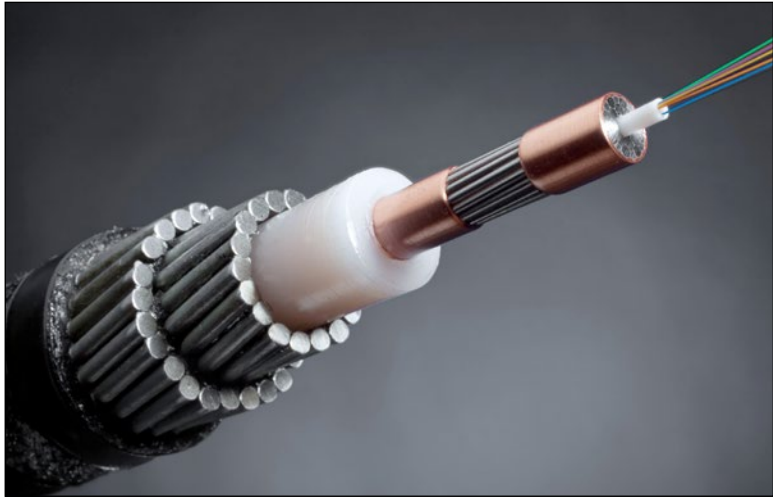


Internet traffic drives demand for undersea cable made in NH



SubCom's Double Armor cable is wrapped in two layers of steel wire to provide extra protection for the fiber optic cable in high ship-traffic areas close to shore.

SubCom in Newington produces the cable that carries data around the world.

By Michael Cousineau
Union Leader Staff

NEWINGTON — Cyberspace doesn't run in a vacuum. It runs under the ocean. Undersea cables as thick as garden hoses on the ocean floor are transmitting your Google emails and your search request for "Hamilton" in London. And one 70-year-old factory not far from the Mall at Fox Run has made enough of that fiber

optic cable in the past decade to reach the moon, 239,000 miles away. SubCom, a growing company employing 1,000 people on its 50-acre campus in Newington, counts Google among its customers. SubCom produces cable that can carry large amounts of data between continents to help run the world. "The internet just wouldn't work without this stuff," said 34-year company veteran Bob Suydam, director of sales and project management, during a recent tour of manufacturing operations. "I've been here a long time, and I still find it absolutely fascinating to come down here and see what

we do, really understand what it allows the world to do as far as communications is concerned," he said. SubCom operates 24/7, with four shifts of roughly 100 workers each in a building of more than a half-million square feet. Making a 60-mile length of cable takes about five days — and up to six days longer if layers of steel and nylon "armoring" are added to bolster the cable's protection against hazards such as anchors and fishermen close to shore. At its core, the cable contains glass strands the diameter of a human hair, protected by steel,

