Niagara On-The-Lake HYDRO

July 17, 2023

Ontario Energy Board
P.O. Box 2319
2300 Yonge Street, 27th Floor
Toronto ON M4P 1E4

Attn: Nancy Marconi, Registrar

Re: EB-2023-0041.

Dear Sirs:

In accordance with Procedural Order No. 1, enclosed please find Niagara-on-the-Lake Hydro Inc.'s responses to Interrogatories as part of our Cost of Service rate application for rates effective January 1, 2024. A full copy has also been uploaded electronically and distributed to all intervenors.

Yours truly,

Tim Curtis
President

c.c. David Stevens, Aird & Berlis
Jay Shepherd, School Energy Coalition
Mark Rubenstein, School Energy Coalition
Brian McKay, School Energy Coalition
Jane Scott, School Energy Coalition
Shelley Grice, Vulnerable Energy Consumers Coalition
Bill Harper, Vulnerable Energy Consumers Coalition

8 Henegan Road P.O. Box 460, Virgil, Ontario, L0S 1T0
Phone: (905) 468-4235 Fax: (905) 468-3861

Rate Application Interrogatories

RESPONSES

2023 Cost of Service Rate Application

Niagara-on-the-Lake Hydro Inc. (NOTL Hydro)

EB-2023-0041

Contents

ONTARIO ENERGY BOARD

IN THE MATTER OF the *Ontario Energy Board Act, 1998*, S.O. 1998, c.15, Schedule B;

AND IN THE MATTER OF an Application by Niagara-on-the-Lake Hydro Inc. (NOTL Hydro) for an Order or Orders approving or fixing just and reasonable rates and other service charges for the distribution of electricity as of January 1, 2024

1 | Administrative Documents

INTERROGATORY RESPONSES

1-SEC-1

[Ex. 1, Appendix 1C Business Plan] NOTL Hydro has provided a copy of its Business Plan, which was approved by its Board on January 19, 2023. Page 16 of the Business Plan states "[T]he following is a rough description of the planned activities over the next five years. These are all subject to change based upon conditions and changing circumstances. NOTL Hydro Board approval has only been obtained for 2023."

a) Please provide the actual total capital dollars shown in Chart 4 for 2024 to 2028 and explain the variance from the amounts provided in Appendix 2-AB.
b) Please provide a copy of all documents that were provided to the Board of Directors, in approving the underlying budgets contained in this Application.
c) Page 19 of the Business Plan states "On January 1, 2023, NOTL Hydro provided a 3% wage increase that is outside of the agreement." Please explain the rationale for providing an increase in excess of the union agreement.

RESPONSE

a) Please refer to 1.0-VECC-4 for dollar amounts in Chart 4. Chart 4 is based on when capital dollars are spent while Appendix 2-AB is based on when items are completed and capitalized for accounting purposes.
b) There are no documents that were provided to the Board of Directors that required approvals other than the provided Business Plan. The Board of Directors were provided with documents showing the expected rate impacts of the submission. These are attached in the appendices (1-SEC1A, 1-SEC-1B) though discussion of the strategic objectives has been removed. The pre-application meeting presentation was also provided to the Board of Directors and has been attached in the appendices (1-SEC-1C).
c) The Board of Directors authorized an additional increase on top of the contractual 2% increase to adjust for the unexpected rising rate of inflation. NOTL Hydro has good relations with its staff and their union such that a six-year contract was signed just before the pandemic. The additional wage increase was provided so that NOTL Hydro is not taking advantage of this relationship and agreements with this unexpected inflation. Additional detail can be found in Exhibit 4 pgs. 28-29.

1-SEC-2

[Ex. 1] Please provide details of all productivity and efficiency measures NOTL Hydro has undertaken over the last five years and any it plans to undertake in the test year and subsequent four years. Please quantify the forecasted savings and explain how they were calculated.

RESPONSE

The following are some of the productivity and efficiency measures taken over the past five years. It cannot be said that these are "all" the measures undertaken but they are most of the more significant ones. We cannot reliably or accurately quantify the savings.

- Customer account records were all digitized.
- An automated accounts payable process was created within the general ledger.
- The payroll system was updated to a more efficient system.
- Outage monitoring reports have been updated to capture more information and streamline the reporting process.
- Safety procedures were all digitized and are now available online by all staff in the field.
- All field activity reporting including spot sheets, tailboard meetings, incident reports and outage reports were digitized.
- Locates were brought inhouse.
- An underground crew was created in response to the demise of the in-house contractor used at NOTL Hydro, and scarcity of contracting resources in the region.
- Contracted services are consistently evaluated in terms of whether to remain with the same supplier, change suppliers or bring this task inhouse.
- NOTL Hydro, as part of CHEC, shares a GIS resource with five other LDCs for $30,000 per year.
- NOTL Hydro is a member of USF and uses the standards developed by them for construction projects.
- NOTL Hydro continues to share the OEB and ESA required surveys with 14 other CHEC members thereby reducing the annual costs.
- NOTL Hydro continues to be a member of CHEC with all the sharing of information and best practices that this provides.
- NOTL Hydro continues to be part of UCS with the continued savings in the support and licensing of its billing system.

1-SEC-3

[Ex. 1, Scorecard]

a) Please file on the record NOTL Hydro's preliminary Scorecard for 2022, if the data is available. If the scorecard is not available, please provide a preliminary 2022 ROE.

b) NOTL Hydro exceeded its deemed ROE by +5.4% in 2019. Please provide an explanation for the overearning.

RESPONSE

a) The preliminary scorecard in attached as appendix 1-SEC-3A.

b) Please refer to the decision in NOTL Hydro's 2021 IRM application EB-2020-0042. An extract is provided below.

"Niagara-on-the-Lake-Hydro most recently rebased its base rates effective May 1, 2019.

Niagara-on-the-Lake Hydro noted that its ROE approved in its 2014 cost of service proceeding (9.36%) applies to four months of earnings in 2019, and its ROE approved in its 2019 rates proceeding (8.98%) applies to eight months of earnings in 2019, resulting in a 2019 blended approved ROE of 9.11%. Niagara-on-the-Lake Hydro noted that its adjusted ROE is within 300 basis points of its approved ROE.

OEB staff submitted that, after making appropriate adjustments to its 2019 reported ROE, Niagara-on-the-Lake Hydro's ROE is within 300 basis points of the approved ROE. OEB staff agreed that Niagara-on-the-Lake Hydro's 2019 reported ROE should be adjusted for the ICM. OEB staff also agreed with the removal of LRAM revenues that did not pertain to 2019, but argued that LRAM revenues pertaining to 2019 should be included in the 2019 ROE, as that would result in a more accurate achieved ROE calculation. OEB staff also disagreed with Niagara-on-the-Lake Hydro's adjustment to include the transformer in rate base and to include the associated depreciation as the timing of the transformer going into service was a forecasting difference and not a misalignment between elements that formed part of the ROE calculation and elements included/excluded in the approved revenue requirement. OEB staff agreed with the nature of the deemed interest adjustment, however, and submitted that the adjustment amount calculated should exclude the impact from the transformer adjustment, as noted above. With these adjustments, OEB staff submitted that Niagara-on-the-Lake Hydro's 2019 ROE should be adjusted to 10.89%.

OEB staff noted that the company's proposed blended approach to the deemed ROE is a deviation from the manner in which the OEB requires utilities to file RRR 2.1.5.6. Nevertheless, OEB staff submitted that Niagara-on-the-Lake Hydro's approach provided a more precise calculation for purposes of determining the over earnings threshold for this proceeding, and therefore OEB staff did not oppose using 9.11% as the approved ROE comparator.

OEB staff noted that an adjusted 2019 ROE of 10.89% would be within 300 basis points of Niagara-on-the-Lake Hydro's approved ROE. Therefore, OEB staff did not object to Niagara-on-the-Lake Hydro's request to adjust its base rates by the Price Cap IR formula result of 1.90% in this proceeding.

VECC calculated an adjusted 2019 ROE of 10.99% which is within 300 basis points of its approved ROE of 8.98%. In its calculations, VECC supported i) the inclusion of ICM

related amounts as the ICM asset was in service in 2019, and ii) the adjustment to remove LRAM revenues not pertaining to 2019, as these revenues have no impact on the 2019 revenue requirement. Regarding the adjustment related to the transformer, VECC stated that the transformer was not in service in 2019 as planned, and Niagara-on-the-Lake Hydro over-earned on the transformer in 2019. The ROE should not be adjusted to remove the impact from the delay in the capital project. VECC further submitted that an approved ROE of 8.98% should be used instead of a blended ROE of 9.11% as proposed by Niagara-on-the-Lake Hydro. VECC did not object to Niagara-on-the-Lake Hydro's request to adjust its base rates in this proceeding.

In reply, Niagara-on-the-Lake Hydro submitted that although OEB staff and VECC calculated different ROE amounts for 2019, in all cases, the adjusted ROE was within the 300 basis points. Niagara-on-the-Lake Hydro requested that the application be considered by the OEB as submitted with respect to its over-earnings.

1-SEC-4

[Ex. 1, p. 56] NOTL Hydro states under Investment Criteria that 'Investments are made using a "Return on Investment" calculation that factors in any reductions in costs to our customers and not just the "Return" to NOTL Hydro. Some investments, … might not be undertaken without this more holistic analysis.'

a) Please provide a numeric example of an investment where this was the case.
b) How does NOTL Hydro factor in non-qualitative aspects of customers' desires, such as improved reliability or underground versus overheard?

RESPONSE

a. The best example is our investment in our transmission stations. By owning these stations, NOTL Hydro customers do not have to pay the Transformation Connection Service Rate which is now $3.10 per kw. Using the 2022 billing of 453,113 kw this would be an annual savings of $1,404,650 for NOTL Hydro customers but not NOTL Hydro itself. A rough estimate of the annual cost of its transmission stations (OM&A, depreciation, and cost of capital) is $800,000 and this is a cost of NOTL Hydro. While this cost is significant the net is an annual savings of $600k to our customers.

b. Our customer survey indicates that reliability is a leading factor with NOTL Hydro customers.

   NOTL Hydro measures feeder reliability and investigates greater than average interruption activity and adjusts accordingly to improve effectiveness.

   Mitigation often concerns increased vegetation management beyond typical schedules, or distribution plant replacement and upgrading if problems persist.

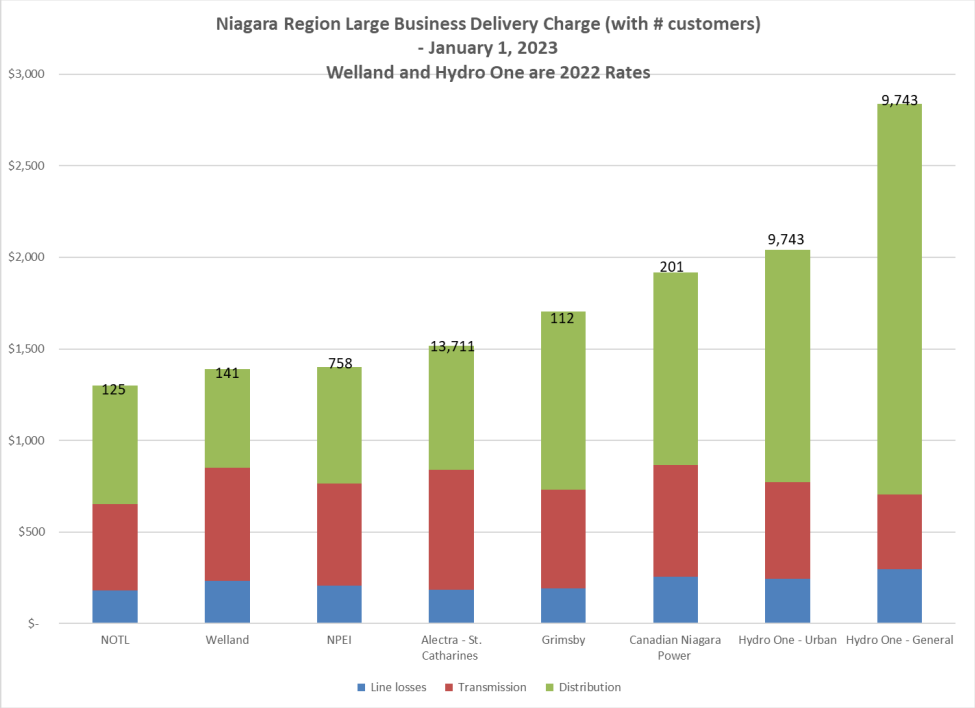
   Underground circuits are known to be more reliable than overhead circuits, especially since the underground circuits are not subject to ambient adverse weather events such as high winds, ice buildup on conductors, and tree branch contacts.

1-SEC-5

[Ex. 1, Table 1.39] Table 1.39 shows Niagara Region Residential Delivery Charges as of January 1, 2023. Please prepare a similar table for GS > 50 kW customers with a demand of 100 kW and explain NOTL Hydro's position with respect to all local distribution companies and the Niagara Region for this rate class.

RESPONSE

NOTL rates are the lowest in the region for this rate class.



1-SEC-6

[Ex. 1, p. 72] NOTL Hydro indicates that it has had limited customer engagement with respect to this application as it is in constant contact with its customers and feels it knows what they want. Specifically, what does NOTL Hydro believe are its customers' top three priorities, how has it determined these priorities and in what ways does the applicant reflect these priorities?

RESPONSE

NOTL Hydro believes reliable power, fair rates, and good service when needed are customers top three priorities. This is based on discussions with customers over the years, the bi annual survey and natural expectations. Please refer to Exhibit 1 pg. 9-16 for how NOTL Hydro has reflected these priorities.

1-SEC-7

[Ex. 1] What goals has NOTL Hydro's Board of Directors set for 2024?

RESPONSE

No goals have been set for 2024 at this time.

1-SEC-8

[Ex. 1, p. 6] NOTL Hydro states 'One of the reasons NOTL Hydro took steps to own its transmission stations was to reduce customer costs. The costs of maintaining these stations is part of NOTL Hydro's distribution costs so adds to the operating costs and increases distribution rates. However, the savings in transmission rates are larger than these increased distribution costs thus making an overall reduction in customer rates.' Please provide NOTL Hydro's analysis showing that the investment of $2.9M in a TS in 2019 has reduced overall customer rates.

RESPONSE

The $2.9M investment in 2019 cannot be looked at in isolation but as part of the overall investment in the transmission stations. Please see 1-SEC-4 above for a discussion of the overall savings to customers of the investments in these stations.

1-VECC-1

Reference: Exhibit 1, page 75 Table 1.42

Please provide the actual ROE for 2022 and the forecast for 2023.

RESPONSE

Actual ROE for 2022 – 8.79%

Forecast ROE for 2023 – 5.84%

1-VECC-2

Reference: Exhibit 1, page 88

NOTL Hydro outsources its basic vegetation management on three-year contracts over which the vegetation is trimmed over the entire Town.

a) Please identify the third-party that undertakes vegetation management.
b) Please provide the end date of the current contract.
c) Please provide the following vegetation management costs:2019 OEB-Approved; 2019 actuals, budget, and actuals for 2020 to 2022 and the forecast for 2023 and 2024.

RESPONSE

a) Pineridge Tree Service.
b) December 31, 2023.
c) Includes costs associated with the three-year contract and expenses related to trimming outside the normal cycle.

Vegetation Management	2019	2020	2021	2022	2023	2024
Actual	$76,205	$49,327	$61,137	$66,096		
Budget	$73,887	$42,541	$64,257	$56,257	$66,538	
OEB Approved	$76,238					
Forecast					$67,059	$68,586

1-VECC-3

Reference: Exhibit 1, page 98

NOTL Hydro is jointly sharing a GIS Technician, through CHEC, with five other LDCs.

a) When did this sharing of the GIS Technician commence?
b) Does this position contribute to NOTL's FTE count?
c) Please provide NOTL's share of the costs.

RESPONSE

a) March 2023
b) No
c) $30,000 annually

1-VECC-4

Reference: Exhibit 1, Appendix 1C, page 17 Chart 4

a) Please provide the dollar amounts for each spending category in Chart 4 for each of the years 2022, 2023 and 2024.

b) Please provide the amounts provided in the application for the same categories for the years 2022 to 2024.

RESPONSE

a)

Business Plan Chart 4			
	2022	2023	2024
Customer driven	$ 1,148,844	$ 760,746	$ 690,000
Underground	$ 656,146	$ 1,025,000	$ 500,000
Overhead	$ 529,951	$ 525,000	$ 555,000
Smart System	$ 52,958	$ 100,000	$ 170,000
Meters	$ 49,076	$ 80,000	$ 80,000
Vehicles	$ -	$ 878,000	$ -
Building	$ 8,186	$ 500,000	$ 13,441
Other	$ 198,101	$ 73,497	$ 87,337
Transformer	$ -	$ -	$ -
Total	**2,643,261**	**3,942,243**	**2,095,778**

b)

Application			
	2022	2023	2024
Customer driven	$ 1,148,844	$ 760,746	$ 690,000
Underground	$ 656,146	$ 1,025,000	$ 500,000
Overhead	$ 529,951	$ 525,000	$ 555,000
Smart System	$ 52,958	$ 100,000	$ 170,000
Meters	$ 49,076	$ 80,000	$ 80,000
Vehicles	$ -	$ 423,000	$ 455,000
Building	$ 8,186	$ 500,000	$ 13,441
Other	$ 198,101	$ 73,497	$ 87,337
Transformer	$ -	$ -	$ -
Total	**2,643,261**	**3,487,243**	**2,550,778**

1-VECC-5

Reference: Exhibit 1, Appendix 1C, page 19

NOTL Hydro will be taking delivery of two new large vehicles in 2023: a new digger in March and a new bucket truck in December. The current bucket truck was purchased in 2013 and was due for replacement. The digger was purchased in 2011.

a) Please provide a breakdown of NOTL's fleet by vehicle type.
b) Please provide NOTL's criteria for replacement of each vehicle type.
   - Please provide the data in part b) for the above two replacements in 2023.
c) Please provide the proposed delivery dates for each vehicle.

RESPONSE

a)

Truck	Description	Year / Make
2	Pick-up	2022 GMC
3	Pick-up	2021 GMC
4	Pick-up	2019 GMC
5	Volt EV	2016 Volt
6	VAN	2010 Dodge
7	Pick-up	2023 GMC
9	Pick-Up	2013 Ford
10	Pick-up	2018 GMC
11	Digger Derrick	2011 INT
TBD	Digger Derrick	2023 FRHT
29	Single Bucket	2018 FRHT
38	Single Bucket	2013 INT
39	Excavator	2022 CAT
90	Trailer	2022 Low-Bed 16ft Trailer
97	Trailer	2017 Timberland
98	Trailer	2021 Pole Trailer
99	Trailer	2022 Dump Trailer

b) NOTL Hydro vehicles are replaced based on their condition. The following indicators help determine condition:

- Age - for budgeting purposes, vehicles are identified for replacement in roughly a ten-year replacement cycle.
- Visual - good vehicle body condition such as no dents or rust may extend the requirement for replacement beyond the budget cycle.
- Maintenance Requirements - increased atypical maintenance requirements and unscheduled surprise repairs may trigger the requirement for replacement.
- Opportunity - The availability of a vehicle may be a trigger for replacement, especially in this current scarce and long lead time supply chain market.

FOLLOW-UP B RESPONSE

The digger derrick truck is from 2011, beyond the ten-year budget cycle.
Atypical maintenance was required for hydraulics, braking systems beyond typical brake jobs, and winch line mechanisms. There was a chassis available at an opportune time

that NOTL Hydro was able to capitalize on.

The bucket truck is from 2013, at or beyond the ten-year budget cycle by the time we take delivery, expected in 2024. Atypical maintenance costs were increasing and NOTL Hydro took advantage of an order that was cancelled by another purchaser.

c) Digger was delivered the third week of July 2023. Bucket truck expected to arrive in January 2024. The original delivery date for the bucket truck was December 2023 but was pushed back by the manufacturer following the approval of the business plan. This change was reflected in the application.

1-VECC-6

Reference: Exhibit 1, Appendix 1 G

With respect to the slide "Customer Satisfaction Index: Compared to Other CHEC Members, NOTL's score in 2023 is statistically lower than that of 1 other LDC.

Please identify the LDC.

RESPONSE

The survey report does not provide the name of the other CHEC member LDCs with their scores so NOTL Hydro does not verifiably have this information.

1-VECC-7

Reference: Exhibit 1, Appendix 1 G

In response to ranking items of most importance, customers ranked lowered cost (61%) and improved reliability (26%) as the top two.

Please explain how NOTL's application addresses these two priorities.

RESPONSE

NOTL Hydro already has the lowest residential rates in the Niagara Region and will continue to maintain that distinction beyond this cost of service process.

NOTL Hydro has system capacity that draws high load customers to the service territory. Connecting high load customers benefits all rate payers with reduced rates.

NOTL Hydro maintains a lower debt-equity ratio than most other LDCs by focusing on what needs upgrading in a planful way and not driven by regulated deemed ratios.

NOTL Hydro is part of the CHEC group and shares resources like a GIS technician and safety specialist that spreads the cost over several utilities.

Safety and engineering resources are contracted as needed for specific needs such as independent crew review, safety meeting facilitation, and station consultation.

Reliability has improved over time through routine maintenance programs such as vegetation management and insulator cleaning. The introduction of more remote operated equipment has helped improve reliability as well.

1-Staff-1

Updated Revenue Requirement Work Form (RRWF) and Models

Upon completing all interrogatories from Ontario Energy Board (OEB) staff and intervenors, please provide an updated RRWF in working Microsoft Excel format with any corrections or adjustments that the Applicant wishes to make to the amounts in the populated version of the RRWF filed in the initial applications. Entries for changes and adjustments should be included in the middle column on sheet 3 Data_Input_Sheet. Sheets 10 (Load Forecast), 11 (Cost Allocation), and 13 (Rate Design) should be updated, as necessary. Please include documentation of the corrections and adjustments, such as a reference to an interrogatory response or an explanatory note. Such notes should be documented on Sheet 14 Tracking Sheet and may also be included on other sheets in the RRWF to assist understanding of changes.

In addition, please file an updated set of models that reflects the interrogatory responses. Please ensure the models used are the latest available models on the OEB's 2024 Electricity Distributor Rate Applications webpage.

RESPONSE

The following updated worksheets are being submitted in Microsoft Excel format with these responses.

NOTL 2024_Rev_Reqt_Workform_20230717
NOTL 2024_Cost_Allocation_Model_20230717
NOTL 2024_DVA_Continuity_Schedule_CoS_20230717
NOTL 2024_Filing_Requirements_Chapter2_Appendices_20230717
NOTL 2024_GA_Analysis_Workform_20230717
NOTL 2024_Load_Forecast_Model_20230717
NOTL 2024_RTSR_Workform_20230717
NOTL 2024_Tariff_Schedule_and_Bill_Impact_Model_20230717
NOTL 2024_Test_year_Income_Tax_PILs_20230717

The table below provides a summary of adjustments made in response to these interrogatories.

Reference	Description	Impacts
1-Staff-1 6-Staff-47	Updated to 2024 PILs model issued by the OEB	Reduced grossed-up PILs amount due to change in model calculation for small business deduction -$21,938
1-Staff-1	Updated to 2024 RTSR issued by the OEB	Reduce cost of power due to lower Uniform Transmission rates in the forecast model - $102,088
1-Staff-1 8-SEC-26 8-VECC-50	Updated to 2024 Tariff and Bill Impact model issued by the OEB	Increased other revenue due to increased rate for pole attachments (2023 rate plus 4.8% inflation) - $7,202 Revised bill impact model to included 1576 and Group 2 in subtotal A
1-Staff-1 7-VECC-38 8-VECC-51	Updated to the 2024 Cost Allocation model issued by the OEB Adjusted tab 16.2 secondary customers Adjusted Tab I8 NCP values for large use.	Changes reflected in revised rates included in update Tariff Schedule.
1-Staff-1	Updated to the 2024 GA Workform issued by the OEB	No impact
1-Staff-1	Updated to 2024 DVA Continuity Schedule by the OEB	Flow through from changes to load forecast.
1-Staff-1	Updated to 2024 Filing Requirements Chapter 2 Appendices issue by the OEB	Reflects changes to Load Forecast and Other Income
1-Staff-1	Updated to 2024 Revenue Requirement Workform issued by the OEB	Refer to tab 14 of the revised model
3-SEC-14 7-VECC-38	Updated Load Forecast Model - revised 2024 load forecast based on 2023 actuals through May 31. Increased Large Use kWhs to 5,000 each hour.	Increase of 43 Customers/Connections Increase of 5.6m kWh Increase 2.7k KW Increase cost of power - $425,520
6-Staff-46	Updates to PILs model now that NOTL Hydro's 2022 PILs return is complete.	Reduced grossed-up PILS - $1,461

1-Staff-2

Ref: Exhibit 1, page 93

Preamble:
Niagara-on-the-Lake Hydro states that it has "undertaken an internal study to analyze the impact of the electrification of transportation and the impact this would have on its ability to deliver its service. This includes assessing the impact on supplying its service territory with the increased demand as well as changes to the assets on its grid that may be necessary. This study will allow Niagara-on-the-Lake Hydro to understand the magnitude of the potential challenge."
Question(s):

a) Has the internal study in the reference been completed? If so, please provide a copy of the study or a summary of the results and analysis.

RESPONSE

See Exhibit 2 Appendix F and G

1-Staff-3

Ref 1: Exhibit 2, Appendix F, EV Analysis #1 and Appendix G, EV Analysis #2
Ref 2: Exhibit 1, Appendix 1C, Business Plan, page 20

Preamble:
In reference 1, Niagara-on-the-Lake Hydro provides EV Analysis #1 which looks at the impact of EV on its system of all residents and businesses converted to electric vehicles. Analysis #2 assesses the impact on the loading of its transformers.

In reference 2, Niagara-on-the-Lake Hydro states that “the potential impact of growth in electric vehicles is unknown.”

Question(s):

a) Based on information in reference 1 to 2, does Niagara-on-the-Lake Hydro intend to conduct a further study to assess the cost estimates and impacts of EV on its system load and distribution transformers over the next five years?

RESPONSE

NOTL Hydro continually reviews the impact of new and upgraded connections on the distribution system and adjusts as needed.

No new formal study is anticipated over the next five years.

1-Staff-4

Facilitating Innovation
Ref: Exhibit 1, page 94

Preample:
In the reference, Niagara-on-the-Lake Hydro hired a consulting firm, Enviro-Scan, to measure its greenhouse gas output and suggest changes that both reduce greenhouse gases and save money. Many of these recommendations have been implemented and the measurements provide a base line for future analysis and decision-making.

Question(s):

a. Please explain what type of changes and recommendations have been implemented to reduce greenhouse gases and save money.
b. Please provide an itemized breakdown of cost per year (both capital and OM&A) for all implemented changes.
c. Please provide the cost savings per year from the start of the implementations to date.
d. Please provide details and quantification on where any of these savings have been incorporated into the current application for 2024 rates.

RESPONSE

a) The following changes were made as a result of the Enviro-Stewards (name corrected from application) recommendations:
- Baseboard heaters were set to a default off position.
- Some lighting at 8 Henegan Road was converted to LED lighting and motion detectors installed.
- Washroom faucets were changed to motion activated units.
- A new hot water tank was installed.
- Solar film was placed on some of the windows.
- Garage bay doors being better monitored to reduce heat loss.

b) The costs were all one-time capital costs:

Electrical lighting and motion detectors	$18,955
Solar film	$1,465
Faucets	$7,046
New water heater	$1,813

c) The report estimated that the above changes should result in annual savings of around $6k. NOTL Hydro has not attempted to verify if these results have been achieved.
d) The changes were made in 2021 so the savings would have been incorporated into the NOTL Hydro electricity costs for its building built into the application.

1-Staff-5

Ref: Exhibit 1, pages 95 and 98-100

Preamble:
Niagara-on-the-Lake Hydro states that it collaborates with other LDCs and give examples of collaborations to support innovation, improve efficiency and mitigate costs.

Question(s):

a) Please provide details and quantification on where these collaborations have been incorporated into the current application for 2024 rates.

RESPONSE

Many of the collaborations that NOTL Hydro has referenced have been in place for several years. The related costs have been included in the budget line items in this application. Some examples include:

- NOTL Hydro shares the Regional Network Interface (RNI) with most other Niagara LDCs reducing the meter readings costs. This service costs around $82k per annum.
- NOTL Hydro shares the annual OEB and ESA survey costs with other CHEC members. This costs around $10k per year.
- NOTL Hydro shares the billing system license and maintenance costs with other UCS members. UCS costs around $160k per year.
- NOTL Hydro is sharing the new GIS analyst with 5 other CHEC members. This is expected to cost around $30k a year.

1-Staff-6

Ref: Exhibit 1, Appendix 1C, Business Plan, page 20

Preamble:
Niagara-on-the-Lake-Hydro states that the new green button requirements, which will go live in 2023, will have an impact on operating costs.

Question(s):

a) Has Niagara-on-the-Lake Hydro conducted any analysis to determine an estimated impact of Green Button on its operating costs?
b) If so, please provide a summary of the analysis including estimated costs.

RESPONSE

a) To date, NOTL Hydro has spent $23,166 on implementing Green Button which have been booked to the variance account. The amount only includes third-party costs and not the cost for internal resources. Green Button costs are not included in the budget as they are currently being booked to the 1508 variance account. Currently, NOTL Hydro is aware of $4,800 in ongoing costs annually for software support and hosting. There may be additional licence fees as well.
b) n/a

1-Staff-7

Ref 1: Exhibit 1, page 81

Preamble:
Regarding the liquidity ratio, Niagara-on-the-Lake Hydro states that its current ratio of 0.45 is low because loans that are booked as current liabilities are actually demand loans. These demand loans are being repaid over a 15-year term and the interest rate has been fixed via 15-year interest rate swaps.

Question(s):

a) Please recalculate Niagara-on-the-Lake Hydro's current ratio if these demand loans were excluded as current liabilities.

RESPONSE

1.26

2 | Rate Base and Capital

INTERROGATORY RESPONSES

2-SEC-9

[Ex. 2, Table 2.4, Appendix 2-AB] Appendix 2-AB shows planned capital versus actual/forecast capital spent over the period of 2019 to 2023 with a variance of +$806k, i.e., net capital expenditures were $806k over planned.

a) The planned dollars are those provided in the final Appendix 2-AB from the 2019 application. Please provide a revised version of Appendix 2-AB where the historical plan amount is the annual budgeted amount as opposed to the amount provided in the Applicant's previous Distribution System Plan.
b) SEC notes, that as presented, gross actuals were $1,059k more than planned and capital contributions were $253k more than planned. This over expenditure is primarily in 2023. Please provide year to date spending for 2023 and year to date at the same point of time for 2022 and 2021.
c) What is the status of the new digger which was scheduled for delivery in March 2023?
d) Please explain why NOTL Hydro has chosen to increase its spending in 2023 from previous years.
e) Why has NOTL Hydro chosen to put several non-repeating activities in 2023 and not spread them out over the 2024 to 2028 period?

RESPONSE

For clarification Appendix 2-AB is based on when assets are capitalized for accounting purposes and not when capital dollars are spent.

a)

CATEGORY	2019			2020			2021			2022			2023		
	Budget	Actual	Var	Budget	Actual	Var	Budget	Actual	Var	Budget	Actual	Var	Budget	Forecast	Var
	$ '000		%	$ '000		%	$ '000		%	$ '000		%	$ '000		%
System Access	836	1,625	94.5%	846	530	-37.4%	842	1,033	22.6%	894	872	-2.4%	841	1,352	60.8%
System Renewal	997	792	-20.6%	915	1,296	41.6%	930	795	-14.5%	1,585	288	-81.8%	1,550	2,802	80.8%
System Service	3,932	8	-99.8%	1,205	2,976	146.9%	1,672	725	-56.7%	45	31	-31.7%	100	125	25.3%
General Plant	84	193	130.3%	72	114	58.8%	132	560	325.6%	97	203	109.8%	1,451	996	-31.3%
TOTAL EXPENDITURE	5,849	2,617	-55.3%	3,038	4,915	61.8%	3,576	3,112	-13.0%	2,621	1,394	-46.8%	3,942	5,276	33.8%
Capital Contributions	- 787	-1,474	87.3%	- 654	- 359	-45.1%	- 667	- 657	-1.6%	- 679	- 610	-10.2%	- 638	- 1,250	95.9%
Net Capital Expenditures	4,936	1,143	-76.8%	2,384	4,557	91.1%	2,909	2,456	-15.6%	1,942	784	-59.6%	3,304	4,026	21.9%
System O&M	$1,251	1,145	-8.5%	1,044	1,128	8.0%	1,069	1,241	16.2%	1,228	1,255	2.2%	1,246	1,270	1.9%

b)

Year	Net Capital Spend at May 31 (000's)
2021	$838
2022	$697
2023	$1,049

Since May 31st, NOTL Hydro has paid for the new digger. NOTL Hydro also has not received any invoices for the Virgil project which commenced in early 2023.

c) The digger was received the third week of July 2023.
d) Please see the answer in e) below and refer to Exhibit 2 Appendix A pgs. 57-60.
e) NOTL Hydro agrees that having so many non-repeating activities in 2023 was not the most desirable and was aware of this when it was setting its 2023 capital budget. One advantage of NOTL Hydro's very low debt levels is that expenditures such as in 2023 can be accommodated very comfortably. A confluence of unrelated events created this higher capital investment year.
    - The timing of the Virgil underground project was determined by the Region of Niagara after many years of delays. NOTL Hydro had no authority as to this timing nor could the project be spread out over multiple years as NOTL Hydro would have done with its own project.
    - The bucket truck had reached its ten year lifespan. It will now be a 2024 delivery.
    - NOTL Hydro had hoped to get some additional years from its existing digger but its deteriorating condition (it is 12 years old) made this no longer a viable option and when a good opportunity to purchase a new one arose it was taken.
    - The investments in the building could have been deferred but were felt to be needed for safety reasons.

2-SEC-10

[Ex. 2, pp. 10, 23 & 38] NOTL Hydro states on page 10 that 'By 2024, all the major pockets of the rural areas will have been converted with the exception of the firelanes. The firelanes will become the focus starting in 2024' and on page 23 'the planned voltage conversion of the firelanes starting in 2025 …' and on page 38 'An open house is being planned for July to discuss the upcoming work on the firelanes.'

a) What amount, if any, has been included in each year, 2024-2028 for conversion of the firelanes?

b) What feedback is NOTL Hydro seeking in its open house? Could it affect the planned budget?

RESPONSE

For clarification the page references above refers to Exhibit 2 – Appendix 2A

a) These amounts budgeted cover all overhead capital work which will include replacement of poles and the firelane conversions projects. The allocation between firelane work and pole replacements will vary from year to year.

Year	Project	Description	Forecast $
2024	Firelane 12	Rebuild / convert overhead 4kV primary to 16kV	$ 375,000
	Line 1/Concession 7/Line 2	Rebuild / convert overhead 4kV primary to 16kV	$ 180,000
2025	Firelane 4	Rebuild / convert overhead 4kV primary to 16kV	$ 555,000
2026	Firelane 11	Rebuild / convert overhead 4kV primary to 16kV	$ 555,000
2027	Firelane 14	Rebuild / convert overhead 4kV primary to 16kV	$ 555,000
2028	Firelane 14A/B/C/D/E/F	Rebuild / convert overhead 4kV primary to 16kV	$ 555,000

b) As the firelanes are privately owned and not municipal rights-of-way, there are additional steps and considerations that must be taken. Also, the sequence in which the firelanes are updated may need to be adjusted based on customer feedback. The budget may be impacted from year to year, but the total amount should remain within the overall scope for this project barring any unforeseen issues.

2-SEC-11

[Ex. 2, Table 2.12, Appendices 2-AB and 2-BA]

a) Please see the following table compiled from Appendices 2-AB and 2-BA. For all years 2019 to 2024, except 2023, the Closing Balance agrees with 2-BA and net capital expenditures equals capital additions. For 2023 net capital expenditures is $2,849k and Capital Additions is $4,026k, a variance of $1,177. Please explain the difference and adjust if required.

Fixed Assets						
$000	2019	2020	2021	2022	2023	2024
Opening Balance	52,376	52,948	57,120	59,380	60,078	63,896
Gross Capex	2,617	4,915	3,112	1,394	3,487	2,551
Contributed	1,474	359	657	610	638	575
Net Capex	1,143	4,556	2,455	784	2,849	1,976
Disposal	571	384	195	86	208	59
Closing Balance	52,948	57,120	59,380	60,078	62,719	65,813
Difference					1,177	
					63,896	

b) Table 2.12 shows the ending balances for CWIP. Please explain how the change in CWIP is incorporated into the fixed assets.

RESPONSE

a) A revised copy of the chapter 2 appendices was filed as NOTLH_2024_Filing _Requirments _Chapter2_Appendices_(OEB M_2023 Model) V3_20230529. The values for 2023 above appear to be taken from a previous version. The table below is updated with values from that filing.

Fixed Assets						
$000	2019	2020	2021	2022	2023	2024
Opening Balance	52,376	52,948	57,120	59,380	60,078	63,896
Gross Capex	2,617	4,915	3,112	1,394	5,276	2,551
Contributed	1,474	359	657	610	1,250	575
Net Capex	1,143	4,556	2,455	784	4,026	1,976
Disposal	571	384	195	86	208	59
Closing Balance	52,948	57,120	59,380	60,078	63,896	65,813
Difference					0	
					63,896	

b) Spend on Capital projects during the year that are not complete at year end is added to the CWIP balance. Projects started in a previous year that are completed are removed from CWIP and capitalized to the appropriate asset class.

2-SEC-12

[Ex. 2, Distribution System Plan Appendix D] With respect to the Rotating Asset Management Plan:

a. Please provide a table showing, for each major asset category, the number of assets, the number assigned to each asset condition assessment category and the number to be replaced for each year 2024 to 2028.
b. For each asset, please provide details regarding how NOTL Hydro has categorized the assets into their asset condition assessment category.
c. If not included in your response to part (b), please provide information on the inputs and how they are used, in the determination of the asset condition.
d. Please provide a list of all NOTL Hydro vehicles, age, asset condition and expected replacement date if applicable.

RESPONSE

a) The estimates below include both assets replaced for voltage conversions (overhead and underground) as well as items replaced due to condition.

Poles – refer to Exhibit 2, Appendix A Table 11

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Table 11: NOTL Hydro Poles by Age and Condition

Age (Years)	Year Installed	Condition					Total
		Excellent	Good	Poor	Critical	Unknown	
0-9	2013-2022	1040	6	0	0	11	1057
19-Oct	2003-2012	727	2	0	5	10	744
20-29	1993-2002	833	58		2	3	896
30-39	1983-1992	213	80	4	7	2	306
40-49	1973-1982	255	422	12	18	0	707
50+	1972 or earlier	70	658	26	50	3	807
Unknown		0	1	1	0	263	265
Total		3138	1227	43	82	292	4782

2023: 89 total
41 from the Critical category in the table above.
48 related to projects included in the capital plan.

2024: 119 total
41 from the Critical category in the table above.
78 related to projects included in the capital plan.

2025: 68 total
43 from the Poor category in the table above.
25 related to projects included in the capital plan.

2026: 60 total
40 from the Good category, anticipated to move to Poor.
20 related to projects included in the capital plan.

2027: 54 total
40 from the Good category, anticipated to move to Poor.
14 related to projects included in the capital plan.

2028: 59 total
40 from the Good category, anticipated to move to Poor.
19 related to projects included in the capital plan.

Transformers – refer to Exhibit 2, Appendix A Table 13

Transformers

Transformers are tracked both by age and condition. A table summarizing the number of transformers in the system is below.

Table 13: NOTL Hydro Transformers by Condition

Transformer Type	Condition					Total
	Excellent	Good	Poor	Critical	Unknown	
Pole mounted	1057	6	3	1	34	1101
Pad mounted	788	24	34	15	41	902
PMH Units	15	1	3	1	0	20
Junction Boxes	101	0	5	5	8	119
Transmission	4	0	0	0	0	4
Total	1965	31	45	22	83	2146

- 2023 - 12 transformers from the critical category in the table above
- 2024 - 10 transformers from the critical category in the table above
- 2025 - 12 transformers from the poor category in the table above
- 2026 - 11 transformers from the poor category in the table above
- 2027 - 11 transformers from the poor category in the table above
- 2028 - 11 transformers from the poor category in the table above

Wire – refer to Exhibit 2, Appendix A Table 16

Table 16: NOTL Hydro Wire by Condition

Wire Type	Condition (kms)					Total
	Excellent	Good	Poor	Critical	Unknown	
Primary OH	208.1	4.2	0.8	0	4.8	217.9
Primary UG	106.7	1.6	0	0	0.5	108.8
Secondary OH	144.6	7.4	1.6	3.8	0	157.4
Secondary UG	305.4	0.1	0.1	0	4.8	310.4
Total	764.8	13.3	2.5	3.8	10.1	794.5

2023:
Primary OH: 2.4 km
Secondary OH: 1.7 km

2024:
Primary OH: 3.2 km
Primary UG: 1.5 km
Secondary OH: 1.9 km

Secondary UG: 2.2 km

2025:
Primary OH: 2.5 km
Primary UG: 1.4 km
Secondary OH: 1.7 km
Secondary UG: 3.9 km

2026:
Primary OH: 1 km
Primary UG: 1.2 km
Secondary OH: 0.6 km
Secondary UG: 3.1 km

2027:
Primary OH: 1.2 km
Primary UG: 1.3 km
Secondary OH: 0.8 km
Secondary UG: 2.9 km

2028:
Primary OH: 1.0 km
Primary UG: 1.3 km
Secondary OH: 0.7 km
Secondary UG: 2.7 km

b) All assets are inspected visually by a journeyman lineman and assessed and categorized based on the individual's experience and asset estimated remaining useful life.
c) Visual assessment
    - Poles: Pole testing, cracks, burns, rot
    - Transformers: rust, discolourization, evidence of oil leakage
    - Wire: breaks, excessive sag
    - Pole Hardware: breakage, missing.
d) See following page.

Truck	Description	Year / Make	Asset Condition	Expected Replacement Year
2	Pick-up	2022 GMC	Good	2032
3	Pick-up	2021 GMC	Good	2031
4	Pick-up	2019 GMC	Good	2030
5	Volt EV	2016 Volt	Good	2025
6	VAN	2010 Dodge	Fair	Will not be replaced
7	Pick-up	2023 GMC	Good	2034
9	Pick-Up	2013 Ford	Fair	Will not be replaced
10	Pick-up	2018 GMC	Good	2029
11	Digger Derrick	2011 INT	Fair	Will not be replaced
TBD	Digger Derrick	2023 FRHT	New	2033
29	Single Bucket	2018 FRHT	Good	2028
38	Single Bucket	2013 INT	Fair	2024
39	Excavator	2022 CAT	Good	2032
90	Trailer	2022 Low-Bed 16ft Trailer	Good	2036
97	Trailer	2017 Timberland	Good	2035
98	Trailer	2021 Pole Trailer	Good	2037
99	Trailer	2022 Dump Trailer	Good	2038

2-SEC-13

[Ex. 2, Tables 7 & 8] NOTL Hydro's historical reliability (Interruptions excluding loss of supply and Major Events) is shown in Table 7 as follows:

	2018	2019	2020	2021	2022
SAIDI	0.76	0.50	0.73	1.02	0.5
SAIFI	0.48	0.38	0.52	1.25	0.52

a) NOTL Hydro states that 'The increase of SAIDI and SAIFI on certain feeders in 2021 were due to a couple of feeder wide outages that lead to the overall increase in these scores that year' and Table 8 shows feeders M2 and M3 to be affected. NOTL Hydro outlines a number of steps it has taken to reduce the outage scores along the M2. What has NOTL Hydro done or plan to do to reduce the outages on M3?
b) What targets has NOTL Hydro set for SAIDI and SAIFI in 2024?

RESPONSE

a) The increase in the outages on the M3 was only in 2021 and the result of one particular outage. This differs from the M2 which has a clear pattern of more outages and so requires specific steps. The M3 will benefit from the actions being taken to reduce outages across the entire system.
b) Below the five-year average.

2-VECC-8

Reference: Appendix 2-AA

a) Please confirm Appendix 2-AA reflects in-service additions in each year.
b) Please explain the increase in overhead system renewal costs in 2023.
c) Please explain the increase in underground system renewal costs in 2023 and 2024.
d) Please explain the increase in SCADA costs (system service) in 2024.

RESPONSE

a) Confirmed
b) 2023 included $525k in projects scheduled to be completed in 2023 plus an additional $509k in Construction Work In Progress (CWIP). As of June 27, 2023, 96% of the overhead CWIP jobs carried forward have been completed.
c) 2023 included $1.025m for the underground work in Virgil and an additional $743k in CWIP. As of June 27, 2023, 88% of the overhead CWIP jobs carried forward have been completed. The Virgil underground job is progressing well and is scheduled to be completed in the fall.
d) NOTL Hydro is planning to install a reclosure and a Scada Mate feeder tie to better automate our distribution system to improve reliability. The Scada Mate will enable the M3 feeder out of York station to tie into the NOTL Station. This is currently the only feeder without this capability.

2-VECC-9

Reference: Exhibit 2, page 16, Table 2.12

Please provide an excel version of Table 2.12.

RESPONSE

Files separately as '2.0-VECC-9A Exhibit 2 Table 12' in excel format.

2-VECC-10

Reference: Appendix 2-G

Please provide SAIDI and SAIFI for the years 2018 to 2022 excluding Loss of Supply, Major Events Days and Scheduled Outages.

RESPONSE

Excluding scheduled outages, loss of supply & major events	2018	2019	2020	2021	2022
SAIFI	0.38	0.38	0.50	1.22	0.58
SAIDI	0.50	0.49	0.67	0.98	0.53

2-VECC-11

Reference: Appendix 2, Appendix B

a) Page 28: Please provide the number of poles to be replaced in each of the years 2023 to 2028.
b) Page 29: Please provide the number of transformers replaced by transformer type for each of the years 2018 to 2022 and forecast to be replaced for each of the years 2023 to 2028.
c) Page 31: Please provide the km of wire replaced by wire type for each of the years 2018 to 2022 and the forecast for each of the years 2023 to 2028.

RESPONSE

a) Also addressed in 2-SEC-12.

Note – reference is to exhibit 2 appendix A DSP

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Table 11: NOTL Hydro Poles by Age and Condition

Age (Years)	Year Installed	Condition					Total
		Excellent	Good	Poor	Critical	Unknown	
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Unknown		0	1	1	0	263	265
Total		3138	1227	43	82	292	4782

2023: 89 total
41 from the Critical category in the table above.
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43 from the Poor category in the table above.
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40 from the Good category, anticipated to move to Poor.
20 related to projects included in the capital plan.

2027: 54 total
40 from the Good category, anticipated to move to Poor.
14 related to projects included in the capital plan.

2028: 59 total
40 from the Good category, anticipated to move to Poor.

19 related to projects included in the capital plan.

b) Also addressed in 2-SEC-12.

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Pad Mounted Transfomers	3	7	4	5	4	11	10	9	11	11	11
Pole Top Transformers	4	9	2	6	6	1	0	3	0	0	0

c)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Primary Overhead (kms)	5.47	1.81	0.37	4.72	3.4	2.4	3.2	2.5	1	1.2	1
Primary Underground (kms)	0.024	0.87	3.07	0.78	1.27	0	1.5	1.4	1.2	1.3	1.3
Secondary Overhead (kms)	3.78	1.02	1.53	2.18	1.77	1.7	1.9	1.7	0.6	0.8	0.7
Secondary Underground (kms)	0.71	3.86	4.29	3.46	5.92	0	2.2	3.9	3.1	2.9	2.7

2-VECC-12

Reference: Appendix 2, Appendix B, page 65

Please provide a table that sets out the Planned Overhead Projects in the same format as Table 31 on page 66.

RESPONSE

NOTL Hydro notes that this is referring Exhibit 2, Appendix A. Please note that these are subject to change based on customer feedback and more detailed analysis of each firelane.

Year	Project	Description
2024	Firelane 12	Rebuild / convert overhead 4kV primary to 16kV
	Line 1/Concession 7/Line 2	Rebuild / convert overhead 4kV primary to 16kV
2025	Firelane 4	Rebuild / convert overhead 4kV primary to 16kV
2026	Firelane 11	Rebuild / convert overhead 4kV primary to 16kV
2027	Firelane 14	Rebuild / convert overhead 4kV primary to 16kV
2028	Firelane 14A/B/C/D/E/F	Rebuild / convert overhead 4kV primary to 16kV

2-VECC-13

Reference: Appendix 2, Appendix B, page 66

Please provide the planned Underground Projects in 2023.

RESPONSE

NOTL Hydro notes that this is referring Exhibit 2, Appendix A

Please see Exhibit 2, Appendix 2A page 58.

2-VECC-14

Reference: Appendix 2, Appendix B, page 67

Please provide the quantity of switches replaced in each of the years 2018 to 2022 and forecast for each of the years 2023 to 2028.

RESPONSE

NOTL Hydro notes that this is referring Exhibit 2, Appendix A

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	Actual	Actual	Actual	Actual	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Switches	0	1	1	3	2	2	2	2	3	2	1

2-Staff-8

Ref 1: Exhibit 2, DSP, Table 12, page 28,
Ref 2: APB Unit Cost Calculations: 2021 Results (xlsx) - 27 March 20237

Preamble:
The number of poles replaced due to deteriorated condition for years 2018 to 2021 have been provided in reference 1 and the total number poles replaced each year for years 2018 to 2021 have also been provided for Activity and Program based Benchmarking (APB) in reference 2.

Question(s):

a) Please explain the difference between the two set of numbers in reference 1 and reference 2.

RESPONSE

APB amounts are total poles installed, not only those replaced due to condition.

2-Staff-9

Ref: Exhibit 2 / Section 5.3.5 & 5.4.5
2021 CDM Guidelines, Chapter 3.1

Preamble:
Niagara-on-the-Lake Hydro notes that it welcomes opportunities to provide CDM services to its customers and significantly overachieved when LDCs had responsibilities for their own CDM activities. However, Niagara-on-the-Lake Hydro concludes there are no CDM projects in the current planning process and Niagara-on-the-Lake Hydro is not applying for CDM funding through rates.

Question(s):

a) Please describe how Niagara-on-the-Lake Hydro has addressed or plans to address the requirement in OEB's CDM Guidelines for distributors to "make reasonable efforts to incorporate consideration of CDM activities into their distribution system planning process, by considering whether distribution rate-funded CDM activities may be a preferred approach to meeting a system need, thus avoiding or deferring spending on traditional infrastructure."
b) Please describe specific changes, if any, that Niagara-on-the-Lake Hydro has made to its distribution system planning process to address the requirement.

RESPONSE

a) Please see page 35 of Exhibit 2 Appendix 2A - Distribution System Plan.
b) Please see page 35 of Exhibit 2 Appendix 2A - Distribution System Plan.

2-Staff-10

Ref: Exhibit 2, Section 5.4.5, page 79
2021 CDM Guidelines, Chapter 3.1

Preamble:
Niagara-on-the-Lake Hydro notes they are not aware of any rate funded CDM opportunities in Niagara-on-the-Lake but to be fair to all customers, it is important to have a strong cost/ benefit analysis on potential opportunities.

Question(s):

a) Has Niagara-on-the-Lake conducted any cost benefit analysis on potential CDM opportunities? If so, please describe the process and results of the findings.

RESPONSE

NOTL Hydro has not identified any potential CDM opportunities on which to perform a cost benefit analysis.

2-Staff-11

Ref: Chapter 2 Appendix 2-C

Preamble:
In the Chapter 2 Appendix 2-C, the calculated depreciation includes an “Adjustment” column (column R), where adjustments to depreciation are $29k and -$135k in 2019 and 2020, respectively. The adjustment to Account 1850 Line Transformers in 2020 also results in a variance between depreciation calculated in Appendix 2-C and depreciation in Appendix 2-BA of -$18k.

Question(s):

a) Please explain what this adjustment column represents and why the variance in Account 1850 is appropriate.

RESPONSE

The adjustments were the result of a review and revaluation of meters (2019) and transformers (2020) held for use.

2-Staff-12

Ref 1: Exhibit 2, page 37
Ref 2: Exhibit 2, Appendix 2B

Preamble:
For self-constructed assets, Niagara-on-the-Lake Hydro uses a burden rate of 50% over base wages of employees to cover benefits and direct employee related costs. These burden rates were increased effective January 1, 2023 due to increased employee benefit costs. No other overhead is allocated to capital.

Question(s):

a) In reference 1, it states that only payroll burden is allocated to capital. Pages 9 to 10 of the capitalization policy in Appendix 2B discusses payroll, truck and store burdens and notes that these burdens are capitalized when directly attributable to bringing and PP&E to the location and condition necessary for it to be capable of operating in the manner intended by management. Please clarify whether truck and store burdens are allocated to capital as well.

   i. If truck and store burdens are allocated as well, please provide the original burden rates, the updated burden rates, the variances and the reason for the changes.

b) Please indicate the payroll burden before the increase, the rate increase and the resulting increase in capitalized amount.
c) Please provide the payroll burden rate for the last five years up to 2024.
d) Please explain how Niagara-on-the-Lake Hydro assesses the appropriateness of its burden rates.

RESPONSE

a) Yes, truck costs are charged to internal capital jobs based on usage.
   i. Burden rates of 50% are applied to payroll at the time of the transaction and trucks are charged to jobs based on usage and the hourly rate. These amounts are posted to the job (OMA or Capital) with an offsetting entry to the burden accounts. At each year-end NOTL Hydro compares the amount booked to the burden accounts against the actual benefit and truck costs incurred. Any difference is trued-up to the appropriate jobs at that time. In the end, the actual benefit costs and truck costs are included in OMA and capital jobs. Internally, the 50% payroll burden and hourly truck costs are used to approximate job costs at the time of entry.
b) Payroll burden was 40% and was changed to 50% on January 1, 2023. This change has no impact on actual costs. The burden is used as a proxy until accounts are trued-up to actual at year end.
c) 40% for 2019-2022 changed to 50% in 2023. The rate of 40% had been in place since prior to 2004.
d) NOTL Hydro periodically reviews its actual burden costs to its burden rates to ensure the burden rates appropriately reflect actual costs.

2-Staff-13

Ref 1: Exhibit 2, page 37

Preamble:
In the reference it states that Niagara-on-the Lake Hydro uses the same rate for allocating costs to capital as it uses to charge customers for work performed on its behalf. Customers are also charged a mark-up of 20% on labour and 10% on materials and truck time. These additional amounts are included in Other Revenue and are not capitalized.

Question(s):

a) Please clarify the nature of the costs that are allocated to capital and how it relates to work performed on customers' behalf.
b) Please confirm that the additional amounts included in Other Revenue are the mark-up of 20% on labour and 10% on materials. If not, please explain what these additional amounts are.

RESPONSE

a) Benefits are allocated at the burden rate and then trued up to actuals. Customers are charged the hourly rate + 50% on payroll to cover benefits and the hourly truck rate. In addition, customers are charged a mark-up on items to cover administrative costs.
b) Confirmed

2-Staff-14

Ref 1: Distribution System Plan, pages 4, 15, and 26
Ref 2: Distribution System Plan, Appendix F - EV Analysis #1
Ref 3: Distribution System Plan, Appendix G - EV Analysis #2
Ref 4: Distribution System Plan, Appendix A – HONI Needs Assessment Report

Preamble:
Niagara-on-the-Lake Hydro states that it has analyzed what the impact of a sudden increase in electric vehicles might mean and is making adjustments. Niagara-on-the-Lake Hydro also states that the use 100kVA pad mounted transformers has resulted in a system better prepared for the widespread adoption of EVs. Adaptation actions include investing in upgrading local transformers and monitoring the installation of EV chargers. Niagara-on-the-Lake Hydro states that it is not expected that much wiring would need to be upgraded.

Question(s):

(a) What analysis has Niagara-on-the-Lake Hydro performed to evaluate the impact on primary underground cables (that supply the residential padmount transformers) ampacity ratings with increasing load factor due to daytime and overnight charging consumption/demand?
(b) How does Niagara-on-the-Lake Hydro intend to monitor installation of EV chargers within its service territory?
(c) How has EV penetration been factored into load growth demand (kW) and consumption (kWh) expectation over the forecast period? Please provide the expected peak demand for each of the transformer stations over the forecast period if different from the figures provided in the HONI Needs Assessment Report dated May 24, 2021.

RESPONSE

a) NOTL Hydro specifies 2/0 Al primary underground cables rated at 185A in conduit. That ampacity rating would allow for eighty-eight 100 kVA transformer connections. NOTL Hydro's most heavily loaded underground subdivision phase does not exceed twenty transformers, typically split halfway by an open point. As such, an increasing load factor is not expected to materially impact primary underground cables.

b) NOTL Hydro encourages customers to inform us when they purchase an EV. NOTL Hydro also monitors transformer loading so this would indicate if any or being overloaded as a result of new EV chargers.

c) The forecast is based on a regression analysis so growth in EV's is included in the base amount. NOTL Hydro does not anticipate the growth in EV's to be substantially different in 2024, especially given the long wait times for many of the vehicles.

2-Staff-15

Ref 1: Distribution System Plan, pages 11 and 50

Preamble:
Niagara-on-the-Lake hydro states that locate services were brought inhouse in 2020 due to performance issues with the service provider and that this was done in collaboration with the Town of Niagara-on-the-Lake.

Question(s):

(a) Please provide the relevant report/business case that documents the terms and conditions, including how costs are apportioned between the Niagara-on-the-Lake Hydro and the Town for the Locate Technician.

RESPONSE

The business case for locates was largely based on the backlog in locates from the previous provider. This was creating operational issues for both the Town of Niagara-on-the-Lake and NOTL Hydro. Each organization alone did not have sufficient demand for a locator but together there was demand for about 1.5 locators. The focus was primarily on performance with some savings being a beneficial byproduct.

The locator is an employee of NOTL Hydro but 100% of his time and costs are charged to Energy Services Niagara Inc. (ESNI). This allows this employee to be a part of the union and access all benefits. ESNI then charges both the Town and NOTL Hydro based on the number of locates provided just like with an external provider. Rates were originally set the same as the previous provider but as they have only been increased once they will be lower than the previous provider rates now. Any additional locates are provided by a local third-party provider.

Given the recent focus on locate services in the industry, the use of an inhouse locator has been very helpful.

No formal business case was prepared for this hire. Please also see 4.0–VECC–22.

2-Staff-16

Ref 1: Distribution System Plan, pages 5, 11, 13, 56 and 60

Preamble:
Niagara-on-the-Lake Hydro states that it has hired its own underground crew and procured equipment as it has been unable to source sufficient contract support to efficiently manage its capital underground program.

Question(s):

a) Did Niagara-on-the-Lake Hydro develop a report/business case that evaluated the various options (external contract, internal resources and equipment, etc.) to address underground excavation issues? If so please provide.
b) Did Niagara-on-the-Lake Hydro attempt to outsource this service through a competitive bid process (ie. annual work needs to allow for contractor unit cost submissions)? If so, what were the results?

RESPONSE

a) NOTL Hydro evaluated the various options before getting internal approval for the hires. The internal business case is attached as appendix 2-Staff-16A. More details on these efforts are provided below and in 4.0-VECC-23.

b) NOTL Hydro met with one local contractor who was not interested in a service contract, but indicated they would respond to individual projects. To date, that contractor has responded to one project only.

Another contractor in the broader Niagara Region has been contacted and does work for NOTL Hydro as needed beyond the scope of work performed by NOTL Hydro FTEs.

There are no other known contractors locally, and few in the region, that have expressed interest working in NOTL when asked.

2-Staff-17

Ref 1: Distribution System Plan, pages 10, 23, 27, 38 and 64

Preamble:
Niagara-on-the-Lake Hydro states that by 2024, all the major pockets of the rural areas will have been converted from 4kV to 27.6kV except for firelanes. The firelanes will become the focus starting in 2024. Firelane roads are privately owned. New 27.6kV plant replacing existing 4kV plant will have a new more suitable path compared to the 4kV path given the growth in the firelanes. New 27.6kV lines in the firelanes will require easements.

Question(s):

a) Please provide the material investment summary for the firelane projects as per the OEB Chapter 5 Filing Requirements, Section 5.4.1.1 Material Investments - Section A - General Information on the project/program and Section B. Evaluation criteria and information requirements for each project/program.
b) Does the plant in the firelanes supply multiple customers or just the owner of the firelane? More detail is required to understand the nature of the work being proposed.
c) Are the conversion costs borne 100% by Niagara-on-the-Lake Hydro or is the property owner responsible for some portion of the line replacement cost?
d) What actions will Niagara-on-the-Lake Hydro undertake if firelane property owners do not approve of 27.6kV line proposals? Is maintaining status quo (4kV supply) through local poletop transformation (27.6kv to 4kV) an option?

RESPONSE

a) Page 64 of the Distribution System Plan is this summary.

b) There are multiple residential customers on each of the firelanes and the ownership structure of each of the firelanes varies. Some firelanes are owned by one person while others have joint ownership of various residents. There are no or very few municipal right-of-ways that normally exist and that allow NOTL Hydro to install their poles lines with no encumbrances. This adds an additional complexity to this project.

   The actual work is the normal replacing of a very aged, and in many cases a 4 kV voltage, pole line with a newer line as is done every year as part of regular system renewal.

c) NOTL Hydro owns the existing plant and will be responsible for the replacement cost. Customers would only be responsible if they want a customized installation.

d) NOTL Hydro has a history of working collaboratively with its customers so does not foresee this being an issue. The current poles and related equipment are old so most of the feedback so far has been from customers looking forward to this process.

   Should an agreement not be reached then NOTL Hydro has multiple options which will vary depending on the particular circumstances. It could leave the some or all the current 4kv system

in place as described, it could still convert to a 27.6 kV system with the old poles if that can be done safely or it could use alternate routes.

A more likely scenario is the customers wanting more than what we are planning (underground, etc.) in which case NOTL Hydro would be looking for contributions from the customers for the additional costs. The regular work being planned would be at no cost to the customer as is part of NOTL Hydro's regular capital program.

2-Staff-18

Ref 1: Distribution System Plan, pages 12-13

Preamble:
Niagara-on-the-Lake Hydro states that cost savings are achieved through reduced unplanned maintenance and repairs, reduced line losses and reduced outages.

Question(s):

a) Please provide the amount of annual O&M savings due to the plan over the forecast period for each of the above factors.

RESPONSE

NOTL Hydro is unable to quantify savings in this manner.

As much older equipment is replaced with newer equipment then maintenance and repairs will decline but NOTL Hydro does not have the precision detail to quantify this.

NOTL Hydro has the lowest lines losses in Niagara so savings can be determined in comparison to other local LDCs or to historical line loss rates. NOTL Hydro does not have a target line loss rate from this plan but would like to see its rate continue to decline.

Outages have various causes and can vary with the weather as well as traffic behaviour. Distinguishing any changes in outages from these factors and the plan is not possible but NOTL Hydro aims to keep its outages below the Ontario average as has been its recent practice.

2-Staff-19

Ref 1: Distribution System Plan, page 63
Ref 2: Distribution System Plan, Table 21, page 43,

Preamble:
Niagara-on-the-Lake Hydro states that meter expenditures are forecast to be higher in 2024 due to ongoing meter reverification requirements and then revert to normal levels.

Questions:

a) What are the "normal levels" of meter reverification requirements over the 2025 – 2028 period? How much of the budgeted meter capital costs is for reverification and replacements versus additional meters for new connections for the forecast years?
b) Do Niagara-on-the-Lake's meters have "last gasp" functionality to enhance operational awareness of power outage situations and does Niagara-on-the-Lake Hydro currently make use of this function?
c) When does Niagara-on-the-Lake Hydro forecast the large-scale replacement of meters due to failures and end of life will occur?

RESPONSE

a) By "normal levels", NOTL Hydro was referring to meter investment requirements without the meter reverification program and this is the $40k budgeted in 2025-2028. The actual requirements vary significantly but this is the proxy average NOTL Hydro has used. In 2024, the budgeted capital cost split evenly between meter reverification and additional meters for new connections.

b) Yes, NOTL Hydro uses a third-party consultant to utilize "last gasp" functionality for outage awareness in non-interval metering applications. NOTL Hydro receives an e-mail alert of all "last gasp" meters and has used this functionality to respond to outages and to monitor restoration efforts. NOTL Hydro also uses this functionality to provide e-mail alerts to customers who are interested in receiving them.

c) NOTL Hydro does not foresee this occurring within the next 5 years as the reverification efforts extend the allowable life of the meters and NOTL Hydro has not had significant issues with failures to date. The current thinking is that NOTL Hydro will try a phased-in replacement rather than one large scale replacement to spread the costs and effort. No formal decision has been made.

2-Staff-20

Ref 1: Distribution System Plan, page 14

Preamble:
Niagara-on-the-Lake Hydro states that a crypto currency miner is establishing operations in Niagara-on-the-Lake Hydro service territory with up to 50MW of load.

Question(s):

a) Please advise the maximum amount of connected load through a customer owned substation that Niagara-on-the-Lake Hydro will accept to connect to its 27.6kV system.

The maximum connected load through a customer owned substation on the NOTL Hydro 27.6 kV distribution system is not defined in the Conditions of Service. Any load greater than 10 MW will be subject to the IESO System Impact Assessment and the Hydro One Connection Impact Assessment prior to connection by NOTL Hydro. All load connections are reviewed on a case-by-case basis.

2-Staff-21

Ref 1: Distribution System Plan, page 17

Preamble:
In 2023 Niagara Region plans to widen part of Niagara Stone Road. Niagara-on-the-Lake Hydro plans to bury its line along part of that road.

Question(s):

a) What is the total cost of the project for Niagara-on-the-Lake Hydro to remove the overhead plant and bury it?
b) What is the cost difference between undergrounding the overhead line versus relocating the pole line and framing for 27.6kv?
c) What amount of compensation will Niagara-on-the-Lake Hydro receive from Niagara Region for relocating its plant as per the Public Service Works on Highways Act?

RESPONSE

a) $1.1m

b) The cost ratio between undergrounding the overhead line on Niagara Stone Road versus relocating the pole line is 4:1.

c) $0. This project is about taking advantage of an opportunity to improve service to customers and minimize disruptions. As this very busy corridor is being torn up and redesigned by the Niagara Region, NOTL Hydro is taking the opportunity to bury its infrastructure so that this will not need to be done in the future.

2-Staff-22

Ref 1: Distribution System Plan, page 18

Question(s):

a) Please summarize objectives for continuous improvement that Niagara-on-the-Lake Hydro set out in the previous DSP
b) Have the objectives in the previous DSP been achieved?
c) If not, how has this affected the current DSP?

RESPONSE

a) The following objectives for continuous improvement were set out in the 2019 DSP:

1. Outage indices – NOTL Hydro looked to continuously improve its SAIDI and SAIFI. Actual SAIDI and SAIFI have generally remained at around the same level and this has generally remained better than the industry average. Given the climate change it could be argued that holding steady is improvement. NOTL Hydro would say that this objective has been achieved.
2. Feeder analysis – NOTL Hydro looked to review outages on feeder lines as an input to its capital planning. At this time, it was a review of the outages but since then NOTL Hydro has developed the outage indices by feeder and has upgraded its related data collection process so has achieved this objective.
3. Line losses – NOTL Hydro looked to further reduce its line losses. This has not been achieved as the line loss rate has increased marginally but is still the lowest in the Niagara region.
4. Rates – NOTL Hydro looked to continue to have the lowest rates in Niagara and this was achieved.
5. Use of smart meters – NOTL Hydro was in the process of deploying Utilismart to give larger customers better access to data and analytics. This system has been deployed though at a cost.

b) Please see a) above

c) The current DSP seeks to build on these efforts for continuous improvement.

2-Staff-23

Ref 1: Distribution System Plan, pages 18 and 20

Preamble:
Chapter 7 of the OEB's Distribution System Code outlines the OEB's expectations regarding Service Quality Requirements (SQR) for Electricity Distributors. In the DSP, Niagara-on-the-Lake Hydro has provided SAIFI and SAIDI statistics for the historical period.

Question(s):

a) Table 8 shows SAIFI and SAIDI statistics by feeder. Are there any outages related to the F3 feeder which is not shown?

RESPONSE

The F3 feeder is quite short and was built to supply one large customer and a handful of residential customers. There are no outages recorded on this feeder.

2-Staff-24

Ref 1: Distribution System Plan, page 20
Ref 2: Distribution System Plan – Appendix D – Asset Management Plan

Preamble:
Niagara-on-the-Lake Hydro states that "vegetation maintenance is conducted on a three-year cycle. Vegetation is cut back to the 3m limit of approach near primary circuits."

Historical outage statistics indicate that tree related outages account for approximately 15 – 20% of total outages (excluding LOS and MEDs).

Question(s):

a) Does Niagara-on-the-Lake Hydro perform any additional out of cycle vegetation management for faster growing tree species that the 3-year cycle cannot accommodate?
b) Has Niagara-on-the-Lake Hydro reviewed the root causes of the tree related outages and considered any additional measures (i.e. "blue sky" approach, hazard tree removal, etc.) that would mitigate the number and impacts of vegetation related outages?

RESPONSE

a) NOTL Hydro does not have additional out of cycle vegetation management for faster growing tree species, nor is the LDC aware of any such species in the service territory.

   NOTL Hydro will perform additional reactionary vegetation management if a requirement to do so is identified.

b) NOTL Hydro does not have a formal root cause analysis for tree related outages. When outages occur due to tree contacts, the affected areas are trimmed back to 3.0m from energized primary conductor. NOTL Hydro does note that the tree canopy in Niagara-on-the-Lake is growing and that this growth is supported by both the residents and the municipal government. NOTL Hydro must take this into account in its vegetation management.

   NOTL Hydro does not engage in tree removal without consultation with municipal authorities, property owners or other agencies such as the Niagara Escarpment Commission.

2-Staff-25

Ref 1: Distribution System Plan, page 20

Preamble:
Table 20 shows an increasing trend in outages related to Foreign Interference.

Question(s):

a) What are the causes of Foreign Interference in each of the historical years?
b) Please describe any measures Niagara-on-the-Lake Hydro had determined can be taken to mitigate/reduce the number of outages related to foreign interference?

RESPONSE

To clarify this is referring to Table 7 in the DSP.

a) This is usually car accidents, animals, and birds. The specific cause is not always recorded.

b) NOTL Hydro is actively engaged in the mitigation and reduction of outages caused by foreign interference through the planning and installation of system supervisory equipment such as automated feeder tie switches, feeder reclosure sectionalizers, radial supply sectionalizers, and smart grid technology, to reduce outage time for all types of system outage causes.

2-Staff-26

Ref 1: Distribution System Plan, page 25

Preamble:
The Chapter 5 filing requirements state that a distributor must provide an overview of its planning process that has informed the preparation of the distributor's five-year capital expenditure plan.

Question(s):

a) Please provide an overview of the Niagara-on-the-Lake Hydro planning process (flowchart or steps, etc.) that has been used to develop its capital expenditure plan.
b) Please provide a summary of the data used in the planning process to identify, select, prioritize, optimize and pace the execution of investments over the term of the DSP.

RESPONSE

a) The capital planning process is driven by a mix of long-term plans and short-term decision making. The long-terms plans are multi-year or multi-decade plans to achieve a certain goal that is considered in the best interests of the distribution system and the NOTL Hydro customers. Examples of this include the voltage conversion from 4 kv to 27.6 kv, the undergrounding of certain urban areas, the transmission station development, the installation of smart grid technology on the lines, fleet renewal and the meter reverification program.

   The short-term decision making consists of the determination of the actual expenditures within these plans for the upcoming few years. This will be based on factors such as asset conditions, local developments, municipal government projects, regulatory requirements, and customer needs. Any one-time projects (building renovations, provincial funding projects) will be added at this time as will regular capital requirements (IT, software systems). An attempt is made to keep the annual level of capital expenditures somewhat even over the years though large capital items (transmission transformers, utility trucks, building renovations) create fluctuations in the total annual expenditures.

   The annual capital budget with a detailed budget for the next year and a high-level forecast of the following four years is prepared by management in late summer and presented to the Board of Directors in the fall for approval. The actual capital expenditures will still be adjusted if circumstances dictate.

   The presence of three municipal representatives on the Board ensures ongoing public access through their elected representatives. Public consultations are occasionally held on items of significance (underground conversion in 2019 and firelane conversion in 2023).

b) The data used for the planning process would include:
   - Asset condition reports
   - Voltages on existing lines
   - Significant non-hydro projects
   - Meter reverification requirements

- Software upgrade requirements
- Smart grid opportunities
- System performance or outage frequency outliers
- The current DSP
- Lessons from recent years
- The general total capital expenditure target

2-Staff-27

Ref 1: Distribution System Plan, pages 25-26 and 32-33
Ref 2: Distribution System Plan – Appendix D – Asset Management Plan

Preamble:
Niagara-on-the-Lake Hydro states that in 2021 it "developed and approved a Rotating Asset Management Plan which summarizes the steps Niagara-on-the-Lake Hydro takes to monitor the condition of its assets and the process by which this information leads to actions taken." Assets rated "Immediate" are replaced within a few days so will not appear on any asset condition tables.

Niagara-on-the-Lake Hydro states that "asset management is one of the factors taken into account when determining the capital expenditure plan. Others include the voltage conversion program, local initiatives, customer needs as they relate to the grid (as opposed to direct connection needs) and budgetary restrictions."

Question(s):

a) Which budget line in the forecast budget do the anticipated costs for Immediate asset replacement appear?
b) What are the annual forecast costs for Immediate asset replacement needs?
c) Please provide the asset life optimization policies, processes and tools that are applicable to the 2024 DSP.
d) Are there factors other than visual inspections that are used to determine the condition of underground primary cables?

RESPONSE

a) Referring to Table 21 Capital Expenditure Detail in the Consolidated Distribution Plan, anticipated costs for immediate asset replacement are found in the following budget lines:
   - Poles and pole mounted transformers: System Renewal Overhead
   - Pad mounted transformer: System Renewal Underground
   - Switches: System Service SCADA/switches

b) There are few immediate asset replacement needs year over year. A portion of each budget line is allocated for equipment replacement, however it is not allocated by immediate, critical, and poor.

c) NOTL Hydro follows Table 2.19 NOTL Hydro Depreciation Rates as a guide for asset useful life. Condition assessment through annual inspections is used to schedule replacement of assets.

d) The condition of underground primary cables is also determined by their performance. If outages occur caused by faulted primary cable, the cable is repaired at the location of the fault. If multiple faults occur on the same cable over time, the cable will be assessed and scheduled for replacement.

2-Staff-28

Ref 1: Distribution System Plan, pages 27-31
Ref 2: Distribution System Plan – Appendix D – Asset Management Plan

Preamble:
Niagara-on-the-Lake Hydro utilizes 7 distribution feeders to supply its customers.

Questions:

a) Please provide the normal (planning) and emergency loading limits for each of the 27.6kV distribution feeders.
b) Please provide the 2022 peak demand load for each of the 27.6kV distribution feeders.

RESPONSE

a) The normal (planning) loading limits for 27.6kV distribution feeders is 400A (20MVA), and 600A (28.6MVA) for temporary emergency conditions.

b) The 2022 peak demand load for each 27.6kV feeder at NOTL Hydro was as follows:
- F1: 307A
- F2: 303A
- F3: 321A
- F4: 329A
- M1: 129A
- M2: 132A
- M3: 148A

2-Staff-29

Ref 1: Distribution System Plan, pages 27-31
Ref 2: Distribution System Plan – Appendix D – Asset Management Plan

Preamble:
Niagara-on-the-Lake Hydro has provided condition assessments for poles, distribution transformers and wires. Niagara-on-the-Lake Hydro states that regular maintenance of its transformer stations is outsourced to a third party with expertise in transmission stations. There is no condition assessment provided for the transformer stations and metering equipment.

Question(s):

a) Please provide condition assessments for the transformer stations and metering equipment.
b) In Table 17, Niagara-on-the-Lake Hydro states that wire age 25 years or more includes installation dates of 2001 and earlier. Should the table entry read that installation dates be 1997 and earlier?

RESPONSE

a) Condition assessment can be found in appendices 2-Staff-29A, 2-Staff-29B, 2-Staff-29C and 2-Staff-29D.
b) Yes

2-Staff-30

Ref 1: Distribution System Plan, page 32

Preamble:
Niagara-on-the-Lake Hydro states that it generally tries to reinvest in a manner that matches the lifecycle of the assets based on their depreciation. Depreciation is directly related to the age of the asset.

Question(s):

a) Is Niagara-on-the-Lake Hydro stating that age is the key determinant with respect to asset replacement as opposed to asset condition?

RESPONSE

No. NOTL Hydro is saying that as a rough guideline the expenditure on system renewal capital should match the inflation adjusted depreciation of the assets. Spending less than this means assets are being harvested while spending more means the average age of the assets is shortening. Please see page 63 of the DSP for a more detailed explanation.

2-Staff-31

Ref 1: Distribution System Plan, pages 20 and 38

Preamble:
Niagara-on-the-Lake Hydro states that climate change will create hotter summers and colder winters though these will vary from year to year. One of the largest contributors to outages in 2022 was adverse weather.

Question(s):

a) Has Niagara-on-the-Lake Hydro determined or studied what the impact of increased extreme weather events will have on its distribution system?

RESPONSE

NOTL Hydro is monitoring the impact of the more extreme weather and taking actions where these actions are identified as appropriate. Some examples of these actions include:

- Installing collars on some of the transformers near the marina to raise them due to concerns with rising lake and river levels.
- The work on the firelanes and Lakeshore Rd will also strengthen this infrastructure to help reduce outages from the stronger storm systems coming off Lake Ontario.

NOTL Hydro does not pretend that it has all the solutions, nor does it know when other types of extreme weather such as another ice storm may occur. NOTL Hydro prepares for these potential events by ensuring it has resources and ensuring it is as adaptable as possible.

The impact of increased extreme weather events is also evaluated as part of the IESO IRRP process attributing to the load forecast in the report.

2-Staff-32

Ref 1: Distribution System Plan, pages 28, 43 and 61

Preamble:
Tables 21 and 28 provide the Niagara-on-the-Lake Hydro historical and forecast capital expenditures by major category and program.

Question(s):

a) Why do the numbers for 2019 – 2022, 2026 in Table 21 differ from the numbers in Table 28?
b) For the System Access category, please provide the annual historical and forecast number of Subdivisions, Customer Projects, New Connections underground, New Connections overhead and Meters.
c) For the System Renewal category, please provide annual forecast number of pole replacements.
d) For the System Renewal category, please provide annual historical and forecast number of transformers, wire and any other Niagara-on-the-Lake equipment specific replacement programs covered by the Overhead and Underground spending categories.
e) For the System Service category, please provide annual historical and forecast numbers for switches any other Niagara-on-the-Lake equipment specific programs covered by the SCADA/switches/Smart Grid spending category.
f) For the General Plant category, please provide the relevant business cases/condition assessments for historical and forecast fleet expenditures.
g) For all material expenditures in the forecast period please provide information on the investment per Chapter 5 Section 5.4.1.1 Material Investments - A. General Information on the project/program and B. Evaluation criteria and information requirements for each project/program. A summary sheet per project/program containing the above information would be beneficial.

RESPONSE

a. 2019 – 2022 – table 21 is based off appendix 2-AA and the year in which items are available for use and capitalized for accounting purposes. Table 28 is based on when capital is spent.

   2026 - Table 21 is missing the $200k for additional underground services equipment, Table 28 is correct.

b. Note that NOTL Hydro records the contribution from subdivisions when they are energized and capitalized the portion paid to the developer based on an economic valuation model as lots are connected over a 5-year time horizon.

   Meters are the number purchased in each year.

   NOTL Hydro does not track the number of new connections by overhead and undergrounds, only the cost. The total new connections are included in the table below which would include any subdivision connections or new connections paid for by customer as part of a customer job.

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Subdivisions										
New Developments Energized	3	0	1	0	1	0	0	0	1	0
Lot Connections (all developments)	26	26	42	16	53	45	0	0	60	60
Customer Projects	11	13	32	30	14	20	20	20	20	20
New Connections	144	127	166	208	165	154	161	161	161	161
Meters	209	186	35	140	410	400	200	200	200	200

c. Please refer to 2.0-VECC-11.

d. Please refer to 2.0-VECC-11

e. Please refer to 2.0-VECC-14.

f. Please refer to 1.0-VECC-5.

g. NOTL Hydro considers most of its capital planning to be program based with individual programs lasting for years or decades. Please see 2-Staff-26 for more details on this planning process. As a result, the investment analysis in the DSP has been provided on this program-based basis. NOTL Hydro notes that it provided the investment analysis in its 2019 DSP on more of a project basis and it ended up being very repetitive and non-value added. NOTL Hydro believes the approach taken in the current DSP provides its customers with a better understanding of its planning.

2-Staff-33

Ref 1: Distribution System Plan pages 11, 13, 50, 68 and 82

Preamble:
Niagara-on-the-Lake Hydro states that it "is considering whether to bring boring and/or vacuuming in-house but no decision has been made. The purchase of a boring machine in 2026 is provided as a placeholder."

Question(s):

a) What investments were deferred to allow for this placeholder investment to be prioritized in the 2026 forecast year? Note that Table 21 includes no expenditure for this amount.

RESPONSE

No other investments were deferred. This purchase would be in addition to our regular capital program. This is consistent with the process for replacing large vehicles. As noted, no decision has been made in this regard and NOTL Hydro included it to provide an indication of our current thought process. It was shown in 2026 so would have no impact on the current rate base calculations.

3 | Customer and Load Forecast

INTERROGATORY RESPONSES

3-SEC-14

[Ex. 3, Appendix 2-IB] Please update the load forecast and customer numbers for the Bridge Year 2023 with actuals to date and revise the 2024 load forecast as required.

RESPONSE

Please refer to the response to 3.0-VECC-15 for the 2023 actuals to date. A revised load forecast has been submitted with these responses.

3-SEC-15

[Ex. 3, p. 3]

a) Please provide an update on any discussions NOTL Hydro has had with the potential new Large User.
b) How has NOTL Hydro determined that 5 MW is the appropriate load to forecast for this customer?

RESPONSE

a) The new Large Use customer has commenced operations and has a load just under 10 MW.
b) The 5 MW was set with the 2019 COS and is intended to represent a safe volume that NOTL Hydro can build into its forecast without exposing itself to the sudden loss of the Large Use customer as happened in 2022. The 5 MW continues to be appropriate in this regard. The variance account provides all NOTL Hydro customers with the benefit of any demand above 5 MW.

3-SEC-16

[Ex. 3, p. 16, Table 3.17] NOTL Hydro has forecasted that customer #s, kWh and kWs for the GS > 50 kW class will all increase by 1.3% in 2024. Table 3.17 shows that the actual kWs for this class exceeded the forecast in 2018 and 2019.

a) Please provide similar information of forecast versus actual for kWs for this class for 2020 to 2022.

b) Page 16 of the application states 'The higher demand in the GS>50 kW class is due to the growth in the early months in what would become a Large Use customer. The Large Use demand is lower than forecast as for a few months the customer did not meet the 5,000 kW demand threshold. Actual demand would have been higher as any demand above the 5,000 kW would have been booked to the variance account.' Has NOTL Hydro explored the possibility that this may also be the case in 2024, i.e., potential Large User may start as a GS > 50kW customer?

c) Please explain what is meant by the last sentence in the above quote.

RESPONSE

a) The previous cost of service did not contain a forecast for 2020 – 2022 for GS>50 kW.

b) The 2023 customer was classified as Large Use based on the customer's own forecast. This customer now has a demand over 5 MW.

c) To clarify, this customer was classified as Large Use starting May 1, 2019 when that rate class was approved for NOTL Hydro. The 56,470 kW in table 3.17 is for the period from May 1 to December 31, 2019. The actual demand for that customer for calendar 2019 was 85,209 kW. The 60,000 kW forecast represents 12 months at 5,000 kW consistent with the amount set out in the proposed variance account at that time. Any revenue from this customer due to their demand being greater than 5MW is the months they were classified as large use was booked to the variance account.

3-VECC-15

Reference: Exhibit 3, page 4, Table 3.2
Load Forecast Model, Tab 3 – Consumption by Rate Class

a) Tab 3 contains, for each rate class, the monthly customer/connection count, the monthly kWh use and the monthly billing demand (where applicable) for the years 2012 to 2022. Please provide similar data for 2023 for all the months where actual values are available.

RESPONSE

At the time of these responses, data is available for January – May 2023.

		Residential		General Service < 50 kW		Unmetered Scattered Load		General Service > 50 kW - 4999 kW			Streetlighting			Large Use		
			Average #		Average #		Average #			Average #			Average #			Average #
Year	Month	kWh	Customers	kWh	Customers	kWh	Customers	kWh	kW	Customers	kWh	kW	Connections	kWh	kW	Customers
2023	January	6,482,256	8,222	3,822,249	1,467	29,757	67	7,521,005	17,507	130	59,201	131	2,254	0	0	0
2023	February	5,748,379	8,222	3,535,416	1,468	28,437	67	6,612,662	18,083	131	50,119	133	2,270	0	0	0
2023	March	6,086,753	8,220	3,810,293	1,471	28,151	67	7,059,248	17,093	131	49,820	133	2,285	16,254	6,553	1
2023	April	5,192,626	8,227	3,287,832	1,473	28,151	67	6,159,493	18,057	131	42,106	133	2,285	2,058,504	7,152	1
2023	May	5,286,722	8,237	3,382,695	1,473	28,151	67	6,507,436	19,153	131	38,337	133	2,285	4,663,336	7,983	1

3-VECC-16

Reference: Exhibit 3, pages 6-8
Load Forecast Model, Tab 4 – Customer Growth

a) Please clarify whether the actual and forecast customer/connection values in Table 3.4 are year-end values, mid-year values or annual averages.

b) For the Residential, GS<50, GS>50, Street Lighting and USL customer classes the forecast customer/connection counts for 2024 vary from those initially calculated using the geomean. In the Load Forecast Model the forecast values for 2024 (cells B28, D28, F28, H28 and J28) all refer to tab "12c. Monthly Customer Forecast". However, this tab is not included in the Load Forecast Model as filed. Please provide a copy of Tab 12c. and, for each of these customer classes, provide the rationale for revising the 2024 customer/connection count forecast from those initially determined using the geomean and how the adjusted values were derived.

RESPONSE

a) Averages
b) Tab 12c is unhidden in the updated Load Forecast filed with these responses. The adjusted values for 2024 were based on the number of known projects and an estimate for infill based on historical results. Please see Exhibit 3 pg. 6 – 8 for explanations of customer count forecast.

3-VECC-17

Reference: **Exhibit 3, pages 11 and 13**

Preamble: The. Application states (page 11):

"NOTL Hydro looked at a number of variables to capture the impact of the pandemic, but none were statistically significant. NOTL Hydro therefore did not have a separate variable for the pandemic other than through its impact on historical load."

a) With respect to Table 3.11, do the values in the column labelled "Weather Normalized" represent: i) the predicted values for the year using the weather normal values for HDD and CDD or ii) the predicted values for the year using the actual HDD and CDD values for the year?

b) If the values in the "Weather Normal" column are based on the weather normal values for HDD and CDD, please re-do the Table using the actual HDD and CDD values for each year to predict the revised Wholesale Purchases for the year.

c) If the values in the "Weather Normal" column are based on the actual HDD and CDD values for each year, the results for 2020 and 2021 suggest that for those years the regression model overstates the actual purchases. In NOTL Hydro's view would this variance be explained, in part, by the impact of the pandemic and the fact there is no variable to capture the impact of the pandemic? If not, why not?

d) Please outline the various variables NOTL Hydro looked at to capture the impact of the pandemic and for each set out: i) the resulting regression equation results, ii) the resulting statistic for the regression equation and iii) the 2024 predicted purchases using the equation.

RESPONSE

a) ii
b) n/a
c) It is likely that the Pandemic may have impacted the results for 2020 and 2021.
d) NOTL Hydro attempted to insert a dummy variable to identify when provincial mandates or other measures were in place, but the dummy variable was not significant. NOTL Hydro did not retain these iterations.

3-VECC-18

Reference: **Exhibit 3, page 13**

Preamble: The Application states:
"The penetration of both heat pumps and EVs in Niagara-on-the-Lake is still very small so the impact on the current load is minimal. NOTL Hydro has conducted scenario analysis to assess the impact of the widespread adoption of EVs but has not incorporated any impact into this forecast due to the uncertainty".

a) What is the current penetration in the NOTL service area for: i) home EV charging, ii) direct current fast charging stations and iii) heat pumps?

RESPONSE

i) 14 in our GIS system from customers that have contacted us.
ii) Unknown
iii) Unknown

3-VECC-19

Reference: **Exhibit 3, page 13**
2024 Load Forecast Model, Tabs 3 & 6
Chapter 2 Appendices, Appendix 2-R

b) The 2019-222 annual values for the Large User Adjustment (CAM, Tab 3), the annual Large User Consumption (CAM, Tab 6) and the portion of Wholesale kWhs delivered to Large Use Customers (Appendix 2-R) are all different. Please explain why and reconcile the differences.

RESPONSE

NOTL Hydro was not able to locate the reference to Exhibit 3 pg. 13 with regards to large use kWh. If the question is referring to pg. 15 those numbers are the same as those found in Cells R174:R177 on tab 3 of the 2024 Load Forecast.

The difference between the total values in Tab 3 and Tab 6 is the period when this customer was not in the Large Use Category. Consistent with the treatment of this customer in its 2019 Cost of Service EB-2018-0056, NOTL Hydro removed all historic consumption for this customer when calculating the load for the regression analysis. There was a small variance in September and October 2021 due to an entry error, that has been corrected in the load forecast filed with these responses.

	Large Use Only	Total for Customer		
	Tab 3	Tab 6	Variance	Rate Class
Jan-19		-2,210,874	-2,210,874	GS>50
Feb-19		-1,860,673	-1,860,673	GS>50
Mar-19		-2,025,190	-2,025,190	GS>50
Apr-19		-2,455,219	-2,455,219	GS>50
May-19	1,880,749	-1,880,749	0	Large Use
Jun-19	2,364,107	-2,364,107	0	Large Use
Jul-19	2,009,409	-2,009,409	0	Large Use
Aug-19	1,815,794	-1,815,794	0	Large Use
Sep-19	2,221,352	-2,221,352	0	Large Use
Oct-19	2,196,281	-2,196,281	0	Large Use
Nov-19	2,096,724	-2,096,724	0	Large Use
Dec-19	2,683,156	-2,683,156	0	Large Use
Jan-20	2,563,949	-2,563,949	0	Large Use
Feb-20	2,137,044	-2,137,044	0	Large Use
Mar-20	2,360,316	-2,360,316	0	Large Use
Apr-20	2,051,734	-2,051,734	0	Large Use
May-20	2,100,823	-2,100,823	0	Large Use
Jun-20	1,685,751	-1,685,751	0	Large Use
Jul-20	1,682,559	-1,682,559	0	Large Use
Aug-20	2,005,130	-2,005,130	0	Large Use
Sep-20	2,213,288	-2,213,288	0	Large Use
Oct-20	2,195,614	-2,195,614	0	Large Use
Nov-20	2,411,634	-2,411,634	0	Large Use
Dec-20	2,368,990	-2,368,990	0	Large Use
Jan-21	2,278,982	-2,278,982	0	Large Use
Feb-21	2,144,486	-2,144,486	0	Large Use
Mar-21	1,888,992	-1,888,992	0	Large Use
Apr-21	1,604,529	-1,604,529	0	Large Use
May-21	1,456,874	-1,456,874	0	Large Use
Jun-21	1,443,859	-1,443,859	0	Large Use
Jul-21	1,411,771	-1,411,771	0	Large Use
Aug-21	1,548,148	-1,548,148	0	Large Use
Sep-21	1,639,422	-1,639,442	-20	Large Use
Oct-21	2,076,334	-2,073,334	3,000	Large Use
Nov-21	1,253,078	-1,253,078	0	Large Use
Dec-21	389,318	-389,318	0	Large Use
Jan-22	343,459	-343,459	0	Large Use
Feb-22	191,246	-191,246	0	Large Use
Mar-22	195,451	-195,451	0	Large Use
Apr-22	186,038	-186,038	0	Large Use
May-22	173,057	-173,057	0	Large Use
Jun-22	161,610	-161,610	0	Large Use
Jul-22	0	-167,742	-167,742	GS>50
Aug-22	0	-160,087	-160,087	GS>50
Sep-22	0	-134,445	-134,445	GS>50
Oct-22	0	-136,590	-136,590	GS>50
Nov-22	0	-146,378	-146,378	GS>50
Dec-22	0	-166,824	-166,824	GS>50

3-Staff-34

Ref 1: Exhibit 3, page 6
Ref 2: Load Forecast Model, sheet 4. Customer Growth

Preamble:
In the load forecast model, sheet 4, row 28, adjusted customer connection counts are provided. The formula references hidden sheet 12c. Monthly Customer Forecast.

Niagara-on-the-Lake Hydro notes that growth in residential customer count is slowing. Some customer growth is attributed to a small development near Virgil.

Question(s):

a) Please provide full details on how the customer numbers for all rate classes for 2024 were derived.
b) Please explain the methodology proposed for use, and why it is suitable as opposed to alternative solutions such as geometric mean of a more representative historic period.
c) Please comment on the expected causes of the decrease in growth rates in recent years, and how COVID-19 may have impacted that.
d) Please provide the number of customer connections expected due to the development near Virgil.
e) Is growth in any other rate class expected resulting from the development near Virgil?
f) Is Niagara-on-the-lake expecting any other developments to result in new connections in 2023 or 2024?

RESPONSE

a) Please refer to 3.0-VECC-16b

b) Please refer to 3.0-VECC-16b

c) Fewer new developments, Niagara-on-the-Lake is largely greenbelt. The Glendale area has room for significant growth but there are no plans for this area in the foreseeable future. The impact of COVID-19 on customer growth rates is unknown but is not considered to be significant.

d) 90

e) No, this is a residential development.

f) No, the remaining new connections are expected to be infill.

3-Staff-35

Ref 1: Load Forecast Model, sheet 7. Weather Sensitive Class
Ref 2: Load Forecast Model, sheet 8. KW and Non-Weather Sensitive

Preamble:
In the first reference a ratio of rate class energy use to wholesale purchases is calculated for 2022, and that ratio is used to estimate normalized energy usage for 2023 and 2024. In the second reference, energy consumption per customer is calculated for 2022, and that energy use per customer is used to estimate rate class energy usage for 2023 and 2024.

OEB staff notes that in years with extreme weather, rate classes with weather sensitive loads would normally be expected to require more energy, while rate classes without weather sensitive loads would not. Therefore, the proportion of wholesale purchases required by a rate class would normally be weather dependent.

Question(s):

a) For the weather sensitive rate classes, why does Niagara-on-the-Lake Hydro propose to use a single historic year to estimate rate class energy requirements relative to wholesale purchases?
b) Please explain how the approach used normalizes for differences in weather sensitivity between rate classes.
c) For the non-weather sensitive rate classes, why does Niagara-on-the-Lake Hydro propose to use a single historic year to estimate energy use per customer?

RESPONSE

a) NOTL Hydro selected 2022 as appropriate because it was observed that residential consumption increased as a percentage of total consumption during 2020 and 2021. This was likely due to the impact of the pandemic with more residents working and schooling from home. The 36.06% used for the forecast is higher than the historical of 35.41% excluding 2020 and 2021. We do know that a certain portion of the population continues to work from home even though restrictions have been lifted.

b) Residential and GS<50 customers are considered weather sensitive while other rate classes are considered not weather sensitive. This is consistent with the approach used and approved in NOTL Hydro's 2014 and 2019 Cost of Service Applications.

c) For GS>50 - 2020 and 2021 were likely impacted by the Pandemic. 2022 is more representative because there were no restrictions in place.

For the streetlights and unmetered customers this best represents the current situation. For example, the increase in unmetered in 2022 is due to small cell connections that are estimated to use much less power than some of the existing accounts. Using the historical average would not be practical.

3-Staff-36

Ref: Exhibit 3, page 11

Preamble:
The Large Use rate class forecast was designed assuming a load of 5,000 kW per month, consistent with the variance account. Niagara-on-the-Lake Hydro states that there is a new Large Use customer that has recently commenced operations and that it has been authorized by the IESO for up to 50 MW.

Question(s):

a) Please provide any updates available on the actual or expected use of the large use customer.

RESPONSE

Current usage is just below 10,000 kW per month. Future demand is unknown. NOTL Hydro is waiting on directions from the customer.

4 | Operations, Maintenance & Administration

INTERROGATORY RESPONSES

4-SEC-17

[Appendices 2-JA, JD, K] Please update Appendices 2-JA, JD and K for 2023 actuals to date and provide actuals for the same point in time for 2022 and 2021.

