
Nova Scotia Utility and Review Board

IN THE MATTER OF

*The Maritime Link Act, S.N.S 2012 c.9
and the
Maritime Link Cost Recovery Process Regulation, N.S. Reg. 189/2012*

NSPML Quarterly Report Q3 2017

October 16, 2017

Table of Contents

1.0 Introduction..... 3

2.0 Update of Project Schedule with Variance Explanation..... 4

 2.1 Gates and Milestones 4

 2.2 Safety..... 4

 2.3 Commercial Activities..... 6

 2.3.1 Land Access Agreements..... 10

 2.3.2 Funding 10

 2.3.3 Joint Development Agreements 10

 2.4 Engineering Activities..... 11

 2.5 Submarine Cables (Marine) 14

 2.6 Converters and Substations 16

 2.7 Construction Contractor(s) – Transmission Lines 17

 2.8 Granite Canal Accommodations Operations..... 19

 2.9 Grounding Sites..... 19

 2.10 Independent Engineer..... 19

 2.11 Status of Nalcor Project and Muskrat Falls..... 19

3.0 Updated Cost Summary 21

4.0 Cost Flow 23

1 **1.0 INTRODUCTION**

2

3 This is the Q3 2017 Quarterly Report for the Maritime Link as directed by the Utility
4 and Review Board (UARB) where the UARB ordered in its Supplemental Decision:

5

6 [115]....detailed reports must be filed by NSPML on a semi-
7 annual basis, on June 15 and December 15 each year. The reports
8 shall commence December 15, 2013. Updated status reports must
9 be filed quarterly.

10

11 As per the UARB's order in its Decision regarding the Maritime Link
12 Interim Cost Assessment (M07718), this Report now includes detail
13 regarding the status of the construction of Nalcor's assets.

14

15 This Decision also requested that the quarterly reports include an accounting of all
16 transactions related to this project, cash flow analysis, and a separate section
17 describing and quantifying the financial and other benefits realized for ratepayers from
18 the Maritime Link prior to delivery of the NS Block and Nalcor Market- priced
19 Energy. NSPML will report on these matters when the Maritime Link is in service in
20 2018.

1 **2.0 UPDATE OF PROJECT SCHEDULE WITH VARIANCE EXPLANATION**

2
3 As per Enerco U-31, sections 1.1, 1.2, and 1.3, this section provides an update on the
4 project schedule, along with a variance explanation and general status updates.

5
6 Please refer to Attachment 1 for the Level 1 Project Schedule.

7
8 Nalcor's schedule for the transmission assets remains mid-2018 and the completion of
9 Muskrat Falls is forecast for late 2019 to mid-2020. NSPML will also provide future
10 updates as Nalcor advances toward completion of the Muskrat Falls project.

11
12 **2.1 Gates and Milestones**

13
14 The Project remains scheduled for energization in November of this year and for
15 commissioning by the end of Q4 2017. The Maritime Link is expected to be in-
16 service by January 1, 2018. NSPML is now preparing for Decision Gate 4, at which
17 point the Maritime Link will be turned over to Operations.

18
19 **2.2 Safety**

20
21 The project review of high risk activities for any remaining field activities by
22 contractors continues to be followed.

23
24 Marine safety reviews were completed for all aspects of the marine program, which
25 was completed at the end of August without any safety incidents.

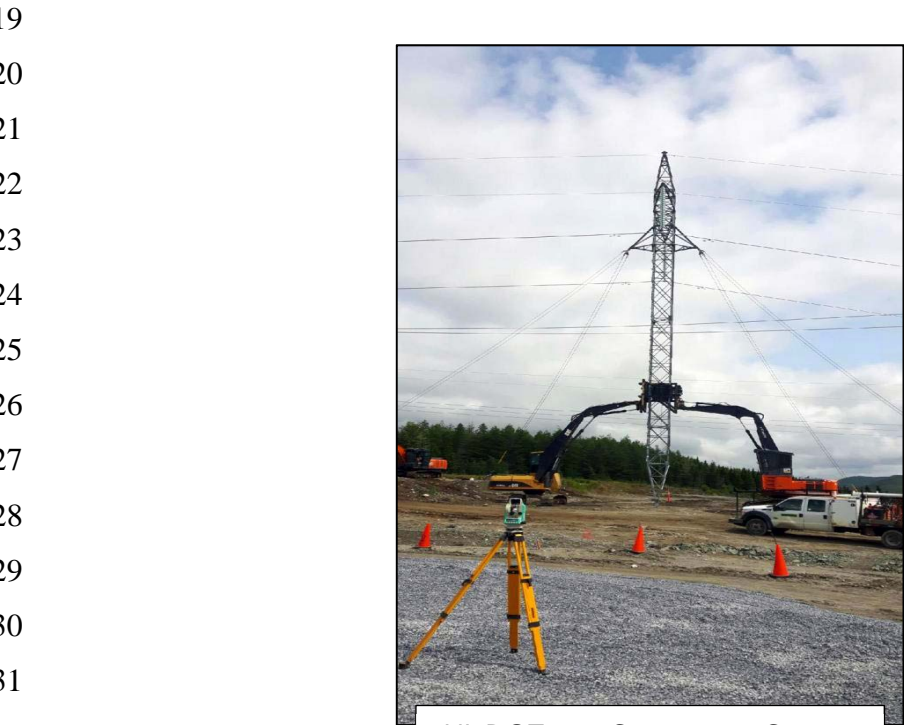
26
27 Safety reviews were conducted prior to the installation of the equipment for the
28 substations, converter building and yards, and other sites. Specific focus was on the
29 Lock-Out, Tag-Out and Permit-to-Work procedures during the utility power outages
30 and energization of HVac equipment at Bottom Brook, Granite Canal, and Woodbine
31 as well as the Newfoundland and Labrador HVac Transmission line. Safety

1 preparations are underway in advance of subsystem testing and final testing of the
2 HVdc systems in Q4.

3
4 As reported previously, a grouted anchor issue and a fallen tower on June 11, 2017
5 resulted in a Newfoundland and Labrador Occupational Health & Safety (OH&S)
6 stop work order being issued for tower erections. The team worked with OH&S to
7 design and implement a plan to enable work to resume safely. Anchor investigations
8 began in August and continued into October for the remaining locations. Additional
9 inspection and repair resources have been deployed directly by NSPML to manage
10 and execute anchor inspection and repair at the lowest cost overall and allow the
11 Transmission Line Contractor resources to focus on the balance of work.

12
13 The safety of the public and the workers continues to be Emera Newfoundland and
14 Labrador’s first priority, and NSPML remains committed to a culture on the work
15 sites that promotes world class safety behaviours.

16
17 To facilitate tower inspection, specially designed equipment has been implemented to
18 allow safe tower inspections and repairs to be undertaken.



NL DC Tower Securement System

2.3 Commercial Activities

The key major procurement activities are presented in Table 1 with an update of the status for each initiative.

