Newfoundland and Labrador Hydro
Hydro Place. 500 Columbus Drive
P.O. Box 12400. St. John's. NL
Canada A1B 4K7
t. 709.737.1400 I f. 709.737.1800
nlhydro.com

December 18, 2025

Board of Commissioners of Public Utilities
Prince Charles Building
120 Torbay Road, P.O. Box 21040
St. John's, NL A1A 5B2

Attention: Jo-Anne Galarneau
Executive Director and Board Secretary

Re: Application for Approval of a Contribution in Aid of Construction for Battle Harbour Data Solutions Inc. Interconnection Costs

Please find enclosed Newfoundland and Labrador Hydro's ("Hydro") application for approval of a contribution from Battle Harbour Data Solutions Inc. ("Battle Harbour") of an amount equal to the costs of the interconnection to allow the provision of Non-Firm Service pursuant to Rate 5.1L of Hydro's Rates, Rules, and Regulations and Section 41(5) of the *Act*. Battle Harbour will pay all associated project costs which are estimated to be $599,100,[1] excluding HST. Details of the interconnection, the estimate, and the Customer's agreement to the contribution are provided within the application.

Should you have any questions, please contact the undersigned.

Yours truly,

NEWFOUNDLAND AND LABRADOR HYDRO

Shirley A. Walsh
Senior Legal Counsel, Regulatory
SAW/rr

Encl.

ecc:

Board of Commissioners of Public Utilities
Jacqui H. Glynn
Ryan Oake
Board General

[1] The costs of the interconnection are less than the stipulated threshold set out in the *Public Utilities Regulations*, and so Hydro is not requesting Board approval of the expenditures at this time.

Battle Harbour Data Solutions Interconnection Costs

December 18, 2025

An application to the Board of Commissioners of Public Utilities

IN THE MATTER OF the *Electrical Power Control Act, 1994*, SNL 1994, Chapter E-5.1 ("*EPCA*") and the *Public Utilities Act*, RSNL 1990, Chapter P-47 ("*Act*"), and regulations thereunder; and

IN THE MATTER OF an application by Newfoundland and Labrador Hydro ("Hydro") for approval of a contribution from Battle Harbour Data Solutions Inc. ("Battle Harbour") of an amount equal to the costs of the interconnection to Line 33.

To: The Board of Commissioners of Public Utilities ("Board")

THE APPLICATION OF HYDRO STATES THAT:

A. Background

1. Hydro is a corporation continued and existing under the *Hydro Corporation Act, 2024*, is a public utility within the meaning of the *Act*, and is subject to the provisions of the *EPCA*.

B. Application

2. Hydro filed an application for a Non-Firm Rate in Labrador on September 15, 2022. That application, and Rate No. 5.1L, was approved in Board Order P.U. 34(2023). Battle Harbour[1] was one of the original applicants for Non-Firm service under Rate 5.1L.

3. In 2022 Hydro completed an Interconnection Study identifying the interconnection requirements to provide Battle Harbour with non-firm service, and to provide an estimate of the schedule and the cost of the equipment, engineering, procurement and construction work needed to complete the interconnection. The Interconnection Study is Schedule A to the Interconnection Contribution Agreement, provided with this application as Schedule 2, Attachment 1.

[1] The customer originally applied under the name of Waterford Capital Inc., but subsequently modified its application to name its affiliate Battle Harbour Data Solutions Inc.,

4. The new customer connection requires infrastructure for a tap off point on Transmission Line 33, between Vanier Terminal Station and Wabush Terminal Station, as well as a transmission line extension from the tee-tap location to customer site. This project also includes the installation of a new 46 kV load break disconnect switch, metering tank, and associated protection, control, and communications equipment.

5. As per item 4 of the Terms and Conditions of Rate 5.1L, the Customer is required to fund the cost of interconnection in advance of Hydro providing service.

6. The original project estimate was completed in 2022 as part of the Interconnection Study. Due to the passage of time, the estimate was reviewed and revised early in 2025. The revised estimate for this multi-year project is provided in Table 1 of Schedule 1 to this application and is also attached to the Interconnection Contribution Agreement. Battle Harbour has agreed to pay all costs of the Interconnection, estimated as $599,100 excluding HST, with project completion in 2027.

7. The proposed contribution is consistent with Hydro's Schedule of Rates, Rules, and Regulations.

C. Newfoundland and Labrador Hydro's Request

8. Hydro requests that the Board make an Order pursuant to Section 41(5) of the *Act*, approving a contribution by Battle Harbour of an amount equal to the capital costs of the interconnection.

D. Communications

9. Communications with respect to this Application should be forwarded to Shirley A. Walsh, Senior Legal Counsel, Regulatory for Hydro.

DATED at St. John's in the province of Newfoundland and Labrador on this 18th day of December 2025.

NEWFOUNDLAND AND LABRADOR HYDRO

Shirley A. Walsh
Counsel for the Applicant
Newfoundland and Labrador Hydro
500 Columbus Drive, P.O. Box 12400
St. John's, NL A1B 4K7
Telephone: (709) 685-4973

Schedule 1

Battle Harbour Data Solutions Inc. – Non-Firm Service Connection

Contents

Battle Harbour Data Solutions Inc. – Non-Firm Service Connection

1.0 Introduction

Newfoundland and Labrador Hydro ("Hydro") owns and operates the 46kV transmission system in Labrador West as part of the Labrador Interconnected System.

In March 2021, the Board of Commissioners of Public Utilities ("Board") approved the Network Additions Policy ("NAP") for the Labrador Interconnected System. The Settlement Agreement and Board Order regarding the NAP required Hydro to review whether a non-firm service offering was reasonable to implement in the region.

Hydro filed its feasibility report regarding non-firm service in late June 2021, finding that non-firm service is feasible to a limited number of customers if participants are willing to accept frequent and potentially extended curtailments throughout the year. Hydro engaged in discussions with applicants for service in Labrador East and Labrador West to assess potential interest in non-firm service prior to making application for its Non-Firm Rate. Through those discussions Hydro developed suggested allocations of the available non-firm capacity in the regions, as detailed in the Non-Firm Rates Application filed September 15, 2022. Hydro carried out system analysis for the interested applicants, consistent with the conditions presented in its report. The customer herein, located in Wabush, Labrador, was one such applicant.[1] The requested service location for this customer is in the area of Line 33 ("L33"), the 46 kV transmission line between Vanier Terminal Station ("VAN TS") and Wabush Terminal Station ("WAB TS"), as shown in Figure 1.

Hydro's application for non-firm energy was approved in Board Order No. P.U. 34(2023) as Rate No. 5.1L.

To accommodate this customer connection, interconnection to existing L33 via tee-tap is required. This includes procurement, installation, and commissioning of a new load break disconnect switch, metering tank, infrastructure for a tap off point, and associated protection and monitoring equipment.

[1] The customer originally applied under the name of Waterford Capital Inc., but subsequently modified its application to name its affiliate Battle Harbour Data Solutions Inc. ("Battle Harbour").

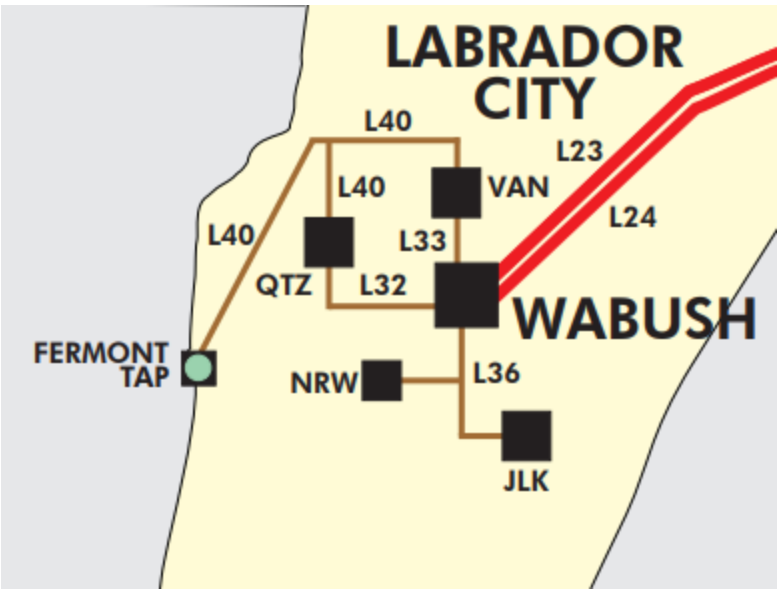


Figure 1: Labrador West 46 kV Transmission System

2.0 Project Description

Hydro completed an interconnection study to assess the interconnection requirements of a new customer to the Labrador Interconnected System.[2] The scope of work includes design and procurement, as well as construction and commissioning of all equipment up to and including the delineation point between Hydro and the Customer, as shown in Figure 2. The new customer connection requires infrastructure for a tap off point on L33, as well as a transmission line extension from the tee-tap location to customer site. This project also includes the installation of a new 46 kV load break disconnect switch, metering tank, and associated protection, control, and communications equipment. As the customer is receiving non-firm service, no transmission system upgrades are required.

[2] The interconnection study is attached to the Interconnection Contribution Agreement, provided with this application as Schedule 2.

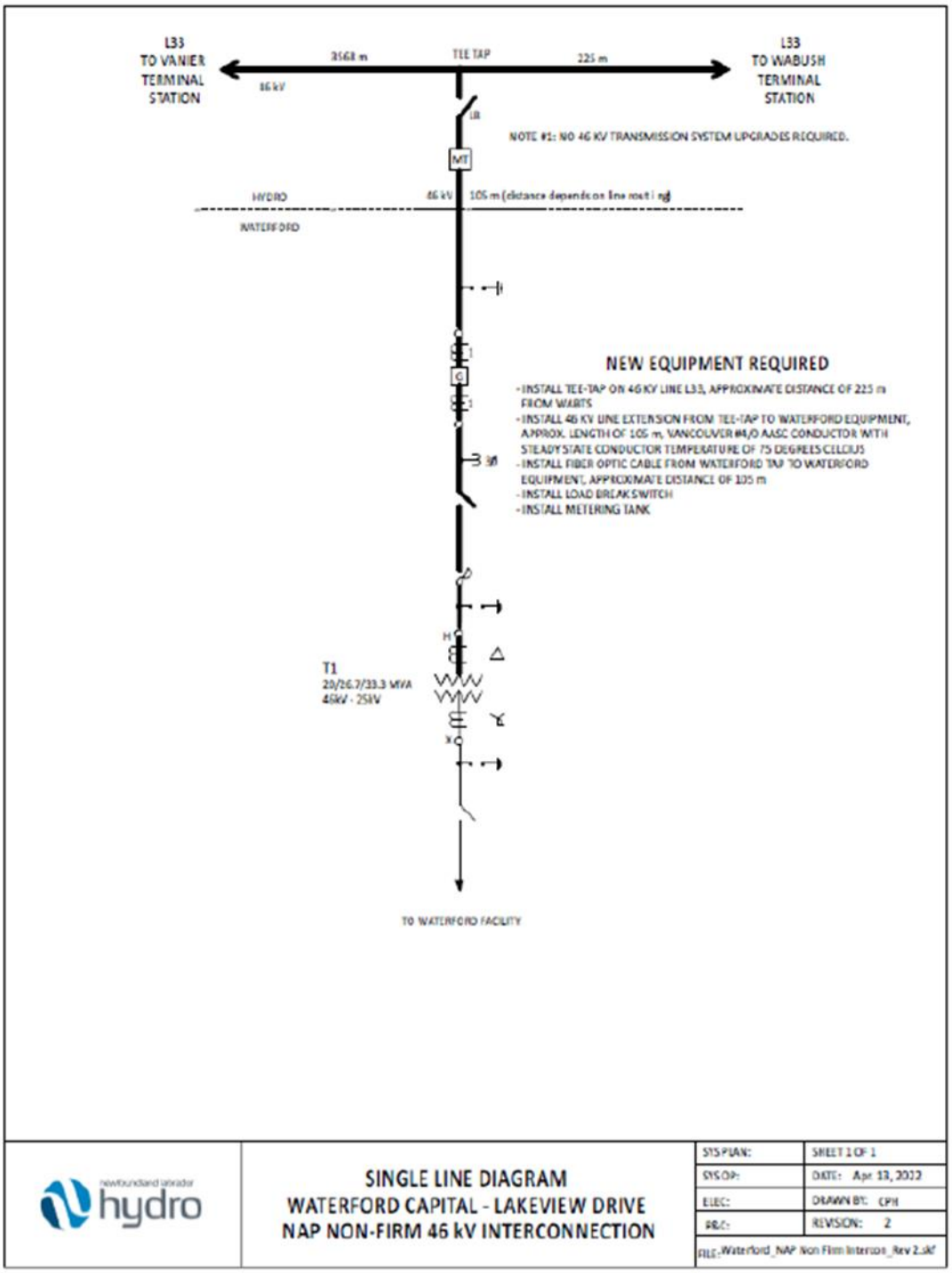


Figure 2: Single Line Diagram

3.0 Scope of Work

An overview of the work to be completed under this project is outlined below.

- Installation of transmission line poles, and associated hardware, along the acquired right of way;
- Installation of tee-tap on L33, approximately 225 metres from WAB TS;
- Installation of 4/0 AASC conductor and fibre optic cable from the tap-off location to the customer site;
- Installation of 46 kV load break disconnect switch;
- Installation of metering tank;
- Installation of Remote Terminal Unit for communication, control, and monitoring; and
- Commissioning.

3.1 Project Budget

The original Interconnection Study, including the project estimate, was completed in 2022 and is provided as Schedule 2, Attachment 1 to this application. Due to the passage of time, the estimate was reviewed and revised early in 2025. The revised estimate for this multi-year project is provided in Table 1, with planned completion in 2027, at an estimated cost of $599,100.

Table 1: Project Estimate ($000)[3]

Project Cost	2026	2027	Total
Material Supply	40.9	122.1	**163.0**
Labour	88.8	71.2	**159.9**
Consultant	31.9	0.0	**31.9**
Contract Work	105.7	7.0	**112.7**
Other Direct Costs	19.6	2.3	**21.9**
Interest and Escalation	18.1	21.6	**39.7**
Contingency	29.4	40.5	**70.0**
Total	**334.4**	**264.7**	**599.1**

[3] Numbers may not add due to rounding.