RESPONSE

Appendix 2-JA	Year to Date at May 31		
	2021	2022	2023
Operations	$ 303,473	$ 278,891	$ 316,394
Maintenance	$ 185,829	$ 208,598	$ 174,756
SubTotal	**$ 489,302**	**$ 487,489**	**$ 491,150**
%Change (year over year)		-0.4%	0.8%
%Change (Test Year vs Last Rebasing Year - Actual)			
Billing and Collecting	$ 264,306	$ 269,895	$ 316,843
Community Relations	$ -	$ -	$ -
Administrative and General	$ 535,346	$ 581,220	$ 680,658
SubTotal	**$ 799,652**	**$ 851,115**	**$ 997,500**
%Change (year over year)		6.4%	17.2%
%Change (Test Year vs Last Rebasing Year - Actual)			
Total	**$ 1,288,954**	**$ 1,338,604**	**$ 1,488,650**
%Change (year over year)		3.9%	11.2%
	2021	2022	2023
Operations	$ 303,473	$ 278,891	$ 316,394
Maintenance	$ 185,829	$ 208,598	$ 174,756
Billing and Collecting	$ 264,306	$ 269,895	$ 316,843
Community Relations	$ -	$ -	$ -
Administrative and General	$ 535,346	$ 581,220	$ 680,658
Total	**$ 1,288,954**	**$ 1,338,604**	**$ 1,488,650**
%Change (year over year)		3.9%	11.2%

2-JD				
USoA Account	**USoA Account Name**	**2021**	**2022**	**2023**
5005	Operation Supervision and Engineering	40,375	15,324	15,293
5010	Load Dispatching	22,405	12,778	39,214
5012	Station Buildings and Fixtures Expense	-	-	-
5014	Transformer Station Equipment - Operation Labour	144	711	171
5015	Transformer Station Equipment - Operation Supplies and Expenses	3,975	163	85
5016	Distribution Station Equipment - Operation Labour	-	-	-
5017	Distribution Station Equipment - Operation Supplies and Expenses	-	-	-
5020	Overhead Distribution Lines and Feeders - Operation Labour	38,700	47,226	45,668
5025	Overhead Distribution Lines and Feeders - Operation Supplies and Expenses	21,732	27,622	30,957
5030	Overhead Subtransmission Feeders - Operation	-	-	-
5035	Overhead Distribution Transformers- Operation	-	66	-
5040	Underground Distribution Lines and Feeders - Operation Labour	-	-	56
5045	Underground Distribution Lines and Feeders - Operation Supplies and Expenses	2,307	13,491	3,993
5050	Underground Subtransmission Feeders - Operation	-	-	-
5055	Underground Distribution Transformers - Operation	-	-	-
5060	Street Lighting and Signal System Expense	-	-	-
5065	Meter Expense	2,396	1,150	4,019
5070	Customer Premises - Operation Labour	8,537	9,444	18,109
5075	Customer Premises - Materials and Expenses	58,175	35,146	38,961
5085	Miscellaneous Distribution Expense	91,467	102,952	115,432
5090	Underground Distribution Lines and Feeders - Rental Paid	-	-	-
5095	Overhead Distribution Lines and Feeders - Rental Paid	13,261	12,817	4,436
5096	Other Rent	-	-	-
5105	Maintenance Supervision and Engineering	10,295	140	-
5110	Maintenance of Buildings and Fixtures - Distribution Stations	-	-	-
5112	Maintenance of Transformer Station Equipment	8,398	14,062	11,235
5114	Maintenance of Distribution Station Equipment	513	2,856	-
5120	Maintenance of Poles, Towers and Fixtures	29,445	21,430	14,840
5125	Maintenance of Overhead Conductors and Devices	34,036	18,679	14,727
5130	Maintenance of Overhead Services	22,483	28,350	37,276
5135	Overhead Distribution Lines and Feeders - Right of Way	3,205	57,679	1,494
5145	Maintenance of Underground Conduit	-	-	360
5150	Maintenance of Underground Conductors and Devices	6,204	20,582	2,444
5155	Maintenance of Underground Services	32,020	14,021	51,818
5160	Maintenance of Line Transformers	11,635	4,219	17,767
5165	Maintenance of Street Lighting and Signal Systems	-	-	-
5170	Sentinel Lights - Labour	-	-	-
5172	Sentinel Lights - Materials and Expenses	-	-	-
5175	Maintenance of Meters	27,596	26,581	22,795
5178	Customer Installations Expenses- Leased Property	-	-	-
5185	Water Heater Rentals - Labour	-	-	-
5186	Water Heater Rentals - Materials and Expenses	-	-	-
5190	Water Heater Controls - Labour	-	-	-
5192	Water Heater Controls - Materials and Expenses	-	-	-
5195	Maintenance of Other Installations on Customer Premises	-	-	-
5305	Supervision	20,997	11,625	24,582
5310	Meter Reading Expense	48,543	46,673	50,732
5315	Customer Billing	152,357	170,675	187,872
5320	Collecting	32,679	31,941	43,673
5325	Collecting- Cash Over and Short	-	-	-
5330	Collection Charges	-	-	-
5335	Bad Debt Expense	7,500	7,500	7,500
5340	Miscellaneous Customer Accounts Expenses	2,230	1,481	2,484
5405	Supervision	-	-	-
5410	Community Relations - Sundry	-	-	-
5415	Energy Conservation	-	-	-
5420	Community Safety Program	-	-	-
5425	Miscellaneous Customer Service and Informational Expenses	-	-	-
5505	Supervision	-	-	-
5510	Demonstrating and Selling Expense	-	-	-
5515	Advertising Expense	-	-	-
5520	Miscellaneous Sales Expense	-	-	-
5605	Executive Salaries and Expenses	195,124	213,944	251,111
5610	Management Salaries and Expenses	31,233	43,430	34,000
5615	General Administrative Salaries and Expenses	38,693	40,215	43,638
5620	Office Supplies and Expenses	7,735	6,127	9,454
5625	Administrative Expense Transferred/Credit	-	-	-
5630	Outside Services Employed	40,997	22,898	22,703
5635	Property Insurance	16,586	17,554	18,099
5640	Injuries and Damages	7,133	9,782	14,435
5645	Employee Pensions and Benefits	5,081	8,610	13,247
5650	Franchise Requirements	-	-	-
5655	Regulatory Expenses	32,824	34,526	42,664
5660	General Advertising Expenses	-	495	-
5665	Miscellaneous General Expenses	23,331	25,270	21,933
5670	Rent	-	-	-
5675	Maintenance of General Plant	123,192	144,719	195,880
5680	Electrical Safety Authority Fees	5,551	5,786	5,629
5681	Special Purpose Charge Expense	-	-	-
5685	Independent Market Operator Fees and Penalties	-	-	-
5695	OM&A Contra	-	-	-
6205	Donations	1,000	1,000	1,000
6205	Sub-account LEAP Funding	6,866	6,866	6,866
	Total	**1,288,954**	**1,338,604**	**1,488,650**

The table below contains payroll data for the first 13 pay periods of each of the years and the benefit expenses up to May 31. The breakdown between Capital and OMA is not possible due to amounts that remain in the burden accounts until all the capital jobs are closed at the end of the year and those costs are distributed accordingly.

2-K	2021	2022	2023
Number of Employees (FTEs including Part-Time)			
Management (including executive)	5	6	6
Non-Management (union and non-union)	12	14	14
Total	17	20	20
Total Salary and Wages including ovetime and incentive pay			
Management (including executive)	347,663	349,431	373,598
Non-Management (union and non-union)	524,468	609,834	651,649
Total	$ 872,131	$ 959,265	$ 1,025,247
Total Benefits (Current + Accrued)			
Management (including executive)	81,276	87,203	88,567
Non-Management (union and non-union)	122,610	152,188	154,484
Total	$ 203,886	$ 239,391	$ 243,051
Total Compensation (Salary, Wages, & Benefits)			
Management (including executive)	$ 428,939	$ 436,634	$ 462,166
Non-Management (union and non-union)	$ 647,078	$ 762,022	$ 806,133
Total	$ 1,076,017	$ 1,198,656	$ 1,268,298
Total Compensation Breakdown (Capital, OM&A)			
OM&A	n/a	n/a	n/a
Capital (inlcudes both capital and billable hours)	n/a	n/a	n/a
Total	n/a	n/a	n/a

4-SEC-18

[Ex. 4, p. 7]

a) NOTL Hydro states that UCS costs for billing are increasing due to the number of participating LDCs declining, primarily due to mergers, thus increasing the costs for the remaining LDCs. Please explain how the charging for UCS is done, e.g., is it on a per customer basis or other methodology?

b) NOTL Hydro states that staff previously assisted in the provision of CDM and AFT services to customers under programs administered by the IESO and OEB and since these programs have finished, this savings opportunity is no longer available. Have these staff been reassigned, or have they been let go? If reassigned, are they incremental to the budget and what work are they doing?

RESPONSE

a) UCS employs a Business Solutions Analyst whose wages are split evenly amongst the members. The remaining shared charges for the CIS system are allocated by the number accounts and hosting costs are allocated based on the percentage agreed upon by the members.

b) Please refer to 4.0-VECC-21-part b.

4-SEC-19

[Ex. 4, p. 28] NOTL Hydro states that 'In 2023, the Board of Directors authorized an additional increase of 3% on top of the contractual 2% increase to adjust for the rising rate of inflation' in order to retain valuable staff.

a) What is the amount in the 2023 and 2024 budgets attributable to this additional increase?
b) Did NOTL Hydro consider giving a one-time payout to employees instead of building the increase into base revenue?

RESPONSE

a) The additional 3% resulted in a $60k increase in total compensation in 2023 which includes time charged to OM&A, capital and billable jobs and $62k in 2024.
b) NOTL Hydro executive team and Board discussed this option. However, this was not viewed as the recommended approach as inflation is inherently built into the base of the next year and any increase should reflect that reality.

4-SEC-20

[Ex. 4, p. 24] NOTL Hydro notes that for 2024 'A new customer facing system (Silverblaze), which will significantly improve the customer experience and replace the current Customer Connect system. As this system is hosted by a third party the costs of this upgrade are operating and not capital.'

a) Please provide details on the decrease in capital costs and the resulting increase in operating costs.
b) Please provide the business case for the decision to move to this new system.

RESPONSE

a) There are no capital components – NOTL Hydro does not own the current system, nor will it own the new system.
b) There are two reasons for the planned move to Silverblaze. First, NOTL Hydro currently uses the Customer Connect system from Northstar Utilities Solutions (Northstar). Northstar also owns the Silverblaze system and will soon no longer support Customer Connect but only Silverblaze. Second, NOTL Hydro has been wanting to upgrade from Customer Connect for a number of years so as to provide more functionality to our customers. Silverblaze will provide this. NOTL Hydro might have switched to Silverblaze in 2023 but our resources are being focused on ULO and Green Button.

4-SEC-21

[Ex. 4, p. 20] NOTL Hydro's website indicates that customers can sign up for e-billing.

a) What percentage of customers are on e-billing?
b) What actions is NOTL Hydro taking to increase the number of customers on e-billing?

RESPONSE

a) 29%
b) NOTL Hydro promotes eBilling via billing inserts and on www.notlhydro.com. Once Silverblaze, the new online customer portal is implemented, NOTL Hydro will renew expanded efforts to obtain additional eBilling customers. NOTL Hydro is expecting to promote customer sign-up however no specific marketing and/or incentives have been determined at this time. Previously, NOTL Hydro ran a promotion where a donation was made to the NOTL Tree Fund for each new customer that signed up for eBilling that resulted in over 250 sign-ups.

4-SEC-22

[Ex. 4, Table 4.6] Table 4.6 shows the inflation factor for 2023 as 3.70 and the adjusted as 3.55. In the Decision and Rate Order for NOTL Hydro's 2023 rates[1], Table 4.1 shows the inflation factor to be 3.55 before adjustments. What impact does this correction have on NOTL Hydro's explanations for the increases in OM&A?

RESPONSE

3.55% is the correct rate. Please see below from our decision.

[1] EB-2022-0052, December 8, 2022

Ontario Energy Board **EB-2022-0052**
Niagara-on-the-Lake Hydro Inc.

4. ANNUAL ADJUSTMENT MECHANISM

Niagara-on-the-Lake Hydro has applied to change its rates, effective January 1, 2023, based on a mechanistic rate adjustment using the OEB-approved **inflation minus X-factor** formula applicable to IRM applications. The adjustment applies to distribution rates (fixed and variable) uniformly across all customer classes.[3]

The components of the Price Cap adjustment formula applicable to Niagara-on-the-Lake Hydro are set out in the table below. Inserting these components into the formula results in a 3.55% increase to Niagara-on-the-Lake Hydro's rates: **3.55% = 3.70% - (0.00% + 0.15%)**.

4-SEC-23

[Ex. 4, Table 4.12: OM&A Costs by Account (Appendix 2-JD)] Please explain the large increases from 2019 actuals to 2024 forecast for the following accounts:

- 5085 Miscellaneous Distribution Expense
- 5675 Maintenance of General Plant

RESPONSE

- **5085 Miscellaneous Distribution Expense**

  2020 vs. 2019 decrease of $3k.

  2021 vs. 2020 increase of $76k – There was a credit of $40k booked to this account in 2020. This entry was to clear historic burden costs related to stores expenses. There were also $15k in expenses allocated to this account starting in 2021 that were previously included elsewhere and a $10k increase in payroll.

  2022 vs. 2021 increase of $34k due to payroll – increase in time spent on GIS records as part of our asset management program.

  2023 vs. 2022 increase of $26k – primarily due to the new CHEC GIS technician

  2024 vs. 2023 increase of $5k

- **5675 Maintenance of General Plant**

  2020 vs. 2019 increase of $122k – Labour increased $83k due to time for line staff that were on rotation due to the pandemic. Other expenses increased $40k, $18k due to first full year of expenses for Cyber Consultant who started in August 2019, $14k for Cyber Penetration audit (completed every 2-3 years) and $7k for repairs to the garage floor.

  2021 vs. 2020 decrease of $43k – Labour decreased $48k due to less impact on line operations due to the pandemic partially offset by increased IT payroll. Other Expenses increased $6k.

  2022 vs. 2021 increase of $48k – Labour increased $28k largely due to time for the additional underground crew when not working in the field (training, rain days, general work in the yard). Other expenses increased $20k, $7.5k for implementation and monthly fees related to the new outage notifications system and $15k for IT consulting regarding the ESRI system.

  2023 vs. 2022 increase of $4k

  2024 vs 2023 decrease of $0.7k

4-VECC-20

Reference: Exhibit 4, page 7

NOTL Hydro continues to be part of UCS which shares a customer billing system across a number of LDCs. UCS costs were themselves managed by moving the management from Utilassist to CHEC and moving the hosting from ITM to ERTH. Unfortunately, the number of participating LDCs has declined primarily due to mergers thus increasing the costs for the remaining LDCs. UCS still remains more cost effective than going it alone.

Please provide the dollar impact of the change on NOTL's costs.

RESPONSE

Please refer to Exhibit 4 Table 4.11 on page 15. The net increase in annual costs from 2019 to 2022 was $45k.

4-VECC-21

Reference: Exhibit 4, page 7

NOTL Hydro staff previously assisted in the provision of CDM and AFT services to customers under programs administered by the IESO and OEB. These programs have since finished so this savings opportunity is no longer available.

a) Please define AFT.
b) Please discuss the status of the staff that previously assisted in the provision of CDM and AFT services, i.e.

RESPONSE

a) AffordAbility Fund Trust - The AffordAbility Fund (AFT) was a provincial energy program that provided households with the opportunity to apply for free energy upgrades that could lower overall home energy use and electricity bills. No longer offered.
b) NOTL Hydro had one staff member that spent the majority of their time on CDM and AFT. They were also responsible for IT and marketing-related activities. When NOTL Hydro's CDM programs began to wind down this staff member was temporarily transferred to manage the billing department to cover a maternity leave. The end of that maternity leave coincided with an opening due to our Business Analyst leaving the company. This staff member is now responsible for the business analyst responsibilities in addition to IT and marketing. Other staff charged hours to CDM and AFT when appropriate i.e. managing CDM staff, responding to customer inquiries and proactively informing customers about the programs.

4-VECC-22

Reference: Exhibit 4, page 7

In 2020 a Locator was added. The new Locator provides services to both NOTL Hydro and the Town of Niagara-on-the-Lake. NOTL Hydro saves as the costs of the Locator are fully charged to the affiliate on a full cost basis, thus absorbing overhead, while the charges for the locate services are lower than those charged by the previous outside provider.

Please provide the annual savings.

RESPONSE

The primary reason for bringing locates in-house was due to long wait times for locates for NOTL Hydro and its customers. The savings from more timely locates accrue to customers so NOTL Hydro is not able to estimate them. NOTL Hydro does not have access to current pricing from the previous service provider so is also not able to estimate its own savings. However, NOTL Hydro notes that the cost per locate has only increased once since 2020 while with the previous locate provider they increased annually. NOTL Hydro therefore expects that its costs will be increasingly lower. Finally, the flexibility of having an inhouse locator has proven highly beneficial in managing projects resulting in overall efficiencies.

Going forward, NOTL Hydro expects that having its own locator will be advantageous in complying with Bill 93 (Getting Ontario Connected Act).

4-VECC-23

Reference: Exhibit 4, page 32

In 2022, two new underground service staff were hired. The overall cost on an hourly basis was lower than the previous contractor resulting in savings.

Please provide a business case or similar analysis to compare the costs of two new underground service staff compared to the previous service contractor, to show the lower costs and savings.

RESPONSE

The business case for this hiring was included in the discussion in the application. With regards to the hourly costs, the charge by the contractor in 2021 for a mini-excavator and operator was $105 per hour. NOTL Hydro's charge in 2023 for the same was $97.79.

4-VECC-24

Reference: Exhibit 4, page 28

In 2023, the Board of Directors authorized an additional increase of 3% on top of the contractual 2% increase to adjust for the rising rate of inflation.

Please provide the resulting compensation costs in 2023 if only the contractual increases are included.

RESPONSE

The additional 3% resulted in a $60k increase in total compensation which includes time charged to OM&A, capital and billable jobs.

4-VECC-25

Reference: Exhibit 4, page 30 Table 4.29

a) Please explain the increase in Health and Dental from $78.4k in 2021 to $113.7k in 2022.
b) Please explain the increase in RRSP and long-term disability in 2021..

RESPONSE

a) Some of the increase is due to the 2 additional FTEs for the underground crew. The costs are based on invoices received from our benefits provider and are grouped by service type. The largest component of the increase was in dental costs, however all categories increased year over year. NOTL Hydro is not provided with the details of the claims to protect employee privacy. Health and Dental costs were relatively flat from 2019 – 2021. NOTL Hydro assumes that benefits may have been underutilized in 2020 and 2021 due to the pandemic and related closures.

b) RRSP increased $6k due to staffing changes. Long-term disability increased by $7k due to increase in coverage amounts.

4-VECC-26

Reference: Exhibit 4, page 30

Total company benefits have increase 41.2% from 2019 to 2024. The biggest benefit is OMERS which accounts for 38% of all benefits. OMERS has increased by 31% over this time period and CPP increased by 60%. These two accounted for most of the benefit cost increase. Benefits are expensed on an accrual basis. Some of this increase will be due to the increased headcount (15%) and to inflation (15.9%) but most is due to uncontrollable rising costs above inflation.

Please specify the uncontrollable costs above inflation that are driving the increase.

RESPONSE

OMERS and CPP are both uncontrollable costs as the required payments are determined by third parties. Other uncontrollable costs above inflation would include additional prescriptions for staff members (which are not capped) that could be due to new health issues or growing families. There are some costs that have increased faster than the rate of inflation but as a relatively small employer, NOTL Hydro has little insight into or the ability to change these costs. NOTL Hydro does utilize a third-party consultant to negotiate administrative rates on our behalf and review expenses to ensure they are in line with other employers of similar size and demographics.

4-VECC-27

Reference: Exhibit 4, page 40

Tandem Consulting has been hired for high level advice and assistance with the models.

a) Please provide more details on the scope of work for Tandem Consulting.
b) Please provide the full amount paid to Tandem Consulting.

RESPONSE

To this point Tandem has been engaged for a one-day session to review the overall process and to discuss some technical details of rate design. NOTL Hydro has not been invoiced for these services at this time.

4-VECC-28

Reference: Appendix 2-JA

a) The average spend on billing and collecting for the years 2019 to 2022 is $611,914. Please provide a breakdown of the 30% increase to $800,299 in 2024.
b) The average spend on Administration & General for the years 2019 to 2022 is $1,260,460. Please provide a breakdown of the 16% increase to $1,465,508 in 2024.

RESPONSE

a) The year over year variance analysis for billing and collecting is provided in Exhibit 2 pages 19 – 23.

The increase of $188k compared to the average is due to:

- Labour accounted for $62k – 2024 is forecast to have the full complement of one manager and three customer account representatives. Historic years included maternity leaves and a leave of absence. One of the leave periods was partially covered by a staff member that was also managing CDM so their time was split between the two roles. Annual payroll increases and increased benefit costs also contributed to the increase.
- Meter Reading expenses $23k primarily related to the replacement of conventional meters with smart interval meters for larger customers which was completed in 2020. The cost to interrogate these meters is the reason for the increase.
- Other Billing Expenses $103k UCS costs have increased due to fewer members sharing in the fixed costs and an funds in 2024 for Silverblaze implementation. Inflationary increases over the period and significant increases in bill paper and envelope costs starting near the end of 2022.

b) The year over year variance analysis for Administrative & General is provided in Exhibit 2 pages 19 – 23.
The increase of $205k compared to the average is due to:

- Labour accounted for $172k – There are several reasons for the increase. The installation of the new transformer at York station in 2019-2020 reduced G&A payroll as more payroll was charged to capital projects. There was also a vacancy in one of the executive positions for several months in 2020. In addition, more time being spent on IT related items due to increased focus on cyber security and non-capital time for the 2 new underground staff for time that is not eligible to be capitalized such as safety training.
- Insurance premiums have increase by $23k, on-going regulatory expenses have increased $16k, and other IT related expenses $16k.

4-VECC-29

Reference: Appendix 2-JB

Please provide the underlying calculation of the inflation amounts of $117,665 and $165,403 in the years 2023 and 2024, respectively.

RESPONSE

2023 – 2022 OM&A of $3,314,505 x 3.55% = $117,665

2024 – 2023 OM&A of $3,410,378 x 4.85% = $165,403

4-VECC-30

Reference: Appendix 2-JC

a) Please describe the activities included under Miscellaneous Distribution Expense.
b) Please explain the increase in Miscellaneous Distribution Expense beginning in 2021.
c) Please explain the increase in Maintenance of Underground Services beginning in 2021.

RESPONSE

a) Cost of labour, materials used, and expenses incurred in distribution system operation not provided for elsewhere. General records, maps, service interruption records, general clerical work.

b) 2021 vs. 2020 increase of $76k – There was a credit of $40k booked to this account in 2020. This entry was to clear historic burden costs related to stores expenses. Approximately $15k in expenses were re-allocated to this account starting in 2021 that were previously included elsewhere following a review of some items in the APH. $10k increase in payroll.

   2022 vs. 2021 increase of $34k due to payroll – increase in time spent on GIS records as part of our asset management program.
   2023 vs. 2022 increase of $26k – primarily due to the new CHEC GIS technician.

   2024 vs 2023 increase of $5k

c) 2021 vs 2020 increase of $30k – 2020 expenses were unusually low for Hydrovac and other contractors for U/G maintenance.

   2022 vs 2021 increase of $4k

   2023 vs 2022 increase of $17k primarily due to increased payroll costs.

   2024 vs 2023 increase of $4k

4-VECC-31

Reference: Appendix 2-JC

Appendix 2-K

a) Please provide incentive pay forecast and actuals for 2019 to 2022.
b) Please provide the incentive pay forecast for 2024.

RESPONSE

Incentive	2019	2020	2021	2022	2023
Actual	$55,503	$52,598	$64,656	$74,098	
Forecast	$40,767	$56,364	$55,941	$74,263	$78,817

a)
b) $80k

4-Staff-37

Ref 1: Exhibit 4, Table 4.15, page 19
Ref 2: Exhibit 4, Table 4.12 / Chapter 2, Appendix 2-JD

Preamble:
Table 4.15 in reference 1 shows that Niagara-on-the-Lake Hydro's 2019 actual OM&A expense was $158,984 (6%) above the 2019 OEB-approved OM&A.

OEB staff observes that the difference stems from the substantial increases in Account 5130 Maintenance of Overhead Services ($57,334)[2], Account 5655 Regulatory Expenses ($100,325)[3] and Account 5675 Maintenance of General Plant ($277,553)[4] as well as increases in Account 5160 Maintenance of Line Transformers ($25,735)[5] and Account 5165 Maintenance of Street Lighting and Signal Systems ($16,549)[6]. These increases are partially offset by other cost reductions.

OEB staff notes that the 2019 OEB-approved amount for Account 5675 is shown as a negative value in Appendix 2-JD which results in a larger variance between the 2019 actual and the 2019 OEB-approved.

Question(s):

a) Please explain in detail the 2019 actual to OEB-approved budget variances.
   a. Please explain the increases in Accounts 5130, 5675, 5160, and 5165 including why the 2019 OEB-approved amount in Account 5675 shows as a negative value.

RESPONSE

NOTL Hydro has no values in account 5165.

NOTL Hydro has a variance of $25,735 in account 5155 – Maintenance of Underground Services.

5130 – Maintenance of Overhead Services – increase was primarily due to non-capital work performed for Bell and a Customer. The offsetting revenue was booked to Miscellaneous Revenue Customer Jobs.

5655 – Regulatory Expenses – the difference between the actual costs incurred as part of our rate application and the approved amount which was 1/5 of the estimated amount consistent with the filing guidelines.

5155 – Maintenance of Underground Services – increase of $25,735 was due to two items. Repairs to a customer property and repairs to a PMH unit.

5160 – the variance in Maintenance of Line Transformers was $16,549 not the $25,735 stated

[1] Part of OM&A maintenance expense
[2] Part of OM&A administrative and general expense
[3] Ibid.
[4] Part of OM&A maintenance expense
[5] Ibid.

above. The increase was partially due to increased labour and truck costs for time spent on transformer maintenance and some additional funds for Transformer Wraps.

5165 – Maintenance of Street Lighting and Signal Systems – NOTL Hydro has not had expenses in either the 2019 Board approved or actual for 2019 in this account.

5675 – the decision in NOTL Hydro's 2019 Cost of Service included a reduction in the requested OM&A of $293,398 with no direction provided. NOTL Hydro recorded the reduction in 5675.

4-Staff-38

Ref: Exhibit 4, Tables 4.12, page 17 / Chapter 2 Appendix 2-JD

Preamble:
The 2024 OM&A amount of $328,770 in Account 5675 represents an increase of $131,100 (66%) compared to the 2019 actual amount of $197,670. The biggest year-over-year- increase is $122,203 (62%) which occurred in 2020.

Question(s):

a) Please provide an itemized breakdown of cost per year and explain the main drivers for the increases in Account 5675 from 2019 to 2024.

RESPONSE

Please refer to 4-SEC-23

4-Staff-39

Ref 1: Exhibit 4, Table 4.11, page 15 / Chapter 2, Appendix 2-JB
Ref 2: Exhibit 4, Table 4.6, page 8

Preamble:
In reference 1, Niagara-on-the-Lake Hydro presents the inflation driver of the historical OM&A on the second line of Table 4.11. OEB staff understands that these inflation values are derived by applying the annual adjusted inflation numbers (OEB inflation minus stretch factor in reference 2) to the preceding year's **actual** OM&A expenditures. Table 1 below demonstrates the derivation.

Table 1

Line No.		2019	2020	2021	2022	2023	2024	Total
1	Total Actual OM&A	$2,830,352	$2,952,740	$3,161,111	$3,314,505	$3,410,378	$3,571,884	
2	Adjusted Inflation	-	1.0170	1.0190	1.0300	1.0355	1.0485	
3	OM&A Based on Adjusted Inflation (1)	-	$2,878,468	$3,008,842	$3,255,944	$3,432,170	$3,575,781	
4	Inflation Impact (2)	-	$48,116	$56,102	$94,833	$117,665	$165,403	$482,120

Notes: (1) Line 3 = Line 1 in previous year x current year adjusted inflation
(2) Line 4 = Line 3 in current year - Line 1 in previous year

Question(s):

a) Please provide an annual inflation estimate using the 2019 actual OM&A as the base and escalating each year thereafter using the adjusted inflation value.

RESPONSE

	2019 Board Approved (BA)	2020 OEB Adjusted Inflation	2019 BA Adjusted for 2020 Inflation	2021 OEB Adjusted Inflation	2019 BA Adjusted for 2021 Inflation	2022 OEB Adjusted Inflation	2019 BA Adjusted for 2022 Inflation	2023 OEB Adjusted Inflation	2019 BA Adjusted for 2023 Inflation	2024 Estimated Adjusted Inflation	2019 BA Adjusted for 2024 Inflation
OM&A	2,671,367	1.0170	2,716,780	1.0190	2,768,399	1.0300	2,851,451	1.0355	2,952,678	1.0485	3,095,882

4-Staff-40

Ref: Exhibit 4, Table 4.11, page 15 / Chapter 2, Appendix 2-JB

Preamble:
Niagara-on-the-Lake Hydro states in the application that it has experienced several cost increases due to regulatory and OEB requirements such as moving all meters to smart meters by 2020.

Question(s):

a) From the OM&A Cost Driver Table 4.11 in the reference, please indicate all costs that have arisen as a result of new regulatory and OEB requirements since the 2019 rebasing. Please include any additional cost items that are not represented in reference (if applicable).

RESPONSE

The following is a summary of some of the regulatory driven costs that have arisen or increased since the 2019 rebasing. Like all LDCs, NOTL Hydro is subject to regulations from a number of sources; not just the OEB. These are included in the listing below. NOTL Hydro is also not commenting on whether or not these new or changing regulatory requirements are appropriate. However, regulations almost always add costs and this needs to be recognized.

Cost	Description
Smart meters	The smart interval meter readings could not be handled by the Sensus RNI used for the residential and small commercial meters so the services of a new software had to be purchased. This service includes the meter reading, data analytics and a customer portal.
Disconnects	The cancellation of winter disconnects means more time is spent trying to contact customers in arrears and arranging payment. We have also seen a small increase in the related write-offs.
Cyber security	Costs for this have risen significantly though the driver is not the regulatory requirements but the increased risk to both NOTL Hydro and customer data from this growing crime.
Locates	The costs of locates has grown significantly; particularly with the current broadband initiative of the Government of Ontario. Performing locates is a regulatory requirement. While NOTL Hydro has been able to mitigate much of this cost increase it has still grown significantly.
Insurance	Maintaining a proper level of insurance is a legal requirement of an LDC. NOTL Hydro, like most LDCs, manages this cost through the use of Mearie but it has still gone up significantly.
Employee benefits	Employee benefit costs continue to rise and many of these are outside of the control of NOTL Hydro such as OMERS, CPP and insurance.
OEB	This includes both OEB assessments and the costs associated with this cost of service application.
Hydro One and the IESO	Protection and control requirements from both Hydro One and the IESO and reporting requirements from the IESO continue to increase adding

	maintenance and engineering support costs related to the transmission stations.
AFT / CDM	As a small LDC, NOTL Hydro tries to be efficient by having staff perform many functions. This has generally been successful. However, when functions that are funded such as AFT and CDM disappear, the related expense as one of the many functions of a staff person cannot always be cut. This loss of funding thus increases costs.
Rate changes	The number of rate changes has increased since 2019, particularly during the pandemic, and the complexity of the rates has increased significantly. This has increased the time and effort required.
Net metering	Net metering customers are much more complicated to implement and monitor.
Reporting	Reporting requirements continue increase requiring more and more detailed record keeping. The APB is an example since the last rebasing.
Safety and operations	Certification and training requirements continue to increase adding costs and reducing productivity.

4-Staff-41

Ref 1: Exhibit 4, Table 4.12, page 17 / Chapter 2 Appendix 2-JD
Ref 2: Exhibit 4, pages 19-26

Preamble:
In reference 1, OM&A cost for Account 5315 Customer Billing has increased significantly ($219,477 or 77%) in the 2024 Test Year compared to the 2019 Actual. In addition, OM&A cost for Account 5320 Collecting has increased sharply by $36,803 (or 60%).

In reference 2, Niagara-on-the-Lake Hydro states that the main drivers of Billing and Collecting in 2020 compared to the 2019 actual included Utilismart cost increases and UCS costs increases. In addition, inflation (including the wage increase of 5% in 2023), customer growth which will increase billing costs, certain costs which are known to be rising faster than inflation such as stationary supplies, and a new customer facing system (Silverblaze) contributed to the Billing and Collecting cost increases over the 2019 to 2024 period.

Question(s):

a) Please provide a further breakdown of costs for Account 5315 Customer Billing and Account 5320 Collecting and indicate the main drivers of costs each year from 2019 actual to 2024.

   Please prepare a table for each account using the following cost categories:
   - Utilismart service
   - UCS
   - Silverblaze
   - Stationary/supplies
   - Printing
   - Postage
   - Salaries and wages
   - Legal fees
   - Other (please indicate the type of costs)

b) In reference 2, Niagara-on-the-Lake Hydro states several factors that will continue to increase Billing and Collecting costs. Please discuss how Niagara-on-the-Lake Hydro intends to mitigate increasing costs in Billing and Collecting OM&A.

RESPONSE

a)

5315	2019	2020	2021	2022	2023	2024
Utilismart	($3,657)	$28,556	$27,289	$48,290	$49,014	$49,995
UCS & Northstar	$105,603	$133,944	$145,114	$159,953	$161,467	$164,696
Silverblaze	$0	$0	$0	$0	$0	$40,000
Stationary/Supplies	$10,088	$12,713	$8,827	$7,726	$7,842	$7,999
Printing	$17,713	$22,768	$19,304	$29,760	$33,006	$33,667
Postage	$89,014	$90,934	$94,925	$95,272	$96,701	$98,635
Salaries and Wages	$103,104	$96,738	$116,278	$129,649	$155,281	$157,860
Legal Fees	$0	$0	$0	$0	$0	$0
Water Billing Offset	($47,063)	($53,216)	($49,756)	($53,429)	($54,230)	($55,315)
Other	$11,653	$28,061	$11,188	$4,388	$8,234	$8,399
Total	**$286,457**	**$360,498**	**$373,170**	**$421,610**	**$457,315**	**$505,935**

5320	2019	2020	2021	2022	2023	2024
Utilismart	$0	$0	$0	$0	$0	$0
UCS & Northstar	$0	$0	$0	$0	$0	$0
Silverblaze	$0	$0	$0	$0	$0	$0
Stationary/Supplies	$0	$0	$0	$0	$0	$0
Printing	$0	$0	$0	$0	$0	$0
Postage	$0	$0	$0	$2,700	$2,741	$2,795
Salaries and Wages	$48,746	$74,817	$69,306	$62,917	$77,048	$78,325
Legal Fees	$0	$0	$0	$0	$0	$0
Water Billing Offset	$0	$0	$0	$0	$0	$0
Other (Bank Fees)	$13,018	$14,576	$14,120	$16,853	$17,105	$17,448
Total	**$61,764**	**$89,393**	**$83,426**	**$82,470**	**$96,894**	**$98,568**

b) There are several ways in which NOTL Hydro will try to mitigate the increasing costs in billing and collecting:

1. Collaboration – NOTL Hydro will continue to collaborate with other LDCs on its billing and collecting systems as it does with UCS.
2. New systems – NOTL Hydro continues to evaluate whether it can reduce costs or improve service by switching systems. The planned switch to Silverblaze is an example of this. The challenge is any conversion is a very expensive process so the savings or performance improvements need to be significant.
3. Advocacy – Most of the increase in costs are a reflection of the new reality and will not be avoidable. Some could be mitigated by different regulations. NOTL Hydro will advocate where appropriate.

4-Staff-42

Ref: Exhibit 4, Tables 4.12, page 17 / Chapter 2 Appendix 2-JD

Preamble:
OEB staff notes that Account 5610 Management Salaries and Expenses shows a significantly year-over-year increase of 164% ($26,947) in 2020.

Question(s):

a) Please explain the increase including the main drivers.

RESPONSE

NOTL Hydro had one staff member that spent the majority of their time on CDM and AFT. They were also responsible for IT and marketing-related activities. When NOTL Hydro's CDM programs began to wind down in 2019 this staff member was temporarily transferred to manage the billing department to cover a maternity leave. The end of that maternity leave in 2020 coincided with an opening due to our Business Analyst leaving the company. This staff member is now responsible for the business analyst responsibilities in addition to IT and marketing. Time spent on business analyst responsibilities are charged to 5610. The previous business analyst charged their time to 5615.

4-Staff-43

Ref 1: Exhibit 4, Table 4.12, page 17 / Chapter 2, Appendix 2-JD
Ref 2: Exhibit 4, page 21

Preamble:
In reference 1, OEB staff notes that Account 5605 Executive Salaries and Expenses and Account 5610 Management Salaries and Expenses increased by 35% ($48,080) and 111% (133,143) respectively in 2021 compared to 2020.

In reference 2, Niagara-on-the-Lake Hydro states that in 2021 executive costs were no longer capitalized to the degree of 2019 and 2020 as the transformer project was completed.

Question(s):

a) Please confirm that the increases in the accounts noted in reference 1 are due to the explanation in reference 2. If not, please provide an explanation.
b) Please provide the executive cost and hours allocated between OM&A and capital from 2019 to 2024.
   i. Please include variances showing hours allocated between capital and labour for management and the dollar breakdown of OM&A and capital costs.

RESPONSE

Note that the amounts in the above question are reversed. 5605 increased $133k and 5610 increased $48k.

a) This explanation relates to 5605 only. The increase in 5610 was related to staffing changes that took place during 2020.

b) Allocated is not the correct term. NOTL Hydro only capitalized costs that are directly attributable to the project. The chart below outlines the % of time charged by the executive team to OM&A, Capital, and Other which includes billable hours (to affiliate or customer) and CDM. Costs are not included as there are only 3 employees in the category.

Executive Time	2019	2020	2021	2022	2023	2024
OM&A	73%	75%	97%	93%	94%	94%
CAPITAL	16%	16%	1%	6%	4%	4%
OTHER (CDM/BILLABLE)	11%	9%	2%	2%	2%	2%
	100%	**100%**	**100%**	**100%**	**100%**	**100%**

i. The increase in 5610 was due to staffing changes and not the allocation between labour and capital. This account captures some hours for 2 management staff, neither of whom charge any time to capital jobs.

4-Staff-44

Ref 1: Chapter 2, Appendix 2-N
Ref 2: Exhibit 4, page 34-38
Ref 3: Exhibit 6, page 18
Ref 4: Chapter 2, Appendix 2-H
Ref 5: Filing Requirements, Chapter 2, 2.4.3.2 Shared Services and Corporate Allocation and 2.6.3 Other Revenue

Preamble:
In reference 2, Niagara-on-the-Lake Hydro states that "The full costs of shared services and corporate cost allocations are not booked to Other Revenue but are all credited against the OM&A costs. The mark-up on those costs is booked to Other Revenue.

In reference 3, Niagara-on-the-Lake Hydro states that "most of the revenue from affiliates has been booked to offset costs so reduces OM&A and has not been booked to other revenue. The one exception is the mark-up on services to cover overhead costs which is included in Revenue from Jobs as described above".

The filing requirements in reference 5 indicates requirements including Other Revenue accounts that distributors must provide in Appendix 2-H and a reconciliation of the revenue arising from Appendix 2-N (reference 1) with the amounts included in Other Revenue in section 2.6.3 (Other Revenue). These include any revenue from affiliate transactions, shared services, or corporate cost allocations as described in section 2.4.3.2, accounts related to affiliate revenue and affiliate expense, and revenues and expenses from affiliate transactions which should be recorded in Account 4375 and Account 4380 respectively.

Reference 5 also states that costs that are included in a distributor's OM&A must be excluded from the account balances incorporated into Appendix 2-H – Other Operating Revenue (i.e., excluded as offsets to the revenue requirement) and vice versa. Costs that are included in a distributor's OM&A must also be excluded from Appendix 2-N – Shared Services and Corporate Cost Allocation.

Question(s):

a) The dollar amounts allocated for Corporate Cost Allocation in 2024 in Appendix 2-N (reference 1) appear to be missing. Please complete the table below.

Name of Company		Service Offered	Pricing Methodology	% of Corporate Costs Allocated	Amount Allocated
From	To			%	$
Niagara-on-the-Lake Hydro Inc	*Energy Services Inc*	Administrative Expenses- Mtce. General Plant, Property Taxes, Property Insurance	Cost-Base	3.54%	$11,115

Niagara-on-the-Lake Hydro Inc	*Energy Services Inc*	Board Of Directors-Payroll	Cost-Base	28.57%	$8,400

b) Please confirm whether the costs of shared services and corporate cost allocations in reference 2 and reference 3 are booked or not booked to Other Revenue in Appendix 2-H (reference 4).
   i. If applicable, please indicate the account(s) in Appendix 2-H that these costs are booked under.

c) Please confirm that Niagara-on-the-Lake Hydro only booked the mark-up on services to cover overhead costs to Other Revenue in Appendix 2-H.
   i. If applicable, please indicate the account(s) in Appendix 2-H that these costs are booked under.

d) Please explain why the approach that Niagara-on-the Lake Hydro explains in reference 2 and reference 3 appears to deviate from the requirements in reference 5.

RESPONSE

a) Graph updated in the question.

b) Confirmed
   i. n/a

c) Confirmed
   i. 4325

d) The only revenue that NOTL Hydro receives from its affiliates is the mark-up on services to recover administrative costs. The APH does not appear to identify these revenues related to recovering administrative costs for services in the description for account 4375 or 4380.

4-Staff-45

Ref: Exhibit 4, pages 7, 31-32 and page 34

Preamble:
Niagara-on-the-Lake Hydro states that the Locator was hired by Niagara-on-the-Lake Hydro but all his time and costs are charged on a full cost basis to the affiliate company. Niagara-on-the-Lake Hydro benefits due to the coverage of some overhead costs. Also, Niagara-on-the-Lake states that "the charges for the locate services are lower than those charged by the previous outside provider. By sharing the locates and billing services, Niagara-on-the-Lake Hydro is able to staff these functions at levels it otherwise would not be able to. This is beneficial to customers from a cost perspective."

Question(s):

a) Please provide cost savings per year since bringing the locator in house.

RESPONSE

The primary reason for bringing locates in-house was due to long wait times for locates for NOTL Hydro and its customers. The savings from more timely locates accrue to customers so NOTL Hydro is not able to estimate them. NOTL Hydro does not have access to current pricing from the previous service provider so is also not able to estimate its own savings. However, NOTL Hydro notes that the cost per locate has only increased once since 2020 while with the previous locate provider they increased annually. NOTL Hydro therefore expects that its costs will be increasingly lower. Finally, the flexibility of having an inhouse locator has proven highly beneficial in managing projects resulting in overall efficiencies.

5 | Cost of Capital

INTERROGATORY RESPONSES

5-SEC-24

[Ex. 5, p.11] What is the status of NOTL Hydro's proposed 2023 operating loan with a fixed swap rate of 4.75% and an expected start date of July 1, 2023?

RESPONSE

NOTL Hydro has not finalized the loan agreement with CIBC or the intercreditor agreement with Infrastructure Ontario at the time of these responses.

6 | Revenue Requirement & Revenue Deficiency or Sufficiency

INTERROGATORY RESPONSES

6-VECC-32

Reference: Chapter 2 Appendices, Appendix 2-H
Exhibit 6, page 15 (Table 6.18)

a) Please provide a Table similar to Appendix 2-H that sets out the 2023 year-to-date actual values and the values for 2022 for the equivalent period.

b) Please provide a Table similar to Table 6.18 that sets out the 2023 year-to-date actual values and the values for 2022 for the equivalent period.

RESPONSE

a) Table is on following page:

		Year to date at May 31	
USoA #	**USoA Description**	**2022**	**2023**
4082	Retail Services Revenues	$4,069.93	$4,121.00
4084	Service Transaction Requests (STR) Revenues	$16.65	$12.81
4086	SSS Administration Revenue	$12,134.65	$12,234.91
4090	Electric Services Incidental to Energy Sales	$0.00	$0.00
4205	Interdepartmental Rents	$0.00	$0.00
4210	Rent from Electric Property	$76,230.99	$114,479.81
4215	Other Utility Operating Income	$0.00	$0.00
4220	Other Electric Revenues	$0.00	$0.00
4225	Late Payment Charges	$13,933.95	$12,964.45
4230	Sales of Water and Water Power	$0.00	$0.00
4235	Miscellaneous Service Revenues	$29,928.57	$28,656.26
4240	Provision for Rate Refunds	$0.00	$0.00
4245	Government and Other Assistance Directly Credited to Income	$0.00	$0.00
4305	Regulatory Debits	($7,213.03)	($13,681.91)
4310	Regulatory Credits	$38,957.61	$28,373.01
4315	Revenues from Electric Plant Leased to Others	$0.00	$0.00
4320	Expenses of Electric Plant Leased to Others	$0.00	$0.00
4325	Revenues from Merchandise	$23,431.61	$27,537.95
4330	Costs and Expenses of Merchandising	$0.00	$0.00
4335	Profits and Losses from Financial Instrument Hedges	$0.00	$0.00
4340	Profits and Losses from Financial Instrument Investments	$0.00	$0.00
4345	Gains from Disposition of Future Use Utility Plant	$0.00	$0.00
4350	Losses from Disposition of Future Use Utility Plant	$0.00	$0.00
4355	Gain on Disposition of Utility and Other Property	$60,690.13	$3,500.00
4357	Gain from Retirement of Utility and Other Property	$0.00	$0.00
4360	Loss on Disposition of Utility and Other Property	$0.00	$0.00
4362	Loss from Retirement of Utility and Other Property	($10,205.16)	($8,735.83)
4365	Gains from Disposition of Allowances for Emission	$0.00	$0.00
4370	Losses from Disposition of Allowances for Emission	$0.00	$0.00
4375	Revenues from Non Rate-Regulated Utility Operations	($26,309.00)	$0.00
4380	Expenses of Non Rate-Regulated Utility Operations	$32,775.00	$0.00
4385	Non Rate-Regulated Utility Rental Income	$0.00	$0.00
4390	Miscellaneous Non-Operating Income	$5,321.10	$5,466.85
4395	Rate-Payer Benefit Including Interest	$0.00	$0.00
4398	Foreign Exchange Gains and Losses, Including Amortization	$0.00	$0.00
4405	Interest and Dividend Income (excludes DVA Interest)	$341.71	$5,096.76
4410	Lessor's Net Investment in Finance Lease	$0.00	$0.00
4415	Equity in Earnings of Subsidiary Companies	$0.00	$0.00
4420	Share of Profit or Loss of Joint Venture	$0.00	$0.00
	Total Above	**$256,126.71**	**$222,049.07**

b) Table below

	Year to date at May 31	
Specific Service Charge	**2022**	**2023**
Misc Revenue - microFIT service charge	$7,173.01	$7,136.72
Misc Revenue Stale Dated Cheques	$0.00	$0.00
Misc Rev Suppliers Dicounts	$620.82	$430.71
FIT charge	$2,244.30	$2,379.08
Arrears Certificate	$45.00	$43.28
Easement Letter	$45.00	$60.00
Account history	$60.00	$90.00
Credit reference/credit check (plus credit agency costs)	$165.00	$0.00
Returned Cheque charge (plus bank charges)	$135.00	$465.00
Account set up charge / change of occupancy charge	$11,790.00	$7,560.00
Meter dispute charge plus Measurement Canada fees (if meter found correct)	$0.00	$0.00
Reconnection at meter - during regular hours	($95.00)	$475.00
Reconnection at pole - after regular hours	$0.00	$0.00
Miscellaneous Revenue Customer Premises	$7,332.69	$9,469.77
Markup	$412.75	$546.70
Total Specific Service Charges	$29,928.57	$28,656.26

6-VECC-33

Reference: Exhibit 6, page 16

a) Please provide a schedule that sets out, for the years 2019 to 2023, the pole attachment rate approved by the Board and the pole attachment rate used for purposes of Table 6.20.

RESPONSE

The table below sets out the OEB approved rates and those used to calculate other revenue from the service charge. Note that attachments were billed to 3rd parties based on the OEB rates while revenue was booked at the rate reflected in our 2019 application plus the inflation adjustment in 2020. The difference between the actual amount billed and the revenue was recorded in the 1508 variance account.

	2019BA	2019	2020	2021	2022	2023	2024
Effective Date of OEB Approved	01-May	01-Jan	01-May	01-May	01-Jan	01-Jan	01-Jan
OEB Approved Pole Attachment Rate	$ 43.63	$ 43.63	$ 44.50	$ 44.50	$ 34.76	$ 36.05	$ 36.05
Table 6.2 Rates	$ 43.63	$ 43.63	$ 44.50	$ 44.50	$ 44.50	$ 44.50	$ 36.05

6-Staff-46

Ref 1: Exhibit 6, p. 10
Ref 2: PILs model

Preamble:
Niagara-on-the-Lake Hydro's 2022 tax returns were not finalized at the time of filing this rate application but will be filed when the tax return have been received and filed with the Ministry of Finance.

Question(s):

a) Please provide the finalized 2022 tax return.
b) Please confirm that the ending UCC in the tax return agrees to the ending historic year UCC in tab H8 of the PILs model. If not confirmed, please identify and explain any differences, and revise the evidence as needed.

RESPONSE

a) 2022 Tax return has been filed with these responses as appendix 6-Staff-36A.

b) The is a difference of $249 due to tax returns not being final at the time the application was submitted. The PILs model filed with these responses has been updated.

6-Staff-47

Ref 1: PILs model
Ref 2: Chapter 3 Filing Requirements for 2023 Edition for 2024 Rate Applications, June 15, 2023

Preamble:
As stated in its 2022 Fall Economic Statement, the Province of Ontario plans to parallel the federal change in the Small Business Deduction (SBD) phase-out that was first announced in the 2022 federal budget.[7] The SBD will not be reduced to nil until a Canadian-Controlled Private Corporation and its associated corporations have a combined taxable capital of $50 million. This change is effective for tax years beginning after April 6, 2022.

Tab T0 of the PILs model provides the PILs calculation. Per the PILs model, Niagara-on-the-Lake Hydro is eligible for the small business deduction. Due to the timing of Niagara-on-the-Lake Hydro's filing of this application, Niagara-on-the-Lake Hydro used the 2023 version of the PILs model, which does not reflect the federal change in small business deduction phase out rules.

Question(s):

a) Please update PILS using the 2024 PILs model.
b) Please confirm that any impacts from the small business decision phase out for 2022 and 2023 will be recorded in Account 1592 – PILs and Tax Variances, as per the Chapter 3 Filing Requirements.

RESPONSE

a) The updated model has been submitted with these responses.

b) NOTL Hydro does not receive the small business deduction. The OEB model uses rate base as a proxy for the calculating the reduction in rates for the small business deduction. The actual calculation for tax purposes is based on taxable capital and includes not just the entity but all related companies in the calculation. As a municipally owned utility that means that the taxable capital of our shareholder, The Town of Niagara-on-the-Lake is included when calculating the deduction. NOTL Hydro therefore does not receive the small business deduction in its tax returns.

The OEB model reduces the combined tax rate to 21.3% when in reality, NOTL Hydro will pay 26.5%. The grossed up PILs calculated in the model is $117k where NOTL strongly believes it should be calculated at 26.5%. This is a difference of approximately $29k.

[7] https://www.canada.ca/en/revenue-agency/services/tax/businesses/topics/corporations/provincial-territorial-corporation-tax/ontario-provincial-corporation-tax/ontario-small-business-deduction.html

7 | Cost Allocation

INTERROGATORY RESPONSES

7-SEC-25

[Ex. 7, p. 6] NOTL Hydro states that for the General Service 50kW – 4,999kW class a weighting factor "8" is proposed for Billing and Collecting as compared to "0.9" in 2019. The weighting is significantly higher due to the incremental costs of the Utilismart smart meter reading and settlement software. Please provide the underlying dollars and calculations to support this statement.

RESPONSE

Please refer to 7.0-VECC-35

7-VECC-34

Reference: **Exhibit 7, page 4**

Preamble: The Application states:
"Account 1855 includes the installed cost of overhead and underground conductors leading from a point where wires leave the last pole of the overhead system or the transformers or manhole, or the top of the pole of the distribution line, to the point of connection with the customer's electrical panel. NOTL Hydro services all Residential accounts as well as GS<50kW and GS 50kW - 4,999kW accounts with a 200 amp or less service."

a) Do any of NOTL Hydro's Residential customers have >200 amp service? If yes, how many?

b) Precisely how many of NOTL's GS<50 customers have >200 amp service based on the most recent data available?

c) Precisely how many of NOTL's GS 50 kW – 4,999 kW customers have >200 amp service based on the most recent data available?

RESPONSE

a) 16

b) 347

c) 123

7-VECC-35

Reference: **Exhibit 7, page 5**

Preamble: The Application states:
"NOTL Hydro undertook a detailed review of expenses in accounts 5315, 5320 and 5340 to determine the costs associated with customers in each rate class."

a) Please provide a copy of the detailed review undertaken by NOTL Hydro.

RESPONSE

Provided separately as appendix 7.0-VECC-35A.

7-VECC-36

Reference: **Exhibit 7, page 7**

Preamble: The Application states:
"NOTL Hydro was approved to increase the MicroFIT rate from $5.40 to $10.00 per month in 2019. The increase was due to the increase in costs related to meter reading and billing for MicroFIT customers, including the implementation of Utilismart Settlement manager to allow for automated billing and improved 1598 reporting with regards to embedded generation. The cost of these services is $8.00 per meter per month. The additional $2.00 is deemed to cover labour and other costs associated with MicroFIT customers. NOTL Hydro is proposing to maintain the $10.00 charge per month."

a) Please confirm that the cost of the Utilismart Settlement manager is the same now as it was in 2019 - $8/meter.

RESPONSE

Confirmed

7-VECC-37

Reference: **Exhibit 7, page 8**

Preamble: The Application states:

"NOTL Hydro had a Standby Power Service Classification approved in its 2019 Cost of Service application. NOTL Hydro is proposing to maintain this customer class. The new potential Large Use customer will have a load approved by the IESO to be up to 50 MW and would like to have a higher load. The customer is also situated in a location that has access to large gas lines. The risk of load displacement is therefore very high; especially as the customer is a participant in the Industrial Conservation Initiative. The standby rate is needed to protect other NOTL Hydro customers."

a) Does the potential new Large Use customer currently have or plan to have behind the meter self-generation?

b) Do any of NOTL Hydro's other customers currently have or (to NOTL Hydro's knowledge) plan to have behind the meter self-generation. If so, please describe the circumstances.

RESPONSE

a) Not that NOTL Hydro is aware of.

b) Not that NOTL Hydro is aware of.

7-VECC-38

Reference: **Exhibit 7, page 6**
2024 Cost Allocation Model, Tab I8

Preamble: The Application states:

"The data used in the cost allocation model reflects the findings of the 2004 hour by hour load data being scaled to be consistent with NOTL Hydro's 2024 load forecast. No historical information was available for the new Large User rate class and therefore NOTL Hydro utilized load profile estimates provided by this customer to estimate the demand data at 5,000kW."

a) In Tab I8 the 4NCP values for the Large Use class are 18,000 kW (i.e., 4,500 x 4). However, since there is only one customer in the class and that customer's monthly peak demand is 5,000 kW why wouldn't the 4NCP value be 20,000 kW?

b) Please re-do the Cost Allocation using a 4NCP value for the Large Use Class of 20,000.

RESPONSE

a) At the time of the submission of this application the new large use customer was assumed to be running at approximately 4,500 kWh per hour 24/7 as their operation had not yet started. Consistent with previous applications the 2004 hour by hour was scaled to the 2024 load forecast based on kWh by customer class. The assumption has been updated to 5,000kW each hour and is reflected in the load forecast and cost allocation filed with these responses.

b) This is updated in the cost allocation model filed with these responses.

7-VECC-39

Reference: **Exhibit 7, page 10**

Preamble: The Application contains the following table:

Table 7.5: Proposed Revenue to Cost Ratio Allocation

Revenue to Cost Ratio Allocation				Target Range	
Customer Class Name	Calculated R/C Ratio	Proposed R/C Ratio	Variance	Floor	Ceilling
Residential	0.9052	0.9052	0.00	0.85	1.15
General Service < 50 kW	1.1338	1.1338	0.00	0.80	1.20
General Service > 50 kW	1.1136	1.1136	0.00	0.80	1.20
Large User	1.0986	1.0986	0.00	0.80	1.20
Unmetered Scattered Load	1.1815	1.1815	0.00	0.80	1.20
Street Lighting	1.4118	1.4118	0.00	0.80	1.20

a) Please confirm that the Target Range for the Large User class should be 0.85-1.15.

RESPONSE

Confirmed

7-VECC-40

Reference: **Exhibit 7, page 10**

Preamble: The Application states:
"NOTL Hydro is proposing not to rebalance streetlights"

a) Has NOTL Hydro consulted with the Town of Niagara-on-the-Lake regarding its proposal not to rebalance street lights? If yes, is the Town in agreement with the proposal?

RESPONSE

There were no specific consultations with the Town of Niagara-on-the-Lake with regards to the proposal not to rebalance street lights. The proposed rates and their impacts were presented to the Board of Directors which includes the mayor, a town councilor, and the CAO of the Town of Niagara-on-the-Lake.

7-VECC-41

Reference: **Exhibit 7, page 11**

Preamble: The Application states:
"The table below shows the customer class allocation using the three revenue scenarios as well as the revenue to cost ratio using the NOTL Hydro developed load profile and 2021 data. The allocations to the residential class are much higher than in the previous study while the allocations to the two general service classes are much lower. In fact, the GS < 50 kW class falls outside the accepted range."

a) The referenced table does not appear to include the cost allocation results (i.e., class allocations and revenue to cost ratios) based on the load profiles developed using the 2021 data. Please provide.

RESPONSE

Revenue Reallocation - Service Revenue Requirement					
	Proposed Base Revenue Requirement %				
Customer Class Name	Cost Allocation Results		Existing Rates	Proposed Allocation	
Residential	63.48%	4,269,255	53.32%	53.32%	3,586,432
General Service < 50 kW	15.71%	1,056,589	22.83%	22.83%	1,535,591
General Service > 50 kW	15.57%	1,047,116	17.08%	17.08%	1,148,872
Large User	2.52%	169,679	2.84%	2.84%	191,016
Unmetered Scattered Load	0.27%	18,436	0.32%	0.32%	21,296
Street Lighting	2.45%	164,682	3.61%	3.61%	242,550
other classes					
other classes					
other classes					
TOTAL	**100.00%**	**6,725,757**	**100.00%**	**100.00%**	**6,725,757**

Revenue to Cost Ratio Allocation				Target Range	
Customer Class Name	Calculated R/C Ratio	Proposed R/C Ratio	Variance	Floor	Celiling
Residential	0.8539	0.8539	0.00	0.85	1.15
General Service < 50 kW	1.4169	1.4169	0.00	0.80	1.20
General Service > 50 kW	1.0903	1.0903	0.00	0.80	1.20
Large User	1.1187	1.1187	0.00	0.85	1.15
Unmetered Scattered Load	1.1399	1.1399	0.00	0.80	1.20
Street Lighting	1.4251	1.4251	0.00	0.80	1.20

7-Staff-48

Ref: Exhibit 7, pages 5-6

Preamble:
New billing and collecting weighting factors are proposed due to Utilismart meter reading expenses for the GS 50 – 4,999 kW, Large User, and Street Lighting rate classes.

Question(s):

a) Please provide any quantitative analysis performed to support the proposed weighting factors.

RESPONSE

Please refer to 7.0-VECC-35

7-Staff-49

Ref: Exhibit 7, pages 10-12

Preamble:
Niagara-on-the-Lake Hydro states that it developed load profiles based on 2021 historic data and observed that it resulted in higher allocations to the residential rate class. It indicates that it believes that the results were distorted due to the pandemic.

Table 7.6 Niagara-on-the-Lake Hydro Load Profile Results contains information that is duplicated in Tables 7.4 and 7.5.

Question(s):

a) Please provide a table similar to Table 7.6 that provides the results from using the load profiles based on the 2021 historical year.
b) Since the application was filed April 2023, please comment on the availability and suitability of 2022 historical data for derivation of load profiles.
c) Please provide an explanation for why Niagara-on-the-Lake Hydro thinks the load profiles from 2004 are still appropriate to use for allocating costs in 2024.

RESPONSE

a) Please refer to 7.0-VECC-41a
b) The process to extract the data, reconcile to the billing and system and update the USF model took place over several months to complete 2021. NOTL Hydro is not able to update the model for 2022 prior to the scheduled settlement conference.
c) Those load profiles were used for the 2014 and 2019 cost of service rate applications and are the best available at this time.

7-Staff-50

Ref 1: Exhibit 7, pages 10-11
Ref 2: Cost Allocation Model, sheet I6.2 Customer Data

Preamble:
The revenue-to-cost ratio for the Street Lighting class is 141.18%, which is above the ceiling of 120%. The only rate class with a revenue-to-cost ratio below 100% is Residential, so following OEB policy, any decreases to Street Lighting would result in offsetting increases to Residential. Niagara-on-the-Lake Hydro proposes to not adjust any revenue-to-cost ratios. It states that:

> "Streetlights are owned by the Town of Niagara-on-the-Lake. The Town of Niagara-on-the-Lake owns 100% of Niagara-on-the-Lake Hydro so effectively the residential customers own 100% of Niagara-on-the-Lake Hydro. All we would be doing is adjusting costs between the Town and their ratepayers who also pay the costs of the Town. It is circular so making this rebalancing has no effective impact."

The cost allocation model indicates that there are 5 Street Lighting customers.

Question(s):

a) Please confirm that Niagara-on-the-Lake Hydro has consulted with its street lighting customers on this proposal, and that they are agreeable.
b) Please confirm that all 5 street lighting customers are the Town of Niagara-on-the-Lake or explain why this approach would be appropriate for other entities if not.
c) Please provide the rate and bill impacts to the Street Lighting and Residential rate classes that would result from adjusting the Street Lighting revenue-to-cost ratio to 120% and allocating the reduced revenue responsibility to the Residential class.

RESPONSE

a) There were no specific consultations with the customers with regards to the proposal not to rebalance street lights. The proposed rates and their impacts were presented to the Board of Directors which includes the mayor, a town councilor, and the CAO of the Town of Niagara-on-the-Lake.
b) The Town of Niagara-on-the-Lake has 2 accounts, accounting for 96.7% of all connections. The other 3 accounts are for the Niagara Region, The City of St. Catharines, and the City of Niagara Falls and account for 3.3% of the connections.
c) The table below shows the impact on rates (excluding the 2-year mitigation proposed by NOTL Hydro) of reducing the revenue-to-cost ratio to 1.20 for Streetlights.

	Revised (Streetlight R/C Ratio0 1.20)	Submitted (Streetlight R/C Ratio 1.4118)	Variance	Variance %
Residential	$35.95	$35.56	$0.39	1.1%
Streetlights				
Fixed	$7.41	$8.84	($1.43)	(16.2%)
Variable	$1.7855	$2.1296	($0.3441)	(16.2%)

	Rate Change	Units	Volume	Bill Impact from Distribution Rates
Residential	$0.39	# Customer	1	$0.39
Streetlights				
Fixed	($1.43)	Per Connection	300	($429.00)
Variable	($0.3441)	Per KW	29	($9.98)

8 | Rate Design

INTERROGATORY RESPONSES

8-SEC-26

[Ex. 8, p. 3 and Tariff Schedule and Bill Impact Model]

a. NOTL Hydro is proposing to split the proposed rate increase over two years, 2024 and 2025. Please provide a tariff sheet for 2025 and bill impacts for 2025.

b. Please update the bill impacts to show the rate riders for Account 1576 and Group 2 to be part of Subtotal A as shown in column G on Tab 4.

RESPONSE

a) Please see Exhibit 8 Appendix 8C for 2025 base rates. NOTL Hydro is proposing that the 2025 inflation factor be added to these rates. In addition, the rate riders, network, and connection charges are unknown for 2025 so NOTL Hydro is not able to accurately produce the Bill Impact and Tariff Schedule.
b) This is revised in the Tariff Schedule and Bill Impact model submitted with these responses.

8-SEC-27

[Ex. 8, Table 8.23] Some of the numbers in Table 8.23 do not agree with the Bill Impact Model. For example, for GS > 50 kW Distribution Table 2.23 says 5.54% and the Bill Impact says 2.34%. Please explain and update as required.

RESPONSE

a) Table 8.23 is the bill impact for the Monthly Service Charge and Distribution Volumetric Rate, while the 2.34% from the Bill Impact includes rate riders. No update is required.

8-VECC-42

Reference: **Exhibit 8, page 4**

Preamble: The Application states:
"NOTL Hydro also requests that the 1% discount provided to customers that own their own transformers not apply to the Large Use RTSR rates in order to maintain the flow through cost mechanism created with having the Large Use RTSR rates equal to the UTS rates."

a) Was this also approved in the Board's EB-2022-0158 Decision?

b) If not, please explain more fully why this change is required.

RESPONSE

a) No

b) This change is required to ensure that the new large use customer is covering the full cost of the increase in Network and Transmission rates that are the result of their demand. If the demand for the large use customer was 5MW, then this would result in an increase in UTR charges to NOTL Hydro of 5MW which should be recovered from the Large Use Customer. If the 1% discount is applied the difference between cost and revenue would be booked to the variance account and be recovered from all customers through a rate rider at a future date.

8-VECC-43

Reference: **Exhibit 8, page 5**

Preamble: The Application states:
"NOTL Hydro is also requesting to amend the accounting order for the Large Use Customer Variance Revenue Account (EB-2022-0158) such that the allocation across customers within each customer class is consistent with the treatment of other Group 2 Accounts."

a) Please describe how the allocation across customers within each customer class is currently done and how this would change under NOTL Hydro's proposal.

RESPONSE

Currently allocated based on kWh for residential, GS<50, and unmetered and on kW for GS>50 and Large Use. Under the proposed changes, residential would be a fixed rate on a per customer basis.

8-VECC-44

Reference: **Exhibit 8, page 6**

Preamble: The Application states:
"The classification of costs between fixed and variable is based on the time horizon being evaluated."

a) Please confirm that the Board's cost allocation model does not classify costs as between fixed and variable but rather as between customer-related and demand-related.

RESPONSE

NOTL Hydro is not proposing to describe the Board's model on behalf of the Board but is only providing NOTL Hydro's impression of the effect of the model.

8-VECC-45

Reference: **Exhibit 8, page 6**

Preamble: The Application states:
"While NOTL Hydro could have tried to amend the formulas, NOTL Hydro is instead proposing a more customer-centric approach. NOTL Hydro is proposing to keep the fixed: variable ratio the same as with current rates. This results in the increases to both fixed and variable rates to be the same. This is both most understandable to customers and prevents any favouritism to customers who use more or less power.'

a) Please provide the 2024 monthly service charge and variable charge for each of the GS<50, GS 50-4,999, Large User and Street Lighting classes if the month service charges were held at their 2023 levels.

RESPONSE

	Proposed 2024 Rates Unadjusted		
Rate Design	**Proposed Fixed Charge**	**Resulting Variable**	
Customer Class Name	**Fixed Rate**	**Rate**	**per**
General Service < 50 kW	$43.56	$0.0163	kWh
General Service > 50 kW	$311.31	$3.1309	kW
Large User	$4,080.99	$2.9274	kW
Street Lighting	$7.95	$17.5055	kW

	Proposed 2024 Rates Adjusted to Spread Increase over 2 Years		
Rate Design	**Proposed Fixed Charge**	**Resulting Variable**	
Customer Class Name	**Fixed Rate**	**Rate**	**per**
General Service < 50 kW	$43.56	$0.0146	kWh
General Service > 50 kW	$311.31	$2.8683	kW
Large User	$4,080.99	$2.7665	kW
Street Lighting	$7.95	$9.7099	kW

8-VECC-46

Reference: **Exhibit 8, pages 7-10**
2024 RTSR Workform, Tabs 3 & 5

a) Please confirm that the customer class usage data in Tab 3 and the billing units in Tab 5 are based on the same year.

b) If not confirmed, please re-do the RTSR Workform using the same year's data in both Tabs.

RESPONSE

a) Confirmed

b) n/a

8-VECC-47

Reference: **Exhibit 8, page 10**
NOTL Hydro's 2023 IRM Application (EB-2022-0052), page 11

Preamble: NOTL Hydro's 2023 IRM Application states:
"NOTL Hydro filed an application to change its Network and Connection rates for Large Use Customers on May 10, 2022 under EB-2022-0158. That case is still in process at the time of this submission. NOTL Hydro has not changed the rates in this application to reflect that request at this time and will make the appropriate adjustments once that case in resolved".

a) Were NOTL Hydro's 2023 RTSRs for the Large Use class revised to reflect the Board's Decision in EB-2022-0158? If not, why not?

Yes, the rates were revised in September 2022. The 2023 IRM was revised to reflect the change.

8-VECC-48

Reference: **Exhibit 8, page 10**

Preamble: The Application states:
"Large Use RSTR rates automatically update whenever new UTR rates are approved by the OEB. This avoids NOTL Hydro having to apply anytime UTR rates are reset and prevents an unfavourable variance accruing while the Large Use RSTR rate application is proceeding."

a) Please outline how NOTL Hydro would anticipate the "automatic update" to occur.

RESPONSE

NOTL Hydro would adjust the rates in its billing system that are charged to the Large Use Customer effective the same date as the UTR rates charged to NOTL Hydro are changed.

8-VECC-49

Reference: **Exhibit 8, pages 12-13**

Preamble: The Application states (page 12):
"NOTL Hydro proposes to increase a number of its Specific Service Charges to better reflect the actual cost of providing these services."

a) What year's costs are the "rates" used in Table 8.12 based on?

b) Are the hourly staff and service truck requirements used in Table 8.12 the same as those used to set the current rates?

   i. If not, which ones have changed and why?

c) To what does NOTL Hydro attribute the decrease in the Meter Dispute Charge?

d) Did NOTL Hydro calculate the current cost of providing each of the services listed in Table 8.11?

   i. If not, why not?

   ii. If yes, did the current cost for any of the services NOTL Hydro is not proposing a rate change differ from the current rates by more than 10%? If so, for which services and what was the current cost for each?

RESPONSE

a) 2024

b) No

   i. Special meter reads were not reviewed in the 2019 application.

   Meter dispute reduced from 2 hours of labour / truck to 1 hour labour / truck. Previously this was assigned to the 2-man service crew and is now the responsibility of one of the Senior Lineman.

   Disconnect/reconnect at meter – after regular hours – increased truck from 1 hour to 2 hours to reflect minimum call-out standards.

   Disconnect/reconnect at pole – after regular hours – increased truck from 1 hour to 2 hours to reflect minimum call-out standards.

   Service Call Customer Owned Equipment Regular Hours – this rate was not changed in our 2019 application. The basis for the current charge is unknown. Calculation based on 2 hours labour and one large vehicle.

   Service Call Customer Owned Equipment After Regular Hours – this rate was based on one lineman attending with a small service truck. The new rate assumes 2 lineman and a large vehicle.

c) Meter dispute reduced from 2 hours of labour / truck to 1 hour labour / truck. Previously this was assigned to the 2-man service crew and is now the responsibility of one of the Senior Lineman.

d) No

   i. NOTL Hydro did not review the costs for Customer Administration charges except for Special Meter Reads and Meter Dispute Charges. The focus was on charges related

to sending staff out into the field to complete the work. NOTL Hydro notes that the $15 charge that applies to most of the Customer Administration charges and is largely standard across the province and dates to the 2006 Electricity Distribution Rate Handbook issued by the OEB.

ii. n/a

8-VECC-50

Reference: **Exhibit 8, page 14**

Preamble: The Application states:
"NOTL Hydro is proposing to use the generic OEB approved province wide service charge of $36.05 for 2023 for pole rentals."

a) Will NOTL Hydro update the rate if the Board approves a province wide pole rental charge for 2024 on a generic basis?

RESPONSE

Yes. Rates were updated in the Tariff Schedule and Bill impact model submitted with these responses. The rate reflected in other revenue was increased to$37.78 (36.08 x 1.048) which is based on the 2023 rate plus the OEB inflation factor for 2024 of 4.8%.

8-VECC-51

Reference: **Exhibit 8, page 14**
2024 Cost Allocation Model, Tab I6.2

Preamble: The Application states:
"For the General Service > 50 kW class, the majority of customers in this customer class use the transformation facilities of the LDC to transform the voltage from the primary to the secondary voltage. However, there are three customers who use their own transformers on the primary side."

a) While the Application states there are 3 GS>50 customer that own their transformers, the Cost Allocation Model indicates there are 6 (i.e., 127 customers in total with 121 using NOTL transformers). Please reconcile.

RESPONSE

There are 3 customers that are primary metered, 2 are GS>50 and 1 is Large Use.

There are 6 customers in total that own their own transformer and receive the transformer allowance. 5 are GS>50 and 1 is Large Use.

NOTL Hydro double counted the Large Use customer when removing customers from Line Transformer Customer Base and the Secondary Customer Base by removing 6 customers instead of 5. This has been updated in the Cost Allocation model submitted with these responses.

8-Staff-51

Ref: Exhibit 8, pages 3-4

Preamble:
The calculated bill impacts are proposed to be mitigated by spreading the increase in distribution rates over two years.

Question(s):

a) Please provide the total bill impacts that would result from taking the full increase in 2024.
b) Has Niagara-on-the-Lake Hydro considered other means of mitigation such as spreading disposition of DVA accounts over two years?
   i. Why is the proposed mitigation preferred?
c) Please confirm that the proposed mitigation combined with an IRM adjustment will result in larger bill impacts in 2025.

RESPONSE

a)

Table 2

RATE CLASSES / CATEGORIES *(eg: Residential TOU, Residential Retailer)*	Units	Sub-Total A		Sub-Total B		Sub-Total C		Total Total Bill	
		$	%	$	%	$	%	$	%
RESIDENTIAL SERVICE CLASSIFICATION - RPP	kwh	$ 3.59	11.2%	$ 6.50	18.2%	$ 7.43	16.9%	$ 7.53	6.3%
GENERAL SERVICE LESS THAN 50 KW SERVICE CLASSIFICATION - RPP	kwh	$ 8.90	13.0%	$ 16.12	20.7%	$ 18.40	18.8%	$ 18.64	6.2%
GENERAL SERVICE 50 to 4,999 kW SERVICE CLASSIFICATION - Non-RPP (Other)	kw	$ 52.72	7.7%	$ 203.60	26.2%	$ 275.26	19.5%	$ 311.66	3.9%
LARGE USE SERVICE CLASSIFICATION - Non-RPP (Other)	kw	$ 1,554.23	9.1%	$ 13,494.73	71.9%	$ 11,987.23	22.7%	$ 13,545.57	2.8%
UNMETERED SCATTERED LOAD SERVICE CLASSIFICATION - RPP	kwh	$ 3.19	11.3%	$ 6.88	21.7%	$ 7.79	19.6%	$ 7.89	6.5%
STREET LIGHTING SERVICE CLASSIFICATION - RPP	kw	$ 273.24	11.2%	$ 397.05	16.0%	$ 406.78	15.8%	$ 459.67	11.4%
RESIDENTIAL SERVICE CLASSIFICATION - Non-RPP (Retailer)	kwh	$ 3.59	11.2%	$ 6.75	18.8%	$ 7.69	17.4%	$ 7.79	6.3%
GENERAL SERVICE LESS THAN 50 KW SERVICE CLASSIFICATION - Non-RPP (Retailer)	kwh	$ 8.90	13.0%	$ 16.72	21.3%	$ 19.00	19.2%	$ 19.25	6.2%
UNMETERED SCATTERED LOAD SERVICE CLASSIFICATION - Non-RPP (Retailer)	kwh	$ 3.19	11.3%	$ 7.12	22.3%	$ 8.03	20.1%	$ 8.14	6.5%
GENERAL SERVICE 50 to 4,999 kW SERVICE CLASSIFICATION - Non-RPP (Retailer)	kw	$ 52.72	7.7%	$ 200.25	25.7%	$ 271.91	19.2%	$ 307.88	3.8%
STREET LIGHTING SERVICE CLASSIFICATION - Non-RPP (Other)	kw	$ 273.24	11.2%	$ 400.00	16.3%	$ 409.74	16.2%	$ 463.01	11.4%
GENERAL SERVICE 50 to 4,999 kW SERVICE CLASSIFICATION - RPP	kw	$ 52.72	7.7%	$ 188.34	19.8%	$ 259.99	16.4%	$ 294.38	3.7%

b) No, group 1 variance accounts accumulate each year. If large balances continue to accrue, the customer will be further burdened in a future year.

   i. Spreading the increase over 2 years to assist customers in managing their energy expenses. Note that NOTL Hydro is not proposing to recover the lost revenue from implementing rates fully in 2024. This proposal is based on the rates as submitted in the original application and may not be feasible once the decision phase of this application is reached.

c) Confirmed

8-Staff-52

Ref: Exhibit 8, pages 5-6

Preamble:
The existing fixed charges are above the cost allocation model ceiling rates in the GS < 50 kW, GS 50 – 4,999kW, Large Use, and Street Lighting rate classes. The fixed charge is proposed to increase for all rate classes by maintaining the fixed to variable proportions.

Question(s):

a) Please provide the variable rates that would result from leaving the fixed charges at their current levels for the rate classes where the fixed charges are already above the ceiling.

RESPONSE

Please refer to 8.0-VECC-45a

8-Staff-53

Ref 1: Exhibit 8, page 10
Ref 2: Exhibit 3, page 4

Preamble:
The Large Use RTSRs are proposed to be set to the UTR rates and are proposed to automatically adjust to the UTR rates any time the UTR rates are adjusted. Niagara-on-the-Lake Hydro expects the single Large Use customer to operate on a 24/7 basis. This implies that it is expected to be operating at full capacity when the system is on peak.

Question(s):

a) If the expected new customer or any additional future large use customers operate in a way that is materially different from what is expected for this customer, will Niagara-on-the-Lake Hydro revisit the approach of setting the Large Use RTSRs to match the UTRs?
b) If the request for automatic adjustment is denied, what approach would Niagara-on-the-Lake Hydro take setting the Large Use RTSRs?

RESPONSE

a) Yes, NOTL Hydro would be willing to revisit if there was a new large customer with materially different operations and demand.

b) NOTL Hydro would request that the Network and Connection rate be set the same as the Uniform Transmission Rates in each rate application, IRMs and Cost of Service. This approach could cause significant balances to accrue in the variance accounts which in turn could be passed on to rate classes that were not responsible for contributing to the balance.

8-Staff-54

Ref: Exhibit 8, pages 12-13

Preamble:
Eight specific service charges are proposed to be updated to reflect costs of providing the services.

Question(s):

a) What consultation did Niagara-on-the-Lake Hydro undertake with its customers in respect of the proposed updates to specific charges?
b) How were the hourly rates for the required resources determined?
c) How were the hours required to perform each service determined?

RESPONSE

a) These average annual volume for the charges that were adjusted were approximately 21 per year over the period from 2019 to 2022 meaning they impact between 0.2% and 0.3% of NOTL Hydro's customers on an annual basis. These are not the same 21 customers each year. No consultation took place for that reason.

b) These are the hourly rates from our collective agreement grossed up for benefits and administrative costs.

c) By the management and staff that perform the services.

8-Staff-55

Ref 1: Exhibit 8, page 15
Ref 2: Chapter 2 Appendix 2-R

Preamble:
The proposed loss factor calculation includes a supply facility loss factor of zero.

Question(s):

a) Please explain where losses in the transmission network would be captured.
b) For each of the years 2018-2022 please provide the total energy required to be generated to supply the customers. This should include total wholesale energy purchases plus any embedded generation purchases.
c) For each of the years 2018-2022 please provide the metered energy received onto Niagara-on-the-Lake Hydro's distribution system.

RESPONSE

a. NOTL Hydro owns its transformer stations. These feed directly off the Hydro One transmission lines so there is no loss on supply lines. There is a loss on the transformation of the electricity to the distribution voltage. These losses, which range from 0.30% – 0.45%, are included in the monthly loads provided by the IESO so are built into NOTL Hydro's line loss calculations.

b.

	2018	2019	2020	2021	2022
IESO (kWh)	210,609,486	221,623,646	214,812,211	208,801,585	202,763,927
Generation (kWh)	14,804,687	15,493,193	15,686,149	16,389,920	15,889,123
Total	**225,414,173**	**237,116,839**	**230,498,360**	**225,191,505**	**218,653,050**

c.

	2018	2019	2020	2021	2022
IESO (kWh)	210,609,486	221,623,646	214,812,211	208,801,585	202,763,927
Generation (kWh)	14,804,687	15,493,193	15,686,149	16,389,920	15,889,123
Total	**225,414,173**	**237,116,839**	**230,498,360**	**225,191,505**	**218,653,050**

9 | Deferral & Variance Accounts

INTERROGATORY RESPONSES

9-SEC-28

[Ex. 9, Table 9.1] Footnote 2 on page 6 of the Filing Requirements for Electricity Distribution Rate Applications - 2023 Edition for 2024 Rate Applications states that 'The previous $50,000 for a distributor with a distribution revenue requirement less than or equal to $10 million still applies to other applications of the materiality threshold, e.g., DVAs, Z factor and eligible investments for the connection of qualifying generation facilities.' Table 9.1 shows the following Group 2 DVA 1508 subaccount principal balances which are less than $50,000.

a. Please explain why NOTL Hydro believes these balances should be approved for disposition.

OEB Cost Assessment	$15,595.68
Pole Attachments Revenue	$4,442.20
Customer Choice	$17,801.41
Green Button	$333.62

b. Please explain why NOTL Hydro is requesting continuation of the OEB Cost Assessment Account.
c. Please explain why NOTL Hydro is requesting to continue the Pole Attachments Revenue account when the Filing Requirements state 'Further transactions would not be expected to be recorded in the account'.

RESPONSE

a) These balances represent costs that NOTL Hydro incurred because of regulatory changes that resulted in increased costs that were not contemplated when rates were set. The total dollars spent on these initiatives combined is over $36,000 well above the $10,000 set out as material for this application.
b) These balances represent costs that NOTL Hydro incurred because of regulatory changes that resulted in increased costs that were not contemplated when rates were set. The total dollars spent on these initiatives combined is over the $10,000 set out as material for this application. NOTL Hydro would take the same position if there were credit balances in these accounts that were due back to our customers.
c) NOTL Hydro will have transactions to record in this account until the end of 2023. Those balances will not be audited and eligible for disposition until 2024.

9-Staff-56

Ref 1: DVA Continuity Schedule
Ref 2: Exhibit 9, pages 4 and 7

Preamble:
The discrepancies in the table below are noted for the Account 1595 sub-accounts' December 31, 2022 balances.

	DVA Continuity Schedule	Exhibit 9 Tables 9.1 and 9.3
1595 (2018)	Not provided	$57,251
1595 (2019)	$52,610	$12,720
1595 (2020)	$8,839	$52,610
1595 (2021)	-$35,951	$8,840
1595 (2022)	$0	-$35,952

Question(s):

a) Please provide the correct balances for each sub-account and update the evidence as needed.

RESPONSE

The balance in 1595 (2018) adjusted for OEB dispositions in 2023 is $174.91 is the amount in table 9.1 while table 9.3 shows the ending balance in 2022. The revised DVA continuity schedule filed on June 5th at the request of OEB staff matches the amounts in exhibit 9. 2018 was missing due to limitations in the DVA continuity model. A revised DVA Continuity model was filed with these responses.

9-Staff-57

Ref 1: DVA Continuity Schedule
Ref 2: Exhibit 9, page 7
Ref 3: Exhibit 1, page 56 – Audited Financial Statements

Preamble:
Note 9 of Niagara-on-the-Lake Hydro's audited financial statements provides regulatory balances as at December 31, 2022. Table 9.3 in Exhibit 9 also provides Reporting and Record Keeping Requirements (RRR) balances for deferral and variance accounts as at December 31, 2022.

	Audited Financial Statements - Total Regulatory Debits and Credits			**Exhibit 9 Table 9.3**	**Difference**
Settlement variances	$1,030,671		Group 1 accounts	$1,106,664	
Other regulatory accounts	$361,871		Group 2 accounts, including Account 1576 and LRAMVA	$314,061	
Total	**$1,392,542**		**Total**	**$1,420,725**	**$28,183**

Question(s):

a) Please reconcile the balances in the audited financial statements to that in Table 9.3 as shown in the table below.

RESPONSE

Please refer to section 2.9.0.7 for explanation of variances

9-Staff-58

Ref 1: Exhibit 9, pages 4 and 10
Ref 2: Chapter 2 Filing Requirements - 2023 Edition for 2024 Rate Applications, December 15, 2022
Ref 3: Accounting Order for the Establishment of a Deferral Account to Record Impacts Arising from Implementing the Customer Choice Initiative Ontario Energy Board File No. EB-2020-0152, Sept 16, 2020

Preamble:
The debit balance of $18,658 in Account 1508, Sub-account Customer Choice Initiative Costs is requested for disposition. In addition, in Table 9.1, the sub-account is proposed to be continued.

Question(s):

a) In the accounting order for Account 1508, Sub-account Customer Choice Initiative Cost, it states that the OEB will assess any claimed costs recorded in the sub-account at the time the sub-account is requested for disposition, subject to the causation, materiality and prudence criteria. Per the Chapter 2 Filing Requirements, a deferral and variance accounts materiality threshold of $50,000 would apply to Niagara-on-the-Lake Hydro. Please explain why the sub-account is requested for disposition when it does not meet the materiality threshold. Please update the evidence as needed.
b) Please explain whether Niagara-on-the-Lake Hydro has incorporated its annual support fee in the test year OM&A.
    a. Please explain why the sub-account is proposed to be continued.

RESPONSE

a) Please refer to 9-SEC-28

b) NOTL has not incorporated these costs into the test year OM&A. NOTL Hydro continues to incur costs associated with Customer Choice.

9-Staff-59

Ref 1: Exhibit 9, pages 4 and 11
Ref 2: OEB's February 9, 2016 Letter, Revisions to the Ontario Energy Board Cost Assessment Model
Ref 3: Chapter 2 Filing Requirements - 2023 Edition for 2024 Rate Applications, December 15, 2022

Preamble:
Per the OEB's letter in reference 1, Account 1508, Sub-account OEB Cost Assessment was established to record any material differences between OEB cost assessments currently built into rates, and cost assessments that will result from the application of the new cost assessment model effective April 1, 2016.

Question(s):
a) Table 9.7 provides the calculation of the OEB Cost Assessment sub-account balance for a debit of $16,322. Variances are calculated from Q1 2018 to Q1 2020, and Q2 2022 to Q4 2022. Please explain why there are variances from Q2 2022 to Q4 2022 when the account should only be recording variances pertaining to the 2016 cost assessment model, which would have been reflected in Niagara-on-the-Lake Hydro's 2019 cost of service rate application. Please revise the evidence as needed.
b) In the OEB's letter in reference 1, it states that any disposition of deferral and variance account balances must meet any OEB default or company-specific materiality thresholds. Per the Chapter 2 Filing Requirements, a deferral and variance accounts materiality threshold of $50,000 would apply to Niagara-on-the-Lake Hydro. Please explain why the sub-account is requested for disposition when it does not meet the materiality threshold. Please update the evidence as needed.
c) Per the OEB's letter in reference 1, regulated entities are to cease recording amounts in these accounts when their rates are rebased/reset, incorporating an updated forecast of cost assessments. In Table 9.1, Account 1508, Sub-account OEB Cost Assessment is proposed to be continued. Given that Niagara-on-the-Lake Hydro has rebased and incorporated the 2016 cost assessment model in rates, please explain why the sub-account is proposed to be continued. Please revise the evidence as needed.

RESPONSE

a. NOTL Hydro continues to experience OEB costs that are in excess of the amount reflected in rates. NOTL Hydro was not able to recover the amounts in its 2019 rate application as they were below the $50,000 materiality threshold.

b. Please refer to 9-SEC-28 for more details on the balances. NOTL Hydro is requesting approval to dispose these variance accounts even though they are below the materiality threshold for the following reasons:
- It seems inconsistent to have a $10,000 materiality threshold for all other aspects of this application except this.
- The materiality threshold is the same for all LDCs irrespective of size which is not consistent with the risk of these variances to the financial performance of the LDCs
- The threshold appears to encourage profligacy which is not consistent with sound financial management.

- In aggregate, these variances will be over $50,000

c. NOTL Hydro continues to experience OEB costs that are in excess of the amount reflected in rates. NOTL Hydro was not permitted to recover the amounts in its 2019 rate application.

9-Staff-60

Ref: Exhibit 9, pages 16-17

Preamble:
Niagara-on-the-Lake Hydro is requesting a debit amount of $145,840 in Account 1576 Accounting Changes Under CGAAP. The balance is a residual amount between the approved balance and the rate riders collected. The OEB has not provided guidance that indicates residual balances are to be requested for disposition and has not historically done so.

Question(s):

a) Please explain why Niagara-on-the-Lake Hydro is requesting disposition of this residual balance.
b) Please explain why the residual balance is large given that the amount represents a residual balance.

RESPONSE

a) This rate rider was in place for several years from 2014 to 2019. During that 5-year period NOTL Hydro over refunded amounts to its customers. The fact that the OEB has not provided guidance does not negate this fact and NOTL Hydro should be made whole with regards to this account.

b) The rate riders were in place for 5 years.

9-Staff-61

Ref: Exhibit 9, Appendix 9A

Preamble:
In the draft accounting order for the Large Use Customer Revenue Variance Account, it states that Niagara-on-the-Lake Hydro will be requesting disposition of this account annually.

In addition, the journal entry to record the revenue variance is

Dr./Cr. Account 1508, Sub-account Large Use Customer Revenue Variance Account
Cr./Dr. Account 4310 – Regulatory Credit/Account 4305 – Regulatory Debit.

Upon approved disposition, the journal entry to record rate riders includes a reallocation between

Dr./Cr. Account 4080 – Distribution Revenue.
Cr./Dr. Account 4310 – Regulatory Credit /4305– Regulatory Debit.

Question(s):

a) Please provide Niagara-on-the-Lake Hydro's views on disposing this account at next rebasing instead of annually. Please comment on whether Niagara-on-the-Lake Hydro would experience any cash flows issues if the account was disposed at next rebasing.
b) For the first journal entry noted above, please explain why the offsetting entry to Account 1508 is to Account 4310/Account 4305 and not directly to Account 4080.
    a. Please explain Niagara-on-the-Lake Hydro's views on revising the first journal entry to debit/credit Account 1508 and credit/debit Account 4080.

RESPONSE

a) NOTL Hydro was approved for annual disposition of this account in its 2019 rate application. NOTL Hydro feels that this is appropriate, and the disposition should continue to be annual. Cash flow issues would be dependent on the magnitude of the variance and whether the account was in a debit or credit position.

b) NOTL Hydro's original submission for the accounting order was directly to account 4080. EB-2018-0056 NOTL Hydro Exhibit 9 Deferral and Variance Accounts w Appendix_20180823 Appendix 9C. The change to account 4310/4305 was at the direction of OEB staff during the Settlement Proposal.

9-Staff-62

Ref: DVA Continuity Schedule

Preamble:
In the DVA Continuity Schedule, Niagara-on-the-Lake Hydro is requesting disposition of a debit amount of $455,549 in Account 1580 – RSVA Wholesale Market Service Charge and a debit amount of $327,109 in Account 1584 – RSVA Retail Transmission Network Charge as at December 31, 2022. These amounts have increased significantly when compared to the prior two years.

Question(s):

a) Please explain the large balances in these two accounts.

RESPONSE

Account 1580 – RSVA Wholesale Market Service (WMS) Charge – NOTL Hydro experienced significant increases in certain line items on its IESO invoices related to the WMS charges in 2022 while the rates charged to customers remained unchanged.

Account 1584 – RSVA Retail Transmission Network Charge – the forecast wholesale rate for the purpose of calculating 2022 rates was $4.90 based 407,567 units billed EB-2021-0045. The actual wholesale rate was $5.13 for the period from January to March 2022 and $5.46 for the period from April to December 2022 while the actual units billed was 409,234. In addition, the Large Use rates were based on 2020 usage of 84,806 kW while the actual usage for this category was 10,236 kW.

Appendices

List of Appendices

Niagara on-the-Lake HYDRO

APPENDIX 1-SEC-1A

INTERROGATORY REPONSES

EB-2023-0041

Niagara-on-the-Lake Hydro
Cost of Service Application update
February 2023

The cost of service application is due to the Ontario Energy Board by the end of April 2023. It is thus still in a state of development.

Rates
The following are the current distribution rates proposals. These will change slightly as the application is updated but not by much.

	2023			2024 – NOTL Hydro model			2024 – OEB Model		
	Fixed	**Variable**		**Fixed**	**Variable**	**Increase**	**Fixed**	**Variable**	**Change**
Residential	31.97	-	Kwh	35.20	-	10.1%	36.51	-	14.2%
GS < 50	43.56	0.0129	kW	43.56	0.0165	10.4%	43.56	0.1508	6.3%
GS > 50	311.31	2.6057	kW	311.31	3.111	10.3%	311.31	2.9707	7.4%
Large	4080.99	2.6057	kW	4080.99	2.9549	10.2%	4080.99	2.9549	10.2%
Unmetered	23.43	0.006	Kwh	23.43	0.0096	10.2%	23.43	0.0075	4.3%
Streetlights	7.95	1.9144	kW	7.95	10.7937	10.6%	7.95	-11.8851	-16.4%

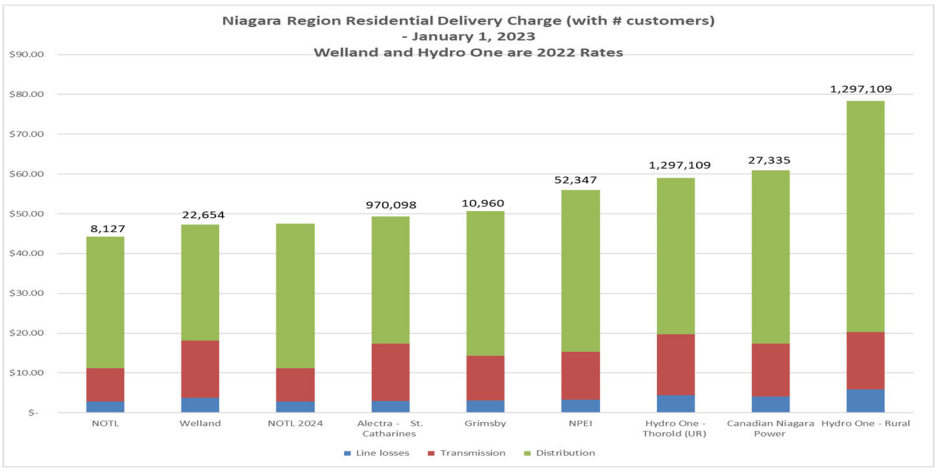
Rates since the last cost of service in 2019 have been set simply as an increase for inflation less the productivity factor. The 2024 rates have been calculated based on actual costs and investments. There are two main drivers for the increase in rates.

Rate base – This is primarily fixed asset investments. Our rate base has gone from $30.5 million in 2019 to a forecast $35.8 million in 2024 or up 18%. This has been driven by our investments in the two stations, the underground conversions (including Virgil) and the new vehicles.

Operating expenses – Operating expenses in 2024 are projected to be $3.6 million. This compares to $2.83 million in 2019 (27% increase) and $2.67 million used by the OEB to calculate rates in 2019 (35% increase). The increase has been driven by inflation, new requirements (industrial smart meters, locates, cyber security) and the loss of CDM.

The OEB model comes out with different rates as it tries to allocate rates based on a calculation of the cost of serving a customer class. NOTL Hydro's view is that this is highly subjective so have manipulated the results to come out with an even increase across rate classes. We also plan to increase the fixed and lower the variable rates.

As per the chart on the next page, for residential customers NOTL Hydro would still have one of the lowest rates in Niagara. As the Welland rates are 2022, it is most likely that in 2024 NOTL Hydro would still have the lowest residential rates. The same results apply to small business rates and NOTL Hydro's large business rates would remain the lowest in Niagara.


Niagara Region Residential Delivery Charge (with # customers)
- January 1, 2023
Welland and Hydro One are 2022 Rates
$90.00
$80.00
$70.00
$60.00
$50.00
$40.00
$30.00
$20.00
$10.00
$-
8,127
22,654
970,098
10,960
52,347
1,297,109
27,335
1,297,109
NOTL
Welland
NOTL 2024
Alectra - St. Catharines
Grimsby
NPEI
Hydro One - Thorold (UR)
Canadian Niagara Power
Hydro One - Rural
Line losses
Transmission
Distribution

Niagara on-the-Lake HYDRO

APPENDIX 1-SEC-1B

INTERROGATORY REPONSES

EB-2023-0041

Niagara-on-the-Lake Hydro
Cost of Service Application update
March 2023

The cost of service application is due to the Ontario Energy Board by the end of April 2023. The goal is to finalize the documents by the end of March to allow time for review. Reviewers will include David Stevens of Aird & Berlis and Greg Van Duzen of CHEC (formerly of Hydro Ottawa and Hydro One) as well as the NOTL Hydro executive team. The document is currently over 500 pages.

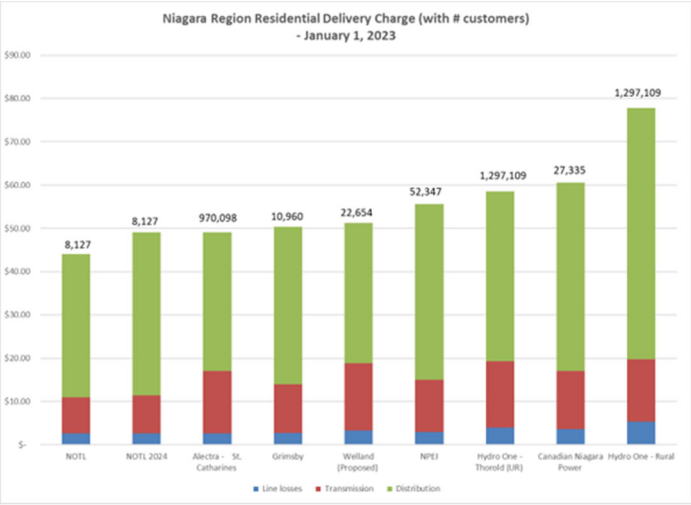
Rates

The following are the current distribution rates proposals. They have not changed much since last month. The model is the actual impact of our proposal but as we are also proposing to spread the increase over two years the actual proposed rates are provided. The rates in 2025 would therefore increase by the same amount plus inflation.

	2023			2024 – Model			2024 - Proposed		
	Fixed	**Variable**		**Fixed**	**Variable**	**Increase**	**Fixed**	**Variable**	**Increase**
Residential	31.97	-	Kwh	35.45	-	10.9%	33.71	-	5.5%
GS < 50	43.56	0.0129	kW	48.30	0.0143	10.9%	45.93	0.0136	5.5%
GS > 50	311.31	2.6057	kW	345.21	2.8814	10.7%	328.26	2.7438	5.4%
Large	4080.99	2.6057	kW	4525.32	2.8284	9.1%	4303.16	2.7171	4.6%
Unmetered	23.43	0.006	Kwh	25.98	0.0067	10.9%	24.71	0.0064	5.5%
Streetlights	7.95	1.9144	kW	8.82	2.1228	10.9%	8.39	2.0186	5.5%

The OEB model tries to determine rates by allocating costs across customer classes as well as between fixed and variable costs. If sticking to the OEB model, the streetlighting rates would be much lower and residential higher. The fixed rates would also be the same as 2023 (except residential) while the variable rates would be much higher. NOTL Hydro has proposed the increase be the same across all rates.

For residential customers NOTL Hydro would still have the lowest residential rates in Niagara.



For commercial customers, the rates are now the second lowest after Welland but we are comparing 2024 NOTL rates vs 2023 Welland rates.

For the potential large use customer we have the same mechanism in place so that NOTL Hydro gets revenue at 5 MW and any overage or underage goes to a variance account.