Table 1

Commercial Activity	Status in June 2017	Initiative Number	Status in October 2017
HVdc Submarine Cable Supply and Installation	The Contract was awarded to Nexans in January 2014.	E11-18	Substantial Completion occurred in September and Final Completion is expected before year end.
Converter stations, switchyards and related structures (“converters and structures”)	The Contract was awarded to ABB Inc. in June 2014.	E12-74	No Change
Right of Way Clearing along Transmission Lines	Contracts were awarded to Majors Logging Limited in NL and to R. MacLean Forestry in NS in February 2014. E13-88 is closed.	E13-88	Closed
Transmission Structures and Grillages	The Contract was awarded to Kalpataru Power Transmission Ltd. in September 2014 for design and delivery of Structures and Grillages.	E13-85	No Change
Site Preparation Services (Includes	The Contract was awarded to JoneJim Concrete Construction	E13-92	Closed

Commercial Activity	Status in June 2017	Initiative Number	Status in October 2017
construction of access road upgrades)	<p>(1994) Ltd. for NS Site Preparation Services in September 2014.</p> <p>The Contracts were awarded to Marine Contractors Inc., MCI Limited Partnership for NL Site Preparation Services in September 2014.</p> <p>Contract closeouts were in progress.</p>		Closed
Transmission Line Construction	<p>E13-95 contract has been terminated.</p> <p>This contract has been replaced with E16-284 and E16-269 as reported in the previous report.</p>	E13-95	No Change
Transmission Line Construction – NL AC Line	The contract with PowerTel was re-assigned to NSPML for the completion of the two Grounding Lines and the HVac Line.	E16-284	Substantial Completion achieved
Transmission Line Construction - NL and NS HVdc Lines	The contract for the construction of the HVdc Transmission Lines was awarded to a joint venture of Emera Utility Services and Rokstad Power Corporation (ERJV).	E16-269	No Change

Commercial Activity	Status in June 2017	Initiative Number	Status in October 2017
Transmission Line Conductors	<p>The Contract for the supply of conductors was awarded to Midal Cables in March 2015. Contract close-out was in progress.</p> <p>The contract for the supply of OPGW was awarded to Composite Power Group Inc. in June 2015. This is also within the scope of the E13-87 initiative. Contract close-out was in progress.</p>	E13-87	<p>The contract close-out remains in progress</p> <p>The contract close-out remains in progress</p>
Horizontal Directional Drill (HDD) Construction Program	<p>Contract awarded to Directional Horizontal Drilling (DHD) in January 2016.</p> <p>E13-157 was divided into two contracts.</p> <p>E13-157 A was awarded to Schlumberger in March 2016 for the supply of HDD fluids. E13-157B was awarded to Baker Hughes in April 2016 for the Supply of directional drilling services, drill bits and other materials. This contract has been closed.</p>	<p>E13-156</p> <p>E13-157</p>	<p>Closed</p> <p>Closed</p>

Commercial Activity	Status in June 2017	Initiative Number	Status in October 2017
	<p>E13-158 for marine intervention services was awarded in April 2016 to DOF Marine. This contract has been closed.</p> <p>The supply of the HDD casing (E15-238) was awarded to East Coast Tubulars Limited in October 2015. This contract has been closed.</p> <p>The closeout of all HDD construction contracts were in progress. This contract has been closed.</p>	<p>E13-158</p> <p>E15-238</p>	<p>Closed</p> <p>Closed</p>
Accommodations Operations	The contract for the accommodations operations services was awarded to East Coast Catering in April 2015.	E13-89	<p>The contract was extended to the end of August 2017.</p> <p>Contract closeout is in progress.</p>

1 **2.3.1 Land Access Agreements**

2

3 In NS, all UARB expropriation hearings have been successfully resolved through
4 negotiated agreements. In Newfoundland and Labrador, there continues to be only
5 three outstanding disputed expropriations. The process for hearing expropriation
6 disputes rests with an arbitration panel established by the Newfoundland and Labrador
7 Government, and NSPML has worked with the Chair of the panel and the
8 Newfoundland and Labrador Government for process and rules to enable hearings in
9 Newfoundland and Labrador. NSPML has also filed applications for dormant
10 expropriated parcels in Newfoundland and Labrador; these applications will be
11 uncontested. Similar to Nova Scotia, these applications are about fair compensation
12 valuation; land control has been obtained for the expropriated parcels.

13

14 **2.3.2 Funding**

15

16 As in prior months, Funding and Drawdown Requests containing comprehensive
17 details of costs for the upcoming month were submitted to the Collateral Agent and
18 Government of Canada as necessary, and all requested funds were received on
19 schedule. Please refer to Attachment 2 for the Independent Engineer (IE) Draw
20 Confirmation Certificates for the period. The IE Certificates allow for Project costs to
21 be paid from the proceeds of the ML Construction Loan under the payment terms of
22 the Material Project Documents and the ML Credit Agreement.

23

24 **2.3.3 Joint Development Agreements**

25

26 NSPML continues to work with Nalcor and NS Power to finalize the remaining
27 operational agreements arising from the Formal Agreements with Nalcor. Please refer
28 to Attachment 3 for details on the status of these Agreements.

1 **2.4 Engineering Activities**

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Commissioning of the Maritime Link continues to align with the completion target date of Q4 2017. Engineering is captured in three main categories across several Work Breakdown Structures (“WBS’s”):

- HVdc Submarine Cable Supply and Installation - NSPML installation engineers were aboard the vessel Skagerrak during the laying of the first cable in April and May 2017, and the laying of the second cable in June/July 2017. Engineering was also aboard the Polar King and Rock Piper, overseeing the cable protection activities including trenching and rock placement. Engineering supported the land work activities at Point Aconi and Cape Ray with regards to installation of land cables and transition compounds where the cables will connect to the overhead transmission lines. With all installation work now completed, the remaining engineering work is focused on completion of final documentation as the contract comes to a close in Q4 2017.
- HVdc Converters and Substations - Engineering is included in the contract awarded to ABB for the supply and installation of these assets. With construction activities close to completion, engineering is focused on site-related changes resulting from interfaces with existing equipment, and final protection and control as current systems during commissioning. Engineering has supported the implementation work during the HVac power outages and energization of the equipment at the three substations. The remaining priorities include the completion of the main circuit studies and the Plant Circuit Diagrams (PCD), and test plan documentation in advance of HVdc subsystem testing and final energization and system testing in Q4, 2017.

- 1 • Overland Transmission - designs for the transmission and grounding lines are
2 complete and in-field modifications resulting from the contractor related as-found
3 geotechnical conditions at each structure are ongoing.
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Auto Transformer at Woodbine – energized in August

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Bottom Brook HVdc Substation: mechanically complete



