T H E

S U B M A R I N E

C A B L E - S O U R C E

C O M P A N I O N

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Source Companion

How to read this companion

This companion records every source behind the manuscript of The Submarine Cable, one entry per source, in the order the ledger was built. It exists so that every load-bearing claim in the book can be traced: what was read, at what depth, what it supports, and where its limits are.

Access levels. Full means the source was read end to end. Excerpt or abstract means only part was available or used. Search-level means the source was seen through search results and snippets. A level marked verified 2026-11-01 was re-read in full on that date and its claims re-checked against the manuscript.

Standing caveats. Vendor and consortium claims are treated as dated claims by an interested party, not neutral fact. Market-share figures are estimates on the basis stated in the entry. Where two sources conflict - for example the founding date of the Gutta Percha Company, or the name of the ship that cut Germany's cables in 1914 - the conflict is preserved in the manuscript rather than resolved by fiat. Figures that mix in-service systems with systems under construction are never compared with in-service-only counts. Present-tense statements in the manuscript are anchored to the dates of the sources below.

R1. Atlantic Cables index (Bill Burns, atlantic-cable.com)

Access: full | https://atlantic-cable.com/Article/AtlanticCables/index.htm

Supports: Directory of primary material on 1857-66 Atlantic cables

Limitations: Personal site, but primary-doc host; individual articles cited separately when read

R2. SubOptic: How many submarine cables are there, anyway? (May 22 2025)

Access: full | https://www.suboptic.org/news/how-many-submarine-cables-are-there-anyway

Supports: 570 in-service systems, 81 planned as of Feb 2025 (TeleGeography data)

Limitations: Industry body blog citing TeleGeography data

R3. IEEE ComSoc: First Optical Transatlantic Cable TAT-8

Access: full | https://www.comsoc.org/node/19856

Supports: TAT-8 in service Dec 14 1988; 280 Mbit/s; 40,000 circuits; 5,846 km; AT&T/BT/FT consortium; Bell Labs 1.3um tech

Limitations: Timeline entry, compressed

R4. Nokia Bell Labs: TAT-8: The First Transatlantic Optical System (1989)

Access: abstract | https://www.nokia.com/bell-labs/publications-and-media/publications/tat-8-the-first-transatlantic-optical-system/

Supports: 25-yr design life; <=3 ship repairs objective; Pacific sister systems

Limitations: Abstract only; full paper behind IET paywall

R5. TeleGeography: 2025 Submarine Cable Map (Jan 20 2025)

Access: full | https://resources.telegeography.com/2025-submarine-cable-map

Supports: 597 systems and 1,712 landings active or under construction

Limitations: Counts mix active + construction

R6. CSIS: Safeguarding Subsea Cables (Aug 16 2024)

Access: full | https://www.csis.org/analysis/safeguarding-subsea-cables-protecting-cyber-infrastructure-amid-great-power-competition

Supports: >95% of international data; ~600 cables planned/operational; ~1.2M km; $3.9T/workday one bank; 98% built/installed by 4 firms; 2021 shares SubCom+ASN+NEC 87%, HMN 11%; big tech own/lease ~half bandwidth; 100-150 severed/yr; Matsu 2023 (2 cables, 14k residents, 6 weeks, 27 disruptions since 2018); Oct 2023 Baltic; PLCN Team Telecom

Limitations: Think-tank report; some claims second-hand (flag in companion)

R7. Wikipedia: TAT-8

Access: full | https://en.wikipedia.org/wiki/TAT-8

Supports: 1985 Canary trial cable; shark attacks; PTAT-1 shielding; burial practice

Limitations: Tertiary; used for non-load-bearing detail and orientation

R8. Wikipedia: 2024 Baltic Sea submarine cable disruptions

Access: full | https://en.wikipedia.org/wiki/2024_Baltic_Sea_submarine_cable_disruptions