Niagara on-the-Lake HYDRO

APPENDIX 1-SEC-1C

INTERROGATORY REPONSES

EB-2023-0041

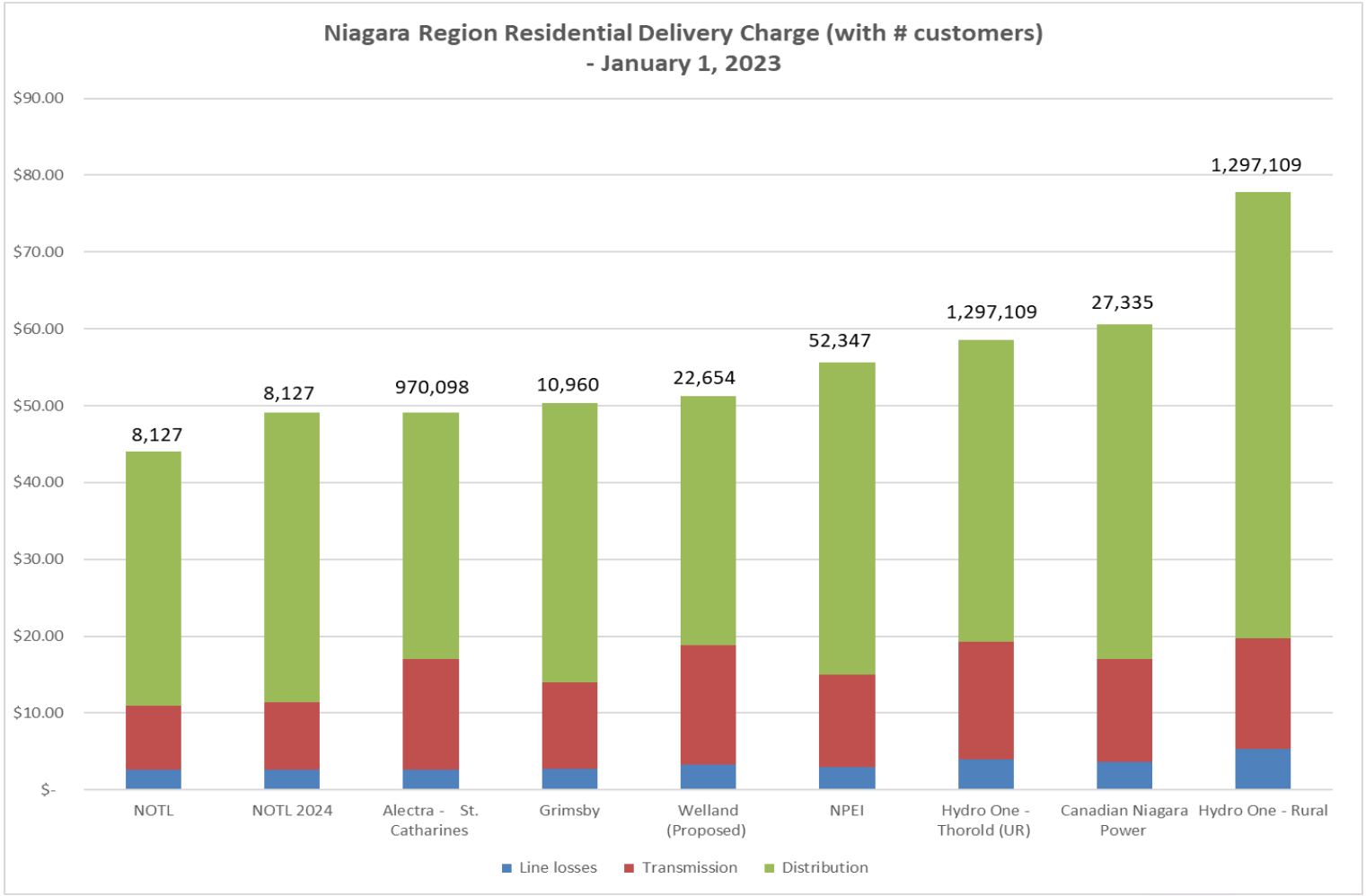
Pre-Application Meeting

EB-2023-0041

April 20, 2023 | Presented by Niagara-on-the-Lake Hydro

PRESENTED BY:
Niagara on-the-Lake HYDRO

NOTL Hydro Residential Rates



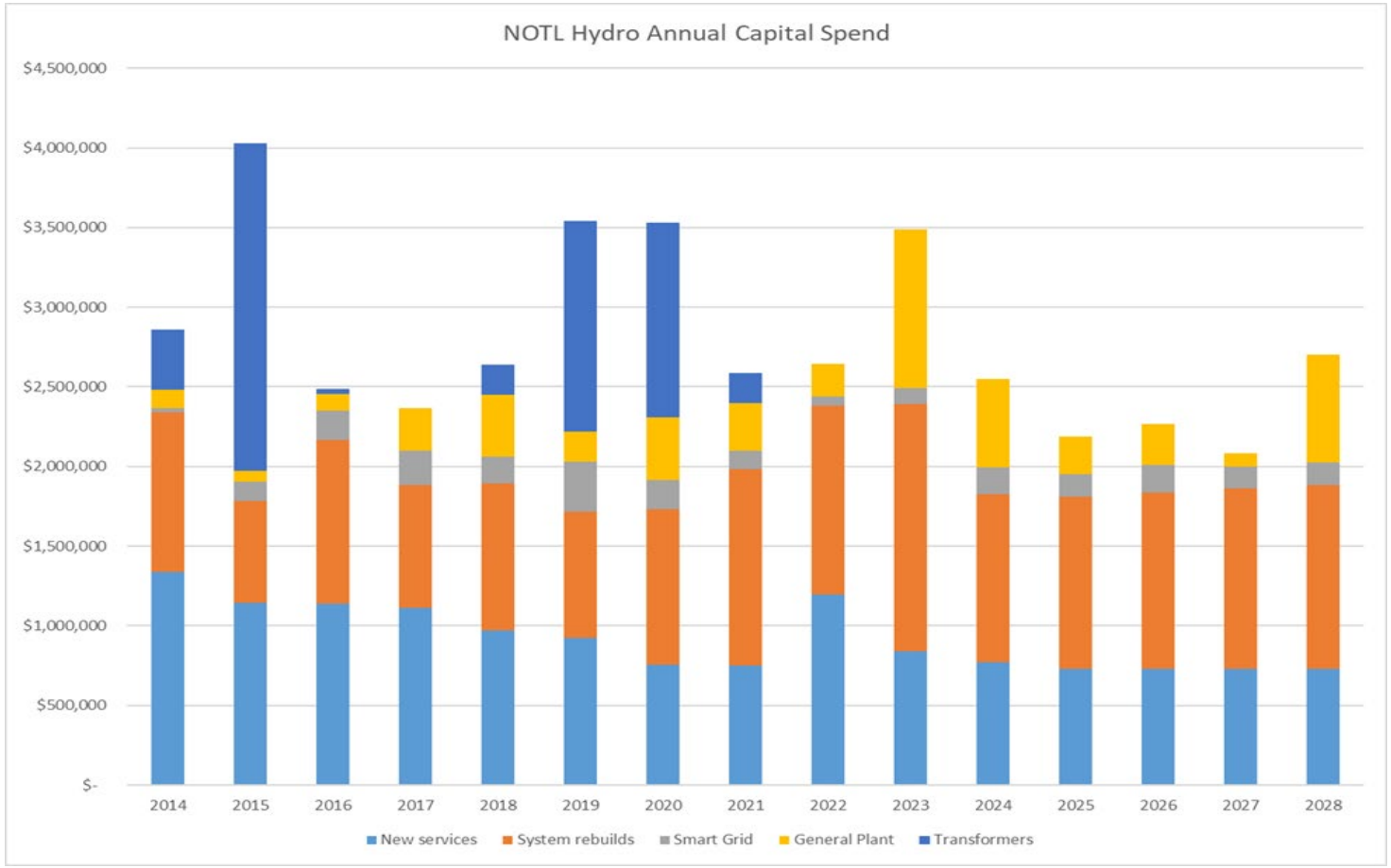
Application Highlights

PRESENTED BY:
Niagara on-the-Lake HYDRO

1. Distribution rate increase of 10.9% - spread over 2 years
2. Ongoing Large Use customer variance account
3. Large Group 1 DVA debit balances
4. No ICM, ACM or unusual capital projects 2024-2028
5. Cost of Capital of 6.08% - lower than OEB deemed 6.67%
6. Ongoing voltage conversion and undergrounding program

Annual Capital Spend

PRESENTED BY:
Niagara on-the-Lake HYDRO



Niagara on-the-Lake HYDRO

APPENDIX 1-SEC-3A

INTERROGATORY REPONSES

EB-2023-0041

Scorecard - Niagara-on-the-Lake Hydro Inc.

7/13/2023

Performance Outcomes	Performance Categories	Measures		2018	2019	2020	2021	2022	Trend	Target: Industry	Target: Distributor
Customer Focus Services are provided in a manner that responds to identified customer preferences.	**Service Quality**	New Residential/Small Business Services Connected on Time		99.42%	100.00%	99.21%	100.00%	100.00%	↑	90.00%	
		Scheduled Appointments Met On Time		100.00%	100.00%	100.00%	100.00%	100.00%	→	90.00%	
		Telephone Calls Answered On Time		89.98%	86.80%	95.61%	98.34%	98.04%	↑	65.00%	
	Customer Satisfaction	First Contact Resolution		12	14	18	12	11			
		Billing Accuracy		99.95%	99.81%	99.87%	99.90%	99.64%	↓	98.00%	
		Customer Satisfaction Survey Results		78.8%	78.8	79.0	79.0	79			
Operational Effectiveness Continuous improvement in productivity and cost performance is achieved; and distributors deliver on system reliability and quality objectives.	**Safety**	Level of Public Awareness		83.00%	82.80%	82.80%	82.60%	82.60%			
		Level of Compliance with Ontario Regulation 22/04 [1]		C	C	C	C	C	→		C
		Serious Electrical Incident Index	Number of General Public Incidents	0	0	0	0	0	→		0
			Rate per 10, 100, 1000 km of line	0.000	0.000	0.000	0.000	0.000	→		0.000
	System Reliability	Average Number of Hours that Power to a Customer is Interrupted [2]		0.76	0.50	0.73	1.02	0.60	↑		0.91
		Average Number of Times that Power to a Customer is Interrupted [2]		0.48	0.38	0.52	1.25	0.60	↑		0.93
	Asset Management	Distribution System Plan Implementation Progress		101%	96	130	153	113			
	Cost Control	Efficiency Assessment		3	3	3	2	2			
		Total Cost per Customer [3]		$761	$758	$750	$768	$804			
		Total Cost per Km of Line [3]		$19,565	$19,676	$19,566	$23,000	$24,066			
Public Policy Responsiveness Distributors deliver on obligations mandated by government (e.g., in legislation and in regulatory requirements imposed further to Ministerial directives to the Board).	**Connection of Renewable Generation**	Renewable Generation Connection Impact Assessments Completed On Time [4]		100.00%		100.00%					
		New Micro-embedded Generation Facilities Connected On Time		100.00%	100.00%	100.00%	100.00%	100.00%	→	90.00%	
Financial Performance Financial viability is maintained; and savings from operational effectiveness are sustainable.	**Financial Ratios**	Liquidity: Current Ratio (Current Assets/Current Liabilities)		0.61	0.56	0.50	0.45	0.40			
		Leverage: Total Debt (includes short-term and long-term debt) to Equity Ratio		0.55	0.57	0.65	0.66	0.67			
		Profitability: Regulatory Return on Equity	Deemed (included in rates)	9.36%	8.98%	8.98%	8.98%	8.98%			
			Achieved	10.12%	14.38%	7.80%	6.84%	8.79%			

1. Compliance with Ontario Regulation 22/04 assessed: Compliant (C); Needs Improvement (NI); or Non-Compliant (NC).
2. An upward arrow indicates decreasing reliability while downward indicates improving reliability.
3. A benchmarking analysis determines the total cost figures from the distributor 's reported information.
4. Value displayed for 2021 reflects data from the first quarter, as the filing requirement was subsequently removed from the Reporting and Record-keeping Requirements (RRR).

Legend:

5-year trend
↑ up ↓ down → flat

Current year
target met target not met

Niagara on-the-Lake HYDRO

APPENDIX 2-STAFF-16A

INTERROGATORY REPONSES

EB-2023-0041

Niagara-on-the-Lake Hydro Inc.
Underground Operations
October 2021

Summary

Included in the proposed 2022 Operating Budget is the addition of two new staff members to perform underground operations. Essentially, the plan is to bring in-house most of the services that are currently outsourced to providers such as Wiens and Regional.

Reasons for this proposal include:

- The cost of underground services has gone up substantially. We suspect this is a combination of cost-driven challenges due to the pandemic and increased demand for these services from the broadband industry.
- NOTL Hydro no longer appears to have a strong relationship with Wiens Underground. Wiens has traditionally provided all the regular service work as well as being the usual low-cost bidder on the underground voltage conversion jobs. Since the passing of Werner Wiens they no longer appear to value this relationship. The current manager is now leaving and there are numerous rumours with regards to the future of Wiens and its ongoing viability.
- NOTL Hydro believes it can establish a rapport similar to what it once had with Wiens with ECG (Environmental Contract Group) who are located in NOTL and who focus on drilling and hydro vac work.
- Inhouse management of this service will allow NOTL Hydro to manage the timing of the work better. The Gate Street project has now been delayed until January 2022 by Avertex. On our own we may be able to start sooner.
- Inhouse management of this service will better allow NOTL Hydro staff to be integrated into the full plan. Responsibility for tasks between inhouse and outside service providers have to be clearly delineated for legal, safety and work management reasons. With the full responsibility inhouse it will be easier to integrate our own staff in all aspects of the project.
- The all-in cost for the inhouse operation is around the same as outsourcing. No financial savings are expected but an improvement in service is. There is enough work to keep the new hires fully occupied.

Financial Analysis

Services provided by Wiens averaged $275k over the past three years and in 2020 Regional Contracting was used to replace some of the direct buried cable in Garrison Village.

Contracted Underground Service Work ($000s)

	2018	**2019**	**2020**	**Average**
Wiens	$270	$308	$246	$275
Regional	-	-	$266	
Total	$270	$308	$512	$363

The estimated full cost of the two additional staff is $180k. It is expected that 90% of their time will be on capital work with the remaining 10% operating. Drilling and boring will still be outsourced and that has been estimated at $50k. Depreciation of the capital needed to operate the underground operations is estimated at $40k. In short, the total cost will be equivalent. Around 90% of this cost is included in the capital budget.

The capital required to equip the underground operations is estimated at $200k. This includes a large pick-up truck, a heavy-duty trailer, a mini-excavator and various tools. Approval will be required to add this expenditure to the 2022 Capital Budget.

Niagara on-the-Lake HYDRO

APPENDIX 2-STAFF-29A

INTERROGATORY REPONSES

EB-2023-0041

SYNERGY POWER

TO:	SITE:
Niagara-On-The-Lake Hydro	Niagara-On-The-Lake Hydro
8 Henegan Rd Virgil, ON L0S 1T0	NOTL TS – 801 Concession Rd 5 Niagara-on-the-Lake, ON L0S 1J0

June 12, 2023

Dear Jason,

Please find attached the oil analysis results for NOTL TS T1, T2 and their respective LTC.

- **Transformer T1 – CG Power System, Serial no. RA140494**

  - ***Dissolved Gas Analysis (DGA)***
    The gas in oil analysis indicated that the oil appears to be in satisfactory condition. All gases remained within the IEEE acceptable limits. We recommend resampling at the 1-year anniversary to continue monitoring gas generation rates as part of your preventative maintenance program.

  - ***Chemical Analysis (ASTM / WATER)***
    The chemistry (ASTM) tests show the oil to be in satisfactory condition. The oil sample indicates clear and bright with no trace of sediment. The moisture amount of water content is **3 mg/kg**, well within the acceptable standards for in-service oil (25 mg/kg max). Additionally, Interfacial Tension is **40.57 mN/m** (acceptable for in service oil is 30 mN/m minimum). Dielectric Breakdown at both 1mm and 2mm are within acceptable limits for in service oil. All other measured parameters are within the IEEE recommended limits for in-service operations. We recommend resampling at the 1-year anniversary to continue monitoring the oil condition through trending.

  - ***Furanic Analysis***
    Furanic results indicate the transformer as having little 'wear' on its winding insulation, detecting <10 ppb Furanic compounds overall, indicating minimal paper degradation. The estimated *Degree of Polymerization* was evaluated at 1003, placing this transformers' *estimated* operating age at <1 year.

- **LTC –Reinhausen, Serial no. RA140494**

  - ***Dissolved Gas Analysis (DGA)***
    The gas in oil analysis indicated that the oil appears to be in satisfactory condition. All gases remained within the IEEE acceptable limits. We recommend resampling at the 6-month anniversary to continue monitoring gas generation rates as part of your preventative maintenance program.

  - ***Chemical Analysis (ASTM / WATER)***
    The chemistry (ASTM) tests show the oil to be in satisfactory condition. The oil sample indicates clear and bright with no trace of sediment. The moisture amount of water content is **11 mg/kg**, well within the acceptable standards for in-service oil (25 mg/kg max). Additionally, Interfacial Tension is **43.44 mN/m** (acceptable for in service oil is 30 mN/m minimum). All other evaluations are within IEEE acceptable limits. We recommend resampling at the 6-month anniversary to continue monitoring the oil condition through trending.

  - ***Metals Content Evaluation***
    No metals found in significant quantities of note

- **Transformer T2 – Ferranti & Packard, Serial no. 5016910101**

  - ***Dissolved Gas Analysis (DGA)***
    The gas in oil analysis indicated that the oil appears to be in satisfactory condition. All gases remained within the acceptable limits. We recommend resampling at the 1-year anniversary to continue monitoring gas generation rates as part of your preventative maintenance program.

  - ***Chemical Analysis (ASTM / WATER)***
    The chemistry (ASTM) tests show the oil to be in satisfactory condition. The oil sample indicates clear and bright with no trace of sediment. The moisture amount of water content is **5 mg/kg**, well within the acceptable standards for in-service oil (25 mg/kg max). Additionally, Interfacial Tension is **36.37 mN/m** (acceptable for in service oil is 30 mN/m minimum). Dielectric Breakdown is acceptable both at 1mm and 2mm. All other evaluations are within the recommended limits for in-service operations. We recommend resampling at the 1-year anniversary to continue monitoring the oil condition through trending.

  - ***Furanic Analysis***
    Furanic results indicate the transformer as having little 'wear' on its winding insulation, detecting <10 ppb Furanic compounds overall, indicating minimal paper degradation. The estimated *Degree of Polymerization* was evaluated at 1003, placing this transformers' *estimated* operating age at <1 year.

- **LTC –Reinhausen, Serial no. C014959**

  - ***Dissolved Gas Analysis (DGA)***
    The gas in oil analysis indicated that the oil appears to be in satisfactory condition. All gases remained within the IEEE acceptable limits. We recommend resampling at the 6-month anniversary as part of your preventative maintenance program.

  - ***Chemical Analysis (ASTM / WATER)***
    The chemistry (ASTM) tests show the oil to be in satisfactory condition. Noting the oil sample indicates clear and bright with no trace of sediment. The moisture amount of water content is **9 mg/kg**, well within the acceptable standards for in-service oil (25 mg/kg max). Additionally, Interfacial Tension is **41.09 mN/m** (acceptable for in service oil is 30 mN/m minimum). All other evaluations are within acceptable limits. We recommend resampling at the 6-month anniversary to continue monitoring the oil condition through trending.

  - ***Metals Content Evaluation***
    No metals found in significant quantities of note.

Please call us if you have any questions regarding this analysis.

Regards,

Douglas Charron
Operation Manager, Service & Maintenance
Tel: (519) 245-4900
Cell: (519) 476-3448
dcharron@synergypower.tech

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919 FRASER DR. UNIT 13 + BURLINGTON, ON + L7L 4X8
905-632-8697 + 905-632-8698
WWW.AVODIAGNOSTICS.COM

TEST REPORT
01-7639834-699171-00

Synergy Power

STRATHROY, ON N7G 3H8 CA
ATTN: DOUG CHARRON
PO#: 23-2068
Project ID:
Customer ID: T1

Serial#: RA140494
Location: NOTL TS
Equipment: TRANSFORMER
Compartment: MAIN(BOTTOM)
Breathing: FB
Bank: **Phase:** 3
Fluid: MIN **Liters:** 29180

Mfr: CG POWER SYSTEM
kV: 115
kVA: 500
Year Mf'd: 2015
Syringe ID: 8000661
Bottle ID:
Sampled By: DB

Control#: 7639834
Order#: 699171
Account: 110286
Received: 05/09/2023
Reported: 05/29/2023

	Lab Control Number:	7639834	7523516	7253676
	Date Sampled:	05/03/2023	02/16/2022	06/25/2019
	Order Number:	699171	671195	597191
	Oil Temp:	25	14	40
Dissolved Gas Analysis (DGA)	**O2/N2 Ratio:**	0.32	0.34	0.39
ASTM	**Transformer Age (yrs):**	8	7	4
D-3612[1]	**Hydrogen (H2) (µL/L):**	<2	<2	3
	Methane (CH4) (µL/L):	17	14	10
	Ethane (C2H6) (µL/L):	<1	<1	<1
	Ethylene (C2H4) (µL/L):	<1	<1	<1
	Acetylene (C2H2) (µL/L):	<1	<1	<1
	Carbon Monoxide (CO) (µL/L):	387	310	240
	Carbon Dioxide (CO2) (µL/L):	1060	864	715
	Nitrogen (N2) (µL/L):	26098	22276	21426
	Oxygen (O2) (µL/L):	8411	7677	8412

Dissolved Gas Analysis Diagnostics – IEEE Std C57.104-2019

	Absolute Gas Levels (µL/L)		**Gas Level Deltas(µL/L) (2 most recent samples)**		**Gas Generation Rates (µL/L per yr) (3-6 most recent samples within 4-24 mos.)**	
Gas	**Level**	**Diagnostic**	**Delta**	**Diagnostic**	**Rate**	**Diagnostic**
Hydrogen (H2)	<2	Normal (<= 40)	0	Normal Variation (<= 25)		
Methane (CH4)	17	Normal (<= 20)	3	Normal Variation (<= 10)		
Ethane (C2H6)	0	Normal (<= 15)	0	Normal Variation (<= 7)		
Ethylene (C2H4)	0	Normal (<= 25)	0	Normal Variation (<= 20)		
Acetylene (C2H2)	<1	Normal (<= 2)	0	Normal Variation (<= 0)		
Carbon Monoxide (CO)	387	Normal (<= 500)	77	Normal Variation (<= 175)		
Carbon Dioxide (CO2)	1060	Normal (<= 3500)	196	Normal Variation (<= 1750)		

DGA Diagnostics **Roger's Ratio**	Diagnostic not applicable - Gas levels normal.
Duval Triangles	Diagnostic not applicable – Triangle 1 gas levels normal. Diagnostic not applicable – Triangle 4 gas levels normal. Diagnostic not applicable – Triangle 5 gas levels normal.
Duval Pentagons	Diagnostic not applicable - Gas levels normal.
Cellulose insulation	CO and CO2 levels are normal. No indication of a fault involving paper.
DGA Status	Status 1 - Normal gas levels and no Indication of gassing. Continue routine DGA and normal transformer operation.
Resampling Protocol	Routine Screening
AVO Resampling Recommendation	Resample within 1 year.

Comment:

Notations: 1. Analysis is ISO/IEC 17025:2017 accredited, ANAB Accredited Certificate Number L2303 2. This test is conducted by a subcontracted laboratory. 3. Subcontracted laboratory has received ISO Standard 17025 accreditation for this test. 5. This test is conducted by AVO Diagnostic Services Laboratory other than Primary Lab. 6. AVO Diagnostic Services Laboratory has received ISO Standard 17025 accreditation for this test. 7. Imported Sample: AVO Diagnostic Services accepts no responsibility for these results; accreditation status does not apply to these results. 8. Imported Equipment 10. mg/kg , µg/g, µg/mL, µL/L = ppm, µg/L = ppb, mN/m = dynes/cm, mm²/s = cSt

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TEST REPORT
01-7639834-699171-00

Synergy Power

Serial#: RA140494 **Mfr:** CG POWER SYSTEM **Control#:** 7639834

Location: NOTL TS **kV:** 115 **Order#:** 699171

Equipment: TRANSFORMER **kVA:** 500 **Account:** 110286

STRATHROY, ON N7G 3H8 CA **Compartment:** MAIN(BOTTOM) **Year Mf'd:** 2015 **Received:** 05/09/2023

ATTN: DOUG CHARRON **Breathing:** FB **Syringe ID:** 8000661 **Reported:** 05/29/2023

PO#: 23-2068 **Bank:** **Phase:** 3 **Bottle ID:**

Project ID: **Fluid:** MIN **Liters:** 29180 **Sampled By:** DB

Customer ID: T1

		Lab Control Number:	7639834	7523516	7253676
		Date Sampled:	05/03/2023	02/16/2022	06/25/2019
		Order Number:	699171	671195	597191
		Oil Temp:	25	14	40
General Oil Quality (GOQ)					
ASTM D-1533[1]	**Moisture in Oil**	**(mg/kg):**	3	2	4
ASTM D-971[1]	**Interfacial Tension**	**(mN/m):**	40.57	40.91	40.04
ASTM D-974[1]	**Acid Number**	**(mg KOH/g):**	0.005	0.006	0.008
ASTM D-1500[1]	**Color Number**	**(ASTM):**	L0.5	L0.5	L1.0
ASTM D-1524[1]	**Visual Exam.**	**(Relative):**	PASS	PASS	PASS
			CLR&BRIGHT	CLR&BRIGHT	CLR&BRIGHT
ASTM D-1524[1]	**Sediment Exam.**	**(Relative):**	ND	ND	ND
ASTM D-877	**Dielectric Breakdown**	**(kV):**			47
ASTM D-1816[1]	**Dielectric Breakdown 1 mm**	**(kV °C):**	34 (22 C)	47 (23°C)	
ASTM D-1816[1]	**Dielectric Breakdown 2 mm**	**(kV °C):**	48 (22 C)	74 (23°C)	
ASTM D-4052[1]	**Density @15°C**	**(g/mL):**	0.8725	0.8723	0.8718

GOQ Diagnostics	**Moisture in Oil:**	Acceptable for in-service oil (25 mg/kg max).
PER IEEE C57.106-2015	**Interfacial Tension:**	Acceptable for in-service oil (30 mN/m min).
(most recent sample)	**Acid Number:**	Acceptable for in-service oil (0.15 mg KOH/g max).
	Color Number and Visual:	Diagnostic not applicable. Diagnostic not applicable.
	Dielectric Breakdown ASTM D-1816:	Acceptable for in-service oil (28 kV min @ 1mm). Acceptable for in-service oil (47 kV min @ 2mm).

Comment:

Furanic Compound	**2-Furaldehyde (µg/L):**	< 10	< 10	< 10
ASTM D-5837[5]	**5-Hydroxy-methyl-furaldehyde (µg/L):**	< 10	< 10	< 10
	2-Acetylfuran (µg/L):	< 10	< 10	< 10
	5-Methyl-2-furaldehyde (µg/L):	< 10	< 10	< 10
	2-Furyl alcohol (µg/L):	< 10	< 10	< 10

Furanic Compound Diagnostics (most recent sample):

New insulation with a high degree of mechanical strength will typically have a Degree of Polymerization (DP) of 1000-1300. "Middle Aged" paper is approximately 500 and paper with less than 250 is in its "Old Age." Severely degraded insulation with a DP of 150 or less will have very little mechanical strength and may result in a transformer failure. The above estimations are based on a study by Chendong of GSU transformers filled with mineral oil.

Estimated Average Degree of Polymerization (DP): >1003

Estimated Operating Age of the Equipment: <1.0

Notations:

Comment:

End of Test Report

Authorized By: _____

JANET KAROLAT
SUPV CHEMIST

Notations: 1. Analysis is ISO/IEC 17025:2017 accredited, ANAB Accredited Certificate Number L2303 2. This test is conducted by a subcontracted laboratory. 3. Subcontracted laboratory has received ISO Standard 17025 accreditation for this test. 5. This test is conducted by AVO Diagnostic Services Laboratory other than Primary Lab. 6. AVO Diagnostic Services Laboratory has received ISO Standard 17025 accreditation for this test. 7. Imported Sample: AVO Diagnostic Services accepts no responsibility for these results; accreditation status does not apply to these results. 8. Imported Equipment 10. mg/kg , µg/g, µg/mL, µL/L = ppm, µg/L = ppb, mN/m = dynes/cm, mm²/s = cSt

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On-Load Tap Changer (LTC) Oil Analysis & Diagnostic Evaluation

Synergy Power
STRATHROY, ON N7G 3H8 CA
ATTN:DOUG CHARRON
PO#:23-2068
Project ID:
Customer ID: T1

Serial#: RA140494
Location: NOTL TS
Equipment Type: LTC
LTC Compartment: SELECTOR
Breathing Type: FB
Bank: **Phase:** 3
Fluid: MIN **Liters:** 13106

LTC Mfr: CG POWER SYSTEM
Model: RMV-II
Year Mf'd: 2015
Syringe ID: 8004652
Bottle ID:
Sampled By: DB

Control#: 7639838
Order#: 699172
Account: 110286
Received: 05/09/2023
Reported: 05/23/2023

		Lab Control Number:	7639838	7523519	7273435	7253679
		Date Sampled:	05/03/2023	02/16/2022	08/29/2019	06/25/2019
		Order Number:	699172	671197	602200	597191
		Oil Temp:	10		30	
		Operations Counter:				
Dissolved Gas Analysis (DGA)		**Hydrogen (H2) (µL/L):**	<2	<2	<2	<2
ASTM		**Methane (CH4) (µL/L):**	1	2	1	1
D-3612[1]		**Ethane (C2H6) (µL/L):**	<1	<1	<1	<1
		Ethylene(C2H4) (µL/L):	1	1	2	2
		Acetylene (C2H2) (µL/L):	<1	<1	<1	<1
		Carbon Monoxide (CO) (µL/L):	23	10	13	10
		Carbon Dioxide(CO2) (µL/L):	482	458	570	521
		Nitrogen (N2) (µL/L):	61453	57325	75872	69902
		Oxygen (O2) (µL/L):	30667	31050	37973	35971
		Total Dissolved Gas (TDG) (µL/L):	92627	88846	114432	106408
		Total Dissolved Combustible Gas (TDCG) (µL/L):	25	13	17	14
		Equivalent TCG Percent:	0.0218	0.0105	0.0119	0.0104
Physical Evaluation						
ASTM D-1533[1]	**Moisture in Oil**	**(mg/kg):**	11	6	12	11
ASTM D-971[1]	**Interfacial Tension**	**(mN/m):**	43.44	45.41	45.35	45.31
ASTM D-1500[1]	**Color Number**	**(ASTM):**	L0.5	L0.5	L0.5	L1.0
ASTM D-1524[1]	**Visual Exam.**	**(Relative):**	PASS	PASS	PASS	PASS
			CLR&BRIGHT	CLR&BRIGHT	CLR&BRIGHT	CLR&BRIGHT
ASTM D-1524[1]	**Sediment Exam.**	**(Relative):**	ND	ND	ND	ND
ASTM D-1816[1]	**Dielectric Breakdown 1 mm**	**(kV °C):**	26 (22 C)	37 (23°C)	26 (23°C)	23 (24°C)
ASTM D-7151[5]		**Silver (Ag) (µg/g):**	< 0.5	< 0.5	< 0.5	< 0.5
		Chronium (Cr) (µg/g):	< 0.5	< 0.5	< 0.5	< 0.5
		Copper (Cu) (µg/g):	< 0.5	< 0.5	< 0.5	< 0.5
		Molybdenum (Mo) (µg/g):	< 0.5	< 0.5	< 0.5	2.49
		Nickel (Ni) (µg/g):	< 0.5	< 0.5	< 0.5	< 0.5
		Phosphorus (P) (µg/g):	< 0.5	< 0.5	< 0.5	< 0.5
		Lead (Pb) (µg/g):	< 0.5	< 0.5	< 0.5	< 0.5
		Tin (Sn) (µg/g):	< 0.5	< 0.5	< 0.5	< 0.5
		Tungsten (W) (µg/g):	< 0.5	< 0.5	< 0.5	< 0.5
		Zinc (Zn) (µg/g):	< 0.5	< 0.5	< 0.5	< 0.5

Diagnostics	**Condition Code:**	**Normal.**
	Recommended Action:	Resample oil for testing within 6 months.
	AVO Watch Level Diagnosis:	Not used. See LTC Model-specific diagnostic statement.
	AVO LTC Model-specific Diagnosis:	Acetylene within normal limit.
	Gas Ratios:	Ratio calculations not applicable.

Notations: 1. Analysis is ISO/IEC 17025:2017 accredited, ANAB Accredited Certificate Number L2303 2. This test is conducted by a subcontracted laboratory. 3. Subcontracted laboratory has received ISO Standard 17025 accreditation for this test. 5. This test is conducted by AVO Diagnostic Services Laboratory other than Primary Lab. 6. AVO Diagnostic Services Laboratory has received ISO Standard 17025 accreditation for this test. 7. Imported Sample: AVO Diagnostic Services accepts no responsibility for these results; accreditation status does not apply to these results. 8. Imported Equipment

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On-Load Tap Changer (LTC) Oil Analysis & Diagnostic Evaluation

Synergy Power

STRATHROY, ON N7G 3H8 CA
ATTN:DOUG CHARRON
PO#:23-2068
Project ID:
Customer ID: T1

Serial#: RA140494
Location: NOTL TS
Equipment Type: LTC
LTC Compartment: SELECTOR
Breathing Type: FB
Bank: **Phase:** 3
Fluid: MIN **Liters:** 13106

LTC Mfr: CG POWER SYSTEM
Model: RMV-II
Year Mf'd: 2015
Syringe ID: 8004652
Bottle ID:
Sampled By: DB

Control#: 7639838
Order#: 699172
Account: 110286
Received: 05/09/2023
Reported: 05/23/2023

Lab Control Number:	7639838	7523519	7273435	7253679
Date Sampled:	05/03/2023	02/16/2022	08/29/2019	06/25/2019
Order Number:	699172	671197	602200	597191
Oil Temp:	10		30	
Operations Counter:				
Metals Content Evaluation:	No metals found in significant quantities.			
Physical Evaluation:	Moisture content acceptable. Interfacial tension acceptable. Color number acceptable. Oil clear and bright. No sediment detected. Dielectric breakdown strength acceptable.			
Comment:				

End of Test Report

Nicolas C.

Authorized By: _____

CHRISTIAN NICOLAS
CHEMIST

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TEST REPORT
01-7639835-699171-00

Synergy Power

STRATHROY, ON N7G 3H8 CA
ATTN: DOUG CHARRON
PO#: 23-2068
Project ID:
Customer ID: T2

Serial#: 5016910101
Location: NOTL DS
Equipment: TRANSFORMER
Compartment: MAIN(BOTTOM)
Breathing: CONS
Bank: **Phase:** 3
Fluid: MIN **Liters:** 28172

Mfr: FERRANTI PACKARD
kV: 115
kVA: 417
Year Mf'd: 2003
Syringe ID: 8001374
Bottle ID:
Sampled By: DB

Control#: 7639835
Order#: 699171
Account: 110286
Received: 05/09/2023
Reported: 05/29/2023

	Lab Control Number:	7639835	7523515	7486678	7442141	7434533
	Date Sampled:	05/03/2023	02/16/2022	09/21/2021	04/23/2021	03/25/2021
	Order Number:	699171	671195	661686	651402	649296
	Oil Temp:	35	15	40	20	30
Dissolved Gas Analysis (DGA)	**O2/N2 Ratio:**	0.46	0.43	0.41	0.43	0.43
ASTM	**Transformer Age (yrs):**	20	19	18	18	18
D-3612[1]	**Hydrogen (H2) (µL/L):**	22	54	57	18	15
	Methane (CH4) (µL/L):	2	2	2	<1	<1
	Ethane (C2H6) (µL/L):	<1	<1	<1	<1	<1
	Ethylene (C2H4) (µL/L):	<1	<1	<1	<1	<1
	Acetylene (C2H2) (µL/L):	<1	<1	<1	<1	<1
	Carbon Monoxide (CO) (µL/L):	112	122	121	49	41
	Carbon Dioxide (CO2) (µL/L):	779	731	746	428	373
	Nitrogen (N2) (µL/L):	56339	43140	36797	35987	34210
	Oxygen (O2) (µL/L):	25856	18576	14988	15391	14587

Dissolved Gas Analysis Diagnostics – IEEE Std C57.104-2019

	Absolute Gas Levels (µL/L)		**Gas Level Deltas(µL/L) (2 most recent samples)**		**Gas Generation Rates (µL/L per yr) (3-6 most recent samples within 4-24 mos.)**	
Gas	**Level**	**Diagnostic**	**Delta**	**Diagnostic**	**Rate**	**Diagnostic**
Hydrogen (H2)	22	Normal (<= 40)	-32		-23	No active gassing (<= 10)
Methane (CH4)	2	Normal (<= 20)	0	Normal Variation (<= 10)	0	No active gassing (<= 3)
Ethane (C2H6)	0	Normal (<= 15)	0	Normal Variation (<= 7)	0	No active gassing (<= 2)
Ethylene (C2H4)	0	Normal (<= 60)	0	Normal Variation (<= 20)	0	No active gassing (<= 5)
Acetylene (C2H2)	<1	Normal (<= 2)	0	Normal Variation (<= 0)	0	No active gassing (<= 0)
Carbon Monoxide (CO)	112	Normal (<= 500)	-10		-6	No active gassing (<= 80)
Carbon Dioxide (CO2)	779	Normal (<= 5500)	48	Normal Variation (<= 1750)	25	No active gassing (<= 800)

DGA Diagnostics **Roger's Ratio**	Diagnostic not applicable - Gas levels normal.
Duval Triangles	Diagnostic not applicable – Triangle 1 gas levels normal. Diagnostic not applicable – Triangle 4 gas levels normal. Diagnostic not applicable – Triangle 5 gas levels normal.
Duval Pentagons	Diagnostic not applicable - Gas levels normal.
Cellulose insulation	CO and CO2 levels are normal. No indication of a fault involving paper.
DGA Status	Status 1 - Normal gas levels and no Indication of gassing. Continue routine DGA and normal transformer operation.
Resampling Protocol	Routine Screening
AVO Resampling Recommendation	Resample within 1 year.

Comment:

Notations: 1. Analysis is ISO/IEC 17025:2017 accredited, ANAB Accredited Certificate Number L2303 2. This test is conducted by a subcontracted laboratory. 3. Subcontracted laboratory has received ISO Standard 17025 accreditation for this test. 5. This test is conducted by AVO Diagnostic Services Laboratory other than Primary Lab. 6. AVO Diagnostic Services Laboratory has received ISO Standard 17025 accreditation for this test. 7. Imported Sample: AVO Diagnostic Services accepts no responsibility for these results; accreditation status does not apply to these results. 8. Imported Equipment 10. mg/kg , µg/g, µg/mL, µL/L = ppm, µg/L = ppb, mN/m = dynes/cm, mm²/s = cSt

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TEST REPORT
01-7639835-699171-00

Synergy Power

STRATHROY, ON N7G 3H8 CA
ATTN: DOUG CHARRON
PO#: 23-2068
Project ID:
Customer ID: T2

Serial#: 5016910101
Location: NOTL DS
Equipment: TRANSFORMER
Compartment: MAIN(BOTTOM)
Breathing: CONS
Bank: **Phase:** 3
Fluid: MIN **Liters:** 28172

Mfr: FERRANTI PACKARD
kV: 115
kVA: 417
Year Mf'd: 2003
Syringe ID: 8001374
Bottle ID:
Sampled By: DB

Control#: 7639835
Order#: 699171
Account: 110286
Received: 05/09/2023
Reported: 05/29/2023

		Lab Control Number:	7639835	7523515	7486678	7442141	7434533
		Date Sampled:	05/03/2023	02/16/2022	09/21/2021	04/23/2021	03/25/2021
		Order Number:	699171	671195	661686	651402	649296
		Oil Temp:	35	15	40	20	30
General Oil Quality (GOQ)							
ASTM D-1533[1]	**Moisture in Oil**	**(mg/kg):**	5	2	7		6
ASTM D-971[1]	**Interfacial Tension**	**(mN/m):**	36.37	37.2	36.83		36.08
ASTM D-974[1]	**Acid Number**	**(mg KOH/g):**	0.006	0.008	0.008		0.006
ASTM D-1500[1]	**Color Number**	**(ASTM):**	L1.5	L1.5	L1.0		L1.5
ASTM D-1524[1]	**Visual Exam.**	**(Relative):**	PASS	PASS	PASS		PASS
			CLR&BRIGHT	CLR&BRIGHT	CLR&BRIGHT		CLR&BRIGHT
ASTM D-1524[1]	**Sediment Exam.**	**(Relative):**	ND	ND	TRACE		ND
ASTM D-877	**Dielectric Breakdown**	**(kV):**					56
ASTM D-1816[1]	**Dielectric Breakdown 1 mm**	**(kV °C):**	38 (22 C)	42 (23°C)	23 (22°C)		
ASTM D-1816[1]	**Dielectric Breakdown 2 mm**	**(kV °C):**	54 (22 C)	32 (23°C)	44 (22°C)		
ASTM D-4052[1]	**Density @15°C**	**(g/mL):**	0.8909	0.8898	0.8907		0.8905

GOQ Diagnostics	**Moisture in Oil:**	Acceptable for in-service oil (25 mg/kg max).
PER IEEE C57.106-2015	**Interfacial Tension:**	Acceptable for in-service oil (30 mN/m min).
(most recent sample)	**Acid Number:**	Acceptable for in-service oil (0.15 mg KOH/g max).
	Color Number and Visual:	Diagnostic not applicable. Diagnostic not applicable.
	Dielectric Breakdown ASTM D-1816:	Acceptable for in-service oil (28 kV min @ 1mm). Acceptable for in-service oil (47 kV min @ 2mm).

Comment:

Furanic Compound	**2-Furaldehyde (µg/L):**	< 10	< 10	< 10	
ASTM D-5837[5]	**5-Hydroxy-methyl-furaldehyde (µg/L):**	< 10	< 10	< 10	
	2-Acetylfuran (µg/L):	< 10	< 10	< 10	
	5-Methyl-2-furaldehyde (µg/L):	< 10	< 10	< 10	
	2-Furyl alcohol (µg/L):	< 10	< 10	< 10	

Furanic Compound Diagnostics (most recent sample):

New insulation with a high degree of mechanical strength will typically have a Degree of Polymerization (DP) of 1000-1300. "Middle Aged" paper is approximately 500 and paper with less than 250 is in its "Old Age." Severely degraded insulation with a DP of 150 or less will have very little mechanical strength and may result in a transformer failure. The above estimations are based on a study by Chendong of GSU transformers filled with mineral oil.

Estimated Average Degree of Polymerization (DP): >1003

Estimated Operating Age of the Equipment: <1.0

Notations:

Comment:

End of Test Report

Authorized By: _____

JANET KAROLAT
SUPV CHEMIST

Notations: 1. Analysis is ISO/IEC 17025:2017 accredited, ANAB Accredited Certificate Number L2303 2. This test is conducted by a subcontracted laboratory. 3. Subcontracted laboratory has received ISO Standard 17025 accreditation for this test. 5. This test is conducted by AVO Diagnostic Services Laboratory other than Primary Lab. 6. AVO Diagnostic Services Laboratory has received ISO Standard 17025 accreditation for this test. 7. Imported Sample: AVO Diagnostic Services accepts no responsibility for these results; accreditation status does not apply to these results. 8. Imported Equipment 10. mg/kg , µg/g, µg/mL, µL/L = ppm, µg/L = ppb, mN/m = dynes/cm, mm²/s = cSt

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On-Load Tap Changer (LTC) Oil Analysis & Diagnostic Evaluation

Synergy Power
STRATHROY, ON N7G 3H8 CA
ATTN:DOUG CHARRON
PO#:23-2068
Project ID:
Customer ID: T2

Serial#: C014959
Location: NOTL TS
Equipment Type: LTC
LTC Compartment: SELECTOR
Breathing Type: FB
Bank: **Phase:** 3
Fluid: MIN **USGal:** 268

LTC Mfr: REINHAUSEN
Model: RMV-II
Year Mf'd: 2003
Syringe ID: 8001395
Bottle ID:
Sampled By: DB

Control#: 7639837
Order#: 699172
Account: 110286
Received: 05/09/2023
Reported: 05/23/2023

		Lab Control Number:	7639837	7523520	7486679	7442140	7434534
		Date Sampled:	05/03/2023	02/16/2022	09/21/2021	04/23/2021	03/25/2021
		Order Number:	699172	671197	661686	651402	649296
		Oil Temp:	35			20	
		Operations Counter:					
Dissolved Gas Analysis (DGA)		**Hydrogen (H2) (µL/L):**	<2	<2	2	<2	<2
ASTM		**Methane (CH4) (µL/L):**	2	2	2	1	2
D-3612[1]		**Ethane (C2H6) (µL/L):**	<1	<1	<1	<1	<1
		Ethylene(C2H4) (µL/L):	<1	<1	<1	<1	<1
		Acetylene (C2H2) (µL/L):	<1	<1	<1	<1	<1
		Carbon Monoxide (CO) (µL/L):	9	10	40	16	10
		Carbon Dioxide(CO2) (µL/L):	516	507	527	410	396
		Nitrogen (N2) (µL/L):	62995	55822	63891	65986	66549
		Oxygen (O2) (µL/L):	31551	29936	31552	33222	34198
		Total Dissolved Gas (TDG) (µL/L):	95073	86277	96014	99635	101155
		Total Dissolved Combustible Gas (TDCG) (µL/L):	11	12	44	17	12
		Equivalent TCG Percent:	0.0087	0.0107	0.0407	0.0141	0.0091
Physical Evaluation							
ASTM D-1533[1]	**Moisture in Oil**	**(mg/kg):**	9	5	10		
ASTM D-971[1]	**Interfacial Tension**	**(mN/m):**	41.09	42.32	42.22		
ASTM D-1500[1]	**Color Number**	**(ASTM):**	L1.0	L1.0	L1.0		
ASTM D-1524[1]	**Visual Exam.**	**(Relative):**	PASS	PASS	PASS		
			CLR&BRIGHT	CLR&BRIGHT	CLR&BRIGHT		
ASTM D-1524[1]	**Sediment Exam.**	**(Relative):**	ND	ND	TRACE		
ASTM D-1816[1]	**Dielectric Breakdown 1 mm**	**(kV °C):**	27 (22 C)	39 (23°C)	23 (22°C)		
ASTM D-7151[5]		**Silver (Ag) (µg/g):**	< 0.5	< 0.5	< 0.5		
		Chronium (Cr) (µg/g):	< 0.5	< 0.5	< 0.5		
		Copper (Cu) (µg/g):	< 0.5	< 0.5	< 0.5		
		Molybdenum (Mo) (µg/g):	< 0.5	< 0.5	< 0.5		
		Nickel (Ni) (µg/g):	< 0.5	< 0.5	< 0.5		
		Phosphorus (P) (µg/g):	< 0.5	< 0.5	< 0.5		
		Lead (Pb) (µg/g):	< 0.5	< 0.5	< 0.5		
		Tin (Sn) (µg/g):	< 0.5	< 0.5	< 0.5		
		Tungsten (W) (µg/g):	< 0.5	< 0.5	< 0.5		
		Zinc (Zn) (µg/g):	< 0.5	< 0.5	< 0.5		

Diagnostics	**Condition Code:**	**Normal.**
	Recommended Action:	Resample oil for testing within 6 months.
	AVO Watch Level Diagnosis:	Not used. See LTC Model-specific diagnostic statement.
	AVO LTC Model-specific Diagnosis:	Acetylene within normal limit.
	Gas Ratios:	Ratio calculations not applicable.
	Metals Content Evaluation:	No metals found in significant quantities.

Notations: 1. Analysis is ISO/IEC 17025:2017 accredited, ANAB Accredited Certificate Number L2303 2. This test is conducted by a subcontracted laboratory. 3. Subcontracted laboratory has received ISO Standard 17025 accreditation for this test. 5. This test is conducted by AVO Diagnostic Services Laboratory other than Primary Lab. 6. AVO Diagnostic Services Laboratory has received ISO Standard 17025 accreditation for this test. 7. Imported Sample: AVO Diagnostic Services accepts no responsibility for these results; accreditation status does not apply to these results. 8. Imported Equipment

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On-Load Tap Changer (LTC) Oil Analysis & Diagnostic Evaluation

Synergy Power
STRATHROY, ON N7G 3H8 CA
ATTN:DOUG CHARRON
PO#:23-2068
Project ID:
Customer ID: T2

Serial#: C014959
Location: NOTL TS
Equipment Type: LTC
LTC Compartment: SELECTOR
Breathing Type: FB
Bank: **Phase:** 3
Fluid: MIN **USGal:** 268

LTC Mfr: REINHAUSEN
Model: RMV-II
Year Mf'd: 2003
Syringe ID: 8001395
Bottle ID:
Sampled By: DB

Control#: 7639837
Order#: 699172
Account: 110286
Received: 05/09/2023
Reported: 05/23/2023

Lab Control Number:	7639837	7523520	7486679	7442140	7434534
Date Sampled:	05/03/2023	02/16/2022	09/21/2021	04/23/2021	03/25/2021
Order Number:	699172	671197	661686	651402	649296
Oil Temp:	35			20	
Operations Counter:					
Physical Evaluation:	Moisture content acceptable. Interfacial tension acceptable. Color number acceptable. Oil clear and bright. No sediment detected. Dielectric breakdown strength acceptable.				
Comment:					

End of Test Report

Nicolas C.

Authorized By: _____

CHRISTIAN NICOLAS
CHEMIST

Niagara on-the-Lake HYDRO

APPENDIX 2-STAFF-29B

INTERROGATORY REPONSES

EB-2023-0041

SYNERGY POWER

Prepared for:

Niagara-On-The-Lake Hydro

Site Location: NOTL DS

Job No: 22-2015

November 2022

Approved By: **Douglas Charron**

SYNERGY POWER

Table of Contents

TO:
Niagara On the Lake Hydro
8 Henegan Rd.
Virgil, ON
L0S 1T0

SITE:
NOTL DS
805 Concession #5
Niagara on the Lake, ON
L0S 1J0

November 22, 2022

Dear Andrew

Please find the attached report for the substation maintenance inspection completed during the week of November 14, 2022.

Service and testing were completed on your T1 and T2 equipment, subsequent buss, switches, reclosers, and feeder cable. Additionally, during the maintenance we assisted in the replacement of the B1-B2 switch with new. All findings are referenced to the Ontario Electrical Safety Code (OESC) and the National Electrical Testing Association (NETA).

Findings

- ***Substation fence found with fallen signage, repaired during maintenance***

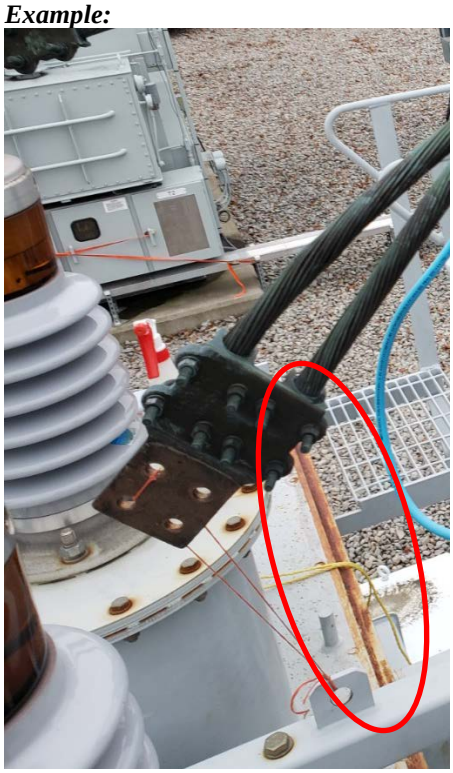

- ***Substation fence found with fallen foliage against fence fabric and barbed wire, removed during maintenance***


- ***Substation fence post (southwest) at inner gate found with broken barbed wire holder, missing horizontal bar holder***

- ***Found T1 & T2 control cabinets with no power and no heat which could be problematic if for long outages during cold periods***

- ***T1 exterior paint found with rusting spots, loss of UV protection in paint will cause increasing problems with tx heat mitigation and rusting***

Example:

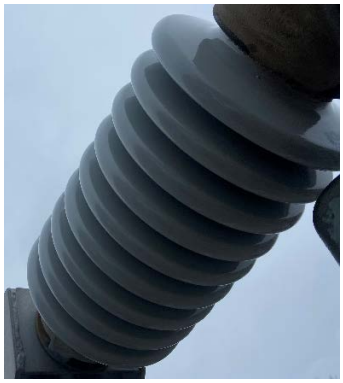


- ***Throughout the system rusted zinc plated hardware was found at various connections, should be replaced with galvanized hardware***

- ***Found broken insulator on red phase leading into F3 recloser, repaired during maintenance***

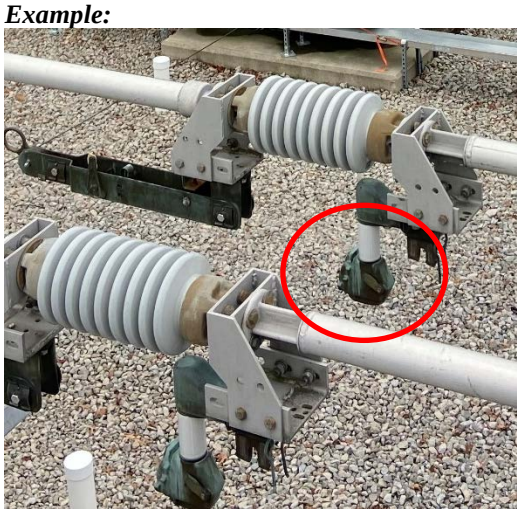
- ***Buss and switch insulators showing accumulation of dirt, cleaned during maintenance***

Examples:



- ***Arc suppressors on various load break buss switches found non-operational***

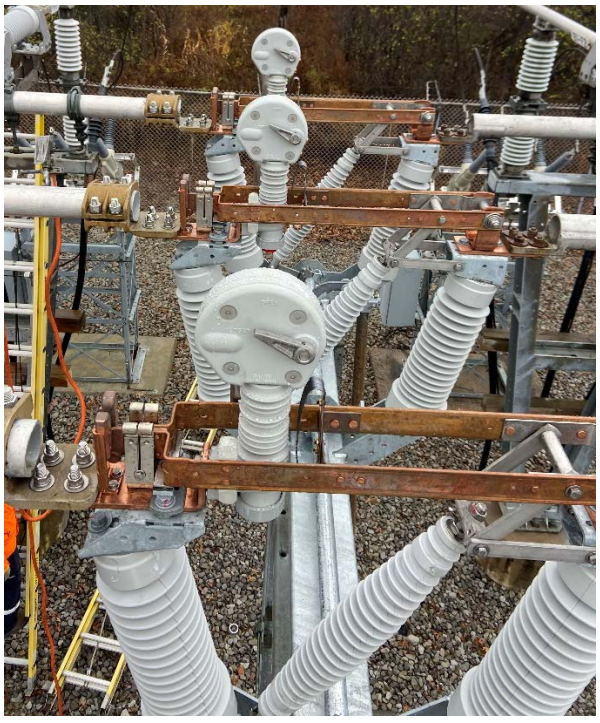
Example:



- ***F1, F2, and F3 feeder cables from recloser to pole showing poor polarization and insulation resistance values***

Example:

- ***B1-B2 Switch replaced during maintenance with new***



Recommendations

- Establish a regularly scheduled substation inspection and maintenance plan.
- Budgetary considerations to repaint T1 for preventing further rusting of equipment and maintain asset life span.
- Installation of power cable to outdoor panel, which would maintain heating to T1 and T2 electrical cabinets in the event of complete isolation from 115kV sources. We estimate this new cable length at approx. 100ft. 1021 is a direct buried cable. More substation excavation will need to be done to install new power cable.
- Purchase and maintain small stockpile of typical 18" porcelain insulators in the event of future breakage, not including the spares we left on site after completing the repair.
- Due to long delivery times and raising costs, consideration to purchase and maintain spare Primary Surge Arresters which would be good to use at either station. Additionally, spare secondary lightning arresters.
- Completion of repairs to substation fence and barbed wire at southwest corner.
- Considerations during next scheduled outage for the installation of protective coverings like T2 on the secondary connections.
- Further investigation into feeder cables showing poor insulation resistance to determine if cable is problem or attached lightning arresters at pole connection. This would include servicing the pole connections and equipment.
- During next regular maintenance replace all rusty zinc plated hardware with outdoor rated hardware.

Regards,

Douglas Charron
Operations Manager, Service & Maintenance
Tel: (519) 245-4900
Cell: (519) 476-3448
dcharron@synergypower.tech

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

TRANSFORMER DATA SHEET

SYSTEM ID: NOTL DS
DEVICE ID: T1
ASSET ID:

Customer: Niagara On -The-Lake Hydro
8 Henegan Rd

Site: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

Date: Nov 2022
Job # 22-2015

NAMEPLATE DATA

Transformer

Transformer Class	Padmount ☐	Station ☑					Other	
Transformer Cooling	ONAN ☐	ONAF ☑		LNAN ☐		DRY ☐	Other	
Transformer Orientation	Front ☐	Top-Top ☑		Top-Side ☐		Side-Side ☐	Other	

Manufacturer	CG POWER TRANSFORMER
Date of Manufacture	2015
Serial #	RA14.0494
KVA / Prov. KVA Rating	30 / 40 / 50 MVA
Primary Voltage	115000Δ
Primary Ampacity	N/A
Secondary Voltage	30240 / 17460 Y
Secondary Ampacity	N/A
HV Winding Material	Cu
LV Winding Material	Cu
CSA Specifications	C88-M90
HV BIL Rating	550kV
LV BIL Rating	150kV

Core & Windings	41277			kg ☑ lb ☐
Tanks & Fittings	16403			kg ☑ lb ☐
Conservator (no oil)	1330			kg ☑ lb ☐
Radiators (no oil)	6990			kg ☑ lb ☐
Total Weight	66000			kg ☑ lb ☐
Main Tank Volume	24370	L	20790	kg ☑ lb ☐
Radiators Volume	1980	L	1690	kg ☑ lb ☐
Conservator Volume	1520	L	1300	kg ☑ lb ☐
LTC Compartment	1310	L	1120	kg ☑ lb ☐
Total Oil	29180	L	24900	kg ☑ lb ☐
Percent Impendance	VARIOUS		ONAN ☑	ONAF ☑
Temperature Rise	65			°C ☑ °F ☐
Transformer Colour	GREY			

Primary & Secondary Bushings

DSG	SERIAL NUMBER	MFR	TYPE	KV	BIL	AMPS	YEAR	TAP
H0								☐
H1	1000094170	ABB	O+C	123	550	600	2014	☐
H2	1000094169	ABB	O+C	123	550	600	2014	☐
H3	1000094171	ABB	O+C	123	550	600	2014	☐
X0	1000094229	ABB	EEMAC	35	200	2000	2014	☐
X1	1000093814	ABB	EEMAC	35	200	2000	2014	☐
X2	1000094230	ABB	EEMAC	35	200	2000	2014	☐
X3	1000094228	ABB	EEMAC	35	200	2000	2014	☐

Comments:

VISUAL INSPECTION

Nameplate Condtion	☑ Satisfactory	☐ Not Satisfactory	☐ NA	Comments:
Fan/Pump Condition	☑ Satisfactory	☐ Not Satisfactory	☐ NA	Comments:
Ground Condition	☑ Satisfactory	☐ Not Satisfactory	☐ NA	Comments:
Liquid Levels In Tank	☑ Satisfactory	☐ Not Satisfactory	☐ NA	Comments:
Interlock Operation	☐ Satisfactory	☐ Not Satisfactory	☑ NA	Comments:
Temp Guage Operation	☑ Satisfactory	☐ Not Satisfactory	☐ NA	Comments:

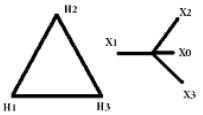
Coolant Temp: 3 ☑ °C ☐ F
Max Coolant Temp: 25 ☑ °C ☐ °F

Comments: TRANSFORMER OFF SINCE NOVEMBER 1, 2022. TESTED ON NOV 14, 2022

TAP CHANGER DATA

Tap Changer Type	OLTC ☑	DETC ☐			
Manufacturer	REINHAUSEN		Oil Volume	345	L ☐ G ☑
Type	RMV-11 2000-72.5kV		Pressure Withstand	+/- 15	PSI
Serial Number	1557763				
Date Of Manufacture	Nov-14				
Standards	IEC 60214-2003, C57.131-20				
Ampacity Rating	2000	A			
Voltage Rating	30420	V			
Tap Positions	33				
Tap Count As Found	6255				
Tap Count As Left	6327				

Vector Diagram: DeltaWye1__5.Dyn



Primary Vector ☑ Secondary Vector ☑

Comments:

TRANSFORMER SURGE ARRESTERS

Lightning Arrestors	Yes	☑	No	☐			
Class	Distribution	☐	Intermediate	☐	Station	☑	
Composition	Ceramic	☐	Polymer	☑			
Manufacturer	ABB		Max / MCOV Rating	96/76	kV		
Catalog #	Q096SA076B						

Comments:

TRANSFORMER SECONDARY LIGHTNING ARRESTERS

Lightning Arrestors	Yes	☑	No	☐			
Class	Distribution	☐	Intermediate	☐	Station	☑	
Composition	Ceramic	☐	Polymer	☑			
Manufacturer	OHIO BRASS		Max / MCOV Rating	24/19.5	kV		
Catalog #	EVP001900						

Comments:

OIL CONSERVATOR

Oil Conservator	Yes ☑	No ☐	Conservator Volume	1520	L ☑	G ☐		
Silica Gel Breather	Yes ☑	No ☐	Breather Volume		L ☐	G ☐		
Silica Gel Colour	Good ☑	Bad ☐	Replaced ☐	N/A ☐				

Comments:

FANS

Fans	Yes	☑	No	☐	
# of Fans	8		Fan Voltage	208/230	
Fan Size	26"		Frame Size	FR48Y	
Horsepower	1/6				

Comments:

TRANSFORMER LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☐	Bus Bar ☑			Conductor Size/Dim	2.5" IPS	
Conductor Material	Aluminum ☑	Copper ☐			Conductors Per Phase	1	
Tape Shield	Aluminum ☐	Copper ☐			Bond Size / Dim	EST 3/0	
Concentric Neutral	Aluminum ☐	Copper ☐			# of Bond Conductors	2	
Insulation Voltage	600V ☐	1000V ☐		☐	# of Neutral Conductors	0	
Insulation Type	RW90 ☐	XLPE ☐		☐	Neutral Size/Dim	N/A	

Comments:

Tested By: D.BENJAMIN, A.BURK

ELECTRICAL TESTS

Turn Ratio Test Test Voltage: 80 V Automatic ☑ Other _____ V

Position / Designation		Top Voltage (V)	Calculated Ratio	H1 X1 to H3 X0 (mA) Exec	% Dev	H2 X2 to H1 X0 (mA) Exec	% Dev	H3 X3 to H2 X0 (mA) Exec	% Dev
1	81.35%	24,600.00	8.119	8.112		8.114		8.115	
				0.70	0.08	0.05	0.06	0.08	0.05
2	82.34%	24,900.00	8.005	8.004		8.004		8.006	
				1.70	0.01	1.50	0.01	1.90	0.01
3	83.80%	25,340.00	7.895	7.889		7.888		7.892	
				0.70	0.07	0.50	0.08	0.80	0.04
4	84.95%	25,690.00	7.787	7.788		7.787		7.787	
				1.80	0.01	1.50	0.01	1.90	0.01
5	86.11%	26,040.00	7.682	7.677		7.677		7.679	
				0.70	0.07	0.50	0.07	0.80	0.04
6	87.27%	26,390.00	7.581	7.579		7.580		7.581	
				1.80	0.02	1.50	0.01	1.90	0.01
7	88.43%	26,740.00	7.481	7.475		7.476		7.476	
				0.70	0.09	0.50	0.07	0.80	0.08
8	89.58%	27,090.00	7.385	7.385		7.384		7.386	
				1.80	0.01	1.50	0.01	1.90	0.01
9	90.74%	27,440.00	7.291	7.283		7.284		7.285	
				0.70	0.10	0.50	0.09	0.80	0.08
10	91.90%	27,790.00	7.199	7.201		7.203		7.198	
				1.80	0.04	1.50	0.06	1.90	0.01
11	93.06%	28,140.00	7.109	7.107		7.106		7.106	
				0.70	0.04	0.50	0.04	0.80	0.04
12	94.21%	28,490.00	7.022	7.025		7.026		7.025	
				1.80	0.04	1.60	0.06	1.90	0.05
13	95.37%	28,840.00	6.937	6.934		6.933		6.935	
				0.70	0.04	0.50	0.05	0.80	0.02
14	96.53%	29,190.00	6.853	6.856		6.857		6.858	
				1.80	0.04	1.60	0.05	1.90	0.07
15	97.69%	29,540.00	6.772	6.770		6.771		6.770	
				0.80	0.03	0.50	0.02	0.80	0.03
16	98.84%	29,890.00	6.693	6.698		6.697		6.698	
				1.90	0.08	1.60	0.05	1.90	0.07
17	100.00%	30,240.00	6.615	6.614		6.614		6.615	
				0.80	0.03	0.50	0.02	0.80	0.01
18	101.16%	30,590.00	6.540	6.545		6.545		6.547	
				1.80	0.08	1.60	0.09	1.90	0.11
19	102.31%	30,940.00	6.466	6.463		6.464		6.465	
				0.80	0.04	0.50	0.03	0.80	0.01
20	103.47%	31,290.00	6.393	6.398		6.397		6.398	
				1.80	0.07	1.60	0.05	1.90	0.08

Comments:

Tested By: D.BENJAMIN, A.BURK

Test Instrument(s) Manufacturer / Model Ratio

Serial # 3427

Temperature (°C) 3

Humdity (%) 70

Turn Ratio Test

Position / Designation		Top Voltage (V)	Calculated Ratio	H1 X1 to H3 X0 (mA) Exec	% Dev	H2 X2 to H1 X0 (mA) Exec	% Dev	H3 X3 to H2 X0 (mA) Exec	% Dev
21	111.41%	31,640.00	6.232	6.320		6.322		6.322	
				0.80	0.04	0.50	0.02	0.80	0.01
22	112.64%	31,990.00	6.254	6.259		6.260		6.260	
				1.80	0.09	1.60	0.09	1.90	0.10
23	113.87%	32,340.00	6.186	6.185		6.184		6.186	
				0.80	0.01	0.50	0.03	0.80	0.01
24	115.11%	32,690.00	6.120	6.125		6.126		6.125	
				1.80	0.09	1.60	0.11	1.90	0.09
25	116.34%	33,040.00	6.055	6.053		6.054		6.055	
				0.80	0.03	0.50	0.01	0.80	0.01
26	117.57%	33,390.00	5.991	5.999		5.997		5.997	
				1.80	0.12	1.60	0.10	1.90	0.10
27	118.80%	33,740.00	5.929	5.927		5.928		5.929	
				0.80	0.04	0.50	0.02	0.80	0.01
28	120.04%	34,090.00	5.868	5.873		5.875		5.875	
				1.80	0.09	1.60	0.11	1.90	0.11
29	121.27%	34,440.00	5.809	5.807		5.809		5.809	
				0.80	0.02	0.50	0.01	0.80	0.01
30	122.50%	34,790.00	5.750	5.757		5.757		5.758	
				1.80	0.11	1.60	0.12	1.90	0.13
31	123.73%	35,140.00	5.693	5.692		5.693		5.694	
				0.80	0.01	0.50	0.01	0.80	0.02
32	124.96%	35,490.00	5.637	5.643		5.643		5.644	
				1.80	0.11	1.60	0.11	1.90	0.13
33	126.20%	35,840.00	5.582	5.581		5.581		5.582	
				0.80	0.02	0.50	0.02	0.80	0.01

Comments:

Tested By: D.BENJAMIN, A.BURK

Test Instrument(s)

Manufacturer / Model

Ratio

Serial # 3427

Temperature (°C) 3

Humdity (%) 70

PRIMARY WINDING RESISTANCE

Resitance in Ohms at 1 A after 1 min

H0 - H1	Ω	H1-H2	867.900 Ω
H0 - H2	Ω	H2-H3	865.000 Ω
H0 - H3	Ω	H3-H1	863.800 Ω

SECONDARY WINDING RESISTANCE

Resistance in Milli Ohms at 5 A after 1 min

Tap Position					
1	X0-X1	28.120 mΩ	X1-X2	mΩ
	X0-X2	28.290 mΩ	X2-X3	mΩ
	X0-X3	27.890 mΩ	X3-X1	mΩ
2	X0-X1	27.560 mΩ	X1-X2	mΩ
	X0-X2	27.660 mΩ	X2-X3	mΩ
	X0-X3	27.400 mΩ	X3-X1	mΩ
3	X0-X1	27.480 mΩ	X1-X2	mΩ
	X0-X2	27.640 mΩ	X2-X3	mΩ
	X0-X3	27.240 mΩ	X3-X1	mΩ
4	X0-X1	26.860 mΩ	X1-X2	mΩ
	X0-X2	26.950 mΩ	X2-X3	mΩ
	X0-X3	26.680 mΩ	X3-X1	mΩ
5	X0-X1	26.880 mΩ	X1-X2	mΩ
	X0-X2	26.960 mΩ	X2-X3	mΩ
	X0-X3	26.650 mΩ	X3-X1	mΩ
6	X0-X1	26.250 mΩ	X1-X2	mΩ
	X0-X2	26.340 mΩ	X2-X3	mΩ
	X0-X3	26.090 mΩ	X3-X1	mΩ
7	X0-X1	26.050 mΩ	X1-X2	mΩ
	X0-X2	26.370 mΩ	X2-X3	mΩ
	X0-X3	25.960 mΩ	X3-X1	mΩ
8	X0-X1	25.510 mΩ	X1-X2	mΩ
	X0-X2	25.670 mΩ	X2-X3	mΩ
	X0-X3	25.420 mΩ	X3-X1	mΩ
9	X0-X1	25.360 mΩ	X1-X2	mΩ
	X0-X2	25.630 mΩ	X2-X3	mΩ
	X0-X3	25.340 mΩ	X3-X1	mΩ
10	X0-X1	24.880 mΩ	X1-X2	mΩ
	X0-X2	24.970 mΩ	X2-X3	mΩ
	X0-X3	24.750 mΩ	X3-X1	mΩ

Tap Position				
11	X0-X1	24.930 mΩ	X1-X2	mΩ
	X0-X2	25.040 mΩ	X2-X3	mΩ
	X0-X3	24.750 mΩ	X3-X1	mΩ
12	X0-X1	24.220 mΩ	X1-X2	mΩ
	X0-X2	24.300 mΩ	X2-X3	mΩ
	X0-X3	24.100 mΩ	X3-X1	mΩ
13	X0-X1	24.070 mΩ	X1-X2	mΩ
	X0-X2	24.300 mΩ	X2-X3	mΩ
	X0-X3	23.940 mΩ	X3-X1	mΩ
14	X0-X1	23.550 mΩ	X1-X2	mΩ
	X0-X2	23.670 mΩ	X2-X3	mΩ
	X0-X3	23.370 mΩ	X3-X1	mΩ
15	X0-X1	23.560 mΩ	X1-X2	mΩ
	X0-X2	23.640 mΩ	X2-X3	mΩ
	X0-X3	23.460 mΩ	X3-X1	mΩ
16	X0-X1	22.500 mΩ	X1-X2	mΩ
	X0-X2	22.570 mΩ	X2-X3	mΩ
	X0-X3	22.380 mΩ	X3-X1	mΩ
17	X0-X1	22.320 mΩ	X1-X2	mΩ
	X0-X2	22.310 mΩ	X2-X3	mΩ
	X0-X3	22.170 mΩ	X3-X1	mΩ
18	X0-X1	22.580 mΩ	X1-X2	mΩ
	X0-X2	22.710 mΩ	X2-X3	mΩ
	X0-X3	22.410 mΩ	X3-X1	mΩ
19	X0-X1	23.520 mΩ	X1-X2	mΩ
	X0-X2	23.730 mΩ	X2-X3	mΩ
	X0-X3	23.260 mΩ	X3-X1	mΩ
20	X0-X1	23.630 mΩ	X1-X2	mΩ
	X0-X2	23.750 mΩ	X2-X3	mΩ
	X0-X3	23.440 mΩ	X3-X1	mΩ

Comments:

Tested By: D.BENJAMIN, A.BURK

Test Instrument(s) Manufacturer / Model

Serial #

Winding: 0618

Temperature (°C) 3

Humdity (%) 70

SECONDARY WINDING RESISTANCE

Resistance in Milli Ohms at 5 A after 1 min

Tap Position	X0-X1	24.290	mΩ	X1-X2	mΩ
21	X0-X2	24.340	mΩ	X2-X3	mΩ
	X0-X3	24.080	mΩ	X3-X1	mΩ
Tap Position	X0-X1	24.330	mΩ	X1-X2	mΩ
22	X0-X2	24.380	mΩ	X2-X3	mΩ
	X0-X3	24.120	mΩ	X3-X1	mΩ
Tap Position	X0-X1	24.950	mΩ	X1-X2	mΩ
23	X0-X2	25.030	mΩ	X2-X3	mΩ
	X0-X3	24.800	mΩ	X3-X1	mΩ
Tap Position	X0-X1	25.000	mΩ	X1-X2	mΩ
24	X0-X2	25.020	mΩ	X2-X3	mΩ
	X0-X3	24.830	mΩ	X3-X1	mΩ
Tap Position	X0-X1	25.670	mΩ	X1-X2	mΩ
25	X0-X2	25.660	mΩ	X2-X3	mΩ
	X0-X3	25.410	mΩ	X3-X1	mΩ
Tap Position	X0-X1	25.560	mΩ	X1-X2	mΩ
26	X0-X2	25.710	mΩ	X2-X3	mΩ
	X0-X3	25.450	mΩ	X3-X1	mΩ
Tap Position	X0-X1	26.350	mΩ	X1-X2	mΩ
27	X0-X2	26.340	mΩ	X2-X3	mΩ
	X0-X3	26.090	mΩ	X3-X1	mΩ
Tap Position	X0-X1	26.320	mΩ	X1-X2	mΩ
28	X0-X2	26.430	mΩ	X2-X3	mΩ
	X0-X3	26.140	mΩ	X3-X1	mΩ
Tap Position	X0-X1	26.980	mΩ	X1-X2	mΩ
29	X0-X2	27.030	mΩ	X2-X3	mΩ
	X0-X3	26.700	mΩ	X3-X1	mΩ
Tap Position	X0-X1	26.930	mΩ	X1-X2	mΩ
30	X0-X2	27.020	mΩ	X2-X3	mΩ
	X0-X3	26.720	mΩ	X3-X1	mΩ

Tap Position	X0-X1	27.660	mΩ	X1-X2	mΩ
31	X0-X2	27.710	mΩ	X2-X3	mΩ
	X0-X3	27.430	mΩ	X3-X1	mΩ
Tap Position	X0-X1	27.640	mΩ	X1-X2	mΩ
32	X0-X2	27.680	mΩ	X2-X3	mΩ
	X0-X3	27.500	mΩ	X3-X1	mΩ
Tap Position	X0-X1	28.260	mΩ	X1-X2	mΩ
33	X0-X2	28.300	mΩ	X2-X3	mΩ
	X0-X3	28.110	mΩ	X3-X1	mΩ
Tap Position	X0-X1		mΩ	X1-X2	mΩ
	X0-X2		mΩ	X2-X3	mΩ
	X0-X3		mΩ	X3-X1	mΩ
Tap Position	X0-X1		mΩ	X1-X2	mΩ
	X0-X2		mΩ	X2-X3	mΩ
	X0-X3		mΩ	X3-X1	mΩ
Tap Position	X0-X1		mΩ	X1-X2	mΩ
	X0-X2		mΩ	X2-X3	mΩ
	X0-X3		mΩ	X3-X1	mΩ
Tap Position	X0-X1		mΩ	X1-X2	mΩ
	X0-X2		mΩ	X2-X3	mΩ
	X0-X3		mΩ	X3-X1	mΩ
Tap Position	X0-X1		mΩ	X1-X2	mΩ
	X0-X2		mΩ	X2-X3	mΩ
	X0-X3		mΩ	X3-X1	mΩ
Tap Position	X0-X1		mΩ	X1-X2	mΩ
	X0-X2		mΩ	X2-X3	mΩ
	X0-X3		mΩ	X3-X1	mΩ
Tap Position	X0-X1		mΩ	X1-X2	mΩ
	X0-X2		mΩ	X2-X3	mΩ
	X0-X3		mΩ	X3-X1	mΩ

Comments:

Tested By: D.BENJAMIN,A.BURK

Test Instrument(s) | Manufacturer / Model: Winding | Serial #: 0618

Temperature (°C): 3

Humdity (%): 70

POWER FACTOR TESTING

TRANSFORMER OVERALL TEST SET UP									TRANSFORMER OVERALL TEST RESULTS							
Test No.	Insulation Tested	Test Mode	Test Leads				Test KV	DFR (Y/N)	Capacitence (pF)	Power Factor %			Direct	Direct	%VDF	IR
			HV	Red	Blue	Gnd				Measured	@20C	Corr	mA	W		
1	$C_{HG} + C_{HL}$	GST-GND	H	L		G	10	N	11889.49	0.28	0.27	0.98	44.7489	1.2482	0.03	G
2	C_{HG}	GSTg-RB	H	L		G	10	N	2713.48	0.23	0.22	0.98	10.2137	0.2313	0.03	G
3	C_{HL}	UST-R	H	L		G	10	N	9188.01	0.3	0.29	0.98	34.4721	1.0142	0.04	G
4	C_{HL}								9176.02				34.5352	1.0168		VALID
5	$C_{LG} + C_{HL}$	GST-GND	L	H		G	10	N	22445.01	0.29	0.28	0.98	84.3617	2.4435	0.05	G
6	C_{LG}	GSTg-RB	L	H		G	10	N	13271.49	0.28	0.28	0.98	50.0271	1.4066	0.04	G
7	C_{HL}	UST-R	L	H		G	10	N	9187.77	0.30	0.29	0.98	34.6301	1.0404	0.04	G
8	$C_{HL'}$								9173.52				34.3346	1.0369		VALID
9	$C_{HG'}$								1712.98				6.4501	0.129		
10	$C_{LG'}$								11709.57				45.6219	1.2789		
11	Overall Oil Test	UST-R	L	H		G						N/A				
12	LTC Chamber Oil Test	UST-R	L	H		G						N/A				

Transformer Bushing C1 Tests

Test No.	Bushing Nameplate					Test Mode	Test KV	DFR (Y/N)	Capacitence (pF)	Power Factor %			Direct		%V DF	IR
	DSG	Serial #	Cat #	PF	Cap.					Measured	@20C	Corr	mA	W		
11	H1	100094170	123G0600AA	0.26	341	UST-R	10	N	333.73	0.27	0.24	0.89	1.2579	0.0346	0.04	G
12	H2	1000094169	123G0600AA	0.26	341	UST-R	10	N	334.00	0.27	0.24	0.89	1.2550	0.0340	0.04	G
13	H3	1000094171	123G0600AA	0.26	340	UST-R	10	N	332.77	0.27	0.24	0.89	1.2506	0.0338	0.04	G
14	N/A															
15	X1	1000093814	035G200HA	0.24	395	UST-R	10	N	388.36	0.29	0.29	1	1.4649	0.0419	0.04	G
16	X2	1000094230	035G200HA	0.29	396	UST-R	10	N	389.71	0.29	0.29	1	1.4654	0.0428	0.04	G
17	X3	1000094228	035G200HA	0.27	398	UST-R	10	N	391.62	0.29	0.29	1	1.4748	0.0431	0.04	G
18	X0	1000094229	035G200HA	0.24	395	UST-R	10	N	392.23	0.30	0.30	1	1.4776	0.0444	0.04	G
19	N/A															

Transformer Bushing C2 Tests

Test No.	Bushing Nameplate					Test Mode	Test KV	Capacitence (pF)	Power Factor %			Direct		%V DF	IR
	DSG	Serial #	Cat #	PF	Cap.				Measured	@20C	Corr	mA	W		
20	H1	100094170	123G0600AA	0.27	3986	GSTg-RB	0.5	3951.75	0.24	0.22	0.89	0.7419	0.0009	0.02	G
21	H2	1000094169	123G0600AA	0.26	3818	GSTg-RB	0.5	3784.07	0.28	0.25	0.89	0.7104	0.001	0.05	G
22	H3	1000094171	123G0600AA	0.27	3937	GSTg-RB	0.5	3899.51	0.31	0.28	0.89	0.734	0.0011	0.06	G
23	N/A														
24	X1	1000093814	035G200HA	0.13	563	GSTg-RB	0.5	579.51	0.22	0.22	1	0.1088	0.0001	0.03	G
25	X2	1000094230	035G200HA	0.14	586	GSTg-RB	0.5	602.93	0.16	0.16	1	0.1134	0.0001	0.04	G
26	X3	1000094228	035G200HA	0.12	606	GSTg-RB	0.5	619.12	0.12	0.12	1	0.1168	0.0001	0.05	G
27	X0	1000094229	035G200HA	0.13	563	GSTg-RB	0.5	603.41	0.21	0.21	1	0.1135	0.0001	0.04	G
28	N/A														

Transformer Surge Arrester Tests

Test No.	Arrester Nameplate					Test Mode	Test KV	ORDER				Direct			IR
	DSG	Serial #	Cat #	Mft.	kV							mA	W		
28	H1	05334337	Q096SA076B	ABB	115	GST-GND	10	TOP				0.1235	0.021		
29	H1	05334337	Q096SA076B	ABB	115	GST-GND	10	MIDDLE				0.3208	0.069		
30															
31	H2	04334377	Q096SA076B	ABB	115	GST-GND	10	TOP				0.1255	0.022		
32	H2	04334377	Q096SA076B	ABB	115	GST-GND	10	MIDDLE				0.3200	0.063		
33															
34	H3	03334377	Q096SA076B	ABB	115	GST-GND	10	TOP				0.1245	0.022		
35	H3	03334377	Q096SA076B	ABB	115	GST-GND	10	MIDDLE				0.3161	0.065		
36															

Comments:

Tested By: D.BENJAMIN, A.BURK

Test Instrument(s) Manufacturer / Model

Serial # PF Test 0417

Temperature (°C) 3

Humditity (%) 70

CAPACITANCE TEST

	Low-Ground	Low - Guard	UST (High-Low)	High-Guard	High-Ground
Capacitance in pico-farads	pF	pF	pF	pF	pF
Uncorrected D.F. (%)					
Corrected to 20°C (%)	0.000%	0.000%	0.000%	0.000%	0.000%
Temp. Correction Factor	1.5				

SECONDARY LIGHTNING ARRESTOR INSULATION RESISTANCE

Resistance in Meg-Ohms 5000 V DC after 1 Min

Phase A to Ground	675000	MΩ
Phase B to Ground	749000	MΩ
Phase C to Ground	738000	MΩ

SECONDARY CONDUCTOR INSULATION RESISTANCE

Resistance in Meg-Ohms N/A V DC after 1 Min

Phase A to Phase B	MΩ
Phase B to Phase C	MΩ
Phase C to Phase A	MΩ

Phase A to Ground		MΩ
Phase B to Ground		MΩ
Phase C to Ground		MΩ

Comments:

Tested By: D.BENJAMIN, A.BURK

Test Instrument(s) Manufacturer / Model

Serial #

Cap Bridge	Megger	
N/A	0516	

Temperature (°C) 3

Humdity (%) 70

DIELECTRIC ABSORPTION TEST (INSULATION RESISTANCE)

Time	High to Low & Gnd		Low to High & Gnd		High & Low to Gnd	
	Uncorrected	Corrected	Uncorrected	Corrected	Uncorrected	Corrected
15 sec	884 MΩ	318 MΩ	490 MΩ	176 MΩ	1279 MΩ	460 MΩ
30 sec	1208 MΩ	435 MΩ	675 MΩ	243 MΩ	1887 MΩ	679 MΩ
45 sec	1650 MΩ	594 MΩ	935 MΩ	337 MΩ	2400 MΩ	864 MΩ
1 min	1939 MΩ	698 MΩ	1130 MΩ	407 MΩ	2660 MΩ	958 MΩ
2 min	3080 MΩ	1109 MΩ	1930 MΩ	695 MΩ	3470 MΩ	1249 MΩ
3 min	4050 MΩ	1458 MΩ	2610 MΩ	940 MΩ	3860 MΩ	1390 MΩ
4 min	4770 MΩ	1717 MΩ	3220 MΩ	1159 MΩ	4110 MΩ	1480 MΩ
5 min	5290 MΩ	1904 MΩ	3760 MΩ	1354 MΩ	4320 MΩ	1555 MΩ
6 min	5750 MΩ	2070 MΩ	4200 MΩ	1512 MΩ	4400 MΩ	1584 MΩ
7 min	6140 MΩ	2210 MΩ	4600 MΩ	1656 MΩ	4510 MΩ	1624 MΩ
8 min	6450 MΩ	2322 MΩ	5100 MΩ	1836 MΩ	4660 MΩ	1678 MΩ
9 min	6750 MΩ	2430 MΩ	5430 MΩ	1955 MΩ	4760 MΩ	1714 MΩ
10 min	7030 MΩ	2531 MΩ	5730 MΩ	2063 MΩ	4850 MΩ	1746 MΩ
Test Voltage		5000 V		5000 V		5000 V
Polarization Index	3.625580196		5.07079646		1.823308271	
Tcc	Insulation Resistance Readings Corrected to 3 °C					

INSULATION RESISTANCE

Resistance in Meg-Ohms after 1 Min

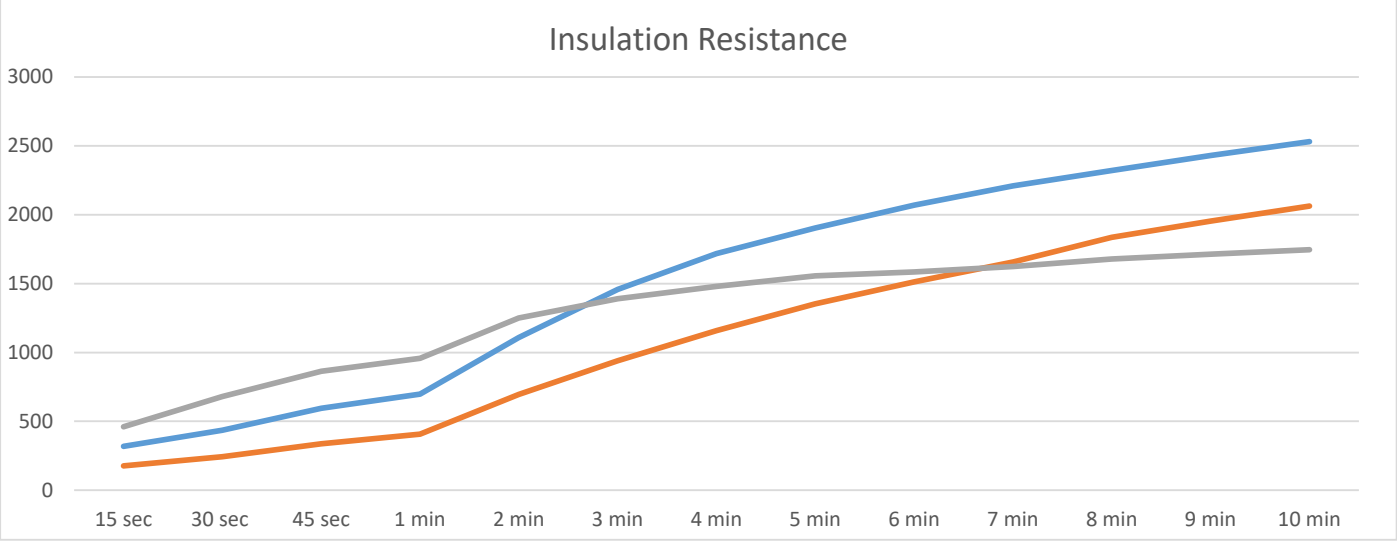
High to Low & Gnd	698	MΩ @	5000 V
Low to High & Gnd	407	MΩ @	5000 V
High & Low to Gnd	958	MΩ @	5000 V

CORE GROUND INSULATION RESISTANCE

Resistance in Meg-Ohms after 1 Min

Core Ground Accesssible: Yes ☑ No ☐

Test Voltage	500	V
Core Ground Resistance	1591	MΩ



Comments:

Tested By: D.CHARRON

Test Instrument(s)

Manufacturer / Model: Megger

Serial #: 0516

Temperature (°C): 3

Humditity (%): 70

Transformer Count: 1
Total Test Count: 3

1. Manufacturer: CG POWER, Serial Number: RA14.0494, Special ID:

TestDate: 11/17/2022 8:30 AM, Trace Name: H1-H3_2022-11-17_07-30-57
TestDate: 11/17/2022 8:35 AM, Trace Name: H2-H1_2022-11-17_07-35-10
TestDate: 11/17/2022 8:39 AM, Trace Name: H3-H2_2022-11-17_07-39-54

Nameplate Details

1. Manufacturer: CG POWER, Serial Number: RA14.0494, Special ID:

Filename: C:\Users\asus\Documents\Doble Engineering\Sweep Frequency Response Analyzer\Data\Eaton-Corp_New-Location_CG-POWER_RA140494_2022-11-17_07-30-57.sfra

TestTemplate: 3-Ph 2-Wind D-Y

Serial Number: RA14.0494
Manufacturer: CG POWER
Year of Manufacture: 2015
Special ID:
Current: 0
Phases: 3
Windings: 2
Type: DIST
HV: 115.5
LV1: 30.24
LV2: 0
Tertiary: 0
Impedance HV-LV1: 8.97
Impedance HV-LV2: 0
Impedance HV-Tertiary: 0
Impedance LV-Tertiary: 0

MVA Maximum: 0
MVA1: 0
MVA2: 0
MVA3: 0
Notes:
Template: 3-Ph 2-Wind D-Y
LTC Serial Number:
LTC Manufacturer:
LTC Year of Mfr: 0
LTC Range:
LTC Notes:
DETC Serial Number:
DETC Manufacturer:
DETC Year of Mfr: 0
DETC Range:
DETC Notes:

Instrument Details

1. Manufacturer: CG POWER, Serial Number: RA14.0494, Special ID:

TestDate: 11/17/2022 8:30 AM, Trace Name: H1-H3_2022-11-17_07-30-57

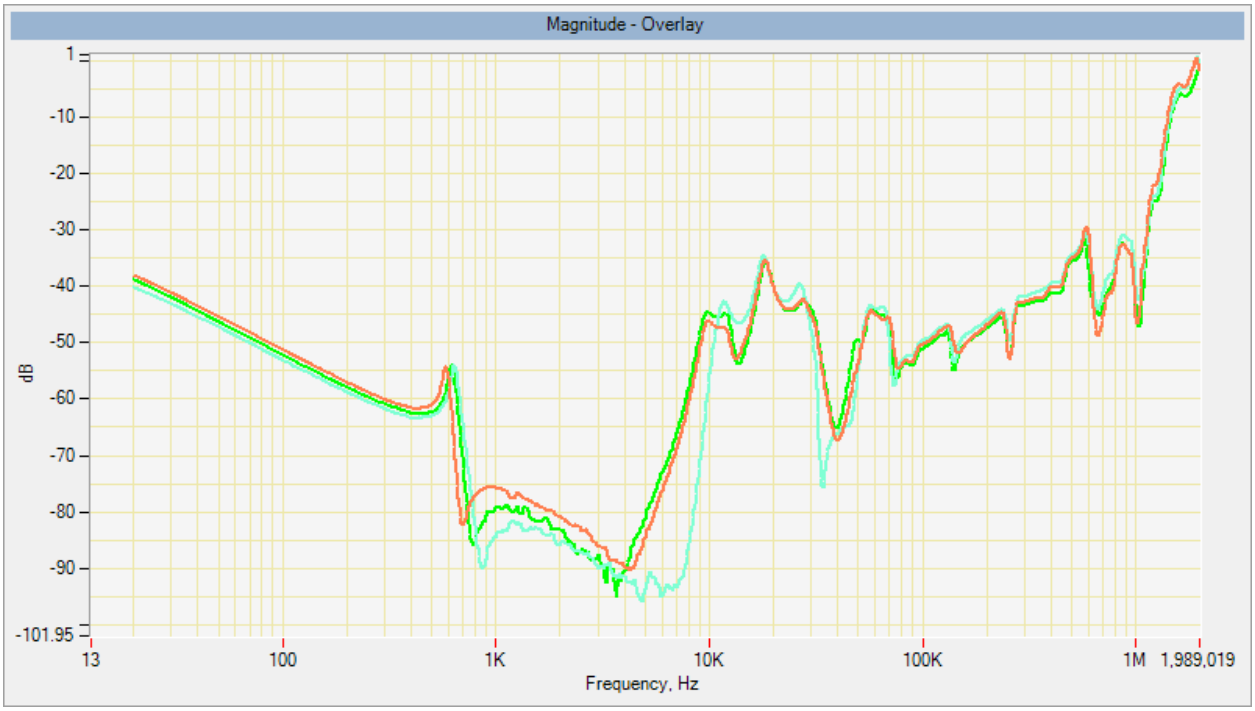
Tested by: Urian Clements
Instrument serial number: m5400
Notes:

TestDate: 11/17/2022 8:35 AM, Trace Name: H2-H1_2022-11-17_07-35-10

Tested by: Urian Clements
Instrument serial number: m5400
Notes:

TestDate: 11/17/2022 8:39 AM, Trace Name: H3-H2_2022-11-17_07-39-54

Tested by: Urian Clements
Instrument serial number: m5400
Notes:

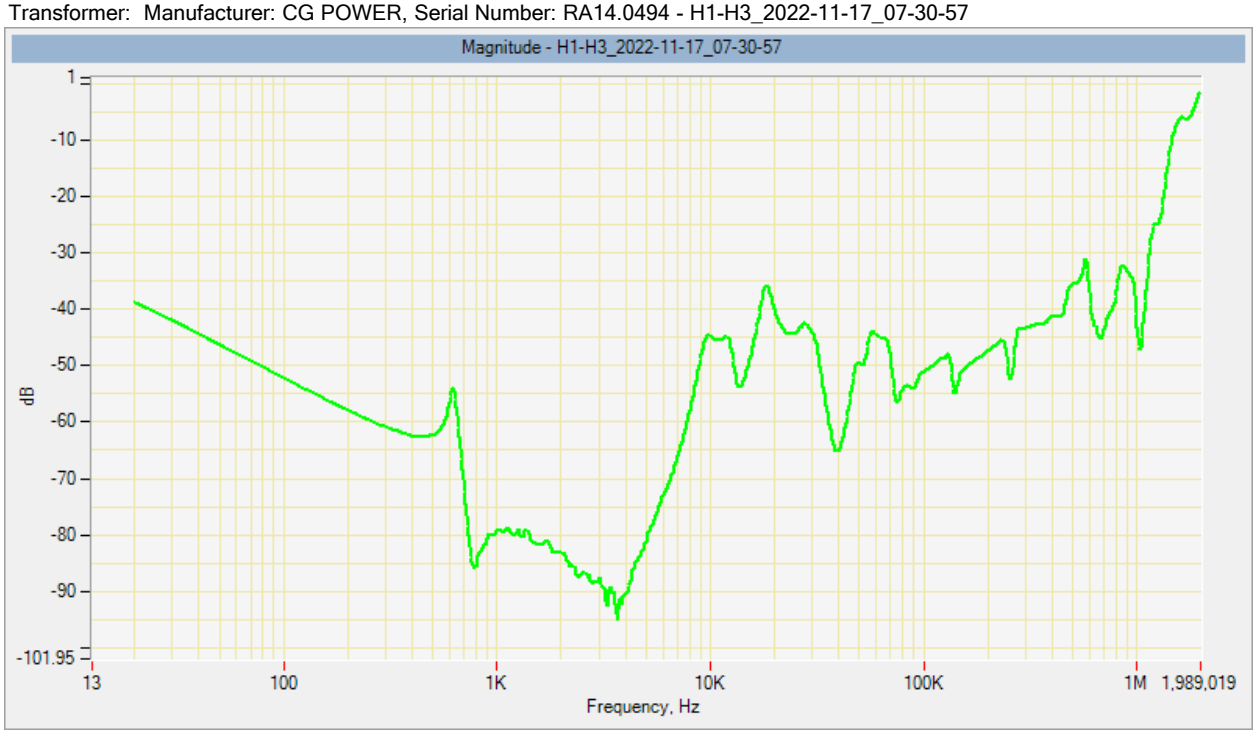


H1-H3_2022-11-17_07-30-57 - Manufacturer: CG POWERSerial Number: RA14.0494Date: 11/17/2022 8:30:57 AM
LTC: 6DETC: as found - make noteMVA Maximum: 0KV: 115.5/30.24

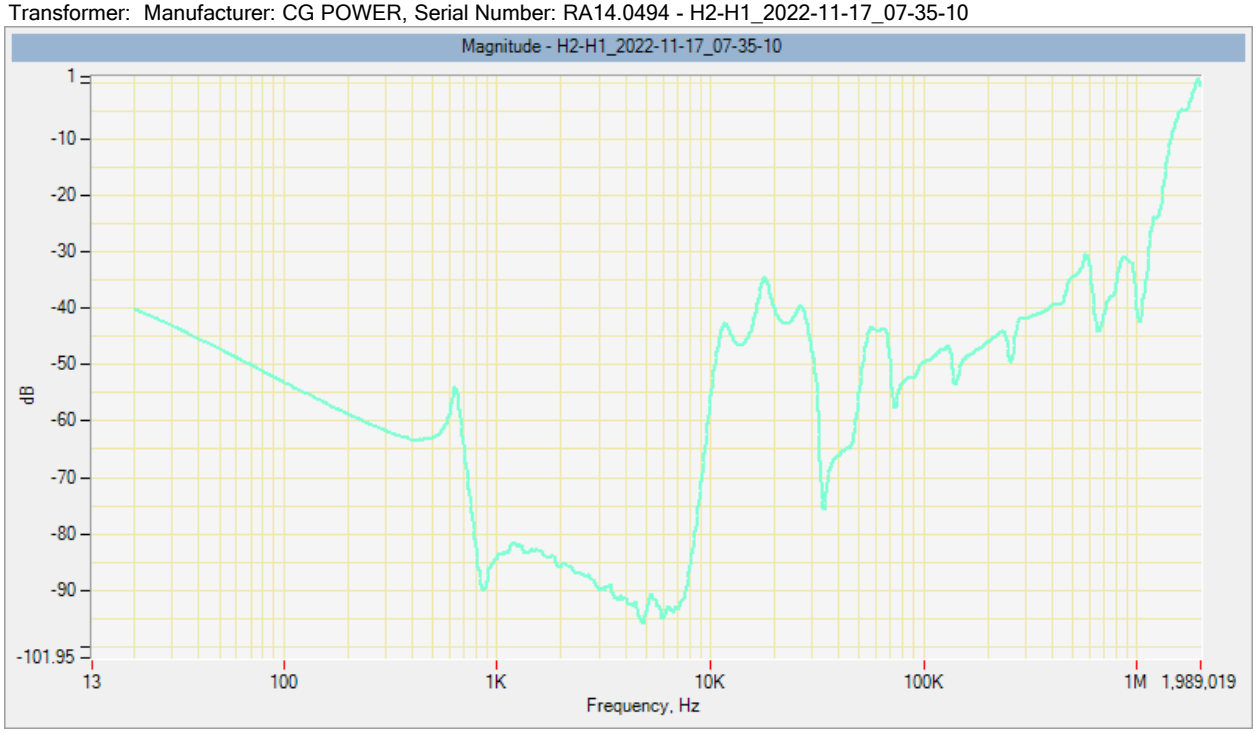
H2-H1_2022-11-17_07-35-10 - Manufacturer: CG POWERSerial Number: RA14.0494Date: 11/17/2022 8:35:10 AM
LTC: 6DETC: as found - make noteMVA Maximum: 0KV: 115.5/30.24

H3-H2_2022-11-17_07-39-54 - Manufacturer: CG POWERSerial Number: RA14.0494Date: 11/17/2022 8:39:54 AM
LTC: 6DETC: as found - make noteMVA Maximum: 0KV: 115.5/30.24

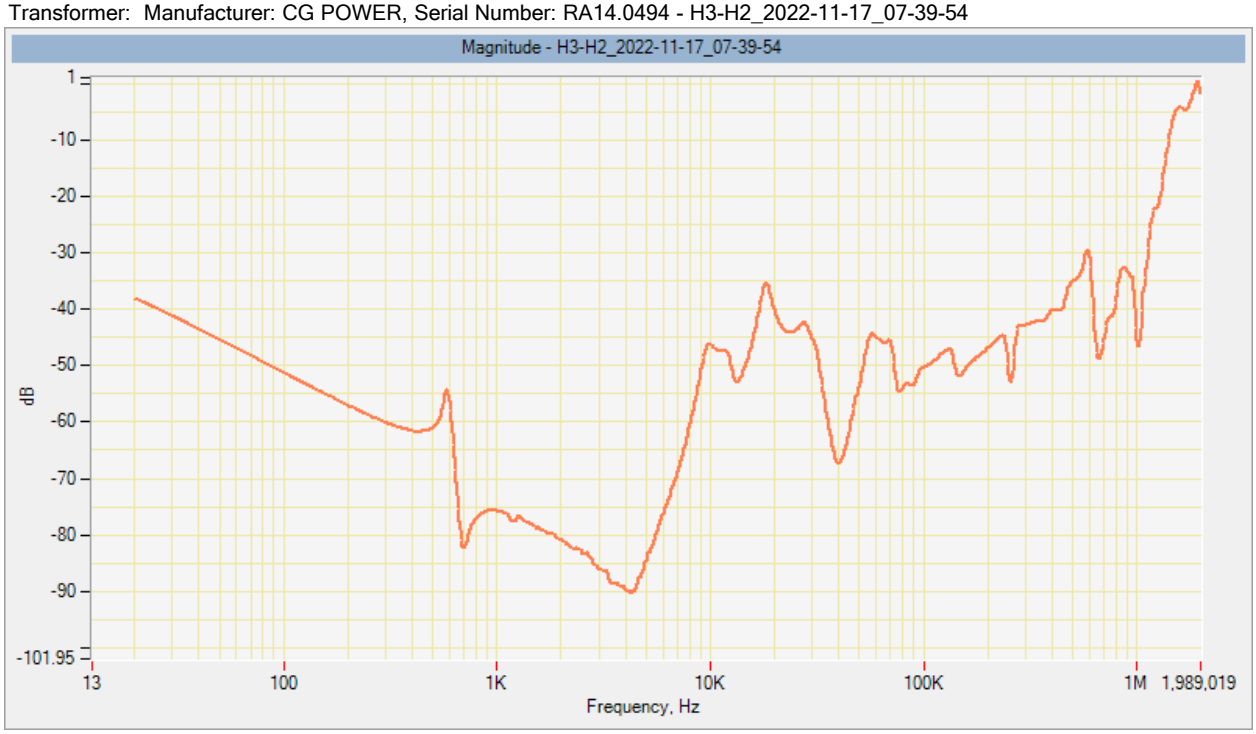
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H1-H3_2022-11-17_07-30-57