Valve installation at Woodbine, NS

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Cape Ray Transition Site

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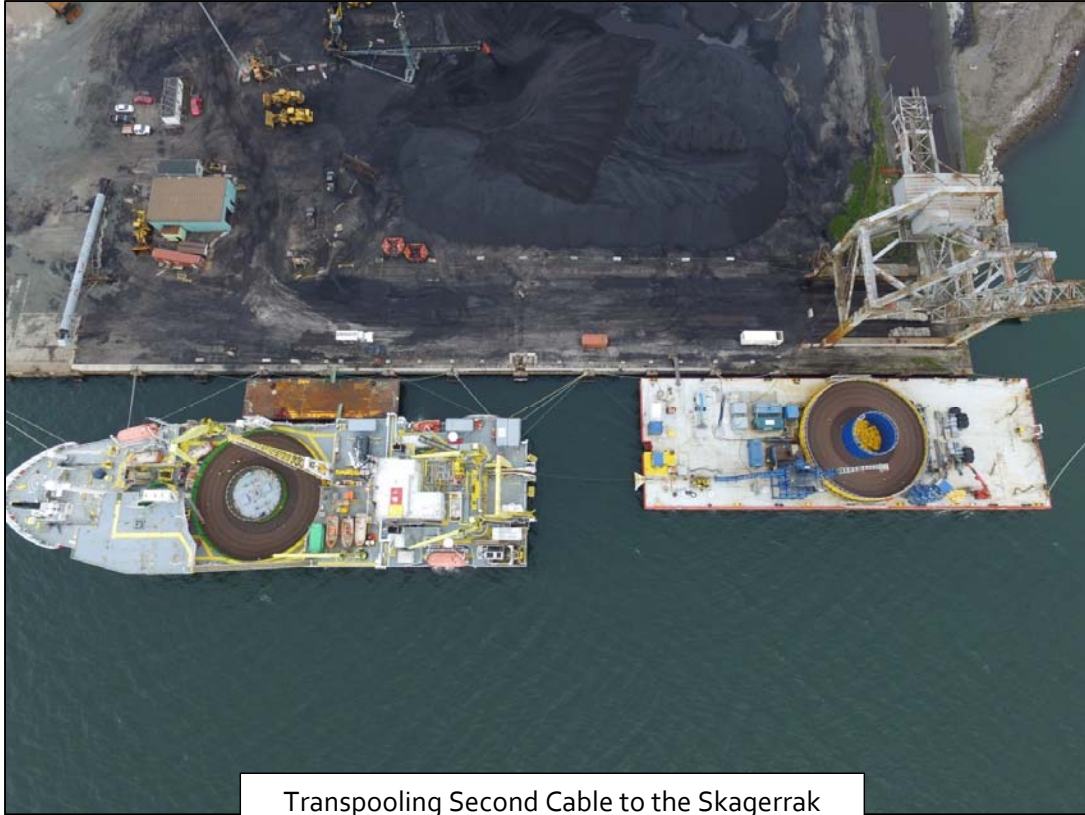
Converter Substation at Woodbine, NS

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2.5 Submarine Cables (Marine)

All trenching and surveys have been completed for both cables. Following the surveys, an issue was discovered on one of the cables where the minimum bend radius (MBR) criterion was exceeded. This required a section of the cable to be replaced near Point Aconi. The repair was successfully completed along with the pull- in at the HDD site at Point Aconi. There was no impact to the critical path of the schedule.

In July and August, the rock protection program was carried out with 144,000 tons of rock placed over the cables according to engineering specifications. This was the final marine activity for the contract.



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Installations of the land cables connecting the subsea cables to the transition sites were completed in May and June 2017 and were terminated in July and August 2017. An issue with one cable was discovered which required a temporary repair prior to termination. Alternatives for a permanent repair are under consideration and the repair is currently scheduled to be completed in Q4, 2017.

Cable testing had been completed at the end of each marine activity and final testing has also been completed successfully.

The post termination tests from the Transition Site in Cape Ray to Point Aconi were successfully completed in late August. This was the conclusion of the marine scope of work.



Point Aconi - West Transition Joint Pit, Land Cable Route to Transition Structure

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2.6 Converters and Substations

ABB reports overall progress project to date of 97.1 percent against a target of 98.8 percent at the end of August. ABB and NSPML continued to review and optimize schedule details for installation, subsystem testing and final system testing before Substantial Completion. As previously reported, ABB indicated it may require an additional 45 days or more to achieve Substantial Completion past the October 1, 2017 contract date. NSPML and ABB have implemented a number of mitigation activities. With these efforts NSPML’s forecast is to achieve commissioning by December 31, 2017.

At Bottom Brook, work at the HVdc converter building progressed to 99 percent complete at the end of the period. Focus is on the pulling and terminations of cables to the HVdc control panels in the building which is now 65 percent complete. ABB have mobilized additional specialists to site to provide technical support for Substation Installation and Pre-Commissioning as part of their schedule mitigation. Progress was achieved for the AC substations with energization occurring from June to September. This concluded the primary HVac scope of work at Bottom Brook.

At Woodbine, Nova Scotia, work at the HVdc converter building was 99 percent complete at the end of August. The current focus is on the pulling and terminations of cables to the HVdc control panels in the building which are 76 percent complete. The HVac substations progressed with the energization of equipment occurring from July through to early October, the Woodbine HVac substation is substantially in-service with some line re-terminations remaining.

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At Granite Canal, civil works, substation installation and pre-commissioning were completed in the period. The new station and shunt reactor were energized during August. Other work was completed in the period to close out punch list items and demobilize.

At the Cape Ray transition compound, work on the control building continued through the month. Installation of cabinets and cable pulls progressed in the period. The exterior light fixtures were installed and glanding of the cabling is in progress. All installation work is scheduled to be completed in October.

At the Point Aconi transition compound, the majority of the outdoor work has been completed with the focus on the completion of building services and preparation of completion of cabling for HVdc equipment and controls. Similar to Cape Ray, this site is scheduled to be completed in October.

2.7 Construction Contractors – Transmission Lines

The status of the transmission lines construction activities at the end of the period is detailed in Table 2.

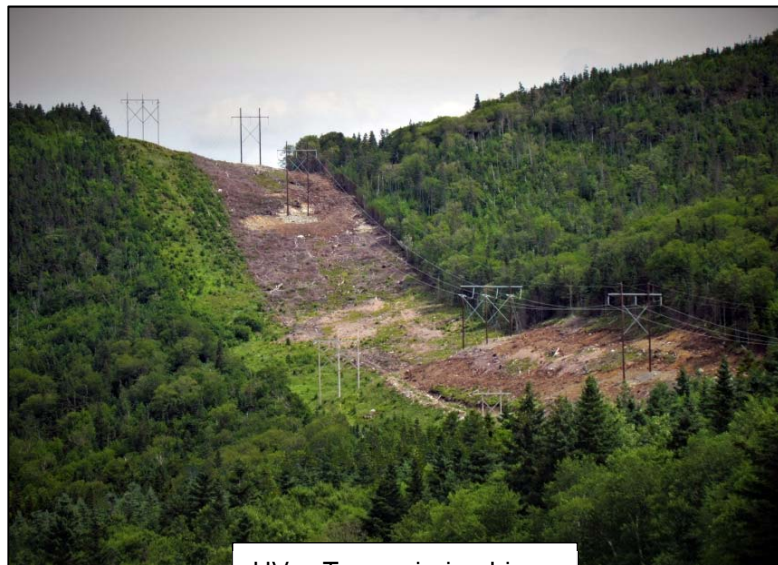
Four of the five transmission lines are complete with minor punch list items remaining and the NL AC now in-service.

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Table 2

Transmission Line	Completion Target	Status
NL Grounding Line	September 2016	Complete.
NL HVdc Transmission Line	November 2017	This line was approximately 65 percent complete when the Stop Work Order was issued in June. The anchor inspection and repair program began in August. More recently Rokstad recommenced the remaining tower erections and stringing activities.
NL HVac Transmission Line	June 2017	Complete and in-service.
NS Grounding Line	September 2016	Complete.
NS DC Transmission Line	June 2017	Complete.

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4
5



HVac Transmission Line

1 **2.8 Granite Canal Accommodations Operations**

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3 This camp was closed at the end of August and deconstruction and disposal of assets
4 are set to commence in Q4, after the procurement of services is complete.