4.0 Conclusion

Hydro completed an interconnection study to assess the interconnection requirements of Battle Harbour to the Labrador Interconnected System. This customer will be supplied by a tap off point on L33, between VAN TS and WAB TS. The scope of work includes infrastructure for the tee-tap, including transmission line poles, conductor, and associated hardware; as well as a load break disconnect switch, metering tank, and protection and monitoring equipment.

This is a two-year project with planned completion in 2027, at an estimated cost of $599,100. The customer has agreed to pay the full costs of the interconnection.

Schedule 2

Battle Harbour Data Solutions Inc. – Non-Firm Interconnection

THIS CONSTRUCTION CONTRIBUTION AGREEMENT made as of the 24th day of October, 2024.

BETWEEN:

NEWFOUNDLAND AND LABRADOR HYDRO, a body corporate existing pursuant to the Hydro Corporation Act being Chapter H-17 of the Statutes of Newfoundland and Labrador, 2007

(hereinafter referred to as "Hydro"),

Battle Harbour Data Solutions Inc., a corporation organized under the laws of Canada and extra-provincially registered under the laws of Newfoundland and Labrador

(hereinafter referred to as "Customer")

(Hereinafter referred to individually as a "Party" and collectively as the "Parties")

WHEREAS Hydro is a fully regulated public utility and provider of electrical power and energy within the Province of Newfoundland and Labrador and as such is subject to the *Public Utilities Act,* c. P-47, R.S.N.L. 1990, and the *Electrical Power Control Act, 1994,* c.E-5.1, S.N.L. 1994;

WHEREAS the Customer will be subject to the Non-Firm Energy Rate No. 5.1L as per the Newfoundland and Labrador Hydro Schedule of Rates, Rules and Regulations and desires to purchase non-firm energy from Hydro at the Customer's site at 13-1 Lakeview Drive, Wabush, Newfoundland and Labrador;

WHEREAS the Parties desire to enter into an agreement whereby Hydro will construct, and the Customer will pay the full cost of constructing and commissioning the Interconnection Project as defined herein;

WHEREAS the Customer will construct and be fully responsible for the cost of construction, commissioning, ownership and operation of all aspects of the facilities on Customer's side of the Hydro owned and operated disconnect switch/metering tank;

WHEREAS the parties acknowledge that the Construction of the Interconnection Project is subject to all necessary and applicable environmental approvals; and

WHEREAS the parties acknowledge that this Agreement shall not be binding unless and until approved by the Board;

THEREFORE THIS AGREEMENT WITNESSETH that the parties agree as follows:

ARTICLE 1
INTERPRETATION

1.01 In this Agreement, including the recitals, unless the context otherwise requires,

(a) **"Board"** means the Board of Commissioners of Public Utilities for Newfoundland and Labrador;

(b) **"Business Day"** means any day that is not a Saturday, Sunday or holiday upon which the main offices of Hydro or the Customer in Newfoundland and Labrador are closed;

(c) **"Contribution"** means the principal amount to be paid to Hydro by the Customer to reimburse Hydro for the costs of engineering and Construction of the Interconnection Project;

(d) **"Effective Date"** means the date when both Parties have executed this agreement;

(e) **"Financing Costs"** means Hydro's interest costs incurred during Construction, consistent with *IAS – 23 Borrowing Costs* and updated quarterly;

(f) **"Good Utility Practice"** means those project management, design, procurement, construction, operation, maintenance, repair, removal and disposal practices, methods and acts that are engaged in key a significant portion of the electric utility industry in Canada during the relevant time period, or any other practices, methods or acts that, in the exercise of reasonable judgment in light of the facts known at the time a decision is made, could have been expected to accomplish a desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be the optimum practice, method or act to the exclusion of others, but rather to be a spectrum of acceptable practices, methods or acts generally accepted in such electric utility industry for the project management, design, procurement, construction, operation, maintenance, repair, removal and disposal of electric utility facilities in Canada. Good Utility Practice shall not be determined after the fact in light of the results achieved by the practices, methods or acts undertaken but rather shall be determined based upon the consistency of the practices, methods or acts when undertaken with the standard set forth in the first two sentences of this

definition at such time.

(g) **"Interconnection Project"** means the construction and commissioning of the interconnection to Hydro's system described in Schedule "A".

(h) **"Month"** means calendar month;

(i) **"Service Location"** means the Customer's civic address where power service has been requested, 13-1 Lakeview Drive, Wabush, Labrador

1.02 In this Agreement all references to dollar amounts and all references to any other monetary amounts are, unless specifically otherwise provided, expressed in terms of coin or currency of Canada which at the time of payment or determination shall be legal tender herein for the payment of public and private debts.

1.03 Words in this Agreement importing the singular number shall include the plural and vice versa and words importing the masculine gender shall include the feminine and neuter genders.

1.04 Where a word is defined anywhere in this Agreement, other parts of speech and tenses of the same word have corresponding meanings.

1.05 Wherever in this Agreement a number of days are prescribed for any purpose, the days shall be reckoned exclusively of the first and inclusively of the last.

1.06 The headings of all the articles are inserted for convenience of reference only and shall not affect the construction or interpretation of this Agreement.

1.07 Any reference in this Agreement to an Article, a Clause, a subclause or a paragraph shall, unless the context otherwise specifically requires, be taken as a reference to an article, a clause, a subclause or a paragraph of this Agreement.

1.08 This Agreement may be executed in two or more counterparts, each of which when so executed shall be deemed to be an original, but all of such counterparts together shall constitute one and the same instrument.

ARTICLE 2
CONSTRUCTION OF INTERCONNECTION PROJECT

2.01 Hydro agrees to construct and commission the Interconnection Project as

described in Schedule "A" and to pay the actual costs of this Construction in the manner set out herein.

2.02 The Customer acknowledges that construction costs will be higher than the estimated provided in Schedule "A' that was completed in 2022 due to inflation and the resulting higher costs of materials, labour, and equipment. A revised estimate was completed in 2025 and is provided in is Schedule "B".

2.03 Customer shall pay the full cost of constructing and commissioning the Interconnection Project, including the costs, if any, related to delays in the completion date or any costs in excess of those estimated in Schedule "B".

2.04 Hydro shall provide Customer with an update to the Interconnection Project schedule included in Schedule "A" within thirty (30) days of receiving the Contribution amount.

2.05 Should Hydro determine at any time during the Construction period that the total cost to complete the Interconnection Project will exceed that estimated in Schedule "B", or that the time to complete the Interconnection Project will be take longer than what was estimated, Hydro will promptly notify the Customer of such determination and will discuss with the Customer possible appropriate remedial actions to be taken to address such cost overruns and/or delays. The Customer's liability to pay such excess costs shall be subject to Hydro providing the Customer with records and reports as contemplated in section 4.02 hereof and the Customer's right to inspect and audit as contemplated in section 4.02 hereof.

2.06 The assets of the Interconnection Project will be owned by Hydro and used only to serve the Customer. The Customer shall be responsible for all sustaining capital, operating and maintenance costs. Hydro shall perform the sustaining capital and operations and maintenance work in the same manner and to the same standards as it would use for its own assets and in accordance with Good Utility Practice

ARTICLE 3
PAYMENT OF CONTRIBUTION

3.01 Upon execution of this Agreement, the Customer shall pay to Hydro a Contribution amount of $599,100.00 which represents 100% of the estimated interconnection cost as detailed in Schedule "B.". Payment shall be received within thirty (30) day of the Effective Date.

3.02 Within six (6) months after the completion of the Interconnection Project, Hydro will provide its accounts to the Customer. Should the total costs be less than the total Contribution paid by the Customer, the difference shall promptly be refunded to the Customer, without interest. Subject to Clause 3.04 below, should the total cost exceed the total Contribution paid by the Customer, the Customer shall pay the difference within forty-five (45) day after the completion of the Interconnection Project.

3.03 If the Customer voluntarily or involuntarily abandons the Service Location, commits an act of bankruptcy or liquidates its assets, there shall become due and payable to Hydro by the Customer, stipulated as liquidated damages without burden or proof thereof, a lump sum equal to the actual costs of the Construction incurred to the date that the Customer notifies Hydro of the abandonment then outstanding, along with any costs associated with cessation of the project as a result of the abandonment, and actual decommissioning costs then outstanding plus Financing Costs calculated from the date of notice of abandonment to the date of final payment of the amounts due under this section.

ARTICLE 4
COSTS OF INTERCONNECTION PROJECT

4.01 Throughout the engineering, procurement and Construction of the Interconnection Project, Hydro will endeavour to ensure that the costs related to Construction of the Interconnection Project do not exceed those necessary to meet Hydro's normal standards for such work.

4.02 Hydro shall cause to be kept proper books of account, records and supporting materials covering all matters relevant to the calculation of the Contribution and the reasonable verification thereof. The Customer may, on reasonable notice and at its own costs, ask for and carry out an independent audit and Hydro shall, for such purpose and at all reasonable times, permit agents of the Customer to inspect and audit and make copies from all such books of account, record and supporting materials relevant to the calculation of the Contribution.

ARTICLE 5
PAYMENT OF ACCOUNTS AND NOTICE OF CLAIMS OF CUSTOMER

5.01 Hydro will render its actual Interconnection Project Construction accounts to the Customer within six (6) months after the completion of the

interconnection.

5.02 All amounts due to Hydro by the Customer are due as provided in this agreement. All amounts in arrears after the expiration of the period of thirty (30) days shall bear interest at the rate of one and one-half (1.5%) percent per Month.

5.03 If the Customer is in default for more than fifteen (15) days in paying any amount due to Hydro under this Agreement, then, without prejudice to its other recourses and without liability therefor, Hydro shall, upon five (5) Business Days' advance written notice to the Customer of its intention so to do, be entitled to delay or suspend Construction on the Interconnection Project until all payments due are received from the Customer. If the Customer has not paid in full within fifteen (15) days of the written notice to the Customer, the Customer shall be deemed to have withdrawn its application and the Non-Firm allocation attributable to the Customer shall become available to other applicants as per Non-Firm Energy Rate No. 5.1L.

5.04 The Customer and Hydro will submit to the other in writing every claim or counterclaim which each may have or claim to have against the other arising under this Agreement within sixty (60) days of the day upon which the Customer or Hydro has knowledge of the event giving rise to such a claim, provided that it is acknowledged and agreed that in the case of the Customer carrying out an independent audit as contemplated by section 4.03 hereof, the sixty (60) day period to submit such claim or counterclaim shall not start until the Customer has received the final report of the independent auditor.

5.05 The Customer and Hydro shall be deemed to have waived all rights for the recovery of any claim or counterclaim that has not been submitted to the other party pursuant to and in accordance with Clause 5.04.

ARTICLE 6
MODIFICATION OR TERMINATION OF AGREEMENT

6.01 Except, where otherwise specifically provided in this Agreement and only to the extent so provided, all previous communications between the parties to this Agreement, either oral or written, with reference to the subject matter of this Agreement, are hereby abrogated and this Agreement shall constitute the sole and complete agreement of the parties hereto in respect of the matters herein set forth.

6.02 Any amendment, change or modification of this Agreement shall be binding upon the parties hereto or either of them only if such amendment, change or modification is in writing and is executed by each of the parties to this Agreement by its duly authorized officers or agents and in accordance with its regulations or by-laws.

ARTICLE 7
SUCCESSORS AND ASSIGNS

7.01 This Agreement shall be binding upon and enure to the benefit of the parties hereto and their respective successors and assigns, but it shall not be assignable by the Customer except to any affiliate, parent or subsidiary corporation of the Customer, without the written consent of Hydro, acting reasonably. Where the Agreement is assigned to an affiliate, parent or subsidiary corporation of the Customer, the Customer must provide written notice to Hydro of the assignment.

ARTICLE 8
ARBITRATION

8.01 Any dispute or differences between the parties hereto concerning this Agreement which cannot be resolved or settled by the said parties shall be settled by final and binding arbitration in the City of St. John's, Newfoundland and Labrador, at the request of either party pursuant to the provisions of the Arbitration Act (Newfoundland and Labrador), subject to the specific terms hereof. The party desiring arbitration shall notify the other party of its intention to submit any dispute(s) or difference(s) to arbitration as well as a brief description of the matter(s) to be submitted for arbitration. Should the parties fail to agree on a single arbitrator to settle the relevant dispute(s) or difference(s) within fifteen (15) days of delivery of the aforesaid notice, then each such party shall within thirty (30) days thereafter nominate an arbitrator having expertise with respect to the subject matter(s) under dispute (failing which nomination by a party, the arbitrator nominated by the other party may proceed to determine the dispute alone as he or she shall deem fit) and the two (2) arbitrators so selected shall select a chairman of the arbitral tribunal of similar expertise to act jointly with them. If said arbitrators shall be unable to agree in the selection of such chairman within thirty (30) days of the expiry of the aforesaid thirty (30) day arbitrator nomination period, the chairman shall be selected as contemplated in the *Arbitration Act* (Newfoundland and Labrador). The costs of the arbitration shall be borne by the parties hereto as may be specified in the determination of the arbitrator(s). The arbitrator(s)

shall further be authorized to retain such legal counsel and other professional advisors to provide any advice to the arbitrator(s) as the arbitrator(s) deem appropriate. The decision of the single arbitrator or any two (2) of the three (3) arbitrators, as the case may be, shall be non-appealable, final and binding with respect to the issue(s) in dispute.

ARTICLE 9
FORCE MAJEURE

9.01 If at any time during the Term of the Agreement, the Construction of the Interconnection Project is suspended in whole or in part, or the performance of a party's obligations hereunder is delayed, interfered with or made impossible by reason of events beyond the reasonable control of and not foreseen or reasonably foreseeable, the party affected due to an Act of God, fire, flood, tidal wave, lightning, earthquake, cyclone, epidemic, pandemic, acts of a competent authority, acts of public enemies, terrorism, civil commotion, war, invasion, embargo, insurrection, rebellion, sabotage, protest, riot, violence, malicious mischief, extortion, strike, labour dispute or lockout and includes any other cause which could not have been avoided by the exercise of reasonable human foresight and skill, (an event of "Force Majeure") then, subject as hereinafter set out, such party will not be liable to the other party for any resulting failure to perform its obligations hereunder nor shall any remedy against the affected party be exercisable until the cause of and the resulting inability to perform due to such Force Majeure has been removed, and any due dates for performance by a party as set forth herein shall be extended accordingly; provided that no event of Force Majeure shall excuse the performance of payment obligations hereunder for services already rendered or plant Constructed. In any event of Force Majeure, the party or parties whose performance has been affected shall use all reasonable diligence and take such action as it or they may lawfully initiate to remove the cause of the Force Majeure. Upon and during the occurrence of an event of Force Majeure, each party shall continue to perform its covenants under this Agreement as soon as possible and to the extent then remaining possible.