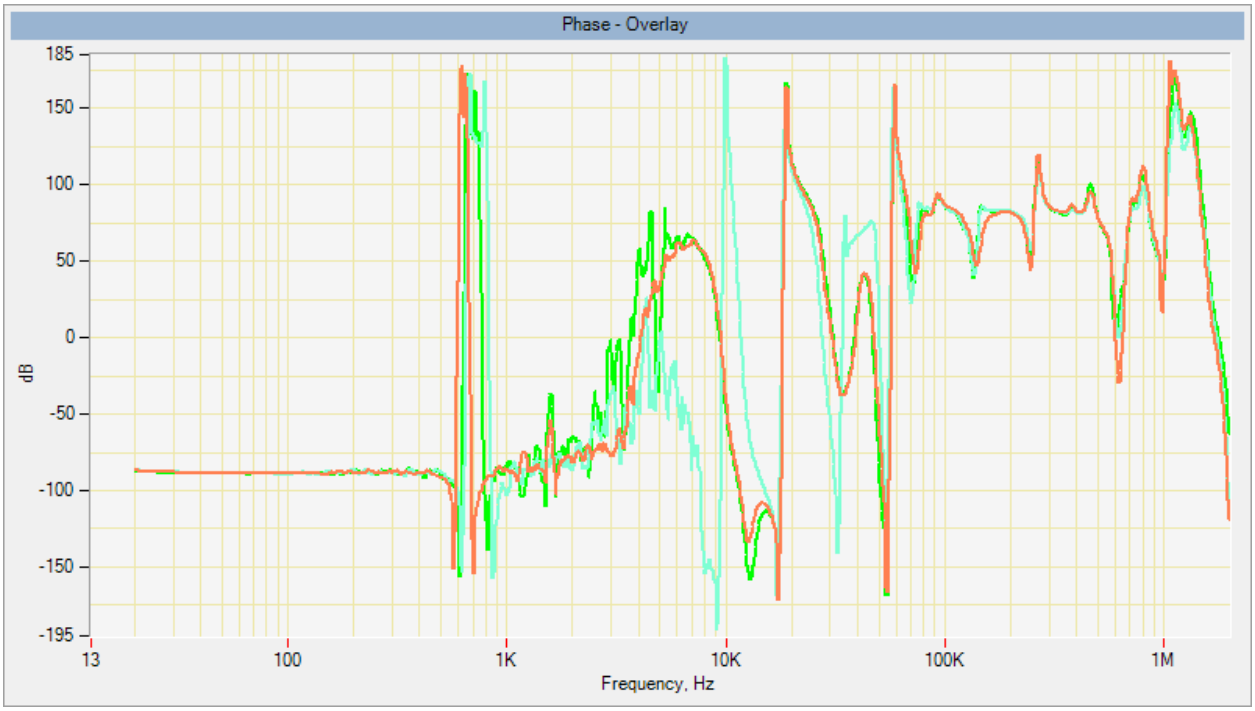


Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H2-H1_2022-11-17_07-35-10

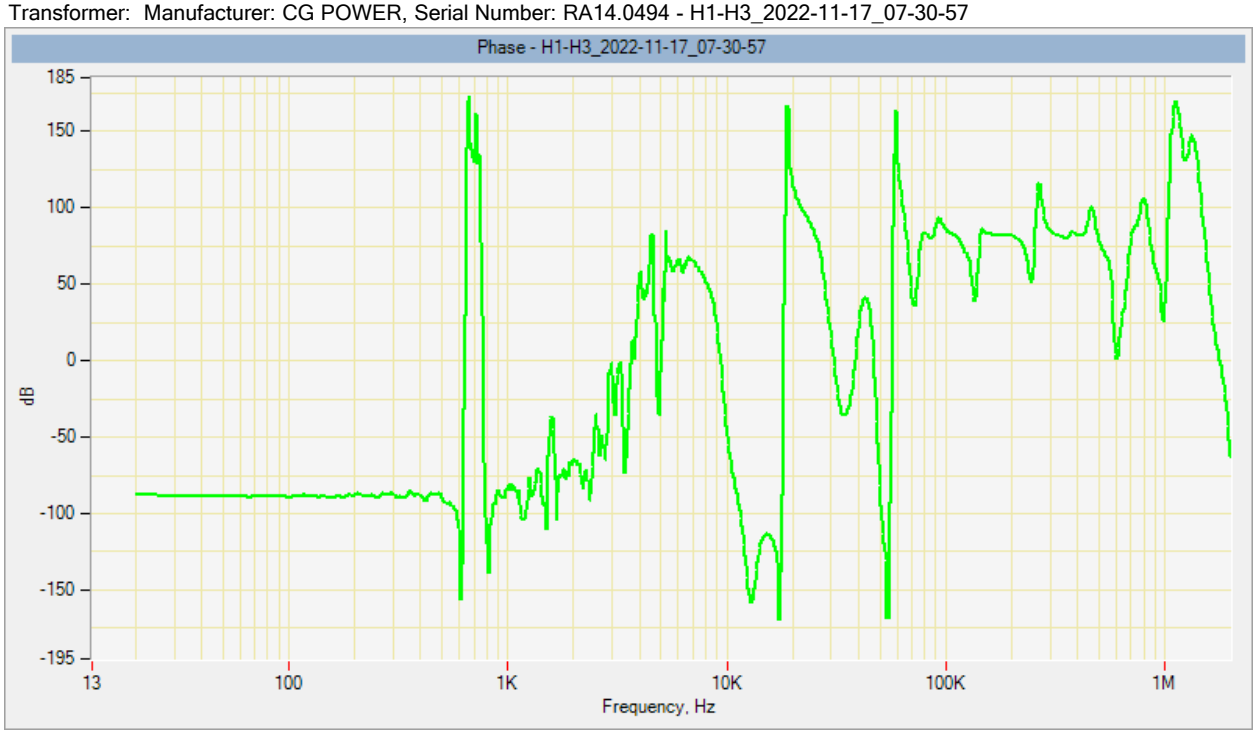


Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H3-H2_2022-11-17_07-39-54

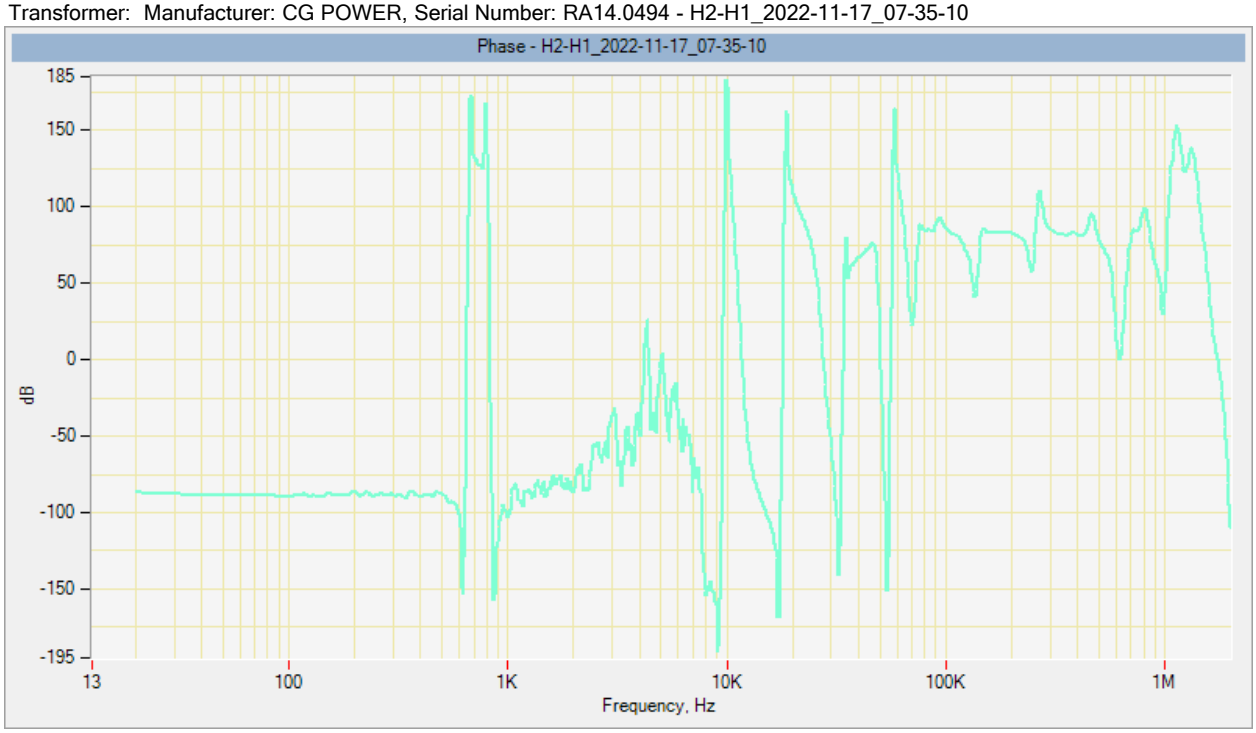



Phase - Overlay
185
150
100
50
0
-50
-100
-150
-195
dB
13
100
1K
10K
100K
1M
Frequency, Hz

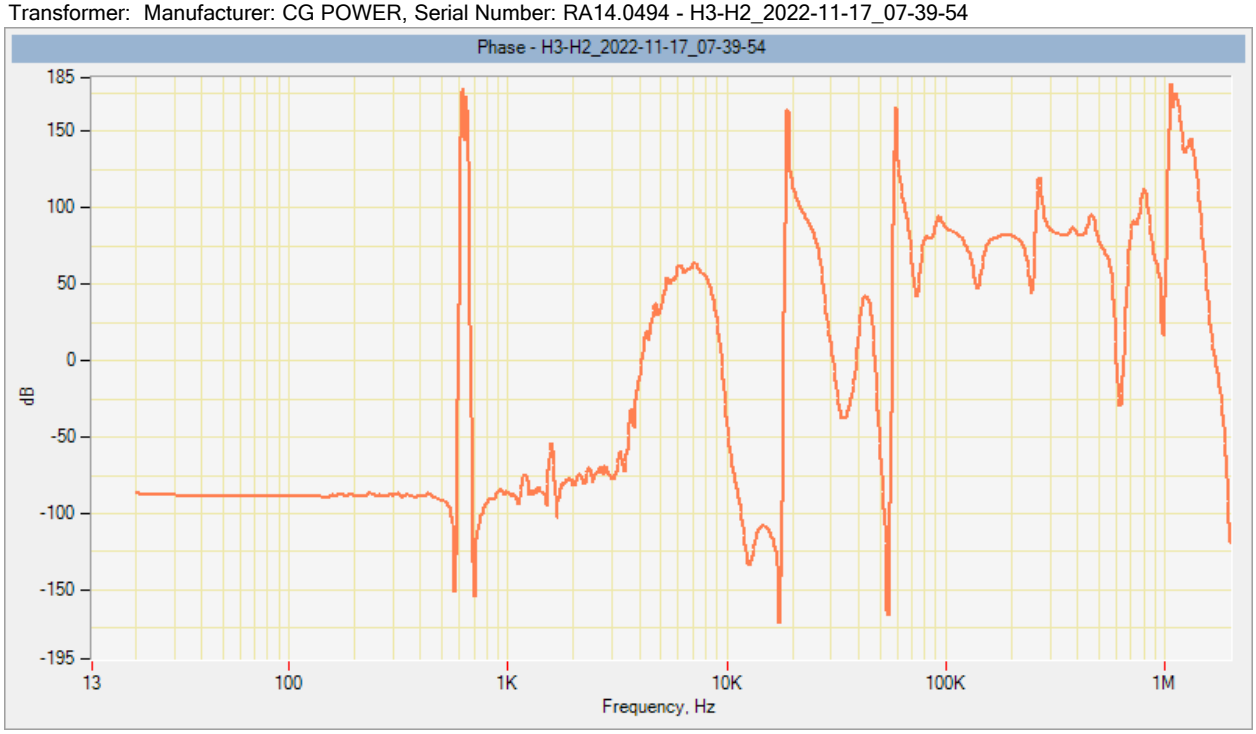
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H1-H3_2022-11-17_07-30-57



Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H2-H1_2022-11-17_07-35-10



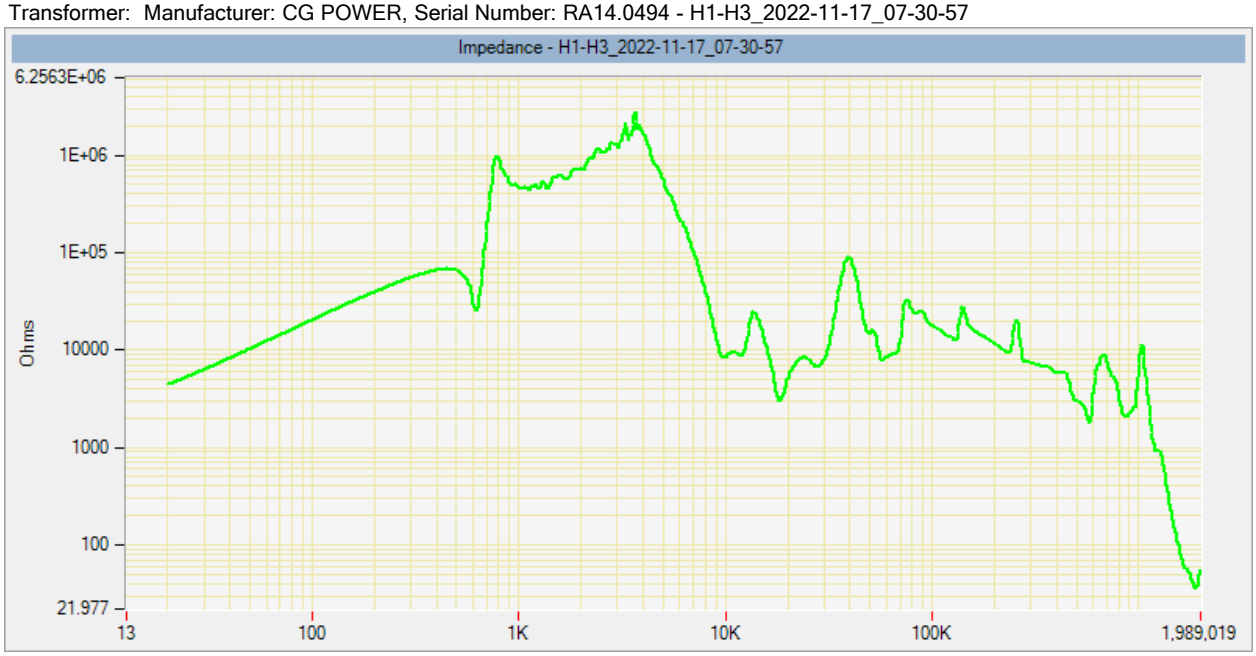
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H3-H2_2022-11-17_07-39-54



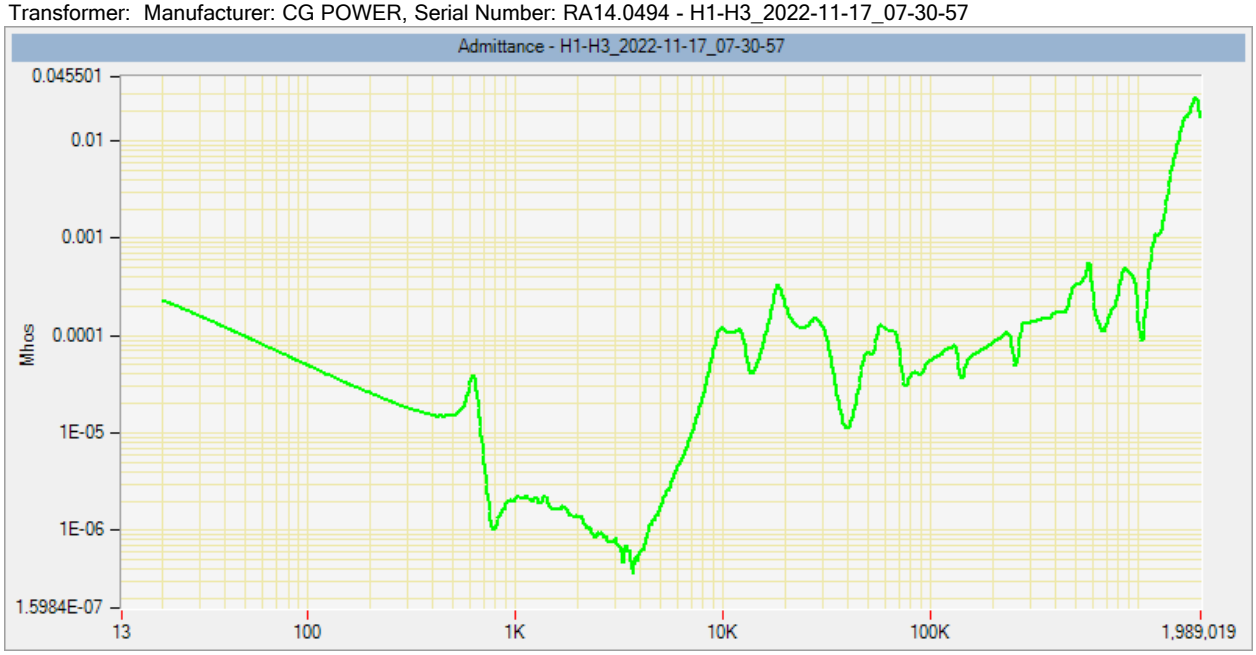

Impedance - Overlay
6.2563E+06
1E+06
1E+05
10000
1000
100
21.977
Ohms
13
100
1K
10K
100K
1,989,019


Admittance - Overlay
0.045501
0.01
0.001
0.0001
1E-05
1E-06
1.5984E-07
Mhos
13
100
1K
10K
100K
1,989,019

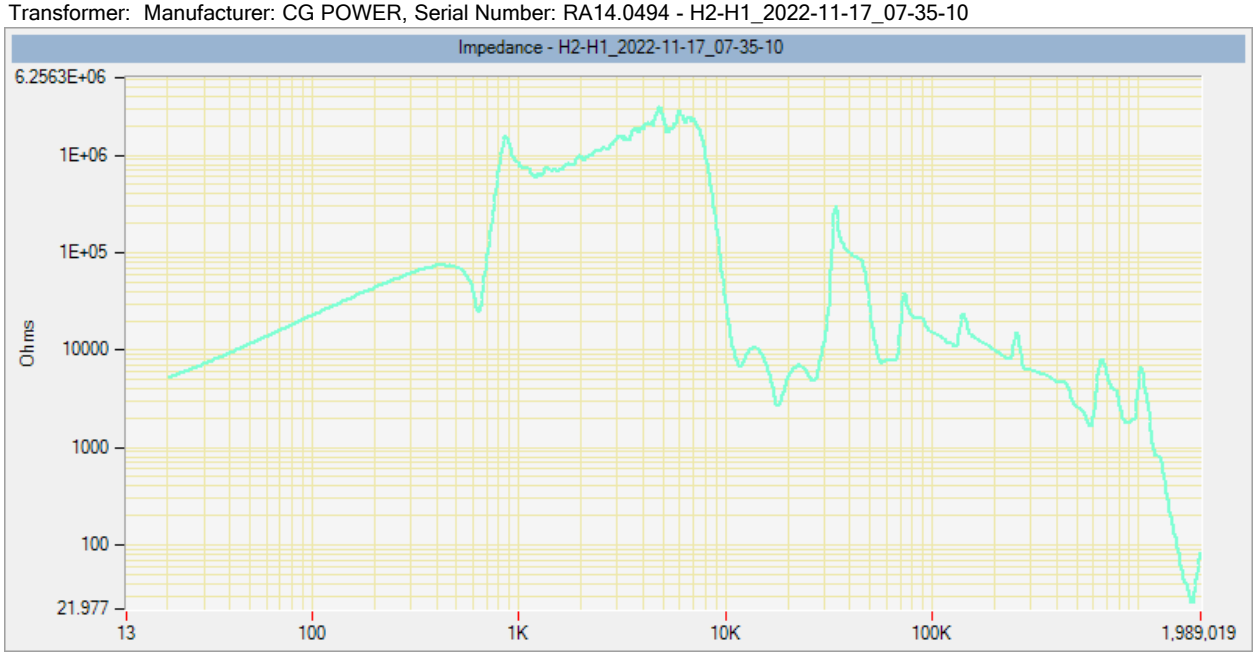
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H1-H3_2022-11-17_07-30-57



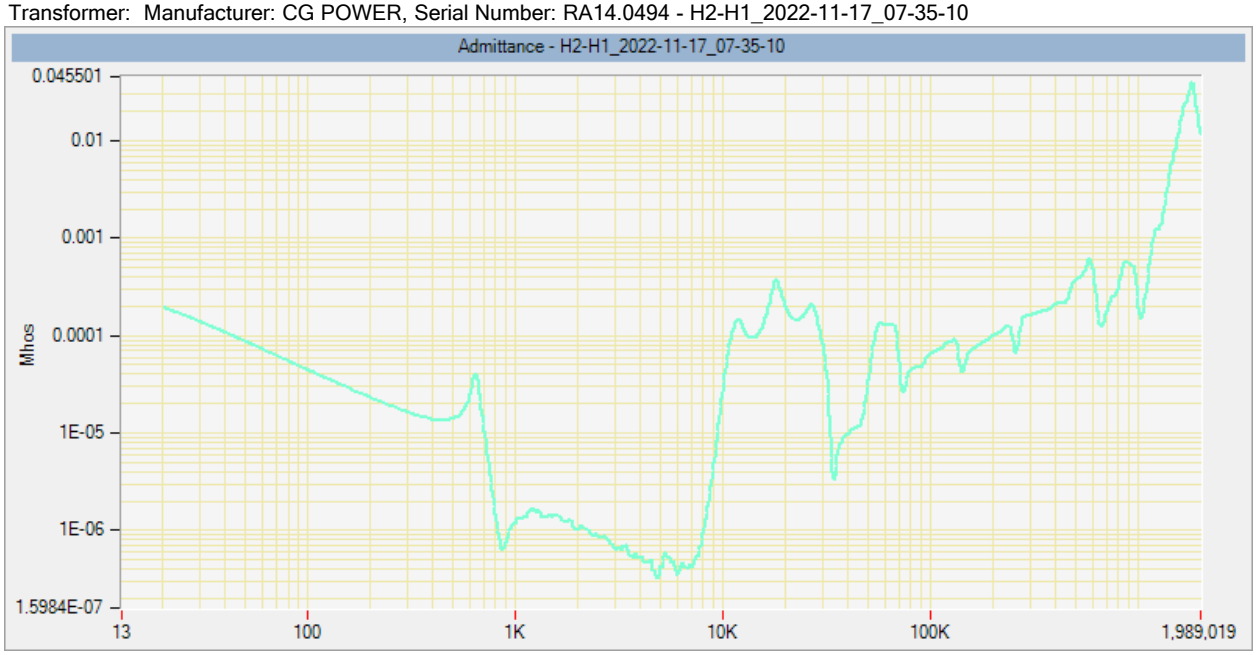
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H1-H3_2022-11-17_07-30-57



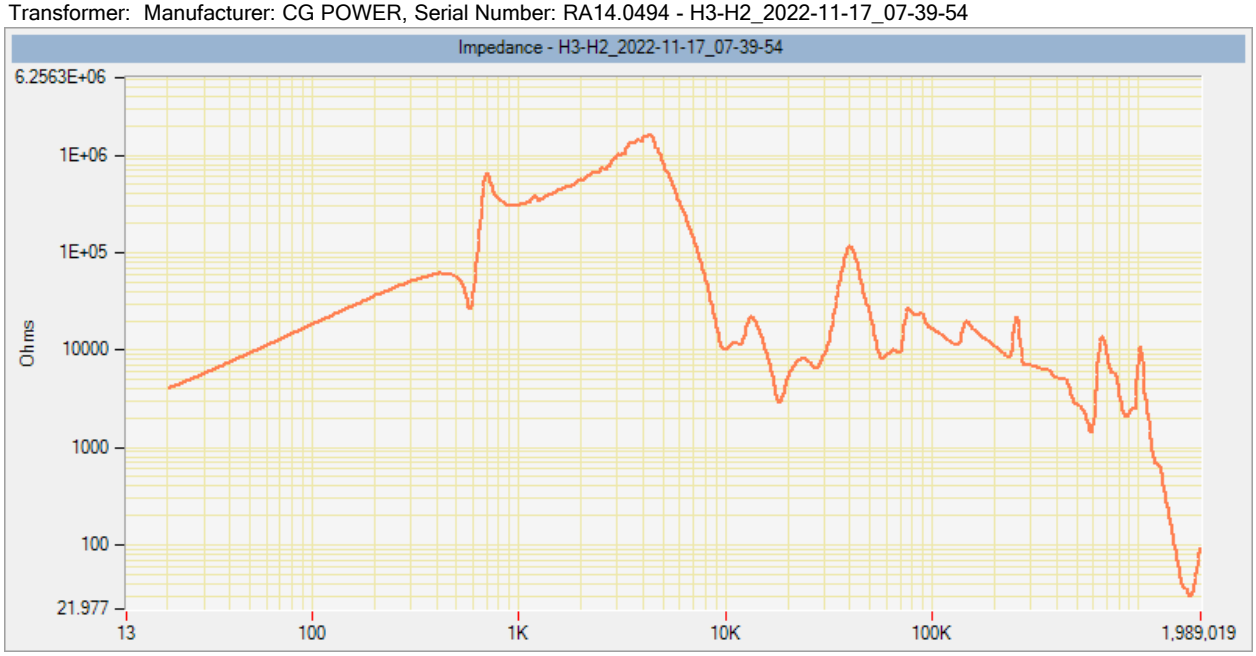
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H2-H1_2022-11-17_07-35-10



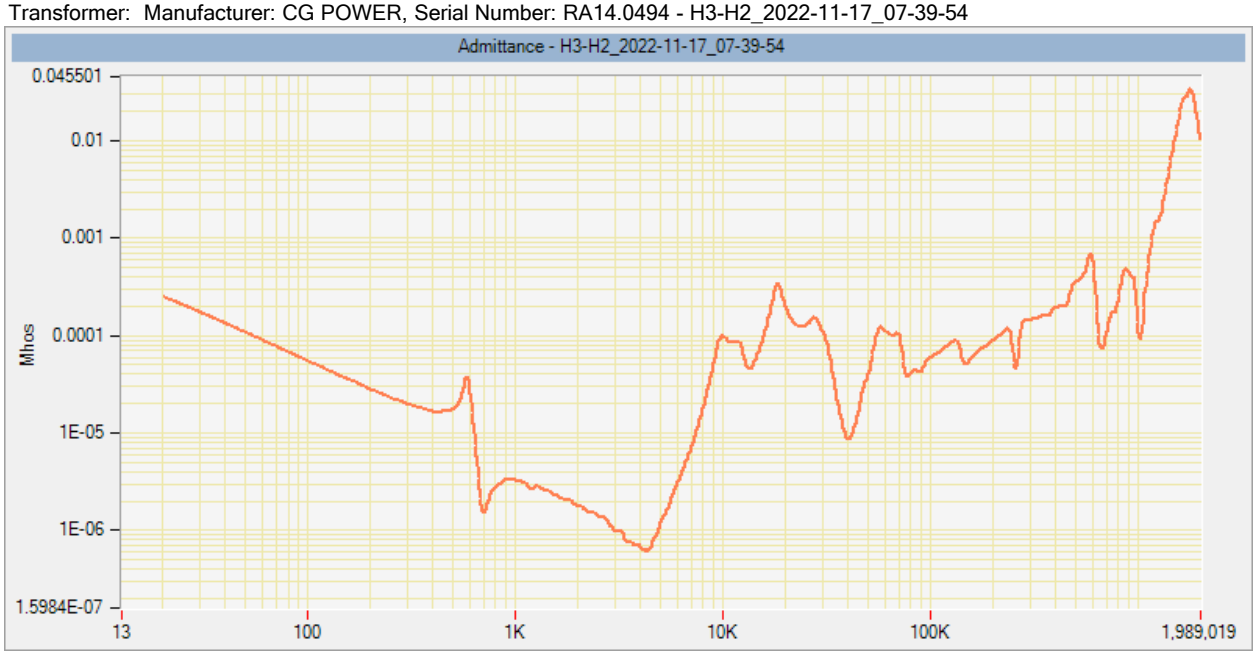
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H2-H1_2022-11-17_07-35-10

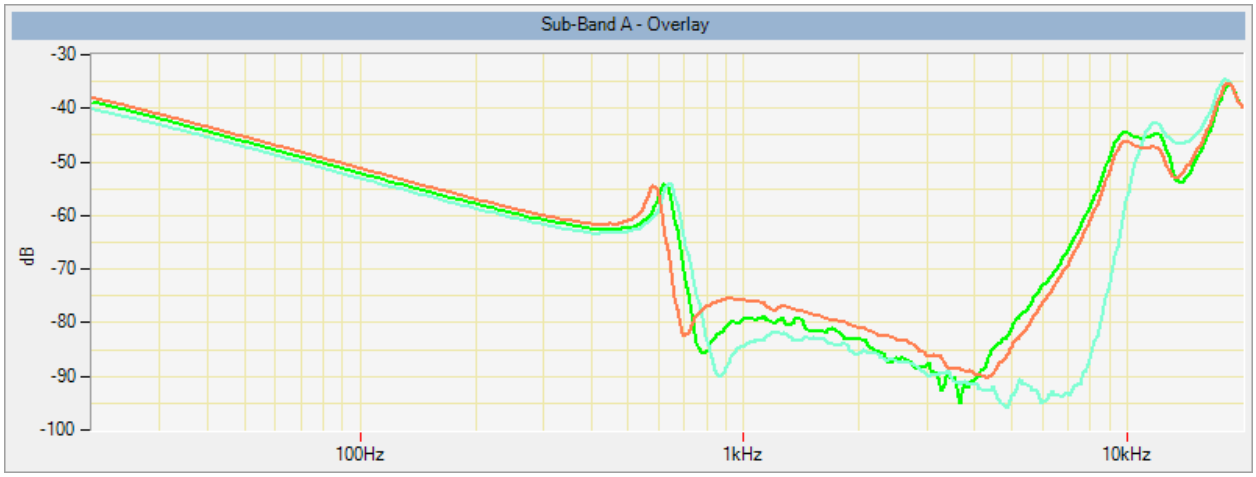


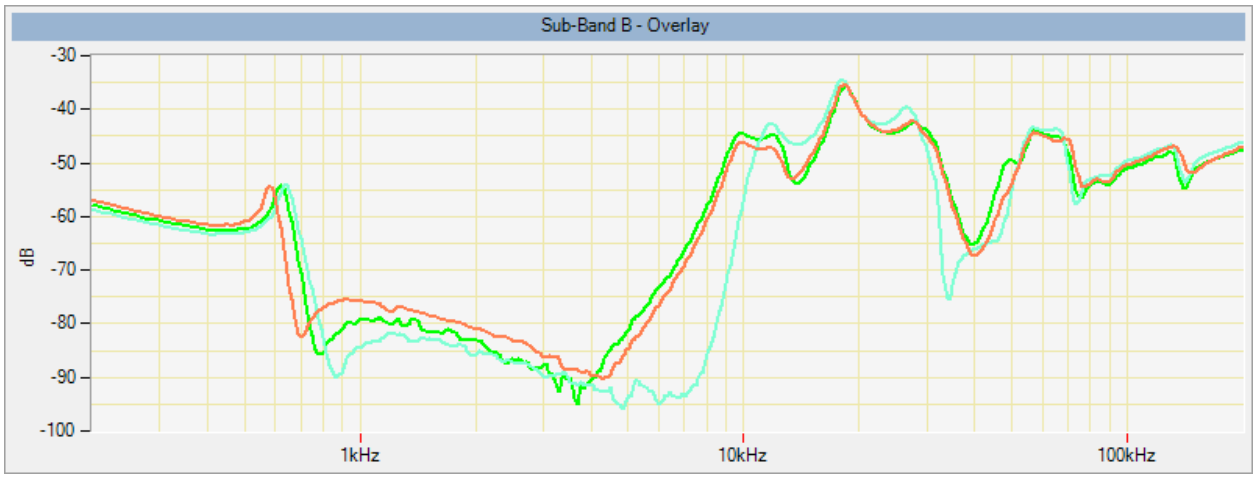
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H3-H2_2022-11-17_07-39-54

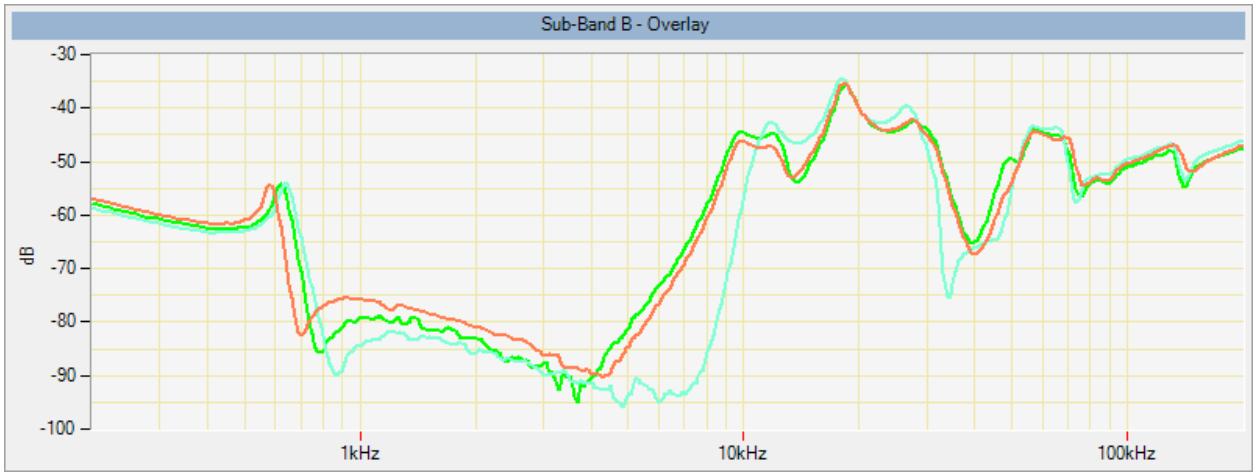


Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H3-H2_2022-11-17_07-39-54




Sub-Band A - Overlay
-30
-40
-50
-60
-70
-80
-90
-100
dB
100Hz
1kHz
10kHz


Sub-Band B - Overlay
-30
-40
-50
-60
-70
-80
-90
-100
dB
1kHz
10kHz
100kHz


Sub-Band B - Overlay
-30
-40
-50
-60
-70
-80
-90
-100
dB
1kHz
10kHz
100kHz

Transformer Count: 1
Total Test Count: 3

1. Manufacturer: CG POWER, Serial Number: RA14.0494, Special ID:

TestDate: 11/17/2022 8:58 AM, Trace Name: X1-X0_2022-11-17_07-58-05
TestDate: 11/17/2022 9:01 AM, Trace Name: X2-X0_2022-11-17_08-01-06
TestDate: 11/17/2022 9:03 AM, Trace Name: X3-X0_2022-11-17_08-03-51

Nameplate Details

1. Manufacturer: CG POWER, Serial Number: RA14.0494, Special ID:

Filename: C:\Users\asus\Documents\Doble Engineering\Sweep Frequency Response Analyzer\Data\Eaton-Corp_New-Location_CG-POWER_RA140494_2022-11-17_07-58-05.sfra

TestTemplate: 3-Ph 2-Wind D-Y

Serial Number: RA14.0494
Manufacturer: CG POWER
Year of Manufacture: 2015
Special ID:
Current: 0
Phases: 3
Windings: 2
Type: DIST
HV: 115.5
LV1: 30.24
LV2: 0
Tertiary: 0
Impedance HV-LV1: 8.97
Impedance HV-LV2: 0
Impedance HV-Tertiary: 0
Impedance LV-Tertiary: 0

MVA Maximum: 50
MVA1: 0
MVA2: 0
MVA3: 0
Notes:
Template: 3-Ph 2-Wind D-Y
LTC Serial Number:
LTC Manufacturer:
LTC Year of Mfr: 0
LTC Range:
LTC Notes:
DETC Serial Number:
DETC Manufacturer:
DETC Year of Mfr: 0
DETC Range:
DETC Notes:

Instrument Details

1. Manufacturer: CG POWER, Serial Number: RA14.0494, Special ID:

TestDate: 11/17/2022 8:58 AM, Trace Name: X1-X0_2022-11-17_07-58-05

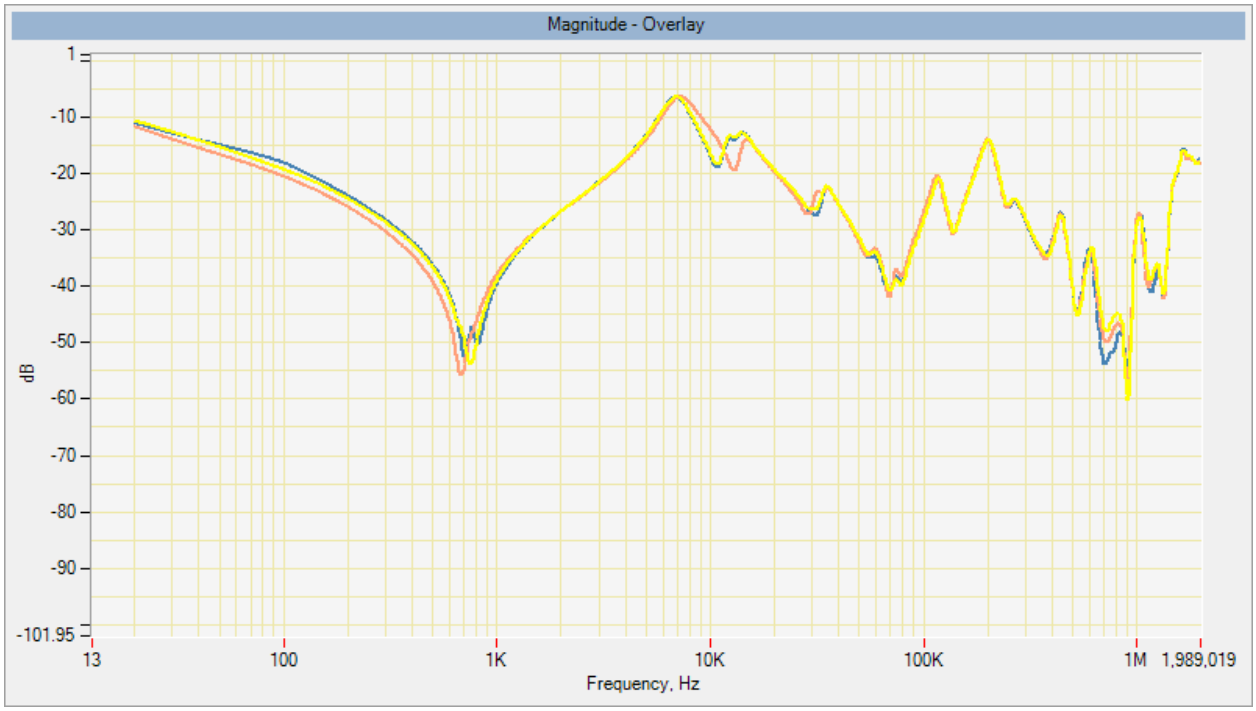
Tested by: Urian Clements
Instrument serial number: m5400
Notes:

TestDate: 11/17/2022 9:01 AM, Trace Name: X2-X0_2022-11-17_08-01-06

Tested by: Urian Clements
Instrument serial number: m5400
Notes:

TestDate: 11/17/2022 9:03 AM, Trace Name: X3-X0_2022-11-17_08-03-51

Tested by: Urian Clements
Instrument serial number: m5400
Notes:

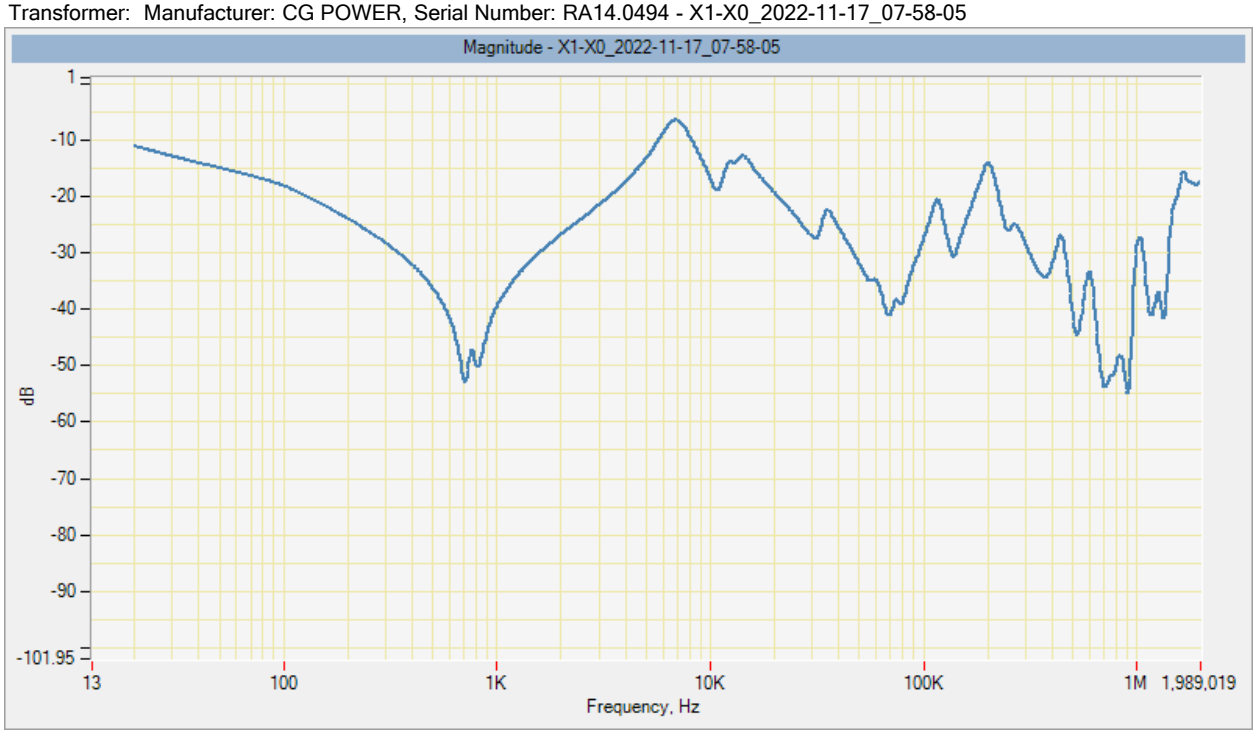


X1-X0_2022-11-17_07-58-05 - Manufacturer: CG POWERSerial Number: RA14.0494Date: 11/17/2022 8:58:05 AM
LTC: 6DETC: as found - make noteMVA Maximum: 50KV: 115.5/30.24

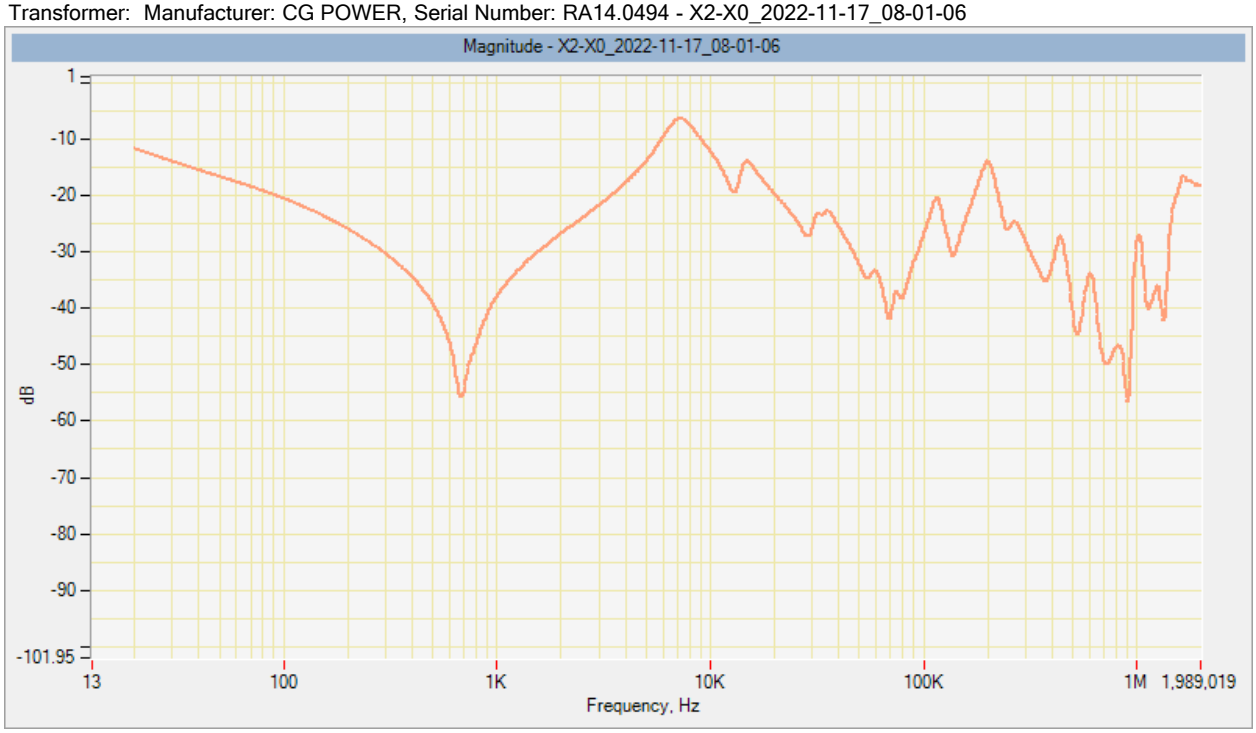
X2-X0_2022-11-17_08-01-06 - Manufacturer: CG POWERSerial Number: RA14.0494Date: 11/17/2022 9:01:06 AM
LTC: 6DETC: as found - make noteMVA Maximum: 50KV: 115.5/30.24

X3-X0_2022-11-17_08-03-51 - Manufacturer: CG POWERSerial Number: RA14.0494Date: 11/17/2022 9:03:51 AM
LTC: 6DETC: as found - make noteMVA Maximum: 50KV: 115.5/30.24

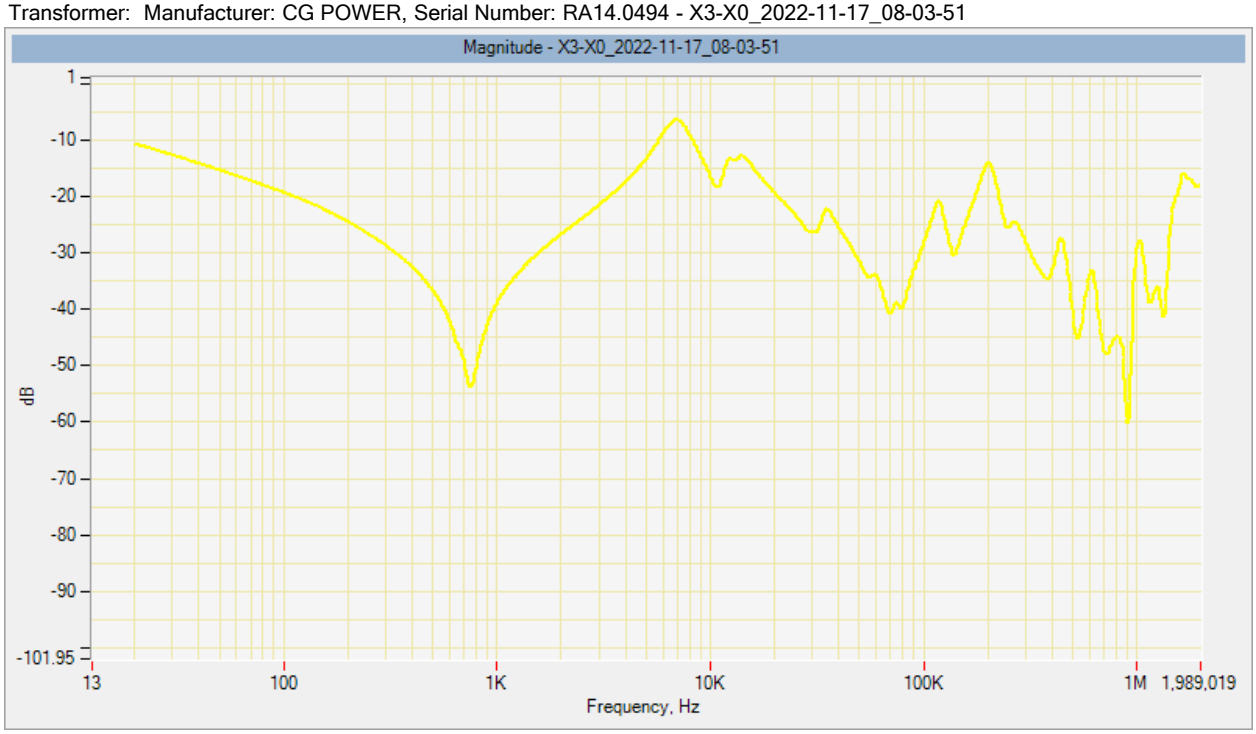
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - X1-X0_2022-11-17_07-58-05

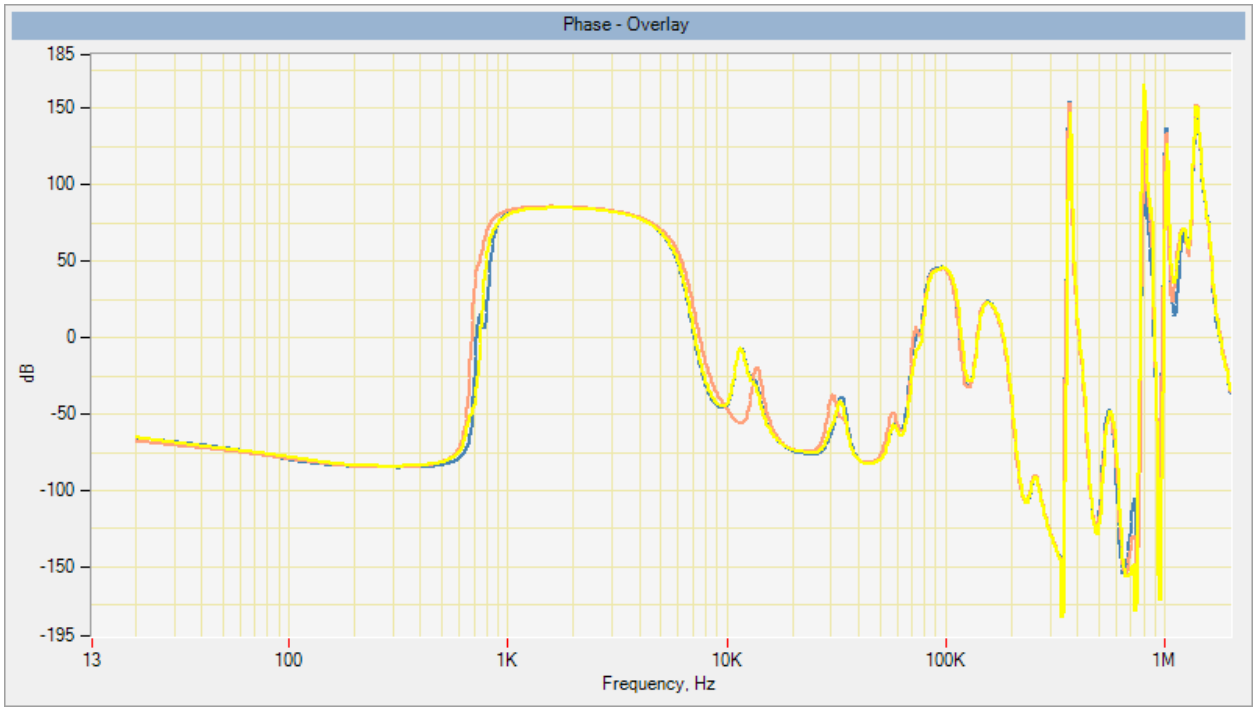


Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - X2-X0_2022-11-17_08-01-06

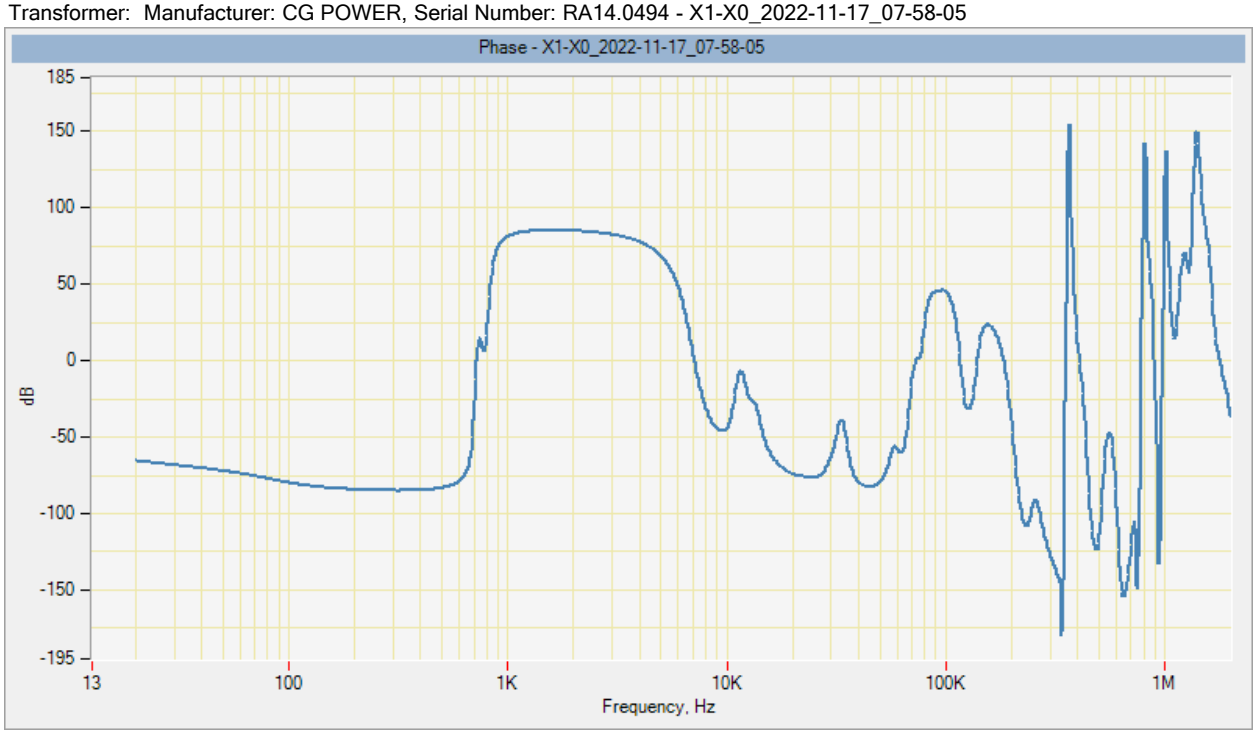


Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - X3-X0_2022-11-17_08-03-51

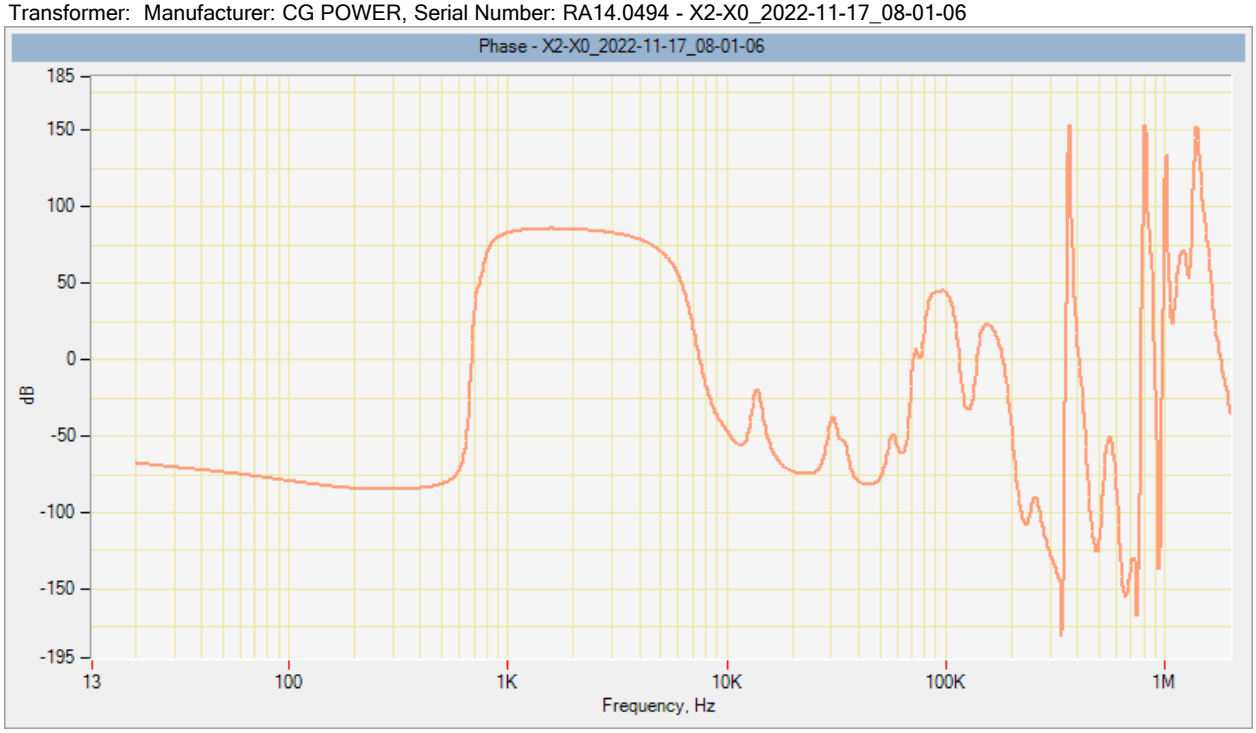



Phase - Overlay
185
150
100
50
0
-50
-100
-150
-195
dB
13
100
1K
10K
100K
1M
Frequency, Hz

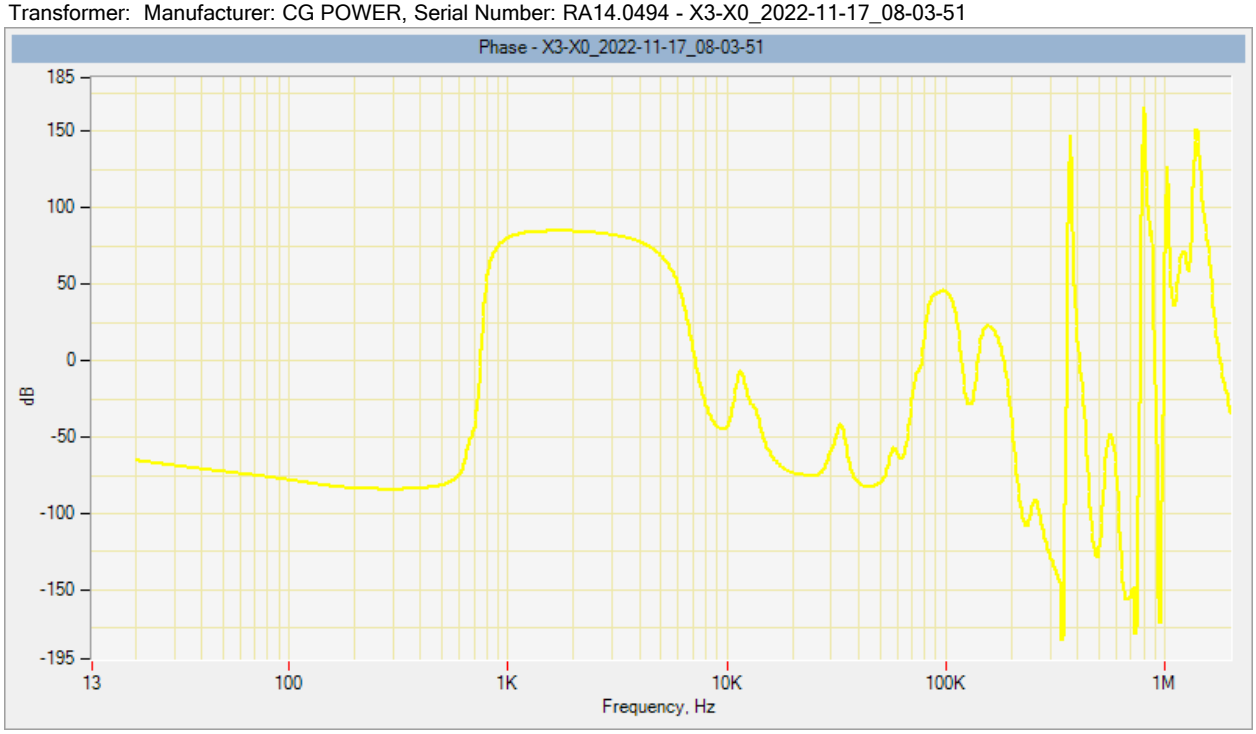
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - X1-X0_2022-11-17_07-58-05



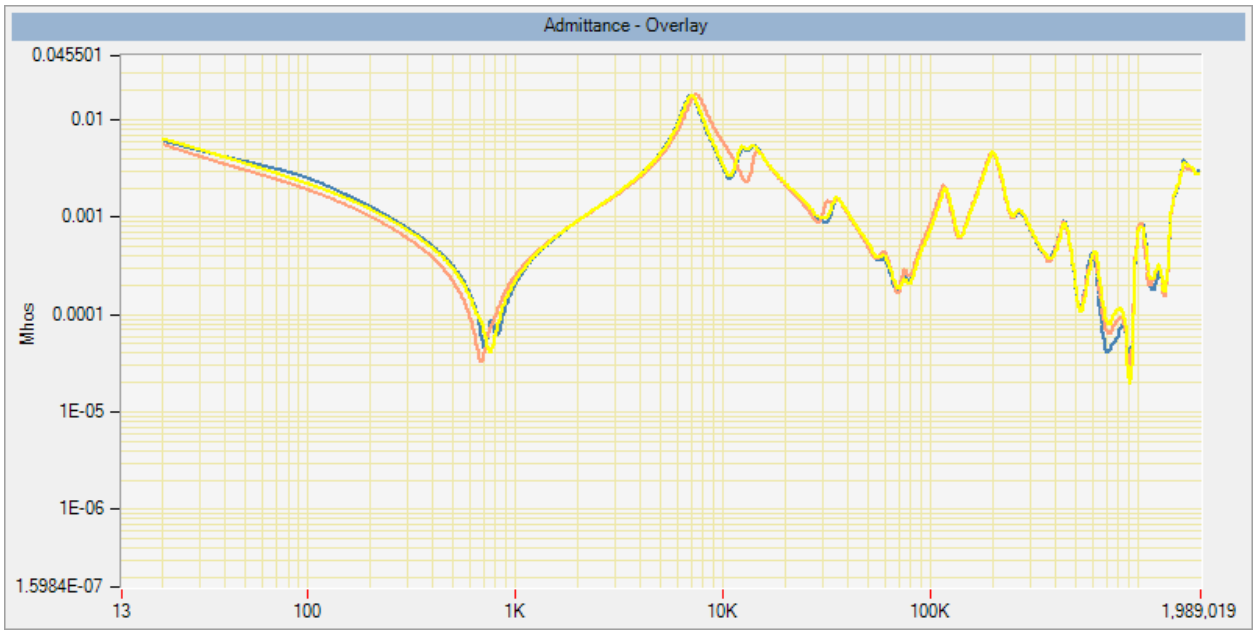
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - X2-X0_2022-11-17_08-01-06



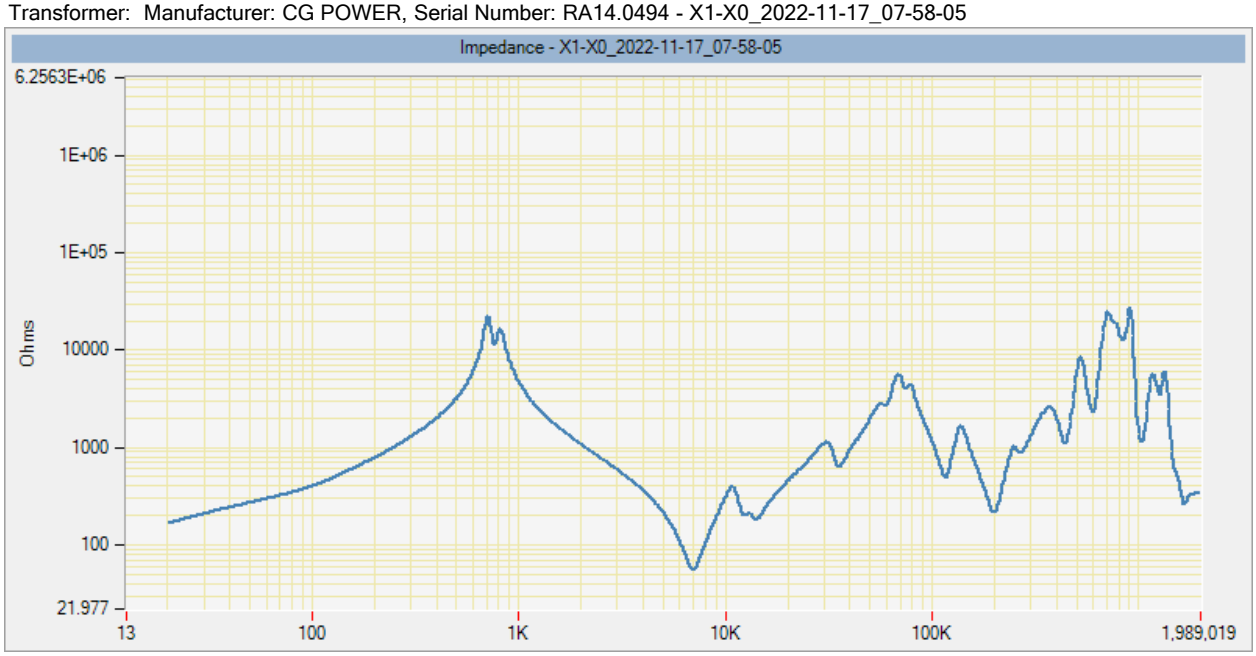
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - X3-X0_2022-11-17_08-03-51



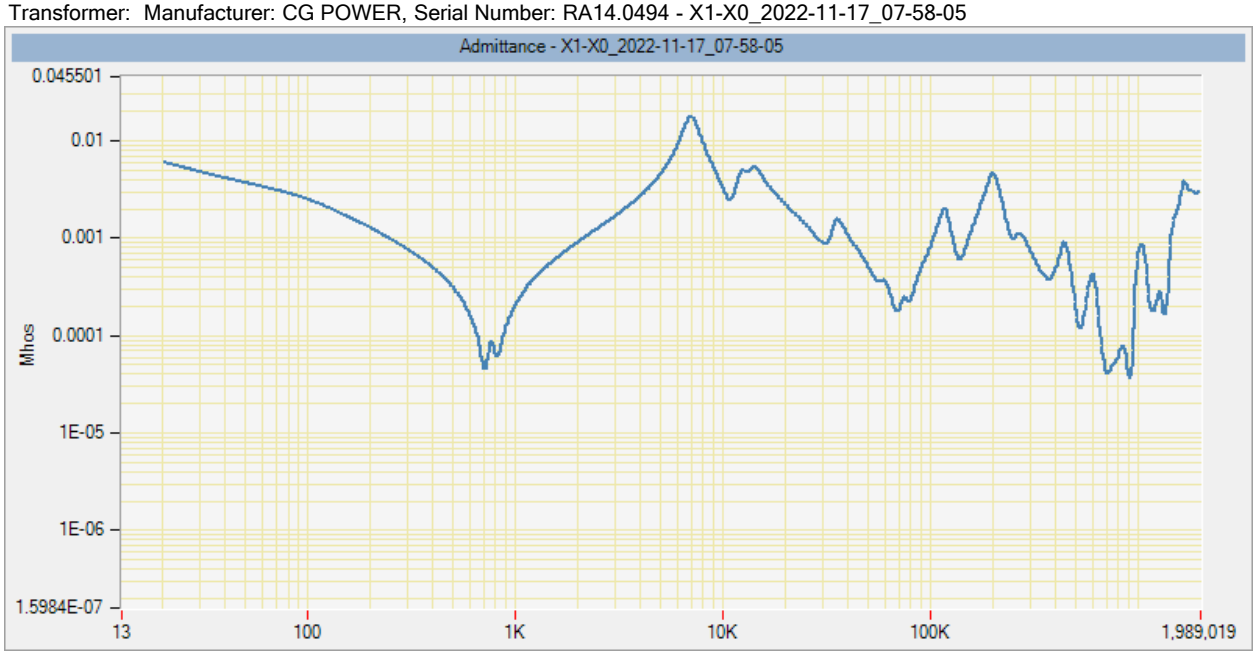

Impedance - Overlay
6.2563E+06
1E+06
1E+05
10000
1000
100
21.977
Ohms
13
100
1K
10K
100K
1,989,019


Admittance - Overlay
0.045501
0.01
0.001
0.0001
1E-05
1E-06
1.5984E-07
Mhos
13
100
1K
10K
100K
1,989,019

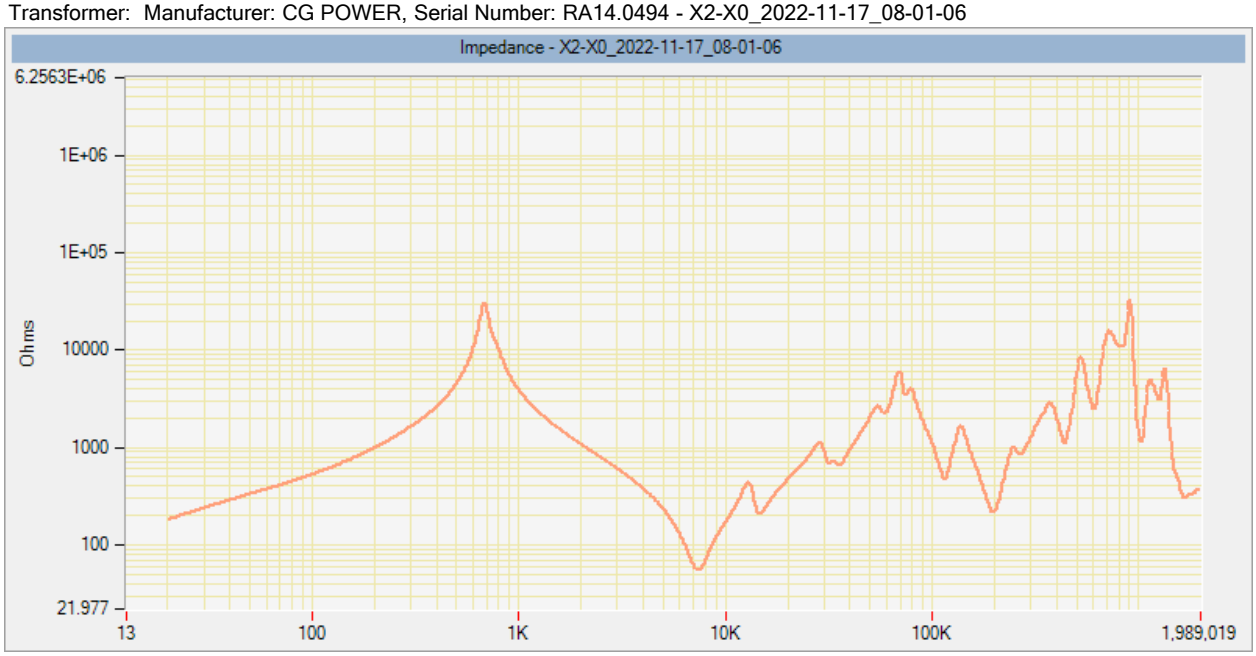
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - X1-X0_2022-11-17_07-58-05



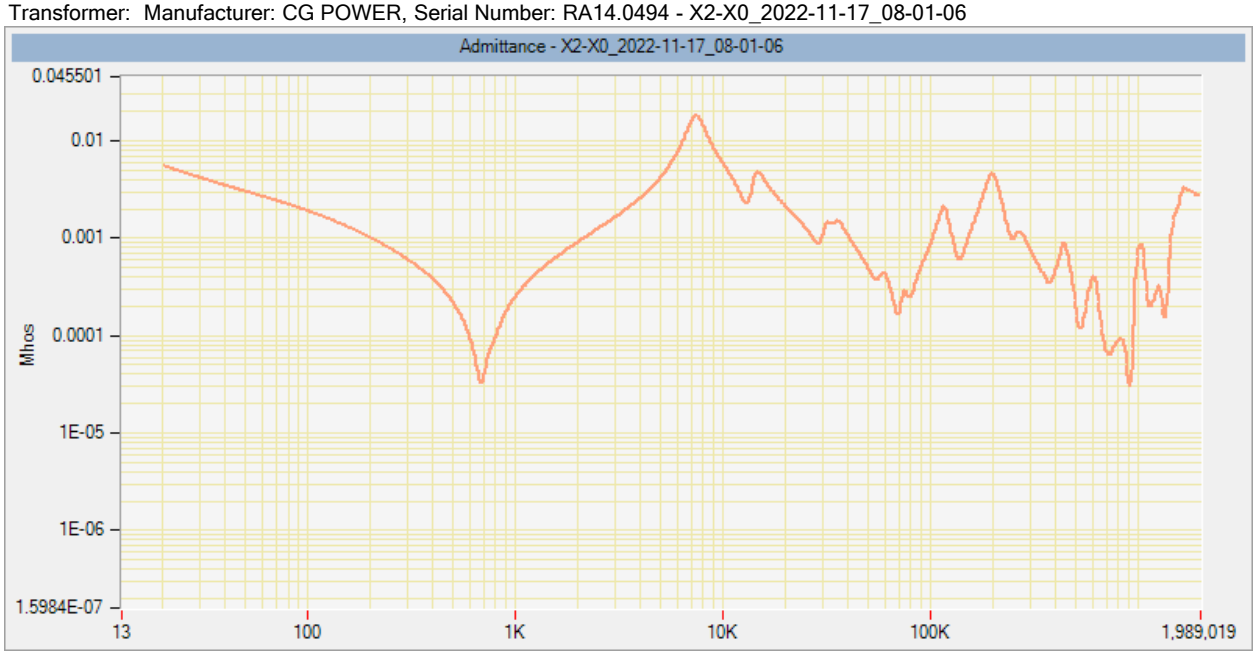
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - X1-X0_2022-11-17_07-58-05



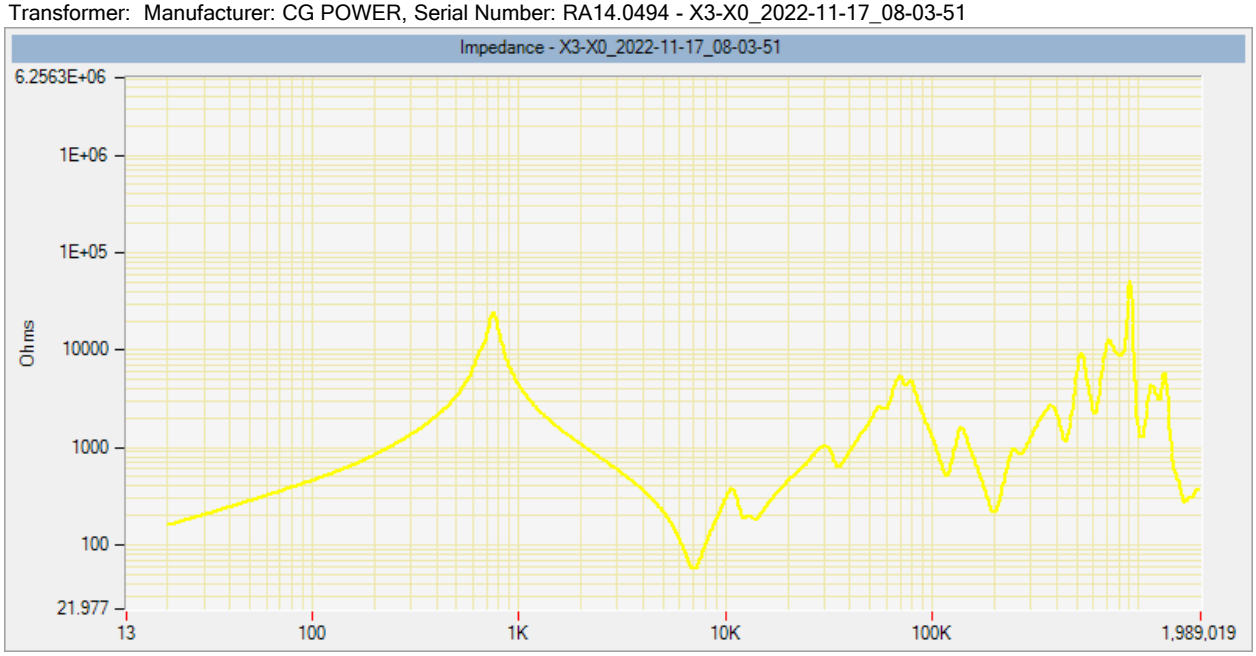
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - X2-X0_2022-11-17_08-01-06



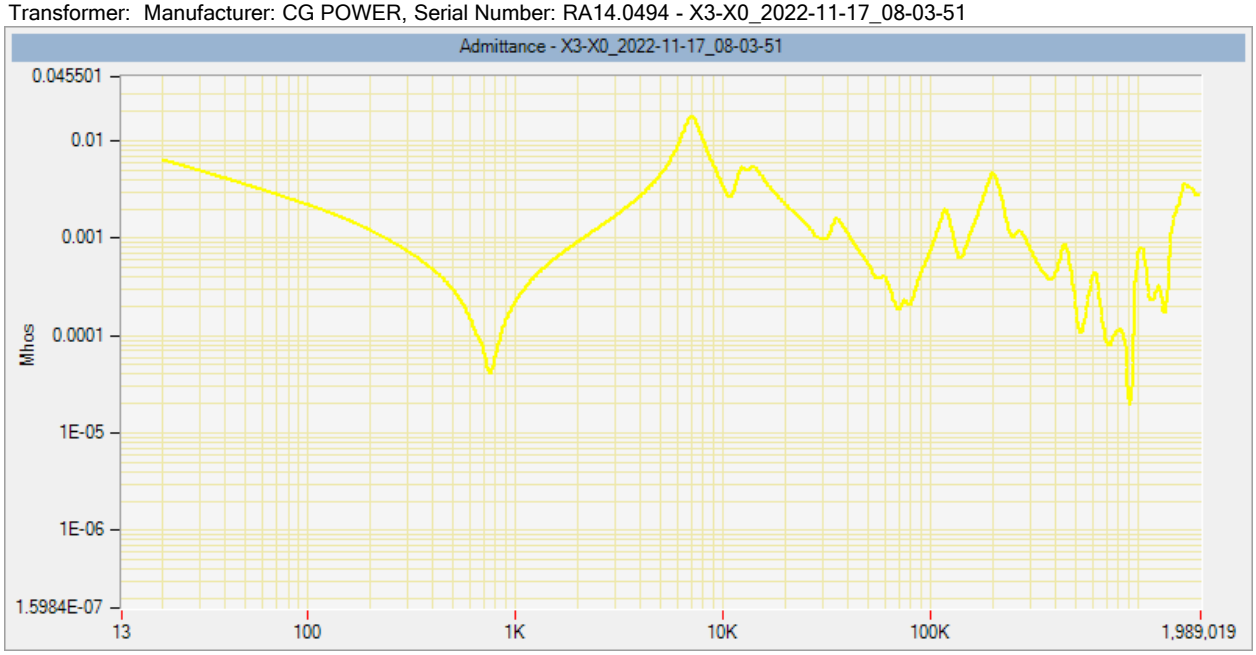
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - X2-X0_2022-11-17_08-01-06



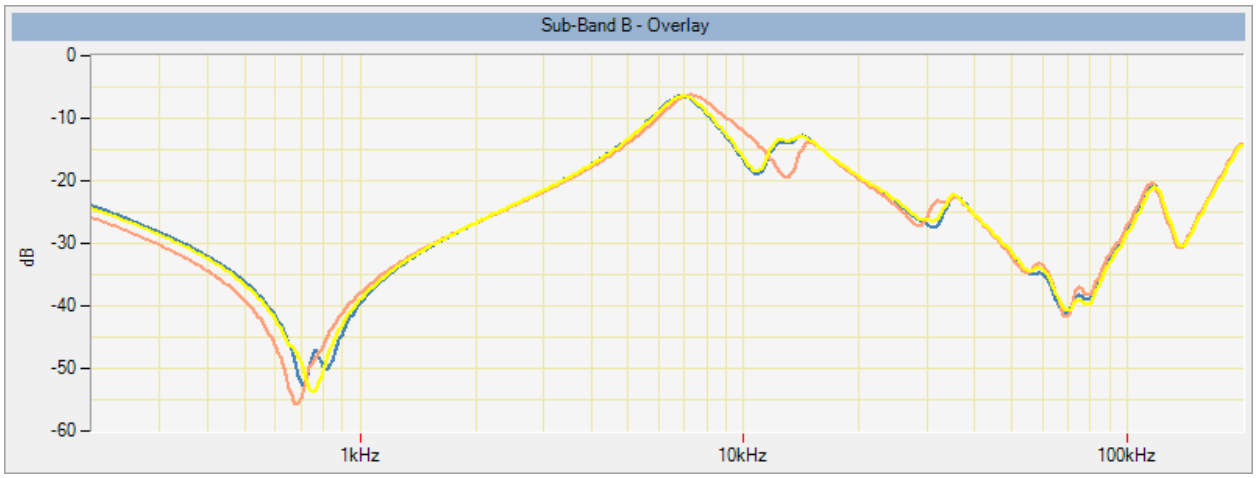
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - X3-X0_2022-11-17_08-03-51

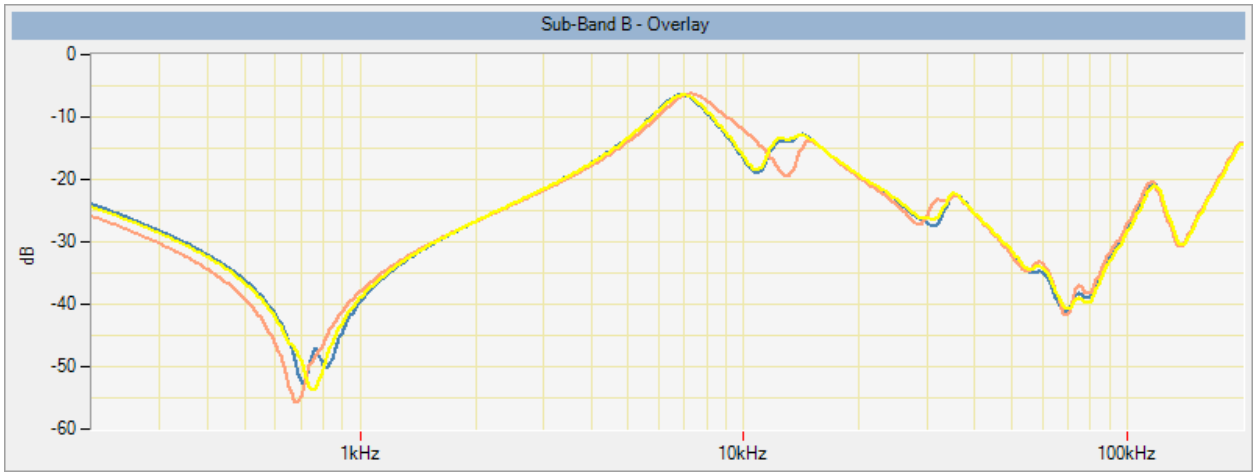


Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - X3-X0_2022-11-17_08-03-51




Sub-Band A - Overlay
0
-10
-20
-30
-40
-50
-60
dB
100Hz
1kHz
10kHz


Sub-Band B - Overlay
0
-10
-20
-30
-40
-50
-60
dB
1kHz
10kHz
100kHz


Sub-Band B - Overlay
0
-10
-20
-30
-40
-50
-60
dB
1kHz
10kHz
100kHz

Transformer Count: 1
Total Test Count: 3

1. Manufacturer: CG POWER, Serial Number: RA14.0494, Special ID:

TestDate: 11/17/2022 8:44 AM, Trace Name: H3-H2_2022-11-17_07-44-09
TestDate: 11/17/2022 8:48 AM, Trace Name: H1-H3_2022-11-17_07-48-48
TestDate: 11/17/2022 8:52 AM, Trace Name: H2-H1_2022-11-17_07-52-52

Nameplate Details

1. Manufacturer: CG POWER, Serial Number: RA14.0494, Special ID:

Filename: C:\Users\asus\Documents\Doble Engineering\Sweep Frequency Response Analyzer\Data\Eaton-Corp_New-Location_CG-POWER_RA140494_2022-11-17_07-44-09.sfra

TestTemplate: 3-Ph 2-Wind D-Y

Serial Number: RA14.0494
Manufacturer: CG POWER
Year of Manufacture: 2015
Special ID:
Current: 0
Phases: 3
Windings: 2
Type: DIST
HV: 115.5
LV1: 30.24
LV2: 0
Tertiary: 0
Impedance HV-LV1: 8.97
Impedance HV-LV2: 0
Impedance HV-Tertiary: 0
Impedance LV-Tertiary: 0

MVA Maximum: 0
MVA1: 0
MVA2: 0
MVA3: 0
Notes:
Template: 3-Ph 2-Wind D-Y
LTC Serial Number:
LTC Manufacturer:
LTC Year of Mfr: 0
LTC Range:
LTC Notes:
DETC Serial Number:
DETC Manufacturer:
DETC Year of Mfr: 0
DETC Range:
DETC Notes:

Instrument Details

1. Manufacturer: CG POWER, Serial Number: RA14.0494, Special ID:

TestDate: 11/17/2022 8:44 AM, Trace Name: H3-H2_2022-11-17_07-44-09

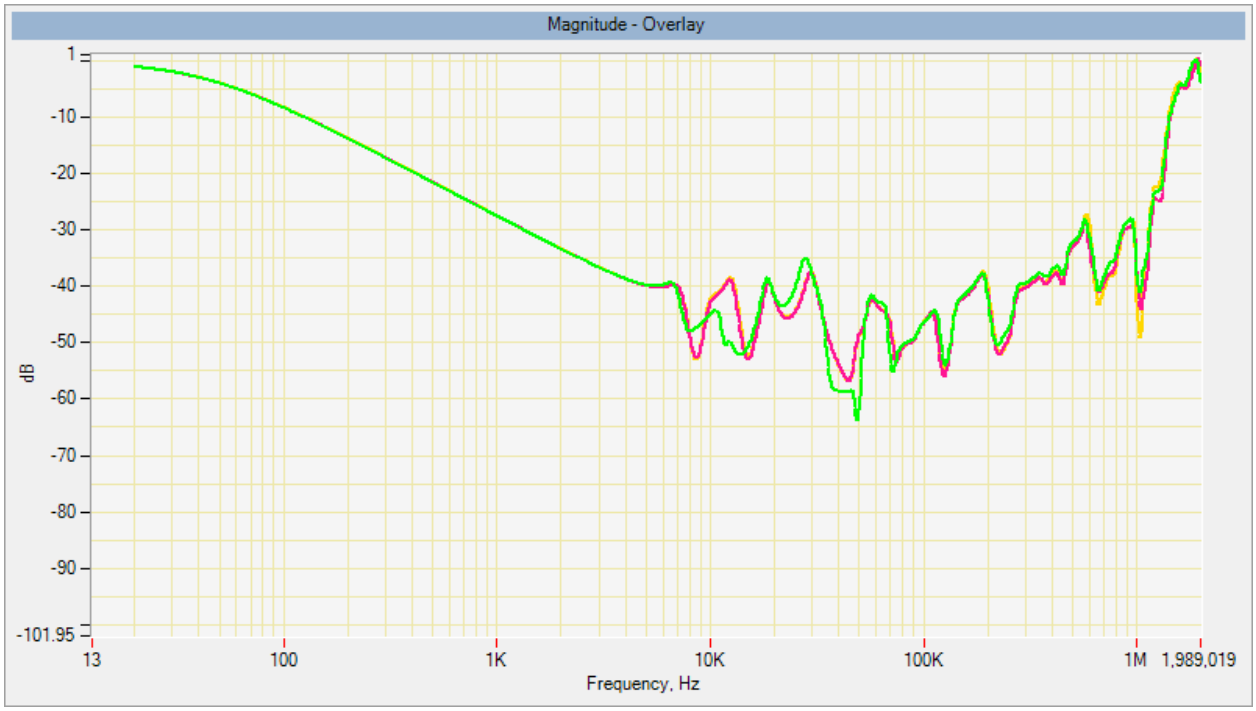
Tested by: Urian Clements
Instrument serial number: m5400
Notes:

TestDate: 11/17/2022 8:48 AM, Trace Name: H1-H3_2022-11-17_07-48-48

Tested by: Urian Clements
Instrument serial number: m5400
Notes:

TestDate: 11/17/2022 8:52 AM, Trace Name: H2-H1_2022-11-17_07-52-52

Tested by: Urian Clements
Instrument serial number: m5400
Notes:

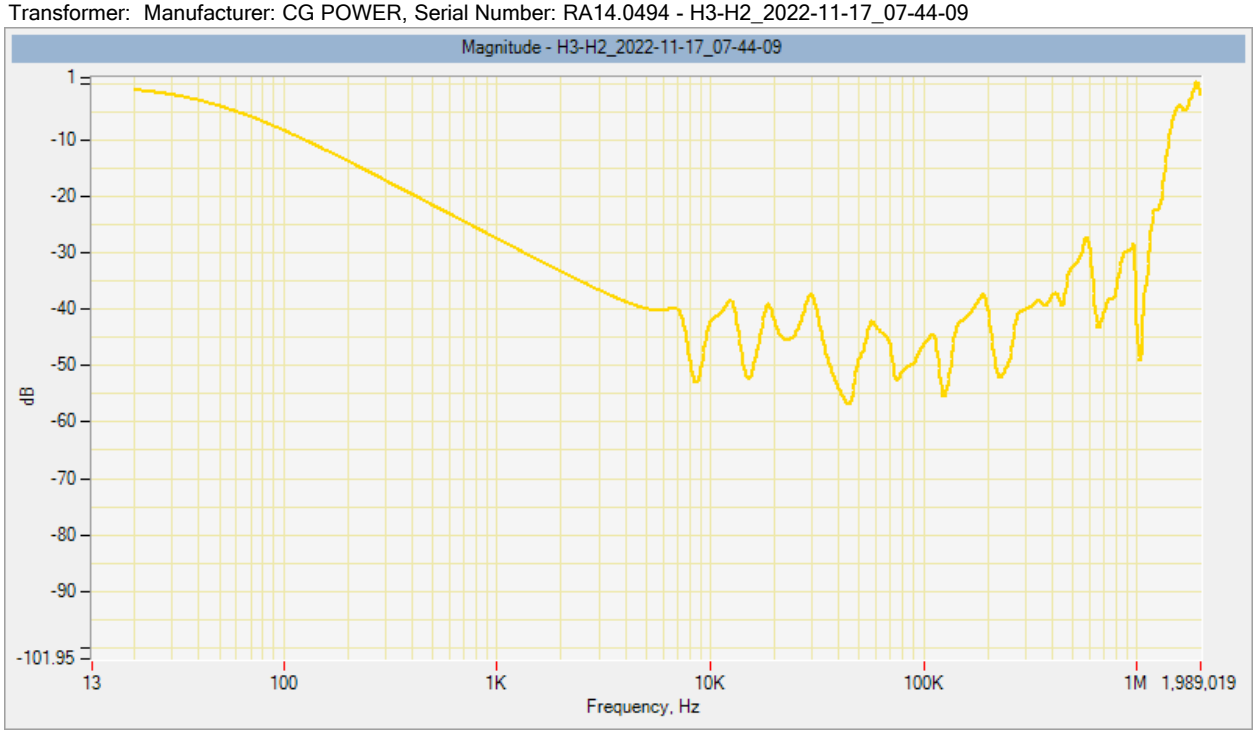


H3-H2_2022-11-17_07-44-09 - Manufacturer: CG POWERSerial Number: RA14.0494Date: 11/17/2022 8:44:09 AM
LTC: 6DETC: as found - make noteMVA Maximum: 0KV: 115.5/30.24

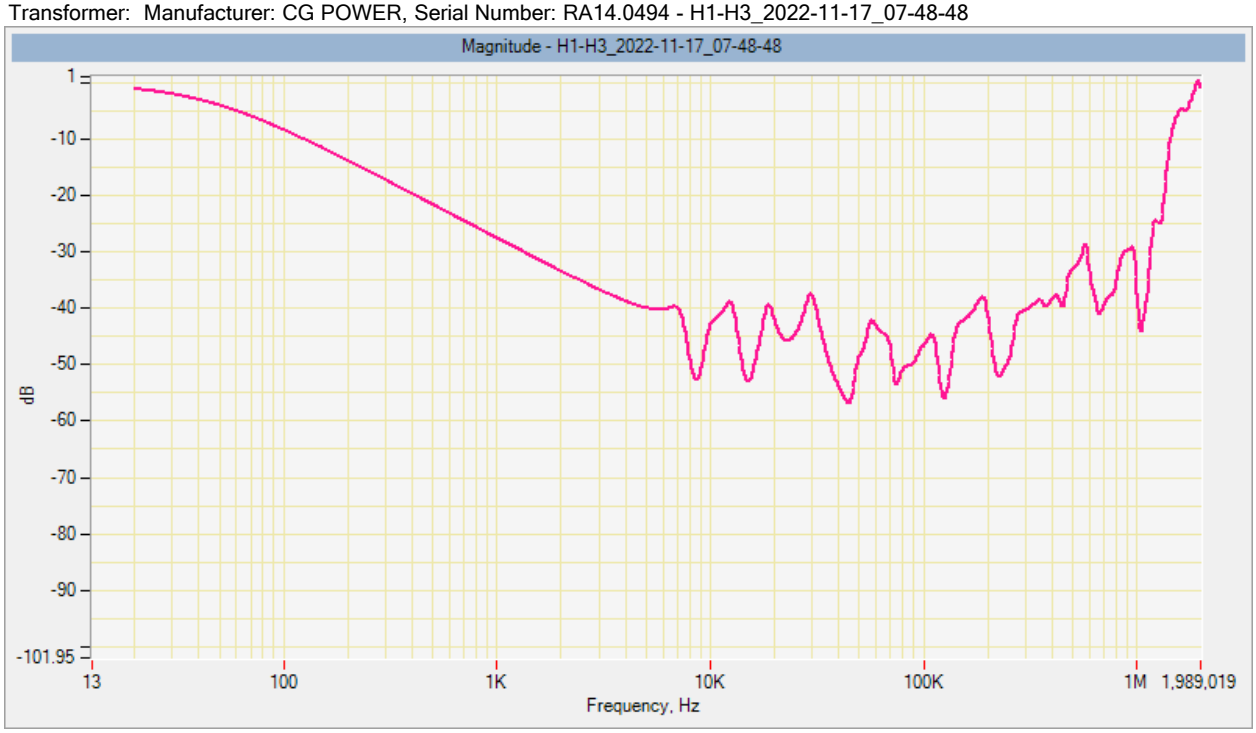
H1-H3_2022-11-17_07-48-48 - Manufacturer: CG POWERSerial Number: RA14.0494Date: 11/17/2022 8:48:48 AM
LTC: 6DETC: as found - make noteMVA Maximum: 50KV: 115.5/30.24

H2-H1_2022-11-17_07-52-52 - Manufacturer: CG POWERSerial Number: RA14.0494Date: 11/17/2022 8:52:52 AM
LTC: 6DETC: as found - make noteMVA Maximum: 50KV: 115.5/30.24

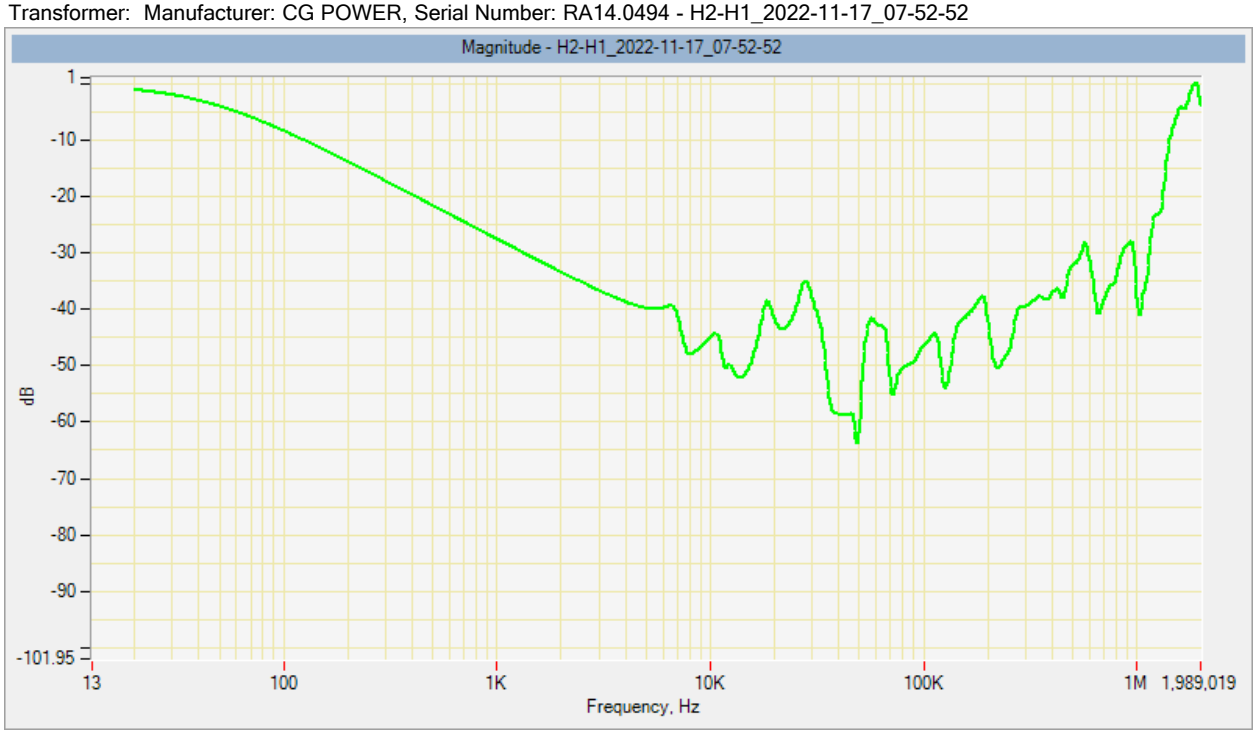
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H3-H2_2022-11-17_07-44-09