5

6 **2.9 Grounding Sites**

7

8 The grounding sites at Indian Head, Newfoundland and Labrador and Big Lorraine,
9 Nova Scotia have been completed.

10

11 **2.10 Independent Engineer**

12

13 The Independent Engineer (IE) team has completed several site visits and project
14 inspections, at various stages in each province. As well, IE team members have
15 witnessed the progress at each major manufacturing facility for cables, converters and
16 transformers on multiple occasions at key stages of manufacturing. The IE completes
17 confidential reports for Canada and provides a briefing to NSPML for each inspection.
18 In September, the IE completed site visits to Woodbine in Nova Scotia and to Bottom
19 Brook and the HVdc Transmission line in Newfoundland and Labrador. Once
20 received, this IE Report will be provided in a forthcoming Quarterly Report. The IE
21 Report from the factory visit to the Nexans manufacturing facility in Futtsu Japan, in
22 January 2017, is attached as Attachment 4.

23

24 **2.11 Status of Nalcor Project and Muskrat Falls**

25

26 Nalcor's schedule remains unchanged from the timelines announced on June 24, 2016.

27

28 The projected in-service date for Labrador-Island Link (LIL) continues to be Q2 2018,
29 a one-year delay from the date forecasted at project sanction. The projected date for
30 first power for Muskrat Falls Generation (MF) continues to be Q3 2019, with full
31 power projected for Q2 2020, a two-year delay from the date forecasted at project
32 sanction. The Nova Scotia block of energy from MF is required to be delivered no

1 later than commissioning of the 3rd of 4 generation units, scheduled between Q3 2019
2 and Q2 2020; unchanged since the last update.

3
4 The latest report from Nalcor, published on August 16, 2017 indicates the following
5 progress as of June 2017:

6
7 Overall construction progress of all components of the Muskrat Falls Project at the end
8 of June 2017 was 78 percent. The Muskrat Falls generation project reached 69 percent
9 complete, with the Labrador-Island Transmission Link progress at 84 percent
10 complete, the transmission line connecting Churchill Falls to Muskrat Falls at 96
11 percent complete, and the transmission line in Labrador between Muskrat Falls and
12 Forteau at 100 percent complete.

13
14 For the Muskrat Falls Hydroelectric Generating Facility, key recent activities include:

- 15
- 16 • Targets for concrete placement for the powerhouse and intake continue to be
17 exceeded, with 76 percent of concrete placed.
 - 18 • Continuation of installation of structural steel in the South Service Bay, tailrace
19 and powerhouse Units 1 and 2.
 - 20 • Commencement of foundation preparation activities and placement of levelling
21 concrete at the North Dam.
 - 22 • Continuation of foundation preparation and placement of fill material at the South
23 Dam.
 - 24 • Commencement of hydro-seeding of the North Spur, work is now 98 percent
25 complete.
- 26

27 Nalcor indicate that progress of concrete placement at Muskrat Falls has exceeded
28 targets in several of the recent months, and that it expects construction on the
29 Labrador-Island-Link (LIL) transmission line will be complete this year.

3.0 UPDATED COST SUMMARY

As per Enerco U-31, section 2.1, the detail below outlines the DG3 forecasted costs.

Table 3 below provides an updated cost summary for the Maritime Link, which includes actual costs incurred as of June 30, 2017 and forecasted costs for the remainder of the Project's construction phase.

NSPML continues to track and report all costs, actual and forecast (2011-2017), consistent with the methodologies used in the cost forecast represented in the ML Project Application. Project costs include fully allocated costs for the entire Project Management Team, including contractors, employees, executives dedicated to the project, and NS Power seconded employees at affiliate mark-up rates according to the Affiliate Code of Conduct. All costs provided are in Canadian dollars.

Actual AFUDC is being tracked and recorded monthly. AFUDC remains within the \$230 million amount estimated at the time of filing of NSPML's Application.

Table 3

(000's of Canadian Dollars)	Actual Costs						Total Project to Date	Q3 2017	Q4 2017	Total Project Estimate at Completion
	2011-2013	2014	2015	2016	Q1 2017	Q2 2017				
Emera NL Project Management Costs	44,379	42,315	24,599	25,639	8,446	8,222	153,599	7,207	15,908	176,713
Nalcor Project Support Costs	-	15,232	425	438	15	128	16,238	152	73	16,464
Construction and Engineering Initiatives	14,975	167,980	259,750	403,871	128,726	150,318	1,125,620	69,948	80,557	1,276,125
Environmental Approval	2,651	4,378	1,082	1,623	450	3,335	13,518	3,365	4,496	21,379
Submarine and related	3,359	83,797	74,439	54,213	31,643	47,554	295,006	19,270	20,026	334,302
Converters, structures, and other ancillary equipment	1,517	48,747	106,195	227,643	49,566	31,725	465,392	37,972	36,791	540,156
AC and DC Transmission	7,448	31,057	78,035	120,392	47,067	67,704	351,703	9,342	19,244	380,289
Total	59,354	225,527	284,774	429,948	137,187	158,667	1,295,457	77,308	96,537	1,469,302
Escalation									32,454	32,454
Contingency								15,393	60,205	75,598
Grand Total	59,354	225,527	284,774	429,948	137,187	158,667	1,295,457	92,701	189,196	1,577,354

1 **Total Actual Project Costs at end of Q2, 2017 Compared to Previous Forecast**

2
3 The total actual project costs for Q2 2017 were \$43.8 million less than the costs for the
4 same period forecasted in the NSPML Quarterly Report of June 16, 2017. The
5 explanations of the variances are as follows:

- 6
- 7 • ENL Project Management, Nalcor Project Support and Environmental Approval:
8 \$1.3 million lower cost incurrence due to resourcing, administration and timing of
9 activities.

 - 10
11 • Submarine and related: \$0.4 million lower cost incurrence due to schedule
12 activities related to the timing of transportation and installation of the submarine
13 cables.

 - 14
15 • Converters, structures and other ancillary equipment: \$25.9 million lower cost
16 incurrence due to slower progress achieved for civil construction and installation
17 activities for the converter buildings and HVdc yards.

 - 18
19 • AC and DC Transmission: The NSPML Quarterly Report of June 16, 2017
20 forecasted \$67.3 million plus \$16.6 million contingency. The incurred cost was
21 \$16.2 million lower and attributable to slower progress of the Newfoundland and
22 Labrador DC and AC transmission line activities, which included a safety stand-
23 down resulting from a failed anchor and tower on the Newfoundland and Labrador
24 DC line.

