OREGON FISHERMEN'S CABLE COMMITTEE

Established as Oregon Fishermen's Undersea Cable Committee July 9, 1998
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Mr. Walter Chuck, Chair, Oregon Ocean Policy Advisory Council
Ms. Robin McArthur, Chair, Oregon Land Conservation and Development Commission
Mr. Chris Castelli, Oregon Department of State Lands

Subject: Recommended Amendment of TSP Part Four, Undersea Cables, Pipelines and other Utilities

Dear Ocean Policy Advisory Councilors, Land Conservation and Development Commissioners and Oregon Department of State Lands,

Summary

In the Oregon Fishermen's Cable Committee, Inc. (OFCC)[1] agreements with the submarine cable owner members, there is a clause that requires Remote Operated Vehicle (ROV) inspections of the buried cables on periodic intervals. In authorizations from the State of Oregon, this inspection requirement is included by requiring the applicant to comply with the terms of their agreement with the OFCC, and in recent cases ROV inspections were required directly by the Oregon Department of State Lands as a condition of the Communication Cable Easement Agreement. The OFCC no longer sees value in requiring periodic cable inspections, as in all 10 inspections that have taken place under this requirement, no reduction of burial has ever been found. The OFCC removed this requirement in May 2018. Several of our submarine cable owners will be seeking an amendment to their terms of authorizations requiring periodic inspections for their cables, and we are asking for a revision to the Territorial Sea Plan Part Four to remove that requirement. In a meeting on this subject with the Dept. of Land Conservation and Development, DLCD suggested that we review all of TSP Part Four and additionally suggest any other appropriate revisions. In addition to our request to remove the inspection requirement, the OFCC suggests that the 2000 meter water depth in TSP Part Four 3. A. 2.) be corrected as it is not commercially practicable. Lastly, we respectfully request that OAR 141-083-0850(8) (concerning burial inspections) be likewise amended to conform to the changes recommended to Part Four.

[1] The OFCC was originally created in July 9, 1998 as the Oregon Fishermen's Undersea Cable Committee, Inc. On Feb. 22, 2000, we changed the name of the organization to Oregon Fishermen's Cable Committee, Inc. To avoid confusion, in this letter OFCC replaces both names.

We do not request that any change be made to the requirement to conduct an ROV inspection after a major geologic event.

History

Origination

Prior to the creation of the OFCC in 1998, Oregon easements for subsea fiber optic cables were silent with regard to ROV inspection of cables. For example, Easement EA 8719, (dated November 1, 1995) to AT&T for the two TPC-5 cables (trans-Pacific cable system #5) has no mention of cable inspections or any other obligation of the easement holder following the installation of the cables. It was the OFCC agreement with WCI Cable in 1998, submitted as an attachment with WCI's Joint Permit Application Form that made the state aware of the interest for periodic inspections. Prior to WCI's application, subsea cable owners strongly discouraged commercial trawl fishermen from fishing within one nautical mile of their cables. The OFCC and WCI Cable negotiated an agreement that would allow trawl fishermen to fish over their buried cable. For the fishermen in those early negotiations it seemed prudent to periodically use an ROV to inspect the new cable to ensure that the cable remained buried and safe to trawl over. The State of Oregon was supportive of the policy shift of allowing fishing activities to co-exist with buried cables, brought about by the OFCC agreement, as most of the fishing grounds would be preserved for multiple use. On December 1, 2000, the Oregon Land Conservation and Development Commission adopted the Oregon Territorial Sea Plan Part Four which concerns Telecommunication Cables, Pipelines and Other Utilities. Under **A 3. Implementation Requirements a. Burial** is this requirement:

> 4.) The easement-granting agency shall require that cables, pipelines, or other utility fixtures shall be inspected periodically and after any major geologic event, such as a subduction-zone earthquake to ensure continued burial.

Note the similarity with that language and the language of the 1998 agreement to create and establish the OFCC:

ROV Burial Verification

WCICI/ANC shall conduct an ROV burial verification every 5 years and after a major geological or environmental event.