ARTICLE 10
GOVERNING LAW AND FORUM

10.01 This Agreement shall be governed by and interpreted in accordance with the laws of the Province of Newfoundland and Labrador and, subject to Clause 8.01, every action or other proceeding arising hereunder shall be determined exclusively by a court of competent jurisdiction in the Province, subject to the

right of appeal to the Supreme Court of Canada where such appeal lies.

10.02 This Agreement is subject to the approval of the Board.

ARTICLE 11
ADDRESS FOR SERVICE

11.01 Any notice, request or other instrument which is required or permitted to be given, made or served under this Agreement by either of the parties hereto, shall be given, made or served in writing and shall be deemed to be properly given, made or served if personally delivered, or sent by email or facsimile transmission, or mailed by prepaid registered post, addressed, if service is to be made

(a) on Hydro, to

The Corporate Secretary
Newfoundland and Labrador Hydro
Hydro Place
P.O. Box 12400
St. John's, Newfoundland
CANADA. AIB 4K7
HydroCorporateSecretary@nlh.nl.ca
or

(b) on the Customer, to

Battle Harbour Data Solutions Inc.
277-281 Water Street, 4th Floor
St. John’s, Newfoundland and Labrador
A1C 6L3
Email: andrewcollingwood@icloud.com
brentreuter@gmail.com

11.02 Any notice mailed by prepaid registered mail will be conclusively deemed to have been given on the fourth day after mailing thereof and, if given by email, will be conclusively deemed to have been given on the day of transmittal thereof if given during the normal business hours of the recipient and on the next Business Day during which such normal business hours next occur if not given during such hours on any day; provided that, in each case, confirmation

of receipt is received by the party giving the notice. If the party giving any notice knows or ought reasonably to know any difficulties with the postal system that might affect the delivery of mail, any such notice must not be mailed but must be given by email.

11.03 Either of the parties hereto may change the address to which a notice, request or other instrument may be sent to it by giving to the other party to this Agreement notice of such change, and thereafter, every notice, request or other instrument shall be delivered or mailed in the manner prescribed in Clause 11.01 to such party at the new address.

ARTICLE 12
CONFIDENTIAL INFORMATION

12.01 The Customer and Hydro acknowledge and agree that the Customer will provide certain proprietary and business related confidential information during the course of this Agreement. The Customer acknowledges that Hydro is subject to the Public Utilities Act and the Access to Information Act and Personal Privacy Act, 2015, S.N.L. 2015, C. A-1.2, and may be required under law to make disclosures under those statutes or under other legal processes. In particular, Hydro is required to submit this Agreement and the details of the Interconnection Project to the Board for review and approval. Hydro shall take reasonable measures and efforts to protect the confidentiality of this information and, in the event that disclosure is demanded under an order or other legally binding requirement, shall provide due notice of such a requirement to the Customer so that the Customer can avail of an opportunity to make the appropriate representations to the body responsible so as to protect the confidentiality of the Customer's information in Hydro's possession.

ARTICLE 13
COUNTERPARTS

13.01 This Agreement may be executed in counterparts, each of which when so executed shall be deemed to be an original, and such counterparts together shall constitute but one and the same instrument. Signatures delivered by facsimile or electronic mail shall be deemed for all purposes to be original counterparts of this Agreement. Signatures scanned and uploaded by electronic means and electronic signatures provided in accordance with section 11 of the Electronic Commerce Act shall be deemed for all purposes to be original.

IN WITNESS WHEREOF Hydro and the Customer has each executed this Agreement by causing it to be executed in accordance with its by-laws or regulations and by its duly authorized officers or agents.

BATTLE HARBOUR DATA SOLUTIONS INC.

Per: DocuSigned by: Brent Reuter 55368A3870B0449...

Title: Director

Date: 11/13/2025

Per: DocuSigned by: Andrew Collingwood 113E41FB51044E5...

Title: Director

Date: 11/13/2025

NEWFOUNDLAND AND LABRADOR HYDRO

Per: Walter Parsons

Title: VP Transmission and Business Development

Date: 11/14/2025

Per: R. Collett

Title: VP Engineering and NLSO

Date: 11/14/2025

SCHEDULE A

Waterford Capital Inc.

NON-FIRM SERVICE INTERCONNECTION STUDY

SCHEDULE B

Battle Harbour Interconnection Cost Estimate

PUB Summary (Budget 2025 and Future)

Project Cost ($ x1,000)	Previous	2026	2027	Beyond	Total
Material Supply	0.0	40.9	122.1	0.0	163.0
Labour	0.0	88.8	71.2	0.0	159.9
Consultant	0.0	31.9	0.0	0.0	31.9
Contract Work	0.0	105.7	7.0	0.0	112.7
Other Direct Costs	0.0	19.6	2.3	0.0	21.9
Interest and Escalation	0.0	18.1	21.6	0.0	39.7
Contingency	0.0	29.4	40.5	0.0	70.0
Total	0.0	334.4	264.7	0.0	599.1

Schedule 2, Attachment 1

TP–TN–169 – Waterford Capital Inc. – Non-Firm Service Interconnection Study

TP-TN-169

Waterford Capital Inc. - Non-Firm Service Interconnection Study

Purpose

The purpose of this Interconnection Study (Study) is to assess the interconnection requirements and to provide an estimate of the schedule and of the cost of the equipment, engineering, procurement and construction work needed to implement an interconnection between the Waterford Capital Inc. (Customer) site and the Labrador Interconnected System before entering into a service agreement for the Non-Firm Rate Option with Newfoundland & Labrador Hydro (Hydro).

1 Introduction

Hydro received an application for potential non-firm electrical service at the Customer's site at 13-1 Lakeview Dr, Wabush, NL. The request is for non-firm energy, meaning delivery or receipt of the energy may be interrupted at any time without liability to Hydro or the Customer.

This Study is based on Hydro being responsible for designing, estimating, conducting an environmental assessment, constructing, commissioning, operating, and maintaining all equipment up to and including the disconnect switch/metering tank supplying the Customer's site, including the protection and communications termination equipment on both ends.

Further, this Study is based on the Customer being responsible for all aspects of the facilities on their site after the Hydro owned and operated disconnect switch/metering tank. This could include, but is not limited to, circuit breakers, transformers, electrical grounding, fencing, batteries, poles, bus work or control buildings required for the safe interconnection of the Customer's site to the Hydro owned disconnect switch/metering tank.

The Study includes the following elements:

1. An assessment of the impact on the provincial electrical system and other customers of Hydro as a result of the requested service.

2. Definition of common infrastructure upgrades that are required to ensure continued reliable operation of Hydro's electrical system.
3. Definition of the facilities required to physically connect the Customer to Hydro's system, including transmission, electrical, civil, and protection, control and communications systems. Also any required Energy Control Centre or Newfoundland Labrador System Operator (ECC/NLSO) software additions, modifications and programming.
4. Deliverables of this Study include a single line diagram, Class 3 cost estimate (+15%/-10%) and Level 1 schedule for the construction of these facilities.

2 Study Results

A load flow study analysis of the requested interconnection to the electrical system has been completed, using Version 33 of the load modelling software PSS®E. The following assumptions were made with respect to this study:

1) The customer will connect to the 46 kV system on transmission line L33, at a tee-tap located approximately 225 m from Wabush Terminal Station, as shown in Figure 1; and

2) Customer load power factor is 0.90.

The load flow analysis considered normal system operation for both peak and light load scenarios. Based on the analysis, there are no transmission system upgrades required to meet the non-firm minimum load allocations of 5 MW in winter and 12.5 MW in summer.

The Single Line Diagram (SLD) for this interconnection is provided in Appendix A. The new equipment associated with the line tap includes metering and a disconnect switch. A Remote Terminal Unit (RTU) will also need to be installed on the Customer site for communication, control, and monitoring site power usage.

Figure 1: Proposed Interconnection

3 Cost Estimate

The estimated cost to complete the interconnection work described herein is presented in the following table. This includes the necessary engineering, procurement, construction, and commissioning costs for the equipment up to and including the disconnect switch/metering tank supplying the Customer's site.

Project Cost ($ x1,000)	Previous	2022	2023	Beyond	Total
Material Supply	0.0	0.0	116.8	0.0	116.8
Labour	0.0	25.6	137.7	0.0	163.3
Consultant	0.0	0.0	0.0	0.0	0.0
Contract Work	0.0	0.0	112.7	0.0	112.7
Other Direct Costs	0.0	2.0	18.5	0.0	20.5
Interest and Escalation	0.0	1.5	26.2	0.0	27.7
Contingency	0.0	2.8	38.6	0.0	41.4
Total	0.0	31.9	450.5	0.0	482.4

The following notes and assumptions are applicable to this estimate:

1. Costs are based on installing approximately 125m line extension between L33 and Customer site.
2. Typical environmental service, survey, brush cutting cost is included.
3. Assumes that there are no land acquisition issues or significant costs associated with securing the easement for the line extension. Difficulties with land acquisition could impact schedule and budget. Detailed work for easement acquisition will start after project approval.
4. Assumes no issues getting the environmental permits and clearance permits.
5. Assumes no issue getting outage for new line connection.

4 Schedule

Table 1 outlines the anticipated project schedule. The schedule assumes that project approvals, including the establishment of the Customer Contribution Agreement, and PUB approvals are received in the noted timeframe. Also, construction and commissioning of new station is the responsibility of the Customer, so Hydro's installation of some equipment in the new station, as well as the commissioning and energization of the new station is dependant on Customer's construction schedule. Hydro will work with the Customer to coordinate the schedules.

Activity		Start Date	End Date
Project Approval:	Customer Contribution Agreements, PUB Approvals	May 2022	August 2022
Design:	Field survey, Land Acquisistion and Permits, Transmission Line Design, Interconnection Design	August 2022	December 2022
Procurement:	Transmission Materials, RTU, Fiber, Disconnect switch, metering tank	October 2022	May 2023
Construction:	Installation of transmission line poles, anchors, conductor, fibre cable, metering tank, gang operated switch, and RTU *(coordinated with customer substation construction schedule)*	June 2023	September 2023
Commissioning:	Test, Commission, and place interconnection in service	September 2023	September 2023

Table 1: Anticipated Project Schedule

5 Specifications & Customer Requirements

In order to ensure the required operability and safe interconnection of the Customer's site to Hydro's electrical system, the necessary Customer submittals would include, but would not be limited to the following:

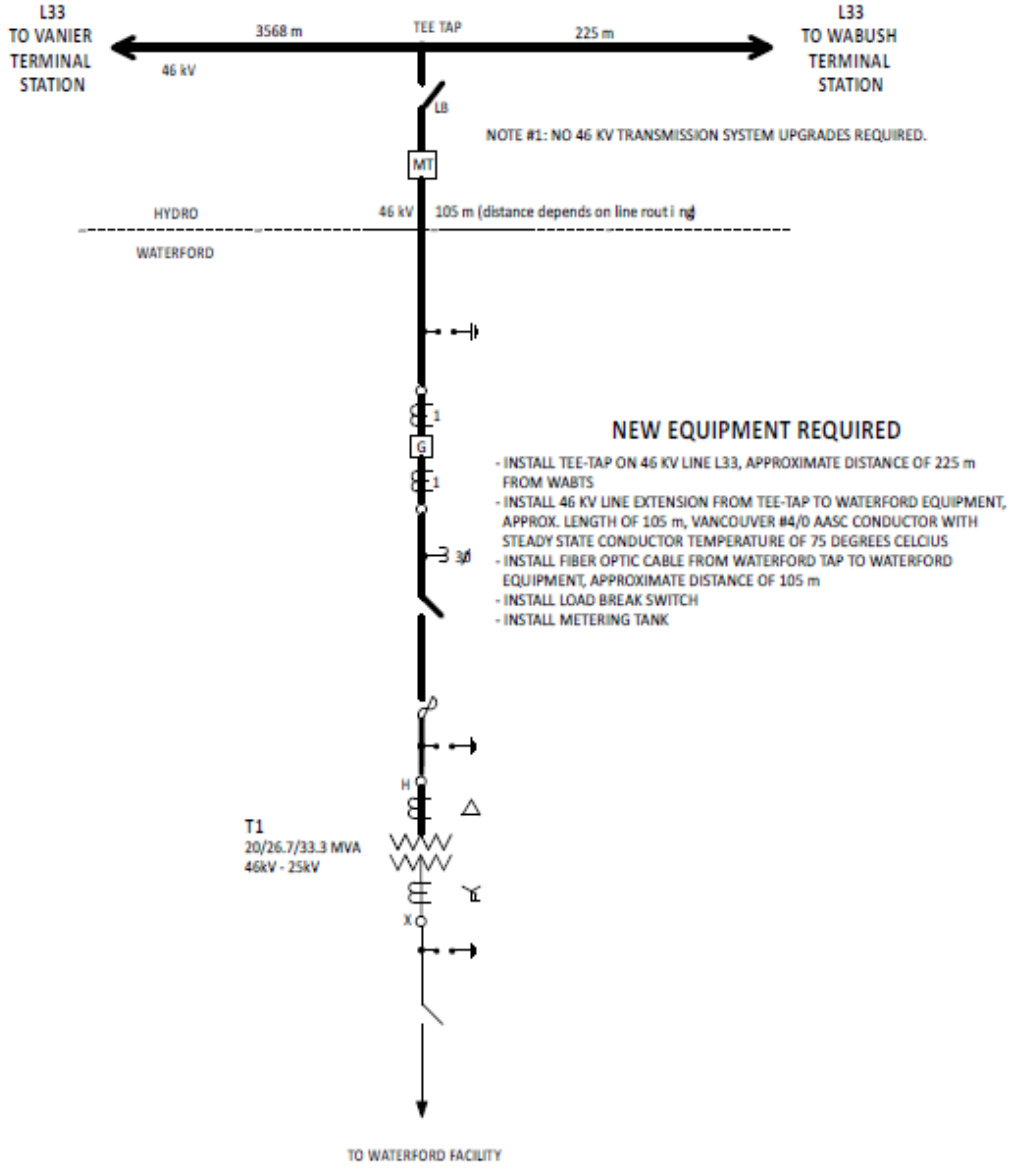
1. Customer's breaker shall meet the specifications provided in Appendix B.
2. Customer shall include in their terminal station design, transformer protection that utilizes modern microprocessor based differential relays.
3. Customer shall provide the factory acceptance testing (FAT) report which confirms that the breaker and other equipment passed the required tests before being released from the factory.
4. Customer shall provide issued for construction (IFC) drawings with sufficient detail to confirm that the breaker and other equipment will be installed in a suitable manner.
5. Customer shall provide completed and signed-off commissioning reports, which would confirm that the installed breaker and other equipment has passed all the electrical tests which illustrate that it will safely work as required.
6. The equipment will not be placed into operation until the test results have been reviewed and evaluated to confirm that the equipment can be safely placed into service. Hydro will review but will not approve customer submittals. Sole responsibility for correct design and operation shall remain with the party completing installation.
7. Customer shall provide a qualified engineer (P.Eng) registered in NL as a technical liaison between Hydro and the Customer during detailed engineering design, construction, commissioning, and energization activities.
8. Customer shall attend coordination meetings as necessary.

