Submarine Cables: O&M and Cable Maintenance
A World View

Neil Rondorf, ICPC Chairman
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International Cable Protection Committee (ICPC) Membership

- 126 Members have signed the Membership Agreement that was introduced in 2010
- Five (5) Government Members
- Ship Operators
- System Suppliers
- Survey Companies
- Associate membership introduced February 2013
Membership

- Global representation in over 60 countries (now including Madagascar & Vanuatu)
- ICPC now represents over 97% of international cable km
- European Commission (EC) continues to recruit new members
Outline

- Engagement as a form of Submarine Cable Protection
- Examples
  - Brazilian Pipeline
  - European Marine Renewable Technologies
  - Seabed Mining
  - SAT 2* Cable Recovery
  - Oil and Natural Gas Corporation
- Gap Analysis
- Summary
Protecting Cables During Operation
Best Industry Practice

ICPC Recommendation #6 provides Best Industry Practice for Protection of Submarine Cables and covers

- Dissemination of cable route information
- Stakeholder Liaison and Education
- Monitoring Security of Cable Routes
- Legal
Engagement as a Form of Submarine Cable Protection

- Greater than 80 percent of submarine cable faults are anthropogenic in nature
- Increased use of our seabed causes the potential for increased damage to submarine cables
  - Nascent users may not be as proactive, unaware of the potential issues
  - Historic users may become complacent about protection of systems with few failures
- Protection extends beyond physical protection such as burial, rock placement, and armor
- Newer forms of protection include increased electronic charting, use of Automatic Identification System (AIS), and awareness
  - Engagement of the industry is a growing form of protection
- Early and frequent engagement improves overall results
  - Multitude of ways to engage the industry
Vessel Monitoring System (VMS)

- Local laws may specify the minimum size of vessel that is fitted with VMS
- VMS integrates with onboard GPS and relays information to fishing authority
- Cable owners may be able to obtain information via court order if a vessel is suspected of damaging a cable

Cable Snagged by Anchor

Image courtesy of the International Cable Protection Committee
Monitoring Security of Cable Route
Automatic Identification System (AIS)

- The Automatic Identification System (AIS) is required by international maritime law for all vessels over 300 gross tonnes (now 100 tonnes in some waters)
- AIS is a useful tool for:
  - Monitoring shipping activity in the vicinity of a cable
  - Providing evidence after a damage incident
- Protection zones are set up around the cables in a Cable Protection System
- AIS receivers decode the VHF messages from ships, which are passed to the Cable Protection System
- Alerts are raised if ships may be anchoring (or fishing) too close to the cable
- All vessel movements are logged and may be used as evidence
Automatic Identification System (AIS)

- Determination of cause of fault can be uncertain
- AIS provides conclusive proof for faults caused by anchor
- Can protect a cable against a ship dragging its anchor whilst at anchor
- Cannot protect a cable against a ship dragging its anchor whilst underway but can prevent multiple failures
- Warnings sent to vessel captain and owner have avoided anchor drag faults on monitored cables.
Brazilian Petrobras Pipeline

- New Petrobras Pipeline route proposed
- Installation planned for the first quarter of 2016
- Petrobras reached out to the International Cable Protection Committee (ICPC) in March 2013 with planned routes
  - Initial map forwarded to membership for comments
  - Based on feedback map clarified and re-forwarded
  - Request asked for information on planned cable installations in the area between now and the pipeline installation in 2016
- Early outreach
European Marine Renewable Technologies

- Europe is leader in field of marine renewable technologies
  - Offshore wind farms, as well as wave and tidal test sites
  - Emerging tidal sites
- Seabed throughout North Sea is shared with:
  - Telecommunications cables
  - Oil and gas platforms
  - Power cables / emerging grids
  - Burgeoning marine renewable technologies
- Large fishing industry on surface
- SubseaCablesUK and Danish Cable Protection Committee (DKCPC) very active local cable protection committees (CPCs)
  - Extensive outreach and collaboration
- Kingfisher Information Service - Offshore Renewable & Cable Awareness (KIS-ORCA) Project yielded multitude of detailed maps of seabed users for public access
  - Available for download at www.kis-orca.eu
European Marine Renewable Technologies

Images courtesy of the Kingfisher Information Service of Seafish and the KIS-ORCA Project 2014
Seabed Mining

- International Seabed Authority (ISA) given the responsibility to regulate deep seabed mining
  - ISA jurisdiction extends to seas beyond a country’s national jurisdiction
- All applications for seabed exploration or mining beyond the exclusive economic zone (EEZ) must route through ISA
- International Cable Protection Committee (ICPC) and ISA signed a memorandum of understanding in 2010
  - ISA provides ICPC with rough coordinates of license applications
  - ICPC distributes mapped coordinates to membership list
  - Membership has the opportunity to contact ISA and the mining company to discuss potential cables in the vicinity of the lease application
- Multitude of locations forwarded for review from applications from:
  - Russia, China, and Japan
Seabed Mining
Out of Service Cable Recovery

- Mertech Marine recovering out-of-service cables off Africa
  - Gained ownership of SAT-1* in 2007
  - Recovered cable in following years
  - Outreach to International Cable Protection Committee (ICPC) prior to recovery to identify other cables in the area

- Recently gained ownership of SAT-2*
  - Conducted independent evaluation of cables in vicinity
  - Outreach to ICPC to identify other cables in the area before recovery

* Cable system name.
Out of Service Cable Recovery

- Detailed recovery plan provided for ICPC review
  - Plan acknowledges that SAT-2 crosses in service and out of service cables
  - Plan provides safety distance requirements for:
    - In the vicinity of an “In service cable”
    - Crossing an “In service cable”
    - Towards or in vicinity of an “Out of service cable”
    - Performing of grapnel runs in the vicinity of any cable
Air and Sea Patrols

- **Air Patrol**
  - Air patrol may be cost effective in certain areas or seasons where there is high marine activity
  - Patrols may be flown all year or during seasonal peaks
  - Potential offending vessels can be contacted via VHF or leaflets dropped indicating location of the cable

- **Sea Patrol**
  - Sea patrol is effective because it allows direct contact
  - Sea patrols can also be year-round or just when fishing vessels are concentrated during certain seasons
  - Always randomize patrols
Terrestrial Patrols

- Submerged plant actions need to be complemented with effective monitoring of the land route
- Patrols ideally undertaken daily
- A cable owners representative should be present during any authorized work in vicinity of the cable with authority to stop work
- “Dial-before-you dig” service should be established with local authorities
National Legislation

- National legislation could help reduce the risk of cable damage
- Australian Government has recognized the strategic importance of submarine cables
- Protection zones designated for Southern Cross, Australia-Japan SEA-ME-WE 3* cable systems
- High risk operations banned & low risk activities restricted
- Criminal penalties up to $224,000 and/or 10 years prison

* Cable system name.
ICPC Activity Update

- International Telecommunication Union (ITU)
  - Green Repeater Initiative
- International Seabed Authority (ISA)
  - Deep Sea Mining Leases
- Asia-Pacific Economic Cooperation (APEC)
  - Bali Workshop on Best Practice Guideline
- Council for Security Cooperation in the Asia Pacific (CSCAP)
  - Workshop Cable Security Issues
- Publications
  - Submarine Cables - Handbook on Law and Policy
Sharing the seabed in harmony

[www.iscpc.org]