

ISSUE

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Subsea cable tested with positive results

While production continues on both subsea cables, testing of the first cable was completed successfully with positive results for the manufacturer, Nexans, and Emera NL. Recently conducted at Nexans' cable manufacturing facility in Futtsu, Japan, the 67 kilometres of completed cable met all performance indicators.

Testing included cable dissection to inspect its numerous layers. Following this, the cable also passed a variety of physical and electrical tests to simulate the effects of electrical loading and unloading it is expected to experience during its 50 year life span.

Nexans is the Maritime Link Project's contractor responsible for the design, manufacturing and installation of the two submarine cables that will span the Cabot Strait. Because of the large volume of cable required for the Project, manufacturing of the second cable is taking place at another Nexans facility in Halden, Norway.



Emera NL and Nexans representatives stand on a turntable of subsea cable at the manufacturing facility in Japan.



Structural steel work is progressing at the Bottom Brook, NL, and Woodbine, NS, sites.

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Grounding line complete

Converter buildings & HVac switchyard going up

Significant progress continues with construction of the steel components for the converter stations and nearby steel gantry towers as part of the HVac switchyard. Steel installation commenced at Cape Breton's Woodbine converter site on July 5, and just three days later similar work began on the island of Newfoundland at Bottom Brook.

The Project will have two converter stations in total, with construction led by ABB. At Bottom Brook, the converter station will transform HVac electricity to HVdc to ensure the most efficient transmission across the Cabot Strait. The Woodbine station will return the power to HVac for use by

Nova Scotia customers.

ABB and its subcontractors are building momentum on both sites with heavy construction activities while demonstrating excellent coordination and a continued focus on safety.

The Emera NL team and its contractors continue their work on these converter station buildings in both provinces, which will house the converter station components. Once completed, the converter stations in each province will be similar in size to a multi-storey warehouse: 15 metres high at peak and about 3,600 square meters.

Keep safe near construction activities

As construction remains active along the Maritime Link Project route as we head into 2017, Emera NL advises members of the public, including hikers, anglers, and hunters to familiarize themselves with right-of-way routes in NL and NS and exercise caution when traveling in these areas. Appropriate safety signs are posted and security measures are in place at all Maritime Link construction sites.

For your safety and the safety of our workers, we ask you to respect the following:

- No hunting or discharging of firearms near construction zones;
- Always be aware of your surroundings and look out for workers and equipment;
- Pay attention to road signage and reduce speed where required;
- Make yourself visible to all workers and respect all posted signage; and
- Use caution when operating an ATV or hiking near construction sites.

As always, safety is Emera NL's number one priority and we believe all injuries are preventable.



Workers with the Maritime Link Project assembling steel towers along the HVdc route in Nova Scotia.

Project ready to install subsea cables in 2017

On August 17, 2016, the Maritime Link Project's horizontal directional drilling (HDD) team completed the final borehole at Point Aconi, NS. With the completion of four boreholes, two at Point Aconi and two at Cape Ray, NL, these cable landing sites are ready for installation of two 170 km subsea cables across the Cabot Strait next year.

"Considering this challenging task, we couldn't be more pleased that the drilling team has completed this work so effectively. Another on-time and on-budget success for the whole Project team," says Rick Janega, President and CEO with Emera NL.

HDD is a steerable underground drilling method to install underground pipes and casings without having to trench. This method ensures minimal impact, preventing disturbance to shorelines and sensitive intertidal areas. Upon completion, a messenger wire was installed to assist with the cable pull-through next summer; the boreholes are now capped until that time.

The HDD program included transporting the drill rig to both provinces by barge, mobilizing the rig on each site, drilling boreholes and installing casing. On the island of Newfoundland, each borehole measures about 635 m. On the Nova Scotia side, each spans about 1,135 m. This work was completed on budget and two days ahead of schedule.



The drill rig used to create boreholes at the Maritime Link Project's landfall sites in NS and NL.

Newfoundland construction update

GRANITE CANAL SWITCHYARD

ABB began work at the Granite Canal site in July 2016 installing foundations and other infrastructure for the switchyard. This work is expected to be completed this fall.

The next phase of ABB's work will involve placing steel and hardware for the switchyard.