6 Contracts & Regulatory Approvals

1. Hydro will require signed Contribution Agreements and full up-front funding from the Customer prior to start of the Project.
2. The start of the Project and Hydro's ability to provide a Non-Firm Service Rate Option are on condition of receiving approval from the Board (The Board of Commissioners of Public Utilities for Newfoundland and Labrador).

APPENDIX A

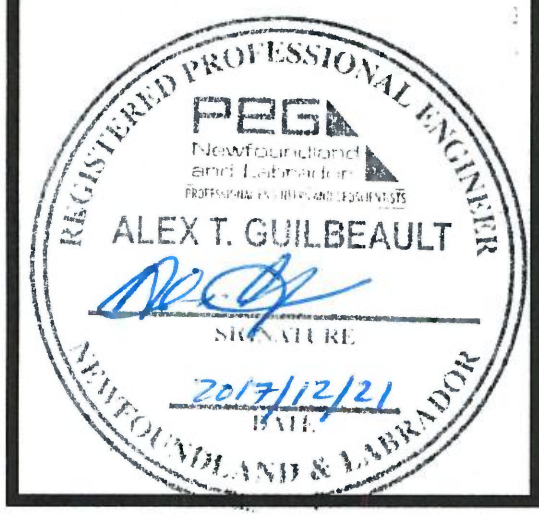
SINGLE LINE DIAGRAM



newfoundland labrador hydro	SINGLE LINE DIAGRAM WATERFORD CAPITAL - LAKEVIEW DRIVE NAP NON-FIRM 46 kV INTERCONNECTION	SYS PLAN:	SHEET 1 OF 1
		SYS OP:	DATE: Apr. 13, 2022
		ELEC:	DRAWN BY: CPH
		P&C:	REVISION: 2
		FILE: Waterford_NAP Non Firm Intercon_Rev 2.skf	

APPENDIX B

REFERENCE SPECIFICATIONS



newfoundland labrador hydro
a nalcor energy company

TERMINALS ENGINEERING STANDARD

No:	**TS07-004-R4**
Page:	**1 of 2**
Issued:	**2017-12-21**
Prepared by:	**A. Guilbeault**
Checked by:	**N. Reid**
Approved by:	**R. Spurrell**

GROUNDING NOTES

1.0 Scope

This standard covers the criteria for fence and station grounding for terminal stations and substations. See standard grounding detail drawings, (TS07-005-R0, Sheets D01 to D15) for installation details.

This standard is to be included with the Drawings when being issued in Construction Contracts.

2.0 Reference Standards

ANSI/IEEE Std. 80-2000 – Guide for Safety in AC Substation Grounding

IEEE 837-2014 – Standard for Qualifying Permanent Connections used in Substation Grounding

CSA C22.1-15 – Canadian electrical code, part I, safety standard for electrical installations

3.0 Grounding Specification

3.1. Exothermic Connections

i. All ground connections shall be of the exothermic type unless otherwise noted on drawings. Exothermic electrical connections which meet IEEE 837-2014 shall be the standard of acceptance.

ii. All Exothermic connections shall be tested with a solid blow from a 0.9 kg hammer. If any crack or movement is evident in the joint or if greater than 30% of the molded material is loosened, the connection shall be replaced.

3.2. Grounding System

i. For all new installations, the station ground grid shall be a minimum #4/0 AWG soft drawn, bare copper (SDBC) stranded conductor buried at 400 mm below finished grade.

ii. When possible the station ground conductor shall be placed adjacent to and in the same excavation as the cable trench.

iii. All risers to station structures or equipment shall be #4/0 AWG SDBC stranded conductor and shall be secured at intervals of 1500 mm (minimum).

iv. The ground conductor shall be exothermically welded to all ground rods, end posts, corner posts, gate posts and to every fourth fence post (i.e. every 12 m spacing). All fence posts along the sections of fence where transmission lines enter the station shall be exothermically welded to the ground grid. The ground conductor and exothermic connection shall be installed below finished grade.

v. The fence gate ground conductor shall be installed under the sweep area of the gate as shown on drawing TS07-005-D03, to form an equipotential ground mat. The ground conductor shall be buried 400 mm below finished grade and 1000 mm outside the fence.

vi. Barbed wire shall be connected to the fence ground at 12m intervals as shown on drawings TS07-005-D02.

4.0 Justification

4.1. Conductor

i. #4/0 AWG SDBC stranded conductor is used for fence and station grounding because the current carrying capacity of the conductor is sufficient for the maximum fault currents on the Hydro grid. The conductor is also of sufficient physical size to offer good protection from mechanical damage.

4.2. Connections

i. Exothermic connections meeting IEEE 837-2014 are used for station grounding rather than mechanical connectors for the following reasons:

- Better electrical connection since conductors are fused together.
- Connections will not deteriorate with age.
- Connections cannot loosen or corrode.
- Connections will withstand repeated faults.
- Low material and labour costs.

4.3. Bonding

i. The fence ground grid is grounded to the station ground grid because inclusion of the fence within the ground-grid area increases the size of the area and thereby substantially reduces the ground-grid resistance, and hence the maximum ground-grid voltage rises as well. While the fence is now affected by this rise, this is not a concern if internal and perimeter voltage gradients of the grid are kept within acceptable limits.

ITEM No.	DESCRIPTION
1	GROUND ROD, COPPER COATED 19mm X 3000mm, SLACAN 9340 OR EQUAL
2A	WIRE, NO. 4/0 SD COPPER, BARE CONCENTRIC, LAY STRANDED, 19 STRAND
2B	WIRE, NO. 2/0 SD COPPER, BARE CONCENTRIC, STRANDED
2C	WIRE, NO. 2 SD COPPER, BARE CONCENTRIC, STRANDED
4	COPPER CRIMPIT – #2 SOL – #2 STR. (RUN) TO #8 SOL – #4 STR. (TAP) BURNDY YC2C4 OR EQUAL
5	CADWELD CONNECTION, TYPE VN, RH & LH, CABLE TO SIDE OF HORIZONTAL STEEL PIPE
6	CADWELD CONNECTION, TYPE VF, CABLE TO VERTICAL STEEL PIPE
7	CADWELD CONNECTION, TYPE HC, THRU HORIZONTAL CABLE TO SIDE OF HORIZONTAL STEEL PIPE
8	CADWELD CONNECTION, TYPE VS, CABLE 45° TO VERTICAL PIPE (NOTE 2)
9A	CADWELD CONNECTION, TYPE TA, CABLE RUN & TAP (SIZE AS REQUIRED)
9B	CADWELD CONNECTION, TYPE TA, CABLE RUN & TAP, #4/0–#4/0
10	CADWELD CONNECTION, TYPE VS, CABLE 45° TO FLAT STEEL
11	CADWELD CONNECTION, TYPE GT, CABLE TO GROUND ROD (SIZE AS REQUIRED)
12	CADWELD CONNECTION, TYPE XA, CABLE TO CABLE 'X' CONNECTION
13	CABLE, WELDING – #4/0
14	SLEEVE [FOR BOTH ENDS OF 4/0 WELDING CABLE], CADWELD, TYPE S–429–F–2S16
15	STUD, THREADED, FOR FASTENING TO STRUCTURAL STEEL, THREAD – 6mmø X 20mm LONG, SHANK –
	9mm LONG, HILTI TYPE EW6 H–20–9 P 12
16	CLAMP, 13mm P.V.C. COATED STEEL, 1 HOLE, IPEX CS 10–1 OR EQUAL
17	CONNECTOR, GROUND FOR 2–7/16" ø GALV. STEEL WIRE TO FLAT STEEL, BURNDY TYPE
	GC2929–GS OR EQUAL
18	CONNECTOR, GROUND FOR 4/0 SD COPPER, BARE CONCENTRIC TO STAINLESS STEEL PIPE (SIZE AS REQUIRED)
19	MAT, GRADIENT CONTROL, APPROX. 1800mm X 1200mm GALVANIZED STEEL WITH 150mm SQUARE MESH
20	CONNECTOR, GROUND FOR COPPER CONDUCTOR TO FLAT STEEL, BURNDY GB29, RANGE 2/0–250MCM
21	SERVIT POST FOR COPPER CABLE TO FLAT STEEL, BURNDY KC28, RANGE 1–4/0
24	TERMINAL, NEMA DRILLED 2 HOLE FOR 4/0 BARE STRANDED COPPER, BURNDY NAS292N OR EQUAL
30	WIRE, GALVANIZED STEEL, 7/16"ø, 7 STRAND
31	CONNECTOR, GROUND FOR 3 – 7/16"ø GALVANIZED STEEL WIRE TO FLAT STEEL, BURNDY
	GE2929–GS OR EQUAL
32	CLAMPS, STRAIGHT LINE, FOR ITEM '30' BURNDY CUW32RE OR EQUAL
62A	STAPLE, GALVANIZED, 1–1/4" WITH 3/8" OPENING

NOTE:

1. USE WITH DWG. NO.'S TS07–005–D02 TO TS07–005–D23.
2. PREFERENCE IS TO CADWELD TO FENCE POST. IF A SUITABLE CADWELD CONNECTION CANNOT BE ACHIEVED, A MECHANICAL CONNECTOR CAN BE USED. BURNDY GAR GROUND CLAMP FOR THE APPROPRIATE FENCE SIZE IS ACCEPTABLE. NLH ENGINEERING APPROVAL MUST BE OBTAINED PRIOR TO USING MECHANICAL CONNECTIONS.

R8	ADDED ITEM 62A	G.W.

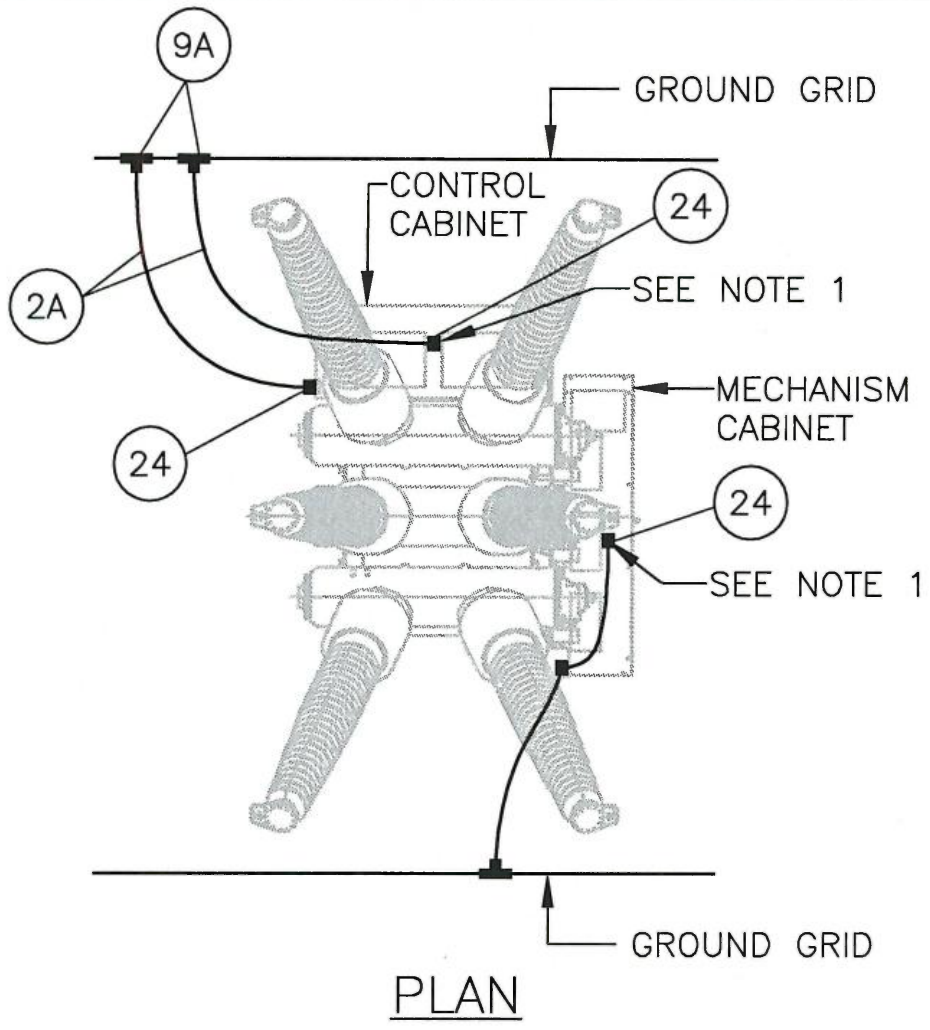
REGISTERED PROFESSIONAL ENGINEER
PEG Newfoundland and Labrador
PROFESSIONAL ENGINEERS AND GEOSCIENTISTS
ALEX GUILBEAULT
SIGNATURE
2022/01/06
DATE
NEWFOUNDLAND & LABRADOR