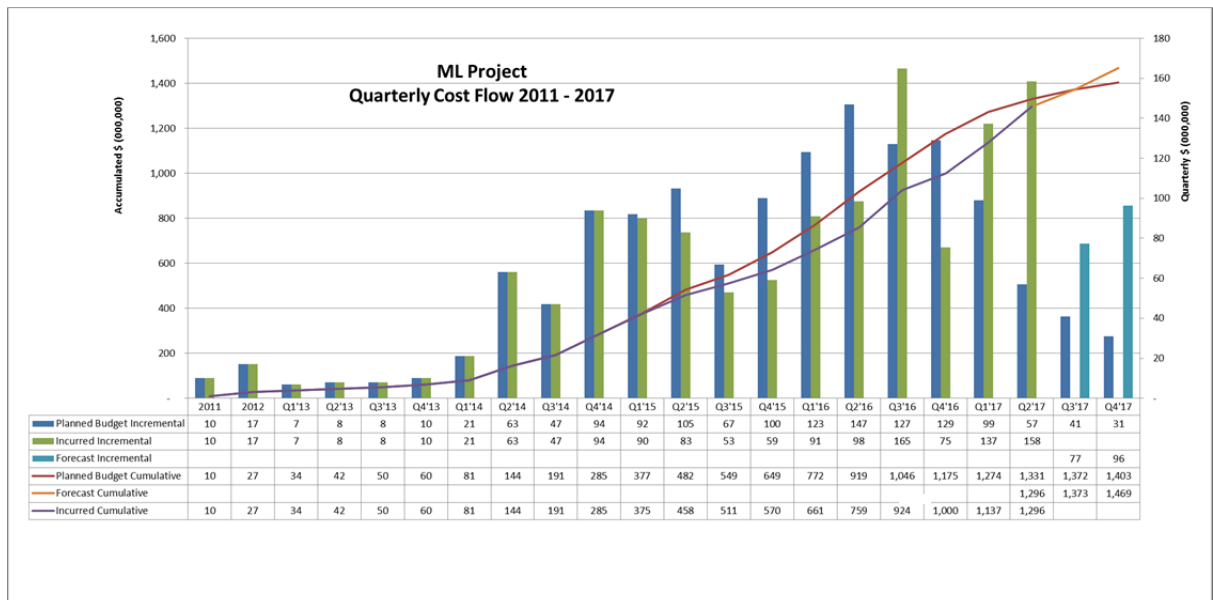
25
26 The variances do not change the forecasted completion date of Q4 2017, and the
27 Project remains within budget.

4.0 COST FLOW

As per Enerco U-31, section 2.2, please refer to Table 4 below for the cost flow until the Maritime Link is commissioned. This cost flow for the base capital spending is now forecast at \$1.469 billion from \$ 1.437 billion and a corresponding decrease in available contingency and escalation forecasted for the remainder of the project. The total of the base capital spending, escalation, and contingency amounts remains at \$1.577 billion.

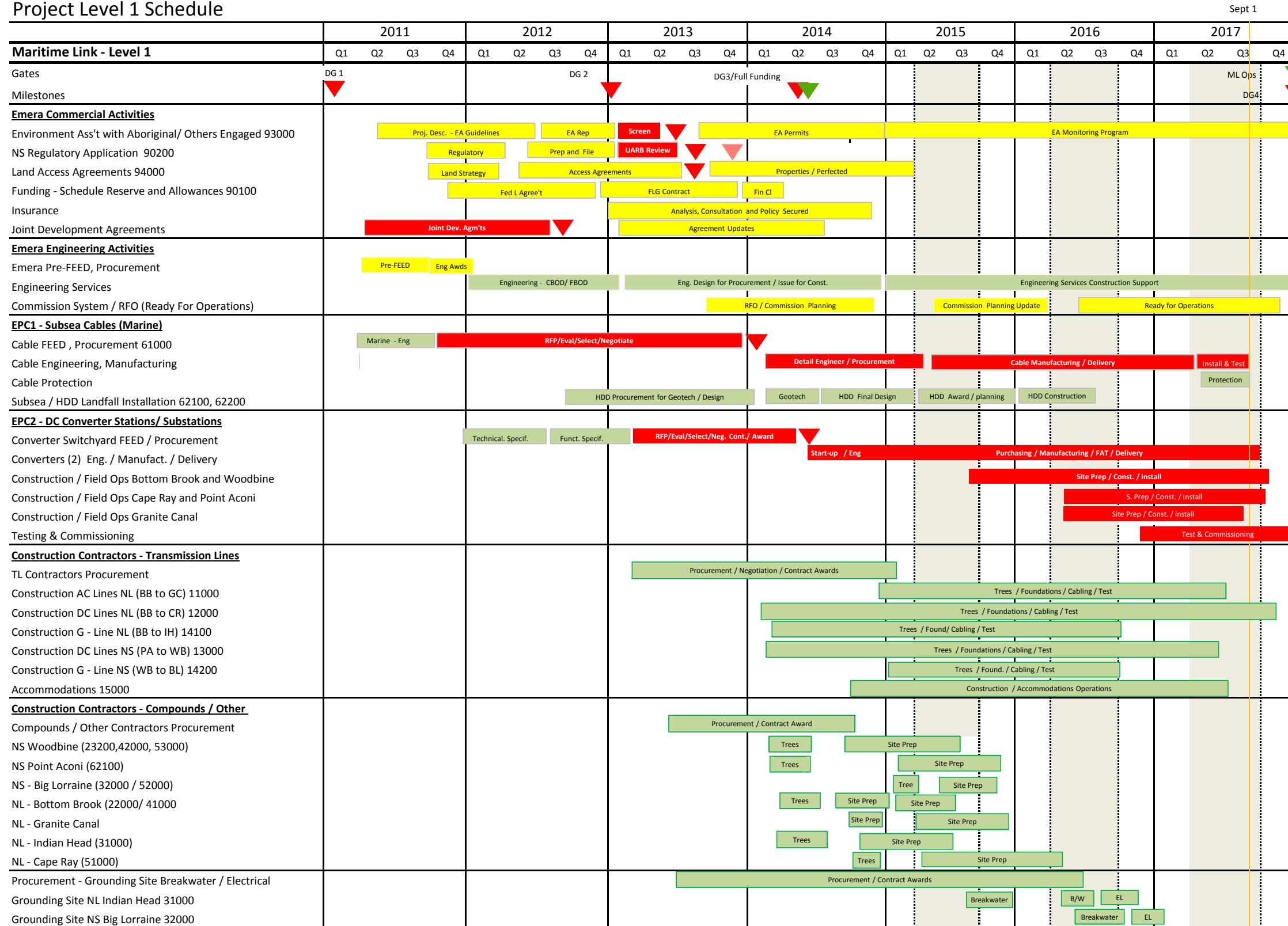
Certain costs such as final major contract payments, release of statutory withholdings, and payment of punch list items are expected to occur in 2018. This does not change the forecast of the project being in-service by January 1, 2018 and AFUDC ending upon the in-service date. NSPML is currently forecasting these 2018 payments and will report on these amounts in the next quarterly report.

Table 4



Maritime Link Project Level 1 Project Schedule

Project Level 1 Schedule



■ ENL Lead Activities ▼ Critical Path Activities
■ Other Lead Activities ▼ Milestones

■ Marine Weather Installation Window 1
■ Marine Weather Installation Window 2
■ Marine Weather Installation Window 3

Schedule Data Date - Sept 1, 2017

Schedule Data Date - May 1, 2017

SCHEDULE "Q"

DRAW CONFIRMATION CERTIFICATE BY INDEPENDENT ENGINEER

ML PROJECT FINANCING

This Draw Confirmation Certificate is provided by Argirov Engineering Inc. (the "Independent Engineer") to The Toronto-Dominion Bank (the "Collateral Agent") in connection with the credit agreement dated February 24, 2014, between NSP Maritime Link Incorporated (the "Borrower"), Maritime Link Financing Trust (the "Lender") and the Collateral Agent (said agreement, as same may be amended, supplemented or restated from time to time, is hereinafter referred to as the "ML Credit Agreement"). Capitalized terms used in this Draw Confirmation Certificate not defined herein shall have the meanings assigned to them in Exhibit A of the ML Credit Agreement.

The Independent Engineer has (i) discussed matters believed pertinent to this Draw Confirmation Certificate with the Borrower and any relevant Material Project Participants, (ii) made such other inquiries as we have determined appropriate and (iii) reviewed:

- (a) the Construction Report dated June 20, 2017 (the "Construction Report"); and
- (b) the Borrower's funding request dated June 26, 2017 (the "Funding Request").