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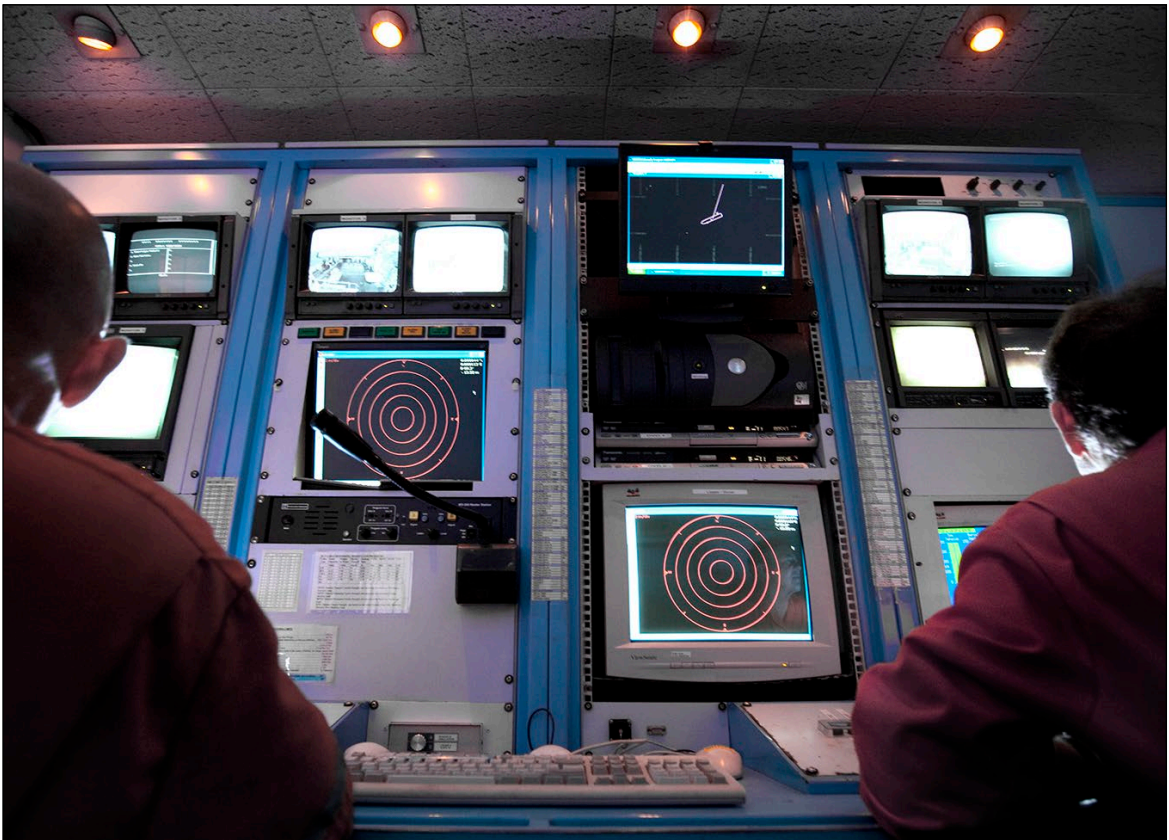
SubCom ship paying out cable attached to floats.



Collecting cable floats during a beach landing.



A remotely operated vehicle (ROV) deploys to inspect cable burial.



From the ship deck, operators ensure cable is properly laid and buried.



During a traditional cable landing, SubCom Reliance Class ships pay out cable as machines and operators pull from shore. Guard vessels stand by.

SubCom

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copper and an outer plastic layer. Data is transmitted through the glass strands at the speed of light.

The cable is made in the same building that workers for what was then known as Simplex Wire & Cable began producing coaxial cable in the 1950s for telephone communications. In the 1980s, SubCom installed the first trans-oceanic fiber system across the Atlantic.

“Cablemaking in general hasn’t changed a whole lot,” Suydam said. “We’ve just had to really beef it up technically to accommodate delicate fiber optic elements.”

Today, SubCom is one of three “key players that dominated the global submarine cables market in 2022,” according to a report from Grand View Research, which provides research reports and consulting services.

Around 98% of all internet traffic is ferried around the world by undersea cables.

“It’s basically the interstate system for the internet,” said Jeremy Hitchcock, co-founder of Dyn, the Manchester-based internet performance management company that rose to prominence in the late 2000s.

Cable worldwide

Around the world, about 870,000 miles of submarine cable was in service as of early this year, according to TeleGeography, a telecommunications market research and consulting firm.

“Content providers such as Google, Facebook, Microsoft, and Amazon are major investors in new cable,” TeleGeography said.

“Faced with the prospect of ongoing massive bandwidth growth, owning new submarine cables makes sense for these companies,” it said.

Winning contracts is becoming a global competition.

“U.S. and China wage war beneath the waves — over internet cables,” screamed a Reuters headline from March.

SubCom’s recent \$600 million cable deal — which offers undersea connections to southeast Asia, the Middle East and western Europe — “became a trophy in a growing proxy war between the United States and China over technologies that could determine who achieves economic and military dominance for decades to come,” wrote Reuters.