GROUNDING DETAILS BILL OF MATERIAL

newfoundland labrador hydro
a nalcor energy company

TERMINAL ENGINEERING STANDARDS

DESIGNED	A. GUILBEAULT	DRAWN	C. HARNUM
CHECKED	K. LAYDEN KL	ISSUED	2021–12–08
APPROVED	P. NOLAN	DWG. No.	**TS07–005–D01–R8**



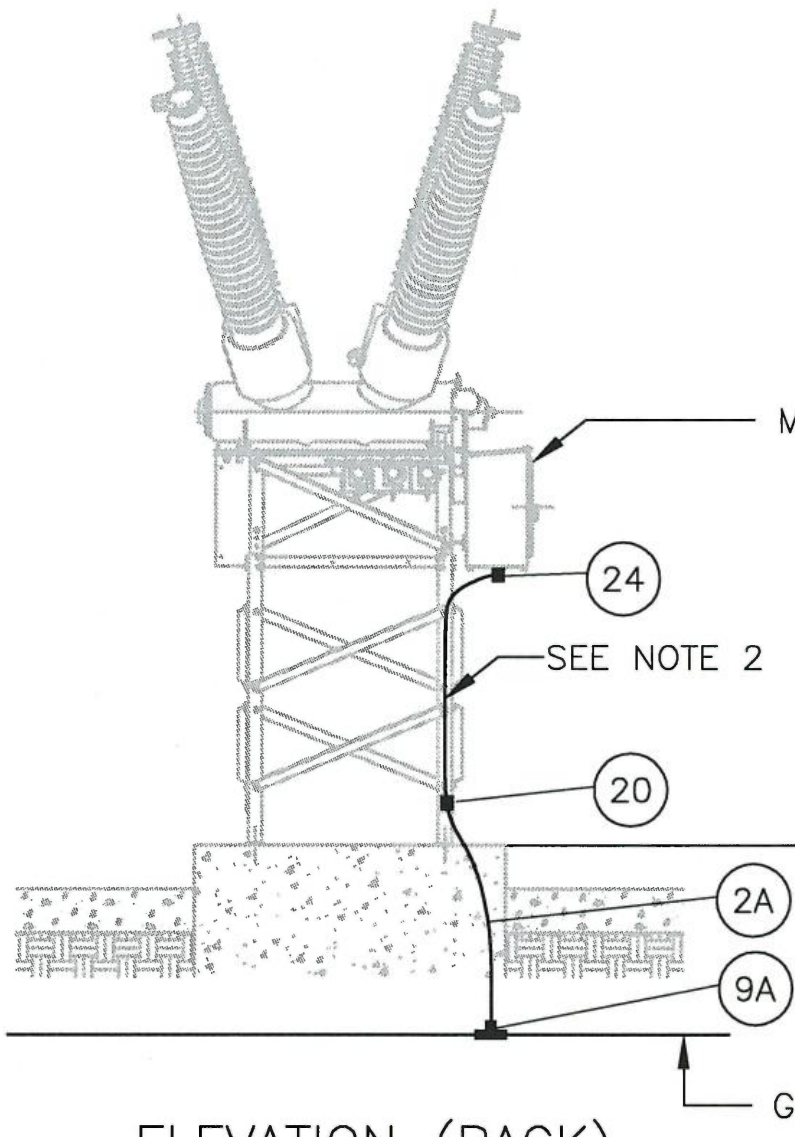
PLAN

REF:

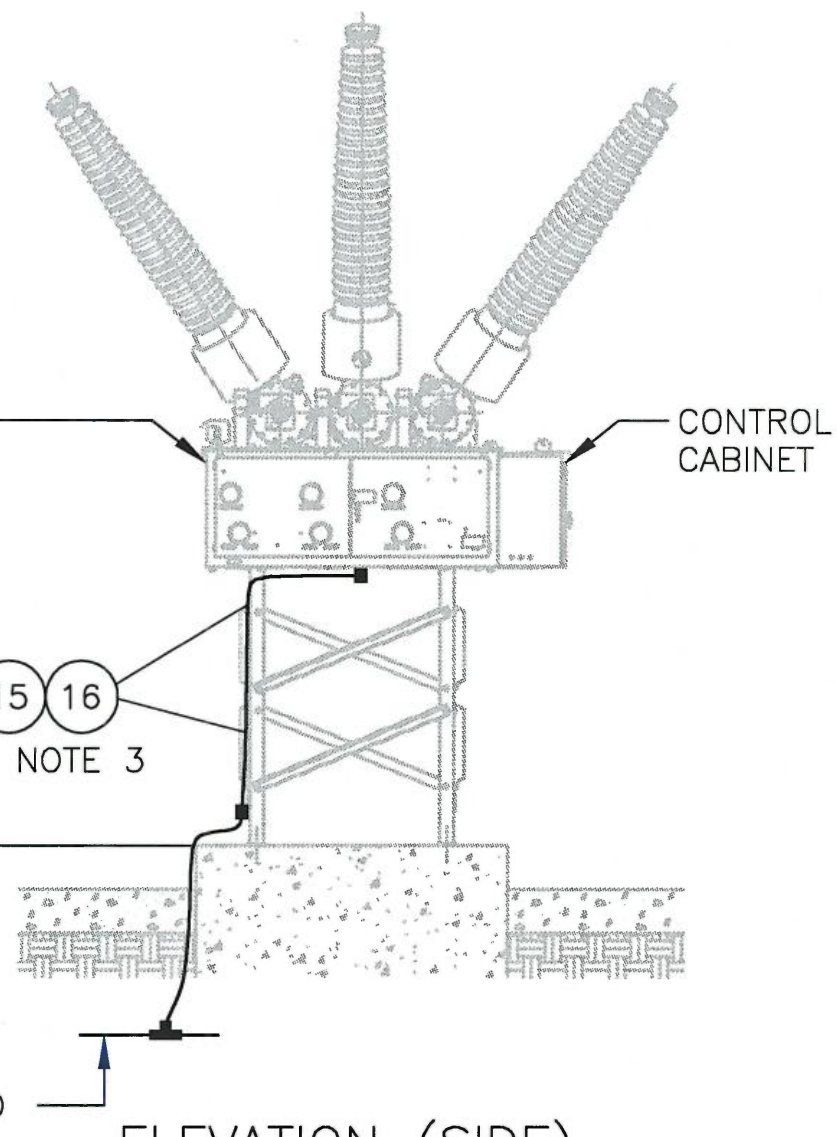
BILL OF MATERIAL #TS07–005–D01
GROUNDING NOTE #TS07–004

NOTES:

1. CONTROL CABINET AND MECHANISM CABINET TO BE GROUNDED ON THE UNDERSIDE OF THE CABINET.
2. GROUND CONDUTOR SHALL FORM A CONTINUOUS RUN FROM THE GROUND GRID TO THE MECHANISM CABINET.
3. GROUND CONDUCTOR SHALL BE SECURED USING THREADED STUD AND PVC COATED CLAMP 1000mm ABOVE FINISHED GRADE AND AT 1000mm INTERVALS THEREAFTER.
4. GROUNDING DETAILS SHOWN USING GANG STYLE BREAKER BUT ALSO APPLIES TO SINGLE POLE BREAKERS.



ELEVATION (BACK)



ELEVATION (SIDE)

R1	DRAWING REDRAWN & CHANGED TO NEW TITLE BLOCK WITH STAMP - DEC. 2017	C.M.

REGISTERED PROFESSIONAL ENGINEER
PEG Newfoundland and Labrador PROFESSIONAL ENGINEERS AND GEOSCIENTISTS
ALEX GUILBEAULT
SIGNATURE
2017/12/21
DATE
NEWFOUNDLAND & LABRADOR

GROUNDING DETAILS
DEAD TANK CIRCUIT BREAKER

newfoundland labrador hydro
a nalcor energy company

TERMINAL ENGINEERING STANDARDS

DESIGNED	A. GUILBEAULT	DRAWN	C. MACKEY
CHECKED	N. REID	ISSUED	2017–12–21
APPROVED	R. SPURRELL	DWG. No.	TS07–005–D08–R1

PLOT SCALE 1:1

ITEM No.	DESCRIPTION
1	25mm P.V.C. RIGID CONDUIT
2	25mm LIQUID TIGHT FLEXIBLE CONDUIT (NON METALLIC)
3	25mm P.V.C. O–RING EXPANSION COUPLER
4	25mm P.V.C. CONDUIT FITTING TYPE LB
5	25mm P.V.C. 90
6	25mm P.V.C. COATED STEEL PIPE STRAPS (1 HOLE)
7	25mm FEMALE ADAPTER FOR ITEM 1
8	25mm TERMINAL ADAPTER FOR ITEM 1 C/W LOCKNUT AND BUSHING
9	25mm CONNECTOR FOR ITEM 2
10	
11	50mm P.V.C. RIGID CONDUIT
12	50mm LIQUID TIGHT FLEXIBLE CONDUIT (NON METALLIC)
13	50mm P.V.C. O–RING EXPANSION COUPLER
14	50mm P.V.C. CONDUIT FITTING TYPE LB
15	50mm P.V.C. 90
16	50mm P.V.C. COATED STEEL PIPE STRAPS (1 HOLE)
17	50mm FEMALE ADAPTER FOR ITEM 11
18	50mm TERMINAL ADAPTER FOR ITEM 11 C/W LOCKNUT AND BUSHING
19	50mm CONNECTOR FOR ITEM 12
20	
21	75mm P.V.C. RIGID CONDUIT
22	75mm LIQUID TIGHT FLEXIBLE CONDUIT (NON METALLIC)
23	75mm P.V.C. O–RING EXPANSION COUPLER
24	75mm P.V.C. CONDUIT FITTING TYPE LB
25	75mm P.V.C. 90
26	75mm P.V.C. COATED STEEL PIPE STRAPS (1 HOLE)
27	75mm FEMALE ADAPTER FOR ITEM 21
28	75mm TERMINAL ADAPTER FOR ITEM 21 C/W LOCKNUT AND BUSHING
29	75mm CONNECTOR FOR ITEM 22
30	
31	100mm PVC RIGID CONDUIT
32	100mm LIQUID TIGHT FLEXIBLE CONDUIT (NON–METALLIC)
33	100mm PVC O–RING EXPANSION COUPLER
34	100mm PVC CONDUIT FITTING TYPE LB
35	100mm PVC 90
36	100mm PVC COATED STEEL PIPE STRAPS (1 HOLE)

NOTE :

USE WITH DWG. NO.'S TS08–002–D02 TO TS08–002–D07.

R3	REVISED PART NUMBERS FOR SUB-STATION LIGHTS	G.W.

LICENSED PROFESSIONAL ENGINEER
08547
Jared Hawco
J. Hawco
SIGNATURE
May 7, 2021
DATE
NEWFOUNDLAND & LABRADOR

CONDUIT AND FITTINGS BILL OF MATERIALS

(SHEET 1 OF 2)

newfoundland labrador hydro
a nalcor energy company

TERMINAL ENGINEERING STANDARDS

DESIGNED	J. HAWCO JH	DRAWN	G. WALSH
CHECKED	K. LAYDEN KL	ISSUED	2021–05–05
APPROVED	H. IRELAND HI	DWG. No.	TS08–002–D01–R3

PLOT SCALE 1:1

ITEM No.	DESCRIPTION
37	100mm FEMALE ADAPTER FOR ITEM 1
38	100mm TERMINAL ADAPTER FOR ITEM 1 C/W LOCKNUT AND BUSHING
39	100mm CONNECTOR FOR ITEM 32
40	
41	STUD, THREADED, FOR FASTENING TO STRUCTURAL STEEL OR CONCRETE, THREAD – 6mmø X 20mm
	LONG, SHANK – 9mm LONG, HILTI TYPE EW6 H–20–9 P12 OR EQUIV.
42	JUNCTION BOX, NON–METALLIC, WATERPROOF, 100mm X 100mm X 100mm
43	CABINET, TERMINAL, FOR C.T.'S & V.T.'S, STAINLESS STEEL GRADE 304 TYPE 4X ENCLOSURE,
	610mm X 510mm X 200mm, WEGMANN SSN4242008 OR EQUIVALENT. c/w STAINLESS STEEL
	SUB PANEL (533mm X 432mm) WEGMANN NP2420SS OR EQUIVALENT.
44	ALUMINUM UNISTRUT, 1 5/8" X 1 5/8"
45	
46	LINE MATCHING UNIT (LMU)
47	HOLOPHANE PXHW–12000LM–WD–120–30K–70CRI–UNM–DGXD–CR–AO + 072331CR
	MOUNTING ARM (SINGLE)
48	HOLOPHANE PXHW–12000LM–WD–120–30K–70CRI–UNM–DGXD–CR–AO (X2) + 072332CR
	MOUNTING ARM (DOUBLE)

NOTE :

USE WITH DWG. NO.'S TS08–002–D02 TO TS08–002–D07.

R3	REVISED PART NUMBERS FOR SUB-STATION LIGHTS	G.W.