On the basis of the foregoing limited review procedures and on the understanding and assumption that the factual information contained in the Construction Report and Funding Request is true, correct and complete in all material respects, the Independent Engineer makes the following statements in favour of the Collateral Agent and to the best of its knowledge, information and belief, as of the date hereof that:

1. Construction of the Project is progressing in a satisfactory manner and in accordance with the terms of the applicable Material Project Documents with the following exceptions:

NO EXCEPTIONS NOTED

2. All payments to the Material Project Participants to be paid with the proceeds of the ML Construction Loan (including any payments using advances from the Working Capital Reserve Account during the period from the last Draw Confirmation Certificate to this Draw Confirmation Certificate) requested to be made pursuant to the Funding Request are allowed under the payment terms of the applicable Material Project Documents and the ML Credit Agreement as to the advance requirements of Section 7.3, with the following exceptions:

NO EXCEPTIONS NOTED

3. Assuming the Borrower exercises proper engineering and construction management throughout the remainder of the Project, we have no reason to believe that the Commissioning Date will not occur prior to the Date Certain, or that the total Project Costs will exceed [\$1,577,354,028] with the following exceptions:

NO EXCEPTIONS NOTED

This Draw Confirmation Certificate is solely for the information and assistance of the Collateral Agent, the Lender and Canada in connection with the Funding Request and shall not be used, circulated or relied upon for any other purpose or by any other party.

Dated: June 28, 2017

Argirov Engineering Inc.

By:  _____

Title: IE Team Leader

SCHEDULE "Q"

DRAW CONFIRMATION CERTIFICATE BY INDEPENDENT ENGINEER

ML PROJECT FINANCING

This Draw Confirmation Certificate is provided by Argirov Engineering Inc. (the "Independent Engineer") to The Toronto-Dominion Bank (the "Collateral Agent") in connection with the credit agreement dated February 24, 2014, between NSP Maritime Link Incorporated (the "Borrower"), Maritime Link Financing Trust (the "Lender") and the Collateral Agent (said agreement, as same may be amended, supplemented or restated from time to time, is hereinafter referred to as the "ML Credit Agreement"). Capitalized terms used in this Draw Confirmation Certificate not defined herein shall have the meanings assigned to them in Exhibit A of the ML Credit Agreement.

The Independent Engineer has (i) discussed matters believed pertinent to this Draw Confirmation Certificate with the Borrower and any relevant Material Project Participants, (ii) made such other inquiries as we have determined appropriate and (iii) reviewed:

- (a) the Construction Report dated July 20, 2017 (the "Construction Report"); and
- (b) the Borrower's funding request dated July 25, 2017 (the "Funding Request").

On the basis of the foregoing limited review procedures and on the understanding and assumption that the factual information contained in the Construction Report and Funding Request is true, correct and complete in all material respects, the Independent Engineer makes the following statements in favour of the Collateral Agent and to the best of its knowledge, information and belief, as of the date hereof that:

1. Construction of the Project is progressing in a satisfactory manner and in accordance with the terms of the applicable Material Project Documents with the following exceptions:

NO EXCEPTIONS NOTED

2. All payments to the Material Project Participants to be paid with the proceeds of the ML Construction Loan (including any payments using advances from the Working Capital Reserve Account during the period from the last Draw Confirmation Certificate to this Draw Confirmation Certificate) requested to be made pursuant to the Funding Request are allowed under the payment terms of the applicable Material Project Documents and the ML Credit Agreement as to the advance requirements of Section 7.3, with the following exceptions:

NO EXCEPTIONS NOTED

3. Assuming the Borrower exercises proper engineering and construction management throughout the remainder of the Project, we have no reason to believe that the Commissioning Date will not occur prior to the Date Certain, or that the total Project Costs will exceed [\$1,577,354,028] with the following exceptions:

NO EXCEPTIONS NOTED

This Draw Confirmation Certificate is solely for the information and assistance of the Collateral Agent, the Lender and Canada in connection with the Funding Request and shall not be used, circulated or relied upon for any other purpose or by any other party.

Dated: July 27, 2017

Argirov Engineering Inc.

By:  _____

Title: IE Team Leader

SCHEDULE "Q"

DRAW CONFIRMATION CERTIFICATE BY INDEPENDENT ENGINEER

ML PROJECT FINANCING

This Draw Confirmation Certificate is provided by Argirov Engineering Inc. (the "Independent Engineer") to The Toronto-Dominion Bank (the "Collateral Agent") in connection with the credit agreement dated February 24, 2014, between NSP Maritime Link Incorporated (the "Borrower"), Maritime Link Financing Trust (the "Lender") and the Collateral Agent (said agreement, as same may be amended, supplemented or restated from time to time, is hereinafter referred to as the "ML Credit Agreement"). Capitalized terms used in this Draw Confirmation Certificate not defined herein shall have the meanings assigned to them in Exhibit A of the ML Credit Agreement.

The Independent Engineer has (i) discussed matters believed pertinent to this Draw Confirmation Certificate with the Borrower and any relevant Material Project Participants, (ii) made such other inquiries as we have determined appropriate and (iii) reviewed:

- (a) the Construction Report dated August 21, 2017 (the "Construction Report"); and
- (b) the Borrower's funding request dated August 25, 2017 (the "Funding Request").

On the basis of the foregoing limited review procedures and on the understanding and assumption that the factual information contained in the Construction Report and Funding Request is true, correct and complete in all material respects, the Independent Engineer makes the following statements in favour of the Collateral Agent and to the best of its knowledge, information and belief, as of the date hereof that:

1. Construction of the Project is progressing in a satisfactory manner and in accordance with the terms of the applicable Material Project Documents with the following exceptions:

NO EXCEPTIONS NOTED

2. All payments to the Material Project Participants to be paid with the proceeds of the ML Construction Loan (including any payments using advances from the Working Capital Reserve Account during the period from the last Draw Confirmation Certificate to this Draw Confirmation Certificate) requested to be made pursuant to the Funding Request are allowed under the payment terms of the applicable Material Project Documents and the ML Credit Agreement as to the advance requirements of Section 7.3, with the following exceptions:

NO EXCEPTIONS NOTED

3. Assuming the Borrower exercises proper engineering and construction management throughout the remainder of the Project, we have no reason to believe that the Commissioning Date will not occur prior to the Date Certain, or that the total Project Costs will exceed [\$1,577,354,028] with the following exceptions:

NO EXCEPTIONS NOTED

This Draw Confirmation Certificate is solely for the information and assistance of the Collateral Agent, the Lender and Canada in connection with the Funding Request and shall not be used, circulated or relied upon for any other purpose or by any other party.

Dated: August 29, 2017

Argirov Engineering Inc.

By:  _____

Title: IE Team Leader

SCHEDULE "Q"

DRAW CONFIRMATION CERTIFICATE BY INDEPENDENT ENGINEER

ML PROJECT FINANCING

This Draw Confirmation Certificate is provided by Argirov Engineering Inc. (the "Independent Engineer") to The Toronto-Dominion Bank (the "Collateral Agent") in connection with the credit agreement dated February 24, 2014, between NSP Maritime Link Incorporated (the "Borrower"), Maritime Link Financing Trust (the "Lender") and the Collateral Agent (said agreement, as same may be amended, supplemented or restated from time to time, is hereinafter referred to as the "ML Credit Agreement"). Capitalized terms used in this Draw Confirmation Certificate not defined herein shall have the meanings assigned to them in Exhibit A of the ML Credit Agreement.