Supports: Nov 18 2024 BCS East-West + C-Lion1 cuts; Yi Peng 3 anchor-drag hypothesis ~100 mi; Apr 2025 Swedish probe inconclusive

Limitations: Tertiary; corroborated by Reuters/AP (R9)

R9. Reuters/AP/Carnegie Baltic coverage

Access: full (search-level for Reuters text; Carnegie full) | reuters.com (Apr 15 2025), apnews.com, carnegieendowment.org emissary Dec 2024

Supports: Swedish probe: no conclusive evidence of intent; Europe more prepared

Limitations: News coverage

R10. SubTel Forum: NTT weighs new cable ship

Access: excerpt | https://subtelforum.com/ntt-group-weighs-building-new-ship-for-undersea-cables/

Supports: Ship shortage as industry bottleneck

Limitations: Trade press

R11. Wikipedia: Submarine communications cable

Access: full | https://en.wikipedia.org/wiki/Submarine_communications_cable

Supports: Construction 19-20C; gutta-percha->polyethylene 1930s/1945 Channel; Ronalds 1816/Clark 1853/Faraday retardation; Whitehouse vs Thomson; Heaviside; optical era; EDFA 1995; PFE 3-15kV up to ~1.65kW... 16.5kW; >100km repeater spacing; unrepeated 380km (2014); SDM 12-24 pairs; open cables; wet/dry plant; RTD <60ms transatlantic

Limitations: Tertiary; used for non-load-bearing detail and orientation

R12. Wikipedia: Transatlantic telegraph cable

Access: full | https://en.wikipedia.org/wiki/Transatlantic_telegraph_cable

Supports: 1858 cable saga; Whitehouse/Thomson; 1865 loss; 1866 success; speeds

Limitations: Tertiary

R13. Wikipedia: Cable layer

Access: full | https://en.wikipedia.org/wiki/Cable_layer

Supports: Modern cable ships, equipment, repeaters list

Limitations: Tertiary

R14. Wikipedia: SS Great Eastern

Access: full | https://en.wikipedia.org/wiki/SS_Great_Eastern

Supports: Ship dimensions, career, cable-laying conversion

Limitations: Tertiary

R15. Wikipedia: Gutta-percha

Access: full | https://en.wikipedia.org/wiki/Gutta-percha

Supports: Material chemistry, history, uses

Limitations: Tertiary

R16. KIS-ORCA: Cable Burial

Access: full | https://kis-orca.org/subsea-cables/cable-burial/

Supports: Plough burial <1m trench, ~1m target depth, 0.2 km/hr for armoured cable; PLGR; ROV jetting; rock placement at crossings

Limitations: Industry safety-org page

R17. OceanIQ: Stages of submarine cable installation (Jan 2025)

Access: full | https://oceaniq.co.uk/news/the-stages-of-submarine-cable-installation/

Supports: Route engineering stages; desktop study; UXO survey; PLGR; shore ends direct vs pre-laid barge; PLIB

Limitations: Vendor blog (Global Marine Group)

R18. NTT-WE Marine: Burying

Access: full | https://www.nttwem.co.jp/english/service/buried/

Supports: Burial 0.6-2.0m by zone; anchors to ~110m; trawl disturbance 0.5-0.6m; plough tow up to 490kN; CARBIS III ROV 2,500m

Limitations: Vendor page

R19. Atlantic-cable.com: The Gutta Percha Company (Bill Burns, incl. Bartlett 1850 factory visit)

Access: full | https://atlantic-cable.com/Article/GuttaPercha/

Supports: Co. est. 1845; seamless extruded tubes (pasta-machine model); 1850/51 Channel cables; insulation improves at depth; >1,000 t/yr imports by 1861; 14,000 miles of core for 64 cables by 1865; Glass Elliot merger -> Telcon; polythene supersedes early 1930s

Limitations: Specialist self-published site with primary transcripts; note R15 (Wikipedia) gives 1847 for company founding - conflict kept visible