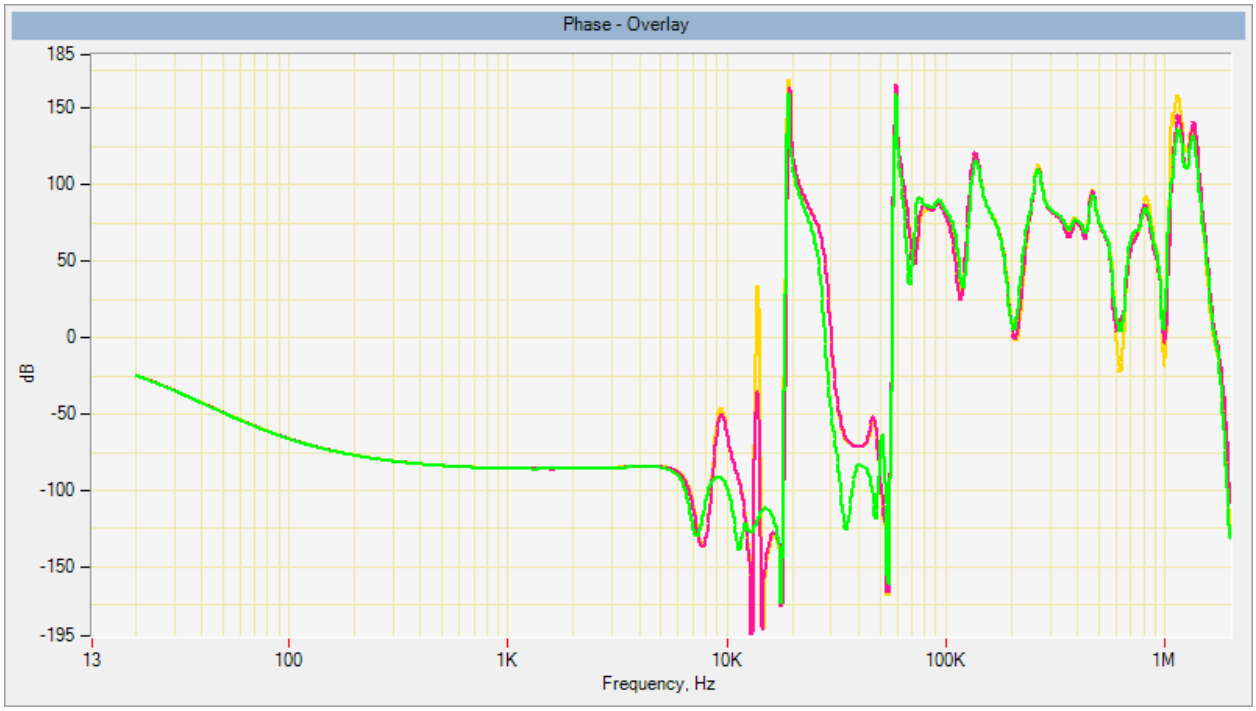


Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H1-H3_2022-11-17_07-48-48

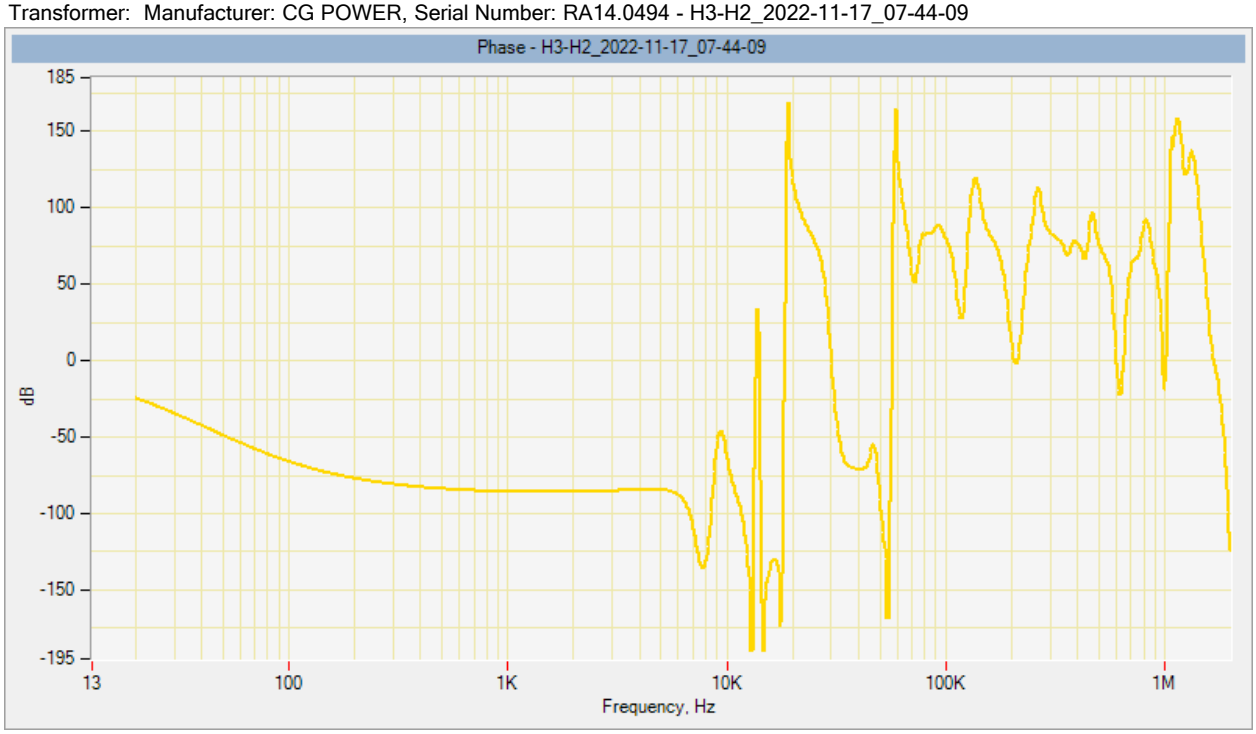


Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H2-H1_2022-11-17_07-52-52

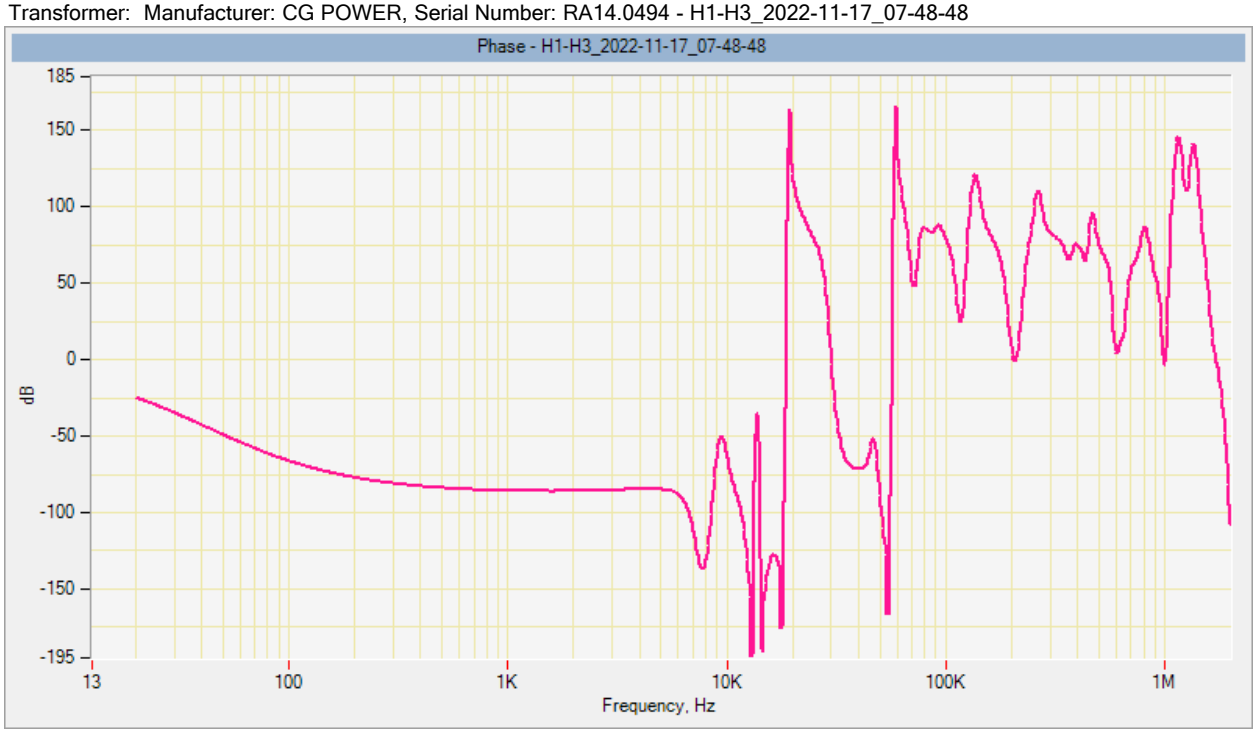



Phase - Overlay
185
150
100
50
0
-50
-100
-150
-195
dB
13
100
1K
10K
100K
1M
Frequency, Hz

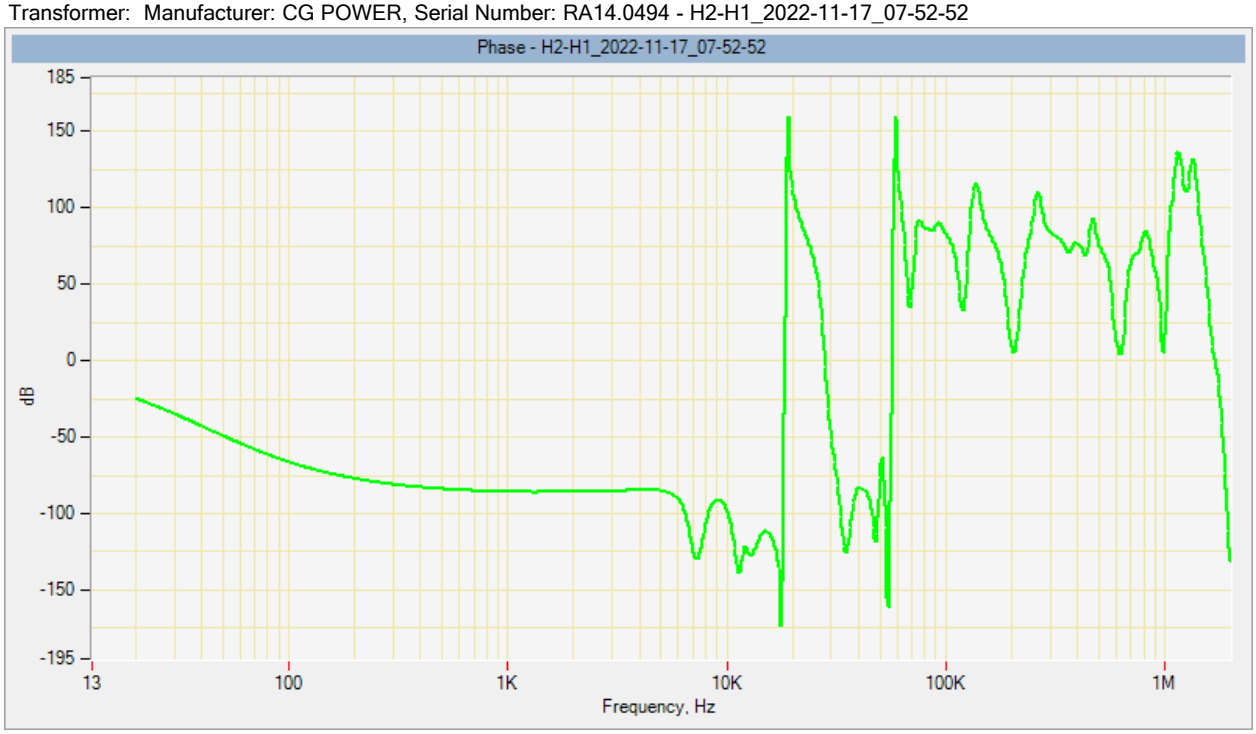
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H3-H2_2022-11-17_07-44-09



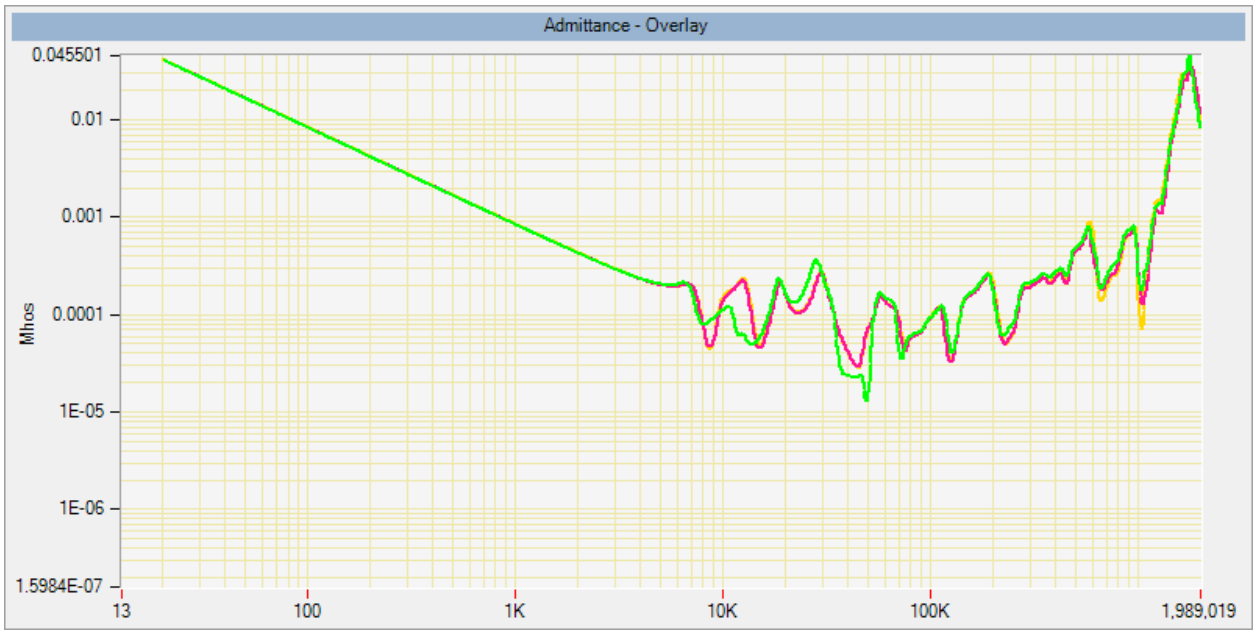
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H1-H3_2022-11-17_07-48-48



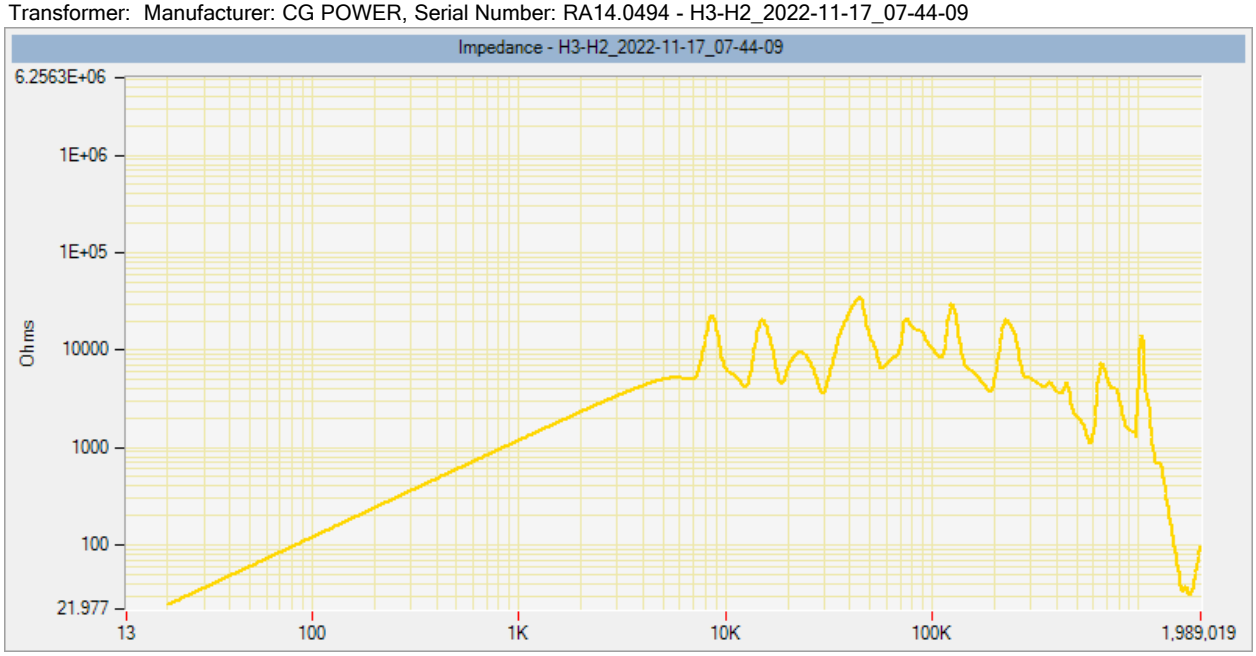
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H2-H1_2022-11-17_07-52-52



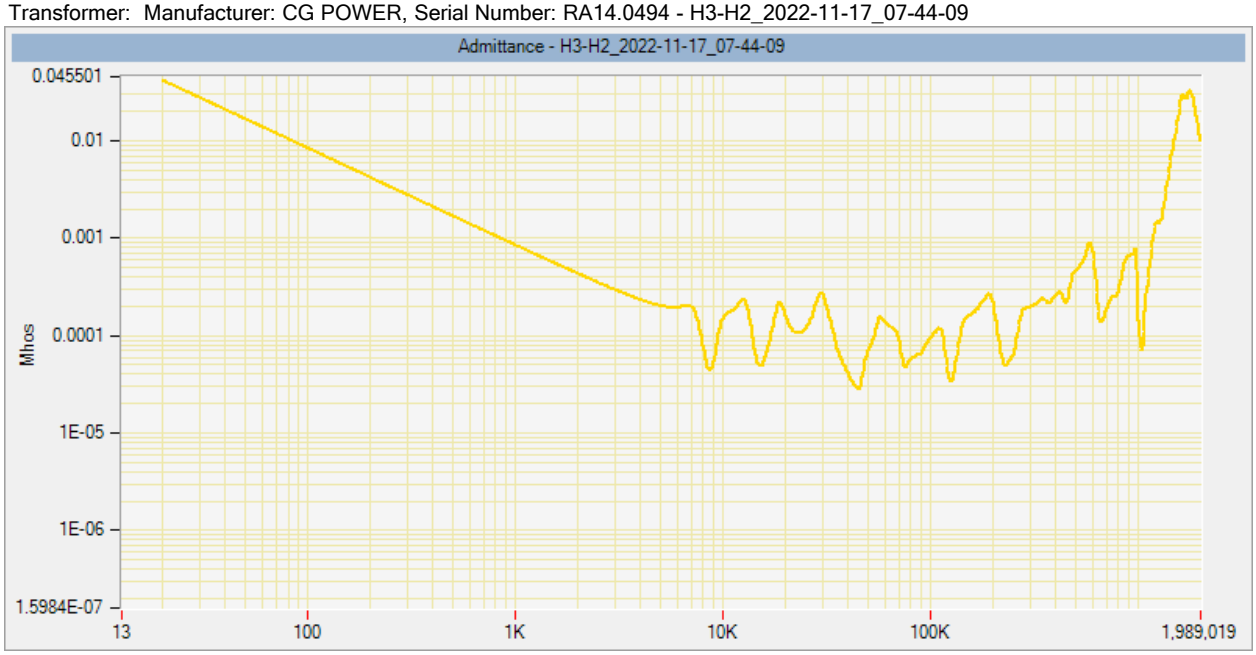

Impedance - Overlay
6.2563E+06
1E+06
1E+05
10000
1000
100
21.977
Ohms
13
100
1K
10K
100K
1,989,019


Admittance - Overlay
0.045501
0.01
0.001
0.0001
1E-05
1E-06
1.5984E-07
Mhos
13
100
1K
10K
100K
1,989,019

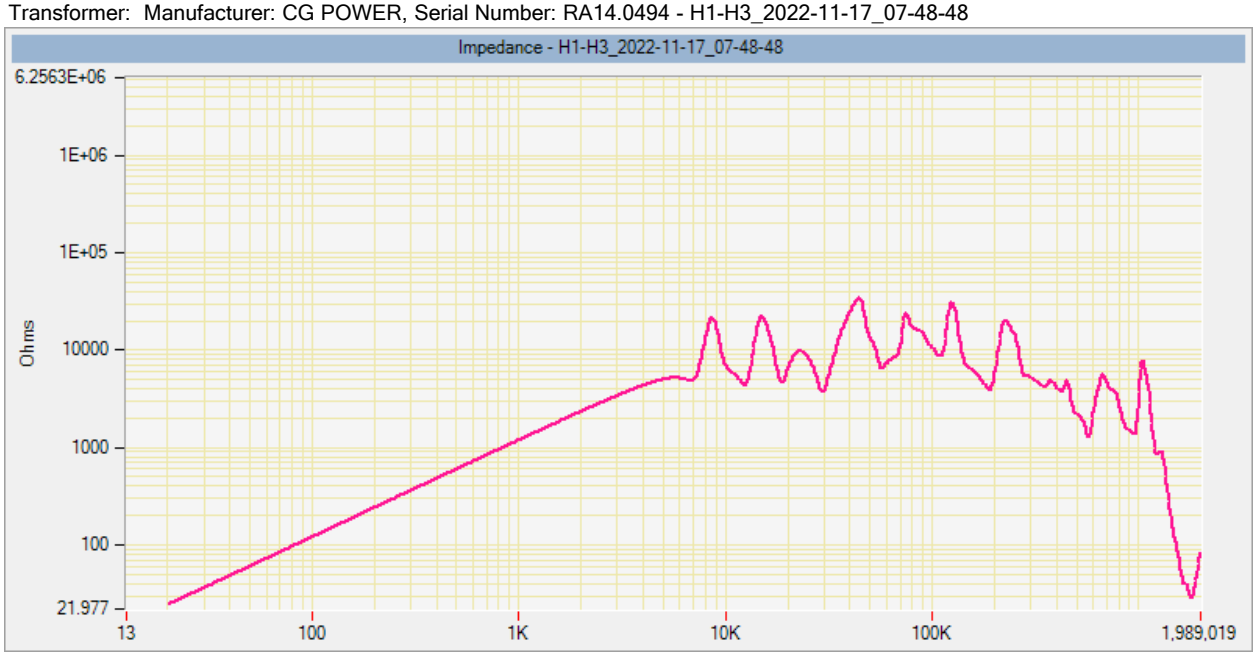
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H3-H2_2022-11-17_07-44-09



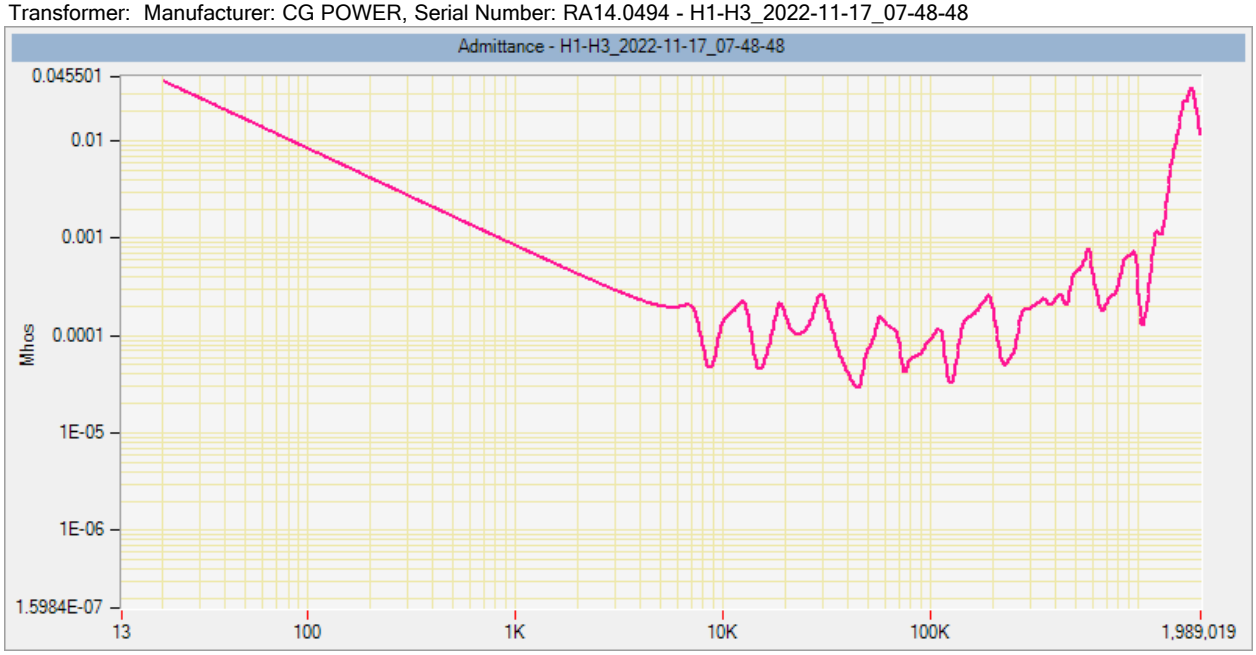
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H3-H2_2022-11-17_07-44-09



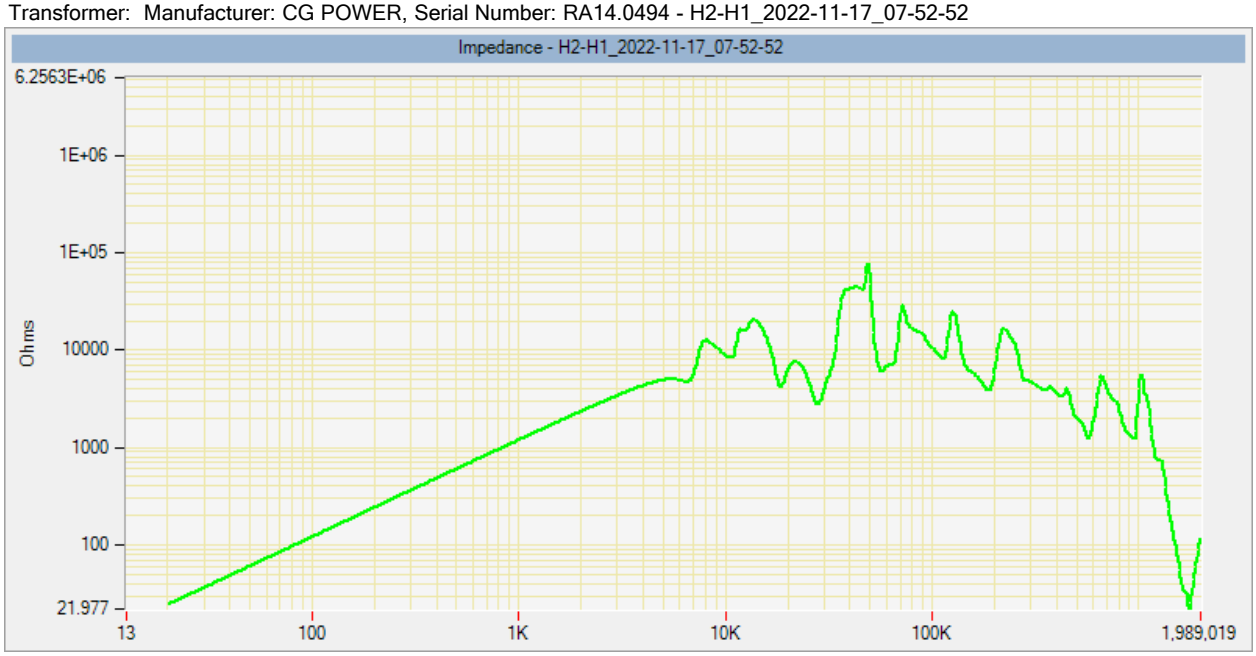
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H1-H3_2022-11-17_07-48-48



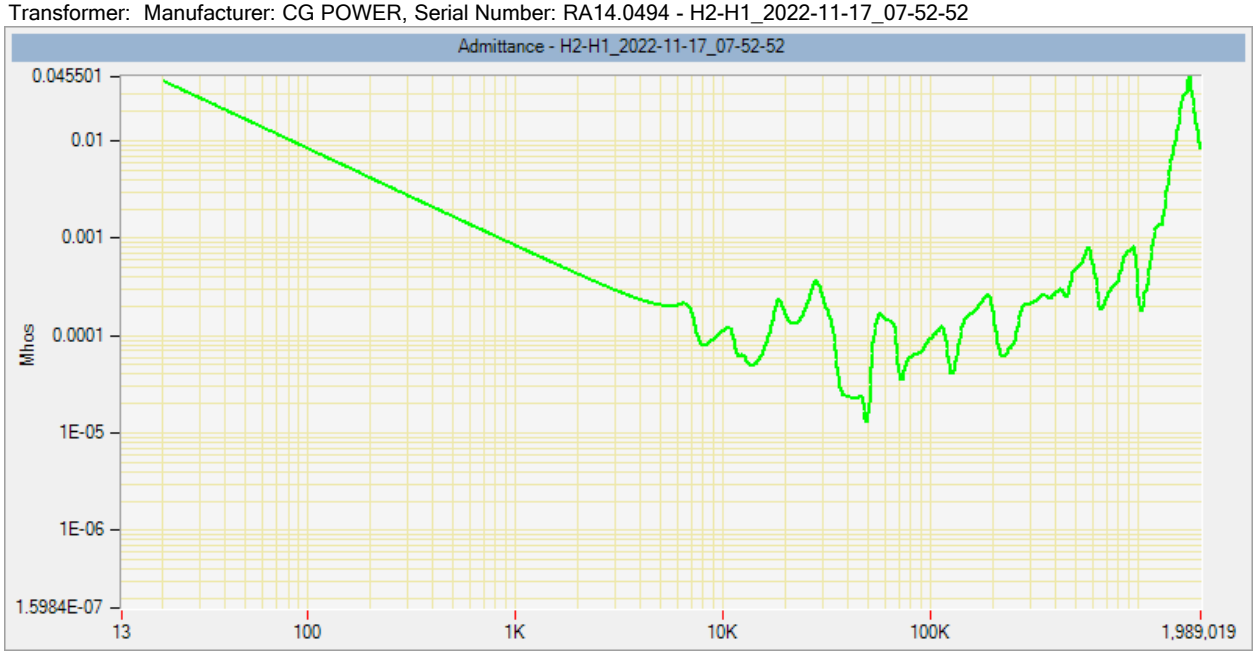
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H1-H3_2022-11-17_07-48-48

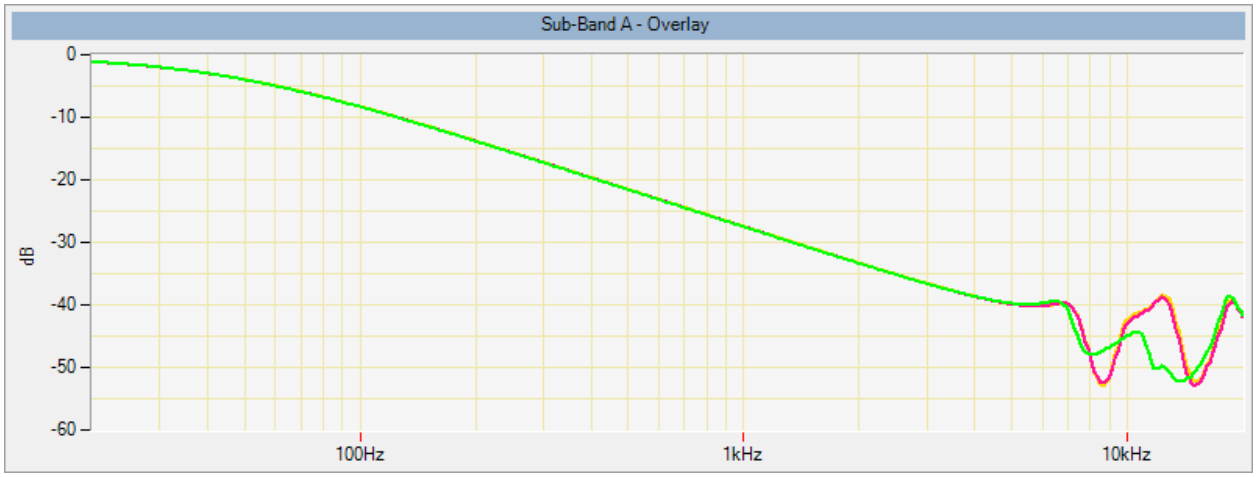


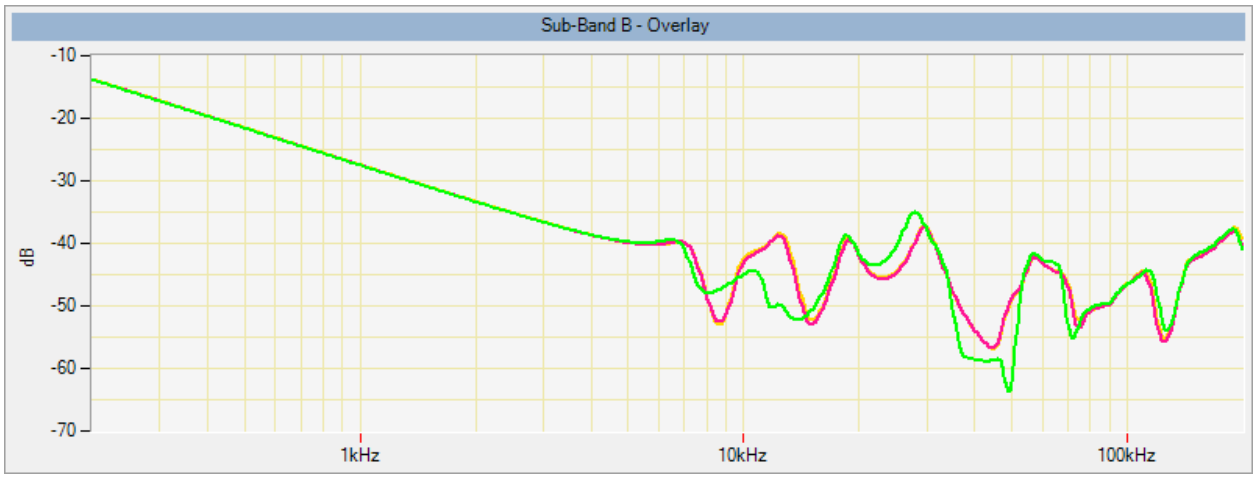
Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H2-H1_2022-11-17_07-52-52

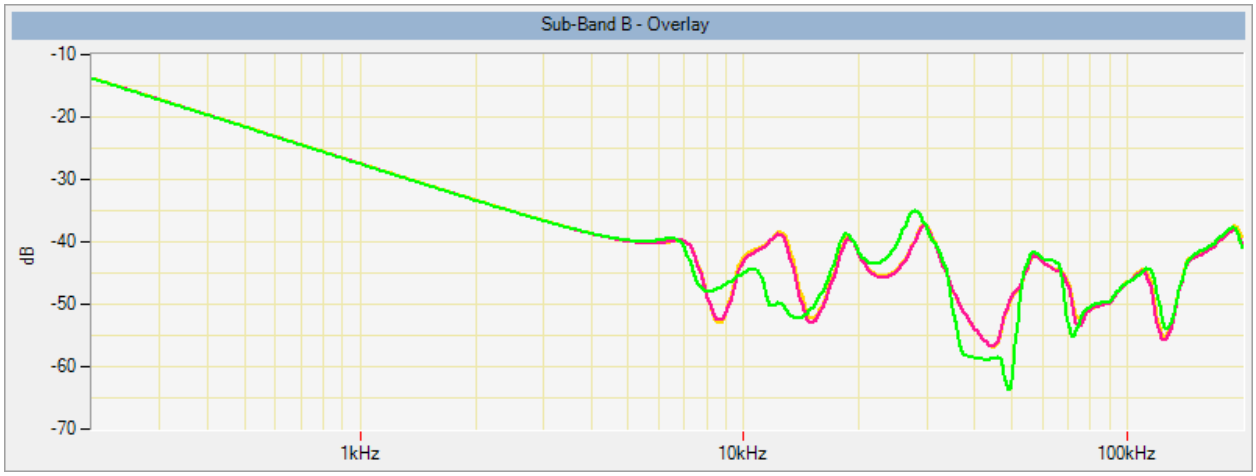


Transformer: Manufacturer: CG POWER, Serial Number: RA14.0494 - H2-H1_2022-11-17_07-52-52




Sub-Band A - Overlay
0
-10
-20
-30
-40
-50
-60
dB
100Hz
1kHz
10kHz


Sub-Band B - Overlay
-10
-20
-30
-40
-50
-60
-70
dB
1kHz
10kHz
100kHz


Sub-Band B - Overlay
-10
-20
-30
-40
-50
-60
-70
dB
1kHz
10kHz
100kHz

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

POTENTIAL TRANSFORMER

SYSTEM ID: NOTL DS

DEVICE ID: T1 PT

Customer: Niagara On -The-Lake Hydro
8 Henegan Rd

Site: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

Date: Nov 2022
Job # 22-2015

Nameplate Data

Manufacturer	
Catalogue #	
Type	
Serial #	61418651
Primary Voltage	16800V
Secondary Voltage	120V

Ratio	140:1
Volage Class	
HV BIL Rating	
ANSI/CSA Metering	
Accuracy	
Relaying Protection	NONE

Comments:

Test Data

Turn Ratio **Test** Voltage: 80 V Automatic ☑ Other _____ V

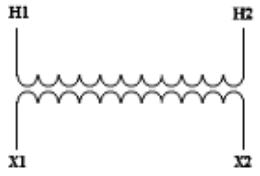
Tap Designation	Information	H1 X1 to H2 X2	H1 X1 to H2 X2	H1 X1 to H2 X2
1	Calculated Ratio	140		
	Measured Ratio	139.902		
	Deviation (%)	0.07		
	Iexc (mA)	0.1		
	Phase (Deg)	N/A		

Insulation Resistance

Resistance in Meg-Ohms after 1 min

High to Low & Ground	5000	v	2060000	MΩ	MΩ	MΩ
Low to High & Ground	500	v	804000	MΩ	MΩ	MΩ
High & Low to Ground	500	v	611000	MΩ	MΩ	MΩ

Winding Diagram



Test Instrument(s) Manufacturer / Model

Serial #

Ratio	Megger
3247	0516

Comments:

D.CHARRON, A.BURK

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

TRANSFORMER DATA SHEET

SYSTEM ID: NOTL DS
DEVICE ID: T2
ASSET ID:

Customer: Niagara On -The-Lake Hydro
8 Henegan Rd

Site: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

Date: Nov 2022
Job # 22-2015

NAMEPLATE DATA

Transformer

Transformer Class	Padmount ☐	Station ☑					Other	
Transformer Cooling	ONAN ☐	ONAF ☑		LNAN ☐		DRY ☐	Other	
Transformer Orientation	Front ☐	Top-Top ☑		Top-Side ☐		Side-Side ☐	Other	

Manufacturer	FERRANTI PACKARD
Date of Manufacture	2003
Serial #	5016-10101
KVA / Prov. KVA Rating	25/33.3/41.7
Primary Voltage	115 500 Δ
Primary Ampacity	208
Secondary Voltage	28400/16400 Y
Secondary Ampacity	848
HV Winding Material	COPPER
LV Winding Material	COPPER
CSA Specifications	
HV BIL Rating	550
LV BIL Rating	150

Core & Windings	28012			kg ☑	lb ☐
Tanks & Fittings	13203			kg ☑	lb ☐
Conservator (no oil)	N/A			kg ☐	lb ☐
Radiators (no oil)	23620			kg ☑	lb ☐
Total Weight	69925			kg ☑	lb ☐
Main Tank Volume	28172	L	24521	kg ☑	lb ☐
Radiators Volume	1137	L	989	kg ☑	lb ☐
Conservator Volume	N/A	L	N/A	kg ☑	lb ☐
LTC Compartment	1273	L	1108	kg ☑	lb ☐
Total Oil	N/A	L	N/A	kg ☑	lb ☐
Percent Impendance	9.95		ONAN ☑	ONAF ☐	
Temperature Rise	65			°C ☐	°F ☐
Transformer Colour	GREY				

Primary & Secondary Bushings

DSG	SERIAL NUMBER	MFR	TYPE	KV	BIL	AMPS	YEAR	TAP
H0	N/A							☐
H1	3504865005	ABB	O Plus C	138	650	800	2003	☐
H2	3504865015	ABB	O Plus C	138	650	800	2003	☐
H3	3504865016	ABB	O Plus C	138	650	800	2003	☐
X0	350504750	ABB	AB	34.5	95	400/200	2003	☐
X1	3505047508	ABB	AB	34.5	200	400/200	2003	☐
X2	3505047506	ABB	AB	34.5	200	400/200	2003	☐
X3	3505012303	ABB	AB	34.5	200	400/200	2003	☐

Comments:

VISUAL INSPECTION

Nameplate Condtion	☑ Satisfactory	☐ Not Satisfactory	☐ NA	Comments:
Fan/Pump Condition	☑ Satisfactory	☐ Not Satisfactory	☐ NA	Comments:
Ground Condition	☑ Satisfactory	☐ Not Satisfactory	☐ NA	Comments:
Liquid Levels In Tank	☑ Satisfactory	☐ Not Satisfactory	☐ NA	Comments:
Interlock Operation	☐ Satisfactory	☐ Not Satisfactory	☑ NA	Comments:
Temp Guage Operation	☑ Satisfactory	☐ Not Satisfactory	☐ NA	Comments:

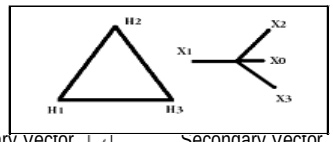
Coolant Temp: 2 ☑ °C ☐ °F
Max Coolant Temp: 40 ☑ °C ☐ °F

Comments: STATION OFF NOVEMBER 1, 2022. TX TESTED NOV 14, 2022

TAP CHANGER DATA

Tap Changer Type	OLTC ☑	DETC ☐			
Manufacturer	FERANTI PACKARD		Oil Volume	1273	L ☑ G ☐
Type	RMV-II 2000		Pressure Withstand		PSI
Serial Number	N/A				
Date Of Manufacture	2003				
Standards					
Ampacity Rating	1300	A			
Voltage Rating		V			
Tap Positions	33				
Tap Count As Found	31731				
Tap Count As Left	31771				

Vector Diagram: DeltaWye1__5.Dyn



Primary vector ☑ Secondary vector ☑

Comments:

TRANSFORMER SURGE ARRESTERS

Lightning Arrestors	Yes	☑	No	☐			
Class	Distribution	☐	Intermediate	☐	Station	☑	
Composition	Ceramic	☐	Polymer	☑			
Manufacturer	ABB		Max / MCOV Rating	96/76	kV		
Catalog #	Q096SA076B						

Comments:

TRANSFORMER LIGHTNING ARRESTORS

Lightning Arrestors	Yes	☑	No	☐			
Class	Distribution	☐	Intermediate	☐	Station	☑	
Composition	Ceramic	☐	Polymer	☑			
Manufacturer	ABB		Max / MCOV Rating	30/24.4	kV		
Catalog #	Q030SB024AOH						

Comments:

OIL CONSERVATOR

Oil Conservator	Yes	☑	No	☐	Conservator Volume		L	☐	G ☐
Silica Gel Breather	Yes	☑	No	☐	Breather Volume		L	☐	G ☐
Silica Gel Colour	Good	☑	Bad	☐	Replaced	☐	N/A	☐	

Comments:

FANS

Fans	Yes	☑	No	☐	
# of Fans	11		Fan Voltage	208/230	
Fan Size	26"		Frame Size	FR48Y	
Horsepower	1/6				

Comments:

TRANSFORMER LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable	☐	Bus Bar	☑	Conductor Size/Dim	2.5" IPS	
Conductor Material	Aluminum	☑	Copper	☐	Conductors Per Phase	1	
Tape Shield	Aluminum	☐	Copper	☐	Bond Size / Dim	EST 3/0	
Concentric Neutral	Aluminum	☐	Copper	☐	# of Bond Conductors	2	
Insulation Voltage	600V	☐	1000V	☐	# of Neutral Conductors	0	
Insulation Type	RW90	☐	XLPE	☐	Neutral Size/Dim	N/A	

Comments:

Tested By: A.BURK, D.BENJAMIN

ELECTRICAL TESTS

Turn Ratio Test Test Voltage: _____ V Automatic ☑ Other _____ V

Position / Designation		Top Voltage (V)	Calculated Ratio	H1 X1 to H3 X0 (mA) Exec	% Dev	H2 X2 to H1 X0 (mA) Exec	% Dev	H3 X3 to H2 X0 (mA) Exec	% Dev
1	90.00%	25,560.00	7.827	7.822		7.826		7.826	
				0.30	0.05	0.30	0.01	0.40	0.01
2	90.62%	25,737.00	7.773	7.779		7.778		7.778	
				0.80	0.08	0.50	0.07	0.80	0.07
3	91.25%	25,915.00	7.720	7.717		7.716		7.718	
				0.30	0.03	0.30	0.04	0.40	0.02
4	91.87%	26,092.00	7.667	7.670		7.670		7.672	
				0.80	0.04	0.60	0.03	0.80	0.06
5	92.50%	26,270.00	7.615	7.613		7.611		7.614	
				0.30	0.04	0.30	0.05	0.30	0.01
6	93.12%	26,447.00	7.564	7.568		7.569		7.570	
				0.80	0.05	0.60	0.06	0.70	0.07
7	93.75%	26,625.00	7.514	7.510		7.509		7.513	
				0.30	0.05	0.20	0.06	0.30	0.01
8	94.37%	26,802.00	7.464	0.468		7.468		7.470	
				0.80	0.05	0.60	0.05	0.80	0.08
9	95.00%	26,980.00	7.415	7.412		7.411		7.413	
				0.30	0.04	0.30	0.05	0.30	0.02
10	95.62%	27,157.00	7.366	7.371		7.370		7.371	
				0.80	0.06	0.50	0.04	0.70	0.07
11	96.25%	27,335.00	7.319	7.315		7.316		7.317	
				0.30	0.05	0.20	0.04	0.30	0.02
12	96.87%	27,512.00	7.271	7.276		7.274		7.276	
				0.80	0.06	0.50	0.04	0.80	0.06
13	97.50%	27,690.00	7.225	7.223		7.224		7.224	
				0.30	0.02	0.20	0.01	0.30	0.01
14	98.12%	27,867.00	7.179	7.181		7.187		7.184	
				0.80	0.04	0.50	0.11	0.70	0.07
15	98.75%	28,045.00	7.133	7.133		7.133		7.134	
				0.30	0.01	0.30	0.01	0.30	0.01
16	99.37%	28,222.00	7.088	7.093		7.094		7.096	
				0.80	0.06	0.50	0.08	1.09	0.09
17	100.00%	28,400.00	7.044	7.044		7.044		7.044	
				0.30	0.01	0.20	0.01	0.20	0.01
18	100.63%	28,578.00	7.000	7.006		7.006		7.009	
				0.70	0.08	0.50	0.08	0.70	0.12
19	101.25%	28,755.00	6.957	6.957		6.955		6.959	
				0.30	0.01	0.20	0.03	0.30	0.02
20	101.88%	28,933.00	6.915	6.922		6.921		6.923	
				0.70	0.11	0.50	0.09	0.70	0.11

Comments:

Tested By: D.BENJAMIN, A.BURK

Test Instrument(s) Manufacturer / Model Ratio

Serial # 3747

Temperature (°C) 2

Humdity (%) 70

Turn Ratio Test

Position / Designation		Top Voltage (V)	Calculated Ratio	H1 X1 to H3 X0 (mA) Exec	% Dev	H2 X2 to H1 X0 (mA) Exec	% Dev	H3 X3 to H2 X0 (mA) Exec	% Dev
21	102.50%	29,110.00	6.872	6.872		6.872		9.874	
				0.30	0.01	0.20	0.01	0.20	0.03
22	103.13%	29,288.00	6.831	6.835		6.836		6.839	
				0.80	0.07	0.50	0.08	0.70	0.12
23	103.75%	29,465.00	6.790	6.788		6.790		6.790	
				0.30	0.02	0.20	0.01	0.30	0.01
24	104.38%	29,643.00	6.749	6.756		6.754		6.755	
				0.80	0.10	0.50	0.07	0.70	0.10
25	105.00%	29,820.00	6.709	6.708		6.710		6.711	
				0.30	0.01	0.20	0.02	0.20	0.03
26	105.63%	29,998.00	6.669	6.677		6.676		6.679	
				0.70	0.12	0.50	0.10	0.70	0.14
27	106.25%	30,175.00	6.630	6.628		6.630		6.630	
				0.30	0.03	0.20	0.01	0.20	0.01
28	106.88%	30,353.00	6.591	6.597		6.597		6.597	
				0.80	0.08	0.50	0.09	0.70	0.10
29	107.50%	30,530.00	6.553	6.555		6.551		6.555	
				0.30	0.04	0.20	0.02	0.20	0.03
30	108.13%	30,708.00	6.515	6.522		6.521		6.523	
				0.80	0.11	0.50	0.09	0.70	0.12
31	108.75%	30,885.00	6.477	6.477		6.478		6.479	
				0.30	0.01	0.20	0.01	0.30	0.02
32	109.38%	31,063.00	6.440	6.447		6.447		6.449	
				0.70	0.10	0.50	0.10	0.70	0.14
33	110.00%	31,240.00	6.404	6.404		6.404		6.405	
				0.30	0.01	0.20	0.01	0.20	0.01

Comments:

Tested By: D. BENJAMIN, A.BURK

Test Instrument(s)

Manufacturer / Model: Ratio

Serial #: 3747

Temperature (°C): 2

Humdity (%): 70

PRIMARY WINDING RESISTANCE

Resitance in Ohms at 1 A after 1 min

H0 - H1	Ω	H1-H2	1.239 Ω
H0 - H2	Ω	H2-H3	1.248 Ω
H0 - H3	Ω	H3-H1	1.243 Ω

SECONDARY WINDING RESISTANCE

Resistance in Milli Ohms at 5 A after 1 min

Tap Position				
1	X0-X1	32.070 mΩ	X1-X2	mΩ
	X0-X2	32.060 mΩ	X2-X3	mΩ
	X0-X3	32.190 mΩ	X3-X1	mΩ
2	X0-X1	31.770 mΩ	X1-X2	mΩ
	X0-X2	31.780 mΩ	X2-X3	mΩ
	X0-X3	31.990 mΩ	X3-X1	mΩ
3	X0-X1	31.750 mΩ	X1-X2	mΩ
	X0-X2	31.810 mΩ	X2-X3	mΩ
	X0-X3	32.010 mΩ	X3-X1	mΩ
4	X0-X1	31.400 mΩ	X1-X2	mΩ
	X0-X2	31.350 mΩ	X2-X3	mΩ
	X0-X3	31.580 mΩ	X3-X1	mΩ
5	X0-X1	31.240 mΩ	X1-X2	mΩ
	X0-X2	31.370 mΩ	X2-X3	mΩ
	X0-X3	31.520 mΩ	X3-X1	mΩ
6	X0-X1	30.990 mΩ	X1-X2	mΩ
	X0-X2	31.010 mΩ	X2-X3	mΩ
	X0-X3	31.250 mΩ	X3-X1	mΩ
7	X0-X1	30.920 mΩ	X1-X2	mΩ
	X0-X2	31.110 mΩ	X2-X3	mΩ
	X0-X3	31.190 mΩ	X3-X1	mΩ
8	X0-X1	30.720 mΩ	X1-X2	mΩ
	X0-X2	30.740 mΩ	X2-X3	mΩ
	X0-X3	30.900 mΩ	X3-X1	mΩ
9	X0-X1	30.760 mΩ	X1-X2	mΩ
	X0-X2	30.730 mΩ	X2-X3	mΩ
	X0-X3	31.040 mΩ	X3-X1	mΩ
10	X0-X1	30.320 mΩ	X1-X2	mΩ
	X0-X2	30.310 mΩ	X2-X3	mΩ
	X0-X3	30.530 mΩ	X3-X1	mΩ

Tap Position				
11	X0-X1	30.290 mΩ	X1-X2	mΩ
	X0-X2	30.310 mΩ	X2-X3	mΩ
	X0-X3	30.430 mΩ	X3-X1	mΩ
12	X0-X1	29.930 mΩ	X1-X2	mΩ
	X0-X2	29.950 mΩ	X2-X3	mΩ
	X0-X3	30.210 mΩ	X3-X1	mΩ
13	X0-X1	29.860 mΩ	X1-X2	mΩ
	X0-X2	30.000 mΩ	X2-X3	mΩ
	X0-X3	30.140 mΩ	X3-X1	mΩ
14	X0-X1	29.640 mΩ	X1-X2	mΩ
	X0-X2	29.700 mΩ	X2-X3	mΩ
	X0-X3	29.960 mΩ	X3-X1	mΩ
15	X0-X1	29.700 mΩ	X1-X2	mΩ
	X0-X2	29.720 mΩ	X2-X3	mΩ
	X0-X3	29.870 mΩ	X3-X1	mΩ
16	X0-X1	29.040 mΩ	X1-X2	mΩ
	X0-X2	29.110 mΩ	X2-X3	mΩ
	X0-X3	29.170 mΩ	X3-X1	mΩ
17	X0-X1	28.790 mΩ	X1-X2	mΩ
	X0-X2	28.970 mΩ	X2-X3	mΩ
	X0-X3	29.040 mΩ	X3-X1	mΩ
18	X0-X1	29.040 mΩ	X1-X2	mΩ
	X0-X2	29.050 mΩ	X2-X3	mΩ
	X0-X3	29.220 mΩ	X3-X1	mΩ
19	X0-X1	29.750 mΩ	X1-X2	mΩ
	X0-X2	29.780 mΩ	X2-X3	mΩ
	X0-X3	29.800 mΩ	X3-X1	mΩ
20	X0-X1	29.660 mΩ	X1-X2	mΩ
	X0-X2	29.670 mΩ	X2-X3	mΩ
	X0-X3	29.900 mΩ	X3-X1	mΩ

Comments:

Tested By: D. BENJAMIN, A.BURK

Test Instrument(s) Manufacturer / Model

Serial #

Winding: 0618

Temperature (°C) 2

Humdity (%) 70

SECONDARY WINDING RESISTANCE

Resistance in Milli Ohms at 5 A after 1 min

Tap Position						
21	X0-X1	29.970	mΩ	X1-X2		mΩ
	X0-X2	30.070	mΩ	X2-X3		mΩ
	X0-X3	30.160	mΩ	X3-X1		mΩ
22	X0-X1	29.960	mΩ	X1-X2		mΩ
	X0-X2	29.940	mΩ	X2-X3		mΩ
	X0-X3	30.200	mΩ	X3-X1		mΩ
23	X0-X1	30.310	mΩ	X1-X2		mΩ
	X0-X2	30.310	mΩ	X2-X3		mΩ
	X0-X3	30.450	mΩ	X3-X1		mΩ
24	X0-X1	30.270	mΩ	X1-X2		mΩ
	X0-X2	30.380	mΩ	X2-X3		mΩ
	X0-X3	30.490	mΩ	X3-X1		mΩ
25	X0-X1	30.750	mΩ	X1-X2		mΩ
	X0-X2	30.820	mΩ	X2-X3		mΩ
	X0-X3	30.830	mΩ	X3-X1		mΩ
26	X0-X1	30.720	mΩ	X1-X2		mΩ
	X0-X2	30.710	mΩ	X2-X3		mΩ
	X0-X3	31.110	mΩ	X3-X1		mΩ
27	X0-X1	31.010	mΩ	X1-X2		mΩ
	X0-X2	31.040	mΩ	X2-X3		mΩ
	X0-X3	31.170	mΩ	X3-X1		mΩ
28	X0-X1	30.970	mΩ	X1-X2		mΩ
	X0-X2	30.970	mΩ	X2-X3		mΩ
	X0-X3	31.330	mΩ	X3-X1		mΩ
29	X0-X1	31.330	mΩ	X1-X2		mΩ
	X0-X2	31.300	mΩ	X2-X3		mΩ
	X0-X3	31.470	mΩ	X3-X1		mΩ
30	X0-X1	31.330	mΩ	X1-X2		mΩ
	X0-X2	31.290	mΩ	X2-X3		mΩ
	X0-X3	31.640	mΩ	X3-X1		mΩ

Tap Position						
31	X0-X1	31.570	mΩ	X1-X2		mΩ
	X0-X2	31.740	mΩ	X2-X3		mΩ
	X0-X3	31.950	mΩ	X3-X1		mΩ
32	X0-X1	31.670	mΩ	X1-X2		mΩ
	X0-X2	31.720	mΩ	X2-X3		mΩ
	X0-X3	32.040	mΩ	X3-X1		mΩ
33	X0-X1	31.950	mΩ	X1-X2		mΩ
	X0-X2	32.100	mΩ	X2-X3		mΩ
	X0-X3	32.210	mΩ	X3-X1		mΩ
	X0-X1		mΩ	X1-X2		mΩ
	X0-X2		mΩ	X2-X3		mΩ
	X0-X3		mΩ	X3-X1		mΩ
	X0-X1		mΩ	X1-X2		mΩ
	X0-X2		mΩ	X2-X3		mΩ
	X0-X3		mΩ	X3-X1		mΩ
	X0-X1		mΩ	X1-X2		mΩ
	X0-X2		mΩ	X2-X3		mΩ
	X0-X3		mΩ	X3-X1		mΩ
	X0-X1		mΩ	X1-X2		mΩ
	X0-X2		mΩ	X2-X3		mΩ
	X0-X3		mΩ	X3-X1		mΩ
	X0-X1		mΩ	X1-X2		mΩ
	X0-X2		mΩ	X2-X3		mΩ
	X0-X3		mΩ	X3-X1		mΩ
	X0-X1		mΩ	X1-X2		mΩ
	X0-X2		mΩ	X2-X3		mΩ
	X0-X3		mΩ	X3-X1		mΩ
	X0-X1		mΩ	X1-X2		mΩ
	X0-X2		mΩ	X2-X3		mΩ
	X0-X3		mΩ	X3-X1		mΩ

Comments:

Tested By: D.BENJAMIN, A.BURK

Test Instrument(s) Manufacturer / Model: Winding

Serial #: 0618

Temperature (°C): 2

Humdity (%): 70

POWER FACTOR TESTING

TRANSFORMER OVERALL TEST SET UP									TRANSFORMER OVERALL TEST RESULTS							
Test No.	Insulation Tested	Test Mode	Test Leads				Test KV	DFR (Y/N)	Capacitence (pF)	Power Factor %			Direct	Direct	%VDF	IR
			HV	Red	Blue	Gnd				Measured	@20C	Corr	mA	W		
1	$C_{HG} + C_{HL}$	GST-GND	H	L		G	10	N	7159.89	0.28	0.27	0.96	26.912	0.7613	0.05	G
2	C_{HG}	GSTg-RB	H	L		G	10	N	2201.47	0.25	0.24	0.96	8.2600	0.2044	0.04	G
3	C_{HL}	UST-R	H	L		G	10	N	4965.71	0.30	0.29	0.96	18.7059	0.5582	0.05	G
4	C_{HL}								4958.38				18.6520	0.5569		VALID
5	$C_{LG} + C_{HL}$	GST-GND	L	H		G	10	N	16230.04	0.33	0.32	0.96	60.9281	2.0089	0.04	G
6	C_{LG}	GSTg-RB	L	H		G	10	N	11270.06	0.34	0.33	0.96	42.5012	1.4629	0.04	G
7	C_{HL}	UST-R	L	H		G	10	N	4966.05	0.30	0.29	0.96	18.7032	0.5678	0.03	G
8	$C_{HL'}$								4959.98				18.4269	0.5460		VALID
9	$C_{HG'}$								1177.15				4.4055	0.0944		
10	$C_{LG'}$								9879.84				38.5901	1.3313		
11	Overall Oil Test	UST-R	L	H		G						1.52				
12	LTC Chamber Oil Test	UST-R	L	H		G						1.52				

Transformer Bushing C1 Tests

Test No.	Bushing Nameplate					Test Mode	Test KV	DFR (Y/N)	Capacitence (pF)	Power Factor %			Direct		%V DF	IR
	DSG	Serial #	Cat #	PF	Cap.					Measured	@20C	Corr	mA	W		
11	H1	3S04865005	138W0800AA	0.26	350	UST-R	10	N	341.99	0.29			1.2873	0.0367	0.04	
12	H2	3S04865015	138W0800AA	0.26	350	UST-R	10	N	341.13	0.29			1.2845	0.0366	0.05	
13	H3	3S04885016	138W0800AA	0.27	350	UST-R	10	N	341.21	0.29			1.2827	0.0367	0.04	
14																
15	X1	3S05047508	1ABAA-AAABCXX	0.30	357	UST-R	10	N	352.99	0.34	0.28	0.8	1.3293	0.0458	0.04	G
16	X2	3S05047506	1ABAA-AAABCXX	0.30	356	UST-R	10	N	351.94	0.35	0.28	0.8	1.3254	0.0460	0.04	G
17	X3	3S04012303	1ABAA-AAABCXX	0.29	337	UST-R	10	N	333.73	0.32	0.25	0.8	1.2564	0.0398	0.05	G
18	X0	3S05047507	1ABAA-AAABCXX	0.30	356	UST-R	10	N	351.57	0.34	0.27	0.8	1.3223	0.0451	0.05	G
19																

Transformer Bushing C2 Tests

Test No.	Bushing Nameplate					Test Mode	Test KV	Capacitence (pF)	Power Factor %			Direct		%V DF	IR
	DSG	Serial #	Cat #	PF	Cap.				Measured	@20C	Corr	mA	W		
20	H1	3S04865005	138W0800AA	0.27	4536	GSTg-RB	0.5	4487.52	0.27			0.8438		0.03	
21	H2	3S04865015	138W0800AA	0.26	4554	GSTg-RB	0.5	4504.88	0.26			0.8497		0.02	
22	H3	3S04885016	138W0800AA	0.26	4576	GSTg-RB	0.5	4.527.89	0.26			0.8509		0.04	
23															
24	X1	3S05047508	1ABAA-AAABCXX	0.12	574.00	GSTg-RB	0.5	661.38	0.16	0.13	0.8	0.1241	0.0001	0.01	G
25	X2	3S05047506	1ABAA-AAABCXX	0.11	567	GSTg-RB	0.5	578.33	0.12	0.10	0.8	0.1084	0.0001	0.04	G
26	X3	3S04012303	1ABAA-AAABCXX	0.11	633	GSTg-RB	0.5	646.25	0.13	0.11	0.8	0.1209	0.0001	0.03	G
27	X0	3S05047507	1ABAA-AAABCXX	0.12	579	GSTg-RB	0.5	605.30	0.14	0.11	0.8	0.1139	0.0001	0.00	G
28															

Transformer Surge Arrester Tests

Test No.	Arrester Nameplate					Test Mode	Test KV	ORDER				Direct			IR
	DSG	Serial #	Cat #	Mft.	kV							mA	W		
28	H1	03334377	Q096SA076B	ABB	115	GST-GND	10	TOP				0.1293	0.025		
29	H1	03334377	Q096SA076B	ABB	115	GST-GND	10	MIDDLE				0.3271	0.077		
30															
31	H2	02334377	Q096SA076B	ABB	115	GST-GND	10	TOP				0.1346	0.025		
32	H2	02334377	Q096SA076B	ABB	115	GST-GND	10	MIDDLE				0.3288	0.079		
33															
34	H3	06034377	Q096SA076B	ABB	115	GST-GND	10	TOP				0.1274	0.023		
35	H3	06034377	Q096SA076B	ABB	115	GST-GND	10	MIDDLE				0.3284	0.077		
36															

Comments:

Tested By: D.BENJAMIN, A.BURK

Test Instrument(s) Manufacturer / Model: PF Test

Serial #: 0417

Temperature (°C): 2

Humditity (%): 70

CAPACITANCE TEST

	Low-Ground	Low - Guard	UST (High-Low)	High-Guard	High-Ground
Capacitance in pico-farads	pF	pF	pF	pF	pF
Uncorrected D.F. (%)					
Corrected to 20°C (%)	0.000%	0.000%	0.000%	0.000%	0.000%
Temp. Correction Factor	1.52				

SECONDARY LIGHTNING ARRESTOR INSULATION RESISTANCE

Resistance in Meg-Ohms 5000 V DC after 1 Min

Phase A to Ground	507000	MΩ
Phase B to Ground	434000	MΩ
Phase C to Ground	449000	MΩ

SECONDARY CONDUCTOR INSULATION RESISTANCE

Resistance in Meg-Ohms N/A V DC after 1 Min

Phase A to Phase B	MΩ
Phase B to Phase C	MΩ
Phase C to Phase A	MΩ

Phase A to Ground		MΩ
Phase B to Ground		MΩ
Phase C to Ground		MΩ

Comments:

Tested By: D. BENJAMIN, A.BURK

Test Instrument(s) Manufacturer / Model

Serial #

Cap Bridge	Megger	
N/A	0516	

Temperature (°C) 26

Humdity (%) 70

DIELECTRIC ABSORPTION TEST (INSULATION RESISTANCE)

Time	High to Low & Gnd		Low to High & Gnd		High & Low to Gnd	
	Uncorrected	Corrected	Uncorrected	Corrected	Uncorrected	Corrected
15 sec	7470 MΩ	2540 MΩ	3340 MΩ	1136 MΩ	4290 MΩ	1459 MΩ
30 sec	10700 MΩ	3638 MΩ	4370 MΩ	1486 MΩ	6000 MΩ	2040 MΩ
45 sec	11410 MΩ	3879 MΩ	4700 MΩ	1598 MΩ	6500 MΩ	2210 MΩ
1 min	12020 MΩ	4087 MΩ	4910 MΩ	1669 MΩ	6830 MΩ	2322 MΩ
2 min	12320 MΩ	4189 MΩ	5555 MΩ	1889 MΩ	7330 MΩ	2492 MΩ
3 min	14160 MΩ	4814 MΩ	5910 MΩ	2009 MΩ	7640 MΩ	2598 MΩ
4 min	14900 MΩ	5066 MΩ	6280 MΩ	2135 MΩ	7740 MΩ	2632 MΩ
5 min	15160 MΩ	5154 MΩ	6610 MΩ	2247 MΩ	7850 MΩ	2669 MΩ
6 min	15380 MΩ	5229 MΩ	6790 MΩ	2309 MΩ	7920 MΩ	2693 MΩ
7 min	16520 MΩ	5617 MΩ	6980 MΩ	2373 MΩ	8100 MΩ	2754 MΩ
8 min	16600 MΩ	5644 MΩ	7160 MΩ	2434 MΩ	8220 MΩ	2795 MΩ
9 min	16780 MΩ	5705 MΩ	7340 MΩ	2496 MΩ	8370 MΩ	2846 MΩ
10 min	17450 MΩ	5933 MΩ	7440 MΩ	2530 MΩ	8460 MΩ	2876 MΩ
Test Voltage	10000 V		5000 V		5000 V	
Polarization Index	1.451747088		1.515274949		1.238653001	
Tcc	Insulation Resistance Readings Corrected to 2 °C					

INSULATION RESISTANCE

Resistance in Meg-Ohms after 1 Min

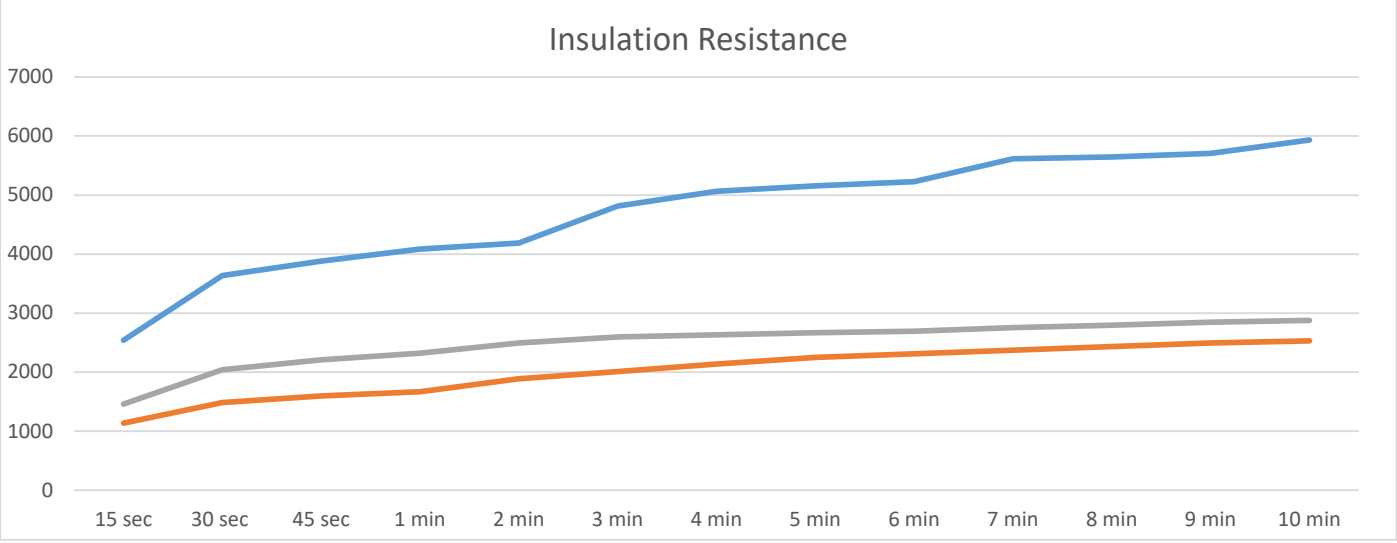
High to Low & Gnd	4087	MΩ @	10000	V
Low to High & Gnd	1669	MΩ @	5000	V
High & Low to Gnd	2322	MΩ @	5000	V

CORE GROUND INSULATION RESISTANCE

Resistance in Meg-Ohms after 1 Min

Core Ground Accesssible: Yes ☑ No ☐

Test Voltage	500	V
Core Ground Resistance	575	MΩ



Comments:

Tested By: D.CHARRON

Test Instrument(s)

Manufacturer / Model: Megger

Serial #: 0516

Temperature (°C): 2

Humditity (%): 70

Transformer Count: 1
Total Test Count: 3

1. Manufacturer: FERRANTI PACKARD, Serial Number: 50169101, Special ID:

TestDate: 11/16/2022 3:58 PM, Trace Name: H1-H3_2022-11-16_14-58-27
TestDate: 11/16/2022 4:04 PM, Trace Name: H2-H1_2022-11-16_15-04-21
TestDate: 11/16/2022 4:09 PM, Trace Name: H3-H2_2022-11-16_15-09-44

Nameplate Details

1. Manufacturer: FERRANTI PACKARD, Serial Number: 50169101, Special ID:

Filename: C:\Users\asus\Documents\Doble Engineering\Sweep Frequency Response Analyzer\Data\Eaton-Corp_New-Location_FERRANTI-PACKARD_50169101_2022-11-16_14-58-27.sfra

TestTemplate: 3-Ph 2-Wind D-Y

Serial Number: 50169101
Manufacturer: FERRANTI PACKARD
Year of Manufacture: 2003
Special ID:
Current: 0
Phases: 3
Windings: 2
Type: DIST
HV: 115.5
LV1: 28.4
LV2: 0
Tertiary: 0
Impedance HV-LV1: 0
Impedance HV-LV2: 0
Impedance HV-Tertiary: 0
Impedance LV-Tertiary: 0

MVA Maximum: 0
MVA1: 0
MVA2: 0
MVA3: 0
Notes:
Template: 3-Ph 2-Wind D-Y
LTC Serial Number:
LTC Manufacturer:
LTC Year of Mfr: 0
LTC Range:
LTC Notes:
DETC Serial Number:
DETC Manufacturer:
DETC Year of Mfr: 0
DETC Range:
DETC Notes:

Instrument Details

1. Manufacturer: FERRANTI PACKARD, Serial Number: 50169101, Special ID:

TestDate: 11/16/2022 3:58 PM, Trace Name: H1-H3_2022-11-16_14-58-27

Tested by: Urian Clements
Instrument serial number: m5400
Notes:

TestDate: 11/16/2022 4:04 PM, Trace Name: H2-H1_2022-11-16_15-04-21

Tested by: Urian Clements
Instrument serial number: m5400
Notes:

TestDate: 11/16/2022 4:09 PM, Trace Name: H3-H2_2022-11-16_15-09-44

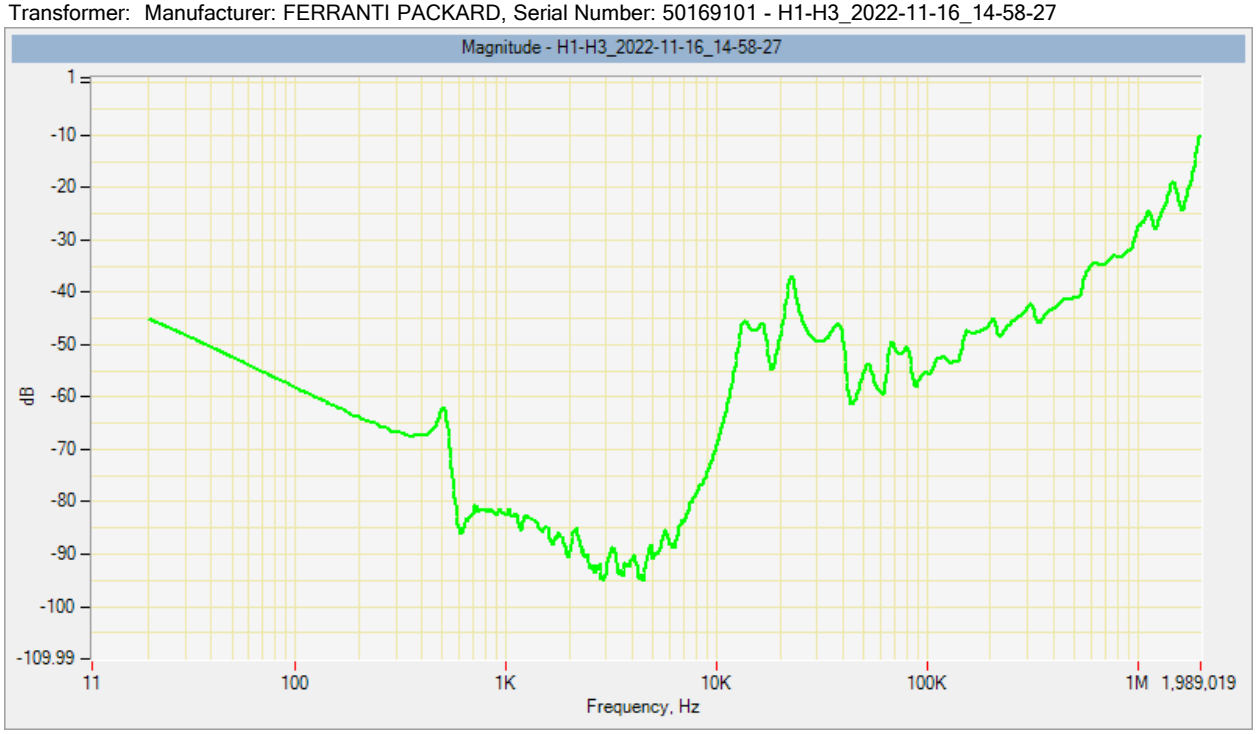
Tested by: Urian Clements
Instrument serial number: m5400
Notes:

H1-H3_2022-11-16_14-58-27 - Manufacturer: FERRANTI PACKARDSerial Number: 50169101Date: 11/16/2022 3:58:27 PM
LTC: 6DETC: as found - make noteMVA Maximum: 0KV: 115.5/28.4

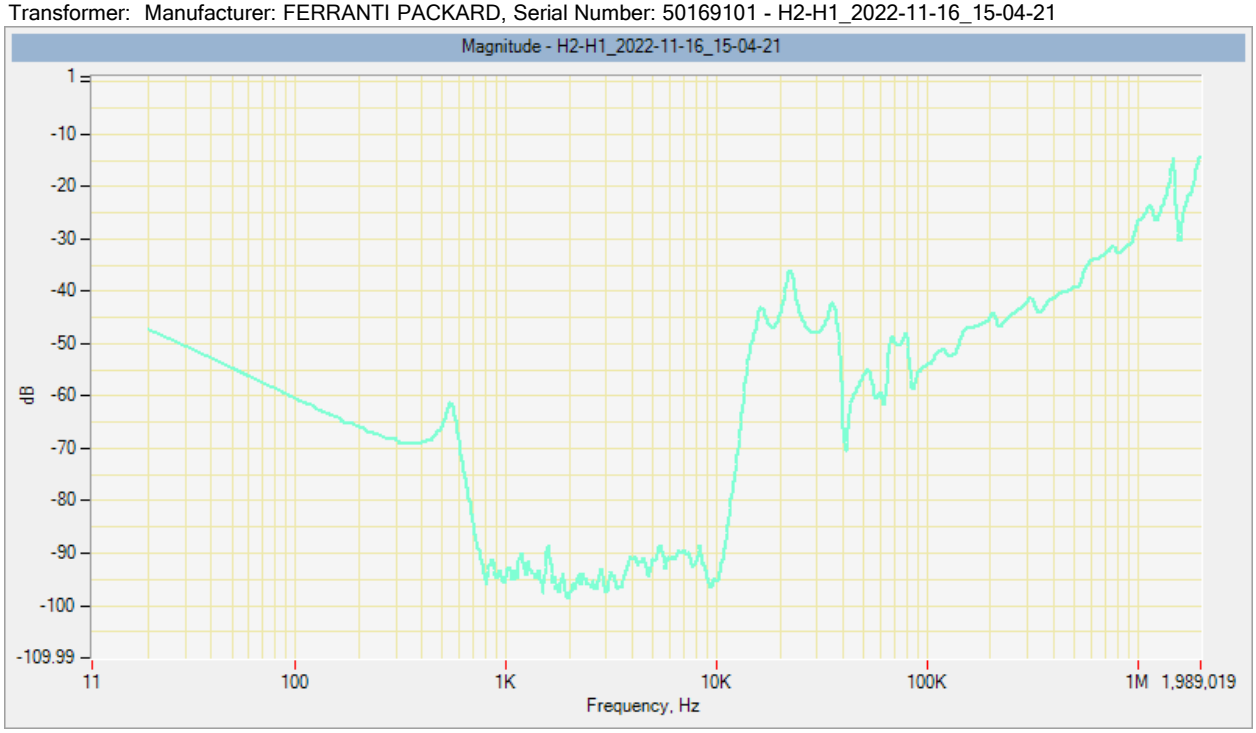
H2-H1_2022-11-16_15-04-21 - Manufacturer: FERRANTI PACKARDSerial Number: 50169101Date: 11/16/2022 4:04:21 PM
LTC: 6DETC: as found - make noteMVA Maximum: 0KV: 115.5/28.4

H3-H2_2022-11-16_15-09-44 - Manufacturer: FERRANTI PACKARDSerial Number: 50169101Date: 11/16/2022 4:09:44 PM
LTC: 6DETC: as found - make noteMVA Maximum: 0KV: 115.5/28.4

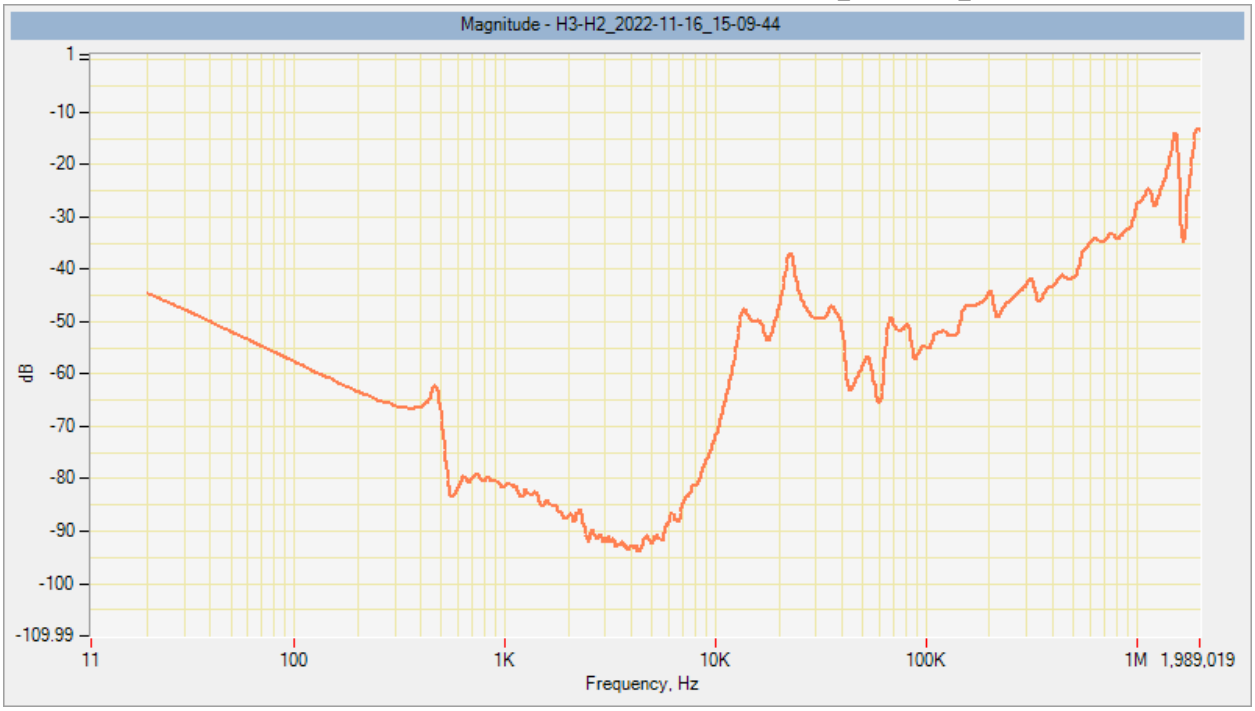
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H1-H3_2022-11-16_14-58-27

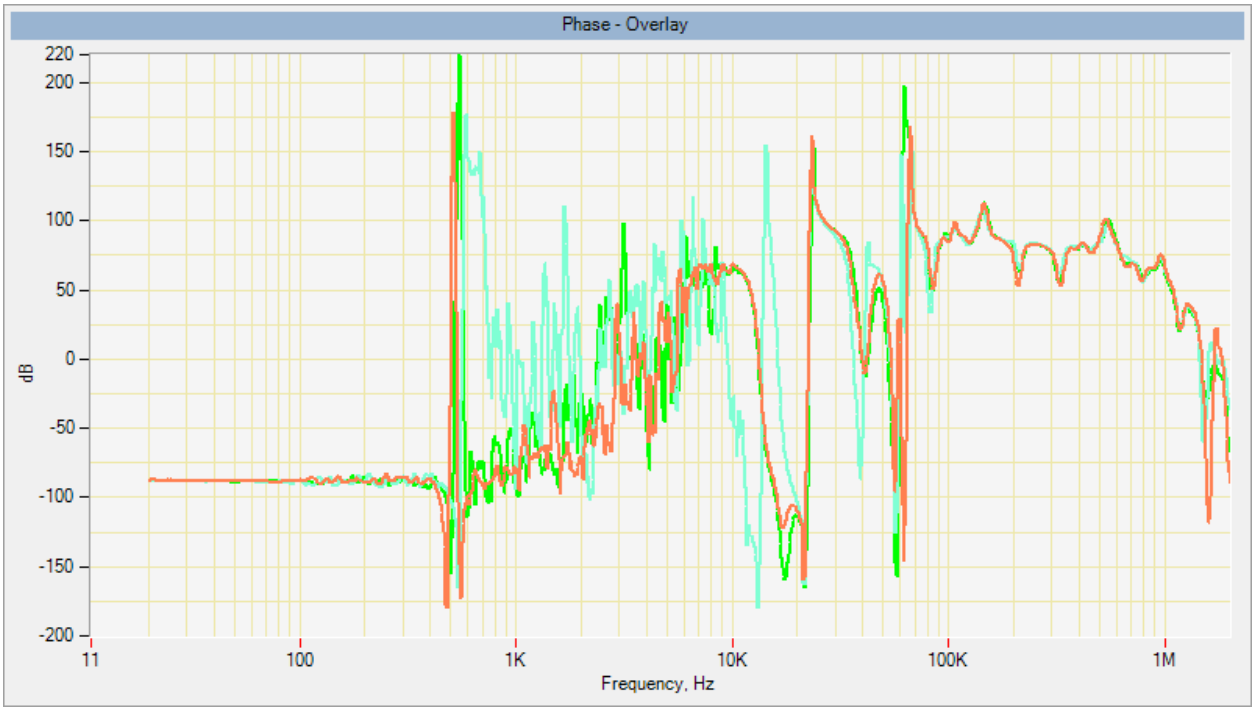


Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H2-H1_2022-11-16_15-04-21

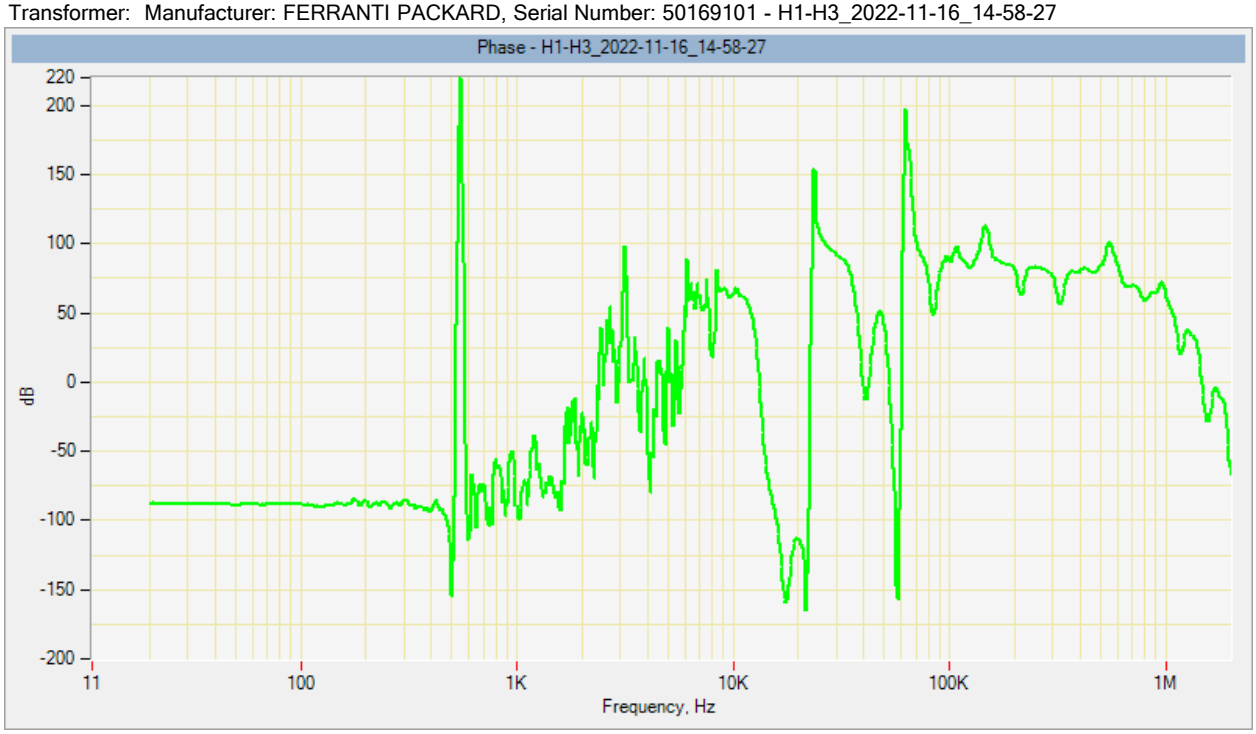


Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H3-H2_2022-11-16_15-09-44

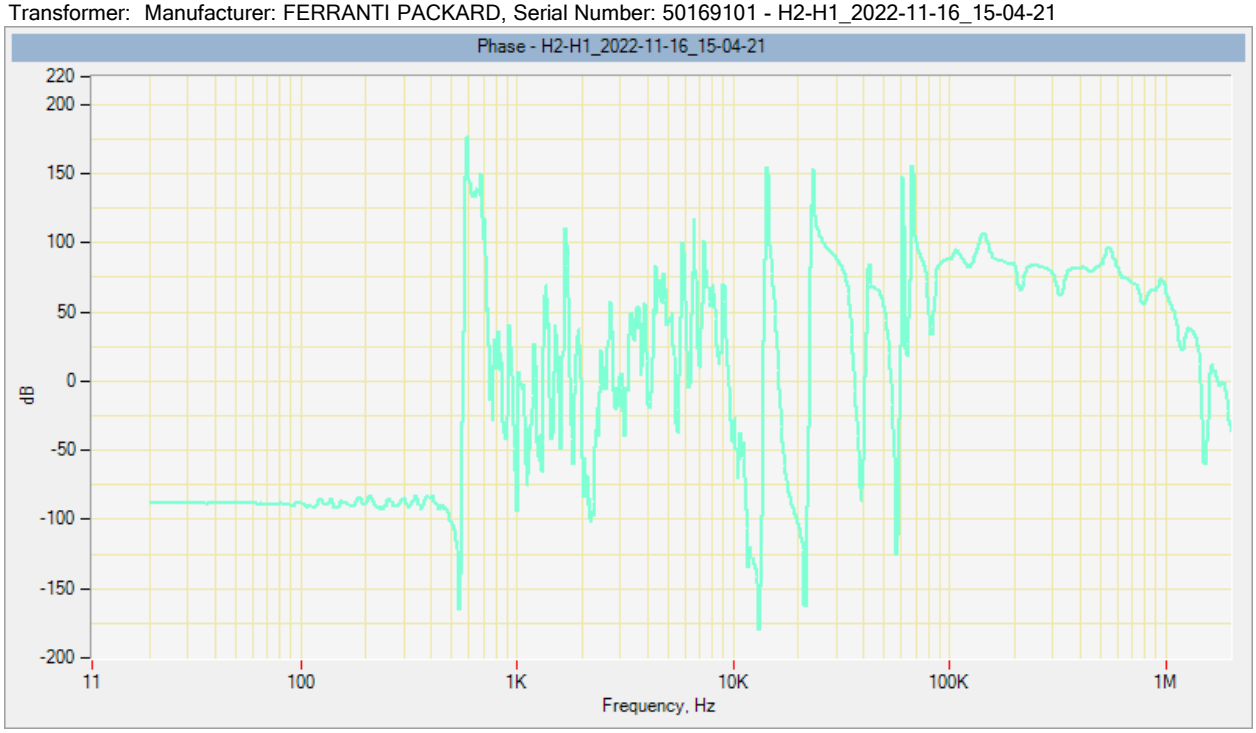



Phase - Overlay
220
200
150
100
50
0
-50
-100
-150
-200
dB
11
100
1K
10K
100K
1M
Frequency, Hz

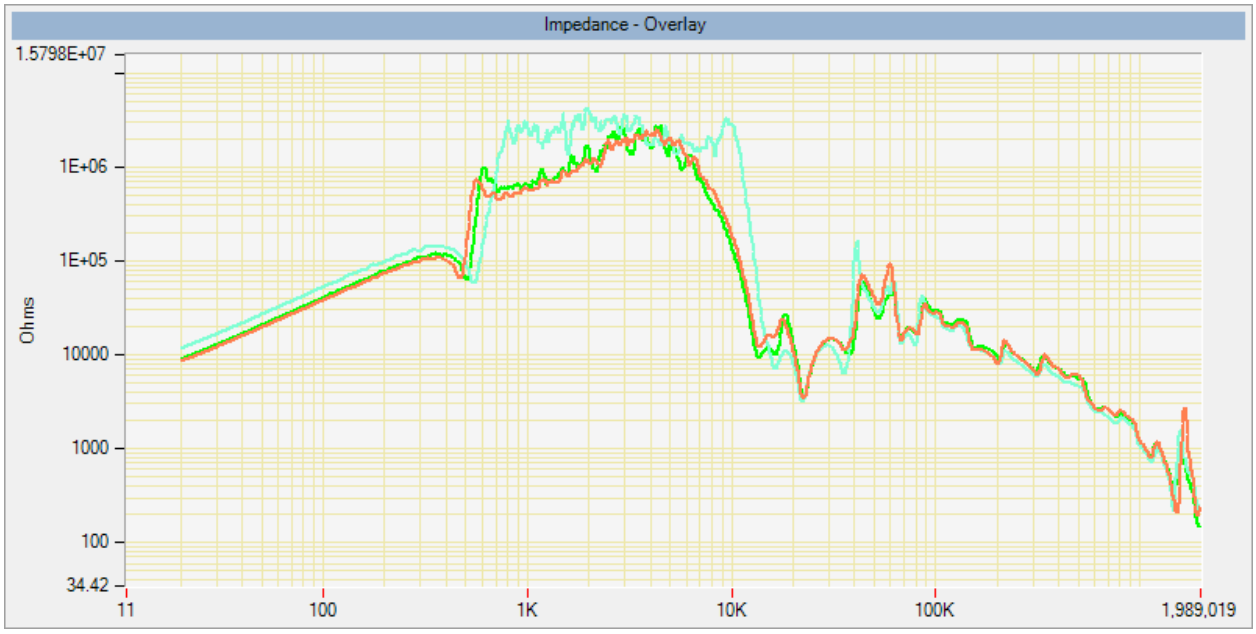
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H1-H3_2022-11-16_14-58-27



Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H2-H1_2022-11-16_15-04-21

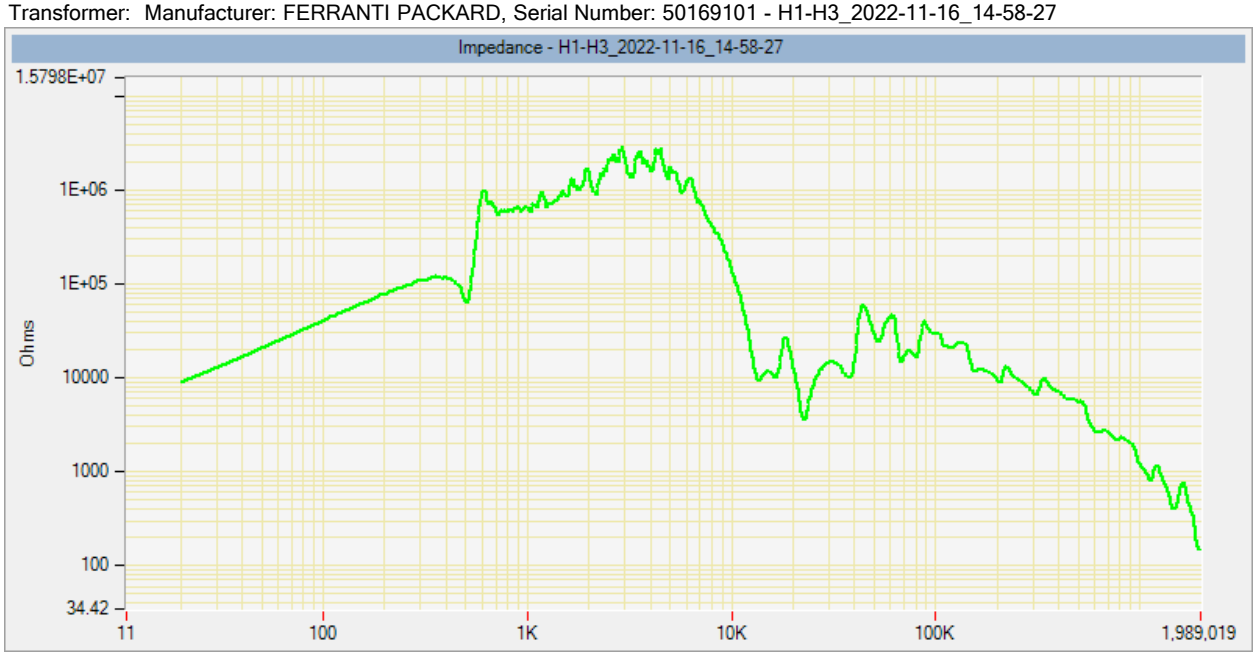


Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H3-H2_2022-11-16_15-09-44

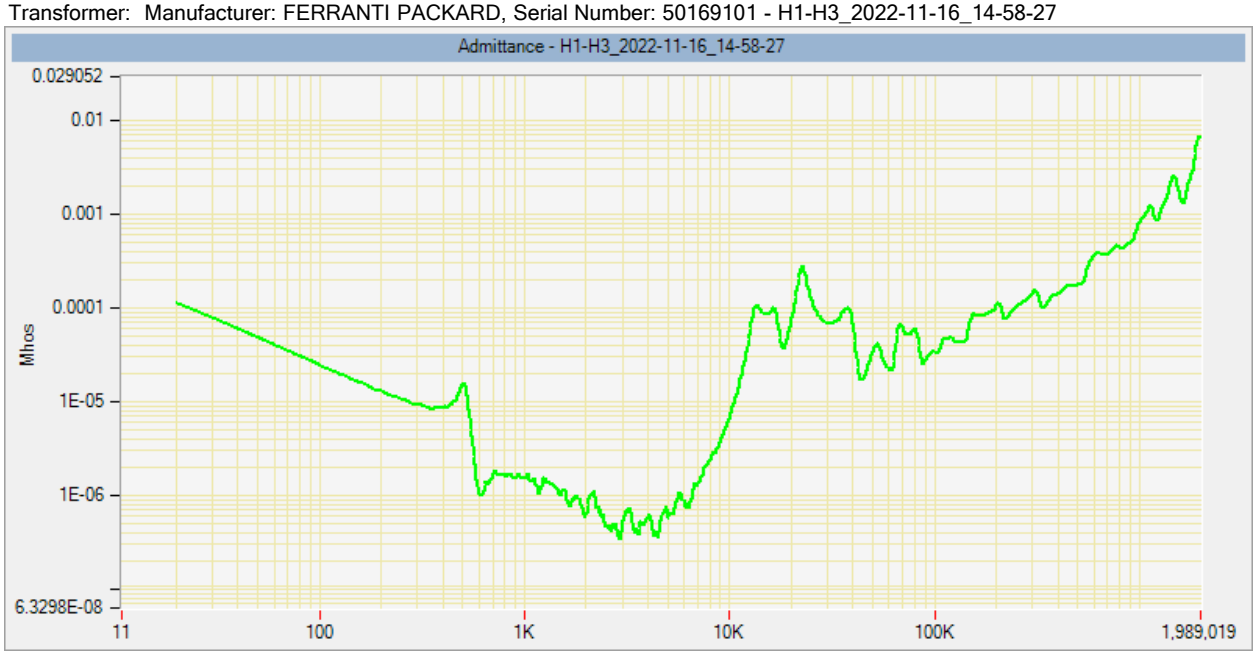

Impedance - Overlay
1.5798E+07
1E+06
1E+05
10000
1000
100
34.42
Ohms
11
100
1K
10K
100K
1,989,019


Admittance - Overlay
0.029052
0.01
0.001
0.0001
1E-05
1E-06
6.3298E-08
Mhos
11
100
1K
10K
100K
1,989,019

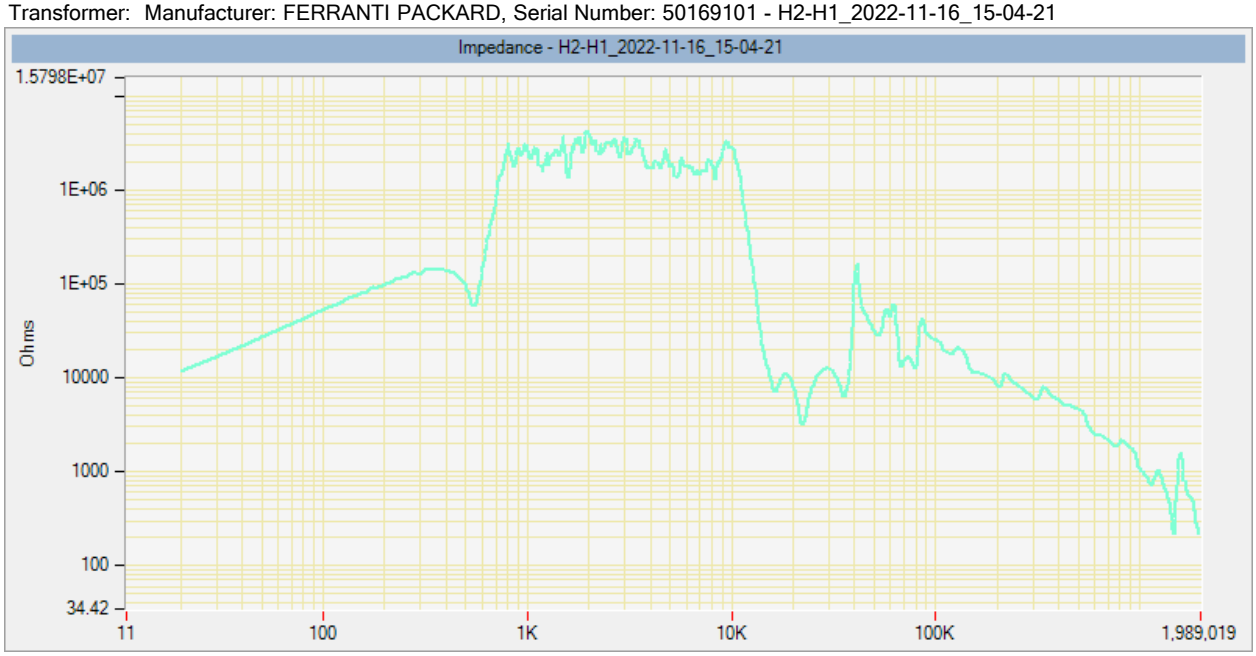
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H1-H3_2022-11-16_14-58-27



