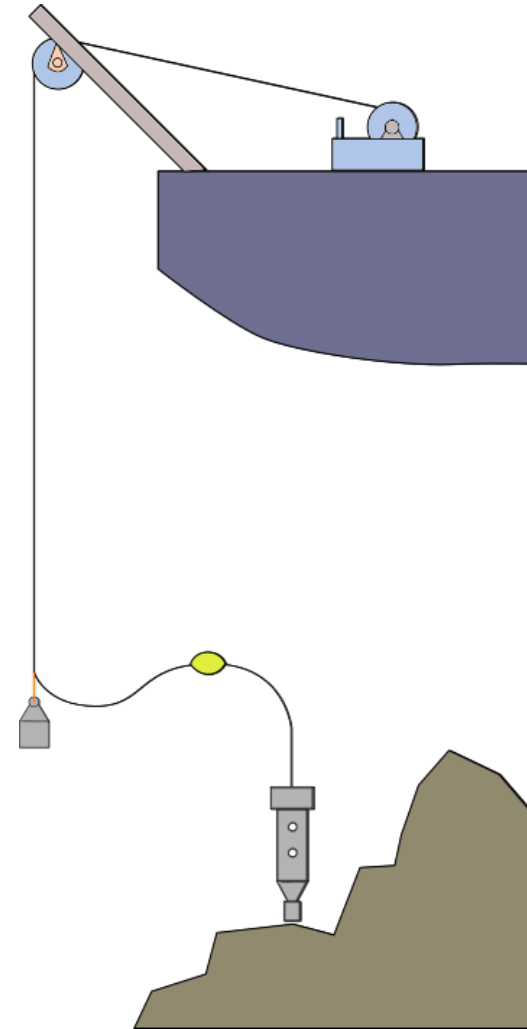


Deployment Scenario

- In order to deploy unit on bottom, the cable must keep free from propellers, not drag on bottom, and must facilitate an acceptable watch circle for a non-DP vessel.
- For MBARI vessels and other identified ships this leads to a number of regulated safety factors that will inform the specification of the tether, and therefore the powered winch.



Safety Considerations for Seagoing Installations

- Max system weight: 500 lbs
- Allowing for dynamic loading a tether must have an SWL of 1000 lbf, and via CFR189 the NBL of the tether must be 7000 lbf.
- The tether must be the weakest link.
- The winch must have a break strength above 7000 lbf.
- In order to haul at > 30 m/min, the winch must possess minimum 3 HP.

Soft Jacket Fiber Tether Solution

CATEGORY	KEY SPECS	IMPACT
TETHER	Custom Cable w SMF, GFI and 600W 400V Conductors	Custom Design will meet requirements.
ELECTRICAL IMPACT	19AWG Conductors 1000V rated	No batteries, will add GFI safety
MECHANICAL	7 klbf NBL, 1 klbf SWL	Lower NBL will accommodate smaller ships than steel.
DATA IMPACT	Fiber facilitates 10 Gbps and CWDM for expansion	Topside data collection would be possible.
OPERATIONAL	10" Min Bend Radius	Will require custom winch, larger sheaves. More care need be take.
MAINTENANCE		Needs fiber kits and training. More downtime for damaged terms & tethers
COST	~\$80,000 for winch, slip ring, and tether	Much higher cost and upkeep

Standard CTD Cable Solution

CATEGORY	KEY SPECS	IMPACT
TETHER	UNOLS Standard 0.322"ø (Coax 4C)	
ELECTRICAL IMPACT	19AWG Conductors 1000V rated	Batteries required to get to 600W
MECHANICAL	10 klbf NBL, 5 klbf SWL	Already support on many ships (WF, RC, JM, SR)
DATA IMPACT	45 Mbps limits via VDSL	Real-Time data collection at the surface lost. Network data only.
OPERATIONAL	6" Min Bend Radius	May Avoid depressor weight, but floats remain
MAINTENANCE	Can use standard terms and splice whips	Field Servicable, inexpensive terminations
COST	~ \$30,000 (Tether/Winch/SlipRing/Xverters	Lower cost, less gear on accommodating ships