R20. Edward B. Bright: Manufacture, Laying and Working of the Cables of 1865 and 1866 (Dec 1866 paper, via atlantic-cable.com)

Access: full | https://atlantic-cable.com/Article/1866Bright/index.htm

Supports: 1857/58 vs 1865/66 cable construction, weights, strains, wpm; soundings; paying-out machinery; grappling recovery of 1865 cable; Thomson mirror galvanometer; shore ends 20 t/mile 30 mi out

Limitations: Period source, framed as period

R22. Reuters: Nokia sells ASN to French state (Jun 27 2024)

Access: full | https://www.reuters.com/markets/deals/nokia-sells-submarine-networks-business-asn-french-state-2024-06-27/

Supports: EUR 350M sale agreement; ~EUR 1bn sales impact

Limitations: news

R23. Nokia: completes sale of ASN to French State (Jan 3 2025)

Access: full | https://www.nokia.com/newsroom/nokia-completes-its-sale-of-leading-submarine-networks-business-asn-alcatel-submarine-networks-to-the-french-state/

Supports: France 80%, Nokia retains 20% + board seat until targeted exit

Limitations: press release

R24. Seacoastonline/Portsmouth Herald: SubCom Newington expansion (Jan 20 2026)

Access: full | https://www.seacoastonline.com/story/news/local/2026/01/20/subcom-newington-plans-500m-expansion-high-speed-cable/88179434007/

Supports: Plant opened 1953 as Simplex Wire & Cable; 58,000 km/yr -> ~77,000 (2026) -> 100,000 km/yr goal; ~800 workers Newington; company-claimed 1M km deployed milestone 2025; ~USD 500M expansion (town figure; company disputes exact cost); Grace Hopper with Google

Limitations: Local paper relaying company claims - attribute as dated company claims

R25. Science History Institute: Communicating Underwater

Access: full (verified 2026-11-01) | https://www.sciencehistory.org/stories/magazine/communicating-underwater/

Supports: 1858 cable: signals weakened, failed entirely 20 Oct 1858; 1857 India mutiny news 40 days to London; gutta-percha demand (tree = 2 lb; >1,000 t/yr imports; plantations 1880s); 1900: 200,000+ miles of cable

Limitations: Museum magazine article

R26. atlantic-cable.co.uk: 1851 Dover-Calais page

Access: full (verified 2026-11-01) | https://atlantic-cable.co.uk/Cables/1851DoverCalais/index.htm

Supports: Newall & Co cable 24 mi + 1 mi splice; 4 copper wires, 10 galvanised iron armour wires; established 17 Oct 1851; message revenue from 30 Nov 1851; GBP 9,000 cable / 15,000 total; 37 yrs service

Limitations: Specialist site hosting period documents

R27. atlantic-cable.com: TAT-1 page

Access: full (verified 2026-11-01) | https://atlantic-cable.com/Cables/1956TAT-1/index.htm

Supports: TAT-1 inaugurated 25 Sep 1956; Clarenville-Oban ~1,950 nmi twin cables; 36 talking circuits; 51 repeaters per cable at 40-mile spacing

Limitations: Specialist site hosting period documents

R28. ICPC media FAQ + history

Access: full (verified 2026-11-01) | https://iscpc.org/news/media-enquiries/ ; https://www.iscpc.org/about-the-icpc/history/

Supports: ~500 systems, ~1.8M km; 150-200 faults/yr; 70-80% accidental (fishing/anchors); 1958 Cable Damage Committee -> 1967 ICPC

Limitations: Industry body; bounded-knowledge claims labelled as such

R29. Pioneer Consulting: Suppliers of Undersea Telecommunications Systems (2021, basis 2015-19)

Access: full (verified 2026-11-01) | https://www.pioneerconsulting.com/wp-content/uploads/2021/03/Pioneer_Consulting_Suppliers_Report_Executive_Summary_Download.pdf