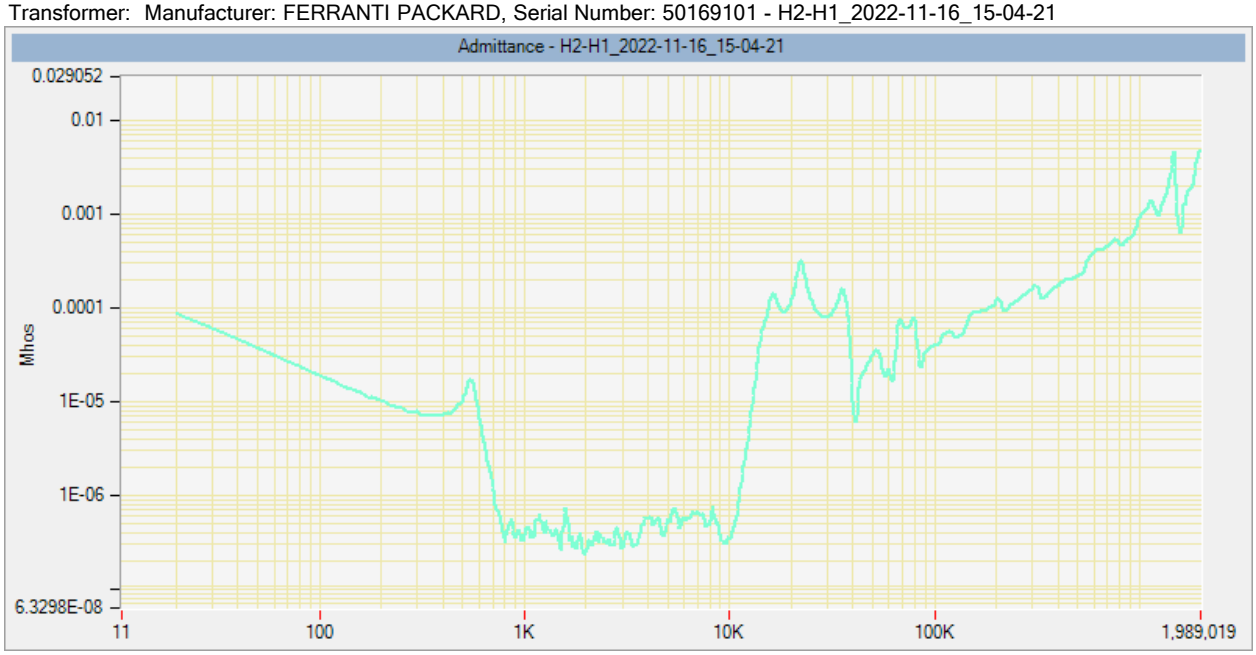
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H1-H3_2022-11-16_14-58-27



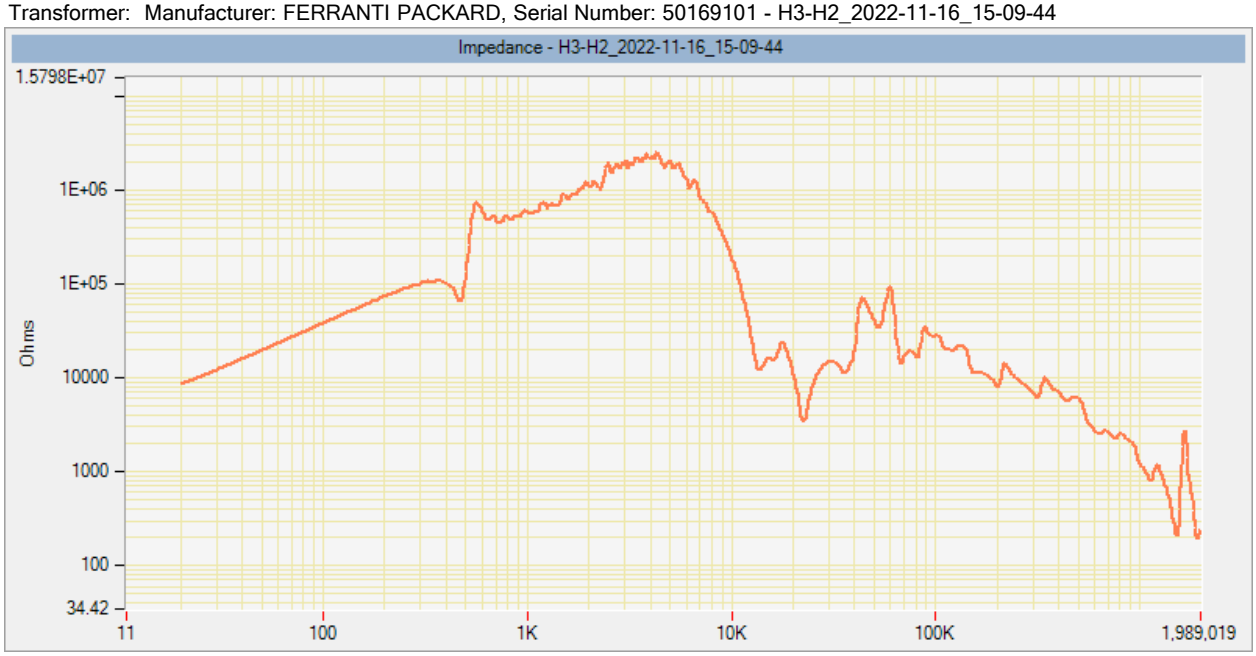
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H2-H1_2022-11-16_15-04-21



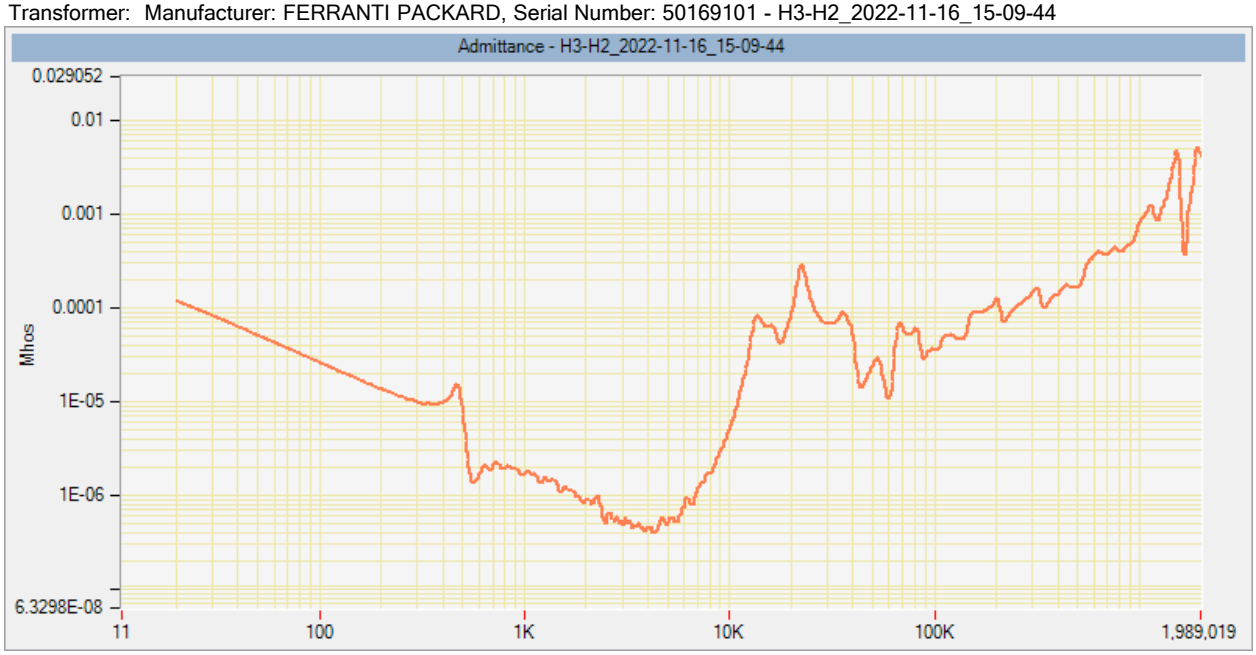
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H2-H1_2022-11-16_15-04-21

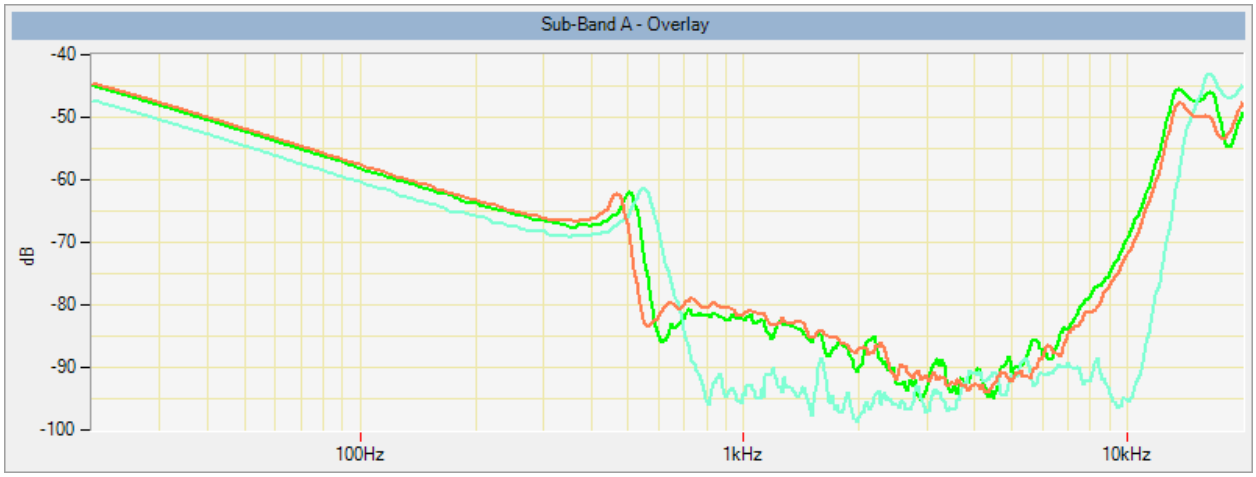


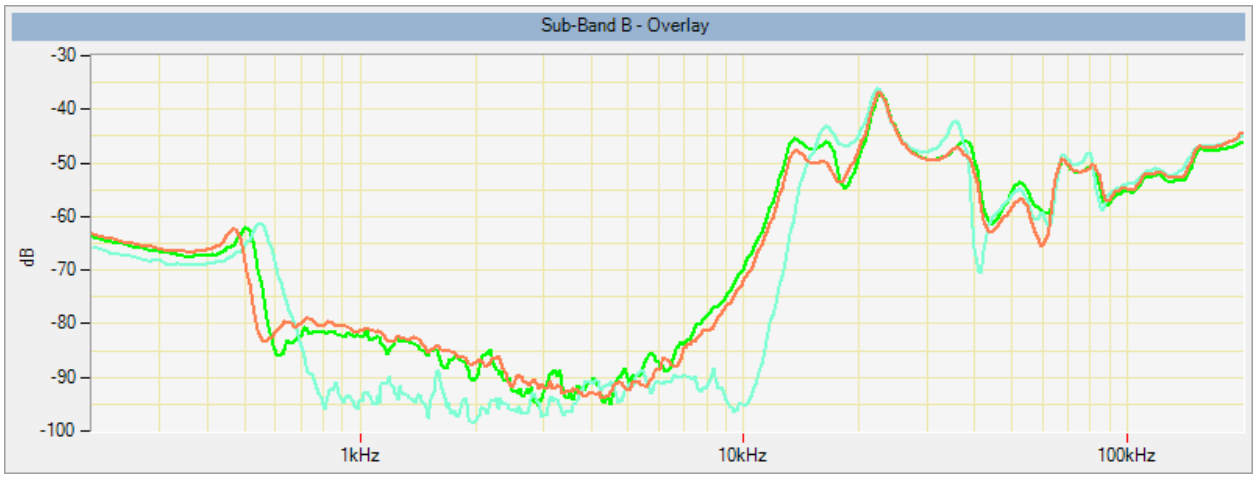
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H3-H2_2022-11-16_15-09-44

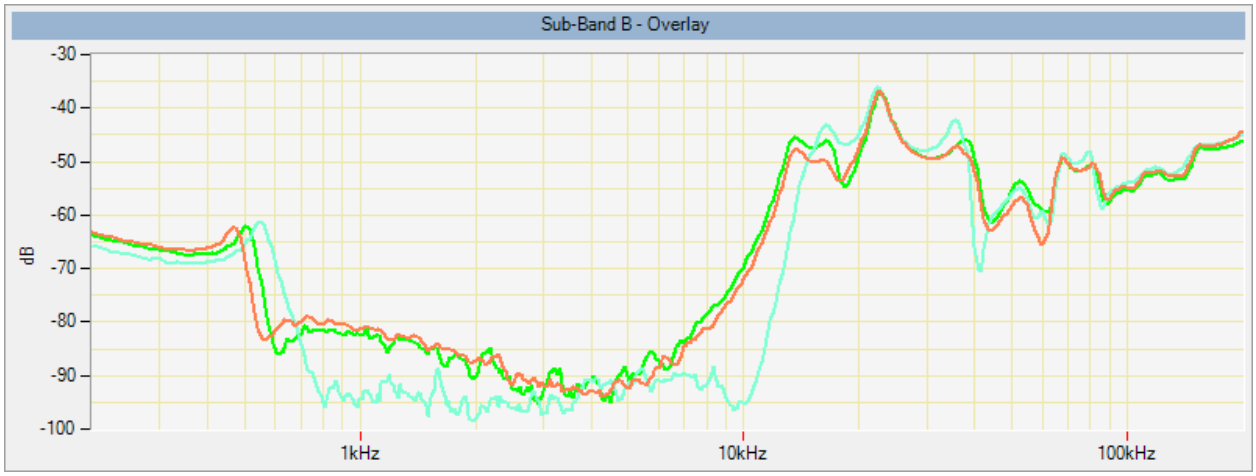


Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H3-H2_2022-11-16_15-09-44




Sub-Band A - Overlay
-40
-50
-60
-70
-80
-90
-100
dB
100Hz
1kHz
10kHz


Sub-Band B - Overlay
-30
-40
-50
-60
-70
-80
-90
-100
dB
1kHz
10kHz
100kHz


Sub-Band B - Overlay
-30
-40
-50
-60
-70
-80
-90
-100
dB
1kHz
10kHz
100kHz

Transformer Count: 1
Total Test Count: 3

1. Manufacturer: FERRANTI PACKARD, Serial Number: 50169101, Special ID:

TestDate: 11/16/2022 4:38 PM, Trace Name: X1-X0_2022-11-16_15-38-03
TestDate: 11/16/2022 4:40 PM, Trace Name: X2-X0_2022-11-16_15-40-56
TestDate: 11/16/2022 4:43 PM, Trace Name: X3-X0_2022-11-16_15-43-55

Nameplate Details

1. Manufacturer: FERRANTI PACKARD, Serial Number: 50169101, Special ID:

Filename: C:\Users\asus\Documents\Doble Engineering\Sweep Frequency Response Analyzer\Data\Eaton-Corp_New-Location_FERRANTI-PACKARD_50169101_2022-11-16_15-38-03.sfra

TestTemplate: 3-Ph 2-Wind D-Y

Serial Number: 50169101
Manufacturer: FERRANTI PACKARD
Year of Manufacture: 2003
Special ID:
Current: 0
Phases: 3
Windings: 2
Type: DIST
HV: 115.5
LV1: 28.4
LV2: 0
Tertiary: 0
Impedance HV-LV1: 0
Impedance HV-LV2: 0
Impedance HV-Tertiary: 0
Impedance LV-Tertiary: 0

MVA Maximum: 0
MVA1: 0
MVA2: 0
MVA3: 0
Notes:
Template: 3-Ph 2-Wind D-Y
LTC Serial Number:
LTC Manufacturer:
LTC Year of Mfr: 0
LTC Range:
LTC Notes:
DETC Serial Number:
DETC Manufacturer:
DETC Year of Mfr: 0
DETC Range:
DETC Notes:

Instrument Details

1. Manufacturer: FERRANTI PACKARD, Serial Number: 50169101, Special ID:

TestDate: 11/16/2022 4:38 PM, Trace Name: X1-X0_2022-11-16_15-38-03

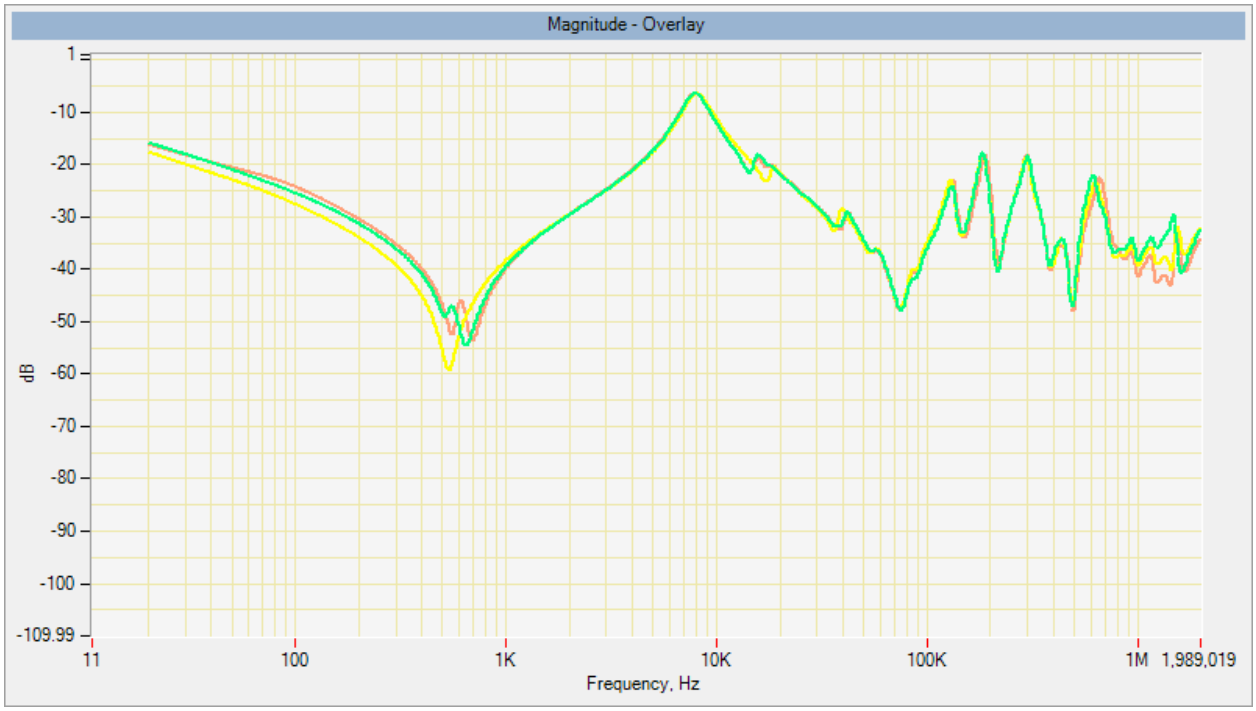
Tested by: Urian Clements
Instrument serial number: m5400
Notes:

TestDate: 11/16/2022 4:40 PM, Trace Name: X2-X0_2022-11-16_15-40-56

Tested by: Urian Clements
Instrument serial number: m5400
Notes:

TestDate: 11/16/2022 4:43 PM, Trace Name: X3-X0_2022-11-16_15-43-55

Tested by: Urian Clements
Instrument serial number: m5400
Notes:

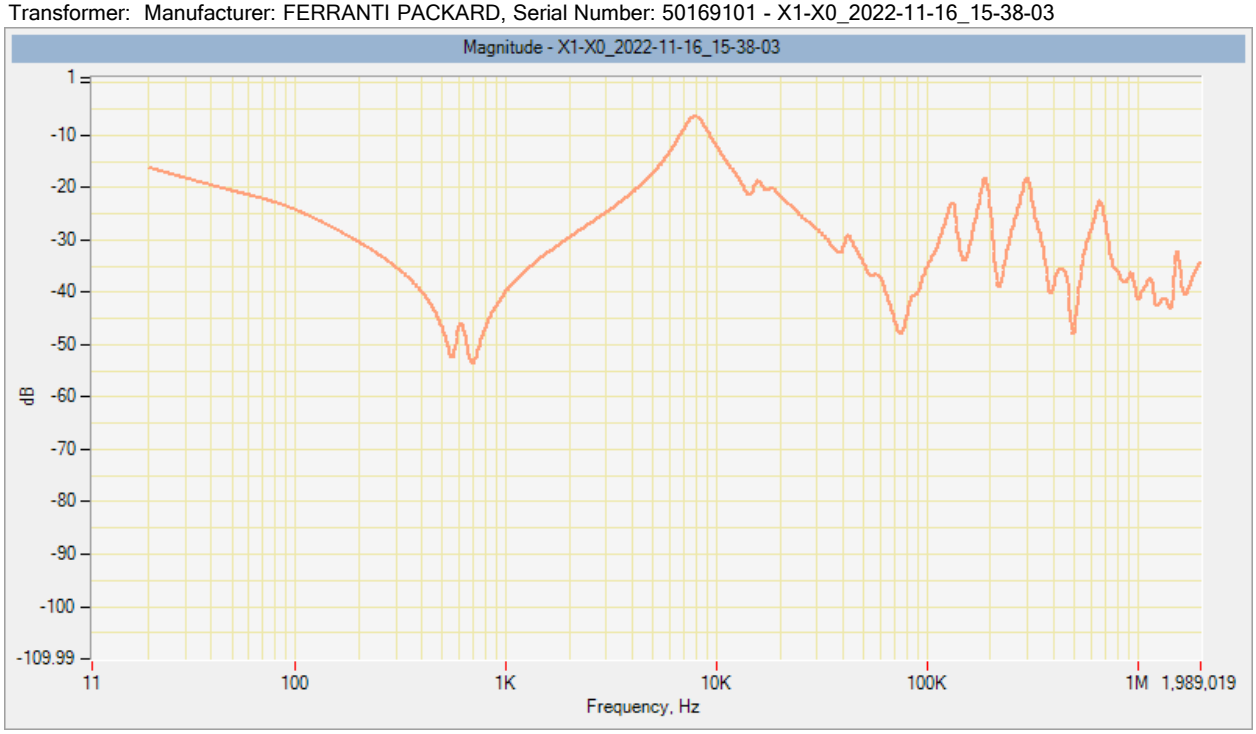


X1-X0_2022-11-16_15-38-03 - Manufacturer: FERRANTI PACKARDSerial Number: 50169101Date: 11/16/2022 4:38:03 PM
LTC: 6DETC: as found - make noteMVA Maximum: 0KV: 115.5/28.4

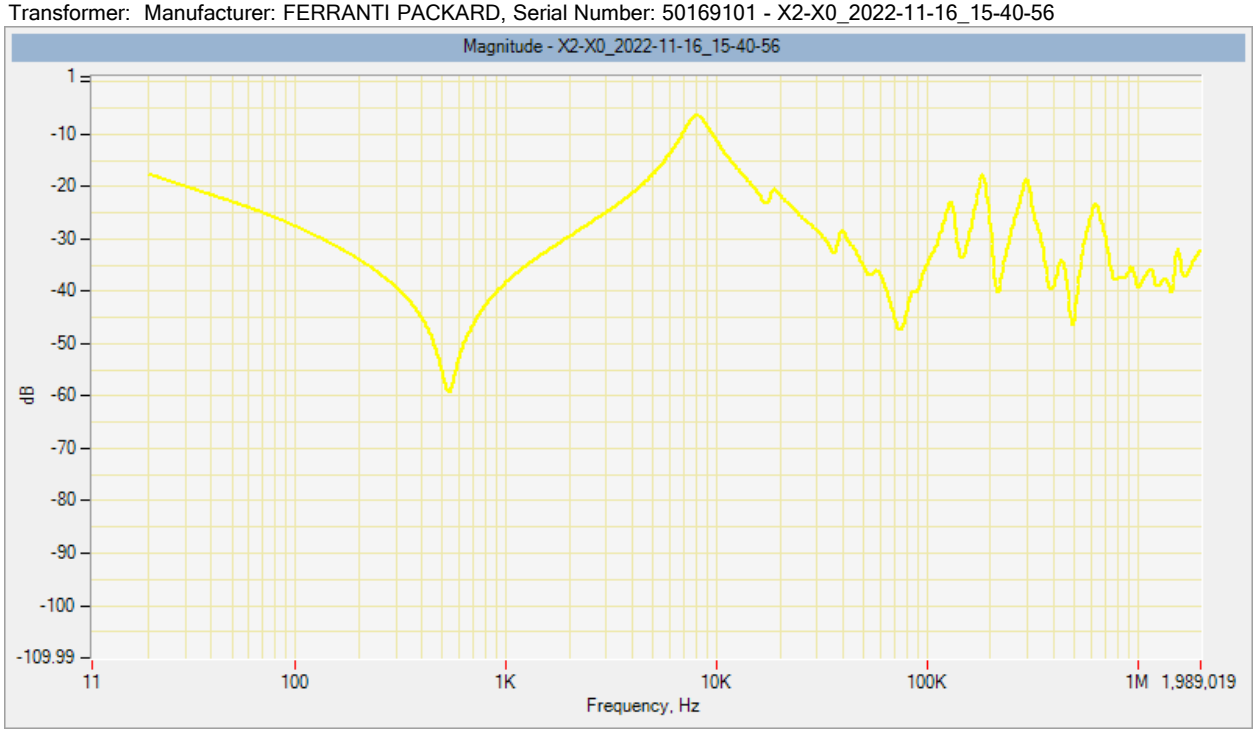
X2-X0_2022-11-16_15-40-56 - Manufacturer: FERRANTI PACKARDSerial Number: 50169101Date: 11/16/2022 4:40:56 PM
LTC: 6DETC: as found - make noteMVA Maximum: 0KV: 115.5/28.4

X3-X0_2022-11-16_15-43-55 - Manufacturer: FERRANTI PACKARDSerial Number: 50169101Date: 11/16/2022 4:43:55 PM
LTC: 6DETC: as found - make noteMVA Maximum: 0KV: 115.5/28.4

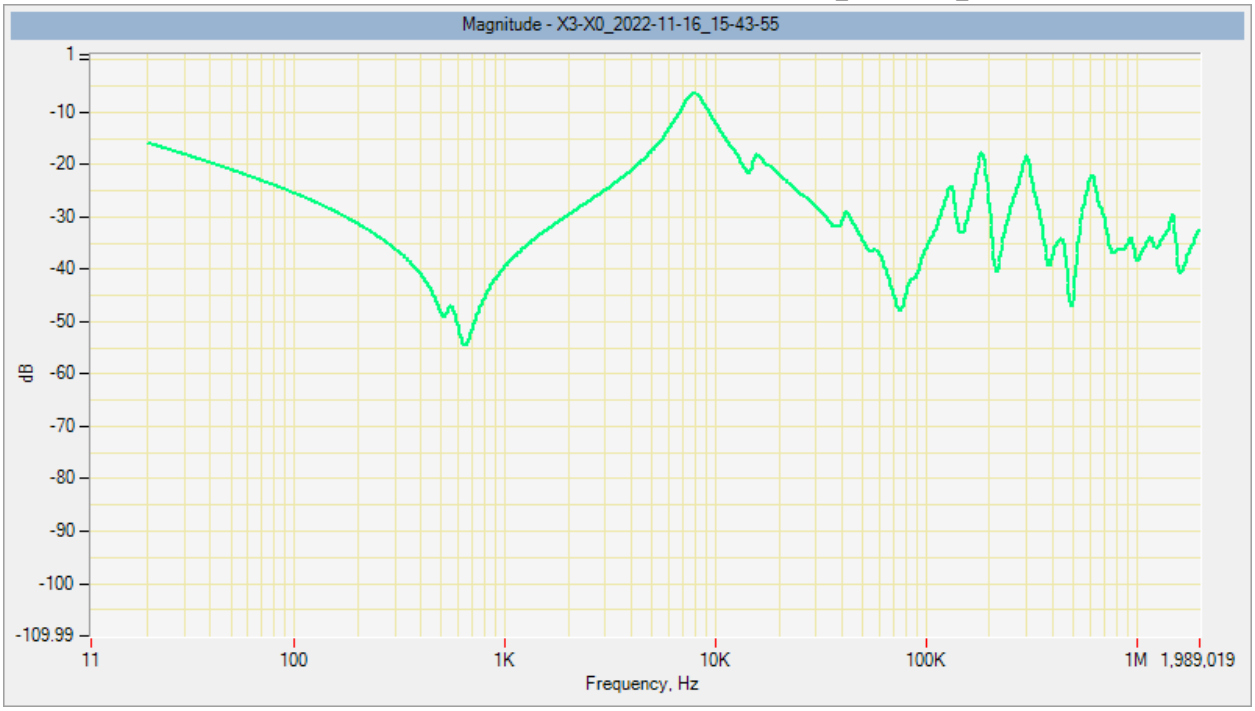
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - X1-X0_2022-11-16_15-38-03

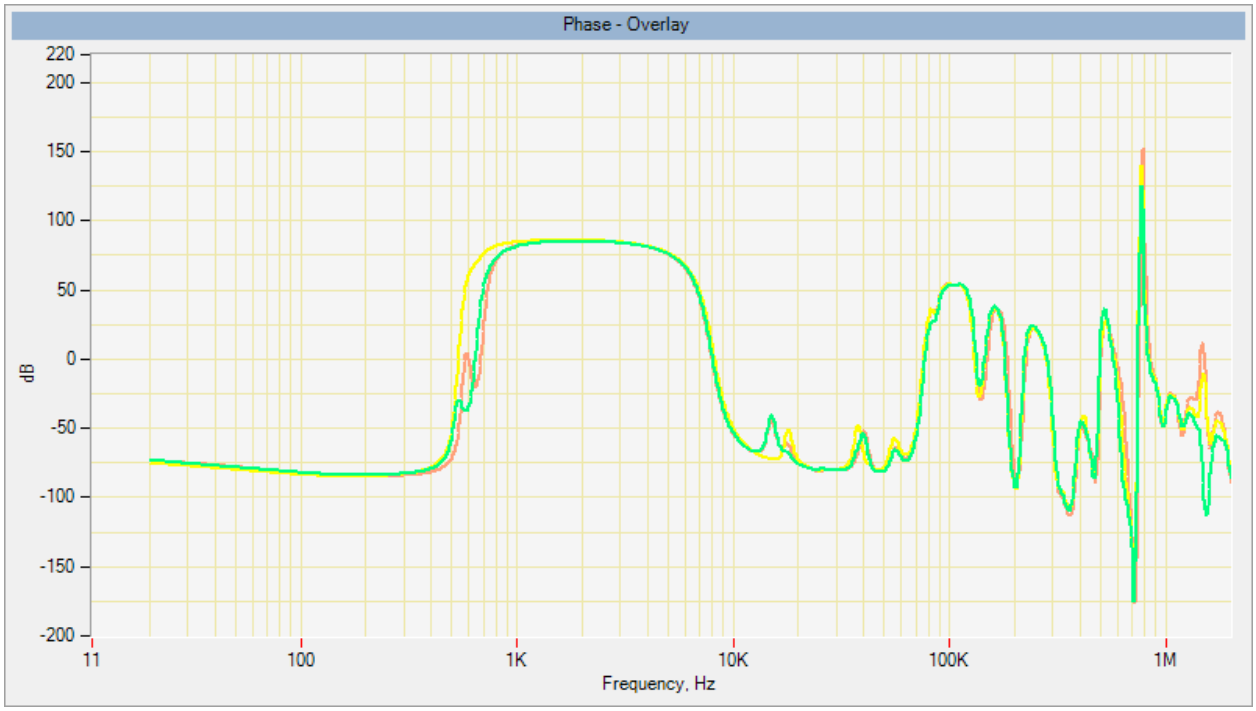


Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - X2-X0_2022-11-16_15-40-56

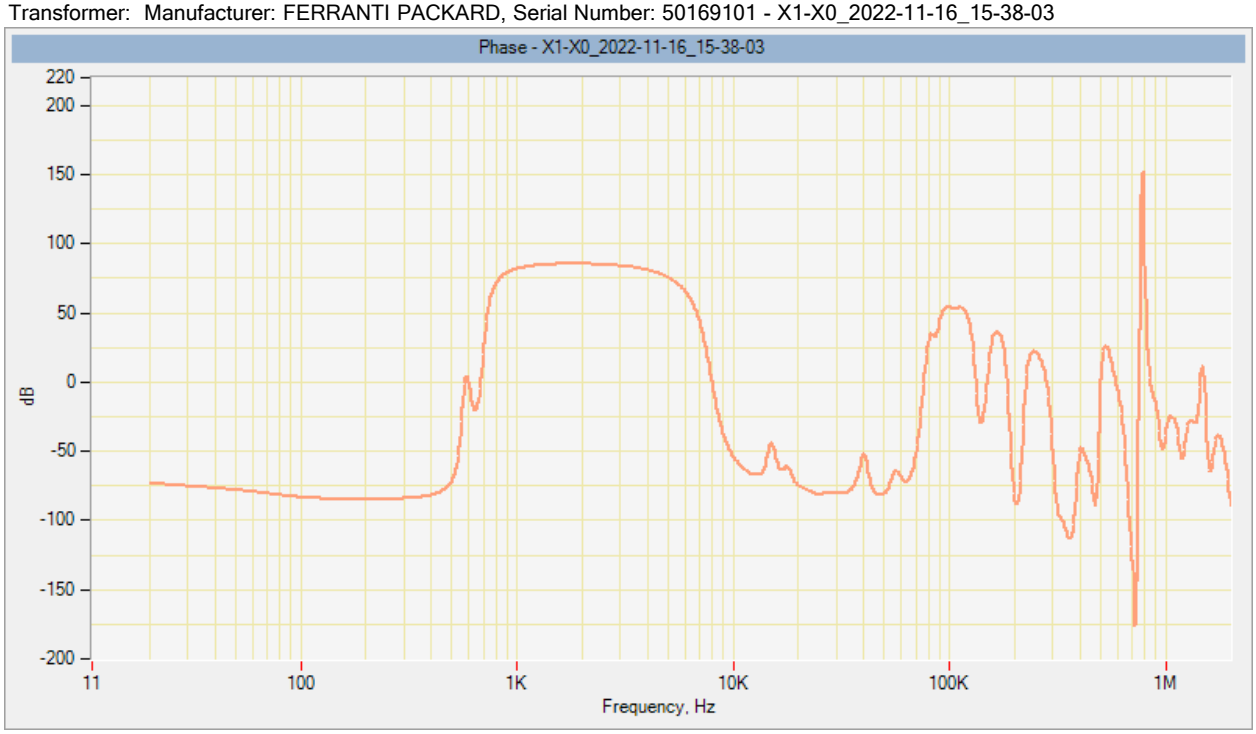


Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - X3-X0_2022-11-16_15-43-55

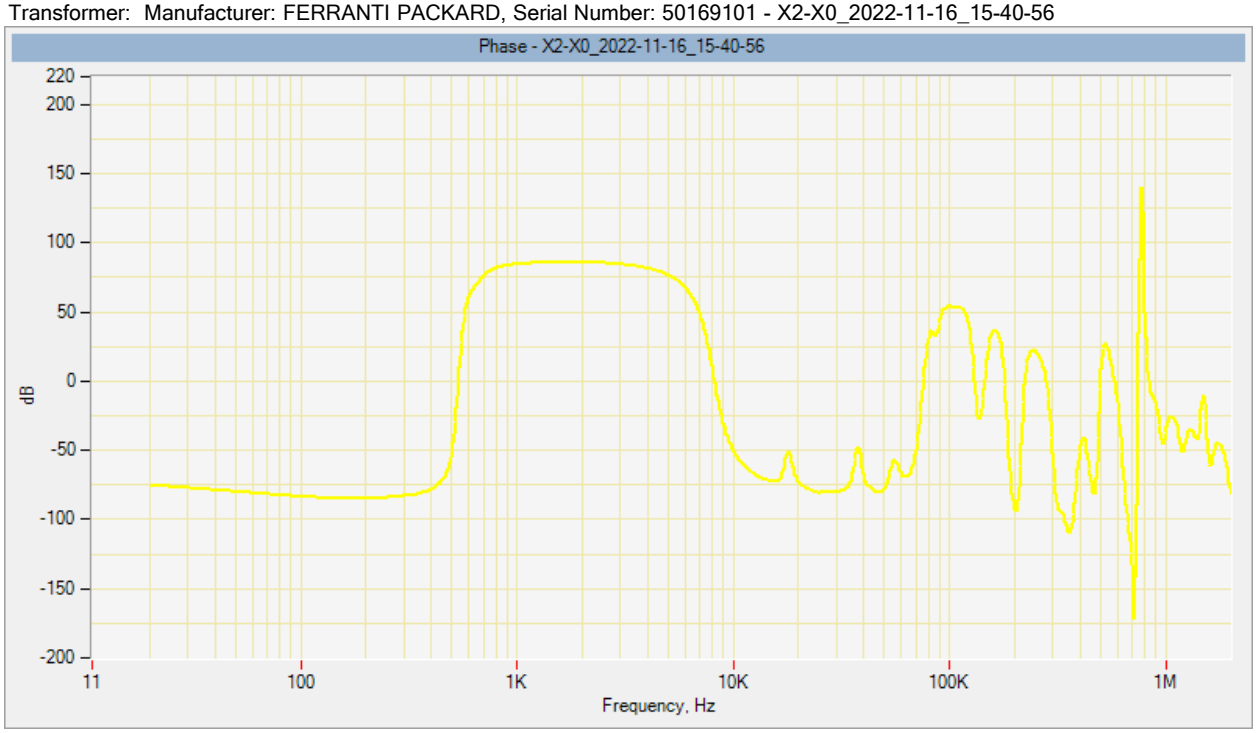



Phase - Overlay
220
200
150
100
50
0
-50
-100
-150
-200
dB
11
100
1K
10K
100K
1M
Frequency, Hz

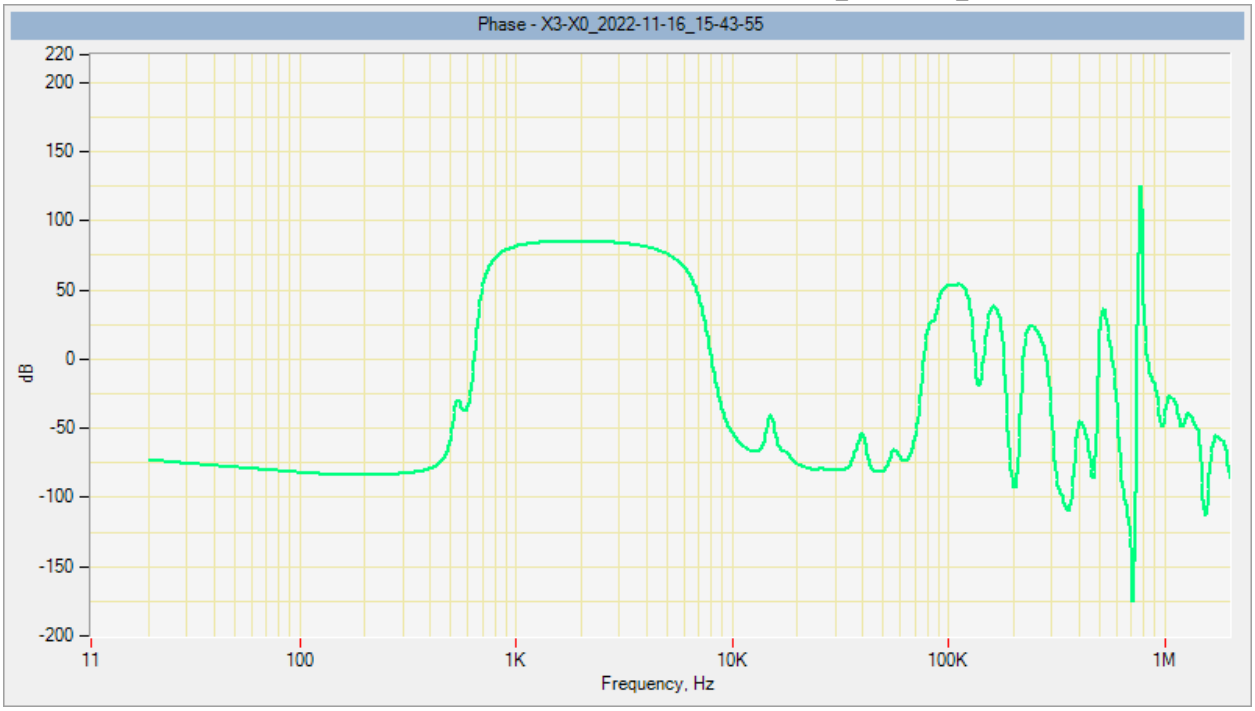
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - X1-X0_2022-11-16_15-38-03



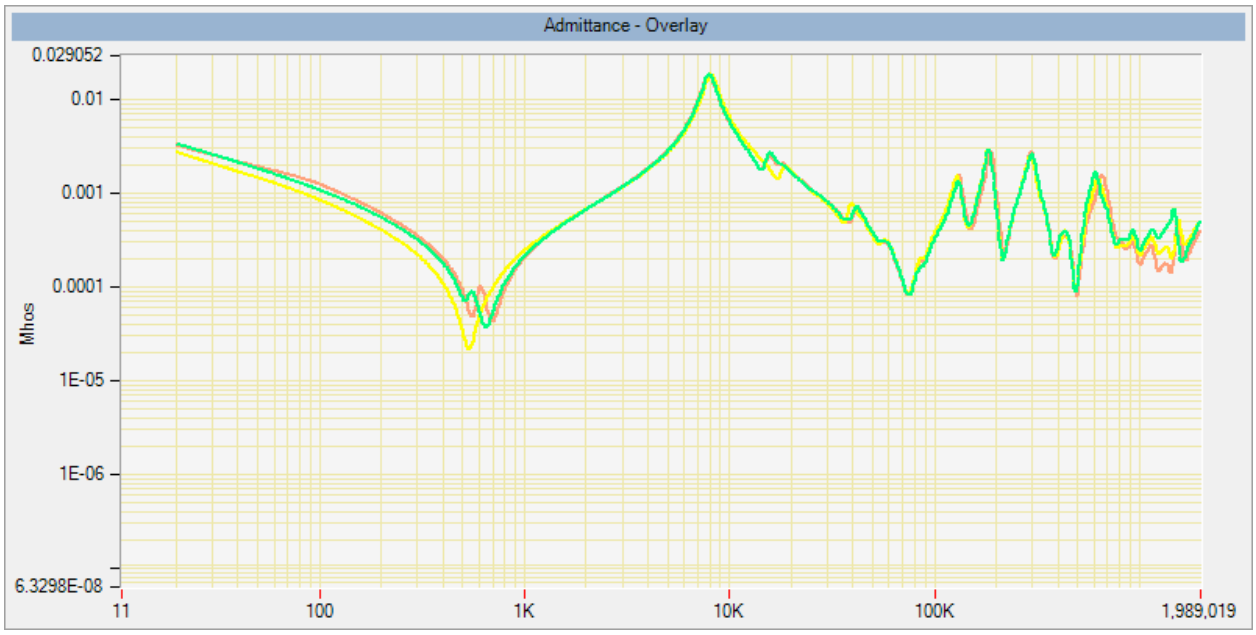
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - X2-X0_2022-11-16_15-40-56



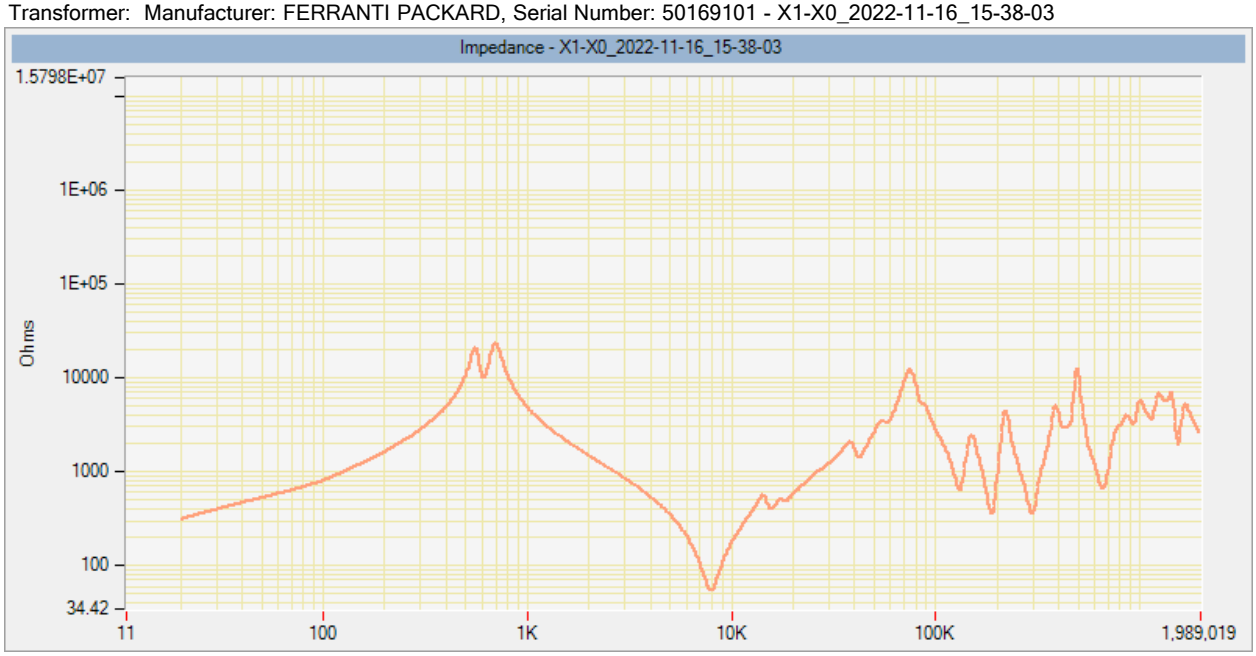
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - X3-X0_2022-11-16_15-43-55



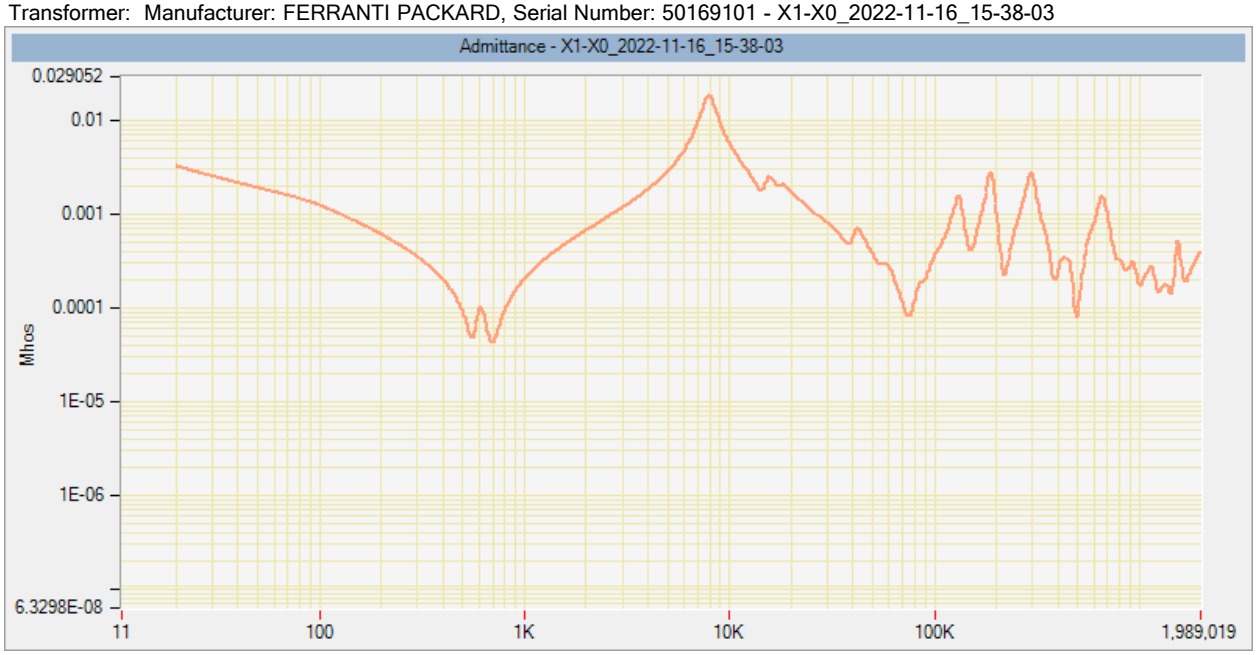

Impedance - Overlay
1.5798E+07
1E+06
1E+05
10000
1000
100
34.42
Ohms
11
100
1K
10K
100K
1,989,019


Admittance - Overlay
0.029052
0.01
0.001
0.0001
1E-05
1E-06
6.3298E-08
Mhos
11
100
1K
10K
100K
1,989,019

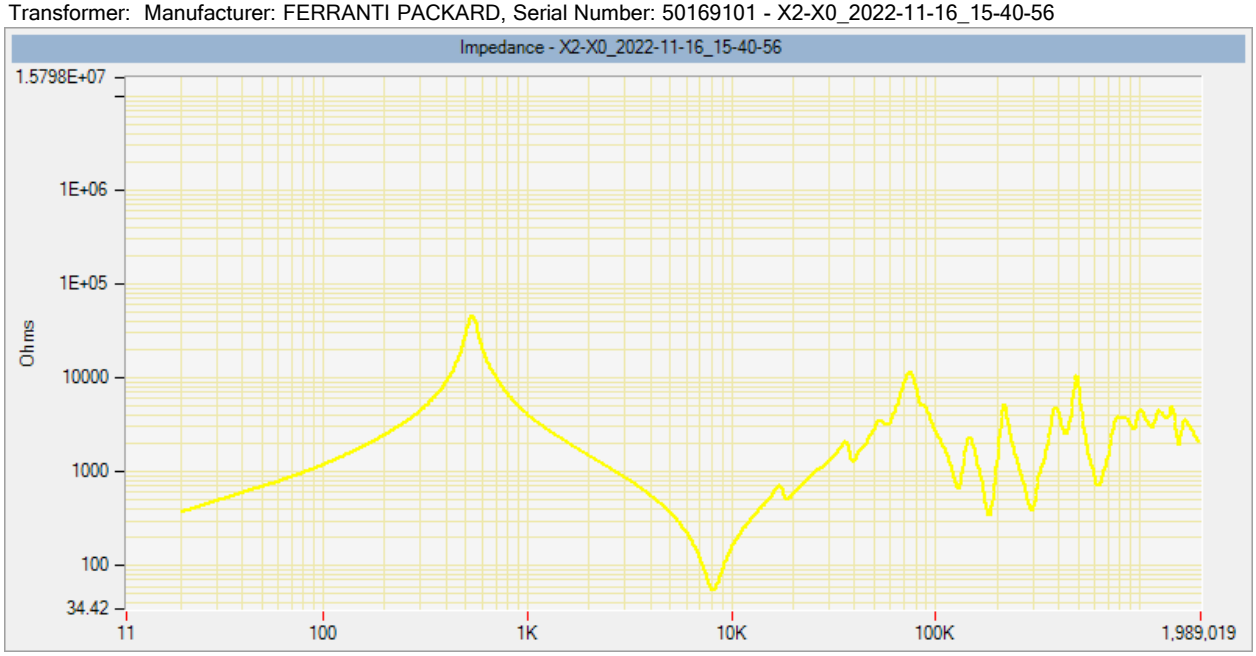
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - X1-X0_2022-11-16_15-38-03



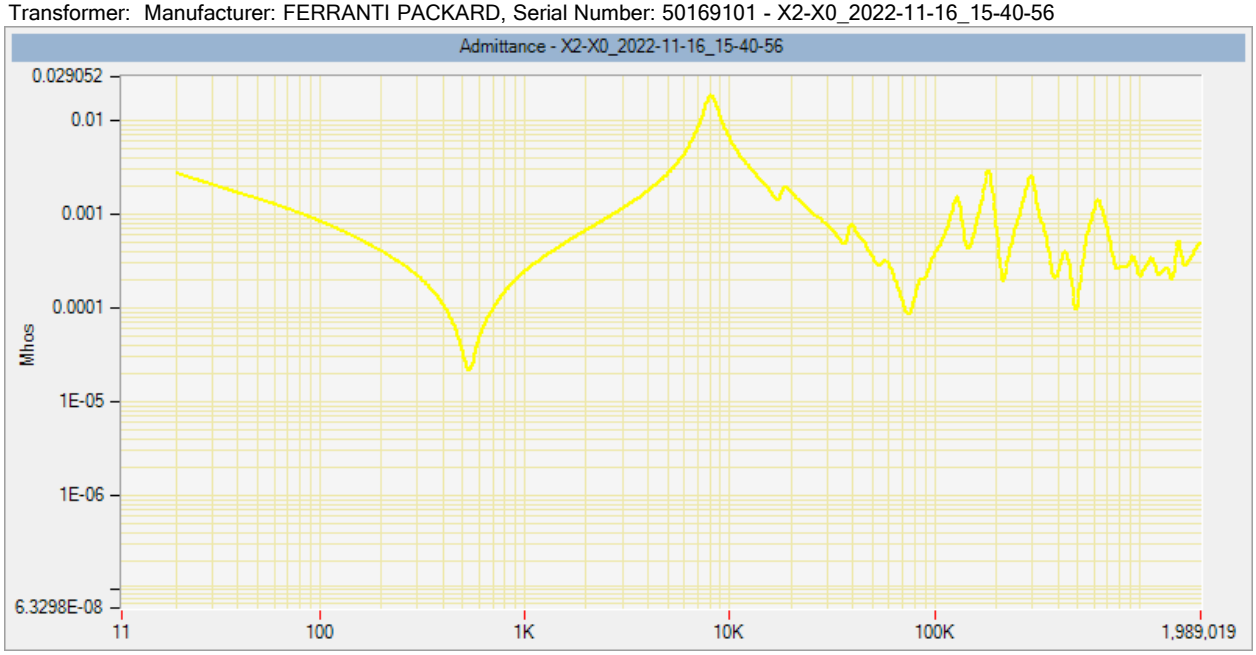
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - X1-X0_2022-11-16_15-38-03



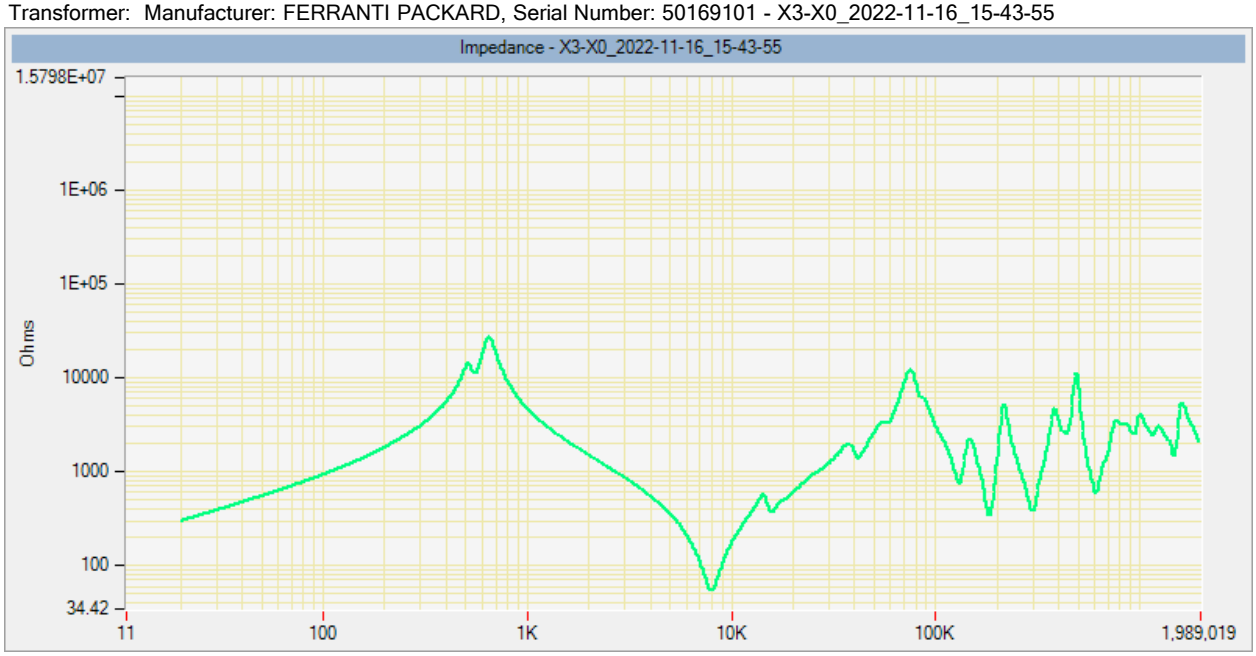
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - X2-X0_2022-11-16_15-40-56



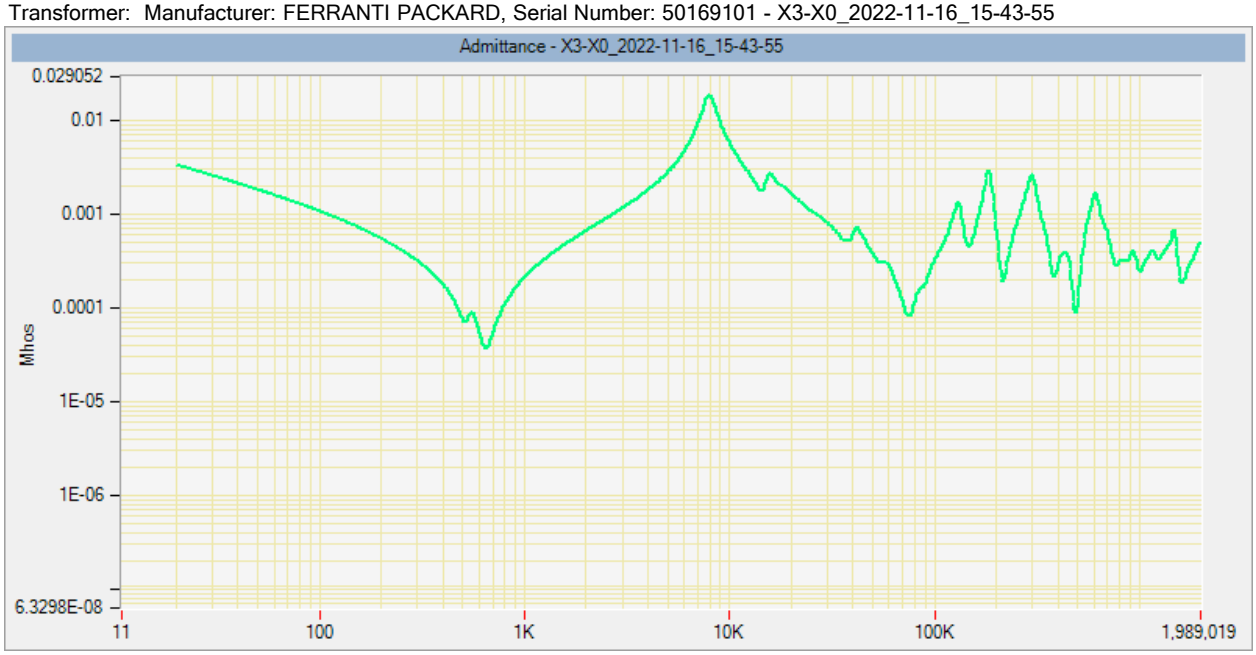
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - X2-X0_2022-11-16_15-40-56

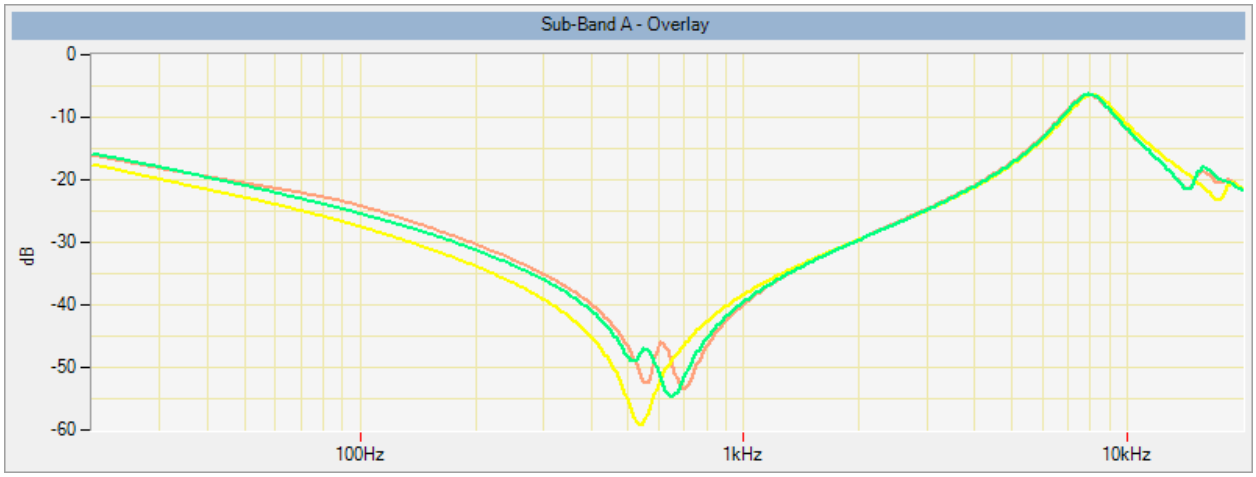


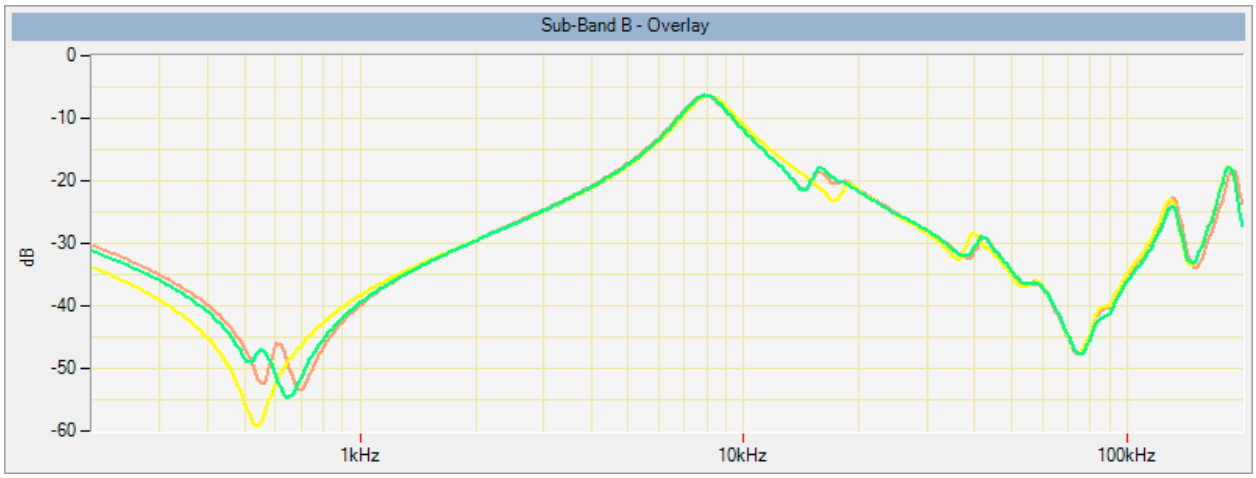
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - X3-X0_2022-11-16_15-43-55

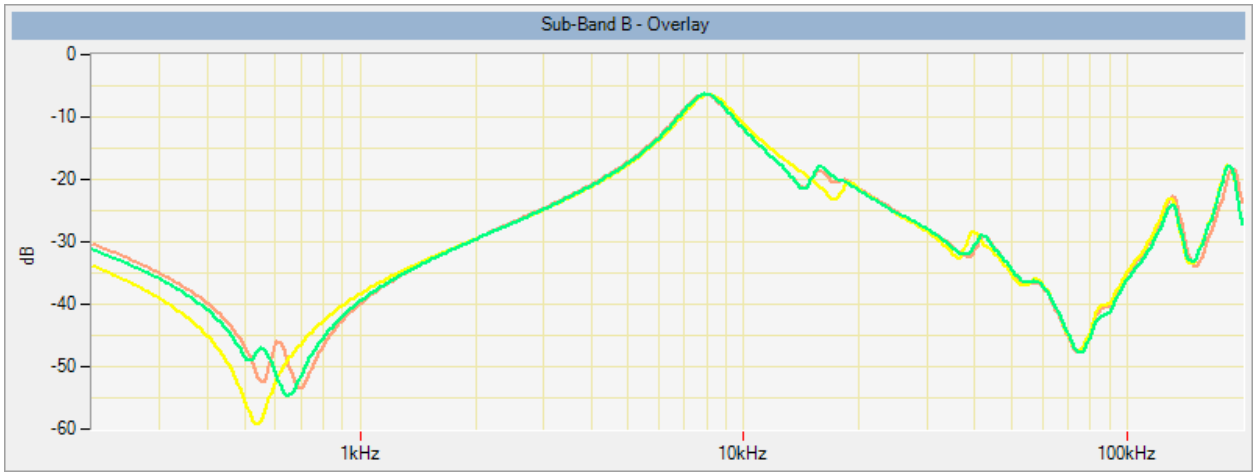


Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - X3-X0_2022-11-16_15-43-55




Sub-Band A - Overlay
0
-10
-20
-30
-40
-50
-60
dB
100Hz
1kHz
10kHz


Sub-Band B - Overlay
0
-10
-20
-30
-40
-50
-60
dB
1kHz
10kHz
100kHz


Sub-Band B - Overlay
0
-10
-20
-30
-40
-50
-60
dB
1kHz
10kHz
100kHz

Transformer Count: 1
Total Test Count: 3

1. Manufacturer: FERRANTI PACKARD, Serial Number: 50169101, Special ID:

TestDate: 11/16/2022 4:24 PM, Trace Name: H1-H3_2022-11-16_15-24-15
TestDate: 11/16/2022 4:28 PM, Trace Name: H2-H1_2022-11-16_15-28-30
TestDate: 11/16/2022 4:32 PM, Trace Name: H3-H2_2022-11-16_15-32-24

Nameplate Details

1. Manufacturer: FERRANTI PACKARD, Serial Number: 50169101, Special ID:

Filename: C:\Users\asus\Documents\Doble Engineering\Sweep Frequency Response Analyzer\Data\Eaton-Corp_New-Location_FERRANTI-PACKARD_50169101_2022-11-16_15-24-15.sfra

TestTemplate: 3-Ph 2-Wind D-Y

Serial Number: 50169101
Manufacturer: FERRANTI PACKARD
Year of Manufacture: 2003
Special ID:
Current: 0
Phases: 3
Windings: 2
Type: DIST
HV: 115.5
LV1: 28.4
LV2: 0
Tertiary: 0
Impedance HV-LV1: 0
Impedance HV-LV2: 0
Impedance HV-Tertiary: 0
Impedance LV-Tertiary: 0

MVA Maximum: 0
MVA1: 0
MVA2: 0
MVA3: 0
Notes:
Template: 3-Ph 2-Wind D-Y
LTC Serial Number:
LTC Manufacturer:
LTC Year of Mfr: 0
LTC Range:
LTC Notes:
DETC Serial Number:
DETC Manufacturer:
DETC Year of Mfr: 0
DETC Range:
DETC Notes:

Instrument Details

1. Manufacturer: FERRANTI PACKARD, Serial Number: 50169101, Special ID:

TestDate: 11/16/2022 4:24 PM, Trace Name: H1-H3_2022-11-16_15-24-15

Tested by: Urian Clements
Instrument serial number: m5400
Notes:

TestDate: 11/16/2022 4:28 PM, Trace Name: H2-H1_2022-11-16_15-28-30

Tested by: Urian Clements
Instrument serial number: m5400
Notes:

TestDate: 11/16/2022 4:32 PM, Trace Name: H3-H2_2022-11-16_15-32-24

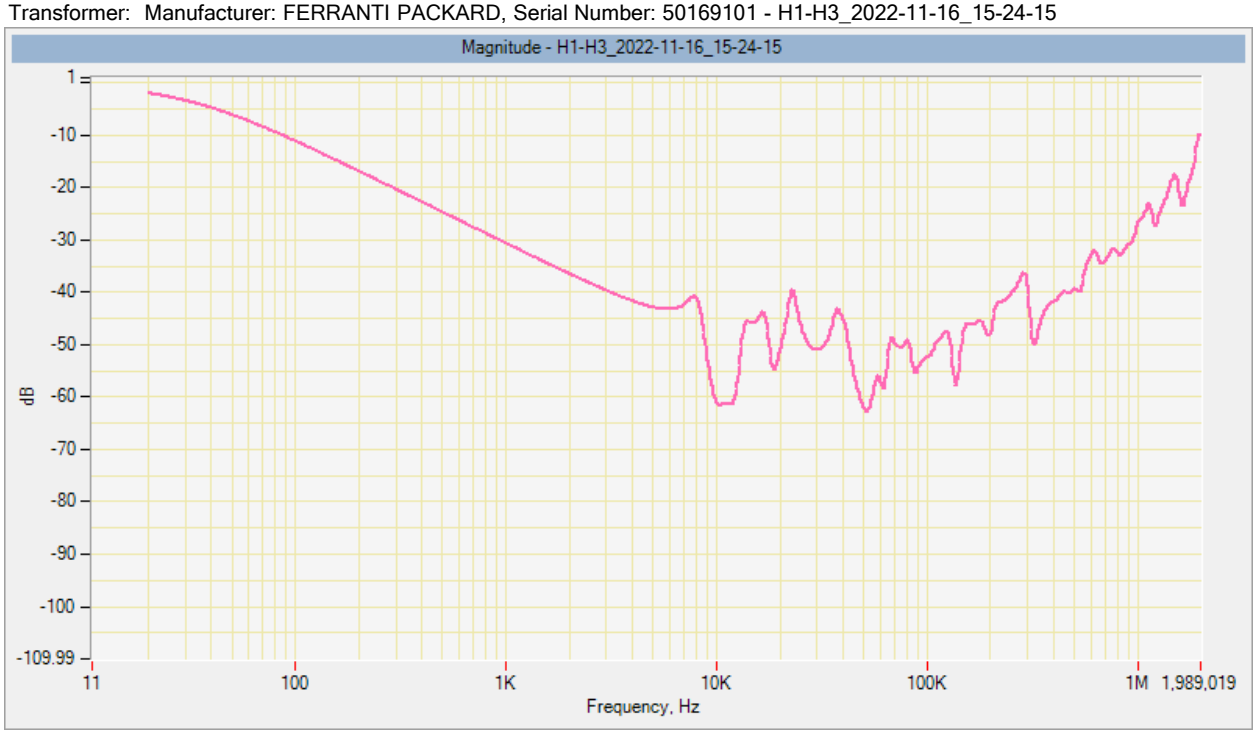
Tested by: Urian Clements
Instrument serial number: m5400
Notes:

H1-H3_2022-11-16_15-24-15 - Manufacturer: FERRANTI PACKARDSerial Number: 50169101Date: 11/16/2022 4:24:15 PM
LTC: 6DETC: as found - make noteMVA Maximum: 0KV: 115.5/28.4

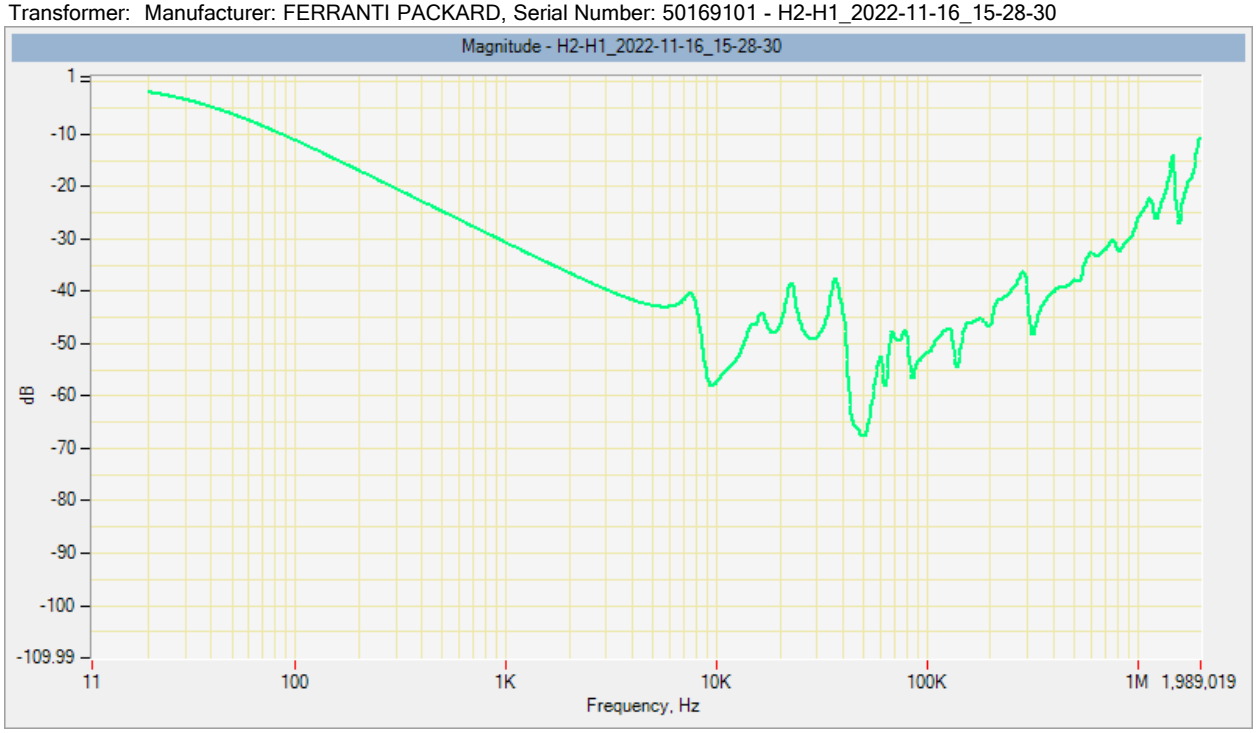
H2-H1_2022-11-16_15-28-30 - Manufacturer: FERRANTI PACKARDSerial Number: 50169101Date: 11/16/2022 4:28:30 PM
LTC: 6DETC: as found - make noteMVA Maximum: 0KV: 115.5/28.4

H3-H2_2022-11-16_15-32-24 - Manufacturer: FERRANTI PACKARDSerial Number: 50169101Date: 11/16/2022 4:32:24 PM
LTC: 6DETC: as found - make noteMVA Maximum: 0KV: 115.5/28.4

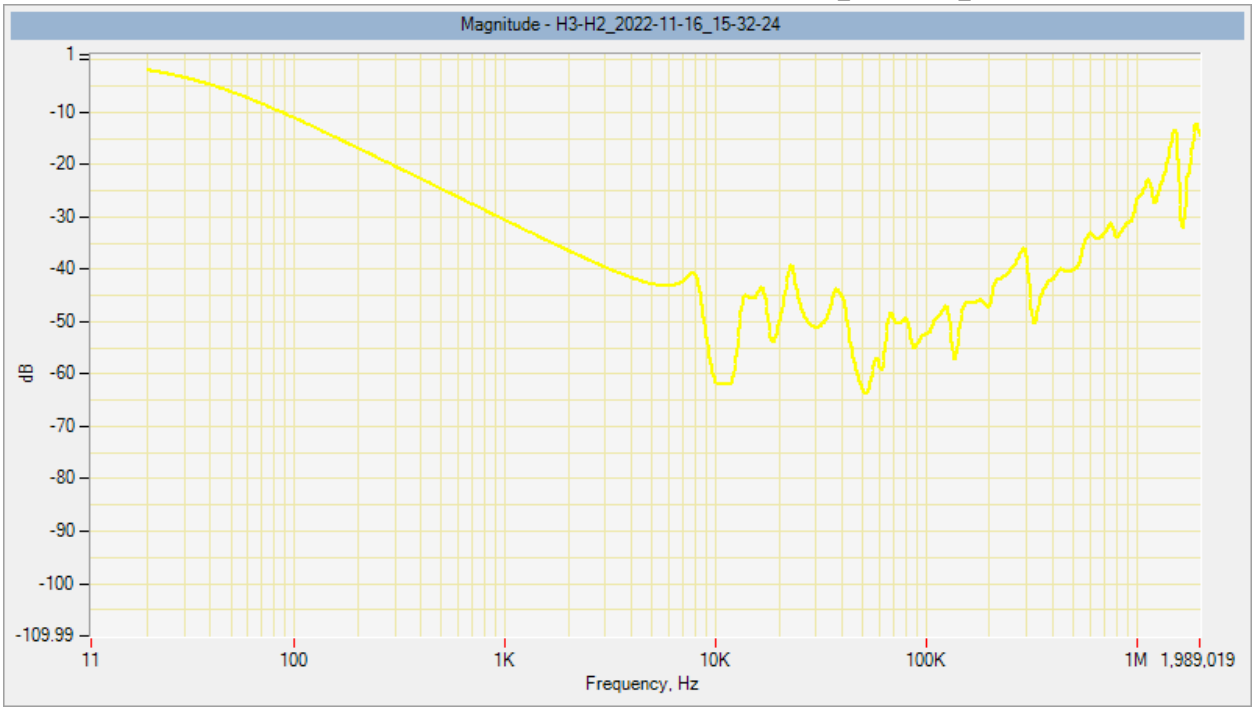
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H1-H3_2022-11-16_15-24-15

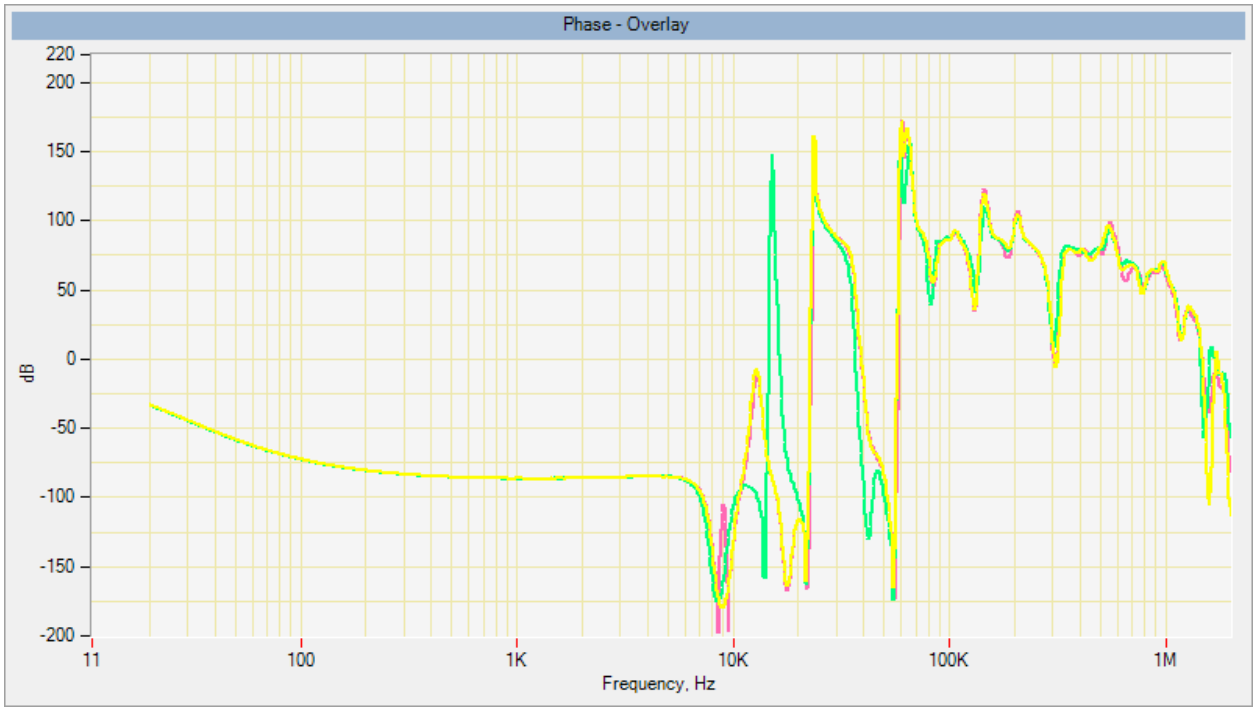


Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H2-H1_2022-11-16_15-28-30

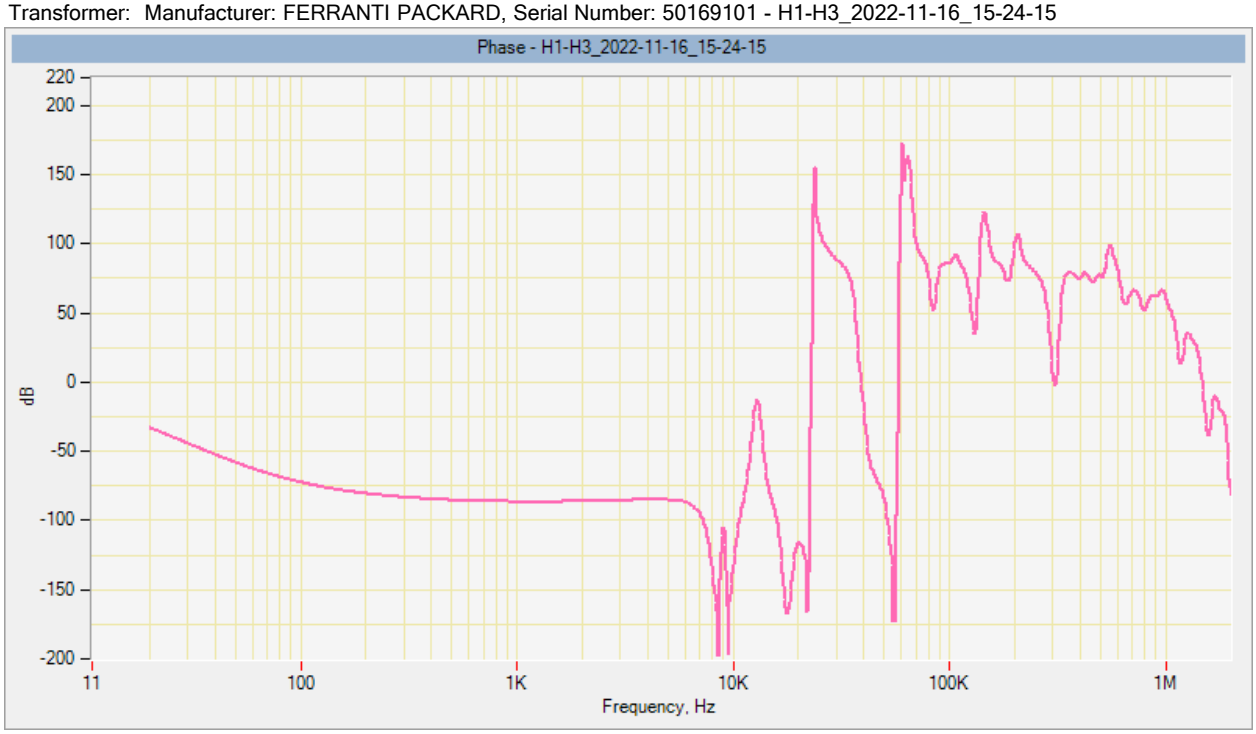


Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H3-H2_2022-11-16_15-32-24

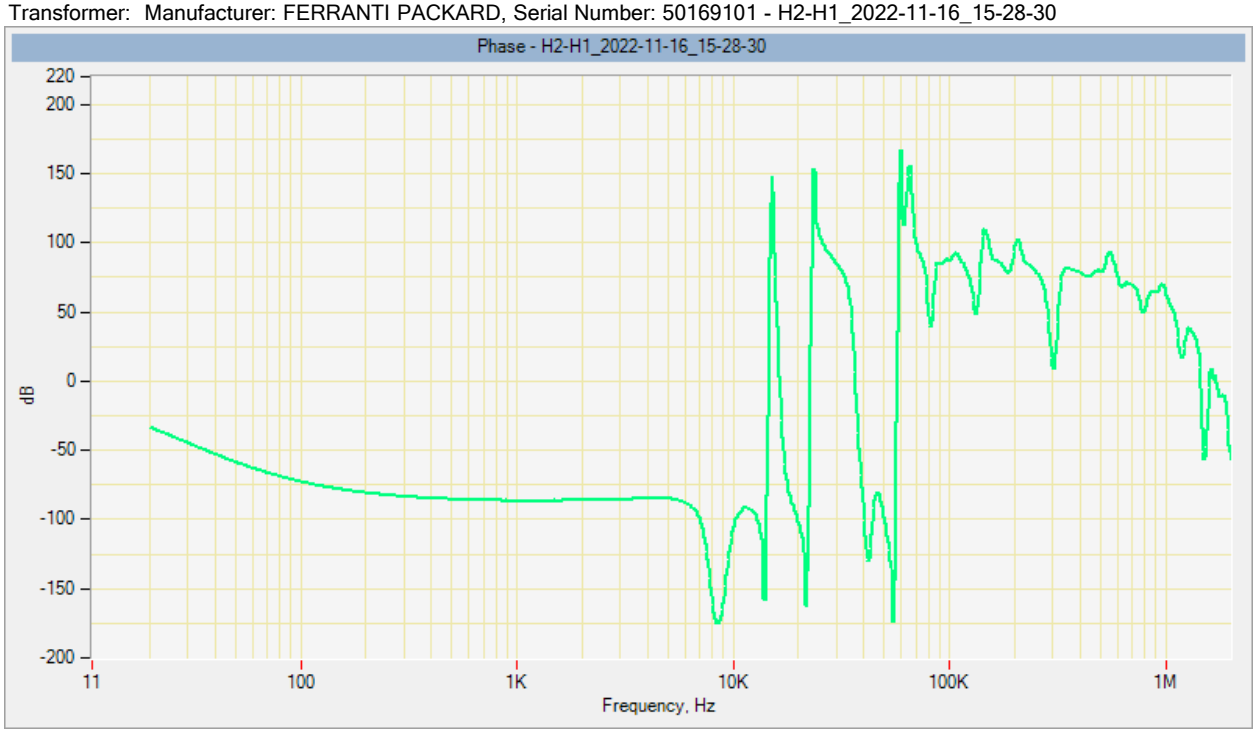



Phase - Overlay
220
200
150
100
50
0
-50
-100
-150
-200
dB
11
100
1K
10K
100K
1M
Frequency, Hz

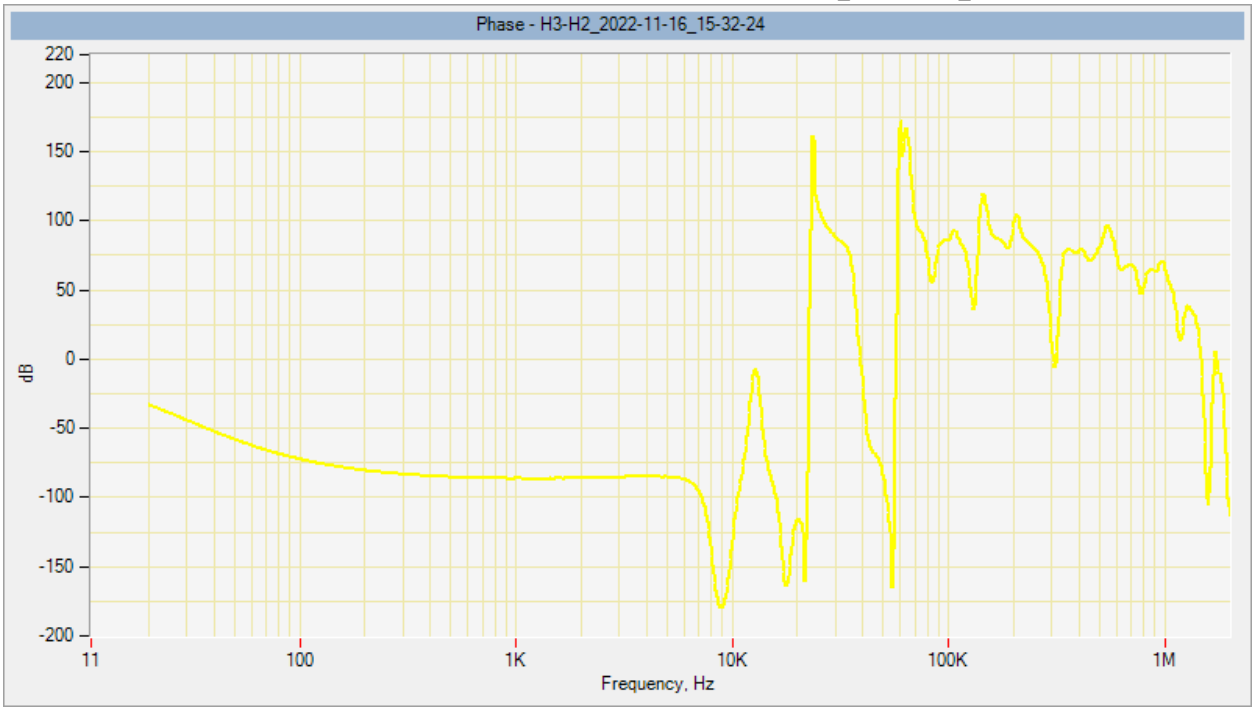
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H1-H3_2022-11-16_15-24-15



Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H2-H1_2022-11-16_15-28-30



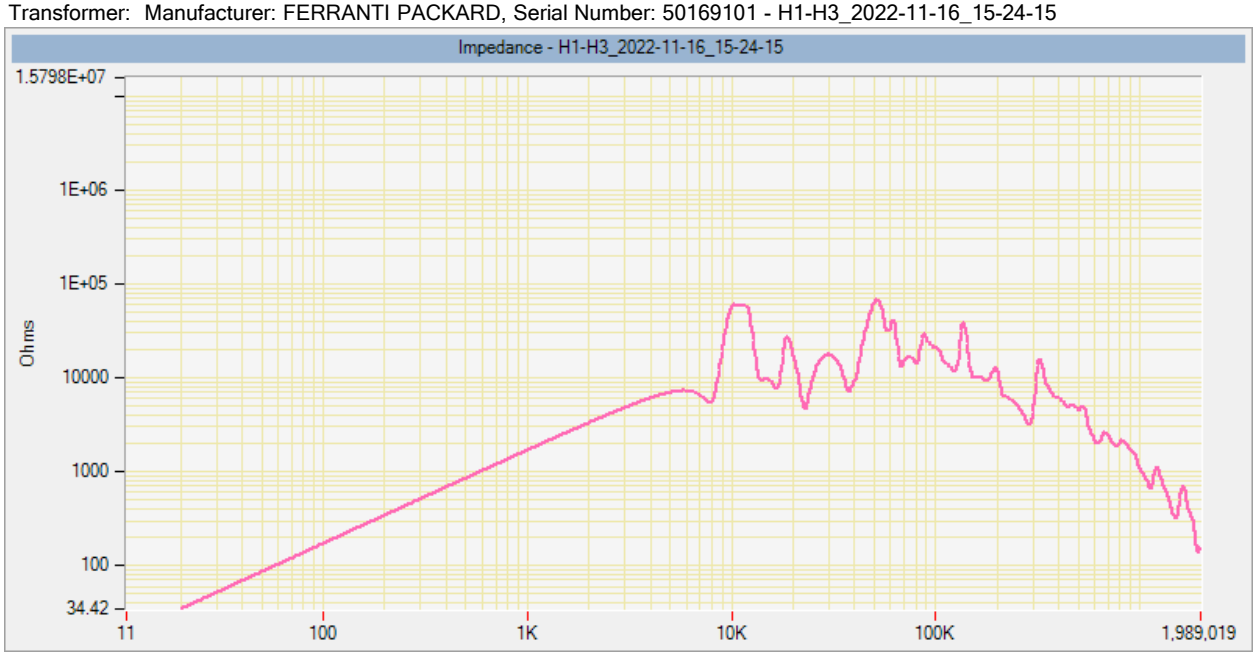
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H3-H2_2022-11-16_15-32-24



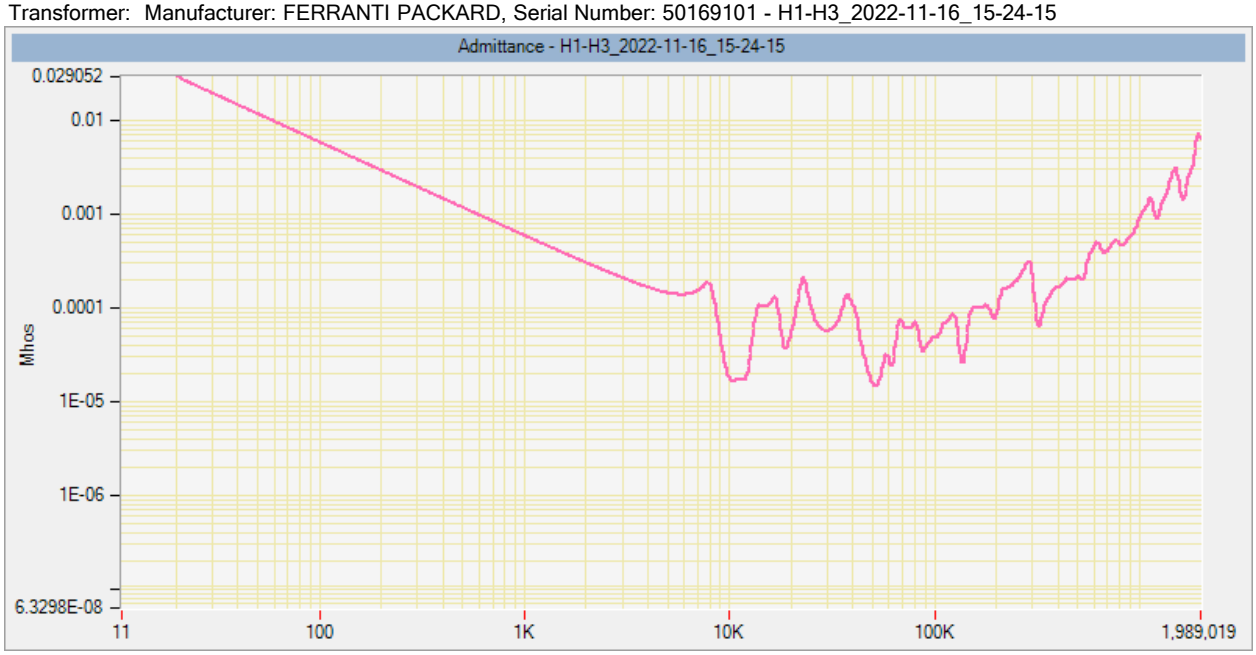

Impedance - Overlay
1.5798E+07
1E+06
1E+05
10000
1000
100
34.42
Ohms
11
100
1K
10K
100K
1,989,019


Admittance - Overlay
0.029052
0.01
0.001
0.0001
1E-05
1E-06
6.3298E-08
Mhos
11
100
1K
10K
100K
1,989,019

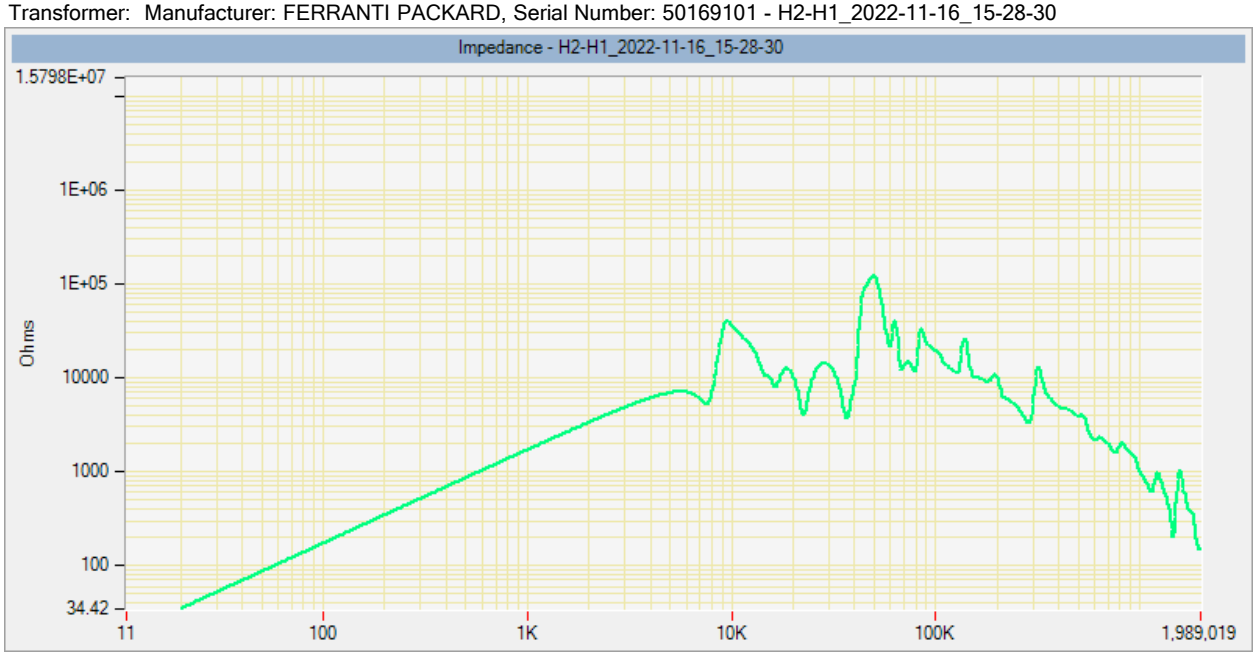
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H1-H3_2022-11-16_15-24-15



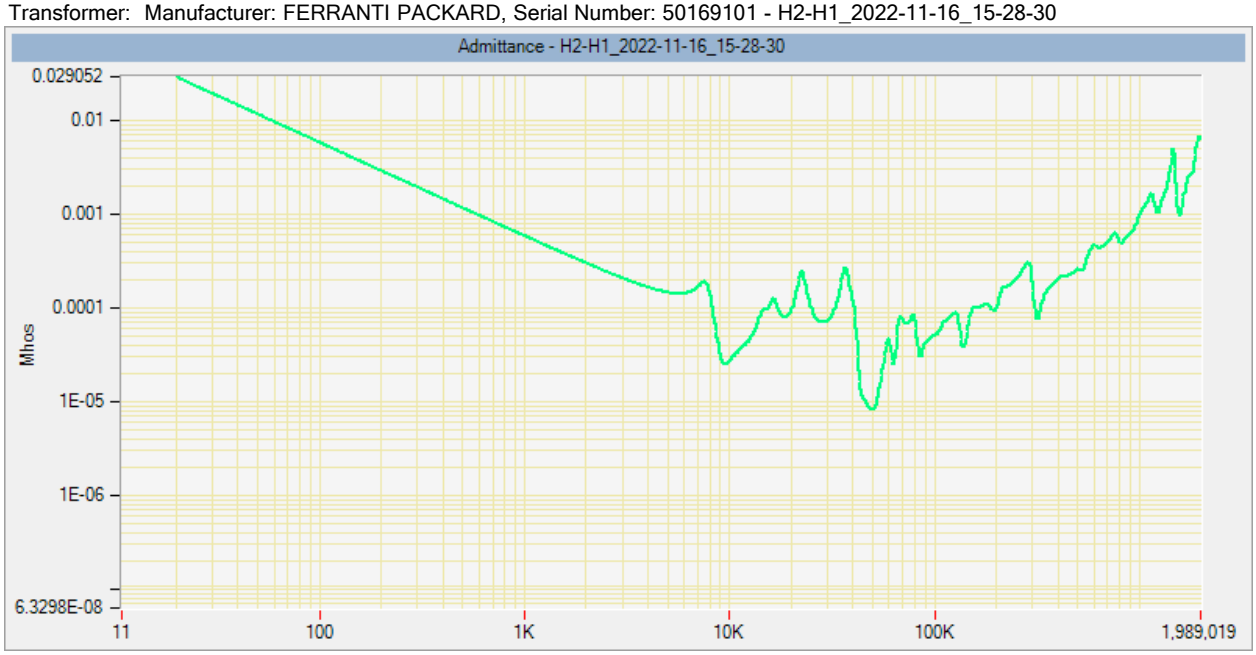
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H1-H3_2022-11-16_15-24-15