LICENSED PROFESSIONAL ENGINEER
08547
Jared Hawco
J. Hawco
SIGNATURE
May 7, 2021
DATE
NEWFOUNDLAND & LABRADOR

CONDUIT AND FITTINGS BILL OF MATERIALS

(SHEET 2 OF 2)

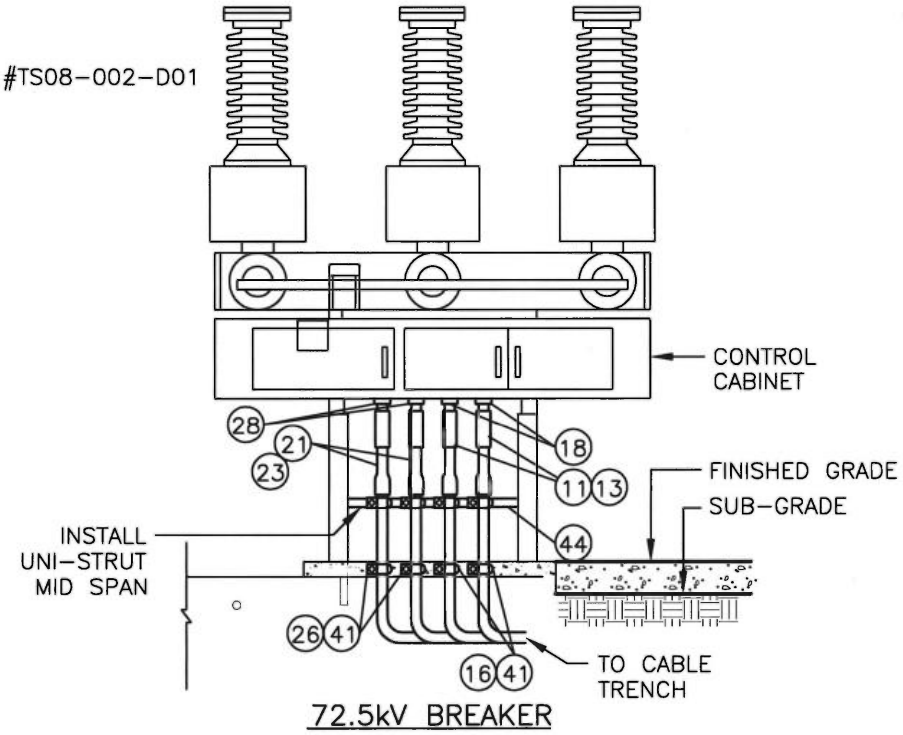
newfoundland labrador hydro
a nalcor energy company

TERMINAL ENGINEERING STANDARDS

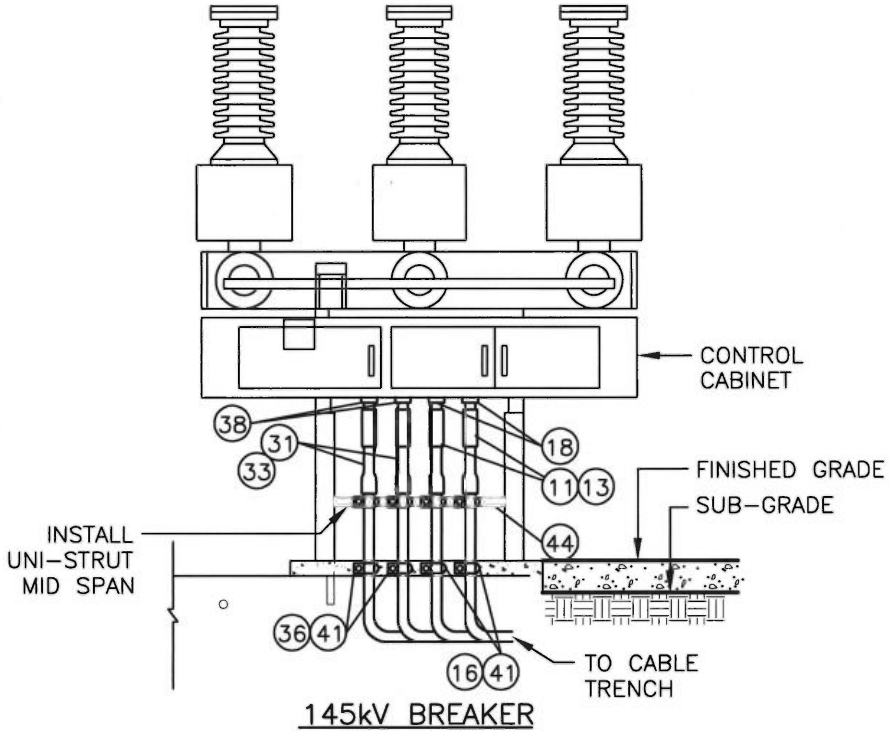
DESIGNED	J. HAWCO	JH	DRAWN	G. WALSH
CHECKED	K. LAYDEN	KL	ISSUED	2021–05–05
APPROVED	H. IRELAND	HI	DWG. No.	TS08–002–D01–R3

PLOT SCALE 1:1

REF:
BILL OF MATERIALS #TS08–002–D01



72.5kV BREAKER



145kV BREAKER

R3	INCREASE 3" CONDUIT TO 4" CONDUIT FOR 145kV BREAKER	G.W.

LICENSED PROFESSIONAL ENGINEER
08547
Jared Hawco
J Hawco
SIGNATURE
May 7, 2021
DATE
NEWFOUNDLAND & LABRADOR

CONDUIT ARRANGEMENT
DEAD TANK CIRCUIT BREAKER
(SHEET 1 OF 2)

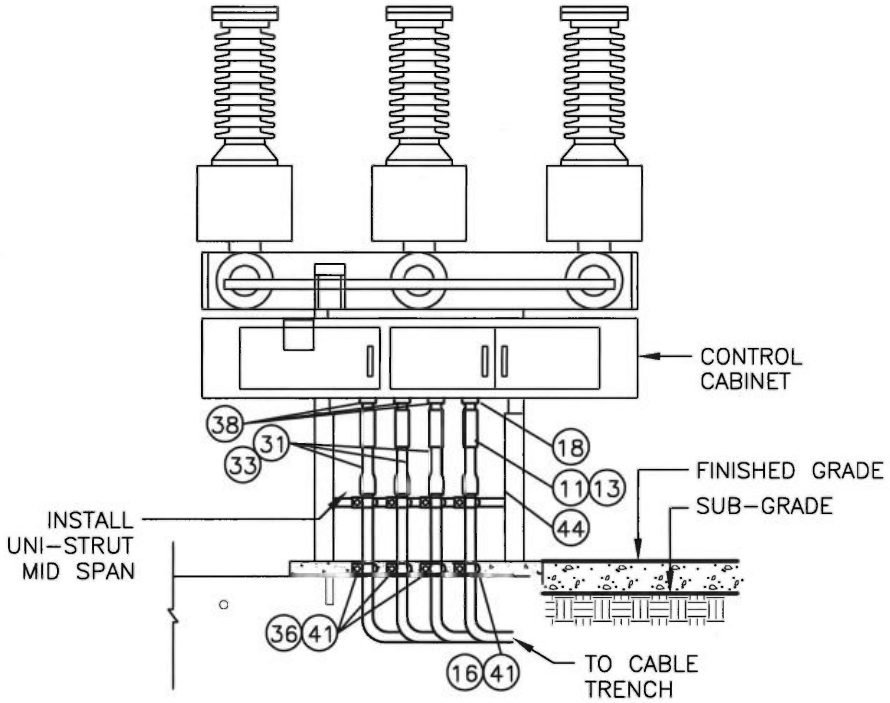
newfoundland labrador hydro
a nalcor energy company

TERMINAL ENGINEERING STANDARDS

DESIGNED	J. HAWCO	JH	DRAWN G. WALSH
CHECKED	K. LAYDEN	KL	ISSUED 2021–05–05
APPROVED	H. IRELAND	HI	DWG. No. TS08–002–D05–R3

PLOT SCALE 1:1

REF:
BILL OF MATERIALS #TS08–002–D01



245kV BREAKER

R3	INCREASE 3" CONDUIT TO 4" CONDUIT FOR 145kV BREAKER	G.W.

LICENSED PROFESSIONAL ENGINEER
08547
Jared Hawco
J. Hawco
SIGNATURE
May 7, 2021
DATE
NEWFOUNDLAND & LABRADOR

CONDUIT ARRANGEMENT
DEAD TANK CIRCUIT BREAKER
(SHEET 2 OF 2)

newfoundland labrador hydro
a nalcor energy company

TERMINAL ENGINEERING STANDARDS

DESIGNED	J. HAWCO JH	DRAWN	G. WALSH
CHECKED	K. LAYDEN KL	ISSUED	2021–05–05
APPROVED	H. IRELAND HI	DWG. No.	TS08–002–D05–R3

PLOT SCALE 1:1

NEWFOUNDLAND AND LABRADOR HYDRO

CIVIL N/A	MECHANICAL N/A
CHECKED:	CHECKED:
COMMUNICATION N/A	PROTECTION & CONTROL LICENSED PROFESSIONAL ENGINEER 10044 AARON C. ANSTEY SIGNATURE May 10, 2021 DATE NEWFOUNDLAND & LABRADOR
CHECKED:	CHECKED:
ELECTRICAL LICENSED PROFESSIONAL ENGINEER 08547 Jared Hawco SIGNATURE May 19, 2021 DATE NEWFOUNDLAND & LABRADOR	TRANSMISSION & DISTRIBUTION N/A
CHECKED:	CHECKED:

Table of Contents

1.0 General Requirements

1.1 This specification covers the design, manufacture, testing, supply and delivery of each circuit breaker (hereinafter called "Equipment") complete with all auxiliary components, spare parts and special tools as described in this standard.

1.2 Equipment shall be designed to operate in an ambient temperature range of -40°C to +40°C for Newfoundland and -50°C to +40°C for Labrador.

1.3 Equipment shall be designed to withstand winds up to 160 km/h and 25 mm of ice in a marine high humidity corrosive environment.

1.4 Vendor shall have service personnel and facilities in Canada or United States for repair of supplied Equipment.

1.5 Equipment shall be a standard proven design reflecting contemporary practice and not incorporating any new designs, components or component arrangements which may be considered prototype. Equipment must have a proven service record under the service conditions equal to those stated in this specification. If required by Purchaser, Vendor must submit with its Tender a list of other units in service in similar operating requirements as those stated in this specification.

1.6 Four (4) weeks after receiving order, Vendor shall furnish the following documents in electronic format (.pdf & .dwg) for Purchaser's review and acceptance:

(a) all documents certifying that the design work is complete and conforms with the terms of the purchase order,
(b) detailed technical literature,
(c) any other information and Drawings in sufficient detail to enable Purchaser to finalize the general arrangement, mounting details, bus-work and schematics for the Equipment.

1.7 Following the documentation review, Purchaser shall return one (1) copy of the documents stamped "Work May Proceed" or "Revise and Resubmit."

1.8 Upon receipt of Drawings and data stamped "Revise and Resubmit", Vendor shall modify the Drawings and data and any other Drawings and data affected by such modification and resubmit them to Purchaser for review. Modification and resubmission shall continue until such time as the Drawings and data are stamped "Work May Proceed".

1.9 No later than thirty (30) days before scheduled shipment of the Equipment, Vendor shall furnish to the Purchaser, one (1) complete set of all Drawings, factory acceptance test results and data in electronic format (.pdf & .dwg) or on an electronic media. All Drawing files shall be compatible with .dwg extension using the latest version of AutoCAD.

1.10 Vendor shall furnish a copy of the operation and maintenance manuals two (2) weeks prior to shipment of the Equipment. The complete operation and maintenance manuals shall include factory acceptance test reports, device data sheets including bushings, all Drawings, spare parts lists, MSDS sheets, CT curves, torque values and all other relevant information. An electronic copy, on electronic media, shall be included with each manual. Electronic documents shall be arranged through the use of hyperlinks to navigate between the table of contents and the body of the text.

1.11 One (1) copy of the operation and maintenance manual and final Equipment drawings shall be included with the Equipment at the time of shipment.

1.12 Purchaser shall be advised of any and all factory test failures which occur. A written report shall be supplied indicating the corrective action(s) taken.

1.13 Vendor shall be responsible for delivery of Goods to the F.O.B. Point, as indicated below. Vendor shall notify F.O.B. Point three (3) days prior to shipment delivery. Vendor shall clearly mark, using a weather proof label, all components of the breaker(s) so each component can be easily identified according to the breaker to which it belongs. Label shall include purchase order number, purchaser's name, breaker serial number, breaker equipment I.D. and location.

All items shall be shipped directly to:

F.O.B. Destination Point

Identified on Requisition

1.14 Vendor is responsible for application of packing materials to properly protect the circuit breaker, including the bushings, from dirt and/or debris during transportation.

1.15 If Vendor fails to deliver the Goods on the delivery date stated in the Purchase Order, and such delay is not occasioned by Force Majeure, Vendor shall discount its Purchase Price, exclusive of taxes, stated therein by the sum of two percent (2%) per week for each of the first three-(3) calendar weeks of late delivery and one percent (1%) per calendar week for each subsequent week of the late delivery to a maximum of ten percent (10%) of the Purchase Price. Vendor hereby confirms and agrees that the aforesaid late delivery charges are reflective of the actual costs and damages to be sustained by Purchaser should a delay occur and Vendor hereby waives any right to dispute or challenge the amount of these charges and shall not take issue with or challenge such amounts in any legal proceedings that may be commenced concerning this Purchase Order / Contract.

1.16 The Goods are required to be delivered as soon as possible. The lead time of Goods will form part of the evaluation criteria. As part of this Specification, the Vendor is asked to complete the table in **Appendix B** outlining the lead times for each item and the cost to expedite (with associated expedited lead times).

2.0 Applicable Codes and Standards

Equipment shall be designed, manufactured, tested, and supplied in accordance with the latest edition of all applicable codes and standards as listed. The list of standards may not be exhaustive, and does not modify the legal obligations of the Vendor who is asked to comply with any further standard, regulation and legislation which may be relevant.

The editions indicated were valid at the time of calling the Tender. Vendor shall bear in mind that standards are subject to revision; their most recent edition shall always be applied.

In case of any conflict between codes, between standards, or between codes and standards, such conflict shall be brought to the attention of Purchaser for clarification and determination.

IEC 62271-1	High-Voltage Switchgear and Control Gear - Part 1 : Common Specifications
IEC 60137	Insulated Bushings for Alternating Voltages above 1000 Volts
IEEE C37.010	Application Guide for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis
IEEE C37.011	Application Guide for Transient Recovery Voltage for AC High-Voltage Circuit Breakers
IEEE C37.012	Application Guide for Capacitance Current Switching for AC High-Voltage Circuit Breakers
IEEE C37.04	IEEE Standard Rating Structure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis
IEEE C37.06	AC High-Voltage Circuit Breakers Rated on Symmetrical Current Basis Preferred Ratings and Related Required Capabilities for Voltages Above 1000V
IEEE C37.081	IEEE Guide for Synthetic Fault Testing of AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis
IEEE C37.09	IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis
IEEE C37.11	Standard Requirements for Electrical Control for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis.
IEEE C37.12	Specification Guide for AC High-Voltage Circuit Breakers Based on a Symmetrical Current Basis
IEEE C37.90.1	IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems
IEEE C37.100	Standard Definitions for Power Switchgear
IEEE C37.99	IEEE Guide for the Protection of Shunt Capacitor Banks
ISO 9001	Quality Control Program
EEMAC Y1-2	Performance Specification for Finishing Systems for Outdoor Electrical Equipment

CSA C22.2 NO. 127-09	Equipment and Lead Wires
CSA-C60044-1-07	Instrument Transformers Part 1: Current Transformers
NEMA CC-1	Electrical Power Connection for Substations
NEMA SG 6	Power Switching Equipment
CSA C22.2 NO. 248	Low Voltage Fuses
IEEE C57.13	IEEE Standard Requirements for Instrument Transformers

3.0 Technical Requirements

3.1 General

3.1.1 Each circuit breaker shall be supplied complete with a steel structure suitable for mounting on a concrete foundation. Each circuit breaker structure shall be double cross-braced on each side to prevent vibration and shall be supported using only concrete pads and anchor bolts. Vendor shall ensure the minimum heights between live parts and circuit breaker base as listed in Appendix A "Technical Requirements". Steel support structure height shall be field adjustable in 152mm (6") increments.