Supports: ASN/NEC/SubCom ~87% share 2015-19, ~98% incl HMN; 16-20 Tbit/s per pair; SDM enables 320 Tbit/s systems; SubCom 12 content-provider projects, 112,841 km since 2010

Limitations: Consultancy, commercially interested; shares are estimates on a 2015-19 basis

R30. TeleGeography blogs (Alan Mauldin): used bandwidth 2024; 99% mythbusting; Red Sea 2024

Access: full (verified 2026-11-01) | https://resources.telegeography.com/used-international-bandwidth-reaches-new-heights ; https://resources.telegeography.com/2023-mythbusting-part-3 ; https://resources.telegeography.com/what-we-know-and-dont-about-multiple-cable-faults-in-the-red-sea

Supports: Demand 6.4 Pbps 2024; content/cloud ~three-quarters of demand, >=80% on major routes; the 99% figure is unmeasurable; Red Sea 24 Feb 2024: three cables

Limitations: Analyst blog of a commercial research firm

R31. Kentik: What caused the Red Sea submarine cable cuts

Access: full (verified 2026-11-01) | https://www.kentik.com/blog/what-caused-the-red-sea-submarine-cable-cuts/

Supports: 24 Feb 2024 disruption clusters 09:46/09:51 UTC; Rubymar anchor-drag theory (unconfirmed); 14 cables cross the Red Sea, 11 remained in service

Limitations: Network-measurement firm analysis

R32. AP + PBS on the 2023 Matsu cable cuts

Access: full (verified 2026-11-01) | https://apnews.com/article/matsu-taiwan-internet-cables-cut-china-65f10f5f73a346fa788436366d7a7c70 ; https://www.pbs.org/newshour/world/taiwan-blames-chinese-ships-for-cut-internet-cables

Supports: Feb 2023: two Matsu cables cut by a Chinese fishing vessel and a freighter a week apart; ~14,000 residents on degraded microwave links for weeks; recurring damage around Taiwan

Limitations: News coverage

R33. Google Cloud blog: Dunant ready for service (Feb 2021)

Access: full (verified 2026-11-01) | https://cloud.google.com/blog/products/infrastructure/googles-dunant-subsea-cable-is-now-ready-for-service

Supports: Dunant RFS Feb 2021; 250 Tbps; 12 fibre-pair SDM; pump-laser sharing across pairs; Orange IRU arrangement

Limitations: Dated vendor claim

R34. SubmarineNetworks database: Dunant

Access: full (verified 2026-11-01) | https://www.submarinenetworks.com/en/systems/trans-atlantic/dunant

Supports: 25 Tbps per pair, 300 Tbps total design capacity

Limitations: Analyst database

R35. Microsoft + Telxius on MAREA

Access: full (verified 2026-11-01) | https://news.microsoft.com/announcement/cross-atlantic-cable-deployed/ ; https://telxius.com/en/telxius-operates-the-two-highest-capacity-submarine-cables-in-the-world/

Supports: MAREA Virginia Beach-Bilbao ~6,600 km; 160 Tbps design; 200 Tbps claimed Dec 2018; Microsoft/Facebook/Telxius

Limitations: Dated vendor claims

R36. Google Cloud blog: Curie ready for service (Nov 2019); Wikipedia: Curie

Access: full (verified 2026-11-01) | https://cloud.google.com/blog/products/infrastructure/curie-subsea-cable-set-to-transmit-to-chile-with-a-pit-stop-to-panama ; https://en.wikipedia.org/wiki/Curie_(submarine_communications_cable)

Supports: Curie RFS Nov 2019; 4 pairs x 18 Tbps = 72 Tbps; 10,500 km; Valparaiso landing Apr 2019; first cable to Chile in 19 years; SubCom built

Limitations: Dated vendor claim; Wikipedia tertiary

R37. 2Africa consortium FAQ + SubmarineNetworks: 2Africa

Access: full (verified 2026-11-01) | https://2africacable.net/faq ; https://www.submarinenetworks.com/en/systems/asia-europe-africa/2africa