The Independent Engineer has (i) discussed matters believed pertinent to this Draw Confirmation Certificate with the Borrower and any relevant Material Project Participants, (ii) made such other inquiries as we have determined appropriate and (iii) reviewed:

- (a) the Construction Report dated September 20, 2017 (the "Construction Report"); and
- (b) the Borrower's funding request dated September 25, 2017 (the "Funding Request").

On the basis of the foregoing limited review procedures and on the understanding and assumption that the factual information contained in the Construction Report and Funding Request is true, correct and complete in all material respects, the Independent Engineer makes the following statements in favour of the Collateral Agent and to the best of its knowledge, information and belief, as of the date hereof that:

1. Construction of the Project is progressing in a satisfactory manner and in accordance with the terms of the applicable Material Project Documents with the following exceptions:

NO EXCEPTIONS NOTED

2. All payments to the Material Project Participants to be paid with the proceeds of the ML Construction Loan (including any payments using advances from the Working Capital Reserve Account during the period from the last Draw Confirmation Certificate to this Draw Confirmation Certificate) requested to be made pursuant to the Funding Request are allowed under the payment terms of the applicable Material Project Documents and the ML Credit Agreement as to the advance requirements of Section 7.3, with the following exceptions:

NO EXCEPTIONS NOTED

3. Assuming the Borrower exercises proper engineering and construction management throughout the remainder of the Project, we have no reason to believe that the


Commissioning Date will not occur prior to the Date Certain, or that the total Project Costs will exceed [\$1,577,354,028] with the following exceptions:

NO EXCEPTIONS NOTED

This Draw Confirmation Certificate is solely for the information and assistance of the Collateral Agent, the Lender and Canada in connection with the Funding Request and shall not be used, circulated or relied upon for any other purpose or by any other party.

Dated: September 27, 2017

Argirov Engineering Inc.

By:  _____

Title: IE Team Leader

Operating Agreement Requirements Arising from the Formal Agreements

	Agreement	Parties	Description	Formal Agreement Source	Status
1.	Asset Interconnection Agreement (NL)	Emera, NLH	Interconnection of ML with the Island Interconnected System	ML-JDA, s. 2.1 (c)	Completed
2.	Multi-Party Pooling Agreement	Emera, NLH	NLH (SO) to have operational control of ML NLH AC Upgrades	ML-JDA, s. 2.1 (d)	Completed
3.	Transmission Operating Agreement (NL)	Emera, NLH	NLH (SO) to have operational control of ML NL HVdc Facilities	ML-JDA, s. 2.1 (e)	Completed
4.	Asset Interconnection Agreement (NS)	Emera, NSPI	Interconnection of ML with NS bulk electric transmission system	ML-JDA, s. 2.1 (f)(i)	Completed with exception of execution; expect execution in Q4, 2017.
5.	Transmission Operating Agreement (NS)	Emera, NSPI	NS SO to have general operational control of the ML	ML-JDA, s. 2.1 (f)(ii)	Completed with exception of execution; expect execution in Q4, 2017.
6.	ECA – Metering and Measuring Standards – Transmission Losses	NSPML, Nalcor	Metering and measuring standards used in the calculation of Transmission Losses	ECA, Schedule 3, s. 5	Completed
7.	Regulation Service Agreement	NSPML, Nalcor	Nalcor’s provision of the Regulation Service with respect to the Nova Scotia Block for the Initial Term	ECA, Schedule 5	Expect completion in 2018
8.	Metering and Measuring Standards – NS NTQ transmission losses	NSPML, Nalcor	Metering and measuring standards used in calculation of NS –NTQ Path Peak and Off-Peak Hour transmission losses	NSTUA, Schedule 3, s. 6	Completed
9.	NB Back-up Capacity Agreement	Bayside Power L.P, Nalcor	Emera’s provision of backup Capacity to NB to Nalcor until March 31, 2021	NBTUA, s. 2.1(d)	Expect completion in 2018
10.	IOA – ML Transmission Procedures	NSPI, NLH	Rules and practices applicable to administration of transmission service over the ML	IOA, Schedule D	Completed
11.	IOA – Reserve Sharing	NSPI, NLH	Sharing of energy and reserves between the Parties to improve Reliability	IOA, Schedule A	Completed

12.	IOA – Description of Interconnection Facilities	NSPI, NLH	Description of Interconnection Facilities for which each Party is responsible	IOA, Schedule B	Completed
13.	IOA – Functional Operating Relationship	NSPI, NLH	Various matters relating to operating relationship	IOA, Schedule C	Completed
14.	IOA – Operating Procedures	NSPI, NLH	IOC to develop “operating procedures”	IOA s.7.2 and s. 7.4(a)	Completed
15.	IOA – Schedule A1.0	NSPI, NLH	Parties to prepare a plan for NLH participation in Reliability Assessment Program (“RAP”)	IOA Schedule A1.0	Completed
16.	ML TSA – ML Scheduling Process	Emera and Nalcor	Scheduling process applicable to the provision of Firm Point-to-Point Transmission Service	MLTSAs, Schedule 2	Expect completion in 2017
17.	Amendments to Formal Agreements	Emera, Nalcor	Amendments to Formal Agreements required by Sanction Agreement	Sanction Agreement	Completed
18.	Energy Access Agreement	Emera, Nalcor	Commitments regarding access to market priced energy	Compliance Filing, Appendix A	Completed
19.	Balancing Service Agreement	Emera, Nalcor	Nalcor commitment to provide balancing services from generation sources in NL for 25 years.	Energy Access Agreement Term Sheet, s. 7(g) and Appendix 1	Completed
20.	Assignment of Transmission Rights under ML(E)TSA	Emera, Nalcor	Assignment of Transmission Rights	ML(E)TSA, s. 3.3 (h)	Expect completion in 2017
21.	Assignment of Energy Access Agreement	Emera, Nalcor, NSPI and NEM	Assignment/assumption of Nalcor’s rights and obligations to/by NEM	EAA s. 15.1 (a)	Expect completion in 2019
22.	Assignment of Nalcor Master Agreement (EAA Schedule 2)	Nalcor, NSPI and NEM	Assignment/assumption of Nalcor’s rights and obligations to/by NEM	Nalcor Master Agreement s. 10.5 (a)	Expect completion in 2019
23.	JOA-Joint Operating Committee (“JOC”)	Nalcor and NSPML	Establish/Operationalize JOC	JOA s.s. 3.1, 3.5	Completed
24.	NS Transmission Utilization Agreement	Nalcor and Emera	Status of Emera firm Point to Point Transmission Service	NSTUA s.s.2.2 (a)-(c)	Completed

MANUFACTURING INSPECTION NVC FABRICATION FACILITY IN FUTTSU-SHI, YOKOHAMA, JAPAN JANUARY 12 AND 13, 2017

Prepared for: Natural Resources Canada and Emera

Project Lead: Nik Argirov

Date: April 8, 2017

Quality Assurance Statement

Office Address	803-633 Kinghorne Mews, Vancouver BC, V6Z 3H3
Prepared by	Nik Argirov
Approved for Issue by	Nik Argirov

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TABLE OF CONTENTS

1. GENERAL	1
2. ORIENTATION MEETING.....	1
3. NVC QA/QC PROCESS	2
4. FACTORY TOUR.....	2
5. CLOSEOUT MEETING.....	3
6. COMMENTS AND CONCLUSIONS	4

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1. GENERAL

On January 12 and 13, 2017, the Independent Engineer (IE), AEI, represented by Nik Argirov, together with Emera Inc. and Nippon High Voltage Cable Corporation (NVC) representatives, performed plant and project equipment (Maritime Link Project (MLP)) inspection at the NVC fabrication facility in Futtsu-Shi, Yokohama, Japan.

