while NASCA is providing data for their members' cable systems, there is still no good way of removing chart data for which there is no owner, or of systematically updating data for cables that are not represented in NASCA. Agencies can use the Cadastre for background information in planning, as can project planners. However, it cannot be relied on as a definitive source for data on existing cables and there is certainly no data in it about planned cables or other planned projects.

Other websites, like those of the Mid-Atlantic Regional Council on the Ocean (MARCO) and the West Coast Governor's Alliance on Ocean Health (WCGA) have additional information on coastal and ocean use, management, and protection. The cable data on those sites flows from the Cadastre. They have great information, but still cannot be relied on as definitive sources for existing and planned ocean infrastructure. The national marine planning information management system called for in the National Ocean Policy, Data.gov/ocean, has still more valuable information, but it is not specifically designed for direct access to data like the Marine Cadastre.⁶

IV. WHAT MORE CAN BE DONE?

According to the final report of Working Group 8 of the Communications Security, Reliability and Interoperability Council "Protection of Submarine Cables Through Spatial Separation", the federal government has not yet promulgated rules requiring agency protection of cables as critical infrastructure. Concepts which could be incorporated into such rules to address this include early consultation, data management, and area wide planning reviews. By working with other US government agencies and stakeholders, licensors and submarine cable owners could ensure discovery of marine cables during project planning and protection from proposed marine activities and infrastructure.⁷

A better source of curated discoverable data on planned and existing cables would benefit both project developers and permitting agencies. This data source should be developed in parallel with a streamlining of requirements regarding the amount, level of detail and timing of data required by government agencies. All new projects in the ocean should require a check of existing and planned cable systems and other infrastructure. When a new project begins the permitting process, regardless of lead agency or location, it should be required to provide data in a standardized format for conflict review against the cable database. Conversely, curated cable data should be discoverable, perhaps through the Cadastre, by the limited set of permitting and consulting agencies and authorized viewers. This would ensure access for those who

need it, and yet would to ensure protection of proprietary information.

Developers of ocean construction projects would benefit from planning reviews by permitting agencies in advance of project specific requests. For example, an agency which permits new projects could use the cable data, along with other marine spatial data – like dredged channels or endangered species - in developing specific areas as the only locations suitable for that development. By providing those limitations to project planners very early in their planning projects, the agency would save the planners time, money and effort. Without such input, offshore project developers waste resources by investigating areas that they would not be able to use. This process is currently being used by BOEM in identification of viable renewable energy development areas through a state specific stakeholder consultation processes.⁸ Such a methodology is aligned with goals of marine spatial planning being promoted by the US National Ocean Policy.

A new set of rules regarding construction near cables, developed with input from both cable owners and project developers would benefit all parties by clearly identifying the requirements for preserving critical infrastructure. They could also facilitate early consultation between cable owners and federal agencies, both for the construction of new cables and to ensure the safety of existing cables through the development of other projects.

Each of these tasks would need development by the agencies, and would require changes to rules and internal processes. This would cost each agency money and man-hours, both of which are in short supply. To reduce this burden and to better ensure that cables are protected as critical infrastructure, a single point of contact could be established within the FCC for submarine cables to ensure that permitted and licensed projects do not interfere with existing or proposed cables. Until the FCC can fully implement the recommendations of the CSRIC WG8 report, marine planners should access cable data information via the Marine Cadastre and consult with NASCA.

V. CONCLUSION

Submarine cables are critical infrastructure for the United States. While modern cable systems are robust and resilient, they are still susceptible to damage from human activity. Better use and management of curated, discoverable data by agencies could lead to decreased costs and more predictable schedules for new offshore projects, and reduce the potential for damage to existing cables. The risk of damage to cables from federally permitted projects can be significantly reduced by standardizing data requirements, facilitating early consultation, and providing a single point of contact within the federal government for submarine cable protection. By doing so, not only will cables be better protected, but also other offshore projects will be easier to develop with fewer last minute changes to plans.

⁶ Marine Cadastre FAQ, accessed at <http://marinecadastre.gov/faq/#MapsandViewers>

⁷ CSRIC WG 8 report, page 12

⁸ BOEM Renewable Energy Programs Stakeholder Engagement, accessed at <http://www.boem.gov/BOEM-Stakeholder-Engagement/> on 6 August 2015