Supports: 8-member consortium (CMI, Meta, Bayobab, Orange, stc, Telecom Egypt, Vodafone, WIOCC); ASN SDM1 up to 16 fibre pairs; up to 180 Tbps design; 45,000 km, 33 countries; open-access landing model; Pearls extension referenced 2026

Limitations: Consortium site (interested) + analyst database; completion status wording as of page fetch date

R38. Wikipedia: Operation Ivy Bells

Access: full (verified 2026-11-01) | https://en.wikipedia.org/wiki/Operation_Ivy_Bells

Supports: Oct 1971: USS Halibut taps Soviet cable in the Sea of Okhotsk; monthly tape recovery; betrayed by Pelton 1980

Limitations: Tertiary; the standard popular account (underlying books: Sontag & Drew, Hoffman)

R39. French finance ministry: the State acquires 80% of ASN

Access: full (verified 2026-11-01) | https://presse.economie.gouv.fr/letat-acquiert-80-du-capital-dasn-alcatel-submarine-networks/

Supports: French state takes 80% of ASN; Nokia retains 20% pending targeted exit

Limitations: Government press release (French)

R40. atlantic-cable.com: Early Cable Instruments + Siphon Recorder treatise (Bill Burns)

Access: full (verified 2026-11-01) | https://atlantic-cable.com/Article/Instruments/index.htm ; https://atlantic-cable.com/Equipment/TelconSiphon/index.htm

Supports: Mirror galvanometer patented 1858; Whitehouse induction coils to 2,000 V; cable key polarity working; siphon recorder patented 1867, general use 1870s; Wheatstone automatic transmitter patented 1858, adapted later; Brown drum relay and Heurtley magnifier (early 1900s)

Limitations: Specialist self-published site with strong primary apparatus documentation

R41. Wikipedia: TAT-12/13

Access: full (verified 2026-11-01) | https://en.wikipedia.org/wiki/TAT-12/13

Supports: Ring system of two cable stretches (hence two numbers), 2 x 5 Gbit/s initial, first transatlantic use of erbium-doped fibre amplifiers, landings NY/Rhode Island/Porthcurno/Bude/Penmarch

Limitations: Tertiary; corroborated by conference literature (IEE 1996 colloquium) seen in search

R42. Wikipedia: Optical amplifier (citing Mears et al. 1987 Electronics Letters; Desurvire et al. 1987 Optics Letters)

Access: full (verified 2026-11-01) | https://en.wikipedia.org/wiki/Optical_amplifier

Supports: EDFA gain first demonstrated 1986-87 independently by Payne's Southampton group and Desurvire's Bell Labs group

Limitations: Tertiary; primary papers named in entry

R43. SubmarineNetworks: FLAG FEA system page

Access: full (verified 2026-11-01) | https://www.submarinenetworks.com/en/systems/asia-europe-africa/flag-fea

Supports: FLAG = Fibre-optic Link Around the Globe; 28,000 km; opened for commercial service 22 November 1997; 18 countries and regions

Limitations: Analyst database; corroborated by Wikipedia's FLAG article

R44. TeleGeography blog: You've Read About Submarine Cable Breaks. Now Read About the Repairs (2025)

Access: full (verified 2026-11-01) | https://resources.telegeography.com/youve-read-a-lot-on-cable-breaks-lately.-have-you-read-about-the-repairs

Supports: over 1.48 million km of submarine cables in service as of early 2025

Limitations: Commercial research firm; in-service route-km estimate. Supersedes the ~1.2M km in R6 (CSIS, Aug 2024), which earlier drafts used.