The purpose of this plant inspection was to verify the status of NVC's work under the Contract and to review their QA/QC process relative to the manufacture of NSPML submarine cable with particular attention to the resolution of the lead sheeting contamination problem and NCR 007.

2. ORIENTATION MEETING

The meeting started with an informative presentation by NVC's plant manager overviewing the company's corporate history, organization, policies, and operations. The following are highlights from that presentation:

NVC was registered in 2006 as a partnership between Nexans (66%) and VISCAS Corporation (34%). The Company currently employs 100 people and its main products are:

- Submarine cables: Mass impregnated or Oil Filled
- High voltage underground cables: Oil Filled or XLPE

The basic values of the company are: 1) Think Customer; 2) Commit to Excellence; 3) Value People and 4) Work Globally.

NVC's values are enhanced by well-defined and strongly adhered to Safety, Environmental and Quality company policies.

NVC Safety Policy:

NVC promotes industrial safety and health activities with the cooperation of all its employees. NVC follows the principle that "Safety and Health should have priority over all".

The Safety Guidelines include emergency response during and after strong earthquakes as well as the necessary industrial safety instructions. The company represented its focus is on the prevention of industrial accidents and illness. Risk assessment and safety awareness are foremost in their corporate culture. The company mitigates risk by setting industrial safety and health targets, periodic target review and continuous improvements to their internal industrial safety and health management systems. The company communicated that it has prioritized the need to continuously improve the safety awareness of its employees. Wearing PPE (including safety glasses) is the standard for everyone on the factory production and testing floors. NVC acts proactively to systematically raise its internal standards of industrial safety and health as it continues to meet all external industrial safety and health requirements.

NVC Companywide Environmental Policy:

1. Make efforts to prevent environmental pollution and continue to improve environmental management systems by continuous consciousness of environmental impact by using energies and resources of various chemical products etc., including metals and plastics, in the manufacturing process with response to changes in factory load.

2. Try to reduce the industrial wastes and the use of regulated chemical substances, making continual improvement in energy/resource saving and recycling activities.
3. Comply with the environment-related laws and regulations, as well as the standards agreed upon with local municipalities or among the industry, and make a voluntary standard for control if necessary.
4. Try to raise consciousness about the environment through environmental education and public relations activities within the company.
5. Actively participate in the environmental protection activities in the local communities, providing information on such activities.

The IE was also informed of the Manufacturing status and the status of Type Tests:

- 1st Batch – Finished on outside Turn Table. Waiting for load out.
- 2nd Batch – Finished. Waiting for jointing with Batch 3.
- 3rd Batch – Lead and outer sheathing in progress.
- All Type Tests have been successfully completed.

3. NVC QA/QC PROCESS

The main pillars of the companywide quality policy are:

1. “Satisfaction of customer and internal post process”.
2. Consideration of “Safety, Quality, Lead time”.
3. “Cost competitiveness”.
4. “Human resource development” of continuous improvement (Kaizen).
5. “Continuous process improvement”.

NVC follows a systematic approach in identifying, reporting and mitigating Nonconformances associated with the Work which include those generated in the design, manufacture, supply, installation, testing and pre-commissioning and/or service delivery process(es). The approach/process conforms to the contractual agreement between NVC and NSPML. Nonconformities are reported (Nonconformance Reports - NCR's) upon occurrence and are submitted electronically using NVC's standard Nonconformity form. Mitigating action for any NCR cannot be performed by NVC without prior NSPML's approval.

This process also includes a well-defined system of reactive and preventive actions.

4. FACTORY TOUR

Submarine and High Voltage (HV) Underground Cable manufacturing is a continuous, conveyer-based process that requires extreme precision. The process is controlled and in many occasions the stations operate in a dust free environment.

The process starts with the Drawing and Stranding operation wherein the profiled copper wires are fed into the conveyer in a proper sequence forming a tightly wound internal core - the main copper conductor. The Paper Lapping operation follows where the main insulation layer (multiple layers of high-density craft paper) is created. The process continues into the Drying and Impregnation operation. The passage from paper lapping into the drying tank is a dust-free and contamination controlled

operation and requires an air controlled and process isolation environment. The Drying and Impregnation is a three-step process including drying, mass impregnation and cooling. The Lead Sheath installation follows this.

The cable then moves into the PE (polyethylene) taping, galvanized steel wire armoring and finally PE jacketing operation.

Upon completion of the jacketing and armoring operations, the cable is ready for testing, however no test was witnessed as all Type Tests were already completed and Batch #1 stored on the outdoor turntable. Batch #1 cable was ready for rewinding and loading out for shipping.

The tour started at the lead extrusion station where the Lead Sheeting operation was ongoing. The NVC representatives pointed out some of the modifications implemented into the extrusion process that contributed to the mitigation of the contamination issue.

Note: Due to the proprietary nature of the manufacturing process, photos were not allowed to be taken in any of the NVC facilities.

5. CLOSEOUT MEETING

Upon conclusion of the factory tour, a meeting was conducted by all the site visit participants. The focus of the meeting discussion was the lead sheath contamination and the corrective actions (studies, tests, and modifications to the process) that NVC have undertaken to resolve the issue.

In summary, the first contamination incident occurred during the lead sheathing of Batch # 1 in January'16. The inclusion of contaminating particles was found in the sheath after 17 km of production when the production was stopped. Subsequently NVC conducted three separate trial runs paralleled by root cause analysis and investigations. It has been concluded that the particles inclusion (in the lead sheath) was triggered by a combination of root causes such as:

- Impurities in the raw material (levels in the higher range of the material specification), in particular the Tin Ingots.
- Unfavorable temperature profile caused by wrong thermocouple calibration.

Modifications have been made to improve the process. They are related to:

- The large die block (13 ¼") not being ideal for the cable.
- Tellurium levels being in the higher range of the alloy specification.

No contamination particles were observed after Trial Run #3.

The main production was restarted with the lead sheathing of Batch #1 in April'16.

Some additional modifications were implemented for the lead sheathing for Batch # 2 which was started in September'16. The same set up (no more modifications) was used for Batch #3. The lead sheathing of Batch #3 started in January'17 and was nearing completion during the visit. No contamination was observed or reported.

In parallel, further tests and analysis have been performed to address the fatigue life requirements:

- Notched test specimens were used to construct fatigue design curves. The fatigue life has been calculated based on load cases as provided by NSPML.
- Fatigue curves based on notched specimens test data indicate sufficient fatigue life for operation of 50 years (455 years to a damage of 1.0).

- Additional testing of specimens with particles show that the applied notch geometry is a conservative representation of the particles found in the as-extruded lead sheathing in Futtsu.
- Testing of samples with Cadmium Telluride (CdTe) inter-metallics shows that the particles have no effect on the fatigue life in the test set-up.

6. COMMENTS AND CONCLUSIONS

The following conclusions and comments are presented:

- It appears that NVC / Nexans has achieved a satisfactory resolution of the lead sheath contamination issue.
- The IE found the workmanship of the manufacturing very good.
- The manufacturing process thus far has been carried out in compliance with very high standards of safety, quality, and environmental criteria.
- Work under this Contract appears to be on schedule.