SubCom officials didn’t want to discuss specific clients or the geopolitical impact of its business deals.

Google in public statements

acknowledged SubCom building at least four cables that the technology company owns.

“A vast underwater network of cables crisscrossing the ocean makes it possible to share, search, send and receive information around the world at the speed of light,” Google said in one announcement on partnering with SubCom.

Internet traffic

Regarding ownership of the cables, SubCom said in an email: “A great number of entities, from telecom operators to data service providers or internet content providers, governments to entrepreneurs, have vital interests in subsea cable connectivity.

“As capacity deployed by private network operators has outpaced that of internet operators in recent years, there has been a large influx in new submarine cable investment from the world’s most active content providers,” the company said.

Jeremy Hitchcock knows about navigating the internet

Dyn, the company he co-founded, helped move data traffic on the internet before the founders sold to Oracle in 2016.

“Dyn’s secret sauce was understanding how the physical infrastructure like submarine and terrestrial cables connected different networks together and where the shortcuts and blockages existed,” Hitchcock said in an email.

He said he imagined some people worked at both Dyn and SubCom over the years.

Deploying cable

The average schedule for a submarine cable project is two to three years from start to finish, with the timetable influenced by regional weather cycles and permit acquisition times.

Cables are engineered to last about 25 years, though some last longer.

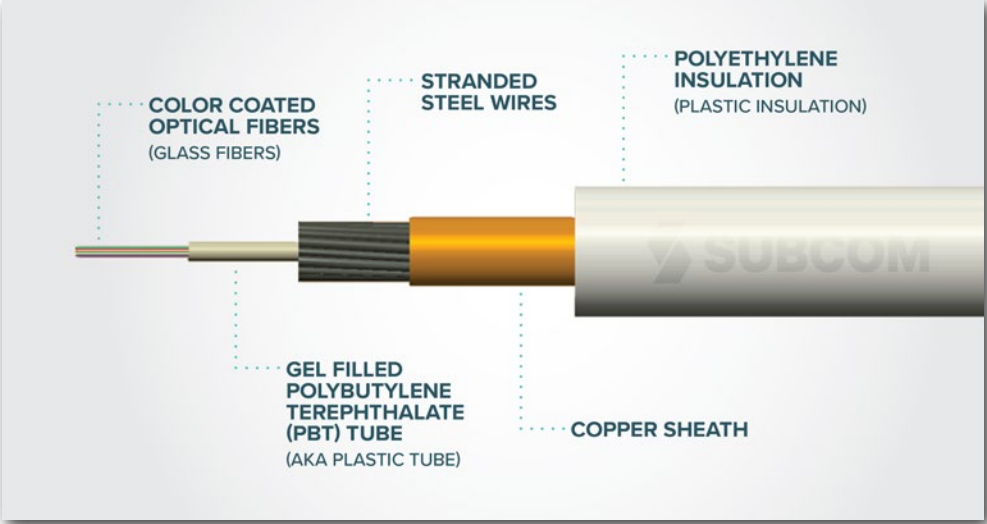
Ships loaded with cable can lay about 125 miles of it a day on the ocean floor. An electronic survey helps determine the cable’s route and water depth and the composition of the seabed, which protects the cable from fishing trawlers and anchors in shallow depths.

A sea plow towed behind a cable ship embeds the cable into the seabed. A remotely operated vehicle comes back to inspect and cover the cable, according to the company.