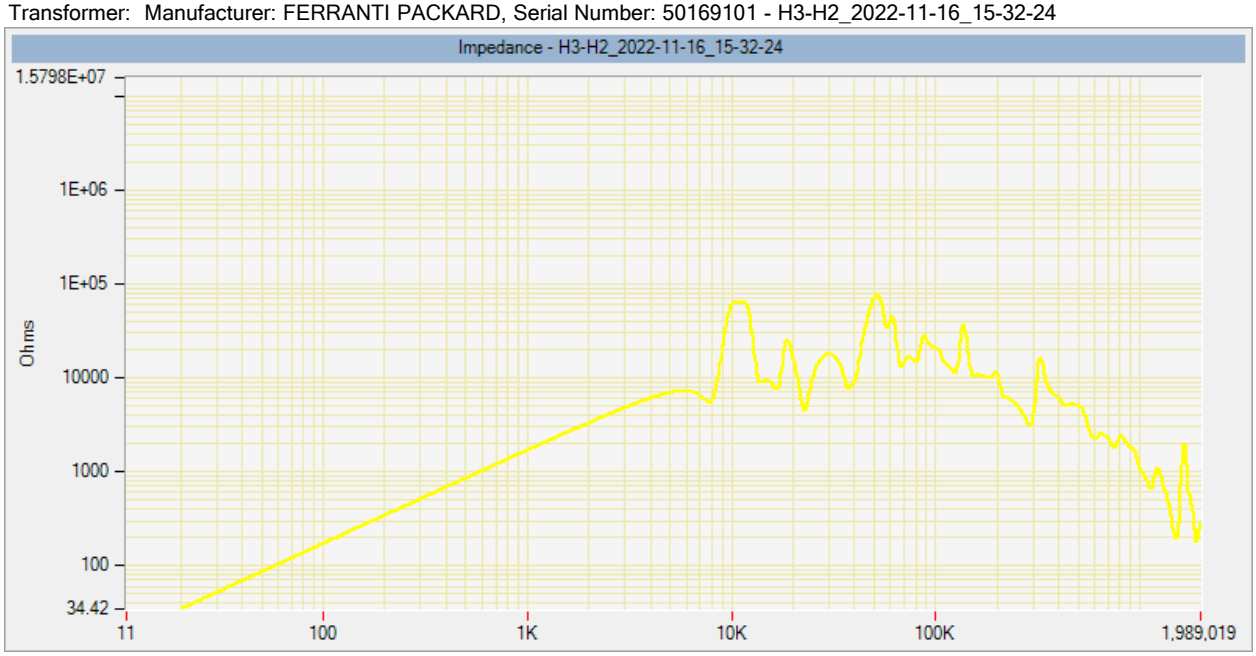
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H2-H1_2022-11-16_15-28-30



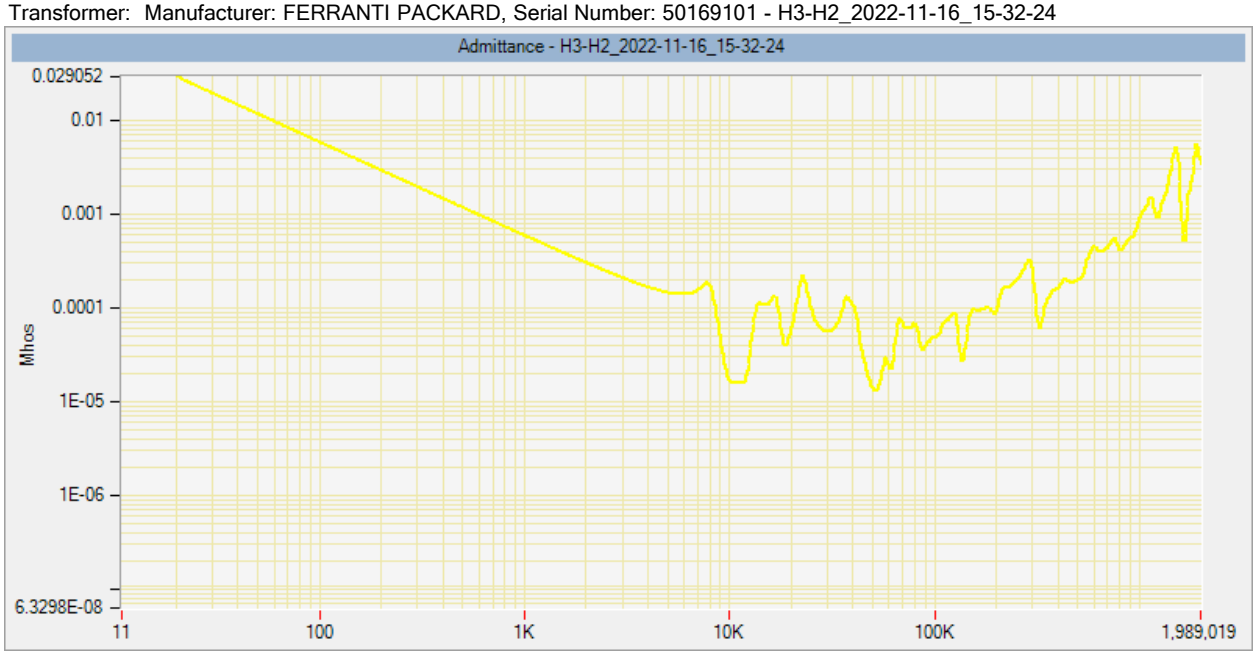
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H2-H1_2022-11-16_15-28-30

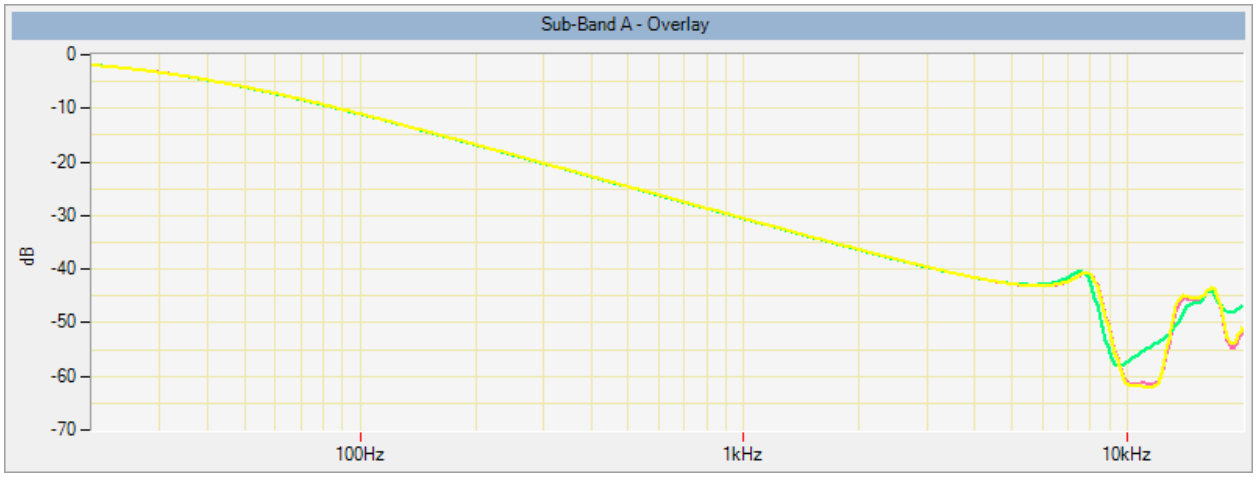


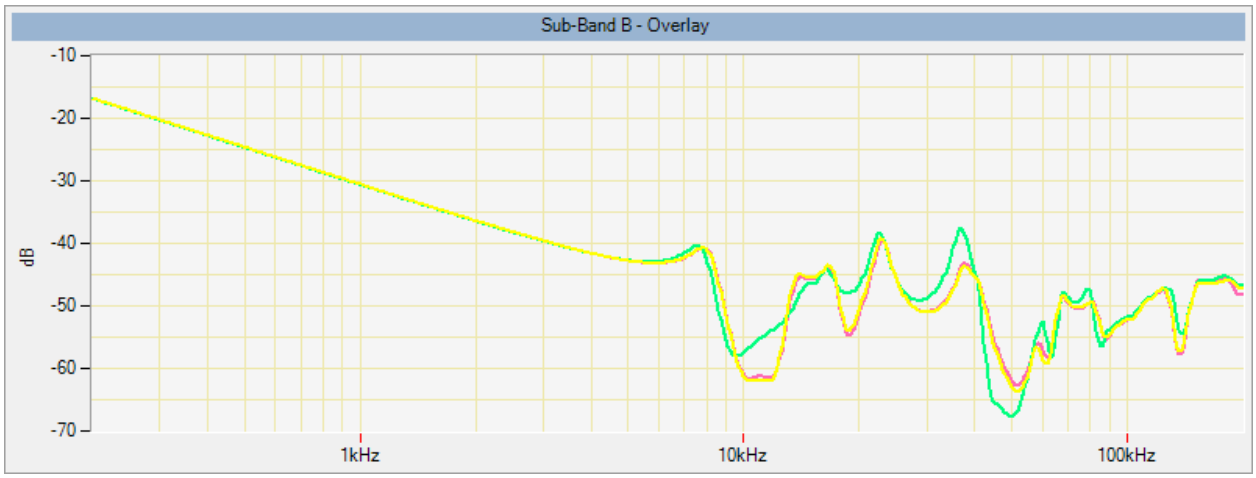
Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H3-H2_2022-11-16_15-32-24

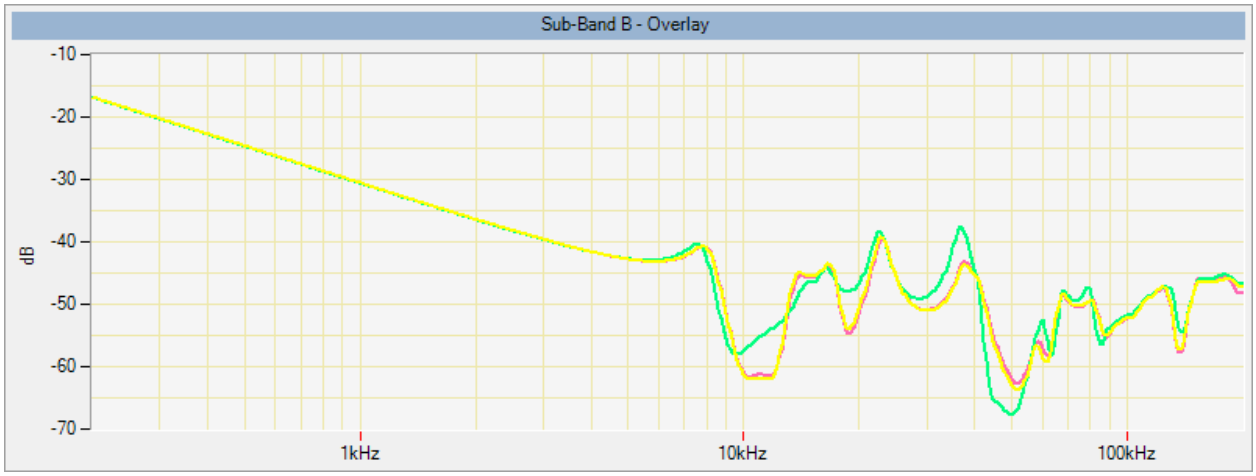


Transformer: Manufacturer: FERRANTI PACKARD, Serial Number: 50169101 - H3-H2_2022-11-16_15-32-24




Sub-Band A - Overlay
0
-10
-20
-30
-40
-50
-60
-70
dB
100Hz
1kHz
10kHz


Sub-Band B - Overlay
-10
-20
-30
-40
-50
-60
-70
dB
1kHz
10kHz
100kHz


Sub-Band B - Overlay
-10
-20
-30
-40
-50
-60
-70
dB
1kHz
10kHz
100kHz

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

POTENTIAL TRANSFORMER

SYSTEM ID: NOTL DS

DEVICE ID: T1 PT

Customer: Niagara On -The-Lake Hydro
8 Henegan Rd

Site: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

Date: Nov 2022
Job # 22-2015

Nameplate Data

Manufacturer	ABB
Catalogue #	923A247G09
Type	VOZZ-20G VOLTAGE TX
Serial #	51900448
Primary Voltage	16800V
Secondary Voltage	120V

Ratio	140:1
Volage Class	34.5kV
HV BIL Rating	200kV
ANSI/CSA Metering	0.3 W THRU ZZ
Accuracy	
Relaying Protection	NONE

Comments:

Test Data

Turn Ratio **Test** Voltage: 80 V Automatic ☑ Other _____ V

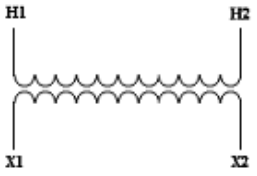
Tap Designation	Information	H1 X1 to H2 X2	H1 X1 to H2 X2	H1 X1 to H2 X2
1	Calculated Ratio	140		
	Measured Ratio	139.895		
	Deviation (%)	0.08		
	Iexc (mA)	0.1		
	Phase (Deg)	N/A		

Insulation Resistance

Resistance in Meg-Ohms after 1 min

High to Low & Ground	5000	v	1570000	MΩ	MΩ	MΩ
Low to High & Ground	500	v	352000	MΩ	MΩ	MΩ
High & Low to Ground	500	v	351000	MΩ	MΩ	MΩ

Winding Diagram



Test Instrument(s) Manufacturer / Model

Serial #

Ratio	Megger
3247	0516

Comments:

D.CHARRON, A.BURK

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

High Voltage Data Sheet

SYSTEM ID: NOTL DS | DEVICE ID / ASSET ID: T1-B1

CUSTOMER: Niagara On -The-Lake Hydro
8 Henegan Rd

SITE: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

DATE: Nov 2022
JOB #: 22-2015

NAMEPLATE DATA

Switch Mounting	Metal Enclosed ☐	Pole ☐	Tower ☑	Other	
Switch Type	Load Break ☑	Air Break ☐		Other	

Manufacturer	S&C	BIL Rating	150 kV
Date of Manufacture	N/A	Feeder ID	T1
Serial #	N/A	Feeds To	T1 BUSS
Catalog #	320123R9-E-T201	Interupting Rating	61000 A
Nom./Max Voltage	25/29.5 kV	Continuous Ampacity	1200 A

Comments:

LIGHTNING ARRESTERS

Lightning Arrestors	Yes ☐	No ☑		Manufacturer	
Class	Distribution ☐	Intermediate ☐	Station ☐	Catalog #	
Composition	Ceramic ☐	Polymer ☐		Max. / MCOV Rating	kV

Comments:

PROTECTIVE DEVICE DATA

PRIMARY FUSE HOLDER DATA

Manufacturer	
Type	
Nom. / Max. Voltage	kV
Holder Max. Fuse Link	
Holder Catalog #	

PRIMARY FUSE LINK DATA

Manufacturer	
Type	
Link Size	A
TCC#	
Link Catalog #	

PRIMARY FUSE LINK SPARES / LOCATION

Spare Primary Fuses: Yes ☐ No ☑ # of Spares: _____ Location: _____

Comments:

INTERLOCK

Key Interlock	Yes ☐	No ☑		Manufacturer	
Interlock Type	Electrical ☐	Mechanical ☐	Utility Lock ☐	Key Interlock #	
Devices Interlocked	H.V Switch ☐	Breaker ☐	Trans. Encl ☐	Other ☐	

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☐	Bus Bar ☑	Conductor Size/Dim	2.5" IPS
Conductor Material	Aluminum ☑	Copper ☐	Conductors per Phase	1 /Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	N/A
Concentric Neutral	Aluminum ☐	Copper ☐	# of Bond Conductors	N/A
Insulation Voltage	V		# of Neutral Conductors	0
Insulation Type			Neutral Size/Dim	N/A

Comments:

Tested By: D. CHARRON

VISUAL INSPECTION/MECHANICAL TESTS

Nameplate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Connections	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Lightning Arrestors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Suppressors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Key Interlock	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

SWITCH CONDITION / OPERATION

Switch Operation as Left	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Contact Surface Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Simultaneous Closure	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

ELECTRICAL TESTS

EARTH RESISTANCE (3 - POINT TEST)

Earth Resistance N/A Ω

ARC SUPPRESSOR CONTACT RESISTANCE

Arc Suppressor Contact Resistance

Phase A	0.8	Ω
Phase B	1.8	Ω
Phase C	0.9	Ω

Comments:

SWITCH INSULATION RESISTANCE

Resistance in Meg-OHMS After 1 Minute

Test Voltage 1 kV ☐ 2.5 kV ☐ 5 kV ☐ 10 kV ☐

	Phase A	Phase B	Phase C
Phase To GND	MΩ	MΩ	MΩ

Switch Fuse/Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current 10 A

	Phase A	Phase B	Phase C
Switch	132 μΩ	71 μΩ	75 μΩ
Fuse	μΩ	μΩ	μΩ
Overall	μΩ	μΩ	μΩ

Comments:

LOAD SIDE CONDUCTOR INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Comments:

LIGHTNING ARRESTER INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Test Instrument(s)

Manufacturer / Model	Megger	DRLO
Serial #	N/A	3292

Comments:

Tested By: D. CHARRON

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

High Voltage Data Sheet

SYSTEM ID: NOTL DS
DEVICE ID: B1-B2
ASSET ID:

CUSTOMER: Niagara On -The-Lake Hydro
8 Henegan Rd

SITE: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

DATE: Nov 2022
JOB #: 22-2015

NAMEPLATE DATA

Switch Mounting: Metal Enclosed ☐ Pole ☐ Tower ☑ Other
Switch Type: Load Break ☑ Air Break ☐ Other

Manufacturer	S&C	BIL Rating	200 kV
Date of Manufacture	N/A	Feeder ID	B1 B2 BUSS TIE
Serial #	N/A	Feeds To	B1 B2 BUSS TIE
Catalog #	135914R2-E-T200	Interupting Rating	40000 A
Nom./Max Voltage	34.5/38 kV	Continuous Ampacity	1200 A

Comments:

LIGHTNING ARRESTERS

Lightning Arrestors: Yes ☐ No ☑
Class: Distribution ☐ Intermediate ☐ Station ☐
Composition: Ceramic ☐ Polymer ☐

Manufacturer	
Catalog #	
Max. / MCOV Rating	kV

Comments:

PROTECTIVE DEVICE DATA

PRIMARY FUSE HOLDER DATA

Manufacturer	
Type	
Nom. / Max. Voltage	kV
Holder Max. Fuse Link	
Holder Catalog #	

PRIMARY FUSE LINK DATA

Manufacturer	
Type	
Link Size	A
TCC#	
Link Catalog #	

PRIMARY FUSE LINK SPARES / LOCATION

Spare Primary Fuses: Yes ☐ No ☑ # of Spares: Location:

Comments:

INTERLOCK

Key Interlock: Yes ☐ No ☑ Manufacturer:
Interlock Type: Electrical ☐ Mechanical ☐ Utility Lock ☐ Key Interlock #:
Devices Interlocked: H.V Switch ☐ Breaker ☐ Trans. Encl ☐ Other ☐

LOAD SIDE CONDUCTOR DATA

Conductor Type: Cable ☐ Bus Bar ☑
Conductor Material: Aluminum ☑ Copper ☐
Tape Shield: Aluminum ☐ Copper ☐
Concentric Neutral: Aluminum ☐ Copper ☐
Insulation Voltage: V
Insulation Type:

Conductor Size/Dim: 2.5" IPS
Conductors per Phase: 1 /Phase
Bond Size/Dim: N/A
# of Bond Conductors: N/A
# of Neutral Conductors: 0
Neutral Size/Dim: N/A

Comments:
Tested By: D. CHARRON

VISUAL INSPECTION/MECHANICAL TESTS

Nameplate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Connections	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Lightning Arrestors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Suppressors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Key Interlock	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

SWITCH CONDITION / OPERATION

Switch Operation as Left	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Contact Surface Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Simultaneous Closure	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

ELECTRICAL TESTS

EARTH RESISTANCE (3 - POINT TEST)

Earth Resistance N/A Ω

ARC SUPPRESSOR CONTACT RESISTANCE

Arc Suppressor Contact Resistance

Phase A	0.1	Ω
Phase B	0	Ω
Phase C	0.2	Ω

Comments:

SWITCH INSULATION RESISTANCE

Resistance in Meg-OHMS After 1 Minute

Test Voltage 1 kV ☐ 2.5 kV ☐ 5 kV ☐ 10 kV ☐

	Phase A	Phase B	Phase C
Phase To GND	MΩ	MΩ	MΩ

Switch Fuse/Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current 10 A

	Phase A	Phase B	Phase C
Switch	68 µΩ	76 µΩ	71 µΩ
Fuse	µΩ	µΩ	µΩ
Overall	µΩ	µΩ	µΩ

Comments:

LOAD SIDE CONDUCTOR INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Comments:

LIGHTNING ARRESTER INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Test Instrument(s)

Manufacturer / Model	Megger	DRLO
Serial #	N/A	6599

Comments:

Tested By: D. CHARRON

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

High Voltage Data Sheet

SYSTEM ID: NOTL DS
DEVICE ID / ASSET ID: B2-B3 SWITCH

CUSTOMER: Niagara On -The-Lake Hydro
8 Henegan Rd

SITE: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

DATE: Nov 2022
JOB #: 22-2015

NAMEPLATE DATA

Switch Mounting	Metal Enclosed ☐	Pole ☐	Tower ☑	Other	
Switch Type	Load Break ☑	Air Break ☐		Other	

Manufacturer	S&C	BIL Rating	150 kV
Date of Manufacture	04/2018	Feeder ID	B2-B3 BUSS
Serial #	N/A	Feeds To	B2-B3 BUSS
Catalog #	135914R2-E-T223	Interupting Rating	61000 A
Nom./Max Voltage	34.5/38 kV	Continuous Ampacity	1200 A

Comments:

LIGHTNING ARRESTERS

Lightning Arrestors	Yes ☐	No ☑		Manufacturer	
Class	Distribution ☐	Intermediate ☐	Station ☐	Catalog #	
Composition	Ceramic ☐	Polymer ☐		Max. / MCOV Rating	kV

Comments:

PROTECTIVE DEVICE DATA

PRIMARY FUSE HOLDER DATA

Manufacturer	
Type	
Nom. / Max. Voltage	kV
Holder Max. Fuse Link	
Holder Catalog #	

PRIMARY FUSE LINK DATA

Manufacturer	
Type	
Link Size	A
TCC#	
Link Catalog #	

PRIMARY FUSE LINK SPARES / LOCATION

Spare Primary Fuses: Yes ☐ No ☑ # of Spares: _____ Location: _____

Comments:

INTERLOCK

Key Interlock	Yes ☐	No ☑		Manufacturer	
Interlock Type	Electrical ☐	Mechanical ☐	Utility Lock ☐	Key Interlock #	
Devices Interlocked	H.V Switch ☐	Breaker ☐	Trans. Encl ☐	Other ☐	

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☐	Bus Bar ☑	Conductor Size/Dim	2.5" IPS
Conductor Material	Aluminum ☑	Copper ☐	Conductors per Phase	1 /Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	N/A
Concentric Neutral	Aluminum ☐	Copper ☐	# of Bond Conductors	N/A
Insulation Voltage	V		# of Neutral Conductors	0
Insulation Type			Neutral Size/Dim	N/A

Comments:

Tested By: D. CHARRON

VISUAL INSPECTION/MECHANICAL TESTS

Nameplate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Connections	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Lightning Arrestors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Suppressors	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Key Interlock	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

SWITCH CONDITION / OPERATION

Switch Operation as Left	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Contact Surface Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Simultaneous Closure	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

ELECTRICAL TESTS

EARTH RESISTANCE (3 - POINT TEST)

Earth Resistance: N/A Ω

ARC SUPPRESSOR CONTACT RESISTANCE

Arc Suppressor Contact Resistance

Phase A	0.0	Ω
Phase B	0.1	Ω
Phase C	0.2	Ω

Comments:

SWITCH INSULATION RESISTANCE

Resistance in Meg-OHMS After 1 Minute

Test Voltage: 1 kV ☐ 2.5 kV ☐ 5 kV ☐ 10 kV ☐

	Phase A	Phase B	Phase C
Phase To GND	MΩ	MΩ	MΩ

Switch Fuse/Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current: 10 A

	Phase A	Phase B	Phase C
Switch	40 µΩ	88 µΩ	91 µΩ
Fuse	µΩ	µΩ	µΩ
Overall	µΩ	µΩ	µΩ

Comments:

LOAD SIDE CONDUCTOR INSULATION RESISTANCE

Resistance in Meg-OHMS @ NA V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Comments:

LIGHTNING ARRESTER INSULATION RESISTANCE

Resistance in Meg-OHMS @ NA V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Test Instrument(s)

Manufacturer / Model	Megger	DRLO
Serial #	N/A	6599

Comments:

Tested By: D.CHARRON

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

High Voltage Data Sheet

SYSTEM ID: NOTL DS
DEVICE ID: T2-B3
ASSET ID:

CUSTOMER: Niagara On -The-Lake Hydro
8 Henegan Rd

SITE: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

DATE: Nov 2022
JOB #: 22-2015

NAMEPLATE DATA

Switch Mounting: Metal Enclosed ☐ Pole ☐ Tower ☑ Other
Switch Type: Load Break ☑ Air Break ☐ Other

Manufacturer	S&C	BIL Rating	150 kV
Date of Manufacture	N/A	Feeder ID	T2
Serial #	N/A	Feeds To	T2 BUSS
Catalog #	320123R9-E-T201	Interupting Rating	61000 A
Nom./Max Voltage	25/29.5 kV	Continuous Ampacity	1200 A

Comments:

LIGHTNING ARRESTERS

Lightning Arrestors: Yes ☐ No ☑
Class: Distribution ☐ Intermediate ☐ Station ☐
Composition: Ceramic ☐ Polymer ☐

Manufacturer	
Catalog #	
Max. / MCOV Rating	kV

Comments:

PROTECTIVE DEVICE DATA

PRIMARY FUSE HOLDER DATA

Manufacturer	
Type	
Nom. / Max. Voltage	kV
Holder Max. Fuse Link	
Holder Catalog #	

PRIMARY FUSE LINK DATA

Manufacturer	
Type	
Link Size	A
TCC#	
Link Catalog #	

PRIMARY FUSE LINK SPARES / LOCATION

Spare Primary Fuses: Yes ☐ No ☑ # of Spares: Location:

Comments:

INTERLOCK

Key Interlock: Yes ☐ No ☑ Manufacturer:
Interlock Type: Electrical ☐ Mechanical ☐ Utility Lock ☐ Key Interlock #:
Devices Interlocked: H.V Switch ☐ Breaker ☐ Trans. Encl ☐ Other ☐

LOAD SIDE CONDUCTOR DATA

Conductor Type: Cable ☐ Bus Bar ☑
Conductor Material: Aluminum ☑ Copper ☐
Tape Shield: Aluminum ☐ Copper ☐
Concentric Neutral: Aluminum ☐ Copper ☐
Insulation Voltage: V
Insulation Type:

Conductor Size/Dim: 2.5" IPS
Conductors per Phase: 1 /Phase
Bond Size/Dim: N/A
# of Bond Conductors: N/A
# of Neutral Conductors: 0
Neutral Size/Dim: N/A

Comments:
Tested By: D. CHARRON

VISUAL INSPECTION/MECHANICAL TESTS

Nameplate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Connections	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Lightning Arrestors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Suppressors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Key Interlock	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

SWITCH CONDITION / OPERATION

Switch Operation as Left	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Contact Surface Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Simultaneous Closure	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

ELECTRICAL TESTS

EARTH RESISTANCE (3 - POINT TEST)

Earth Resistance: N/A Ω

ARC SUPPRESSOR CONTACT RESISTANCE

Arc Suppressor Contact Resistance

Phase A	0.9	Ω
Phase B	1.1	Ω
Phase C	0.8	Ω

Comments: ARC SUPPRESSOR PHASE B&C NEEDED ADDITIONAL SERVICING

SWITCH INSULATION RESISTANCE

Resistance in Meg-OHMS After 1 Minute

Test Voltage: 1 kV ☐ 2.5 kV ☐ 5 kV ☐ 10 kV ☐

	Phase A	Phase B	Phase C
Phase To GND	MΩ	MΩ	MΩ

Switch Fuse/Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current: 10 A

	Phase A	Phase B	Phase C
Switch	71 µΩ	76 µΩ	81 µΩ
Fuse	µΩ	µΩ	µΩ
Overall	µΩ	µΩ	µΩ

Comments:

LOAD SIDE CONDUCTOR INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Comments:

LIGHTNING ARRESTER INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Test Instrument(s)

Manufacturer / Model	Megger	DRLO
Serial #	N/A	6599

Comments:

Tested By: D. CHARRON

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

High Voltage Data Sheet

SYSTEM ID: NOTL DS
DEVICE ID / ASSET ID: B1-F1

CUSTOMER: Niagara On -The-Lake Hydro
8 Henegan Rd

SITE: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

DATE: Nov 2022
JOB #: 22-2015

NAMEPLATE DATA

Switch Mounting	Metal Enclosed ☐	Pole ☐	Tower ☑	Other	
Switch Type	Load Break ☑	Air Break ☐		Other	

Manufacturer	S&C	BIL Rating	150 kV
Date of Manufacture	N/A	Feeder ID	T1 BUSS
Serial #	N/A	Feeds To	F1 RECLOSER
Catalog #	320123R9-E-T201	Interupting Rating	61000 A
Nom./Max Voltage	25/29.5 kV	Continuous Ampacity	1200 A

Comments:

LIGHTNING ARRESTERS

Lightning Arrestors	Yes ☐	No ☑		Manufacturer	
Class	Distribution ☐	Intermediate ☐	Station ☐	Catalog #	
Composition	Ceramic ☐	Polymer ☐		Max. / MCOV Rating	kV

Comments:

PROTECTIVE DEVICE DATA

PRIMARY FUSE HOLDER DATA

Manufacturer	
Type	
Nom. / Max. Voltage	kV
Holder Max. Fuse Link	
Holder Catalog #	

PRIMARY FUSE LINK DATA

Manufacturer	
Type	
Link Size	A
TCC#	
Link Catalog #	

PRIMARY FUSE LINK SPARES / LOCATION

Spare Primary Fuses: Yes ☐ No ☑ # of Spares: _____ Location: _____

Comments:

INTERLOCK

Key Interlock	Yes ☐	No ☑		Manufacturer	
Interlock Type	Electrical ☐	Mechanical ☐	Utility Lock ☐	Key Interlock #	
Devices Interlocked	H.V Switch ☐	Breaker ☐	Trans. Encl ☐	Other ☐	

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☐	Bus Bar ☑	Conductor Size/Dim	2.5" IPS
Conductor Material	Aluminum ☑	Copper ☐	Conductors per Phase	1 /Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	N/A
Concentric Neutral	Aluminum ☐	Copper ☐	# of Bond Conductors	N/A
Insulation Voltage	V		# of Neutral Conductors	0
Insulation Type			Neutral Size/Dim	N/A

Comments:

Tested By: D. CHARRON

VISUAL INSPECTION/MECHANICAL TESTS

Nameplate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Connections	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Lightning Arrestors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Suppressors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Key Interlock	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

SWITCH CONDITION / OPERATION

Switch Operation as Left	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Contact Surface Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Simultaneous Closure	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

ELECTRICAL TESTS

EARTH RESISTANCE (3 - POINT TEST)

Earth Resistance: N/A Ω

ARC SUPPRESSOR CONTACT RESISTANCE

Arc Suppressor Contact Resistance

Phase A	0.8 Ω
Phase B	1.2 Ω
Phase C	0.9 Ω

Comments:

SWITCH INSULATION RESISTANCE

Resistance in Meg-OHMS After 1 Minute

Test Voltage: 1 kV ☐ 2.5 kV ☐ 5 kV ☐ 10 kV ☐

	Phase A	Phase B	Phase C
Phase To GND	MΩ	MΩ	MΩ

Switch Fuse/Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current: 10 A

	Phase A	Phase B	Phase C
Switch	460 µΩ	97 µΩ	223 µΩ
Fuse	µΩ	µΩ	µΩ
Overall	µΩ	µΩ	µΩ

Comments:

LOAD SIDE CONDUCTOR INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Comments:

LIGHTNING ARRESTER INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Test Instrument(s)

Manufacturer / Model	Megger	DRLO
Serial #	N/A	6599

Comments:

Tested By: D. CHARRON

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

High Voltage Data Sheet

SYSTEM ID: NOTL DS
DEVICE ID: B1-F2
ASSET ID:

CUSTOMER: Niagara On -The-Lake Hydro
8 Henegan Rd

SITE: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

DATE: Nov 2022
JOB #: 22-2015

NAMEPLATE DATA

Switch Mounting	Metal Enclosed ☐	Pole ☐	Tower ☑	Other	
Switch Type	Load Break ☑	Air Break ☐		Other	

Manufacturer	S&C	BIL Rating	150 kV
Date of Manufacture	N/A	Feeder ID	T1 BUSS
Serial #	N/A	Feeds To	F2 RECLOSER
Catalog #	320123R9-E-T201	Interupting Rating	61000 A
Nom./Max Voltage	25/29.5 kV	Continuous Ampacity	1200 A

Comments:

LIGHTNING ARRESTERS

Lightning Arrestors	Yes ☐	No ☑		Manufacturer	
Class	Distribution ☐	Intermediate ☐	Station ☐	Catalog #	
Composition	Ceramic ☐	Polymer ☐		Max. / MCOV Rating	kV

Comments:

PROTECTIVE DEVICE DATA

PRIMARY FUSE HOLDER DATA

Manufacturer	
Type	
Nom. / Max. Voltage	kV
Holder Max. Fuse Link	
Holder Catalog #	

PRIMARY FUSE LINK DATA

Manufacturer	
Type	
Link Size	A
TCC#	
Link Catalog #	

PRIMARY FUSE LINK SPARES / LOCATION

Spare Primary Fuses: Yes ☐ No ☑ # of Spares: Location:

Comments:

INTERLOCK

Key Interlock	Yes ☐	No ☑		Manufacturer	
Interlock Type	Electrical ☐	Mechanical ☐	Utility Lock ☐	Key Interlock #	
Devices Interlocked	H.V Switch ☐	Breaker ☐	Trans. Encl ☐	Other ☐	

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☐	Bus Bar ☑	Conductor Size/Dim	2.5" IPS
Conductor Material	Aluminum ☑	Copper ☐	Conductors per Phase	1 /Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	N/A
Concentric Neutral	Aluminum ☐	Copper ☐	# of Bond Conductors	N/A
Insulation Voltage	V		# of Neutral Conductors	0
Insulation Type			Neutral Size/Dim	N/A

Comments:

Tested By: D. CHARRON

VISUAL INSPECTION/MECHANICAL TESTS

Nameplate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Connections	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Lightning Arrestors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Suppressors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Key Interlock	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

SWITCH CONDITION / OPERATION

Switch Operation as Left	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Contact Surface Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Simultaneous Closure	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

ELECTRICAL TESTS

EARTH RESISTANCE (3 - POINT TEST)

Earth Resistance: N/A Ω

ARC SUPPRESSOR CONTACT RESISTANCE

Arc Suppressor Contact Resistance

Phase A	0.8	Ω
Phase B	0.5	Ω
Phase C	NOP	Ω

Comments: ARC SUPPRESSOR NON-OPERATIONAL UNTIL SERVICED, C PHASE STILL NON OPERATIONAL

SWITCH INSULATION RESISTANCE

Resistance in Meg-OHMS After 1 Minute

Test Voltage: 1 kV ☐ 2.5 kV ☐ 5 kV ☐ 10 kV ☐

	Phase A	Phase B	Phase C
Phase To GND	MΩ	MΩ	MΩ

Switch Fuse/Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current: 10 A

	Phase A	Phase B	Phase C
Switch	66 µΩ	65 µΩ	100 µΩ
Fuse	µΩ	µΩ	µΩ
Overall	µΩ	µΩ	µΩ

Comments:

LOAD SIDE CONDUCTOR INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Comments:

LIGHTNING ARRESTER INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Test Instrument(s)

Manufacturer / Model	Megger	DRLO
Serial #	N/A	6599

Comments:

Tested By: D. CHARRON

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

High Voltage Data Sheet

SYSTEM ID: NOTL DS
DEVICE ID: B2-F3
ASSET ID:

CUSTOMER: Niagara On -The-Lake Hydro
8 Henegan Rd

SITE: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

DATE: Nov 2022
JOB #: 22-2015

NAMEPLATE DATA

Switch Mounting	Metal Enclosed ☐	Pole ☐	Tower ☑	Other	
Switch Type	Load Break ☑	Air Break ☐		Other	

Manufacturer	S&C	BIL Rating	150 kV
Date of Manufacture	06/2018	Feeder ID	B2 BUSS
Serial #	N/A	Feeds To	F3 RECLOSER
Catalog #	320123R10-E-T201	Interupting Rating	61000 A
Nom./Max Voltage	25/29.5 kV	Continuous Ampacity	1200 A

Comments:

LIGHTNING ARRESTERS

Lightning Arrestors	Yes ☐	No ☑		Manufacturer	
Class	Distribution ☐	Intermediate ☐	Station ☐	Catalog #	
Composition	Ceramic ☐	Polymer ☐		Max. / MCOV Rating	kV

Comments:

PROTECTIVE DEVICE DATA

PRIMARY FUSE HOLDER DATA

Manufacturer	
Type	
Nom. / Max. Voltage	kV
Holder Max. Fuse Link	
Holder Catalog #	

PRIMARY FUSE LINK DATA

Manufacturer	
Type	
Link Size	A
TCC#	
Link Catalog #	

PRIMARY FUSE LINK SPARES / LOCATION

Spare Primary Fuses: Yes ☐ No ☑ # of Spares: Location:

Comments:

INTERLOCK

Key Interlock	Yes ☐	No ☑		Manufacturer	
Interlock Type	Electrical ☐	Mechanical ☐	Utility Lock ☐	Key Interlock #	
Devices Interlocked	H.V Switch ☐	Breaker ☐	Trans. Encl ☐	Other ☐	

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☐	Bus Bar ☑	Conductor Size/Dim	2.5" IPS
Conductor Material	Aluminum ☑	Copper ☐	Conductors per Phase	1 /Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	N/A
Concentric Neutral	Aluminum ☐	Copper ☐	# of Bond Conductors	N/A
Insulation Voltage	V		# of Neutral Conductors	0
Insulation Type			Neutral Size/Dim	N/A

Comments:

Tested By: D. CHARRON

VISUAL INSPECTION/MECHANICAL TESTS

Nameplate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Connections	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Lightning Arrestors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Suppressors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Key Interlock	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

SWITCH CONDITION / OPERATION

Switch Operation as Left	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Contact Surface Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Simultaneous Closure	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

ELECTRICAL TESTS

EARTH RESISTANCE (3 - POINT TEST)

Earth Resistance: N/A Ω

ARC SUPPRESSOR CONTACT RESISTANCE

Arc Suppressor Contact Resistance

Phase A	0.3	Ω
Phase B	0.1	Ω
Phase C	0.1	Ω

Comments:

SWITCH INSULATION RESISTANCE

Resistance in Meg-OHMS After 1 Minute

Test Voltage: 1 kV ☐ 2.5 kV ☐ 5 kV ☐ 10 kV ☐

	Phase A	Phase B	Phase C
Phase To GND	MΩ	MΩ	MΩ

Switch Fuse/Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current: 10 A

	Phase A	Phase B	Phase C
Switch	72 µΩ	73 µΩ	83 µΩ
Fuse	µΩ	µΩ	µΩ
Overall	µΩ	µΩ	µΩ

Comments:

LOAD SIDE CONDUCTOR INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Comments:

LIGHTNING ARRESTER INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Test Instrument(s)

Manufacturer / Model	Megger	DRLO
Serial #	N/A	6599

Comments:

Tested By: D. CHARRON

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

High Voltage Data Sheet

SYSTEM ID: NOTL DS
DEVICE ID: B3-F4
ASSET ID:

CUSTOMER: Niagara On -The-Lake Hydro
8 Henegan Rd

SITE: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

DATE: Nov 2022
JOB #: 22-2015

NAMEPLATE DATA

Switch Mounting	Metal Enclosed ☐	Pole ☐	Tower ☑	Other	
Switch Type	Load Break ☑	Air Break ☐		Other	

Manufacturer	S&C	BIL Rating	150 kV
Date of Manufacture	N/A	Feeder ID	T2 BUSS
Serial #	N/A	Feeds To	F4 RECLOSER
Catalog #	320123R9-E-T201	Interupting Rating	61000 A
Nom./Max Voltage	25/29.5 kV	Continuous Ampacity	1200 A

Comments:

LIGHTNING ARRESTERS

Lightning Arrestors	Yes ☐	No ☑		Manufacturer	
Class	Distribution ☐	Intermediate ☐	Station ☐	Catalog #	
Composition	Ceramic ☐	Polymer ☐		Max. / MCOV Rating	kV

Comments:

PROTECTIVE DEVICE DATA

PRIMARY FUSE HOLDER DATA

Manufacturer	
Type	
Nom. / Max. Voltage	kV
Holder Max. Fuse Link	
Holder Catalog #	

PRIMARY FUSE LINK DATA

Manufacturer	
Type	
Link Size	A
TCC#	
Link Catalog #	

PRIMARY FUSE LINK SPARES / LOCATION

Spare Primary Fuses: Yes ☐ No ☑ # of Spares: Location:

Comments:

INTERLOCK

Key Interlock	Yes ☐	No ☑		Manufacturer	
Interlock Type	Electrical ☐	Mechanical ☐	Utility Lock ☐	Key Interlock #	
Devices Interlocked	H.V Switch ☐	Breaker ☐	Trans. Encl ☐	Other ☐	

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☐	Bus Bar ☑	Conductor Size/Dim	2.5" IPS
Conductor Material	Aluminum ☑	Copper ☐	Conductors per Phase	1 /Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	N/A
Concentric Neutral	Aluminum ☐	Copper ☐	# of Bond Conductors	N/A
Insulation Voltage	V		# of Neutral Conductors	0
Insulation Type			Neutral Size/Dim	N/A

Comments:

Tested By: D. CHARRON

VISUAL INSPECTION/MECHANICAL TESTS

Nameplate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Connections	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Lightning Arrestors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Suppressors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Key Interlock	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

SWITCH CONDITION / OPERATION

Switch Operation as Left	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Contact Surface Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Simultaneous Closure	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

ELECTRICAL TESTS

EARTH RESISTANCE (3 - POINT TEST)

Earth Resistance N/A Ω

ARC SUPPRESSOR CONTACT RESISTANCE

Arc Suppressor Contact Resistance

Phase A	0.5	Ω
Phase B	0.6	Ω
Phase C	NOP	Ω

Comments: ARC SUPPRESSOR PHASE C NON OPERATIONAL

SWITCH INSULATION RESISTANCE

Resistance in Meg-OHMS After 1 Minute

Test Voltage 1 kV ☐ 2.5 kV ☐ 5 kV ☐ 10 kV ☐

	Phase A	Phase B	Phase C
Phase To GND	MΩ	MΩ	MΩ

Switch Fuse/Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current 10 A

	Phase A	Phase B	Phase C
Switch	111 µΩ	151 µΩ	90 µΩ
Fuse	µΩ	µΩ	µΩ
Overall	µΩ	µΩ	µΩ

Comments:

LOAD SIDE CONDUCTOR INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Comments:

LIGHTNING ARRESTER INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Test Instrument(s)

Manufacturer / Model	Megger	DRLO
Serial #	N/A	6599

Comments:

Tested By: D. CHARRON

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

RECLOSER | SYSTEM ID: NOTL DS | DEVICE ID: F1 RECLOSER | ASSET ID:

Custo Niagara On -The-Lake Hydro
8 Henegan Rd

Site: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

Date: Nov 2022
Job # 22-2015

NAMEPLATE DATA

Manufacturer	G&W VIPER-ST
Date of Manufacture	
Serial #	
Catalogue #	VIP398ER-12-1-ST-6V3
Max Voltage Rating	38kV
Interupting rating	12500A

ID	F1 RECLOSER
Continious Ampacity	800A
Frame Size	800A
Fed From	B1-F1
Feeds To	27.6kV DIST

Mounting Type Rack Out ☐ Fixed ☑

Comments 150kV BIL

INTERLOCK

Key Interlock Yes ☐ No ☑ Manufacturer _____
Interlock Type Electrical ☐ Mechanical ☐ Utility Lock ☐ Key Interlock # _____
Devices Interlocked H.V Switch ☐ Breaker ☐ Trans. Encl ☐ Other ☐

PROTECTIVE DEVICE DATA

Protective Device Data Thermal ☐ Magnetic ☐ Electronic ☑ Fuse ☐ Other: SEL RELAY

Manufacturer	SEL
TYPE	651R RECLOSER CONTROL
P/N	0651R224XGAA2E1123B302
S/N	1163080452
Control Voltage	120V AC, 1A INPUT

CT RATIO CORRECTION FACTORS		
PHASE	Y-SIDE	Z-SIDE
1	1.009	1.061
2	1.015	1.065
3	0.981	1.071

Comments

PROTECTIVE DEVICE DATA

Pick Up Settings	Dial Setting		Relay Pickup	
Long Time Pickup		=		X
Short Time Pickup		=		X
Instantaneous Pickup		=		X
Ground Fault Pickup		=		X

Delay Settings	Dial Setting		Relay Pickup		ON/OFF
Long Time Delay		=		S	
Short Time Delay		=		S	
Ground Fault Delay		=		S	

Magnetic Trip Setting Low ☐ Med ☐ High ☐ N/A ☑

Comment
Tested By B. BEAM

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☑	Bus Bar ☐	Conductor Size/Dim	1000KCMIL	
Conductor Material	Aluminum ☑	Copper ☐	Conductors per Phase	1	/Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	2/0	
Concentric Neutral	Aluminum ☐	Copper ☑	# of Bond Conductors	1	
Insulation Voltage	28kV	V	# of Neutral Conductors	N/A	
Insulation Type	100% TRXLPE	V	Neutral Size/Dim	N/A	

Comments:

VISUAL INSPECTION / MECHANICAL TESTS

Key Interlock Operation	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Chutes	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Name Plate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Breaker Operation	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

ELECTRICAL TESTS

Insulation Resistance

Resistance in meg-ohms after 1 minute

Test Voltage ☐ 500V ☐ 1kV ☐ 2.5kV ☐ 10kV

	Phase A (A to B)	Phase B (B to C)	Phase C (C to A)
Phase To Phase	MΩ	MΩ	MΩ
Phase To GND	MΩ	MΩ	MΩ
Line to Load	MΩ	MΩ	MΩ

Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current 10 A

	Phase A	Phase B	Phase C
Switch	143 μΩ	118 μΩ	135 μΩ
Fuse	μΩ	μΩ	μΩ
Overall	μΩ	μΩ	μΩ

PRIMARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Injected Current	Phase A Time	Phase B Time	Phase C Time
150% of Rated Current	A	sec	sec	sec
300% of Rated Current	A	sec	sec	sec
of Rated Current	A	sec	sec	sec

SECONDARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Settings as Found	Test Settings	PU	Phase A Time	Phase B Time	Phase C Time
Long Time Pickup						
Long Time Delay						
Short Time Pickup						
Short Time Delay						
Instantaneous Pickup						
Ground Fault Pickup						
Ground Fault Delay						

Breaker Tripped Via Secondary ☐ Yes ☐ No ☐ Non-Functioning Comments:

Settings Restored to As Found ☐ Yes ☐ No

Comments:

Tested By: A.BURK

Test Instrument(s)	Manufacturer / Model	Megger	DRLO	Relay
	Serial #	N/A	6599	N/A

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

RECLOSER | SYSTEM ID: NOTL DS | DEVICE ID: F2 RECLOSER | ASSET ID:

Custo Niagara On -The-Lake Hydro
8 Henegan Rd

Site: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

Date: Nov 2022
Job # 22-2015

NAMEPLATE DATA

Manufacturer	G&W VIPER-ST
Date of Manufacture	
Serial #	
Catalogue #	VIP398ER-12-1-ST-6V3
Max Voltage Rating	38kV
Interupting rating	12500A

ID	F2 RECLOSER
Continious Ampacity	800A
Frame Size	800A
Fed From	B1-F2
Feeds To	27.6kV DIST

Mounting Type Rack Out ☐ Fixed ☑

Comments: 150kV BIL

INTERLOCK

Key Interlock Yes ☐ No ☑ Manufacturer _____

Interlock Type Electrical ☐ Mechanical ☐ Utility Lock ☐ Key Interlock # _____

Devices Interlocked H.V Switch ☐ Breaker ☐ Trans. Encl ☐ Other ☐

PROTECTIVE DEVICE DATA

Protective Device Data Thermal ☐ Magnetic ☐ Electronic ☑ Fuse ☐ Other: SEL RELAY

Manufacturer	SEL
TYPE	651R RECLOSER CONTROL
P/N	0651R224XGAA2E1123B302
S/N	1162231093
Control Voltage	120V AC, 1A INPUT

CT RATIO CORRECTION FACTORS		
PHASE	Y-SIDE	Z-SIDE
1	1.009	1.061
2	1.015	1.065
3	0.981	1.071

Comments:

PROTECTIVE DEVICE DATA

Pick Up Settings	Dial Setting		Relay Pickup	
Long Time Pickup		=		X
Short Time Pickup		=		X
Instantaneous Pickup		=		X
Ground Fault Pickup		=		X

Delay Settings	Dial Setting		Relay Pickup		ON/OFF
Long Time Delay		=		S	
Short Time Delay		=		S	
Ground Fault Delay		=		S	

Magnetic Trip Setting Low ☐ Med ☐ High ☐ N/A ☑

Comment:
Tested By: B. BEAM

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☑	Bus Bar ☐	Conductor Size/Dim	1000KCMIL	
Conductor Material	Aluminum ☑	Copper ☐	Conductors per Phase	1	/Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	2/0	
Concentric Neutral	Aluminum ☐	Copper ☑	# of Bond Conductors	1	
Insulation Voltage	28kV	V	# of Neutral Conductors	N/A	
Insulation Type	100% TRXLPE	V	Neutral Size/Dim	N/A	

Comments:

VISUAL INSPECTION / MECHANICAL TESTS

Key Interlock Operation	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Chutes	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Name Plate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Breaker Operation	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

ELECTRICAL TESTS

Insulation Resistance

Resistance in meg-ohms after 1 minute

Test Voltage ☐ 500V ☐ 1kV ☐ 2.5kV ☐ 10kV

	Phase A (A to B)	Phase B (B to C)	Phase C (C to A)
Phase To Phase	MΩ	MΩ	MΩ
Phase To GND	MΩ	MΩ	MΩ
Line to Load	MΩ	MΩ	MΩ

Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current 10 A

	Phase A	Phase B	Phase C
Switch	128 μΩ	118 μΩ	126 μΩ
Fuse	μΩ	μΩ	μΩ
Overall	μΩ	μΩ	μΩ

PRIMARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Injected Current	Phase A Time	Phase B Time	Phase C Time
150% of Rated Current	A	sec	sec	sec
300% of Rated Current	A	sec	sec	sec
of Rated Current	A	sec	sec	sec

SECONDARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Settings as Found	Test Settings	PU	Phase A Time	Phase B Time	Phase C Time
Long Time Pickup						
Long Time Delay						
Short Time Pickup						
Short Time Delay						
Instantaneous Pickup						
Ground Fault Pickup						
Ground Fault Delay						

Breaker Tripped Via Secondary ☐ Yes ☐ No ☐ Non-Functioning Comments:

Settings Restored to As Found ☐ Yes ☐ No

Comments:

Tested By: A.BURK

Test Instrument(s)	Manufacturer / Model	Megger	DRLO	Relay
	Serial #	N/A	6599	N/A

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

RECLOSER | SYSTEM ID: NOTL DS | DEVICE ID: F3 RECLOSER | ASSET ID:

Custo Niagara On -The-Lake Hydro
8 Henegan Rd

Site: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

Date: Nov 2022
Job # 22-2015

NAMEPLATE DATA

Manufacturer	G&W VIPER-ST
Date of Manufacture	16-Dec
Serial #	E3522
Catalogue #	VIP398ER-12-1-ST-6V3
Max Voltage Rating	38kV
Interupting rating	12500A

ID	F3 RECLOSER
Continious Ampacity	800A
Frame Size	800A
Fed From	B2-F3
Feeds To	27.6kV DIST

Mounting Type Rack Out ☐ Fixed ☑

Comments: 150kV BIL

INTERLOCK

Key Interlock Yes ☐ No ☑ Manufacturer _____
Interlock Type Electrical ☐ Mechanical ☐ Utility Lock ☐ Key Interlock # _____
Devices Interlocked H.V Switch ☐ Breaker ☐ Trans. Encl ☐ Other ☐

PROTECTIVE DEVICE DATA

Protective Device Data Thermal ☐ Magnetic ☐ Electronic ☑ Fuse ☐ Other: SEL RELAY

Manufacturer	SEL
TYPE	651R RECLOSER CONTROL
P/N	0651R224XGAA2E1123B302
S/N	1163080456
Control Voltage	120V AC, 1A INPUT

CT RATIO CORRECTION FACTORS		
PHASE	Y-SIDE	Z-SIDE
1	1.009	1.061
2	1.015	1.065
3	0.981	1.071

Comments:

PROTECTIVE DEVICE DATA

Pick Up Settings	Dial Setting		Relay Pickup	
Long Time Pickup		=		X
Short Time Pickup		=		X
Instantaneous Pickup		=		X
Ground Fault Pickup		=		X

Delay Settings	Dial Setting		Relay Pickup		ON/OFF
Long Time Delay		=		S	
Short Time Delay		=		S	
Ground Fault Delay		=		S	

Magnetic Trip Setting Low ☐ Med ☐ High ☐ N/A ☑

Comment:
Tested By: B. BEAM

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☑	Bus Bar ☐	Conductor Size/Dim	1000KCMIL	
Conductor Material	Aluminum ☑	Copper ☐	Conductors per Phase	1	/Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	2/0	
Concentric Neutral	Aluminum ☐	Copper ☑	# of Bond Conductors	1	
Insulation Voltage	28kV	V	# of Neutral Conductors	N/A	
Insulation Type	100% XLPE	V	Neutral Size/Dim	N/A	

Comments:

VISUAL INSPECTION / MECHANICAL TESTS

Key Interlock Operation	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Chutes	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Name Plate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Breaker Operation	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

ELECTRICAL TESTS

Insulation Resistance

Resistance in meg-ohms after 1 minute

Test Voltage ☐ 500V ☐ 1kV ☐ 2.5kV ☐ 10kV

	Phase A (A to B)	Phase B (B to C)	Phase C (C to A)
Phase To Phase	MΩ	MΩ	MΩ
Phase To GND	MΩ	MΩ	MΩ
Line to Load	MΩ	MΩ	MΩ

Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current 10 A

	Phase A	Phase B	Phase C
Switch	134 μΩ	119 μΩ	118 μΩ
Fuse	μΩ	μΩ	μΩ
Overall	μΩ	μΩ	μΩ

PRIMARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Injected Current	Phase A Time	Phase B Time	Phase C Time
150% of Rated Current	A	sec	sec	sec
300% of Rated Current	A	sec	sec	sec
of Rated Current	A	sec	sec	sec

SECONDARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Settings as Found	Test Settings	PU	Phase A Time	Phase B Time	Phase C Time
Long Time Pickup						
Long Time Delay						
Short Time Pickup						
Short Time Delay						
Instantaneous Pickup						
Ground Fault Pickup						
Ground Fault Delay						

Breaker Tripped Via Secondary ☐ Yes ☐ No ☐ Non-Functioning Comments:

Settings Restored to As Found ☐ Yes ☐ No

Comments:

Tested By: A.BURK

Test Instrument(s)	Manufacturer / Model	Megger	DRLO	Relay
	Serial #	N/A	6599	N/A

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

RECLOSER | SYSTEM ID: NOTL DS | DEVICE ID: F4 RECLOSER | ASSET ID:

Custo Niagara On -The-Lake Hydro
8 Henegan Rd

Site: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

Date: Nov 2022
Job # 22-2015

NAMEPLATE DATA

Manufacturer	G&W VIPER-ST
Date of Manufacture	16-Dec
Serial #	E3521
Catalogue #	VIP398ER-12-1-ST-6V3
Max Voltage Rating	38kV
Interupting rating	12500A

ID	F4 RECLOSER
Continious Ampacity	800A
Frame Size	800A
Fed From	B3-F4
Feeds To	27.6kV DIST

Mounting Type Rack Out ☐ Fixed ☑

Comments:

INTERLOCK

Key Interlock Yes ☐ No ☑ Manufacturer _____

Interlock Type Electrical ☐ Mechanical ☐ Utility Lock ☐ Key Interlock # _____

Devices Interlocked H.V Switch ☐ Breaker ☐ Trans. Encl ☐ Other ☐

PROTECTIVE DEVICE DATA

Protective Device Data Thermal ☐ Magnetic ☐ Electronic ☑ Fuse ☐ Other: SEL RELAY

Manufacturer	SEL
TYPE	651R RECLOSER CONTROL
P/N	0651R224XGAA2E1123B302
S/N	1163080454
Control Voltage	120V AC, 1A INPUT

CT RATIO CORRECTION FACTORS		
PHASE	Y-SIDE	Z-SIDE
1	1.006	1.071
2	0.982	1.075
3	0.995	1.075

Comments:

PROTECTIVE DEVICE DATA

Pick Up Settings	Dial Setting		Relay Pickup	
Long Time Pickup		=		X
Short Time Pickup		=		X
Instantaneous Pickup		=		X
Ground Fault Pickup		=		X

Delay Settings	Dial Setting		Relay Pickup		ON/OFF
Long Time Delay		=		S	
Short Time Delay		=		S	
Ground Fault Delay		=		S	

Magnetic Trip Setting Low ☐ Med ☐ High ☐ N/A ☑

Comment:

Tested By: A. BURK

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☑	Bus Bar ☐	Conductor Size/Dim	1000KCMIL	
Conductor Material	Aluminum ☑	Copper ☐	Conductors per Phase	1	/Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	2/0	
Concentric Neutral	Aluminum ☐	Copper ☑	# of Bond Conductors	1	
Insulation Voltage	28kV	V	# of Neutral Conductors	N/A	
Insulation Type	100% TRXLPE	V	Neutral Size/Dim	N/A	

Comments:

VISUAL INSPECTION / MECHANICAL TESTS

Key Interlock Operation	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Chutes	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Name Plate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Breaker Operation	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

ELECTRICAL TESTS

Insulation Resistance

Resistance in meg-ohms after 1 minute

Test Voltage ☐ 500V ☐ 1kV ☐ 2.5kV ☐ 5kV

	Phase A (A to B)	Phase B (B to C)	Phase C (C to A)
Phase To Phase	MΩ	MΩ	MΩ
Phase To GND	MΩ	MΩ	MΩ
Line to Load	MΩ	MΩ	MΩ

Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current 10 A

	Phase A	Phase B	Phase C
Switch	121 μΩ	120 μΩ	116 μΩ
Fuse	μΩ	μΩ	μΩ
Overall	μΩ	μΩ	μΩ

PRIMARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Injected Current	Phase A Time	Phase B Time	Phase C Time
150% of Rated Current	A	sec	sec	sec
300% of Rated Current	A	sec	sec	sec
of Rated Current	A	sec	sec	sec

SECONDARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Settings as Found	Test Settings	PU	Phase A Time	Phase B Time	Phase C Time
Long Time Pickup						
Long Time Delay						
Short Time Pickup						
Short Time Delay						
Instantaneous Pickup						
Ground Fault Pickup						
Ground Fault Delay						

Breaker Tripped Via Secondary ☐ Yes ☐ No ☐ Non-Functioning Comments:

Settings Restored to As Found ☐ Yes ☐ No

Comments:

Tested By: A. BURK

Test Instrument(s)	Manufacturer / Model	Megger	DRLO	Relay
	Serial #	N/A	6599	N/A

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

Polarization Index | SYSTEM ID NOTL DS | DEVICE ID F1 FEED | ASSET ID

Customer: Niagara On -The-La
8 Henegan Rd

Site: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

Date Nov 2022
Job 22-2015

CONDUCTOR DATA

Manufacturer	NEXANS
Voltage Class	28kV
Insulation Type	100% TRXL
Conductor Size	1000KCMIL
Conductor Type	Al

INSULATION OVERVIEW

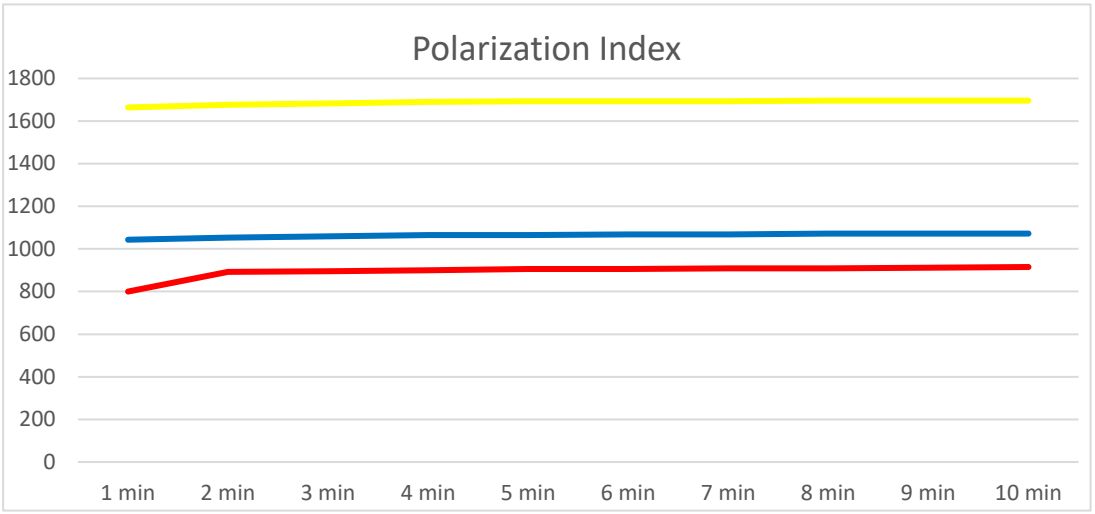
Insulation Resistance after 10 Mins @ 5000 V

Phase A	915	MΩ
Phase B	1696	MΩ
Phase C	1072	MΩ

CONDITIONS

Temperature	1	°C
Humidity	60	%

TIME	A (RED)		B (YELLOW)		C (BLUE)	
1 min	2500 MΩ	800 MΩ	5200 MΩ	1664 MΩ	3260 MΩ	1043 MΩ
2 min	2790 MΩ	893 MΩ	5240 MΩ	1677 MΩ	3290 MΩ	1053 MΩ
3 min	2800 MΩ	896 MΩ	5260 MΩ	1683 MΩ	3310 MΩ	1059 MΩ
4 min	2810 MΩ	899 MΩ	5280 MΩ	1690 MΩ	3330 MΩ	1066 MΩ
5 min	2830 MΩ	906 MΩ	5290 MΩ	1693 MΩ	3330 MΩ	1066 MΩ
6 min	2830 MΩ	906 MΩ	5290 MΩ	1693 MΩ	3340 MΩ	1069 MΩ
7 min	2840 MΩ	909 MΩ	5290 MΩ	1693 MΩ	3340 MΩ	1069 MΩ
8 min	2840 MΩ	909 MΩ	5300 MΩ	1696 MΩ	3350 MΩ	1072 MΩ
9 min	2850 MΩ	912 MΩ	5300 MΩ	1696 MΩ	3350 MΩ	1072 MΩ
10 min	2860 MΩ	915 MΩ	5300 MΩ	1696 MΩ	3350 MΩ	1072 MΩ
Voltage	5000 V		5000 V		5000 V	
Polarization Index PI	1.144		1.019230769		1.027607362	
TCC	Insulation Resistance Readings Corrected to 1 °C					



Test Instrument(s) Manufacturer / Model Megger
Serial # 3176

Comments: CABLES ATTACHED TO RECLOSER AND POLE LA'S

A.BURK

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

Polarization Index | SYSTEM ID NOTL DS | DEVICE ID F2 FEED | ASSET ID

Customer: Niagara On -The-La
8 Henegan Rd

Site: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

Date Nov 2022
Job 22-2015

CONDUCTOR DATA

Manufacturer	NEXANS
Voltage Class	28kV
Insulation Type	100% TRXL
Conductor Size	1000KCMIL
Conductor Type	Al

INSULATION OVERVIEW

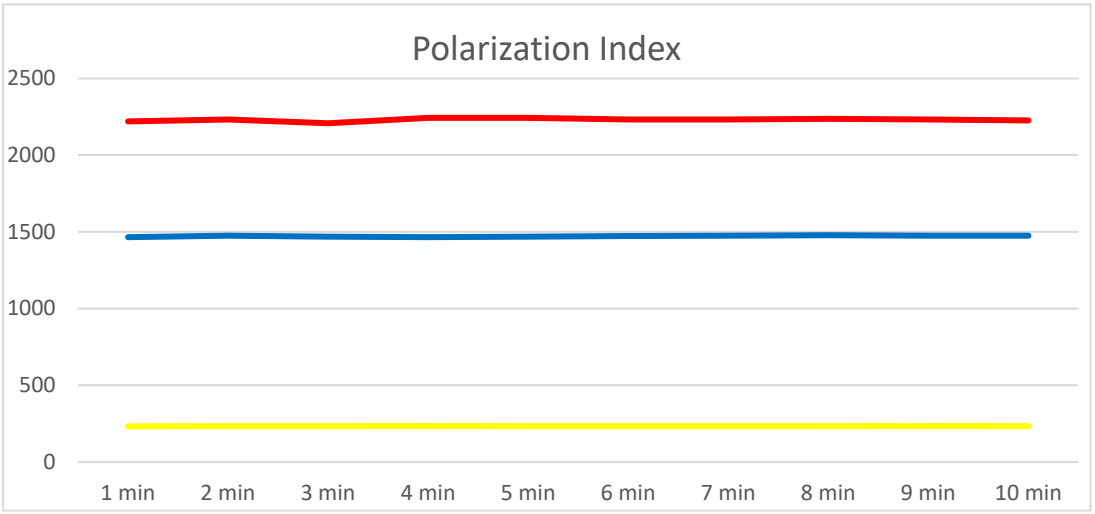
Insulation Resistance after 10 Mins @
5000 V

Phase A	2227	MΩ
Phase B	234	MΩ
Phase C	1475	MΩ

CONDITIONS

Temperature	1	°C
Humidity	60	%

TIME	A (RED)		B (YELLOW)		C (BLUE)	
1 min	6940 MΩ	2221 MΩ	726 MΩ	232 MΩ	4580 MΩ	1466 MΩ
2 min	6980 MΩ	2234 MΩ	730 MΩ	234 MΩ	4610 MΩ	1475 MΩ
3 min	6900 MΩ	2208 MΩ	732 MΩ	234 MΩ	4590 MΩ	1469 MΩ
4 min	7010 MΩ	2243 MΩ	733 MΩ	235 MΩ	4580 MΩ	1466 MΩ
5 min	7010 MΩ	2243 MΩ	732 MΩ	234 MΩ	4590 MΩ	1469 MΩ
6 min	6980 MΩ	2234 MΩ	732 MΩ	234 MΩ	4600 MΩ	1472 MΩ
7 min	6980 MΩ	2234 MΩ	731 MΩ	234 MΩ	4610 MΩ	1475 MΩ
8 min	6990 MΩ	2237 MΩ	732 MΩ	234 MΩ	4620 MΩ	1478 MΩ
9 min	6980 MΩ	2234 MΩ	733 MΩ	235 MΩ	4610 MΩ	1475 MΩ
10 min	6960 MΩ	2227 MΩ	730 MΩ	234 MΩ	4610 MΩ	1475 MΩ
Voltage	5000 V		5000 V		5000 V	
Polarization Index PI	1.002881844		1.005509642		1.006550218	
TCC	Insulation Resistance Readings Corrected to 1 °C					



Test Instrument(s) | Manufacturer / Model: Megger | Serial #: 0516

Comments: CABLES ATTACHED TO RECLOSER AND POLE LA'S

A.BURK

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

Polarization Index | SYSTEM ID NOTL DS | DEVICE ID F3 FEED | ASSET ID

Customer: Niagara On -The-La
8 Henegan Rd

Site: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

Date Nov 2022
Job 22-2015

CONDUCTOR DATA

Manufacturer	PRYSMIAN
Voltage Class	28kV
Insulation Type	100% TRXLPE
Conductor Size	1000KCMIL
Conductor Type	Al

INSULATION OVERVIEW

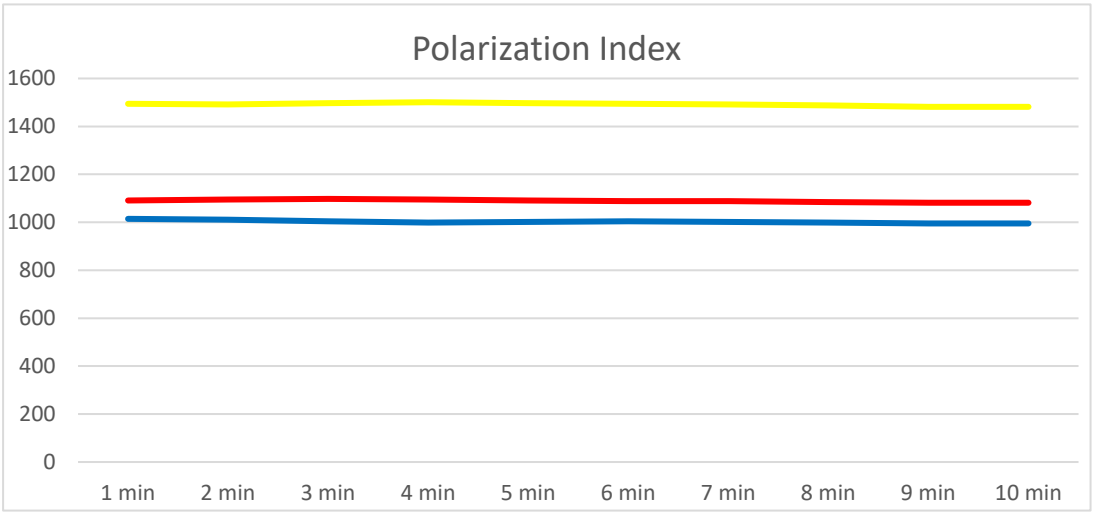
Insulation Resistance after 10 Mins @ 5000 V

Phase A	1082	MΩ
Phase B	1482	MΩ
Phase C	995	MΩ

CONDITIONS

Temperature	1	°C
Humidity	60	%

TIME	A (RED)		B (YELLOW)		C (BLUE)	
1 min	3410 MΩ	1091 MΩ	4670 MΩ	1494 MΩ	3170 MΩ	1014 MΩ
2 min	3420 MΩ	1094 MΩ	4660 MΩ	1491 MΩ	3160 MΩ	1011 MΩ
3 min	3430 MΩ	1098 MΩ	4680 MΩ	1498 MΩ	3140 MΩ	1005 MΩ
4 min	3420 MΩ	1094 MΩ	4690 MΩ	1501 MΩ	3120 MΩ	998 MΩ
5 min	3410 MΩ	1091 MΩ	4680 MΩ	1498 MΩ	3130 MΩ	1002 MΩ
6 min	3400 MΩ	1088 MΩ	4670 MΩ	1494 MΩ	3140 MΩ	1005 MΩ
7 min	3400 MΩ	1088 MΩ	4660 MΩ	1491 MΩ	3130 MΩ	1002 MΩ
8 min	3390 MΩ	1085 MΩ	4650 MΩ	1488 MΩ	3120 MΩ	998 MΩ
9 min	3380 MΩ	1082 MΩ	4630 MΩ	1482 MΩ	3110 MΩ	995 MΩ
10 min	3380 MΩ	1082 MΩ	4630 MΩ	1482 MΩ	3110 MΩ	995 MΩ
Voltage	5000 V		5000 V		5000 V	
Polarization Index PI	0.991202346		0.99143469		0.981072555	
TCC	Insulation Resistance Readings Corrected to 1 °C					



Test Instrument(s) Manufacturer / Model Megger
Serial # 0516

Comments: CABLES ATTACHED TO RECLOSER AND POLE LA'S

A.BURK

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

Polarization Index

SYSTEM ID NOTL DS

DEVICE ID F4 FEED

ASSET ID

Customer: Niagara On -The-La
8 Henegan Rd

Site: 805 Concession 5
Niagara On the Lake, ON, L0S 1J0

Date Nov 2022
Job 22-2015

CONDUCTOR DATA

Manufacturer	PRYSMIAN
Voltage Class	28kV
Insulation Type	100% TRXLPE
Conductor Size	1000KCMIL
Conductor Type	Al

INSULATION OVERVIEW

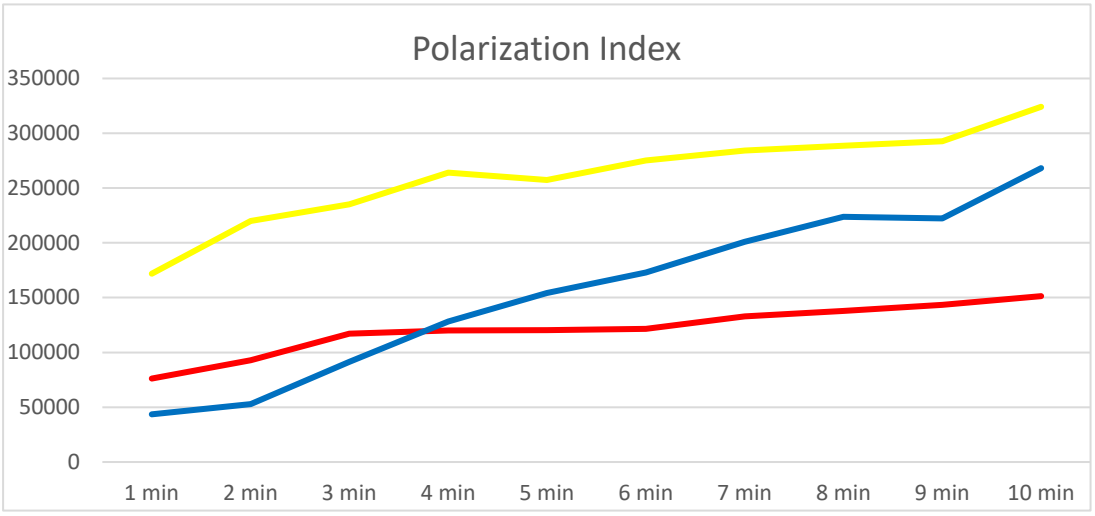
Insulation Resistance after 10 Mins @
5000 V

Phase A	151360	MΩ
Phase B	324160	MΩ
Phase C	268160	MΩ

CONDITIONS

Temperature	1	°C
Humidity	60	%

TIME	A (RED)		B (YELLOW)		C (BLUE)	
1 min	238000 MΩ	76160 MΩ	537000 MΩ	171840 MΩ	136000 MΩ	43520 MΩ
2 min	290000 MΩ	92800 MΩ	687000 MΩ	219840 MΩ	165000 MΩ	52800 MΩ
3 min	366000 MΩ	117120 MΩ	735000 MΩ	235200 MΩ	286000 MΩ	91520 MΩ
4 min	375000 MΩ	120000 MΩ	825000 MΩ	264000 MΩ	401000 MΩ	128320 MΩ
5 min	376000 MΩ	120320 MΩ	804000 MΩ	257280 MΩ	482000 MΩ	154240 MΩ
6 min	380000 MΩ	121600 MΩ	860000 MΩ	275200 MΩ	540000 MΩ	172800 MΩ
7 min	415000 MΩ	132800 MΩ	888000 MΩ	284160 MΩ	628000 MΩ	200960 MΩ
8 min	431000 MΩ	137920 MΩ	902000 MΩ	288640 MΩ	699000 MΩ	223680 MΩ
9 min	448000 MΩ	143360 MΩ	915000 MΩ	292800 MΩ	695000 MΩ	222400 MΩ
10 min	473000 MΩ	151360 MΩ	1013000 MΩ	324160 MΩ	838000 MΩ	268160 MΩ
Voltage	5000 V		5000 V		5000 V	
Polarization Index PI	1.987394958		1.886405959		6.161764706	
TCC	Insulation Resistance Readings Corrected to 1 °C					



Test Instrument(s)

Manufacturer / Model: Megger

Serial #: 0516

Comments:

CABLES ATTACHED TO RECLOSER AND POLE LA'S

A.BURK

Niagara on-the-Lake HYDRO

APPENDIX 2-STAFF-29C

INTERROGATORY REPONSES

EB-2023-0041

TO:
NOTL Hydro
8 Henegan Rd
Virgil, ON

SITE:
York TS
York Road
St.Catherines, ON

August 26, 2022

Dear Jason,

Please find the attached report for the substation maintenance inspection completed on the week of July 5, 2022

All service and testing completed on your 83MVA transformer, 27.6KV switch and bus, and outgoing feeder reclosers. All findings are referenced to the Ontario Electrical Safety Code (OESC) and the National Electrical Testing Association (NETA).

Findings

- *Insulators and terminations inspected and cleaned*

Before

After

Before

After

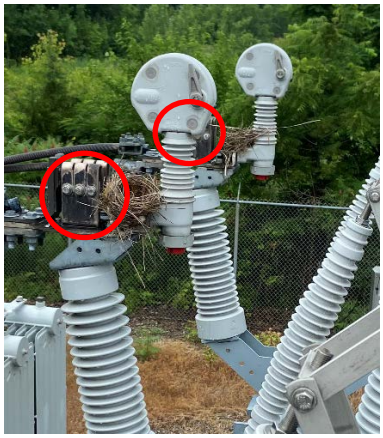
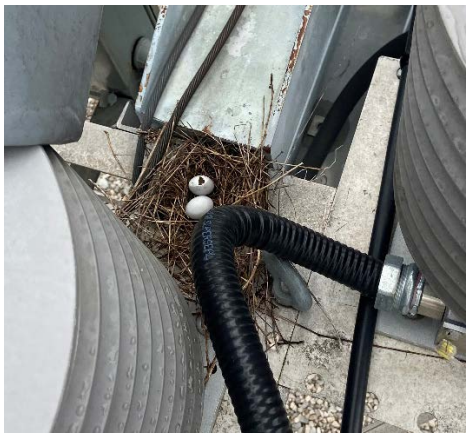
Before

After

Before

After

- *Bird nests removed from HV switch and reclosure*


- *Metering CT cable jacket damaged due to proximity of the 27.6kV live conductor, added extra protection*

Before

Before

After

After

- *Repaired broken / missing busbar nameplate*

Before *After*

- *Trimmed back overgrowth surrounding station to 1 meter from the fence*

Before *After*

Recommendations

- Continue to monitor and maintain equipment through preventative maintenance program.
- Establish brush control program for outer edge of the station to ensure no touching of fence, free and clear of over fence hanging, and provide a clear pathway for walking around exterior.
- Maintain weed spray program for within in the station and 1m perimeter of exterior to be applied semi-annually.

Regards,

Douglas Charron
Operations Manager, Service & Maintenance
Tel: (519) 245-4900
Cell: (519) 476-3448
dcharron@synergypower.tech

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

TRANSFORMER DATA SHEET

SYSTEM ID: MAIN
DEVICE ID: YORK TS
ASSET ID:

Customer: Niagara On the Lake Hydro
8 Henegan

Site: York TS
York Rd

Date: July 7, 2022
Job # 22-2121

NAMEPLATE DATA

Transformer

Transformer Class	Padmount ☐	Station ☑				Other
Transformer Cooling	ONAN ☐	ONAF ☑		LNAN ☐	DRY ☐	Other
Transformer Orientation	Front ☐	Top-Top ☑		Top-Side ☐	Side-Side ☐	Other

Manufacturer	NORTHERN
Date of Manufacture	2019
Serial #	2933-18001
KVA / Prov. KVA Rating	50000/67000/83000
Primary Voltage	115000
Primary Ampacity	417
Secondary Voltage	27600
Secondary Ampacity	1736
HV Winding Material	CU
LV Winding Material	CU
CSA Specifications	C88-16
HV BIL Rating	550
LV BIL Rating	200

Core & Windings	44209			kg ☑ lb ☐
Tanks & Fittings	20868			kg ☑ lb ☐
Conservator (no oil)	N/A			kg ☐ lb ☐
Radiators (no oil)	N/A			kg ☐ lb ☐
Total Weight	90537			kg ☑ lb ☐
Main Tank Volume	28239	L	24285	kg ☑ lb ☐
Radiators Volume	N/A	L	N/A	kg ☐ lb ☐
Conservator Volume	2000	L	N/A	kg ☐ lb ☐
LTC Compartment	1366	L	1175	kg ☑ lb ☐
Total Oil	N/A	L	N/A	kg ☐ lb ☐
Percent Impendance	10.316		ONAN ☑	ONAF ☐
Temperature Rise	65			°C ☑ °F ☐
Transformer Colour	GREY			

Primary & Secondary Bushings

DSG	SERIAL NUMBER	MFR	TYPE	KV	BIL	AMPS	YEAR	TAP
H0	N/A							☐
H1	19190368	ABB	O PLUS C II	145	650	600	2019	☑
H2	19190367	ABB	O PLUS C II	145	650	600	2019	☑
H3	19190370	ABB	O PLUS C II	145	650	600	2019	☑
X0	19190244	ABB	EEMAC	35	200	2000	2019	☑
X1	19190241	ABB	EEMAC	35	200	2000	2019	☑
X2	19190242	ABB	EEMAC	35	200	2000	2019	☑
X3	19190243	ABB	EEMAC	35	200	2000	2019	☑

Comments:

VISUAL INSPECTION

Nameplate Condtion	☑ Satisfactory	☐ Not Satisfactory	☐ NA	Comments:
Fan/Pump Condition	☐ Satisfactory	☐ Not Satisfactory	☑ NA	Comments:
Ground Condition	☑ Satisfactory	☐ Not Satisfactory	☐ NA	Comments:
Liquid Levels In Tank	☑ Satisfactory	☐ Not Satisfactory	☐ NA	Comments:
Interlock Operation	☐ Satisfactory	☐ Not Satisfactory	☑ NA	Comments:
Temp Guage Operation	☑ Satisfactory	☐ Not Satisfactory	☐ NA	Comments:

Coolant Temp: 23 ☑ °C ☐ °F

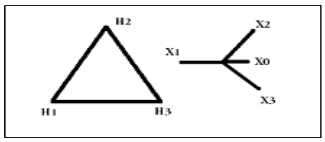
Max Coolant Temp: 25 ☑ °C ☐ °F

Comments:

TAP CHANGER DATA

Tap Changer Type	OLTC ☑ DETC ☐		
Manufacturer	REINHAUSE MANUFACTURING	Oil Volume	345 L ☐ G ☑
Type	RMV-II-2500-72.5	Pressure Withstand	N/A PSI
Serial Number	2079788		
Date Of Manufacture	2019		
Standards	C57.131-2012		
Ampacity Rating	2500 A		
Voltage Rating	115000 V		
Tap Positions	33		
Tap Count As Found	1827		
Tap Count As Left	2195		

Vector Diagram: DeltaWye1__5.Dyn



Primary Vector ☑ Secondary Vector ☑

Comments:

NEUTRAL GROUNDING RESISTOR (NGR)

NGR Present	Yes ☐	No ☑	
Manufacturer		NGR Serial #	
NGR Voltage	V	Maximum Current	
NGR Resistance	Ω	NGR Location	

Comments:

TRANSFORMER LIGHTNING ARRESTORS

Lightning Arrestors	Yes ☑		No ☐		
Class	Distribution ☐		Intermediate ☐	Station ☑	
Composition	Ceramic ☐		Polymer ☑		
Manufacturer	OHIO BRASS		Max / MCOV Rating	24 / 19.5	kV
Catalog #	EV001900				

Comments:

OIL CONSERVATOR

Oil Conservator	Yes ☑	No ☐	Conservator Volume		L ☐ G ☐	
Silica Gel Breather	Yes ☑	No ☐	Breather Volume		L ☐ G ☐	
Silica Gel Colour	Good ☑	Bad ☐	Replaced ☐	N/A ☐		

Comments:

FANS

Fans	Yes ☑	No ☐	
# of Fans	12	Fan Voltage	208-230
Fan Size	26"	Frame	48Y
Horsepower	1/3HP	Model	A4P11N282A

Comments:

TRANSFORMER LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☑	Bus Bar ☐			Conductor Size/Dim	750 MCM
Conductor Material	Aluminum ☐	Copper ☑			Conductors Per Phase	2
Tape Shield	Aluminum ☐	Copper ☐			Bond Size / Dim	4 / 0
Concentric Neutral	Aluminum ☐	Copper ☐			# of Bond Conductors	1
Insulation Voltage	600V ☐	1000V ☐		☐	# of Neutral Conductors	1
Insulation Type	RW90 ☐	XLPE ☐		☐	Neutral Size/Dim	750 MCM

Comments:

Tested By: D. Benjamin, B. Beam

ELECTRICAL TESTS

Turn Ratio Test Test Voltage: 80 V Automatic ☑ Other _____ V

Position / Designation		Top Voltage (V)	Calculated Ratio	H1 X1 to H3 X0 (mA) Exec	% Dev	H2 X2 to H1 X0 (mA) Exec	% Dev	H3 X3 to H2 X0 (mA) Exec	% Dev
1	90.000%	24,840.00	8.0187	8.0212		8.0200		8.0220	
				1.80	0.03	1.40	0.02	1.80	0.04
2	90.625%	25,012.50	7.9633	7.9874		7.9857		7.9880	
				2.20	0.30	1.80	0.28	2.10	0.31
3	91.250%	25,185.00	7.9089	7.9460		7.9470		7.4960	
				1.80	0.47	1.40	0.48	1.80	0.48
4	91.875%	25,357.50	7.8549	7.8830		7.8810		7.8820	
				3.20	0.36	2.70	0.33	3.20	0.34
5	92.500%	25,530.00	7.8020	7.8040		7.8040		7.8040	
				1.90	0.02	1.50	0.02	1.80	0.02
6	93.125%	25,702.50	7.7495	7.7690		7.7730		7.7720	
				2.20	0.26	1.80	0.30	2.20	0.29
7	93.750%	25,875.00	7.6980	7.7340		7.7330		7.7330	
				1.90	0.47	1.50	0.45	1.90	0.46
8	94.375%	26,047.50	7.6469	7.6750		7.6730		7.6730	
				3.30	0.37	2.70	0.34	3.30	0.34
9	95.000%	26,220.00	7.5964	7.5970		7.5980		7.5980	
				1.90	0.01	1.50	0.02	1.90	0.02
10	95.625%	26,392.50	7.5469	7.5650		7.5670		7.5670	
				2.20	0.25	1.80	0.26	2.20	0.27
11	96.250%	26,565.00	7.4981	7.5310		7.5310		7.5320	
				1.90	0.44	1.50	0.44	1.90	0.46
12	96.875%	26,737.50	7.4495	7.4740		7.4740		7.4740	
				3.30	0.32	2.80	0.33	3.30	0.33
13	97.500%	26,910.00	7.4019	7.4020		7.4030		7.4030	
				2.10	0.00	1.70	0.01	2.00	0.01
14	98.125%	27,082.50	7.3546	7.3730		7.3720		7.3730	
				2.20	0.24	1.80	0.24	2.30	0.25
15	98.750%	27,255.00	7.3082	7.3390		7.3400		7.3400	
				1.90	0.42	1.50	0.43	1.90	0.43
16	99.375%	27,427.50	7.2621	7.2840		7.2860		7.2850	
				3.30	0.30	2.80	0.32	3.30	0.32
17	100.000%	27,600.00	7.2169	7.2170		7.2170		7.2180	
				1.90	0.00	1.50	0.01	1.90	0.02
18	100.625%	27,772.50	7.1722	7.1630		7.1660		7.1660	
				3.30	0.12	2.80	0.09	3.30	0.08
19	101.250%	27,945.00	7.1278	7.0980		7.0990		7.1000	
				1.90	0.42	1.50	0.40	1.90	0.39
20	101.875%	28,117.50	7.0842	7.0740		7.0730		7.0750	
				2.30	0.14	1.90	0.15	2.30	0.12

Comments:

Tested By: D. Benjamin, B. Beam

Test Instrument(s) Manufacturer / Model

Ratio
3247

Serial #

Temperature (°C) 20

Humdity (%) 80

Turn Ratio Test

Position / Designation		Top Voltage (V)	Calculated Ratio	H1 X1 to H3 X0 (mA) Exec	% Dev	H2 X2 to H1 X0 (mA) Exec	% Dev	H3 X3 to H2 X0 (mA) Exec	% Dev
21	102.500%	28,290.00	7.0409	7.0430		7.0450		7.0440	
				1.90	0.03	1.60	0.05	2.00	0.04
22	103.125%	28,462.50	6.9983	6.9930		6.9940		6.9950	
				3.30	0.07	2.80	0.06	3.40	0.05
23	103.750%	28,635.00	6.9560	6.9300		6.9310		6.9310	
				1.90	0.38	1.60	0.36	2.00	0.35
24	104.375%	28,807.50	6.9145	6.9040		6.9030		6.9050	
				2.30	0.14	1.90	0.16	2.30	0.13
25	105.000%	28,980.00	6.8732	6.8740		6.8750		6.8760	
				2.00	0.01	1.60	0.03	2.00	0.04
26	105.625%	29,152.50	6.8327	6.8270		6.8280		6.8300	
				3.30	0.09	2.80	0.06	3.40	0.04
27	106.250%	29,325.00	6.7924	6.7670		6.7690		6.7690	
				1.90	0.37	1.60	0.34	2.00	0.34
28	106.875%	29,497.50	6.7527	6.7420		6.7440		6.7440	
				2.30	0.15	1.90	0.13	2.30	0.13
29	107.500%	29,670.00	6.7131	6.7150		6.7160		6.7160	
				1.90	0.02	1.60	0.05	2.00	0.03
30	108.125%	29,842.50	6.6747	6.6710		6.6720		6.6720	
				3.30	0.06	2.80	0.03	3.40	0.04
31	108.750%	30,015.00	6.6362	6.6140		6.6130		6.6130	
				1.90	0.33	1.60	0.34	2.00	0.35
32	109.375%	30,187.50	6.5984	6.5900		6.5900		6.5900	
				2.30	0.13	1.90	0.13	2.30	0.12
33	110.000%	30,360.00	6.5608	6.5630		6.5640		6.5640	
				2.00	0.03	1.60	0.05	2.00	0.04
As Found 14	98.13%	27,082.50	7.355	7.372		7.373		7.373	
				2.10	0.23	1.70	0.26	2.00	0.25

Comments:

Tested By: D. Bejamin, B. Beam

Test Instrument(s)

Manufacturer / Model: Ratio

Serial #: 3247

Temperature (°C): 20

Humditity (%): 80

PRIMARY WINDING RESISTANCE

Resitance in Ohms at 10 A after 1 min

H0 - H1	Ω	H1-H2	0.614 Ω
H0 - H2	Ω	H2-H3	0.614 Ω
H0 - H3	Ω	H3-H1	0.615 Ω

SECONDARY WINDING RESISTANCE

Resistance in Milli Ohms at 10 A after 1 min

Tap Position					
1	X0-X1	17.410 mΩ	X1-X2	34.410 mΩ	
	X0-X2	17.360 mΩ	X2-X3	34.290 mΩ	
	X0-X3	17.290 mΩ	X3-X1	34.350 mΩ	
2	X0-X1	17.200 mΩ	X1-X2	34.120 mΩ	
	X0-X2	17.180 mΩ	X2-X3	34.010 mΩ	
	X0-X3	17.130 mΩ	X3-X1	34.060 mΩ	
3	X0-X1	17.310 mΩ	X1-X2	34.320 mΩ	
	X0-X2	17.220 mΩ	X2-X3	34.140 mΩ	
	X0-X3	17.200 mΩ	X3-X1	34.250 mΩ	
4	X0-X1	17.050 mΩ	X1-X2	33.730 mΩ	
	X0-X2	17.020 mΩ	X2-X3	33.650 mΩ	
	X0-X3	16.970 mΩ	X3-X1	33.720 mΩ	
5	X0-X1	17.120 mΩ	X1-X2	33.900 mΩ	
	X0-X2	17.040 mΩ	X2-X3	33.720 mΩ	
	X0-X3	16.990 mΩ	X3-X1	33.860 mΩ	
6	X0-X1	16.940 mΩ	X1-X2	33.510 mΩ	
	X0-X2	16.880 mΩ	X2-X3	33.410 mΩ	
	X0-X3	16.820 mΩ	X3-X1	33.470 mΩ	
7	X0-X1	17.000 mΩ	X1-X2	33.740 mΩ	
	X0-X2	16.930 mΩ	X2-X3	33.520 mΩ	
	X0-X3	16.870 mΩ	X3-X1	33.580 mΩ	
8	X0-X1	16.770 mΩ	X1-X2	33.120 mΩ	
	X0-X2	16.710 mΩ	X2-X3	33.040 mΩ	
	X0-X3	16.690 mΩ	X3-X1	33.100 mΩ	
9	X0-X1	16.820 mΩ	X1-X2	33.230 mΩ	
	X0-X2	16.720 mΩ	X2-X3	33.140 mΩ	
	X0-X3	16.690 mΩ	X3-X1	33.190 mΩ	
10	X0-X1	16.650 mΩ	X1-X2	32.930 mΩ	
	X0-X2	16.590 mΩ	X2-X3	23.840 mΩ	
	X0-X3	16.580 mΩ	X3-X1	32.890 mΩ	

Tap Position					
11	X0-X1	16.740 mΩ	X1-X2	33.060 mΩ	
	X0-X2	16.670 mΩ	X2-X3	32.960 mΩ	
	X0-X3	16.620 mΩ	X3-X1	33.030 mΩ	
12	X0-X1	16.480 mΩ	X1-X2	32.570 mΩ	
	X0-X2	16.450 mΩ	X2-X3	32.520 mΩ	
	X0-X3	16.410 mΩ	X3-X1	32.610 mΩ	
13	X0-X1	16.500 mΩ	X1-X2	32.720 mΩ	
	X0-X2	16.470 mΩ	X2-X3	32.610 mΩ	
	X0-X3	16.400 mΩ	X3-X1	32.650 mΩ	
14	X0-X1	16.360 mΩ	X1-X2	32.400 mΩ	
	X0-X2	16.350 mΩ	X2-X3	32.310 mΩ	
	X0-X3	16.310 mΩ	X3-X1	29.440 mΩ	
15	X0-X1	16.410 mΩ	X1-X2	32.340 mΩ	
	X0-X2	16.380 mΩ	X2-X3	32.430 mΩ	
	X0-X3	16.300 mΩ	X3-X1	32.490 mΩ	
16	X0-X1	15.960 mΩ	X1-X2	31.630 mΩ	
	X0-X2	15.940 mΩ	X2-X3	31.570 mΩ	
	X0-X3	15.940 mΩ	X3-X1	31.580 mΩ	
17	X0-X1	15.790 mΩ	X1-X2	31.410 mΩ	
	X0-X2	15.800 mΩ	X2-X3	31.380 mΩ	
	X0-X3	15.780 mΩ	X3-X1	31.330 mΩ	
18	X0-X1	15.930 mΩ	X1-X2	31.650 mΩ	
	X0-X2	15.940 mΩ	X2-X3	31.530 mΩ	
	X0-X3	15.920 mΩ	X3-X1	31.560 mΩ	
19	X0-X1	16.450 mΩ	X1-X2	32.580 mΩ	
	X0-X2	16.400 mΩ	X2-X3	32.490 mΩ	
	X0-X3	16.350 mΩ	X3-X1	32.510 mΩ	
20	X0-X1	16.360 mΩ	X1-X2	32.380 mΩ	
	X0-X2	16.310 mΩ	X2-X3	32.330 mΩ	
	X0-X3	16.280 mΩ	X3-X1	32.380 mΩ	

Comments:

Tested By: D. Benjamin, B. Beam

Test Instrument(s) Manufacturer / Model

Serial #

Winding
0618

Temperature (°C) 23

Humditity (%) 70

SECONDARY WINDING RESISTANCE

Resistance in Milli Ohms at 10 A after 1 min

Tap Position				
21	X0-X1	16.550 mΩ	X1-X2	32.740 mΩ
	X0-X2	16.460 mΩ	X2-X3	32.660 mΩ
	X0-X3	16.400 mΩ	X3-X1	32.740 mΩ
22	X0-X1	16.490 mΩ	X1-X2	32.640 mΩ
	X0-X2	16.430 mΩ	X2-X3	32.550 mΩ
	X0-X3	16.410 mΩ	X3-X1	32.670 mΩ
23	X0-X1	16.720 mΩ	X1-X2	33.170 mΩ
	X0-X2	16.670 mΩ	X2-X3	33.060 mΩ
	X0-X3	16.580 mΩ	X3-X1	33.110 mΩ
24	X0-X1	16.670 mΩ	X1-X2	32.970 mΩ
	X0-X2	16.610 mΩ	X2-X3	32.900 mΩ
	X0-X3	16.600 mΩ	X3-X1	32.960 mΩ
25	X0-X1	16.810 mΩ	X1-X2	33.370 mΩ
	X0-X2	16.770 mΩ	X2-X3	33.230 mΩ
	X0-X3	16.690 mΩ	X3-X1	33.300 mΩ
26	X0-X1	16.750 mΩ	X1-X2	33.190 mΩ
	X0-X2	16.750 mΩ	X2-X3	33.140 mΩ
	X0-X3	16.680 mΩ	X3-X1	33.200 mΩ
27	X0-X1	17.010 mΩ	X1-X2	33.720 mΩ
	X0-X2	16.980 mΩ	X2-X3	33.590 mΩ
	X0-X3	16.960 mΩ	X3-X1	33.730 mΩ
28	X0-X1	16.940 mΩ	X1-X2	33.550 mΩ
	X0-X2	16.900 mΩ	X2-X3	33.510 mΩ
	X0-X3	16.860 mΩ	X3-X1	33.570 mΩ
29	X0-X1	17.120 mΩ	X1-X2	33.930 mΩ
	X0-X2	17.060 mΩ	X2-X3	33.800 mΩ
	X0-X3	17.070 mΩ	X3-X1	33.920 mΩ
30	X0-X1	17.080 mΩ	X1-X2	33.810 mΩ
	X0-X2	17.050 mΩ	X2-X3	33.770 mΩ
	X0-X3	17.020 mΩ	X3-X1	33.870 mΩ

Tap Position				
31	X0-X1	17.300 mΩ	X1-X2	34.350 mΩ
	X0-X2	17.300 mΩ	X2-X3	34.280 mΩ
	X0-X3	17.220 mΩ	X3-X1	34.310 mΩ
32	X0-X1	17.240 mΩ	X1-X2	34.180 mΩ
	X0-X2	17.220 mΩ	X2-X3	34.140 mΩ
	X0-X3	17.170 mΩ	X3-X1	34.150 mΩ
33	X0-X1	17.390 mΩ	X1-X2	34.550 mΩ
	X0-X2	17.390 mΩ	X2-X3	34.470 mΩ
	X0-X3	17.310 mΩ	X3-X1	34.540 mΩ
Tap Position	X0-X1	mΩ	X1-X2	mΩ
	X0-X2	mΩ	X2-X3	mΩ
	X0-X3	mΩ	X3-X1	mΩ
Tap Position	X0-X1	mΩ	X1-X2	mΩ
	X0-X2	mΩ	X2-X3	mΩ
	X0-X3	mΩ	X3-X1	mΩ
Tap Position	X0-X1	mΩ	X1-X2	mΩ
	X0-X2	mΩ	X2-X3	mΩ
	X0-X3	mΩ	X3-X1	mΩ
Tap Position	X0-X1	mΩ	X1-X2	mΩ
	X0-X2	mΩ	X2-X3	mΩ
	X0-X3	mΩ	X3-X1	mΩ
Tap Position	X0-X1	mΩ	X1-X2	mΩ
	X0-X2	mΩ	X2-X3	mΩ
	X0-X3	mΩ	X3-X1	mΩ
Tap Position	X0-X1	mΩ	X1-X2	mΩ
	X0-X2	mΩ	X2-X3	mΩ
	X0-X3	mΩ	X3-X1	mΩ
Tap Position	X0-X1	mΩ	X1-X2	mΩ
	X0-X2	mΩ	X2-X3	mΩ
	X0-X3	mΩ	X3-X1	mΩ