HVAC LINE – GRANITE CANAL TO BOTTOM BROOK

Emera NL's contractor PowerTel continues construction of the HVac line this fall, working from both ends of the line - Granite Canal and Bottom Brook - to meet in the middle. Currently, crews are focused on pole setting, which is over halfway complete. This includes framing wooden structures and stringing line using helicopters. PowerTel will continue working on the HVac line through the winter months and is expected to complete its work in the spring of 2017.



PowerTel installing jumpers along the HVac line in NL.

BOTTOM BROOK

Over the past year, ABB has been installing concrete foundations and other civil works at Bottom Brook. The installation of pre-cast foundations was recently completed. Erection of the steel converter building began over the summer and it is expected to be enclosed by the fall of 2016. ABB's subcontractor will soon begin installation of the electrical equipment and associated structural steel. JSM Electrical, subcontractor for ABB, finished installing all gantry towers and bridges/girders inside the switchyard in August.

GROUNDING LINE – BOTTOM BROOK TO INDIAN HEAD

Contractor PowerTel's construction on the grounding line from Bottom Brook to Indian Head is expected to be substantially complete in the fall of 2016. It will connect to the electrical grounding site once work is completed at Indian Head.

INDIAN HEAD

With the rock breakwater and all in-water work now complete at the Indian Head grounding site, contractor GJ

Cahill will install the final electrical components to finish the grounding site during Q4 of 2016. This work involves electrical-related work such as installing filter, grounding rods and other associated infrastructure. Once this work is complete, the grounding line and the grounding site will be linked together to complete the HVdc grounding system in NL.

HVDC LINE – BOTTOM BROOK TO CAPE RAY

HVdc transmission line contractor EUS-Rokstad, a joint venture of Rokstad Power and Emera Utility Services, mobilized on the island of Newfoundland this past summer. Work will continue through the winter on all three segments of the HVdc transmission line that runs between Bottom Brook and Cape Ray, NL.

Work continues to involve tower assembly and foundation installation for the steel HVdc structures, which include both guyed and self-supporting towers. As foundations are installed and towers are assembled, they will be installed by cranes or helicopters as required in areas of challenging slope or terrain along the three segments.



EUS-Rokstad continues to progress with HVdc tower construction, recently completing the first tower in NL.

CAPE RAY

Two HDD boreholes were successfully completed in June 2016 and are now ready for the subsea cable to be installed in mid-2017.

This fall, ABB will begin installation of infrastructure to transition the subsurface cables to overland transmission lines. Starting in October, civil work will occur in preparation for the transition compound. This work includes four to six weeks of foundation work such as excavation, material hauling, form work, concrete pouring, placing pre-cast units, backfill and compaction.

Nova Scotia construction update

POINT ACONI

Two boreholes were successfully completed with HDD in August 2016 and are now ready for the subsea cables to be installed in mid-2017.

ABB has now mobilized to the Point Aconi site. Civil work was completed by Joneljim Concrete Construction in the fall of 2015. ABB has begun installing the infrastructure to transition the subsurface cables to overland transmission lines. This work is expected to be complete before the end of the year. The land cables that will meet the subsea cables at the landfall site in Point Aconi passed a rigorous inspection process. These cables will be shipped from Nexans' facility in Halden, Norway to both provinces before the end of 2016.

BIG LORRAINE

Zutphen Contractors has completed the rock breakwater at the Big Lorraine grounding site. The breakwater will protect the grounding site from wave and swell erosion. Forty grounding wells have been installed to house the electrical grounding elements. Contractor GJ Cahill Ltd. will install these elements along with other electrical equipment to connect the site to the grounding line.



Construction at the grounding site at Big Lorraine, NS, which includes installation of grounding wells.

WOODBINE

A busy construction season saw the installation of many of the concrete foundations for the DC and AC yards. ABB is also installing grounding systems and conduit for electrical cables. ABB's subcontractor mobilized in late September to begin installation of the electrical equipment and associated structural steel.

The auto transformer needed for the substation expansion and two DC transformers have been positioned on-site. Each transformer was delivered on a separate shipment to the port in Sydney. They were transported to Woodbine by ABB contractor Deugro, specializing in oversized cargo.

Construction of the three-storey converter building continues with the structure's roof now complete. As the building becomes fully enclosed over the coming weeks, interior work will ramp up. This includes the

installation of electrical equipment and control systems to convert DC to AC electricity for connection to the Nova Scotia Power grid.



Steel installation progresses for the converter station at Woodbine site.