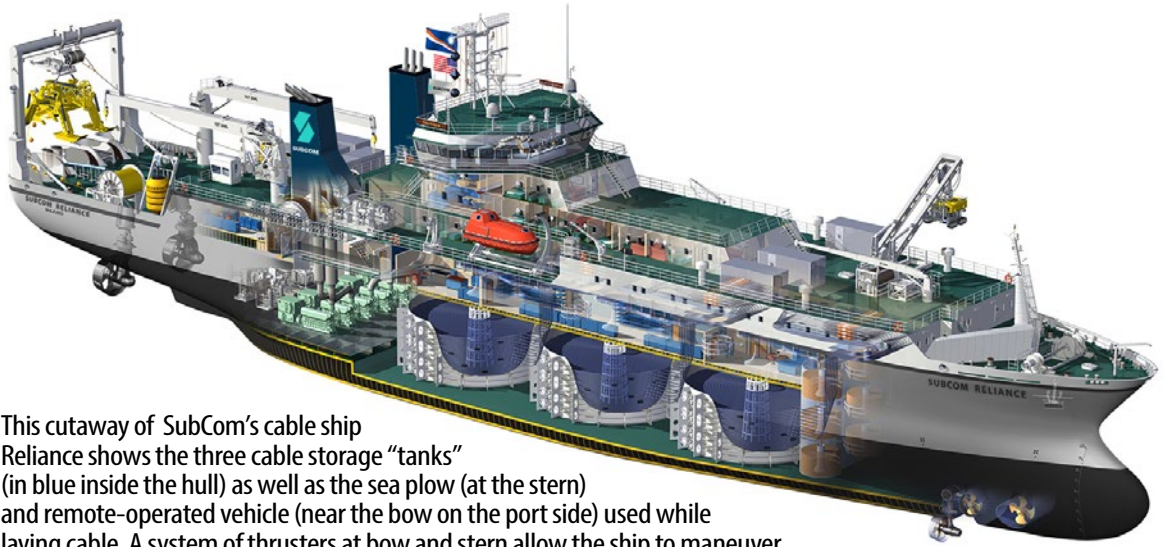
“Very similar to the way a field is furrowed or plowed, there is a



SubCom’s facility on the Piscataqua River in Newington has been manufacturing undersea cable for decades, originally as Simplex Wire and Cable.



Fine glass fibers in the core of SubCom’s subsea cable do the work of carrying data between continents.



This cutaway of SubCom’s cable ship Reliance shows the three cable storage “tanks” (in blue inside the hull) as well as the sea plow (at the stern) and remote-operated vehicle (near the bow on the port side) used while laying cable. A system of thrusters at bow and stern allow the ship to maneuver precisely and maintain position during cable operations.

blade on that plow that drives on the bottom of the ocean,” Suydam said. “The cable runs through the trench that it creates and then it just naturally folds back over and buries the cable as it goes along.”

The cable typically lies under water a mile deep, but depths can be up to 5.6 miles in places.

Boosting the signal

The cables need help to carry the high-speed data across thousands of miles.

In a second building half the size of the cable-making plant, other workers assemble “repeaters” that protect electronics.

“This takes the optical signal and it will strengthen it and amplify it to get across the ocean,” Suydam said.

“If you take a flashlight, the light can only go so far. That’s kind of what you’re doing with the fibers. You’re injecting light into that fiber. It’s going to fade over time, so those amplifiers in those repeaters take that signal, give it enough strength to get to that next repeater, which does the same thing.

“It just does it over and over and over until it gets to the other side of the ocean,” Suydam said.

Hiring workers

In the past three years, SubCom’s workforce has grown by about 200 employees, to around 1,000.

“I don’t think it’s any one particular area that’s grown,” said Dan Sousa, managing director of manufacturing operations. “I

think it’s just a little bit at a time in each area.”

The privately owned company doesn’t disclose figures on sales and profits.

Hiring has been challenging over the past several years, Sousa said.

Finding job candidates has become easier in the past six months, according to the company.

Much of the company’s management team graduated from the nearby University of New Hampshire.