R45. WIRED (2025) and Subsea Environmental Services on the TAT-8 recovery

Access: full | https://www.wired.com/story/say-goodbye-to-the-undersea-cable-that-made-the-global-internet-possible/ ; https://subsea.cc/cable-recovery/subsea-featured-in-wired-the-story-of-tat-8s-recovery/

Supports: MV Maasvliet recovering retired TAT-8 lengths from the Atlantic for recycling in 2025

Limitations: Journalism plus the recovery contractor's own account

R46. Bell System Technical Journal: SF Cable System issue (1970) and SG Undersea Cable System issue (Sept 1978); atlantic-cable.com cable timeline

Access: full PDFs (verified 2026-11-01) | https://www.worldradiohistory.com/Archive-Bell-System-Technical-Journal/70s/Bell-System-Technical-Journal-1970-5.pdf ; https://bitsavers.org/magazines/Bell_System_Technical_Journal/BSTJ_V57N07_197809_Part_1.pdf ; https://atlantic-cable.com/Cables/CableTimeLine/atlantic.htm

Supports: SF design objective 720 three-kHz two-way channels; TAT-5 in service March 1970 (Green Hill RI - Conil), 361 repeaters, capable of over 820 channels; SG/TAT-6 objective 4,000 two-way voice channels, delivered 4,200; timeline: TAT-6 4,000 channels (1976), TAT-7 4,000 voice circuits (1983, withdrawn 1994)

Limitations: owning AT&T/Bell Labs journals for TAT-5/6; TAT-7's in-service year and last-coaxial status rest on the atlantic-cable timeline and Wikipedia cross-check, no owning document located

R47. Electronics & Power (IET), 1979: Intelsat - facing the problems of success

Access: abstract (verified 2026-11-01) | https://digital-library.theiet.org/content/journals/10.1049/ep.1979.0441

Supports: by 1979 Intelsat handled two-thirds of the world's transoceanic communication traffic

Limitations: Period trade-press article; figure is Intelsat's own traffic measure

R48. Bloomberg (14 Mar 2019): Undersea Cables Are No Longer Underwater as Fiber Booms Again

Access: search-level (paywall) | https://www.bloomberg.com/news/articles/2019-03-14/undersea-cables-are-no-longer-underwater-as-fiber-booms-again

Supports: during the 1990s dot-com boom, phone companies spent more than $20 billion laying undersea fibre-optic cables

Limitations: News report; round figure; the boom's spending window varies by source

R49. Royal Museums Greenwich archive: Proposal and terms for laying down a telegraph cable between Varna and Balaclava, 1854

Access: full (verified 2026-11-01) | https://www.rmg.co.uk/collections/archive/rmgc-object-523848

Supports: the Crimean War cable scheme, Varna to Balaclava, planned 1854 and laid April 1855

Limitations: Museum catalogue entry for the primary document; the laying date rests on the standard historical record

R50. Wikipedia: Fanning Raid

Access: full (verified 2026-11-01) | https://en.wikipedia.org/wiki/Fanning_Raid

Supports: on 7 September 1914 a German landing party cut the cable at Fanning Island

Limitations: Tertiary; the standard account of the raid

R51. Infraestruturas de Portugal: Atlantic CAM SMART cable ring

Access: full (verified 2026-11-01) | https://www.infraestruturasdeportugal.pt/pt-pt/atlantic-cam-ve-reforcado-o-financiamento-comunitario-0 ; https://www.infraestruturasdeportugal.pt/pt-pt/ip-e-asn-assinam-contrato-para-construcao-de-novo-anel-cam

Supports: the Continent-Azores-Madeira SMART ring is EU-funded and under construction contract with ASN

Limitations: Government press releases (Portuguese); project funded and in development, not yet in service

R52. NATO news (14 Jan 2025): NATO launches 'Baltic Sentry'

Access: full (verified 2026-11-01) | https://www.nato.int/en/news-and-events/articles/news/2025/01/14/nato-launches-baltic-sentry-to-increase-critical-infrastructure-security

Supports: NATO's dedicated Baltic critical-infrastructure patrol mission launched January 2025

Limitations: Institutional announcement

R53. Hansard, House of Commons, 7 July 1859: Red Sea and India Telegraph Company guarantee debate