3.1.2 The steel structure shall have a minimum of two (2) 2-hole NEMA drilled stainless steel faced terminal pads located on diagonally opposite corners of the structure. These holes shall be located 400 mm above the base of the structure for the purpose of grounding.

3.1.3 The circuit breaker shall be electrically, and mechanically (if applicable), trip free with anti-pumping circuits.

3.1.4 All pressure gauges, density meters and the circuit breaker position indicator shall be readily visible from ground level without opening doors, covers, or shields. All pressure gauges and density meters shall have a red-yellow-green color scheme as well as graduated markings showing a numerical scale for the complete range of the device. Each phase shall be gauged individually for all voltage classes of Equipment and be temperature corrected. The Standard of Acceptance shall be: Wika Model 233.52.100 (GDM) with auxiliary contacts and Gas Density Transmitter or approved equal.

3.1.5 Circuit breaker nameplate must be made of stainless steel, with all breaker specifications engraved and blackened.

3.1.6 All moving parts shall be guarded. The circuit breaker shall be equipped with an over pressure device positioned so as not to impose danger to personnel or nearby equipment.

3.1.7 Circuit breakers manufactured with a spring operating mechanism design shall be able to undergo one (1) trip - close - trip cycle and restoration of full energy within 10 seconds after trip cycle operation.

3.1.8 For gas insulated circuit breakers, Vendor shall fit the circuit breaker with a 1/2 inch NPT male fitting, Type DILO #DN8, accessible from the ground level. Vendor shall supply two (2) meters of flexible hose with 1/2 inch female swivel connectors Type DILO #DN8 at each end for filling circuit breaker with mixed gas. **Vendor shall supply a gas filling kit including one (1) gas regulator and one (1) hose with each circuit breaker.**

3.2 Low Voltage Wiring

3.2.1 All wiring shall be Type SIS 41 strand wire, 90°C, 600 volts with colour black insulation AWM Style 1015 as per Section 2.0 Codes and Standards. The minimum wire size shall be #14 AWG.

For dead tank breakers, current transformer leads shall be #10 AWG as a minimum. All wires shall be terminated with ring tongue, non-split, nylon insulated compression type connectors.

3.2.2 All wiring for auxiliary components shall be #12 AWG, Type SIS 41 strand wire, 90°C, 600 volts with colour black insulation AWM Style 1015 as per Section 2.0 Codes and Standards.

3.2.3 Vendor shall provide white marking tags at both ends of all wiring to clearly identify all wiring terminations as shown on Drawings.

3.2.4 All wiring shall be terminal to terminal. Splices, tee-connectors, or other quick connect terminal adapters are not acceptable. No more than two wires shall be connected to any one terminal.

3.2.5 Vendor shall arrange all wiring in a neat and quality manner. All wiring shall be placed in a wire duct system that is covered and securely fastened to the rear panel of the cabinet. Sufficient space shall be maintained between wiring and cabinet heaters.

3.2.6 For dead tank breakers, all terminal blocks for C.T. wiring in the main control cabinet shall be sliding disconnect link type, fire self-extinguishing. Standard of Acceptance shall be States Multi-Amp, Type ZWM or approved equal.

3.2.7 For dead tank breakers, all terminal blocks for C.T. wiring in the circuit breaker operating mechanism cabinets shall be DIN rail mounted and mechanically bolted with a feed through connection for #8 AWG with a minimum voltage rating of 600V.

3.2.8 All terminal blocks utilized by the Vendor for inter-panel wiring shall be DIN rail mounted, mechanically bolted with a feed through connection, sliding link, minimum voltage rating of 600V and wire range #22 – #10 AWG. Standard of Acceptance shall be Phoenix ATTA6-T P/P or approved equal. A minimum of twelve (12) spare terminals shall be supplied for Purchaser's future use.

3.2.9 All terminal blocks for AC and DC power supply shall be sliding disconnect link type, fire self-extinguishing, minimum voltage rating of 600V and wire range up to #6 AWG. Standard of Acceptance shall be States Multi-Amp, Type ZWM or approved equal.

3.2.10 All terminal blocks where Purchaser's field wiring will terminate in breaker control cabinet shall be DIN rail mounted, mechanically bolted with a feed through connection, sliding link, minimum voltage level 600V and wire range #18 – #6 AWG.

3.2.11 Vendor shall maintain a minimum spacing of 100 mm (4") between the outside edges of all terminal blocks and from all four sides of the cabinet. All terminal blocks and relays shall be mounted on a back panel located at the rear of the control cabinet. The sides of the cabinet shall be left unused. Vendor shall make all internal connections on inside of terminal blocks only. The outside of the terminal blocks shall be left for Purchaser's use and clearly indicated on Vendor's Drawings "For Customer Use". The bottom of the cabinet shall be left clear to facilitate entry and termination of Purchaser's cables. All equipment and terminal blocks shall be located so that they shall not interfere with the wiring and termination of cables.

3.2.12 All control cables running on the exterior of the circuit breaker shall be in liquid tight flexible conduit with matching end terminals.

3.3 Insulating Medium

3.3.1 Circuit breakers shall be supplied with a gas quantity to fully field test each circuit breaker and completely fill the circuit breaker to its operating density.

3.3.2 Circuit breakers shall be designed to operate under the stated environmental conditions using pure SF6 gas for Newfoundland and mixed gas for Labrador.

3.3.3 Each phase of the circuit breaker shall have a separate gas system isolated from the other two phases. Each phase shall have its own three-way valve, density gauge and fill point. For breakers with a cold weather package all gas tubing shall be heat traced or insulated.

3.3.4 Vendor shall supply one (1) three-way ball valve as part of the gas system to enable the Purchaser to test and verify alarm and lockout points. The three-way valve shall have a center-off orientation.

3.3.5 Gas rupture disk and associated parts shall be manufactured using corrosion resistive material.

3.4 Control Cabinet and Spring Mechanism Cabinet

3.4.1 The control cabinets shall be a stainless steel NEMA 4X enclosure.

3.4.2 The centerline height of the control cabinet shall be five (5) feet from the steel base of the structure to allow for worker access to the cabinet. In the event that the cabinet cannot meet this requirement, a hot-dipped galvanized serrated steel access platform will be permitted. The access platform's top plate elevation must not exceed 1.4m.

3.4.3 The control cabinet doors shall use a locking three point latch mechanism, complete with padlocking facilities suitable for a 10 mm shank.

3.4.4 All control cabinet doors must include a locking mechanism to keep the doors open. If control cabinet has swing frame sub panels they must also include a locking mechanism to keep doors open.

3.4.5 A drip shield shall be provided over the control cabinet doors.

3.4.6 All control cabinets shall have at least two (2) gland plates on the bottom face of the cabinet to allow for separate cable entry to each side of the control cabinet.

3.4.7 The control cabinet shall be equipped with the following accessories:

(a) Two (2) 120 VAC, LED bulbs, 900 lumen light sources, switched by the opening of the cabinet door;

(b) one (1) 125 VAC, 20A, ground fault interrupter (GFI) duplex receptacle;

(c) one (1) anti-condensation heater thermostatically controlled to maintain a cabinet temperature of approximately 10^{o}C in an ambient of -50^{o}C. The anti-condensation heater shall be mounted so as not to impede or obstruct the free access of wiring and cabling and allow for the entry of Purchaser's cabling through the bottom of the control cabinet.

(d) heaters must include stainless steel heat shields to protect control cables.

(e) electrical counters and overloads shall be located in the main control cabinets (not in the phase cabinets). Electrical counters shall be calibrated with mechanical counters.

(f) one (1) ground bus to individually ground each set of current transformer leads and all other circuits requiring ground points.

(g) one (1) stainless steel nameplate containing the gas type and filling chart information. The nameplate shall be fastened to the inside of a cabinet door.

3.5 Bushings and H.V. Terminals

3.5.1 All bushings shall be porcelain. Bushing creepage distance shall be as stated in Appendix A, "Technical Requirements".

3.5.2 The terminals shall be 4-hole NEMA drilled and be compatible for bolting to a flat 4-hole NEMA drilled aluminum jumper terminal. The terminal shall be capable of withstanding a horizontal pull of 1300 N.

3.5.3 For dead tank breakers, the bushing CT covers shall be clearly marked with the breaker pole number designations (1-6).

3.6 Gas Monitoring System

3.6.1 Circuit breaker shall be equipped with a gas monitoring system. The gas monitoring system shall contain a display for local readout mounted external to circuit breaker control cabinets and be easily viewed from ground elevation and shall not require the cabinets to be opened. The gas monitoring system shall provide the following auxiliary alarm signal contacts as a minimum:

a) "low gas density" or alarm condition;
b) "lockout" condition;

If available, additional auxiliary contacts shall be used for the following:

a) "fill up";
b) "over pressure".

3.6.2 Vendor shall provide a means for Purchaser to remotely monitor each breaker. The remote system shall consist of an adequate number of auxiliary contacts complete with a gas density transmitter to monitor gas density and pressure readouts remotely. Vendor shall provide a system to provide the ambient temperature of the Equipment.

The gas density transmitter shall transmit a 4-20mA output through a shielded cable and be operational to a -50°C ambient. The Standard of Acceptance: WIKA Field Case Design Model GD-10.

Purchaser will develop the communication network to transmit the data to a remote database system.

3.6.3 On-Line Condition Monitoring:

On-Line Condition Monitoring shall be included. The Standard of Acceptance: Incon Optimizer3 Circuit Breaker Monitor (P/N: OM3D-F). Others will not be accepted.

The On-line Condition Monitoring system for each breaker shall monitor, maintain historical records, trend and alarm the following:

a. SF6 gas density and leakage rate

b. Breaker contact wear

c. Breaker travel time (open and close)

All field end sensors, including their wiring, mounting and connections shall be included.

The following shall be included and installed in the control cabinet as part of the online condition monitoring system:

a. One (1) Corning SPH-01P Single Panel Housing equipped with one (1) Corning CCH-CP06-H3 Six-Position Multimode ST Bulkhead Connector Panel;

b. One (1) duplex OM3, 50µm ST to ST Multimode fiber patch cable between the OM3D-F and the external (i.e. not within the single panel housing) side of the Single Panel Housing Bulkhead Connector Panel, positions 1-2.

The Single Panel Housing shall be installed in a manner to allow the connection of fiber optic patch cables to all six positions of the bulkhead connector panel, with sufficient clearance for the cables' bend radii.

3.6.4 Incons shall be programmed and tested with the below settings applied at the factory. Setting sheet shall accompany the FAT results. Any setting not specified below should be left at its default setting.

a. MANUFACTURER
b. VOLTAGE RATING
c. MAX INTERUPTING CURRENT
d. MAX OPERATIONS COUNT
e. POWER SYSTEM FREQUENCY
f. BUSHING CT RATIO nnn:1
g. PICKUP COIL RATING
h. INPUT MODE
i. A INPUT POLARITY
j. B INPUT POLARITY
k. A INPUT DELAY
l. CONTACT WEAR MODE
m. CONTACT LIFE DANGER LIMIT
n. CONTACT LIFE WARNING LIMIT
o. ARC TIME ALARM LIMIT
p. TRAVEL TIME ALARM LIMIT
q. CLOSING TIME ALARM LIMIT
r. LOW PRESSURE WARNING ALARM LIMIT
s. LOW PRESSURE DANGER ALARM LIMIT
t. PRESSURE TREND ALARM LIMIT
u. FORECAST PLANNING ALARM
v. GAS FILL WEIGHT
w. FILL PRESSURE
x. FILL TEMPERATURE
y. BREAKER VOLUME

3.7 Control Cabinet Accessories

3.7.1 The DC supplies, close, trip #1, trip #2 and motor circuits of the circuit breaker shall be separately fused and have a lockable ganged knife switch with a visible gap for each circuit. Fusing shall be type Class RK1, 250V.

3.7.2 Vendor shall supply a mechanical indicator for close and open positions of the circuit breaker. The "CLOSE/OPEN" indicator shall be visible from ground elevation and not require the cabinet to be opened.

3.7.3 The circuit breaker shall not give false indication of the "CLOSE/OPEN" state of any of its phases under any failure mode.

3.7.4 Circuit breaker shall be equipped with the following manual controls;

(a) "TRIP-OFF-CLOSE" control switch with spring return to "OFF" from both positions,

(b) "LOCAL/REMOTE" selector switch

(c) The "TRIP-OFF-CLOSE" switch may incorporate a 30 second time delay to mitigate arc flash hazard. The standard of acceptance shall be Electroswitch TD-CSR.

3.7.5 All incoming low voltage AC supplies receptacles & lights, cabinet heaters and tank heaters, shall be separately fused and have a ganged knife switch for each circuit with a visible gap. Fusing shall be type Class RK1, 250V.

3.7.6 A minimum of six (6) reversible "a" contacts and six (6) reversible "b" contacts per phase shall be provided for breakers with three (3) independent poles. All contacts shall be anti-corrosive.

3.7.7 For breakers with three (3) interconnected poles, the breaker shall be supplied with six (6) reversible "a" contacts and six (6) reversible "b" contacts, per breaker. All contacts shall be anti-corrosive.

3.7.8 For the safety of maintenance personnel, a close and/or trip blocking device shall be provided for each circuit breaker. Key operated device is not acceptable. A warning sign indicating "DO NOT WORK ON BREAKER IN CLOSED POSITION WITHOUT MAINTENANCE TRIP BLOCKING DEVICE IN PLACE" shall be placed near the operating mechanism.