Intervals

The OFCC originally requested cable owners conduct an ROV inspection every five years. We developed an Oregon ROV Survey Protocol which defined the scope of the inspections, the type of areas that should be inspected, the form of the survey results, etc. The first two cables were inspected in July 2005. The results were, as expected, unremarkable. The cable "was found to be well buried at most inspection sites" with a few spots having less than the original target burial. No change in fishing areas resulted. Following the first two cable ROV inspections in July

2005, the OFCC cable owners realized that repeated inspections would be very costly. In late 2005 the OFCC Board agreed to modify the terms of our agreements to indicate that the first ROV inspection would take place within five years, and if no significant changes were found, subsequent inspections would take place at eight year intervals. The OFCC presented our new policy to the OR DSL and in March of 2006, the OFCC received a letter from Department of State Lands Director Ann Hanus approving the requested change.

Recent OFCC Action

In May of 2018 at the OFCC Board meeting held at the Microsoft campus in Redmond, WA, the OFCC again discussed the ROV inspection interval. By this time, several cables had undergone two ROV inspections, while others had undergone one. The Board discussed the results of previous ROV inspections (no reduction of burial found) and the cost of the inspections. The Board agreed to eliminate periodic inspections. An inspection continues to be required within the first five years after installation, after any major geological or environmental event as determined by the OFCC, and if there is any indication of the cable not being buried as initially recorded. Our intent was that the industry standard Post-Lay Inspection following installation would satisfy our requirement for the initial inspection.

A sub-group of the OFCC met on December 5, 2018 at the OR Department of State Lands (DSL) with several DSL staff and a representative from the Oregon Dept. of Justice. We presented our rationale for removing the periodic inspection requirement. The consensus was that the OFCC should meet with Oregon Dept. of Land Conservation and Development (DLCD) and provide this information to them, and then submit a formal letter of request to the agency.

A sub-group of the OFCC met with staff at DLCD on June 11, 2019. The consensus was that the Territorial Sea Plan Part Four would need to be modified, but that it would be a "minor, surgical fix." The recommended path forward was to prepare a request by letter to the Ocean Policy Advisory Council (OPAC), the Department of State Lands, and the Land Conservation and Development Commission (LCDC).

Rationale for Modifications

Overview

We believe the rationale for removing the periodic inspection requirement for submarine cables is strong. The requirement did not exist until the OFCC began to require it in the late 1990's. Ten inspections covering over 50 distinct sites have shown that off the Oregon coast cable that is buried has stayed buried. Only one new exposure has been discovered, and it is believed to be existing from the time the cable was installed. The costs to conduct periodic inspections are quite significant and put Oregon cable owners at an economic disadvantage compared to other areas where there are no periodic inspection requirements. ROV inspections temporarily displace fisheries that could otherwise occur over submarine cables. Environmental disturbance on the seabed is negligible during inspections, but emissions from large ships that conduct inspections contribute to global air pollution.

ROV Inspection Criteria

The OFCC / Oregon requirement for ROV inspection has resulted in 10 inspections, with 93 ROV dives and a total of 102 sites inspected. Two sites were unable to be inspected in order to avoid gear conflicts with the Dungeness crab fishery. The 93 dives inspected approximately 168.593 kilometers of undersea cable. This took over 47 days, not counting cableship transits to and from Oregon.

The sites to be inspected were selected from the following criteria, if any:

- Areas with steep slopes
- Areas with possible hazards from the cable lay records
- Areas where a sacrificed gear claim was made
- Areas where a possible cable contact was reported
- Areas of higher activity bottom contact fishing
- Areas where the cable has been repaired, post installation
- Areas where plow burial was interrupted, such as lifting the sea plow off the seabed

In the case of cables in which none of the above criteria applied, the OFCC ROV Protocol required inspection at intervals along the route and the inspections were done at locations of interest to the OFCC fishermen and the cable owner.