Access: full (verified 2026-11-01) | https://api.parliament.uk/historic-hansard/commons/1859/jul/07/lords-amendments-considered

Supports: the Red Sea cable guarantee ran to some 36,000 pounds a year

Limitations: Parliamentary record; the fifty-year term rests on the authorizing Acts

R54. Reuters (22 Feb 2022): Tonga reconnects to world as submarine cable restored

Access: full (verified 2026-11-01) | https://www.reuters.com/world/asia-pacific/tonga-reconnects-world-submarine-cable-restored-after-tsunami-2022-02-22/

Supports: Tonga's international cable restored 22 February 2022, about five weeks after the 15 January eruption

Limitations: News coverage; the domestic link's far longer restoration is widely reported

R55. Reuters (19 Dec 2008): Breaks in cables to Middle East disrupt Internet

Access: full (verified 2026-11-01) | https://www.reuters.com/article/technology/breaks-in-cables-to-middle-east-disrupt-internet-idUSTRE4BI68E/

Supports: December 2008 breaks in three Europe-Middle East cables disrupted services across the region

Limitations: News coverage

R56. ICPC: Submarine Cable Protection and the Environment (March 2021)

Access: full (verified 2026-11-01) | https://www.iscpc.org/publications/submarine-cable-protection-and-the-environment/ICPC_Public_EU_March%202021.pdf

Supports: fish and shark bites caused a small number of historical faults, declining to none in recent decades; improved design has removed the threat

Limitations: Industry body publication

R57. Soham Agarwal, National Maritime Foundation (2024): Cable Repair through International Cooperation

Access: full (verified 2026-11-01) | https://maritimeindia.org/wp-content/uploads/2024/05/Soham-Agarwal-Cable-Repair-through-International-Cooperation-.pdf

Supports: new cable ships require investment above US$100-150 million; repair-permit friction and long response times

Limitations: Policy paper with an India focus

R58. Halogen Services research note: Undersea cables - the repair fleet is the single point of failure

Access: full (verified 2026-11-01) | https://halogen.studio/research/undersea-cables-repair-fleet

Supports: a single cable repair is commonly cited at one to three million dollars

Limitations: Consultancy research summarizing commonly cited figures; treat as industry lore

R59. Douglas R. Burnett (CIL/NUS): The 1884 International Convention for Protection of Submarine Cables - Provisions Not in UNCLOS

Access: full (verified 2026-11-01) | https://cil.nus.edu.sg/wp-content/uploads/2011/04/Douglas-Burnett_1884_International_Convention_for_Protection_of_Submarine_Cables_Provisions_Not_in_UNCLOS_De1.pa

Supports: the 1884 Convention's provisions, its relationship to UNCLOS 1982, and its limits

Limitations: Legal conference paper by a leading cable-law practitioner

R60. ZTT / OFTA panel presentation: Disruption of the Submarine Cable Systems on 26/27 Dec 2006

Access: full (verified 2026-11-01) | http://www.zttcable.com.hk/en/download/sof0901ofta_disruption.pdf

Supports: the 26 December 2006 Hengchun earthquake broke multiple systems across the Luzon Strait and disrupted Internet access across Asian economies

Limitations: Industry presentation

R61. Headrick & Griset: Submarine Telegraph Cables: Business and Politics, 1838-1939 (Business History Review 75(3), Autumn 2001, 543-578)

Access: abstract via doi.org/10.2307/3116386 (Cambridge); figures as quoted in British Historical Society of Portugal Newsletter 16 (Aug 2022, bhsportugal.org) and Wikipedia: Electrical telegraph (verified 2026-11-01)

Supports: in 1892 British companies owned and operated two-thirds of the world's cables; in 1896 thirty cable-laying ships, twenty-four British; 1923 share still 42.7%; Depression and shortwave radio nearly bankrupted the cable companies in the 1930s

Limitations: article full text paywalled (JSTOR/Cambridge); the 1892/1896 figures were verified through two independent secondary quotations of the paper, not its own pages