3.7.9 Motors shall have open drip proof enclosures, Class F insulation, with a 155^{o}C temperature rating (105^{o}C rise above ambient temperature).

3.7.10 245kV circuit breakers shall be supplied with two (2) sets of trip coils per phase. 72.5 kV and 145 kV circuit breakers shall be supplied with two (2) independent trip circuits.

3.7.11 Trip coil monitoring will apply a Normally Closed (NC) 52b contact in series with a 4.7 kOhm resistor, to be connected in parallel across the Normally Open (NO) 52a contact. This shall be applied to all trip coils. The trip coil shall be fast release and have an ampacity consumption not more than 6 amps for dead tank breakers and 10 amps for live tank breakers. Each trip coil circuit shall be equipped with a terminal block allowing for the connection of customer trip coil monitoring.

3.7.12 Circuit breaker close circuit shall be equipped with terminal blocks allowing for the connection of customer interlocks to block close.

3.7.13 The charging springs for 245 kV breakers shall charge individual poles in sequence (Phase A then Phase B then Phase C) after tripping operation.

3.7.14 Circuit breaker shall include an anti-condensate heater failure alarm. In addition, if tank heaters are utilized to meet temperature requirements, a tank heater alarm shall be included which can detect if any one (1) tank heater fails.

3.8 Spare Parts and Special Tools

3.8.1 Vendor shall supply pricing for a list of recommended spare parts and special tools. The spare parts list shall contain components the manufacturer believes are critical to the operation of the circuit breaker. The spare parts list shall contain the following items, as a minimum:

a) One (1) spring charge mechanism;
b) Two (2) trip coils;
c) Two (2) close coils; and
d) Gasket kits.

3.8.2 Vendor shall include in total Tender price the cost of any special tooling required to install the spare parts or to complete regular maintenance activities.

3.8.3 The spare parts list and special tools are optional items for Purchaser.

3.9 Ratings

3.9.1 For each voltage class, Appendix A specifies the technical requirements for the Equipment. Vendor shall refer to the voltage class specified with the Tender.

3.9.2 Equipment of a higher capability than defined in Appendix A shall be stated in Tender and if accepted, the nameplate shall be stamped with the higher rating.

3.10 Bushing Current Transformers on Dead Tank Breakers

3.10.1 The continuous current rating factor (RF) for all bushing type current transformers shall not exceed 2.0 times rated current.

3.10.2 The secondary ratings and required quantity of CT's shall be stated either in Appendix A and / or on the Purchase Order / Contract. Current Transformers used for metering circuits shall have their secondary cores approved for revenue metering by Measurement Canada.

3.10.3 All bushing type current transformers shall be designed with windings evenly distributed on all taps around the continuous, toroidal core to minimize leakage flux, meeting the definition of IEC Class 'PX' and IEEE Class C.

3.10.4 The rated transformation ratio of the bushing transformers shall be equal to the physical turns ratio; i.e. the transformers shall not have "turns correction".

4.0 Information to be Supplied with Tender

4.1 Tender shall include a complete set of typical manufacturer's Drawings showing details and general description of the Equipment being tendered. This information shall include, as a minimum: outline and dimensions; nameplate drawings; control schematics.

Vendor shall complete Appendix B "Information to be Supplied with Tender by Vendor" and submit it with the Tender.

Application data for all bushing CT's as set forth in IEEE C57.13.

4.2 Service Personnel and Facilities

Vendor shall state the location of nearest service and facilities in Canada or the United States.

4.3 Quality Assurance

Upon request by Purchaser, Vendor shall include a copy of the ISO Quality Assurance Program Certification for the facility where the design manufacturing of the equipment will be performed.

4.4 Equipment Testing

4.4.1 Functional Tests

Vendor shall provide with Tender a copy of a test plan used to functional test the Equipment specified.

Purchaser has the right to add additional testing to this plan to verify the operation the Equipment.

4.4.2 Type Tests

Vendor shall provide a listing of all type testing completed on this Equipment specified and provide copies to Purchaser.

4.4.3 Factory Acceptance Testing

Vendor shall notify the Purchaser two (2) weeks prior to functional testing of the Equipment to provide the option of the Purchaser to witness testing at the Vendor's facilities.

APPENDIX A
Technical Requirements

		Voltage Class			
Technical Requirements	**UNIT**	**34.5 kV**	**72.5 kV**	**145 kV**	**245 kV**
Nominal System Voltage	kV	25	46/66/69	138	230
Maximum Continuous voltage	kV	27.5	72.5	152	253
Basic Impulse Level	kV	150	350	650	1050
Frequency	Hz	60	60	60	60
Rated Continuous Current (1)	A	600	2000	1200	2000
Rated Voltage Range Factor K	-	1.0	1.0	1.0	1.0
Interrupting Rating (symmetrical rms) (2)	kA	12.5	40	20	31.5
Close and Latch Rating (rms) (3)	kA	20	64	32	50.4
Close and Latch Rating (crest) (4)	kA	33.8	108	54	85.1
Interrupting Rating at O-C-O Operation	kA	12.5	40	20	31.5
Maximum Interrupting Time	cycle	3	3	3	3
Duty Cycle (Rapid Response)	s	O-0.3s-CO-15s-CO (Dead Tank) O-0.3s-CO-3min-CO (Live Tank)			
Minimum Height Between Live Parts and Breaker Base (5)	mm	5000	5000	5000	5500
Specific Creepage Distance (SCD) (6)	mm	688	1813	3800	6325
Specific Creepage Distance (SCD) for Pollution Level IV (HRD TS) (7)	mm	853	2248	4712	7843
Control Voltage	V	125 Vdc	125 Vdc	125 Vdc	125 Vdc
Breaker Charging Mechanism	V	125 Vdc	125 Vdc	125 Vdc	125 Vdc
Auxiliary Power	V	120 Vac	120 Vac	120 Vac	120 Vac
Tank heater	V	-	-	240 Vac	240 Vac
Single Phase Reclosing Capability	-	No	No	No	Yes
Three-Phase Reclosing Capability	-	Yes	Yes	Yes	Yes

(1) Continuous current rating for Oxen Pond Terminal Station is 3000 A at 72.5 kV
(2) Interrupting Rating = Short Time Current Rating (3 Seconds) at maximum continuous voltage
(3) Close and Latch Rating (rms) = 1.6 * Interrupting Rating * K-Factor
(4) Close and Latch Rating (crest) = 2.7 * Interrupting Rating * K-Factor
(5) In cases where stated minimum height between live parts and breaker base is not possible due to overhead limitations, new breaker shall be installed at a height not lower than that of existing breaker.
(6) Creepage distance is based on Specific Creepage Distance (SCD), not Unified Specific Creepage Distance (USCD).

creepage length = creepage rate * maximum continuous voltage
(i.e. creepage length = 25mm/kV * 253kV = 6325mm)

(7) In areas deemed to have a pollution level of IV (very heavy), according to IEC 60071-2, a creepage rate of 31mm/kV should be used (i.e. Holyrood).

Bushing Current Transformers on Dead Tank Breakers				
Voltage Class (kV)	Type	Rating (Proportional to Physical Turns Ratio)	Number per Breaker	Accuracy (Burden)
34.5	Protection	1200/1000/900/800/600/500/400/300/200/100-5 A	15[3]	2.5L800[1]
72.5	Protection	1200/1000/900/800/600/500/400/300/200/100-5 A	15[3]	2.5L800[1]
145	Protection	1200/1000/900/800/600/500/400/300/200/100-5 A	15[3]	2.5L800[1]
245	Protection	1200/1000/900/800/600/500/400/300/200/100-5 A	18	2.5L800[1]
34.5	Metering	1200/1000/900/800/600/500/400/300/200/100-5 A	3[3]	0.3B2.0[2]
72.5	Metering	1200/1000/900/800/600/500/400/300/200/100-5 A	3[3]	0.3B2.0[2]
145	Metering	1200/1000/900/800/600/500/400/300/200/100-5 A	3[3]	0.3B2.0[2]
245	Metering	1200/1000/900/800/600/500/400/300/200/100-5 A	N/A	0.3B2.0[2]

(1) Accuracy Class 2.5L800 @ 1200-5 with rating factor of 2.0.
(2) Accuracy Class 0.3B2.0 @ 1200-5 with rating factor of 2.0. All secondary cores shall be approved for revenue metering by Measurement Canada.
(3) Metering CT Cores shall be located closest to the Breakers main contacts (on bottom) with Protection CT Cores stacked towards breaker H.V. Terminals (on top of metering cores). Purchaser will specify which side of the breaker metering CT cores will be installed during drawing review.

Optional Requirements		
Clause	Description	Required (Yes/No)

APPENDIX B
Information to be Supplied with Tender by Vendor

Circuit Breaker Manufacturer	
Circuit Breaker Model	
Arc Extinguishing Medium	
Type of Breaker Operating Mechanism	Spring Only
Net weight of Complete Breaker	kg
Shipping Weight of Largest Component	kg
Type of Interrupting Chambers	
Number of Interrupting Units per Phase	
Interrupting Chamber Muting	
Rated Maximum Voltage (continuous)	kV
Nominal System Voltage	kV
Basic Impulse Level	kV
Minimum Voltage for Rated Interrupted Capacity	kV
Rated Frequency (60 Hz) Withstand Voltage	kV
Impulse (1.2 x 50 microsec) Withstand Voltage	kV
Frequency	H_z
Rated Continuous Current	A
Symmetrical 3 Phase Interrupting Capacity	kA
Asymmetrical 3 Phase Interrupting Capacity	kA
Rated Making Capacity	kA
Short Time Current Rating (4 seconds)	kA
Rated Nominal Interrupting Current at the Second Tripping on an O-C-O Operation	kA
Rated Short Circuit Current at Max. Voltage	kA
Transient Recovery for a 3-Phase ungrounded fault on the line side terminal at:	

100% interrupting capacity	V/m sec
50% interrupting capacity	V/m sec
25% interrupting capacity	V/m sec
10% interrupting capacity	V/m sec
Arcing Time at 100% Breaking Capacity	Cycles
Total Closing Time	Cycles
Rated Interrupting Time at Minimum Fault Interrupting Capacity	ms
Rated Interrupting Time from Energization of Trip Coil to Final Arc Extinction	ms
Minimum Permissible Dead Time for Duty Cycle (O-C-O)	ms
Maximum Interrupting Time	ms
Phase to Phase Clearance / Bushings	mm
Minimum Clearance between Live Parts to Ground	mm
Leakage Distance of Bushings	mm
Permissible Safe Cantilever Loading	N
Duty Cycle	
Closing Resistors (Optional refer to Appendix A):	
- insertion time	ms
- energy	Ω/ms/J
Capacitive Switching Duty	
Minimum Ambient Temperature	^{o}C
Maximum Ambient Temperature	^{o}C
Capacity for Line Charging / Line Dropping	km
Control Voltage Range	vdc
Power of Motor	W
Tripping Current Per Phase	A

Closing Current Per Phase	A
Single Phase Reclosing Capabilities	Yes/No
Three Phase Reclosing Capabilities	Yes/No
Number of auxiliary spare contacts available for Purchaser's use	N/C
Operating Pressure or Density of Gas	kPa
State Minimum Density of Gas required for each : Block Trip, Block Close, Block Reclose, Lock Out and Total Volume	kPa
Type and percentage of gasses present	%
Nominal Gas pressure, gauge value at 20°C (where applicable)	%
Recommended gas pressure at 20°C for	
(i) Recharge alarm	kPa
(ii) Breaker trip	kPa
(iii) Block closing	kPa
Switching Surge Withstand Voltage (Wet)	kV
Power Frequency Withstand Voltage (Wet)	kV
Power Frequency Withstand Voltage (Dry)	kV
Kilometric Fault Interrupting Capability	
Maximum time interval between operation of first & last pole	
Air or Gas usage per single breaker operation	
Maximum air or gas operating pressure	
Minimum air or gas operating pressure	
Temperature at which gas will liquefy at normal working gas density.	°C
Minimum Gas Pressure to maintain Rated Basic Impulse	kPa
Maximum allowable amount of moisture in gas at normal working gas pressure to maintain Rated Basic Impulse Level	ppm
Annual gas leakage rate of total volume	%
Estimated weight of gas per breaker	kg

Type of pressure relief devices provided	
Pressure at which pressure relief devices will operate	
Type of gas insulation monitoring devices	
Type of gasket material	
Other available gas fault sensors	
Source Side C.T. Secondary Ratios	
Source Side C.T. Accuracy	
Load Side C.T. Secondary Ratio	
Load Side C.T. Accuracy	
Gas Density Monitor – Manufacturer and Model No.	
Gas Density Transmitter – Manufacturer and Model No.	

Item	Original Lead Time	Expedited Lead Time	Cost to Expedite

Document Summary

Document Owner:	S. Parsons
Document Distribution:	

Revision History

Revision	Prepared by	Reason for change	Effective Date
0	S. Parsons	Original Issue	2022/05/10

Document Control

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Affidavit

IN THE MATTER OF the *Electrical Power Control Act, 1994*, SNL 1994, Chapter E-5.1 ("*EPCA*") and the *Public Utilities Act*, RSNL 1990, Chapter P-47 ("*Act*"), and regulations thereunder; and

IN THE MATTER OF an application by Newfoundland and Labrador Hydro ("Hydro") for approval of a contribution from Battle Harbour Data Solutions Inc. ("Battle Harbour") of an amount equal to the costs of the interconnection to Line 33.

AFFIDAVIT

I, Paul Dillon, of St. John's in the province of Newfoundland and Labrador, make oath and say as follows:

1) I am Director of Engineering, Engineering and Technology, Newfoundland and Labrador Hydro, the applicant named in the attached application.
2) I have read and understand the foregoing application.
3) To the best of my knowledge, information, and belief, all of the matters, facts, and things set out in this application are true.

SWORN at St. John's in the province of Newfoundland and Labrador this 18th day of December 2025, before me:

Michelle Compton
Commissioner for Oaths, Newfoundland and Labrador

Paul Dillon
Paul Dillon

MICHELLE COMPTON
A Commissioner for Oaths in and for
the Province of Newfoundland and Labrador.
My commission expires on December 31, 2030