Results of ROV Inspections

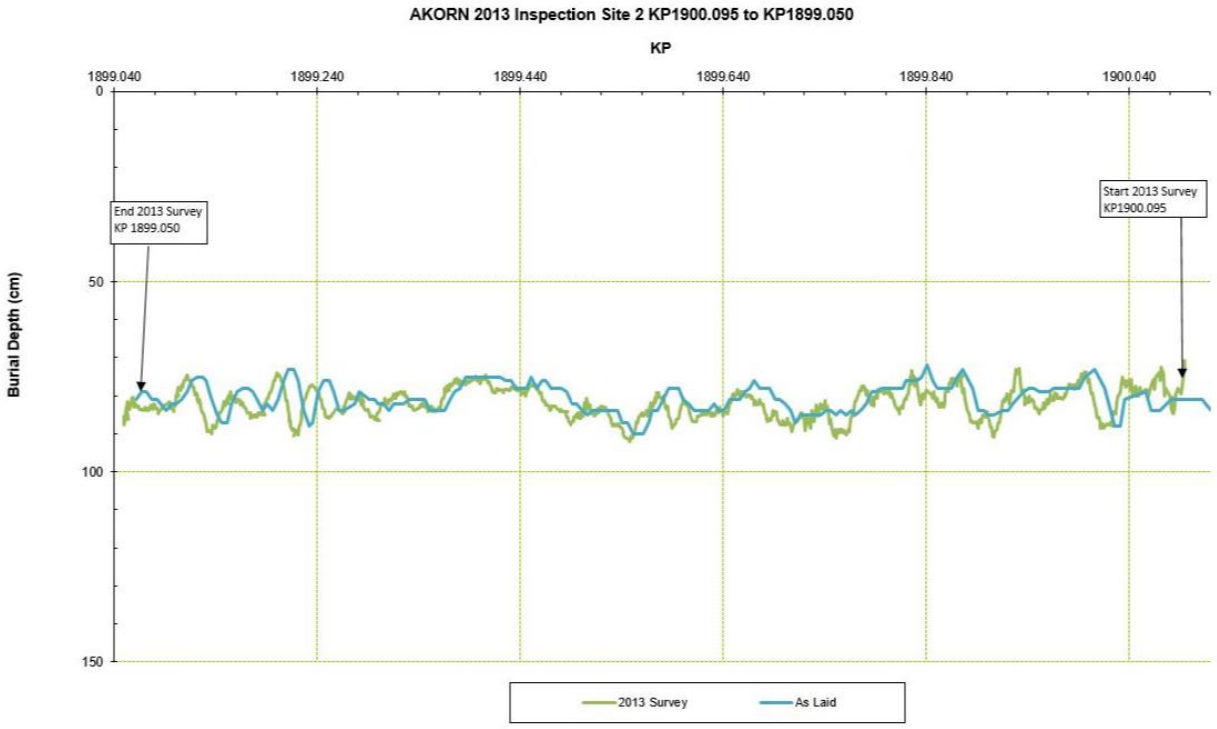
The single most notable result of the ROV inspection program was found at Inspection Area 4 of the 2010 ROV survey of the Alaska United Fiber System West cable (AUFS-West). Regarding this location the Engineer In Charge of the inspection made these comments:

> "The portions of the AUFS-West Survey Site 4 contains slopes steep enough to necessitate interrupting continuous data collection by the ROV generally between KP (Kilometer Post) **73.868 and KP 73.320 and again between KP 73.320 and KP 73.198.** Over these areas the ROV was flown with spot data checks taken along with visual DVD information. Exposed and unsupported cable appears between KP 73.221 and KP 73. 207. The maximum height seen above a natural seabed depression is approximately 1.5 meters above this depression. This is a heavily sloped micro area with cable returning to good burial on either side of this depression. No remedial work feasible. Otherwise, very good average burial is found throughout this site. Trawl marks are observed at this site at KP 73.455 and KP 73.408 with small non-impacting debris slightly off the cable track near KP 73.374."