R62. Crampton & Wollaston, Minutes of Proceedings of the Institution of Civil Engineers (1858), on the 1851 Dover-Calais cable

Access: abstract via doi.org/10.1680/imotp.1858.23727 (verified 2026-11-01)

Supports: 1851 cable construction - four No.16 copper wires, two coatings of gutta-percha, served with hemp, armoured with ten No.1 galvanised iron wires

Limitations: contemporary primary account; read via DOI record

R63. PK Porthcurno (Telegraph Museum): Our History; Wikipedia/BT Archives/Open University on the Eastern Telegraph Company

Access: full (verified 2026-11-01) | https://pkporthcurno.com/collections/our-history/ ; https://en.wikipedia.org/wiki/Eastern_Telegraph_Company ; https://oro.open.ac.uk/106050/1/WILDE_A884_VOR.pdf

Supports: first cable brought ashore at Porthcurno June 1870; Porthcurno the largest telegraph station in the world by the 1920s; ETC formed 1872 by merger of four predecessors (Anglo-Mediterranean; Falmouth, Gibraltar & Malta; British-Indian Submarine; Marseilles, Algiers & Malta) with John Pender chairman; ETC folded into the 1929 consolidation

Limitations: museum and reference histories rather than peer-reviewed; the four-predecessor detail follows the Open University thesis

R64. atlantic-cable.com: Cable & Wireless / Eastern group history; Awarua Communications Museum: shortwave beam; FundingUniverse: Cable & Wireless

Access: full (verified 2026-11-01) | https://atlantic-cable.com/CableCos/CandW/EATC/ ; https://www.awaruamuseum.co.nz/nzpo-evolution/rf-shortwave.html ; https://www.fundinguniverse.com/company-histories/cable-and-wireless-plc-history/

Supports: Marconi's 1901 transatlantic signal and the Pender group's Newfoundland landing ban; beam (Empiradio) services from 1926-27 took about 65-68% of Eastern group traffic within six months; 8 April 1929 merger forming Imperial & International Communications; renamed Cable & Wireless in 1934

Limitations: specialist/museum histories; the traffic-loss figures are Eastern-group specific, consistent with the book's half-their-messages for cables overall

R65. AIEE (1922): Key West-Havana Submarine Telephone Cable System; BSTJ (1942): The Future of Transoceanic Telephony; atlantic-cable.com 1921 Key West-Havana page

Access: abstract via doi.org/10.1109/t-aiee.1922.5060758; full PDFs (worldradiohistory.com, atlantic-cable.com) (verified 2026-11-01)

Supports: three continuously loaded single-core cables of 100-105 nautical miles in water over a mile deep, opened for telephone service 1921, each also carrying duplex telegraph channels; the 1921 cables were loaded with iron wire - permalloy loading followed in 1924

Limitations: manuscript previously said permalloy tape; corrected to iron wire on the BSTJ 1942 account (three cables continuously loaded with iron wire were laid in 1921)

R66. Library of Congress, National Recording Registry essay: First Transatlantic Telephone Call; IEEE Communications Society milestone

Access: full (verified 2026-11-01) | https://www.loc.gov/static/programs/national-recording-preservation-board/documents/FirstTransatlanticTelephoneCall.pdf ; https://www.comsoc.org/node/18956

Supports: commercial transatlantic radiotelephone service inaugurated 7 January 1927 (Gifford-Murray call); radio remained the only transatlantic telephone until TAT-1 in 1956

Limitations: commemorative sources; the date itself is uncontested

R67. C. E. Shannon: A Mathematical Theory of Communication, Bell System Technical Journal 27 (July/October 1948)

Access: full text widely mirrored (verified 2026-11-01)

Supports: 1948, Bell Laboratories; a channel of given bandwidth and noise has a calculable maximum information rate

Limitations: none material; the chapter's within-a-factor-or-two discussion is the author's synthesis of the coherent-era literature and is hedged in the text