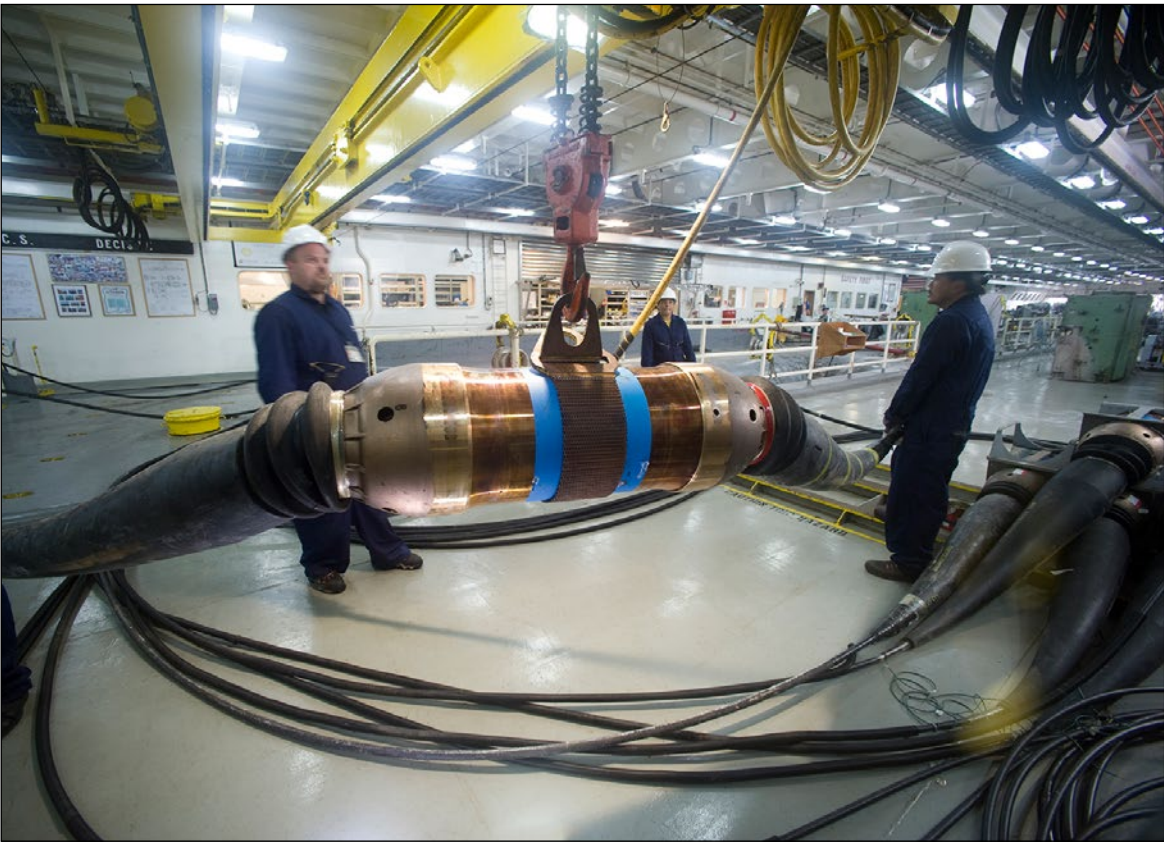
Last October, the New Hampshire Department of Military Affairs and Veterans Services, along with New Hampshire Employment Security, recognized SubCom as a gold New Hampshire veteran-friendly business.

Many jobs there rely on efficiency, security and quick decision-making, skills that many veterans possess and make them appealing to hire, according to the company.

The company’s increased hiring can be traced to more business.

“The internet is really the hard driver of all of this, video streaming, data transfer between financial institutions, just a huge amount of traffic,” Suydam said.

mcousineau@unionleader.com



Repeaters like this are used at intervals to strengthen the signals being passed through the fiber optic cable.



Inside one of the cable storage “tanks” aboard a SubCom ship.



The sea plow, here ready to be launched from the ship, is used to dig a trench and bury cable in the ocean floor. An ROV then inspects and, if needed, completes burial.