Post Lay Inspection occurs following the installation of a cable at sites of interest along the cable route, not along the entire length of buried cable. This site had not been inspected previously, and cable engineers believe that this 14 meter long suspension likely occurred during the installation in a 'pock mark' depression that was probably already there. Pock marks are often caused when a methane gas pocket collapses and are difficult to see in surveys. This 1.5 m deep

pock mark was in over 780 meters of water, so the depth of the pock mark was less than .2% of the water depth—less than resolution of the survey echo sounder. This inspection result was an anomaly; at every other site the inspections showed that burial remained consistent with the burial at the time of installation.

In over 90 other dives, no evidence of new cable exposures was found. In cases where the ROV submarine returned to an exposure that had been previously inspected five or eight years earlier we found no change to the exposure. Most inspection sites were found to be similar to as previously inspected or buried a little deeper in the sediment than previously measured. The burial graph below is typical of results commonly found during inspections:



Costs to Conduct Periodic Inspections

Most ROV inspections off Oregon have been done by cable ships, typically a ship that is 100-170 m in length, and requires 46-55 personnel to conduct ROV operations. This includes teams that precisely record and document the navigation, positions and data processing ("surveyors"), specialists that operate and maintain the submersible, submarine cable engineers, representatives for the cable system owner and the OFCC, and an Electrical/Technical officer who maintains and trouble shoots software, sensor and connection issues related to the data collection. These positions are in addition to the normal complement of ship's crew. On an ROV inspection conducted in 2017, there were 65 personnel on board, 16 of which were "industrial personnel" associated with the technical operation, and 49 who were part of the ship's crew. This inspection took place over eight days. Ship and crew costs range between $40,000 and $80,000/day. This amount would not include OFCC and Owners' representatives aboard the ship and some administrative costs of the ship owner. Total costs for a single inspection could range

from $500,000 to $850,000 to the cable owner. Typical ROV inspections last about 3-4 days per cable inspected, not counting mobilization, transit and de-mob.

Unnecessary Requirements put Oregon at a Competitive Disadvantage

California, which used to require ROV cable inspections between 18 and 24 months for the life of the cable, has acted to remove those requirements. If Oregon retains the requirements, it puts the State of Oregon at a competitive disadvantage for attracting new cable systems to the state. Subsea cables landing in Oregon strengthen our internet backbone and influence the siting of data centers and the tech industry in the state. The synergy of submarine cable landings in Oregon, the tech industry, and data centers are making Oregon's "silicon forest" a magnet for development. The Oregon Broadband Advisory Council notes the significance of Oregon's undersea cables to Oregon's digital infrastructure:

> "This growing cluster of undersea cables is positioning Oregon as a telecommunications gateway to the Pacific Rim. There is an ongoing opportunity to promote Oregon for future cable landings, related on-shore operations, and as a preferred location for any business or organization needing high-bandwidth connectivity to the Pacific Rim. Undersea telecommunications cables and their interconnections add valuable infrastructure to the state. Undersea cables bring permitting and easement fees, contract work for the fishing fleet, and the potential of long-term jobs to manage and maintain the cables and the networks." - *Oregon Broadband Advisory Council*

The State of California had also considered the benefits and costs of periodic ROV cable inspections. The following is an excerpt from the California Coastal Commission's Staff Report F15A of November 18, 2016, on a request by Level 3 Communications to a permit amendment to remove the periodic inspection requirement:

> "The results of the 2001 post-lay inspection survey and four periodic surveys completed in 2003, 2005, 2010 and 2015 demonstrate that buried cable remains buried. The applicant therefore proposes to eliminate the requirement to survey the cables every five years and replace it with a requirement to survey only after an event or physical phenomenon that could result in a cable becoming unburied. Since buried cable has remained buried over time and no conflicts have been reported since its installation, eliminating periodic burial surveys and instead surveying the cable only after a natural or anthropogenic event that has the potential to expose the cable (i.e., seismic activity or gear snag) will not reduce protection of coastal resources. Furthermore, eliminating the periodic burial surveys will reduce the environmental effects associated with performing the surveys (e.g., air emissions from survey vessels and potential conflicts with commercial fishing along the cable survey routes). The Central California Joint Cable/Fisheries Liaison Committee supports the proposed amendment (Exhibit 2)." And later:

> "Commission staff recommends that the Commission approve the proposed permit amendment and concur with Level 3 Communications' modified consistency certification."