GROUNDING LINE - WOODBINE TO BIG LORRAINE

The grounding line between Woodbine and Big Lorraine was completed by PowerTel in late August 2016. This marks the first completed line on the Maritime Link and will connect the Woodbine HVdc converter station to the electrical grounding site at Big Lorraine.

HVDC LINE - WOODBINE TO POINT ACONI

HVdc transmission line contractor EUS-Rokstad continues to advance HVdc transmission line work in Nova Scotia. Throughout the fall and winter, work will continue on steel tower assembly, civil construction work for tower bases and the erection of these transmission towers. These steel towers include both guyed and self-supporting towers.

Woodbine site tour provides update on Project's progress

On September 20, ABB and Emera NL provided a tour of the infrastructure and technologies for the Maritime Link Project in Nova Scotia. Construction of the converter stations and substations in both NS and NL is managed by ABB. This work is on budget and on schedule as part of the Maritime Link's final completion date in late 2017. Hosting events such as this tour is part of Emera NL's ongoing commitment to keep partners informed on the Maritime Link Project.



Emera executives, NS Minister of Transportation and Infrastructure Renewal, and ABB executives participate in a tour of Woodbine Site.

In profile: Verna McDonald, Heavy Equipment Operator on the Project

Emera NL and its contractors are committed to fostering an inclusive and respectful workplace on the Maritime Link Project. An inclusive work environment is more than ensuring there are opportunities for those who historically haven't been welcomed into this type of industry – it's ensuring that once the workforce is diverse, everyone feels welcomed, valued, and included.

Verna McDonald, a Heavy Equipment Operator with Maritime Link contractor Marine Contractors Inc. says that her experience working on the Maritime Link was empowering. "To be a woman coming into this industry can be scary, but my supervisors were very equal in giving us all opportunities to work on machines - the same opportunities as male workers," McDonald explains.

Emera NL's Diversity Plan acknowledges that historically, employment opportunities within the construction industry were less accessible for some groups. Four traditionally under-

represented groups identified in the plan include: women, Aboriginal Persons, persons with disabilities and visible minorities. Ensuring that individuals, such as Verna, gain the experience required to excel in their field is part of Emera NL's diversity strategy.

Verna noted that diversity on the team has grown since she began three years ago, having worked alongside people from all over the world. She also takes pride in being a part of bringing "nothing to something", explaining that the site was only mud and bog when she began working at Bottom Brook, NL. Now that site preparation is complete and work is well underway with the converter station and switchyard construction, the site is starting to take shape.

The experience gained while working on the Project is something Verna feels will positively impact her career: "It's going to open a lot of doors for me when this Project is done."

She proudly noted that she has now worked with four different machines including the excavator, loader, tandem, and the big 740 rock truck. "When I talk about what I do for a living and say I drive a 740 rock truck, people say 'wow, you don't look like the type'."

She is quick to add that not only does she drive big trucks, "I love it."



Verna McDonald driving a rock truck at Bottom Brook site in Newfoundland.

Nova Scotia grounding line complete



Powerline Technicians work to complete the NS Grounding Line for the Maritime Link Project.

On August 24, the Maritime Link Project achieved another significant milestone with the completion of the Nova Scotia grounding line between Woodbine and Big Lorraine. Completed by transmission line contractor PowerTel, 697 wooden poles were installed and overhead grounding lines were strung over approximately 41 km. This marks the first section of completed transmission infrastructure for the Maritime Link Project and demonstrates the significant progress that has been made to date.

PowerTel continues on the grounding line on the island of Newfoundland between Bottom Brook and Indian Head. With completion expected this fall, the line includes 399 poles, with overhead

grounding lines strung over approximately 23 km. Much of the grounding line has been installed along existing utility and highway right-of-ways. This minimizes the environmental footprint of the Project.

The grounding lines for the Maritime Link are the pathways to the grounding sites at Indian Head, NL and Big Lorraine, NS. Located on the ocean shoreline based on technical specifications, each site was selected in consultation with the local communities, including local fish harvesters.

The grounding lines will be at-the-ready to connect to the converter stations in each province, creating electrical grounding once the Maritime Link is operational in late 2017.

Contact us

1-855-722-3373
info_MaritimeLink@emera.com
www.EmeraNL.com

Office locations

Newfoundland and Labrador
St. John's: 9 Austin Street
St. John's: 9 Austin Street
Stephenville: 13 Tennessee Drive

Nova Scotia
Halifax: 1223 Lower Water Street
Sydney: 99 Terminal Road