The State of California has granted such requests, including the request by Level 3.

ROV Inspections Displace Fisheries

While there has been tremendous cooperation between the Oregon commercial fishing industry and the subsea cable industry, cable inspections do necessitate short-term displacement of commercial and recreational fishing operations. Fixed gear fishermen such as Dungeness crab fishermen, sablefish longline fishermen, sablefish trap fishermen, and eel trap fishermen have had to move gear for surveys. Likewise, groundfish trawl fishermen and shrimp trawlers have had to modify their tows so as not to interfere with a cable ship conducting underwater operations. Under the International Steering and Sailing Rules[2] (c) A vessel engaged in fishing when underway shall, so far as possible, keep out of the way of:

(i) a vessel not under command;
(ii) a vessel restricted in her ability to maneuver

A vessel conducting a subsea cable inspection is 'restricted in her ability to maneuver' as it has a submersible vehicle tethered to the ship and both must stay on the track of the submarine cable.

Environmental Impact

A neutrally buoyant ROV has a very light touch on the seabed, so the only environmental impact on the seabed is occasional stirring up of sediment. However, cableships typically burn diesel fuel resulting in carbon emissions. If a ship burns 20 mt of diesel per day, the ship will emit approximately 38,500 lbs. of carbon into the atmosphere each day.[3] When the carbon mixes with oxygen in the atmosphere, CO^2 forms at the ratio of the molecular weight of CO^2 (44) to the molecular weight of carbon (12) resulting in approximately 22.2 lbs. of atmospheric CO^2 for each gallon of diesel combusted.

Elimination of periodic ROV inspection requirements will dramatically reduce the carbon footprint of operating a subsea cable and reduce by hundreds of tons the amount of carbon entering the air.

Adjustment of the Water Depth Burial Requirement

The following language is in TSP Part Four, 3. Implementation Requirements a. Burial 2.) **In federal waters: Decisions to permit burial of cables, pipelines, or other fixtures crossing or**

[2] USCG Navigation Rules and Regulations Handbook p. 28
https://www.navcen.uscg.gov/pdf/navRules/Handbook/CG_NRHB_20190212.pdf

[3] "Emission Facts: Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel" US EPA website, National Service Center for Environmental Publications 2005. Calculation based on 2778 grams of carbon/gal and 314.9 gallons/metric ton at 7lb/gal.

affixed to the seabed of the outer continental shelf (beneath federal waters) to a depth of 2,000 meters off Oregon will be deemed consistent with this state policy. In practice, this is a very difficult standard to achieve and is not realistic with current technology. Most currently available sea plows are designed with a maximum operating depth of 1500 meters. While the steel frame could withstand deeper depths, cable plows are very technical equipment with cameras, lights, position beacons, power packs, sensors and controls. These components are typically rated to be used at not more than 1500 meters. The water pressure at 1500 meters, is one atmosphere (14.7 lb/in^2) for every 10 meters, or roughly 2200 lbs. per square inch.

History of the Water Depth Burial Requirement

The 2000 meter water depth was likely used because in February of 2000, Oregon DSL issued a Communication Cable Easement to MFS GlobeNet for a trans-Pacific cable. GlobeNet is unique in that it is the only cable in Oregon who specified to their installation contractor that they wanted the cable system buried out to a water depth to 2000 meters. The OFCC had previously asked for burial to 1500 meters with cable armoring to 2000 meters to allow future burial if the commercial fishing grounds expanded to waters deeper than 1500 meters. Given that GlobeNet had already planned to bury out to 2000 meters system wide, 2000 meters was used in the OFCC Agreement. When Amendment Four of the Territorial Sea Plan was drafted in 2000, it was likely that the most recent OFCC Agreement—the GlobeNet Agreement—was used to guide the development of the policy. In the installation of this cable, the plow burial went to 1200 meters, (656 fms) and the remaining cable out to 2000 meters water depth (1093 fms) was done by a jetting ROV. Cable burial by jetting is a very time consuming, expensive operation, with multiple passes required and burial results typically inferior to plow burial.

The OFCC continued to use the 1500 meter burial requirement in the next several cable agreements, along with provisions that required the cable to be built with outer armoring to allow for possible future burial by jetting ROV if fishing expanded to deeper waters and upon a vote of the OFCC.

In November of 2005 the Pacific Fishery Management Council (PFMC) approved Amendment 19 to the Pacific Coast Groundfish Fishery Management Plan. One part of that amendment was to "freeze" the footprint of the groundfish trawl fishery by creating a boundary with coordinates approximating the 700 fm (1280 m) contour, prohibiting fishing on the seaward side of the line, thus preventing expansion of the groundfish trawl fishery into deeper waters. That policy was adopted by the National Marine Fisheries Service on March 8, 2006 and implementing regulatory provisions were adopted effective on June 12, 2006. This Essential Fish Habitat Conservation Area line was called the "***Seaward of 700 fm (1280 m) contour***".

With a boundary line prohibiting fishing on the seaward side, the OFCC changed our policy of asking new cable projects to bury the cable to 1500 meters with a request to bury the cable to an agreed point 1 kilometer seaward of the 'Seaward of 700 fm Line'. From a practical standpoint, this was a much clearer way to identify the desired End of Burial point. Depths taken aboard ships and fishing vessels from echo sounders are an approximation, and two vessels at

the same location often have slightly different readings for depth. Even the same vessel can have slightly different readings of depth at a location on subsequent trips due to variability in salinity and water temperature and how these factors affect the speed of sound in water. Using depths as a boundary creates confusion due to the lack of consistency. **We recommend adopting replacing the 2000 m burial requirement with one requiring burial to 1500 meters or to a latitude/longitude agreed to by affected stakeholders.** This will minimize unnecessary burial where it is not needed.

Survey Postponement Request

Cable owners are currently facing upcoming burial inspection survey requirements that are approaching their compliance dates. Ideally, the TSP Part Four, the regulations, and associated easements would be amended prior to the compliance dates for the burial inspection survey requirement. However, in speaking with the DLCD, they have conveyed that the OPAC, LCDC, and DLCD may not have the bandwidth to logistically process the amendments in time. We would like your support, both for amending the TSP as well as encouraging the DSL to postpone the inspection requirements until OPAC, the LCDC and the relevant state agencies complete the amendment process. If you agree, we would appreciate OPAC and the LCDC sending letters to DSL indicating their support for waver or postponement of burial inspection surveys. This would relieve pressure on the cable owners and provide time for OPAC, LCDC and the agencies to complete their amendments.

Conclusion

Periodic ROV inspections were a reasonable request when Oregon started to see an influx of undersea cables. The State and Oregon fishermen both wanted assurance that cables which were buried at the time of installation stayed buried, preventing conflicts with existing ocean uses. Commercial fishermen are the primary stakeholder interested in ensuring that cables stay buried. We have had commercial fishermen aboard every inspection of fiber optic cables in Oregon, and we are well satisfied that buried cable will not become unburied unless some large scale natural event such as an undersea landslide associated with a major earthquake occurs. We recommend amendment of TSP Part Four to remove the periodic inspection requirement and to modify the 2000 meter water depth burial requirement to a more practicable standard. We have provided a 'tracked changes' markup of our suggested changes to TSP Part Four as Enclosure 1.

/Scott McMullen/

Scott McMullen, Chairman
Oregon Fishermen's Cable Committee, Inc.

Enclosure 1: Marked up TSP Part Four