Comments:

Tested By: D. Benjamin, B. Beam

Test Instrument(s) Manufacturer / Model: Winding

Serial #: 41058

Temperature (°C): 23

Humdtity (%): 70

PRIMARY WINDING RESISTANCE

Resitance in Ohms at 1 A after 1 min (Corrected to 85C)

H0 - H1	Ω	H1-H2	0.837 Ω
H0 - H2	Ω	H2-H3	0.837 Ω
H0 - H3	Ω	H3-H1	0.838 Ω

SECONDARY WINDING RESISTANCE

Resistance in Milli Ohms at 1 A after 1 min (Corrected to 85C)

Tap Position					
1	X0-X1	21.602 mΩ	X1-X2	42.695 mΩ	
	X0-X2	21.540 mΩ	X2-X3	42.546 mΩ	
	X0-X3	21.453 mΩ	X3-X1	42.621 mΩ	
2	X0-X1	21.341 mΩ	X1-X2	42.335 mΩ	
	X0-X2	21.317 mΩ	X2-X3	42.199 mΩ	
	X0-X3	21.255 mΩ	X3-X1	42.261 mΩ	
3	X0-X1	21.478 mΩ	X1-X2	42.583 mΩ	
	X0-X2	21.366 mΩ	X2-X3	42.360 mΩ	
	X0-X3	21.341 mΩ	X3-X1	42.497 mΩ	
4	X0-X1	21.155 mΩ	X1-X2	41.851 mΩ	
	X0-X2	21.118 mΩ	X2-X3	41.752 mΩ	
	X0-X3	21.056 mΩ	X3-X1	41.839 mΩ	
5	X0-X1	21.242 mΩ	X1-X2	42.062 mΩ	
	X0-X2	21.143 mΩ	X2-X3	41.839 mΩ	
	X0-X3	21.081 mΩ	X3-X1	42.013 mΩ	
6	X0-X1	21.019 mΩ	X1-X2	41.578 mΩ	
	X0-X2	20.944 mΩ	X2-X3	41.454 mΩ	
	X0-X3	20.870 mΩ	X3-X1	41.529 mΩ	
7	X0-X1	21.093 mΩ	X1-X2	41.864 mΩ	
	X0-X2	21.006 mΩ	X2-X3	41.591 mΩ	
	X0-X3	20.932 mΩ	X3-X1	41.665 mΩ	
8	X0-X1	20.808 mΩ	X1-X2	41.095 mΩ	
	X0-X2	20.733 mΩ	X2-X3	40.995 mΩ	
	X0-X3	20.709 mΩ	X3-X1	41.070 mΩ	
9	X0-X1	20.870 mΩ	X1-X2	41.231 mΩ	
	X0-X2	20.746 mΩ	X2-X3	41.119 mΩ	
	X0-X3	20.709 mΩ	X3-X1	41.181 mΩ	
10	X0-X1	20.659 mΩ	X1-X2	40.859 mΩ	
	X0-X2	20.584 mΩ	X2-X3	29.580 mΩ	
	X0-X3	20.572 mΩ	X3-X1	40.809 mΩ	

Tap Position					
11	X0-X1	20.771 mΩ	X1-X2	41.020 mΩ	
	X0-X2	20.684 mΩ	X2-X3	40.896 mΩ	
	X0-X3	20.622 mΩ	X3-X1	40.983 mΩ	
12	X0-X1	20.448 mΩ	X1-X2	40.412 mΩ	
	X0-X2	20.411 mΩ	X2-X3	40.350 mΩ	
	X0-X3	20.361 mΩ	X3-X1	40.462 mΩ	
13	X0-X1	20.473 mΩ	X1-X2	40.598 mΩ	
	X0-X2	20.436 mΩ	X2-X3	40.462 mΩ	
	X0-X3	20.349 mΩ	X3-X1	40.511 mΩ	
14	X0-X1	20.299 mΩ	X1-X2	40.201 mΩ	
	X0-X2	20.287 mΩ	X2-X3	40.089 mΩ	
	X0-X3	20.237 mΩ	X3-X1	36.528 mΩ	
15	X0-X1	20.361 mΩ	X1-X2	40.127 mΩ	
	X0-X2	20.324 mΩ	X2-X3	40.238 mΩ	
	X0-X3	20.225 mΩ	X3-X1	40.313 mΩ	
16	X0-X1	19.803 mΩ	X1-X2	39.246 mΩ	
	X0-X2	19.778 mΩ	X2-X3	39.171 mΩ	
	X0-X3	19.778 mΩ	X3-X1	39.184 mΩ	
17	X0-X1	19.592 mΩ	X1-X2	38.973 mΩ	
	X0-X2	19.604 mΩ	X2-X3	38.936 mΩ	
	X0-X3	19.579 mΩ	X3-X1	38.874 mΩ	
18	X0-X1	19.766 mΩ	X1-X2	39.271 mΩ	
	X0-X2	19.778 mΩ	X2-X3	39.122 mΩ	
	X0-X3	19.753 mΩ	X3-X1	39.159 mΩ	
19	X0-X1	20.411 mΩ	X1-X2	40.425 mΩ	
	X0-X2	20.349 mΩ	X2-X3	40.313 mΩ	
	X0-X3	20.287 mΩ	X3-X1	40.338 mΩ	
20	X0-X1	20.299 mΩ	X1-X2	40.176 mΩ	
	X0-X2	20.237 mΩ	X2-X3	40.114 mΩ	
	X0-X3	20.200 mΩ	X3-X1	40.176 mΩ	

Comments:

Tested By: D. Benjamin, B. Beam

Test Instrument(s) Manufacturer / Model

Serial #

Winding
41508

Temperature (°C) 0

Humditity (%) 70

SECONDARY WINDING RESISTANCE

Resistance in Milli Ohms at 1 A after 1 min (Corrected to 85C)

Tap Position				
21	X0-X1	20.535 mΩ	X1-X2	40.623 mΩ
	X0-X2	20.423 mΩ	X2-X3	40.524 mΩ
	X0-X3	20.349 mΩ	X3-X1	40.623 mΩ
22	X0-X1	20.460 mΩ	X1-X2	40.499 mΩ
	X0-X2	20.386 mΩ	X2-X3	40.387 mΩ
	X0-X3	20.361 mΩ	X3-X1	40.536 mΩ
23	X0-X1	20.746 mΩ	X1-X2	41.157 mΩ
	X0-X2	20.684 mΩ	X2-X3	41.020 mΩ
	X0-X3	20.572 mΩ	X3-X1	41.082 mΩ
24	X0-X1	20.684 mΩ	X1-X2	40.908 mΩ
	X0-X2	20.609 mΩ	X2-X3	40.822 mΩ
	X0-X3	20.597 mΩ	X3-X1	40.896 mΩ
25	X0-X1	20.857 mΩ	X1-X2	41.405 mΩ
	X0-X2	20.808 mΩ	X2-X3	41.231 mΩ
	X0-X3	20.709 mΩ	X3-X1	41.318 mΩ
26	X0-X1	20.783 mΩ	X1-X2	41.181 mΩ
	X0-X2	20.783 mΩ	X2-X3	41.119 mΩ
	X0-X3	20.696 mΩ	X3-X1	41.194 mΩ
27	X0-X1	21.106 mΩ	X1-X2	41.839 mΩ
	X0-X2	21.068 mΩ	X2-X3	41.678 mΩ
	X0-X3	21.044 mΩ	X3-X1	41.851 mΩ
28	X0-X1	21.019 mΩ	X1-X2	41.628 mΩ
	X0-X2	20.969 mΩ	X2-X3	41.578 mΩ
	X0-X3	20.919 mΩ	X3-X1	41.653 mΩ
29	X0-X1	21.242 mΩ	X1-X2	42.100 mΩ
	X0-X2	21.168 mΩ	X2-X3	41.938 mΩ
	X0-X3	21.180 mΩ	X3-X1	42.087 mΩ
30	X0-X1	21.192 mΩ	X1-X2	41.951 mΩ
	X0-X2	21.155 mΩ	X2-X3	41.901 mΩ
	X0-X3	21.118 mΩ	X3-X1	42.025 mΩ

Tap Position				
31	X0-X1	21.465 mΩ	X1-X2	42.621 mΩ
	X0-X2	21.465 mΩ	X2-X3	42.534 mΩ
	X0-X3	21.366 mΩ	X3-X1	42.571 mΩ
32	X0-X1	21.391 mΩ	X1-X2	42.410 mΩ
	X0-X2	21.366 mΩ	X2-X3	42.360 mΩ
	X0-X3	21.304 mΩ	X3-X1	42.373 mΩ
33	X0-X1	21.577 mΩ	X1-X2	42.869 mΩ
	X0-X2	21.577 mΩ	X2-X3	42.770 mΩ
	X0-X3	21.478 mΩ	X3-X1	42.856 mΩ
Tap Position	X0-X1	mΩ	X1-X2	mΩ
	X0-X2	mΩ	X2-X3	mΩ
	X0-X3	mΩ	X3-X1	mΩ
Tap Position	X0-X1	mΩ	X1-X2	mΩ
	X0-X2	mΩ	X2-X3	mΩ
	X0-X3	mΩ	X3-X1	mΩ
Tap Position	X0-X1	mΩ	X1-X2	mΩ
	X0-X2	mΩ	X2-X3	mΩ
	X0-X3	mΩ	X3-X1	mΩ
Tap Position	X0-X1	mΩ	X1-X2	mΩ
	X0-X2	mΩ	X2-X3	mΩ
	X0-X3	mΩ	X3-X1	mΩ
Tap Position	X0-X1	mΩ	X1-X2	mΩ
	X0-X2	mΩ	X2-X3	mΩ
	X0-X3	mΩ	X3-X1	mΩ
Tap Position	X0-X1	mΩ	X1-X2	mΩ
	X0-X2	mΩ	X2-X3	mΩ
	X0-X3	mΩ	X3-X1	mΩ
Tap Position	X0-X1	mΩ	X1-X2	mΩ
	X0-X2	mΩ	X2-X3	mΩ
	X0-X3	mΩ	X3-X1	mΩ

Comments:

Tested By: D. Benjamin, B. Beam

Test Instrument(s) Manufacturer / Model: Winding

Serial #: 41058

Temperature (°C): 0

Humdity (%): 70

POWER FACTOR TESTING

TRANSFORMER OVERALL TEST SET UP									TRANSFORMER OVERALL TEST RESULTS							
Test No.	Insulation Tested	Test Mode	Test Leads				Test KV	DFR (Y/N)	Capacitence (pF)	Power Factor %			Direct	Direct	%VDF	IR
			HV	Red	Blue	Gnd				Measured	@20C	Corr	mA	W		
1	$C_{HG} + C_{HL}$	GST-GND	H	L		G	10	N	9843.48	0.21	0.2	0.94	37.053	1.0088	0.05	
2	C_{HG}	GSTg-RB	H	L		G	10	N	2499.07	0.25	0.23	0.94	9.4257	0.2664	0.04	
3	C_{HL}	UST-R	H	L		G	10	N	7355.66	0.2	0.19	0.94	27.7461	0.7476	0.04	
4	C_{HL}								7344.4				27.6272	0.7424		VALID
5	$C_{LG} + C_{HL}$	GST-GND	L	H		G	10	N	19039.13	0.26	0.25	0.94	71.7288	2.2211	0.04	
6	C_{LG}	GSTg-RB	L	H		G	10	N	11697.59	0.29	0.28	1.94	44.1349	1.4668	0.03	
7	C_{HL}	UST-R	L	H		G	10	N	7356.30	0.19	0.18	2.94	27.724	0.7396	0.03	
8	$C_{HL'}$								7341.54				27.5939	0.7543		VALID

Transformer Bushing C1 Tests

Test No.	Bushing Nameplate					Test Mode	Test KV	Capacitence (pF)	Power Factor %			Direct		%VDF	IR
	DSG	Serial #	Cat #	PF	Cap.				Measured	@20C	Corr	mA	W		
11	H1	19190368	145Z0600AA	0.32	423.00	UST-R									
12	H2	19190367	145Z0600AA	0.32	424.00	UST-R									
13	H3	19190370	145Z0600AA	0.32	423.00	UST-R									
14	N/A														
15	X1	19190241	035G2000HA	0.25	391.00	UST-R	10	389.59	0.23			1.4632	0.0329	0.03	
16	X2	19190242	035G2000HA	0.25	387.00	UST-R	10	386.00	0.23			1.4525	0.0328	0.03	
17	X3	19190243	035G2000HA	0.25	386.00	UST-R	10	384.73	0.23			1.4481	0.0326	0.03	
18	X0	19190244	035G2000HA	0.25	389.00	UST-R	10	386.70	0.22			1.4538	0.0325	0.04	
19	N/A														

Transformer Bushing C2 Tests

Test No.	Bushing Nameplate					Test Mode	Test KV	Capacitence (pF)	Power Factor %			Direct		%VDF	IR
	DSG	Serial #	Cat #	PF	Cap.				Measured	@20C	Corr	mA	W		
20	H1	19190368	145Z0600AA	0.32	3826.00	GSTg-RB									
21	H2	19190367	145Z0600AA	0.32	3829.00	GSTg-RB									
22	H3	19190370	145Z0600AA	0.32	3816.00	GSTg-RB									
23	N/A														
24	X1	19190241	035G2000HA	0.18	564.00	GSTg-RB	0.5	577.38	0.19			0.1086	0.0001	0.02	
25	X2	19190242	035G2000HA	0.17	574.00	GSTg-RB	0.5	588.89	0.14			0.1109	0.0001	0.01	
26	X3	19190243	035G2000HA	0.18	563.00	GSTg-RB	0.5	575.43	0.14			0.1078	0.0001	0.02	
27	X0	19190244	035G2000HA	0.18	569.00	GSTg-RB	0.5	581.95	0.14			0.1096	0.0001	0.01	
28	N/A														

LIGHTNING ARRESTOR INSULATION RESISTANCE

Resistance in Meg-Ohms @ 5000 V DC after 1 Min

Phase A to Ground	340,000	MΩ
Phase B to Ground	416,000	MΩ
Phase C to Ground	332,000	MΩ

Comments:

Tested By: D. Benjamin, B. Beam

Test Instrument(s) Manufacturer / Model: PF Test

Serial #: 0417

Temperature (°C): 23

Humdity (%): 70

POWER FACTOR TESTING

Transformer Bushing C1 Tests (Pre-Installation)

Test No.	Bushing Nameplate					Test Mode	Test KV	Capacitence (pF)	Power Factor %			Direct		%VDF	IR
	DSG	Serial #	Cat #	PF	Cap.				Measured	@20C	Corr	mA	W		
11	H1	19190368	145Z0600AA	0.32	423.00	UST-R									
12	H2	19190367	145Z0600AA	0.32	424.00	UST-R									
13	H3	19190370	145Z0600AA	0.32	423.00	UST-R									
14	N/A														
15	X1	19190241	035G2000HA	0.25	391.00	UST-R	10	389.59	0.23			1.4632	0.0329	0.03	
16	X2	19190242	035G2000HA	0.25	387.00	UST-R	10	386.00	0.23			1.4525	0.0328	0.03	
17	X3	19190243	035G2000HA	0.25	386.00	UST-R	10	384.73	0.23			1.4481	0.0326	0.03	
18	X0	19190244	035G2000HA	0.25	389.00	UST-R	10	386.70	0.22			1.4538	0.0325	0.04	
19	N/A														

Transformer Bushing C2 Tests

Test No.	Bushing Nameplate					Test Mode	Test KV	Capacitence (pF)	Power Factor %			Direct		%VDF	IR
	DSG	Serial #	Cat #	PF	Cap.				Measured	@20C	Corr	mA	W		
20	H1	19190368	145Z0600AA	0.32	3826.00	GSTg-RB									
21	H2	19190367	145Z0600AA	0.32	3829.00	GSTg-RB									
22	H3	19190370	145Z0600AA	0.32	3816.00	GSTg-RB									
23	N/A														
24	X1	19190241	035G2000HA	0.18	564.00	GSTg-RB	0.5	577.38	0.19			0.1086	0.0001	0.02	
25	X2	19190242	035G2000HA	0.17	574.00	GSTg-RB	0.5	588.89	0.14			0.1109	0.0001	0.01	
26	X3	19190243	035G2000HA	0.18	563.00	GSTg-RB	0.5	575.43	0.14			0.1078	0.0001	0.02	
27	X0	19190244	035G2000HA	0.18	569.00	GSTg-RB	0.5	581.95	0.14			0.1096	0.0001	0.01	
28	N/A														

Comments:

Tested By: D. Benjamin, B. Beam

Test Instrument(s) Manufacturer / Model: PF Test

Serial #: 0417

Temperature (°C): 0

Humdity (%): 70

DIELECTRIC ABSORPTION TEST (INSULATION RESISTANCE)

Time	HV-LV+G		LV-HV+G		HV+LV-G	
	Uncorrected	Corrected	Uncorrected	Corrected	Uncorrected	Corrected
15 sec	63100 MΩ	74458 MΩ	19800 MΩ	23364 MΩ	28100 MΩ	33158 MΩ
30 sec	100600 MΩ	118708 MΩ	29800 MΩ	35164 MΩ	34000 MΩ	40120 MΩ
45 sec	95100 MΩ	112218 MΩ	32400 MΩ	38232 MΩ	36600 MΩ	43188 MΩ
1 min	96000 MΩ	113280 MΩ	32800 MΩ	38704 MΩ	37100 MΩ	43778 MΩ
2 min	121900 MΩ	143842 MΩ	35500 MΩ	41890 MΩ	39300 MΩ	46374 MΩ
3 min	117000 MΩ	138060 MΩ	36800 MΩ	43424 MΩ	40200 MΩ	47436 MΩ
4 min	119100 MΩ	140538 MΩ	37800 MΩ	44604 MΩ	40600 MΩ	47908 MΩ
5 min	128600 MΩ	151748 MΩ	38800 MΩ	45784 MΩ	41000 MΩ	48380 MΩ
6 min	145200 MΩ	171336 MΩ	39500 MΩ	46610 MΩ	41700 MΩ	49206 MΩ
7 min	154700 MΩ	182546 MΩ	40100 MΩ	47318 MΩ	41500 MΩ	48970 MΩ
8 min	158100 MΩ	186558 MΩ	40400 MΩ	47672 MΩ	42000 MΩ	49560 MΩ
9 min	167700 MΩ	197886 MΩ	40700 MΩ	48026 MΩ	42100 MΩ	49678 MΩ
10 min	188500 MΩ	222430 MΩ	41200 MΩ	48616 MΩ	42300 MΩ	49914 MΩ
Test Voltage		10000 V		5000 V		5000 V
Polarization Index	1.963541667		1.256097561		1.140161725	
Tcc	Insulation Resistance Readings Corrected to 23 °C					

INSULATION RESISTANCE

Resistance in Meg-Ohms after 1 Min

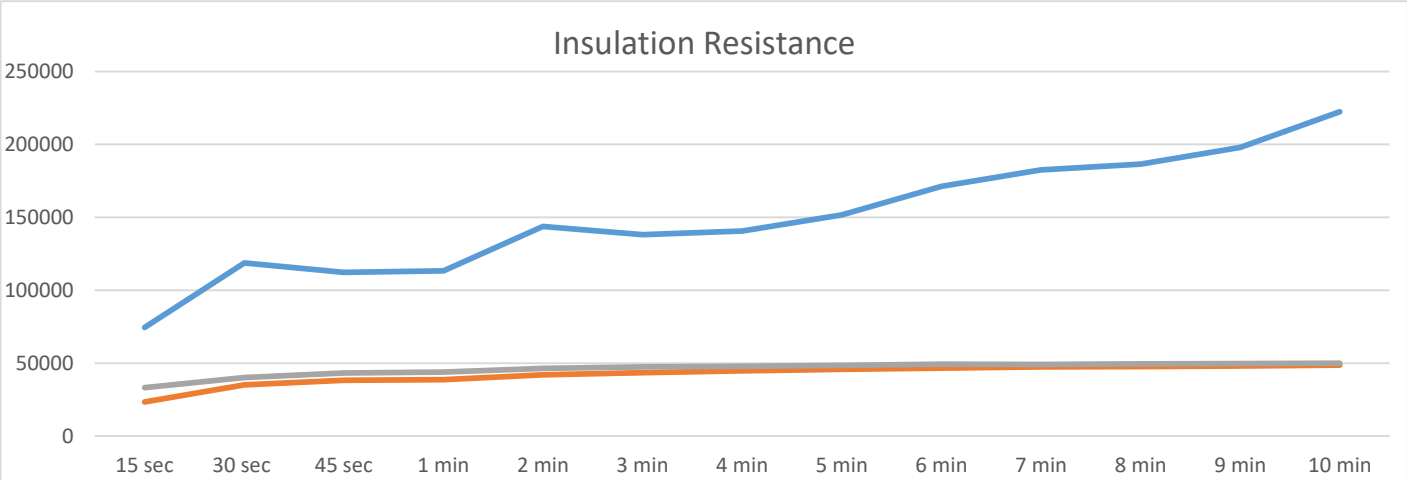
HV-LV	113280	MΩ @	10000 V
HV-G	38704	MΩ @	5000 V
LV-G	43778	MΩ @	5000 V

CORE GROUND INSULATION RESISTANCE

Resistance in Meg-Ohms after 1 Min

Core Ground Accesssible: Yes ☑ No ☐

Test Voltage	1000	V
Core Ground Resistance	40500	MΩ



Comments:

Tested By: D. Benjamin, B. Beam

Test Instrument(s)

Manufacturer / Model: Megger

Serial #: 9195

Temperature (°C): 23

Humdity (%): 70

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

INSULATION RESISTANCE | **SYSTEM ID** YORK TS | **DEVICE ID** MAIN TX

Customer: Niagara On the Lake Hydro
8 Henegan

Site: York TS
York Rd

Date: July 7, 2022
Job # 22-2121

INSULATION RESISTANCE TEST

Description: TX Lightning Arresters 1min @ 5000V

Phase A to GND	340000	MΩ	Phase A to Phase B		MΩ
Phase B to GND	41600	MΩ	Phase B to Phase C		MΩ
Phase C to GND	332000	MΩ	Phase C to Phase A		MΩ

Comments:

Description:

Phase A to GND		MΩ	Phase A to Phase B		MΩ
Phase B to GND		MΩ	Phase B to Phase C		MΩ
Phase C to GND		MΩ	Phase C to Phase A		MΩ

Comments:

Description:

Phase A to GND		MΩ	Phase A to Phase B		MΩ
Phase B to GND		MΩ	Phase B to Phase C		MΩ
Phase C to GND		MΩ	Phase C to Phase A		MΩ

Comments:

Description:

Phase A to GND		MΩ	Phase A to Phase B		MΩ
Phase B to GND		MΩ	Phase B to Phase C		MΩ
Phase C to GND		MΩ	Phase C to Phase A		MΩ

Comments:

Description:

Phase A to GND		MΩ	Phase A to Phase B		MΩ
Phase B to GND		MΩ	Phase B to Phase C		MΩ
Phase C to GND		MΩ	Phase C to Phase A		MΩ

Comments:
Tested By: B. BEAM

Test Instrument(s)					
	Manufacturer / Model	MEGGER			
	Serial #	0516			

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

High Voltage Data Sheet

SYSTEM ID: YORK
DEVICE ID: 2514T1-Q12S
ASSET ID:

CUSTOMER: Niagara On the Lake Hydro
8 Henegan Rd.

SITE: York Rd.
0

DATE: July 7, 2022
JOB #: 22-2121

NAMEPLATE DATA

Switch Mounting — Metal Enclosed ☐ Pole ☑ Tower ☐ Other
Switch Type — Load Break ☑ Air Break ☐ Other

Manufacturer	S&C	BIL Rating	650 kv
Date of Manufacture	08/19	Feeder ID	2514T1
Serial #	N/A	Feeds To	IPS
Catalog #	133092R2-E	Interupting Rating	40000 A
Nom./Max Voltage	14.4/17 kv	Continuous Ampacity	2400 A

Comments:

LIGHTNING ARRESTERS

Lightning Arrestors — Yes ☐ No ☑
Class — Distribution ☐ Intermediate ☐ Station ☐
Composition — Ceramic ☐ Polymer ☐

Manufacturer	
Catalog #	
Max. / MCOV Rating	kv

Comments:

PROTECTIVE DEVICE DATA

PRIMARY FUSE HOLDER DATA

Manufacturer	
Type	
Nom. / Max. Voltage	kV
Holder Max. Fuse Link	
Holder Catalog #	

PRIMARY FUSE LINK DATA

Manufacturer	
Type	
Link Size	A
TCC#	
Link Catalog #	

PRIMARY FUSE LINK SPARES / LOCATION

Spare Primary Fuses — Yes ☐ No ☐ # of Spares: Location:

Comments:

INTERLOCK

Key Interlock — Yes ☑ No ☐ Manufacturer:
Interlock Type — Electrical ☐ Mechanical ☑ Utility Lock ☐ Key Interlock #:
Devices Interlocked — H.V Switch ☑ Breaker ☐ Trans. Encl ☐ Other ☐

LOAD SIDE CONDUCTOR DATA

Conductor Type — Cable ☐ Bus Bar ☐
Conductor Material — Aluminum ☐ Copper ☐
Tape Shield — Aluminum ☐ Copper ☐
Concentric Neutral — Aluminum ☐ Copper ☐
Insulation Voltage: V
Insulation Type:

Conductor Size/Dim: 3.5" IPS
Conductors per Phase: 1 /Phase
Bond Size/Dim: N/A
# of Bond Conductors: 0
# of Neutral Conductors: 1
Neutral Size/Dim: 750 MCM

Comments:
Tested By: B. BEAM

VISUAL INSPECTION/MECHANICAL TESTS

Nameplate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Connections	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Lightning Arrestors	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Suppressors	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Key Interlock	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments: Replaced lock
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

SWITCH CONDITION / OPERATION

Switch Operation as Left	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Contact Surface Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Simultaneous Closure	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

ELECTRICAL TESTS

EARTH RESISTANCE (3 - POINT TEST)

Earth Resistance: N/A Ω

ARC SUPPRESSOR CONTACT RESISTANCE

Arc Suppressor Contact Resistance

Phase A	N/A	Ω
Phase B	N/A	Ω
Phase C	N/A	Ω

Comments:

SWITCH INSULATION RESISTANCE

Resistance in Meg-OHMS After 1 Minute

Test Voltage: 1 kV ☐ 2.5 kV ☐ 5 kV ☐ 10 kV ☐

	Phase A	Phase B	Phase C
Phase To GND	MΩ	MΩ	MΩ

Switch Fuse/Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current: 10 A

	Phase A	Phase B	Phase C
Switch	μΩ	μΩ	μΩ
Fuse	μΩ	μΩ	μΩ
Overall	39 μΩ	32 μΩ	31 μΩ

Comments:

LOAD SIDE CONDUCTOR INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Comments:

LIGHTNING ARRESTER INSULATION RESISTANCE

Resistance in Meg-OHMS @ N/A V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Test Instrument(s)

Manufacturer / Model	Megger	DRLO
Serial #	N/A	1848

Comments:

Tested By: B. BEAM

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

High Voltage Data Sheet

SYSTEM ID: YORK | DEVICE ID: 2514T1-B1 | ASSET ID:

CUSTOMER: Niagara On the Lake Hydro
8 Henegan

SITE: York TS
York Rd

DATE: July 7, 2022
JOB #: 22-2121

NAMEPLATE DATA

Switch Mounting	Metal Enclosed ☐	Pole ☐	Tower ☑	Other	
Switch Type	Load Break ☑	Air Break ☐		Other	

Manufacturer	S&C	BIL Rating	200 kV
Date of Manufacture	08/19	Feeder ID	N/A
Serial #	N/A	Feeds To	B1 BUS
Catalog #	135914R2-T205	Interupting Rating	40 kA
Nom./Max Voltage	34.5 kV	Continuous Ampacity	1200 A

Comments:

LIGHTNING ARRESTORS

Lightning Arrestors	Yes ☐	No ☑		Manufacturer	
Class	Distribution ☐	Intermediate ☐	Station ☐	Catalog #	
Composition	Ceramic ☐	Polymer ☐		Max. / MCOV Rating	kV

Comments:

PROTECTIVE DEVICE DATA

PRIMARY FUSE HOLDER DATA

Manufacturer	
Type	
Nom. / Max. Voltage	kV
Holder Max. Fuse Link	
Holder Catalog #	

PRIMARY FUSE LINK DATA

Manufacturer	
Type	
Link Size	A
TCC#	
Link Catalog #	

PRIMARY FUSE LINK SPARES / LOCATION

Spare Primary Fuses: Yes ☐ No ☐ # of Spares: _____ Location: _____

Comments: SWITCH ONLY

INTERLOCK

Key Interlock	Yes ☐	No ☐		Manufacturer	ABUS
Interlock Type	Electrical ☐	Mechanical ☐	Utility Lock ☑	Key Interlock #	
Devices Interlocked	H.V Switch ☐	Breaker ☐	Trans. Encl ☐	Other ☐	

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☐	Bus Bar ☐	Conductor Size/Dim	
Conductor Material	Aluminum ☐	Copper ☐	Conductors per Phase	/Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	
Concentric Neutral	Aluminum ☐	Copper ☐	# of Bond Conductors	
Insulation Voltage	V		# of Neutral Conductors	
Insulation Type			Neutral Size/Dim	

Comments:

Tested By: A. BURK

VISUAL INSPECTION/MECHANICAL TESTS

Nameplate Condition	☐ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Insulator Condition	☐ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Connections	☐ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Lightning Arrestors	☐ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Arc Suppressors	☐ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Key Interlock	☐ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Straps & Materials	☐ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

SWITCH CONDITION / OPERATION

Switch Operation as Left	☐ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Contact Surface Condition	☐ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Simultaneous Closure	☐ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

Comments:

ELECTRICAL TESTS

EARTH RESISTANCE (3 - POINT TEST)

Earth Resistance N/A Ω

ARC SUPPRESSOR CONTACT RESISTANCE

Arc Suppressor Contact Resistance

Phase A	Ω
Phase B	Ω
Phase C	Ω

Comments:

SWITCH INSULATION RESISTANCE

Resistance in Meg-OHMS After 1 Minute

Test Voltage 1 kV ☐ 2.5 kV ☐ 5 kV ☐ 10 kV ☐

	Phase A	Phase B	Phase C
Phase To GND	N/A MΩ	N/A MΩ	N/A MΩ

Switch Fuse/Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current 10 A

	Phase A	Phase B	Phase C
Switch	μΩ	μΩ	μΩ
Fuse	μΩ	μΩ	μΩ
Overall	75 / 101 μΩ	68 / 60 μΩ	61 / 80 μΩ

Comments: TESTED BOTH CONNECTIONS

LOAD SIDE CONDUCTOR INSULATION RESISTANCE

Resistance in Meg-OHMS @ _____ V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Comments:

LIGHTNING ARRESTER INSULATION RESISTANCE

Resistance in Meg-OHMS @ _____ V DC after 1 Minute

Phase A	MΩ
Phase B	MΩ
Phase C	MΩ

Test Instrument(s)	Manufacturer / Model	Megger	DRLO
	Serial #	N/A	1848

Comments:

Tested By: A. BURK

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

INSULATION RESISTANCE **SYSTEM ID** YORK **DEVICE ID** VARIOUS

Customer: Niagara On the Lake Hydro
8 Henegan

Site: York TS
York Rd

Date: July 7, 2022
Job # 22-2121

INSULATION RESISTANCE TEST ALL TESTS - 1min @ 5000V

Description: 2514B15A

Phase A to GND	342000	MΩ	Phase A to Phase B		MΩ
Phase B to GND	481000	MΩ	Phase B to Phase C		MΩ
Phase C to GND	509000	MΩ	Phase C to Phase A		MΩ

Comments: OHIO BRASS 221617 PVR 17/21 DIST

Description: 2514M1SA

Phase A to GND	69900	MΩ	Phase A to Phase B		MΩ
Phase B to GND	175600	MΩ	Phase B to Phase C		MΩ
Phase C to GND	126000	MΩ	Phase C to Phase A		MΩ

Comments: OHIO BRASS 221617 PVR 17/21 DIST

Description: 2514M2SA

Phase A to GND	204000	MΩ	Phase A to Phase B		MΩ
Phase B to GND	166900	MΩ	Phase B to Phase C		MΩ
Phase C to GND	227000	MΩ	Phase C to Phase A		MΩ

Comments: OHIO BRASS 221617 PVR 17/21 DIST

Description: 2514M3SA

Phase A to GND	282000	MΩ	Phase A to Phase B		MΩ
Phase B to GND	193800	MΩ	Phase B to Phase C		MΩ
Phase C to GND	137700	MΩ	Phase C to Phase A		MΩ

Comments: OHIO BRASS 221617 PVR 17/21 DIST

Description: STATION SERVICE LA

Phase A to GND	252000	MΩ	Phase A to Phase B		MΩ
Phase B to GND	N/A	MΩ	Phase B to Phase C		MΩ
Phase C to GND	N/A	MΩ	Phase C to Phase A		MΩ

Comments: FUSE CUTOUT - 35260 µΩ
Tested By: A.BURK

Test Instrument(s)	Manufacturer / Model			
	Serial #			
	MEGGER	DRLO		
	0576	6599		

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

RECLOSER

SYSTEM ID: YORK
DEVICE ID: 2514M1-LLC
ASSET ID:

Custo Niagara On -The-Lake Hydro
8 Henegan Rd

Site: York TS
York Rd

Date: July 7, 2022
Job # 22-2121

NAMEPLATE DATA

Manufacturer	G&W
Date of Manufacture	FEB-03
Serial #	650-03-0011
Catalogue #	VIP398ER-12E-1
Max Voltage Rating	38KV
Interupting rating	12,500

ID	2514M1-LLC
Continious Ampacity	800A
Frame Size	800
Fed From	B1 BUS
Feeds To	2514M1

Mounting Type Rack Out ☐ Fixed ☑

Comments:

INTERLOCK

Key Interlock Yes ☐ No ☑ Manufacturer _____
Interlock Type Electrical ☐ Mechanical ☐ Utility Lock ☐ Key Interlock # _____
Devices Interlocked H.V Switch ☐ Breaker ☐ Trans. Encl ☐ Other ☐

PROTECTIVE DEVICE DATA

Protective Device Data Thermal ☐ Magnetic ☐ Electronic ☑ Fuse ☐ Other: SEL RELAY

Manufacturer	SEL
TYPE	351R
P/N	0351R11X8111XX1
S/N	2003020146
Control Voltage	120

CT RATIO CORRECTION FACTORS		
PHASE	Y-SIDE	Z-SIDE
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A

Comments:

PROTECTIVE DEVICE DATA

Pick Up Settings	Dial Setting		Relay Pickup	
Long Time Pickup		=		X
Short Time Pickup		=		X
Instantaneous Pickup		=		X
Ground Fault Pickup		=		X

Delay Settings	Dial Setting		Relay Pickup		ON/OFF
Long Time Delay		=		S	
Short Time Delay		=		S	
Ground Fault Delay		=		S	

Magnetic Trip Setting Low ☐ Med ☐ High ☐ N/A ☑

Comments: COUNTER: AS FOUND - 317, AS LEFT - 318
Tested By: D. CHARRON

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☑	Bus Bar ☐	Conductor Size/Dim	1000MCM
Conductor Material	Aluminum ☐	Copper ☑	Conductors per Phase	1 /Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	2/0
Concentric Nuetral	Aluminum ☐	Copper ☐	# of Bond Conductors	1
Insulation Voltage			# of Nuetral Conductors	0
Insulation Type			Nuetral Size/Dim	N/A

Comments:

VISUAL INSPECTION / MECHANICAL TESTS

Key Interlock Operation	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Chutes	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Name Plate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Operation	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

ELECTRICAL TESTS

Insulation Resistance

Resistance in meg-ohms after 1 minute

Test Voltage ☐ 500V ☐ 1kV ☑ 5kV ☐ 10kV

	Phase A (A to B)	Phase B (B to C)	Phase C (C to A)
Phase To Phase	MΩ	MΩ	MΩ
Phase To GND	MΩ	MΩ	MΩ
Line to Load	MΩ	MΩ	MΩ

Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current 10 A

	Phase A	Phase B	Phase C
Switch	μΩ	μΩ	μΩ
Fuse	μΩ	μΩ	μΩ
Overall	126 μΩ	126 μΩ	131 μΩ

PRIMARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Injected Current	Phase A Time	Phase B Time	Phase C Time
150% of Rated Current	A	sec	sec	sec
300% of Rated Current	A	sec	sec	sec
____ of Rated Current	A	sec	sec	sec

SECONDARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Settings as Found	Test Settings	PU	Phase A Time	Phase B Time	Phase C Time
Long Time Pickup						
Long Time Delay						
Short Time Pickup						
Short Time Delay						
Instantaneous Pickup						
Ground Fault Pickup						
Ground Fault Delay						

Breaker Tripped Via Secondary	☐ Yes	☑ No	☐ Non-Functioning	Comments:
Settings Restored to As Found	☐ Yes	☐ No		

Comments:

Tested By: D. CHARRON

Test Instrument(s)	Manufacturer / Model	Megger	DRLO	Relay
	Serial #	N/A	1848	N/A

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

RECLOSER | **SYSTEM ID** YORK | **DEVICE ID** 2514M2-LLC | **ASSET ID**

Custo Niagara On -The-Lake Hydro
8 Henegan Rd

Site: York TS
York Rd

Date: July 7, 2022
Job # 22-2121

NAMEPLATE DATA

Manufacturer	G&W
Date of Manufacture	FEB-03
Serial #	650-03-0010
Catalogue #	VIP398ER-12E-1
Max Voltage Rating	38KV
Interupting rating	12,500

ID	2514M2-LLC
Continious Ampacity	800A
Frame Size	800
Fed From	B1 BUS
Feeds To	2514M2

Mounting Type Rack Out ☐ Fixed ☑

Comments:

INTERLOCK

Key Interlock Yes ☐ No ☑ Manufacturer _____

Interlock Type Electrical ☐ Mechanical ☐ Utility Lock ☐ Key Interlock # _____

Devices Interlocked H.V Switch ☐ Breaker ☐ Trans. Encl ☐ Other ☐

PROTECTIVE DEVICE DATA

Protective Device Data Thermal ☐ Magnetic ☐ Electronic ☐ Fuse ☐ Other: SEL RELAY

Manufacturer	SEL
TYPE	351R
P/N	0351R11X8111XX1
S/N	N/A
Control Voltage	120

CT RATIO CORRECTION FACTORS		
PHASE	Y-SIDE	Z-SIDE
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A

Comments:

PROTECTIVE DEVICE DATA

Pick Up Settings	Dial Setting		Relay Pickup	
Long Time Pickup		=		X
Short Time Pickup		=		X
Instantaneous Pickup		=		X
Ground Fault Pickup		=		X

Delay Settings	Dial Setting		Relay Pickup		ON/OFF
Long Time Delay		=		S	
Short Time Delay		=		S	
Ground Fault Delay		=		S	

Magnetic Trip Setting Low ☐ Med ☐ High ☐ N/A ☑

Comments: COUNTER: AS FOUND - 350, AS LEFT - 352
Tested By: D. CHARRON

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☑	Bus Bar ☐	Conductor Size/Dim	1000MCM
Conductor Material	Aluminum ☐	Copper ☑	Conductors per Phase	1 /Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	2/0
Concentric Nuetral	Aluminum ☐	Copper ☐	# of Bond Conductors	1
Insulation Voltage			# of Nuetral Conductors	0
Insulation Type			Nuetral Size/Dim	N/A

Comments:

VISUAL INSPECTION / MECHANICAL TESTS

Key Interlock Operation	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Chutes	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Name Plate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Operation	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

ELECTRICAL TESTS

Insulation Resistance

Resistance in meg-ohms after 1 minute

Test Voltage ☐ 500V ☐ 1kV ☐ 5kV ☐ 10kV

	Phase A (A to B)	Phase B (B to C)	Phase C (C to A)
Phase To Phase	MΩ	MΩ	MΩ
Phase To GND	MΩ	MΩ	MΩ
Line to Load	MΩ	MΩ	MΩ

Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current 10 A

	Phase A	Phase B	Phase C
Switch	μΩ	μΩ	μΩ
Fuse	μΩ	μΩ	μΩ
Overall	144 μΩ	131 μΩ	145 μΩ

PRIMARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Injected Current	Phase A Time	Phase B Time	Phase C Time
150% of Rated Current	A	sec	sec	sec
300% of Rated Current	A	sec	sec	sec
____ of Rated Current	A	sec	sec	sec

SECONDARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Settings as Found	Test Settings	PU	Phase A Time	Phase B Time	Phase C Time
Long Time Pickup						
Long Time Delay						
Short Time Pickup						
Short Time Delay						
Instantaneous Pickup						
Ground Fault Pickup						
Ground Fault Delay						

Breaker Tripped Via Secondary	☐ Yes	☑ No	☐ Non-Functioning	Comments:
Settings Restored to As Found	☐ Yes	☐ No		

Comments:

Tested By: D. CHARRON

Test Instrument(s)	Manufacturer / Model	Megger	DRLO	Relay
	Serial #	N/A	1848	N/A

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

RECLOSER | **SYSTEM ID** YORK | **DEVICE ID** 2514M3-LLC | **ASSET ID**

Custo Niagara On -The-Lake Hydro
8 Henegan Rd

Site: York TS
York Rd

Date: July 7, 2022
Job # 22-2121

NAMEPLATE DATA

Manufacturer	G&W
Date of Manufacture	FEB-03
Serial #	650-03-0010
Catalogue #	VIP398ER-12E-1
Max Voltage Rating	38KV
Interupting rating	12,500

ID	2514M2-LLC
Continious Ampacity	800A
Frame Size	800
Fed From	B1 BUS
Feeds To	2514M3

Mounting Type Rack Out ☐ Fixed ☑

Comments:

INTERLOCK

Key Interlock Yes ☐ No ☑ Manufacturer _____

Interlock Type Electrical ☐ Mechanical ☐ Utility Lock ☐ Key Interlock # _____

Devices Interlocked H.V Switch ☐ Breaker ☐ Trans. Encl ☐ Other ☐

PROTECTIVE DEVICE DATA

Protective Device Data Thermal ☐ Magnetic ☐ Electronic ☐ Fuse ☐ Other: SEL RELAY

Manufacturer	SEL
TYPE	651R
P/N	0651R21CXBA8AD1112DEX
S/N	5203440004
Control Voltage	120V

CT RATIO CORRECTION FACTORS		
PHASE	Y-SIDE	Z-SIDE
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A

Comments:

PROTECTIVE DEVICE DATA

Pick Up Settings	Dial Setting		Relay Pickup	
Long Time Pickup		=		X
Short Time Pickup		=		X
Instantaneous Pickup		=		X
Ground Fault Pickup		=		X

Delay Settings	Dial Setting		Relay Pickup		ON/OFF
Long Time Delay		=		S	
Short Time Delay		=		S	
Ground Fault Delay		=		S	

Magnetic Trip Setting Low ☐ Med ☐ High ☐ N/A ☑

Comments: COUNTER: AS FOUND - 391, AS LEFT - 392
Tested By: D. CHARRON

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☑	Bus Bar ☐	Conductor Size/Dim	1000MCM
Conductor Material	Aluminum ☐	Copper ☑	Conductors per Phase	1 /Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	2/0
Concentric Nuetral	Aluminum ☐	Copper ☐	# of Bond Conductors	1
Insulation Voltage			# of Nuetral Conductors	0
Insulation Type			Nuetral Size/Dim	N/A

Comments:

VISUAL INSPECTION / MECHANICAL TESTS

Key Interlock Operation	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Chutes	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Name Plate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Operation	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

ELECTRICAL TESTS

Insulation Resistance

Resistance in meg-ohms after 1 minute

Test Voltage ☐ 500V ☐ 1kV ☐ 5kV ☐ 10kV

	Phase A (A to B)	Phase B (B to C)	Phase C (C to A)
Phase To Phase	MΩ	MΩ	MΩ
Phase To GND	MΩ	MΩ	MΩ
Line to Load	MΩ	MΩ	MΩ

Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current 10 A

	Phase A	Phase B	Phase C
Switch	μΩ	μΩ	μΩ
Fuse	μΩ	μΩ	μΩ
Overall	131 μΩ	133 μΩ	138 μΩ

PRIMARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Injected Current	Phase A Time	Phase B Time	Phase C Time
150% of Rated Current	A	sec	sec	sec
300% of Rated Current	A	sec	sec	sec
____ of Rated Current	A	sec	sec	sec

SECONDARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Settings as Found	Test Settings	PU	Phase A Time	Phase B Time	Phase C Time
Long Time Pickup						
Long Time Delay						
Short Time Pickup						
Short Time Delay						
Instantaneous Pickup						
Ground Fault Pickup						
Ground Fault Delay						

Breaker Tripped Via Secondary	☐ Yes	☑ No	☐ Non-Functioning	Comments:
Settings Restored to As Found	☐ Yes	☐ No		

Comments:

Tested By: D. CHARRON

Test Instrument(s)	Manufacturer / Model	Megger	DRLO	Relay
	Serial #	N/A	1848	N/A

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

RECLOSER

SYSTEM ID: YORK
DEVICE ID: 2514M4-LLC
ASSET ID:

Custo Niagara On -The-Lake Hydro
8 Henegan Rd

Site: York TS
York Rd

Date: July 7, 2022
Job # 22-2121

NAMEPLATE DATA

Manufacturer	VIPER
Date of Manufacture	JAN-2019
Serial #	E6004
Catalogue #	VIP398ER-12-1-ST-6VS-P1
Max Voltage Rating	38KV
Interupting rating	12,500

ID	2514M4-LLC
Continious Ampacity	800A
Frame Size	800
Fed From	B1 BUS
Feeds To	2514 M4

Mounting Type Rack Out ☐ Fixed ☑

Comments: 2514M4 FEEDER NOT INSTALLED

INTERLOCK

Key Interlock Yes ☐ No ☑ Manufacturer _____
Interlock Type Electrical ☐ Mechanical ☐ Utility Lock ☐ Key Interlock # _____
Devices Interlocked H.V Switch ☐ Breaker ☐ Trans. Encl ☐ Other ☐

PROTECTIVE DEVICE DATA

Protective Device Data Thermal ☐ Magnetic ☐ Electronic ☐ Fuse ☐ Other: SEL RELAY

Manufacturer	SEL
TYPE	651R
P/N	0651R21CXBA8AD1112DEX
S/N	5203440004
Control Voltage	120

CT RATIO CORRECTION FACTORS		
PHASE	Y-SIDE	Z-SIDE
1	0.962	1.025
2	0.983	1.184
3	0.981	1.023
PTR	266.67	266.67

Comments:

PROTECTIVE DEVICE DATA

Pick Up Settings	Dial Setting		Relay Pickup	
Long Time Pickup		=		X
Short Time Pickup		=		X
Instantaneous Pickup		=		X
Ground Fault Pickup		=		X

Delay Settings	Dial Setting		Relay Pickup		ON/OFF
Long Time Delay		=		S	
Short Time Delay		=		S	
Ground Fault Delay		=		S	

Magnetic Trip Setting Low ☐ Med ☐ High ☐ N/A ☑

Comments:
Tested By: D. CHARRON

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☑	Bus Bar ☐	Conductor Size/Dim	
Conductor Material	Aluminum ☐	Copper ☑	Conductors per Phase	/Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	2/0
Concentric Nuetral	Aluminum ☐	Copper ☐	# of Bond Conductors	1
Insulation Voltage			# of Nuetral Conductors	0
Insulation Type			Nuetral Size/Dim	N/A

Comments: NO FEEDER CABLES

VISUAL INSPECTION / MECHANICAL TESTS

Key Interlock Operation	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Chutes	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Name Plate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Operation	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

ELECTRICAL TESTS

Insulation Resistance

Resistance in meg-ohms after 1 minute

Test Voltage ☐ 500V ☐ 1kV ☐ 5kV ☐ 10kV

	Phase A (A to B)	Phase B (B to C)	Phase C (C to A)
Phase To Phase	MΩ	MΩ	MΩ
Phase To GND	MΩ	MΩ	MΩ
Line to Load	MΩ	MΩ	MΩ

Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current N/A A

	Phase A	Phase B	Phase C
Switch	μΩ	μΩ	μΩ
Fuse	μΩ	μΩ	μΩ
Overall	μΩ	μΩ	μΩ

PRIMARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Injected Current	Phase A Time	Phase B Time	Phase C Time
150% of Rated Current	A	sec	sec	sec
300% of Rated Current	A	sec	sec	sec
____ of Rated Current	A	sec	sec	sec

SECONDARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Settings as Found	Test Settings	PU	Phase A Time	Phase B Time	Phase C Time
Long Time Pickup						
Long Time Delay						
Short Time Pickup						
Short Time Delay						
Instantaneous Pickup						
Ground Fault Pickup						
Ground Fault Delay						

Breaker Tripped Via Secondary	☐ Yes	☑ No	☐ Non-Functioning	Comments:
Settings Restored to As Found	☐ Yes	☐ No		

Comments:

Tested By: D. CHARRON

Test Instrument(s)	Manufacturer / Model	Megger	DRLO	Relay
	Serial #	N/A	1848	N/A

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

RECLOSER | **SYSTEM ID** YORK | **DEVICE ID** 2514M5-LLC | **ASSET ID**

Custo Niagara On -The-Lake Hydro
8 Henegan Rd

Site: York TS
York Rd

Date: July 7, 2022
Job # 22-2121

NAMEPLATE DATA

Manufacturer	VIPER
Date of Manufacture	07/2020
Serial #	202004070007
Catalogue #	VIP398ER-12-1-ST-6VS
Max Voltage Rating	38KV
Interupting rating	12,500

ID	2514M5-LLC
Continious Ampacity	800A
Frame Size	800
Fed From	B1 BUS
Feeds To	2514 M5

Mounting Type Rack Out ☐ Fixed ☑

Comments: 2514M5 FEEDER NOT INSTALLED

INTERLOCK

Key Interlock Yes ☑ No ☐ Manufacturer _____

Interlock Type Electrical ☐ Mechanical ☐ Utility Lock ☑ Key Interlock # _____

Devices Interlocked H.V Switch ☐ Breaker ☐ Trans. Encl ☐ Other ☐

PROTECTIVE DEVICE DATA

Protective Device Data Thermal ☐ Magnetic ☐ Electronic ☐ Fuse ☐ Other: SEL RELAY

Manufacturer	SEL
TYPE	651R
P/N	0651R21CXBA8AD1112DEX
S/N	5201121012
Control Voltage	120

CT RATIO CORRECTION FACTORS		
PHASE	Y-SIDE	Z-SIDE
1	0.996	1.043
2	0.988	1.012
3	0.964	1.031
PTR	266.67	266.67

Comments:

PROTECTIVE DEVICE DATA

Pick Up Settings	Dial Setting		Relay Pickup	
Long Time Pickup		=		X
Short Time Pickup		=		X
Instantaneous Pickup		=		X
Ground Fault Pickup		=		X

Delay Settings	Dial Setting		Relay Pickup		ON/OFF
Long Time Delay		=		S	
Short Time Delay		=		S	
Ground Fault Delay		=		S	

Magnetic Trip Setting Low ☐ Med ☐ High ☐ N/A ☑

Comments:

Tested By: D. CHARRON

LOAD SIDE CONDUCTOR DATA

Conductor Type	Cable ☑	Bus Bar ☐	Conductor Size/Dim	
Conductor Material	Aluminum ☐	Copper ☑	Conductors per Phase	/Phase
Tape Shield	Aluminum ☐	Copper ☐	Bond Size/Dim	2/0
Concentric Nuetral	Aluminum ☐	Copper ☐	# of Bond Conductors	1
Insulation Voltage			# of Nuetral Conductors	0
Insulation Type			Nuetral Size/Dim	N/A

Comments: NO FEEDER CABLES

VISUAL INSPECTION / MECHANICAL TESTS

Key Interlock Operation	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Arc Chutes	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Insulator Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Name Plate Condition	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:
Operation	☐ Satisfactory	☐ Not Satisfactory	☑ N/A	Comments:
Ground Straps & Materials	☑ Satisfactory	☐ Not Satisfactory	☐ N/A	Comments:

ELECTRICAL TESTS

Insulation Resistance

Resistance in meg-ohms after 1 minute

Test Voltage ☐ 500V ☐ 1kV ☑ 5kV ☐ 10kV

	Phase A (A to B)	Phase B (B to C)	Phase C (C to A)
Phase To Phase	MΩ	MΩ	MΩ
Phase To GND	MΩ	MΩ	MΩ
Line to Load	MΩ	MΩ	MΩ

Contact Resistance

Resistance in Miro-OHMS after 1 Minute.

Test Current N/A A

	Phase A	Phase B	Phase C
Switch	μΩ	μΩ	μΩ
Fuse	μΩ	μΩ	μΩ
Overall	μΩ	μΩ	μΩ

PRIMARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Injected Current	Phase A Time	Phase B Time	Phase C Time
150% of Rated Current	A	sec	sec	sec
300% of Rated Current	A	sec	sec	sec
____ of Rated Current	A	sec	sec	sec

SECONDARY CURRENT INJECTION TRIP UNIT / RELAY TEST

	Settings as Found	Test Settings	PU	Phase A Time	Phase B Time	Phase C Time
Long Time Pickup						
Long Time Delay						
Short Time Pickup						
Short Time Delay						
Instantaneous Pickup						
Ground Fault Pickup						
Ground Fault Delay						

Breaker Tripped Via Secondary ☐ Yes ☑ No ☐ Non-Functioning Comments:

Settings Restored to As Found ☐ Yes ☐ No

Comments:

Tested By: D. CHARRON

Test Instrument(s)	Manufacturer / Model	Megger	DRLO	Relay
	Serial #	N/A	1848	N/A

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

INSULATION RESISTANCE

SYSTEM ID YORK **DEVICE ID** VARIOUS

Customer: Niagara On -The-Lake Hydro
8 Henegan Rd

Site: York TS
York Rd

Date: July 7, 2022
Job # 22-2121

INSULATION RESISTANCE TEST

ALL TESTS 1 MINUTE @10KV

Description: 2514T1SA1

Phase A to GND	>500000 MΩ	Phase A to Phase B	MΩ
Phase B to GND	>500000 MΩ	Phase B to Phase C	MΩ
Phase C to GND	>500000 MΩ	Phase C to Phase A	MΩ

Comments: ABB 108KV MAX / 84 MCOV Q108SA084BOH

Description:

Phase A to GND	MΩ	Phase A to Phase B	MΩ
Phase B to GND	MΩ	Phase B to Phase C	MΩ
Phase C to GND	MΩ	Phase C to Phase A	MΩ

Comments:

Description:

Phase A to GND	MΩ	Phase A to Phase B	MΩ
Phase B to GND	MΩ	Phase B to Phase C	MΩ
Phase C to GND	MΩ	Phase C to Phase A	MΩ

Comments:

Description:

Phase A to GND	MΩ	Phase A to Phase B	MΩ
Phase B to GND	MΩ	Phase B to Phase C	MΩ
Phase C to GND	MΩ	Phase C to Phase A	MΩ

Comments:

Description:

Phase A to GND	MΩ	Phase A to Phase B	MΩ
Phase B to GND	MΩ	Phase B to Phase C	MΩ
Phase C to GND	MΩ	Phase C to Phase A	MΩ

Comments:

Tested By: D. CHARRON

Test Instrument(s)					
Manufacturer / Model	MEGGER				
Serial #	0516				

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

Polarization Index SYSTEM ID YORK DEVICE ID 2514M1 ASSET ID

Customer: NOTL
8 Henegan

Site: York TS
York Rd

Date June 7, 2018
Job 22-2121

CONDUCTOR DATA

Manufacturer	NEXANS
Voltage Class	28kV
Insulation Type	100% TR-XLPE
Conductor Size	1000 kcmil
Conductor Type	AL

INSULATION OVERVIEW

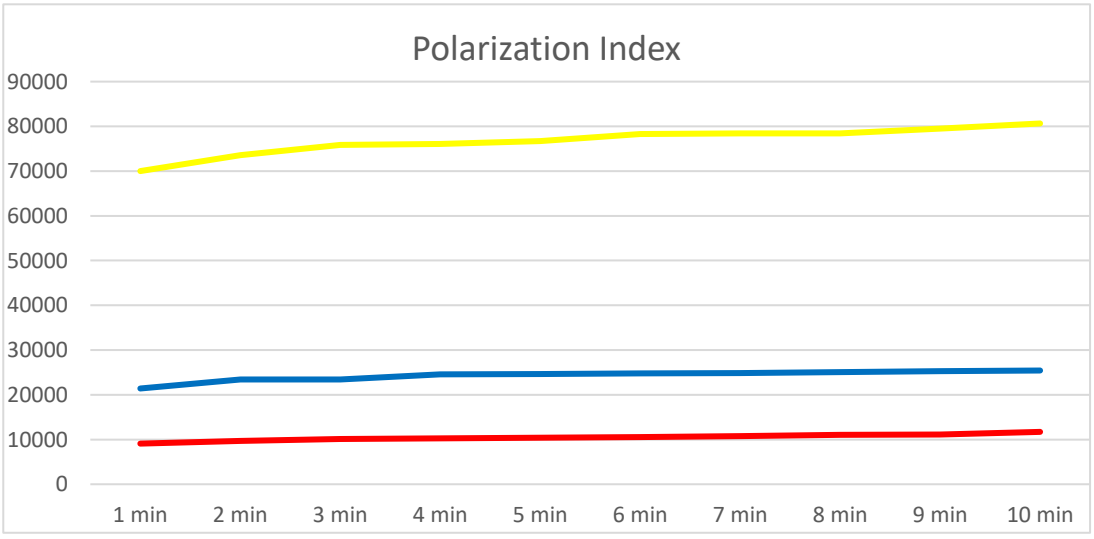
Insulation Resistance after 10 Mins @
5000 V

Phase A	11704	MΩ
Phase B	80640	MΩ
Phase C	25424	MΩ

CONDITIONS

Temperature	22	°C
Humidity	60	%

TIME	A (RED)		B (YELLOW)		C (BLUE)	
1 min	8110 MΩ	9083 MΩ	62500 MΩ	70000 MΩ	19110 MΩ	21403 MΩ
2 min	8670 MΩ	9710 MΩ	65700 MΩ	73584 MΩ	20900 MΩ	23408 MΩ
3 min	9020 MΩ	10102 MΩ	67700 MΩ	75824 MΩ	20900 MΩ	23408 MΩ
4 min	9170 MΩ	10270 MΩ	67900 MΩ	76048 MΩ	21900 MΩ	24528 MΩ
5 min	9290 MΩ	10405 MΩ	68500 MΩ	76720 MΩ	22000 MΩ	24640 MΩ
6 min	9440 MΩ	10573 MΩ	69900 MΩ	78288 MΩ	22100 MΩ	24752 MΩ
7 min	9620 MΩ	10774 MΩ	70000 MΩ	78400 MΩ	22200 MΩ	24864 MΩ
8 min	9870 MΩ	11054 MΩ	70000 MΩ	78400 MΩ	22400 MΩ	25088 MΩ
9 min	9930 MΩ	11122 MΩ	71000 MΩ	79520 MΩ	22600 MΩ	25312 MΩ
10 min	10450 MΩ	11704 MΩ	72000 MΩ	80640 MΩ	22700 MΩ	25424 MΩ
Voltage	5000 V		5000 V		5000 V	
Polarization Index PI	1.288532676		1.152		1.187859759	
TCC	Insulation Resistance Readings Corrected to 22 °C					



Test Instrument(s) Manufacturer / Model Megger
Serial # 0516

Comments:	WARM, DAMP, HUMID
Tested By:	A. BURK

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

Polarization Index

SYSTEM ID: YORK
DEVICE ID: 2514M2
ASSET ID:

Customer: NOTL
8 Henegan

Site: York TS
York Rd

Date June 7, 2018
Job 22-2121

CONDUCTOR DATA

Manufacturer	GENERAL CABLE
Voltage Class	28kV
Insulation Type	100% TR-XLPE
Conductor Size	1000 kcmil
Conductor Type	AL

INSULATION OVERVIEW

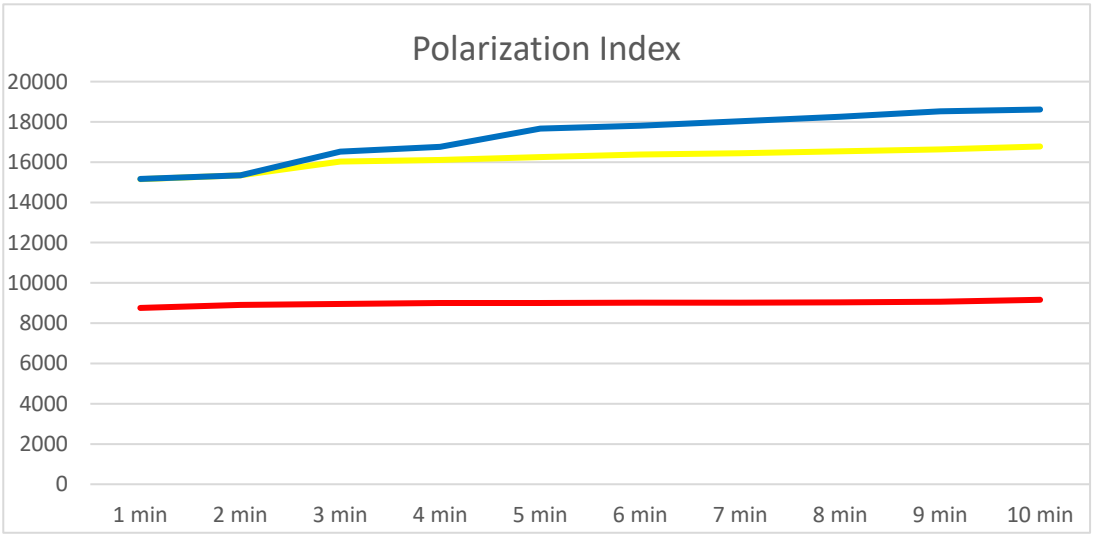
Insulation Resistance after 10 Mins @
5000 V

Phase A	9162	MΩ
Phase B	16778	MΩ
Phase C	18614	MΩ

CONDITIONS

Temperature	22	°C
Humidity	60	%

TIME	A (RED)		B (YELLOW)		C (BLUE)	
1 min	7820 MΩ	8758 MΩ	13530 MΩ	15154 MΩ	13540 MΩ	15165 MΩ
2 min	7960 MΩ	8915 MΩ	13700 MΩ	15344 MΩ	13700 MΩ	15344 MΩ
3 min	7990 MΩ	8949 MΩ	14310 MΩ	16027 MΩ	14750 MΩ	16520 MΩ
4 min	8040 MΩ	9005 MΩ	14380 MΩ	16106 MΩ	14970 MΩ	16766 MΩ
5 min	8040 MΩ	9005 MΩ	14510 MΩ	16251 MΩ	15780 MΩ	17674 MΩ
6 min	8050 MΩ	9016 MΩ	14620 MΩ	16374 MΩ	15900 MΩ	17808 MΩ
7 min	8050 MΩ	9016 MΩ	14680 MΩ	16442 MΩ	16100 MΩ	18032 MΩ
8 min	8070 MΩ	9038 MΩ	14760 MΩ	16531 MΩ	16300 MΩ	18256 MΩ
9 min	8100 MΩ	9072 MΩ	14850 MΩ	16632 MΩ	16540 MΩ	18525 MΩ
10 min	8180 MΩ	9162 MΩ	14980 MΩ	16778 MΩ	16620 MΩ	18614 MΩ
Voltage	5000	V	5000	V	5000	V
Polarization Index PI	1.046035806		1.107169254		1.227474151	
TCC	Insulation Resistance Readings Corrected to 22 °C					



Test Instrument(s)
Manufacturer / Model: Megger
Serial #: 0535

Comments:	WARM, DAMP, HUMID
Tested By:	A. BURK

SYNERGY POWER
51 Second Street, Unit A Strathroy, ON N7G 3H8 519-476-4900 www.synergypower.tech

Polarization Index SYSTEM ID YORK DEVICE ID 2514M3 ASSET ID

Customer: NOTL
8 Henegan

Site: York TS
York Rd

Date June 7, 2018
Job 22-2121

CONDUCTOR DATA

Manufacturer	NEXANS
Voltage Class	28kV
Insulation Type	100%
Conductor Size	1000 kcmil
Conductor Type	AL

INSULATION OVERVIEW

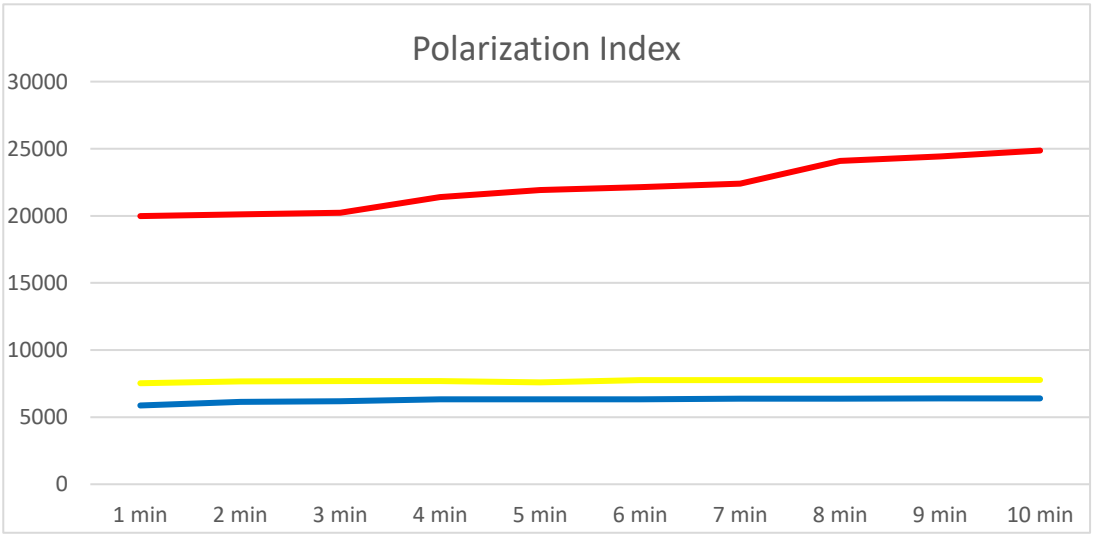
Insulation Resistance after 10 Mins @
5000 V

Phase A	24864	MΩ
Phase B	7773	MΩ
Phase C	6395	MΩ

CONDITIONS

Temperature	22	°C
Humidity	60	%

TIME	A (RED)		B (YELLOW)		C (BLUE)	
1 min	17840 MΩ	19981 MΩ	6720 MΩ	7526 MΩ	5240 MΩ	5869 MΩ
2 min	17960 MΩ	20115 MΩ	6850 MΩ	7672 MΩ	5480 MΩ	6138 MΩ
3 min	18070 MΩ	20238 MΩ	6860 MΩ	7683 MΩ	5520 MΩ	6182 MΩ
4 min	19100 MΩ	21392 MΩ	6860 MΩ	7683 MΩ	5640 MΩ	6317 MΩ
5 min	19580 MΩ	21930 MΩ	6770 MΩ	7582 MΩ	5640 MΩ	6317 MΩ
6 min	19760 MΩ	22131 MΩ	6920 MΩ	7750 MΩ	5650 MΩ	6328 MΩ
7 min	20000 MΩ	22400 MΩ	6930 MΩ	7762 MΩ	5690 MΩ	6373 MΩ
8 min	21500 MΩ	24080 MΩ	6930 MΩ	7762 MΩ	5700 MΩ	6384 MΩ
9 min	21800 MΩ	24416 MΩ	6940 MΩ	7773 MΩ	5710 MΩ	6395 MΩ
10 min	22200 MΩ	24864 MΩ	6940 MΩ	7773 MΩ	5710 MΩ	6395 MΩ
Voltage	5000 V		5000 V		5000 V	
Polarization Index PI	1.244394619		1.032738095		1.089694656	
TCC	Insulation Resistance Readings Corrected to 22 °C					



Test Instrument(s) Manufacturer / Model Megger
Serial # 0535

Comments:	WARM, DAMP, HUMID
Tested By:	A. BURK

Niagara on-the-Lake HYDRO

APPENDIX 2-STAFF-29D

INTERROGATORY REPONSES

EB-2023-0041

SYNERGY POWER

TO:
Niagara-On-The-Lake Hydro
8 Henegan Rd
Virgil, ON
L0S 1T0

SITE:
Niagara-On-The-Lake Hydro
NOTL TS – 801 Concession Rd 5
Niagara-on-the-Lake, ON
L0S 1J0

June 12, 2023

Dear Jason,

Please find attached the oil analysis results for York TS T1 and the respective LTC.

- **Transformer T1 – Northern Transformer, Serial no. 293318001**

  - ***Dissolved Gas Analysis (DGA)***
    The gas in oil analysis indicated that the oil appears to be in satisfactory condition. All gases remained within the IEEE acceptable limits. We recommend resampling at the 1-year anniversary to continue monitoring gas generation rates as part of your preventative maintenance program.

  - ***Chemical Analysis (ASTM / WATER)***
    The chemistry (ASTM) tests show the oil to be in satisfactory condition. The oil sample indicates clear and bright with no trace of sediment. The moisture amount of water content is **3 mg/kg**, well within the acceptable standards for in-service oil (25 mg/kg max). Additionally, Interfacial Tension is **47.85 mN/m** (acceptable for in service oil is 30 mN/m minimum). Dielectric Breakdown at both 1mm and 2mm are within acceptable limits for in service oil. All other measured parameters are within the recommended limits for in-service operations. We recommend resampling at the 1-year anniversary to continue monitoring the oil condition through trending.

  - ***Furanic Analysis***
    Furanic results indicate the transformer as having little 'wear' on its winding insulation, detecting <10 ppb Furanic compounds overall, indicating minimal paper degradation. The estimated *Degree of Polymerization* was evaluated at 1003, placing this transformers' *estimated* operating age at <1 year.

- **LTC –Reinhausen, Serial no. 2079788**

  - ***Dissolved Gas Analysis (DGA)***
    The gas in oil analysis indicated that the oil appears to be in satisfactory condition. All gases remained within the acceptable limits. We recommend resampling at the 6-month anniversary to continue monitoring gas generation rates as part of your preventative maintenance program.

  - ***Chemical Analysis (ASTM / WATER)***
    The chemistry (ASTM) tests show the oil to be in satisfactory condition. The oil sample indicates clear and bright with no trace of sediment. The moisture amount of water content is **9 mg/kg**, well within the acceptable standards for in-service oil (25 mg/kg max). Additionally, Interfacial Tension is **49.41 mN/m** (acceptable for in service oil is 30 mN/m minimum). All other evaluations are within acceptable limits. We recommend resampling at the 6-month anniversary to continue monitoring the oil condition through trending.

  - ***Metals Content Evaluation***
    No metals were found in significant quantities of note.

Please call us if you have any questions regarding this analysis.
Regards,

Douglas Charron
Operation Manager, Service & Maintenance
Tel: (519) 245-4900
Cell: (519) 476-3448
dcharron@synergypower.tech

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919 FRASER DR. UNIT 13 + BURLINGTON, ON + L7L 4X8
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TEST REPORT
01-7639833-699171-00

Synergy Power

STRATHROY, ON N7G 3H8 CA
ATTN: DOUG CHARRON
PO#: 23-2068
Project ID:
Customer ID: T1

Serial#: 293318001 **Location:** YORK TS **Equipment:** TRANSFORMER **Compartment:** MAIN(BOTTOM) **Breathing:** CONS **Bank:** **Phase:** 3 **Fluid:** MIN **Liters:** 28239

Mfr: NORTHERN **kV:** 115.5 **kVA:** 83000 **Year Mf'd:** 2019 **Syringe ID:** 8001268 **Bottle ID:** **Sampled By:** DB

Control#: 7639833 **Order#:** 699171 **Account:** 110286 **Received:** 05/09/2023 **Reported:** 05/29/2023

	Lab Control Number:	7639833	7523514	7361178	7352954	7320730
	Date Sampled:	05/03/2023	02/16/2022	06/24/2020	06/01/2020	03/01/2020
	Order Number:	699171	671195	631126	629239	614267
	Oil Temp:	5	19	40	35	
Dissolved Gas Analysis (DGA)	**O2/N2 Ratio:**	0.34	0.36	0.41	0.39	0.36
ASTM	**Transformer Age (yrs):**	4	3	1	1	1
D-3612[1]	**Hydrogen (H2) (µL/L):**	2	3	2	<2	4
	Methane (CH4) (µL/L):	2	2	<1	<1	1
	Ethane (C2H6) (µL/L):	<1	<1	<1	<1	<1
	Ethylene (C2H4) (µL/L):	<1	<1	<1	<1	<1
	Acetylene (C2H2) (µL/L):	<1	<1	<1	<1	<1
	Carbon Monoxide (CO) (µL/L):	215	115	35	27	44
	Carbon Dioxide (CO2) (µL/L):	657	538	291	225	362
	Nitrogen (N2) (µL/L):	32512	27792	31881	23099	41273
	Oxygen (O2) (µL/L):	11041	9879	13132	9117	14952

Dissolved Gas Analysis Diagnostics – IEEE Std C57.104-2019

	Absolute Gas Levels (µL/L)		**Gas Level Deltas(µL/L) (2 most recent samples)**		**Gas Generation Rates (µL/L per yr) (3-6 most recent samples within 4-24 mos.)**	
Gas	**Level**	**Diagnostic**	**Delta**	**Diagnostic**	**Rate**	**Diagnostic**
Hydrogen (H2)	2	Normal (<= 40)	-1			
Methane (CH4)	2	Normal (<= 20)	0	Normal Variation (<= 10)		
Ethane (C2H6)	0	Normal (<= 15)	0	Normal Variation (<= 7)		
Ethylene (C2H4)	0	Normal (<= 25)	0	Normal Variation (<= 20)		
Acetylene (C2H2)	<1	Normal (<= 2)	0	Normal Variation (<= 0)		
Carbon Monoxide (CO)	215	Normal (<= 500)	100	Normal Variation (<= 175)		
Carbon Dioxide (CO2)	657	Normal (<= 3500)	119	Normal Variation (<= 1750)		

DGA Diagnostics **Roger's Ratio**	Diagnostic not applicable - Gas levels normal.
Duval Triangles	Diagnostic not applicable – Triangle 1 gas levels normal. Diagnostic not applicable – Triangle 4 gas levels normal. Diagnostic not applicable – Triangle 5 gas levels normal.
Duval Pentagons	Diagnostic not applicable - Gas levels normal.
Cellulose insulation	CO and CO2 levels are normal. No indication of a fault involving paper.
DGA Status	Status 1 - Normal gas levels and no Indication of gassing. Continue routine DGA and normal transformer operation.
Resampling Protocol	Routine Screening
AVO Resampling Recommendation	Resample within 1 year.
Comment:	
General Oil Quality (GOQ)	

Notations: 1. Analysis is ISO/IEC 17025:2017 accredited, ANAB Accredited Certificate Number L2303 2. This test is conducted by a subcontracted laboratory. 3. Subcontracted laboratory has received ISO Standard 17025 accreditation for this test. 5. This test is conducted by AVO Diagnostic Services Laboratory other than Primary Lab. 6. AVO Diagnostic Services Laboratory has received ISO Standard 17025 accreditation for this test. 7. Imported Sample: AVO Diagnostic Services accepts no responsibility for these results; accreditation status does not apply to these results. 8. Imported Equipment 10. mg/kg , µg/g, µg/mL, µL/L = ppm, µg/L = ppb, mN/m = dynes/cm, mm²/s = cSt

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905-632-8697 + 905-632-8698
WWW.AVODIAGNOSTICS.COM

TEST REPORT
01-7639833-699171-00

Synergy Power
STRATHROY, ON N7G 3H8 CA
ATTN: DOUG CHARRON
PO#: 23-2068
Project ID:
Customer ID: T1

Serial#: 293318001 **Location:** YORK TS **Equipment:** TRANSFORMER **Compartment:** MAIN(BOTTOM) **Breathing:** CONS **Bank:** **Phase:** 3 **Fluid:** MIN **Liters:** 28239

Mfr: NORTHERN **kV:** 115.5 **kVA:** 83000 **Year Mf'd:** 2019 **Syringe ID:** 8001268 **Bottle ID:** **Sampled By:** DB

Control#: 7639833 **Order#:** 699171 **Account:** 110286 **Received:** 05/09/2023 **Reported:** 05/29/2023

		Lab Control Number:	7639833	7523514	7361178	7352954	7320730
		Date Sampled:	05/03/2023	02/16/2022	06/24/2020	06/01/2020	03/01/2020
		Order Number:	699171	671195	631126	629239	614267
		Oil Temp:	5	19	40	35	
ASTM D-1533[1]	**Moisture in Oil**	**(mg/kg):**	3	2	9	3	6
ASTM D-971[1]	**Interfacial Tension**	**(mN/m):**	47.85	47.4	46.85	48.05	50.17
ASTM D-974[1]	**Acid Number**	**(mg KOH/g):**	0.003	0.008	0.006	< 0.001	0.009
ASTM D-1500[1]	**Color Number**	**(ASTM):**	L0.5	L0.5	L0.5	L0.5	L0.5
ASTM D-1524[1]	**Visual Exam.**	**(Relative):**	PASS	PASS	PASS	PASS	PASS
			CLR&BRIGHT	CLR&BRIGHT	CLR&BRIGHT	CLR&BRIGHT	CLR&BRIGHT
ASTM D-1524[1]	**Sediment Exam.**	**(Relative):**	ND	ND	ND	ND	ND
ASTM D-1816[1]	**Dielectric Breakdown 1 mm**	**(kV °C):**	41 (22 C)	32 (23°C)			38 (23°C)
ASTM D-1816[1]	**Dielectric Breakdown 2 mm**	**(kV °C):**	73 (22 C)	68 (23°C)	48 (24°C)	44 (22°C)	
ASTM D-924	**Power Factor @ 25°C (Routine)**	**(%):**			0.002	0.001	0.001
ASTM D-4052[1]	**Density @15°C**	**(g/mL):**	0.83	0.8294	0.83	0.8324	
ASTM D-2668	**Oxidation Inhibitor**	**(wt. %)**			0.142	0.148	0.148

GOQ Diagnostics
PER IEEE C57.106-2015
(most recent sample)

Moisture in Oil:	Acceptable for in-service oil (25 mg/kg max).
Interfacial Tension:	Acceptable for in-service oil (30 mN/m min).
Acid Number:	Acceptable for in-service oil (0.15 mg KOH/g max).
Color Number and Visual:	Diagnostic not applicable. Diagnostic not applicable.
Dielectric Breakdown ASTM D-1816:	Acceptable for in-service oil (28 kV min @ 1mm). Acceptable for in-service oil (47 kV min @ 2mm).

Comment:

Furanic Compound		**2-Furaldehyde (µg/L):**	< 10	< 10	< 10	< 10	< 10
ASTM D-5837[5]		**5-Hydroxy-methyl-furaldehyde (µg/L):**	< 10	< 10	< 10	< 10	< 10
		2-Acetylfuran (µg/L):	< 10	< 10	< 10	< 10	< 10
		5-Methyl-2-furaldehyde (µg/L):	< 10	< 10	< 10	< 10	< 10
		2-Furyl alcohol (µg/L):	< 10	18	14	15	< 10

Furanic Compound Diagnostics (most recent sample):

New insulation with a high degree of mechanical strength will typically have a Degree of Polymerization (DP) of 1000-1300. "Middle Aged" paper is approximately 500 and paper with less than 250 is in its "Old Age." Severely degraded insulation with a DP of 150 or less will have very little mechanical strength and may result in a transformer failure. The above estimations are based on a study by Chendong of GSU transformers filled with mineral oil.

Estimated Average Degree of Polymerization (DP): >1003

Estimated Operating Age of the Equipment: <1.0

Notations:

Comment:

Particle Count		**>= 4 µm(c)/mL:**				767	87
ASTM D-6786		**>= 6 µm(c)/mL:**				326	5
		>= 10 µm(c)/mL:				87	1
		>= 14 µm(c)/mL:				30	0
		>= 21 µm(c)/mL:				7	0
		>= 38 µm(c)/mL:				0	0
		>= 70 µm(c)/mL:				0	0
		ISO CODE:				17/16/12	14/>=9/>=0
		Diagnostics:					

Comment:

Notations: 1. Analysis is ISO/IEC 17025:2017 accredited, ANAB Accredited Certificate Number L2303 2. This test is conducted by a subcontracted laboratory. 3. Subcontracted laboratory has received ISO Standard 17025 accreditation for this test. 5. This test is conducted by AVO Diagnostic Services Laboratory other than Primary Lab. 6. AVO Diagnostic Services Laboratory has received ISO Standard 17025 accreditation for this test. 7. Imported Sample: AVO Diagnostic Services accepts no responsibility for these results; accreditation status does not apply to these results. 8. Imported Equipment 10. mg/kg , µg/g, µg/mL, µL/L = ppm, µg/L = ppb, mN/m = dynes/cm, mm^2/s = cSt

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Synergy Power

STRATHROY, ON N7G 3H8 CA
ATTN: DOUG CHARRON
PO#: 23-2068
Project ID:
Customer ID: T1

Serial#: 293318001
Location: YORK TS
Equipment: TRANSFORMER
Compartment: MAIN(BOTTOM)
Breathing: CONS
Bank: **Phase:** 3
Fluid: MIN **Liters:** 28239

Mfr: NORTHERN
kV: 115.5
kVA: 83000
Year Mf'd: 2019
Syringe ID: 8001268
Bottle ID:
Sampled By: DB

Control#: 7639833
Order#: 699171
Account: 110286
Received: 05/09/2023
Reported: 05/29/2023

Lab Control Number:	7639833	7523514	7361178	7352954	7320730
Date Sampled:	05/03/2023	02/16/2022	06/24/2020	06/01/2020	03/01/2020
Order Number:	699171	671195	631126	629239	614267
Oil Temp:	5	19	40	35	

End of Test Report

Authorized By: _____

JANET KAROLAT
SUPV CHEMIST

Notations: 1. Analysis is ISO/IEC 17025:2017 accredited, ANAB Accredited Certificate Number L2303 2. This test is conducted by a subcontracted laboratory. 3. Subcontracted laboratory has received ISO Standard 17025 accreditation for this test. 5. This test is conducted by AVO Diagnostic Services Laboratory other than Primary Lab. 6. AVO Diagnostic Services Laboratory has received ISO Standard 17025 accreditation for this test. 7. Imported Sample: AVO Diagnostic Services accepts no responsibility for these results; accreditation status does not apply to these results. 8. Imported Equipment 10. mg/kg , µg/g, µg/mL, µL/L = ppm, µg/L = ppb, mN/m = dynes/cm, mm^2/s = cSt

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On-Load Tap Changer (LTC) Oil Analysis & Diagnostic Evaluation

Synergy Power
STRATHROY, ON N7G 3H8 CA
ATTN:DOUG CHARRON
PO#:23-2068
Project ID:
Customer ID: T1

Serial#: 2079788
Location: YORK TS
Equipment Type: LTC
LTC Compartment: SELECTOR
Breathing Type: SEALED
Bank: **Phase:**
Fluid: MIN **USGal:** 345

LTC Mfr: REINHAUSEN
Model: RMV-II
Year Mf'd: 2019
Syringe ID: 8004299
Bottle ID:
Sampled By: DB

Control#: 7639836
Order#: 699172
Account: 110286
Received: 05/09/2023
Reported: 05/23/2023

		Lab Control Number:	7639836	7523521	7361064	7352955	7320731
		Date Sampled:	05/03/2023	02/16/2022	06/24/2020	06/01/2020	03/01/2020
		Order Number:	699172	671197	631105	629239	614267
		Oil Temp:	5	24	40	19	
		Operations Counter:					
Dissolved Gas Analysis (DGA)		**Hydrogen (H2) (µL/L):**	<2	<2	<2	<2	<2
ASTM		**Methane (CH4) (µL/L):**	1	2	2	1	1
D-3612[1]		**Ethane (C2H6) (µL/L):**	<1	<1	<1	<1	<1
		Ethylene(C2H4) (µL/L):	1	2	<1	<1	<1
		Acetylene (C2H2) (µL/L):	<1	<1	<1	<1	<1
		Carbon Monoxide (CO) (µL/L):	5	9	7	2	4
		Carbon Dioxide(CO2) (µL/L):	472	500	409	374	178
		Nitrogen (N2) (µL/L):	64999	60046	70116	70542	70994
		Oxygen (O2) (µL/L):	33610	32197	34871	34960	21268
		Total Dissolved Gas (TDG) (µL/L):	99088	92756	105406	105879	92446
		Total Dissolved Combustible Gas (TDCG) (µL/L):	7	13	10	3	6
		Equivalent TCG Percent:	0.0047	0.0092	0.0082	0.0019	0.0059
Physical Evaluation							
ASTM D-1533[1]	**Moisture in Oil**	**(mg/kg):**	9	5	12		6
ASTM D-971[1]	**Interfacial Tension**	**(mN/m):**	49.41	50.49	49.82		50.65
ASTM D-1500[1]	**Color Number**	**(ASTM):**	L0.5	L0.5	L0.5		L0.5
ASTM D-1524[1]	**Visual Exam.**	**(Relative):**	PASS	PASS	PASS		PASS
			CLR&BRIGHT	CLR&BRIGHT	CLR&BRIGHT		CLR&BRIGHT
ASTM D-1524[1]	**Sediment Exam.**	**(Relative):**	ND	ND	ND		ND
ASTM D-1816[1]	**Dielectric Breakdown 1 mm**	**(kV °C):**	24 (22 C)	37 (23°C)	20 (22°C)		30 (23°C)
ASTM D-7151[5]		**Silver (Ag) (µg/g):**	< 0.5	< 0.5	< 0.5		< 0.5
		Chronium (Cr) (µg/g):	< 0.5	< 0.5	< 0.5		< 0.5
		Copper (Cu) (µg/g):	< 0.5	< 0.5	< 0.5		< 0.5
		Molybdenum (Mo) (µg/g):	< 0.5	< 0.5	< 0.5		< 0.5
		Nickel (Ni) (µg/g):	< 0.5	< 0.5	< 0.5		< 0.5
		Phosphorus (P) (µg/g):	< 0.5	< 0.5	< 0.5		6.1
		Lead (Pb) (µg/g):	< 0.5	< 0.5	< 0.5		< 0.5
		Tin (Sn) (µg/g):	< 0.5	< 0.5	< 0.5		< 0.5
		Tungsten (W) (µg/g):	< 0.5	< 0.5	< 0.5		< 0.5
		Zinc (Zn) (µg/g):	< 0.5	< 0.5	< 0.5		< 0.5

Diagnostics	**Condition Code:**	**Normal.**
	Recommended Action:	Resample oil for testing within 6 months.
	AVO Watch Level Diagnosis:	Not used. See LTC Model-specific diagnostic statement.
	AVO LTC Model-specific Diagnosis:	Acetylene within normal limit.
	Gas Ratios:	Ratio calculations not applicable.
	Metals Content Evaluation:	No metals found in significant quantities.

Notations: 1. Analysis is ISO/IEC 17025:2017 accredited, ANAB Accredited Certificate Number L2303 2. This test is conducted by a subcontracted laboratory. 3. Subcontracted laboratory has received ISO Standard 17025 accreditation for this test. 5. This test is conducted by AVO Diagnostic Services Laboratory other than Primary Lab. 6. AVO Diagnostic Services Laboratory has received ISO Standard 17025 accreditation for this test. 7. Imported Sample: AVO Diagnostic Services accepts no responsibility for these results; accreditation status does not apply to these results. 8. Imported Equipment

AVO DIAGNOSTIC SERVICES
919 FRASER DR. UNIT 13 + BURLINGTON, ON + L7L 4X8
905-632-8697 + 905-632-8698
WWW.AVODIAGNOSTICS.COM

On-Load Tap Changer (LTC) Oil Analysis & Diagnostic Evaluation

Synergy Power
STRATHROY, ON N7G 3H8 CA
ATTN:DOUG CHARRON
PO#:23-2068
Project ID:
Customer ID: T1

Serial#: 2079788
Location: YORK TS
Equipment Type: LTC
LTC Compartment: SELECTOR
Breathing Type: SEALED
Bank: **Phase:**
Fluid: MIN **USGal:** 345

LTC Mfr: REINHAUSEN
Model: RMV-II
Year Mf'd: 2019
Syringe ID: 8004299
Bottle ID:
Sampled By: DB

Control#: 7639836
Order#: 699172
Account: 110286
Received: 05/09/2023
Reported: 05/23/2023

Lab Control Number:	7639836	7523521	7361064	7352955	7320731
Date Sampled:	05/03/2023	02/16/2022	06/24/2020	06/01/2020	03/01/2020
Order Number:	699172	671197	631105	629239	614267
Oil Temp:	5	24	40	19	
Operations Counter:					
Physical Evaluation:	Moisture content acceptable. Interfacial tension acceptable. Color number acceptable. Oil clear and bright. No sediment detected. Dielectric breakdown strength acceptable.				

Comment:

End of Test Report

Nicolas C.

Authorized By: _____

CHRISTIAN NICOLAS
CHEMIST

Niagara on-the-Lake HYDRO

APPENDIX 6-STAFF-36A

INTERROGATORY REPONSES

EB-2023-0041

Canada Revenue Agency / Agence du revenu du Canada

T2 Corporation Income Tax Return

200

055 **Do not use this area**

This form serves as a federal, provincial, and territorial corporation income tax return, unless the corporation is located in Quebec or Alberta. If the corporation is located in one of these provinces, you have to file a separate provincial corporation return.

All legislative references on this return are to the federal Income Tax Act and Income Tax Regulations. This return may contain changes that had not yet become law at the time of publication.

Send one completed copy of this return, including schedules and the General Index of Financial Information (GIFI), to your tax centre. You have to file the return within six months after the end of the corporation's tax year.

For more information see **canada.ca/taxes** or Guide T4012, T2 Corporation – Income Tax Guide.

Identification

Business number (BN) 001 86360 5929 RC0001

Corporation's name

002 NIAGARA-ON-THE-LAKE HYDRO INC.

Address of head office

Has this address changed since the last time the CRA was notified? . . . . . 010 Yes ☐ No ☒

If **yes**, complete lines 011 to 018.

011

012 8 Henegan Road

City	Province, territory, or state
015 Virgil	016 ON
Country (other than Canada)	**Postal or ZIP code**
017	018 L0S 1T0

Mailing address (if different from head office address)

Has this address changed since the last time the CRA was notified? . . . . . 020 Yes ☐ No ☒

If **yes**, complete lines 021 to 028.

021 c/o

022 P.O. Box 460

023 8 Henegan Road

City	Province, territory, or state
025 Virgil	026 ON
Country (other than Canada)	**Postal or ZIP code**
027 CA	028 L0S 1T0

Location of books and records (if different from head office address)

Has this address changed since the last time the CRA was notified? . . . . . 030 Yes ☐ No ☒

If **yes**, complete lines 031 to 038.

031

032

City	Province, territory, or state
035	036
Country (other than Canada)	**Postal or ZIP code**
037	038

040 **Type of corporation at the end of the tax year** (tick one)

- ☒ 1 Canadian-controlled private corporation (CCPC)
- ☐ 2 Other private corporation
- ☐ 3 Public corporation
- ☐ 4 Corporation controlled by a public corporation
- ☐ 5 Other corporation (specify)

If the type of corporation changed during the tax year, provide the effective date of the change . . . . . 043 Year Month Day

To which tax year does this return apply?

Tax year start (060)	Tax year-end (061)
Year Month Day	Year Month Day
2022-01-01	2022-12-31

Has there been an acquisition of control resulting in the application of subsection 249(4) since the tax year start on line 060? . . . . . 063 Yes ☐ No ☒

If **yes**, provide the date control was acquired . . . . . 065 Year Month Day

Is the date on line 061 a deemed tax year-end according to subsection 249(3.1)? . . . . . 066 Yes ☐ No ☒

Is the corporation a professional corporation that is a member of a partnership? . . . . . 067 Yes ☐ No ☒

Is this the first year of filing after:

Incorporation? . . . . . 070 Yes ☐ No ☒

Amalgamation? . . . . . 071 Yes ☐ No ☒

If **yes**, complete lines 030 to 038 and attach Schedule 24.

Has there been a wind-up of a subsidiary under section 88 during the current tax year? . . . . . 072 Yes ☐ No ☒

If **yes**, complete and attach Schedule 24.

Is this the final tax year before amalgamation? . . . . . 076 Yes ☐ No ☒

Is this the final return up to dissolution? . . . . . 078 Yes ☐ No ☒

If an election was made under section 261, state the functional currency used 079

Is the corporation a resident of Canada? 080 Yes ☒ No ☐

If **no**, give the country of residence on line 081 and complete and attach Schedule 97.

081

Is the non-resident corporation claiming an exemption under an income tax treaty? . . . . . 082 Yes ☐ No ☒

If **yes**, complete and attach Schedule 91.

If the corporation is exempt from tax under section 149, tick one of the following boxes:

085

- ☐ 1 Exempt under paragraph 149(1)(e) or (l)
- ☐ 2 Exempt under paragraph 149(1)(j)
- ☐ 4 Exempt under other paragraphs of section 149

Do not use this area

095 096 898

Attachments

Financial statement information: Use GIFI schedules 100, 125, and 141.
Schedules – Answer the following questions. For each **yes** response, **attach** the schedule to the T2 return, unless otherwise instructed.

		Yes	Schedule
Is the corporation related to any other corporations?	150	X	9
Is the corporation an associated CCPC?	160	X	23
Is the corporation an associated CCPC that is claiming the expenditure limit?	161		49
Does the corporation have any non-resident shareholders who own voting shares?	151		19
Has the corporation had any transactions, including section 85 transfers, with its shareholders, officers, or employees, other than transactions in the ordinary course of business? Exclude non-arm's length transactions with non-residents	162		11
If you answered **yes** to the above question, and the transaction was between corporations not dealing at arm's length, were all or substantially all of the assets of the transferor disposed of to the transferee?	163		44
Has the corporation paid any royalties, management fees, or other similar payments to residents of Canada?	164		14
Is the corporation claiming a deduction for payments to a type of employee benefit plan?	165	X	15
Is the corporation claiming a loss or deduction from a tax shelter?	166		T5004
Is the corporation a member of a partnership for which a partnership account number has been assigned?	167		T5013
Did the corporation, a foreign affiliate controlled by the corporation, or any other corporation or trust that did not deal at arm's length with the corporation have a beneficial interest in a non-resident discretionary trust (without reference to section 94)?	168		22
Did the corporation own any shares in one or more foreign affiliates in the tax year?	169		25
Has the corporation made any payments to non-residents of Canada under subsections 202(1) and/or 105(1) of the Income Tax Regulations?	170		29
Did the corporation have a total amount over CAN$1 million of reportable transactions with non-arm's length non-residents?	171		T106
For private corporations: Does the corporation have any shareholders who own 10% or more of the corporation's common and/or preferred shares?	173	X	50
Has the corporation made payments to, or received amounts from, a retirement compensation plan arrangement during the year?	172		
Does the corporation earn income from one or more Internet web pages or websites?	180		88
Is the net income/loss shown on the financial statements different from the net income/loss for income tax purposes?	201	X	1
Has the corporation made any charitable donations; gifts of cultural or ecological property; or gifts of medicine?	202	X	2
Has the corporation received any dividends or paid any taxable dividends for purposes of the dividend refund?	203	X	3
Is the corporation claiming any type of losses?	204	X	4
Is the corporation claiming a provincial or territorial tax credit or does it have a permanent establishment in more than one jurisdiction?	205	X	5
Has the corporation realized any capital gains or incurred any capital losses during the tax year?	206	X	6
i) Is the corporation a CCPC and reporting a) income or loss from property (other than dividends deductible on line 320 of the T2 return), b) income from a partnership, c) income from a foreign business, d) income from a personal services business, e) income referred to in clause 125(1)(a)(i)(C) or 125(1)(a)(i)(B), f) aggregate investment income as defined in subsection 129(4), or g) an amount assigned to it under subsection 125(3.2) or 125(8); or ii) Is the corporation a member of a partnership and assigning its specified partnership business limit to a designated member under subsection 125(8)?	207	X	7
Does the corporation have any property that is eligible for capital cost allowance?	208	X	8
Does the corporation have any resource-related deductions?	212		12
Is the corporation claiming deductible reserves?	213		13
Is the corporation claiming a patronage dividend deduction?	216		16
Is the corporation a credit union claiming a deduction for allocations in proportion to borrowing or a provincial credit union tax reduction?	217		17
Is the corporation an investment corporation or a mutual fund corporation?	218		18
Is the corporation carrying on business in Canada as a non-resident corporation?	220		20
Is the corporation claiming any federal, provincial, or territorial foreign tax credits, or any federal logging tax credits?	221		21
Does the corporation have any Canadian manufacturing and processing profits?	227		27
Is the corporation claiming an investment tax credit?	231		31
Is the corporation claiming any scientific research and experimental development (SR&ED) expenditures?	232		T661
Is the total taxable capital employed in Canada of the corporation and its related corporations over $10,000,000?	233	X	33/34/35
Is the total taxable capital employed in Canada of the corporation and its associated corporations over $10,000,000?	234	X	
Is the corporation subject to gross Part VI tax on capital of financial institutions?	238		38
Is the corporation claiming a Part I tax credit?	242		42
Is the corporation subject to Part IV.1 tax on dividends received on taxable preferred shares or Part VI.1 tax on dividends paid?	243		43
Is the corporation agreeing to a transfer of the liability for Part VI.1 tax?	244		45
For financial institutions: Is the corporation a member of a related group of financial institutions with one or more members subject to gross Part VI tax?	250		39
Is the corporation claiming a Canadian film or video production tax credit?	253		T1131
Is the corporation claiming a film or video production services tax credit?	254		T1177
Is the corporation claiming a Canadian journalism labour tax credit?	272		58
Is the corporation subject to Part XIII.1 tax? (Show your calculations on a sheet that you identify as Schedule 92.)	255		92

Attachments (continued)

		Yes	Schedule
Did the corporation have any foreign affiliates in the tax year?	271		T1134
Did the corporation own or hold specified foreign property where the total cost amount of all such property, at any time in the year, was more than CAN$100,000?	259		T1135
Did the corporation transfer or loan property to a non-resident trust?	260		T1141
Did the corporation receive a distribution from or was it indebted to a non-resident trust in the year?	261		T1142
Has the corporation entered into an agreement to allocate assistance for SR&ED carried out in Canada?	262		T1145
Has the corporation entered into an agreement to transfer qualified expenditures incurred in respect of SR&ED contracts?	263		T1146
Has the corporation entered into an agreement with other associated corporations for salary or wages of specified employees for SR&ED?	264		T1174
Did the corporation pay taxable dividends (other than capital gains dividends) in the tax year?	265	X	55
Has the corporation made an election under subsection 89(11) not to be a CCPC?	266		T2002
Has the corporation revoked any previous election made under subsection 89(11)?	267		T2002
Did the corporation (CCPC or deposit insurance corporation (DIC)) pay eligible dividends, or did its general rate income pool (GRIP) change in the tax year?	268	X	53
Did the corporation (other than a CCPC or DIC) pay eligible dividends, or did its low rate income pool (LRIP) change in the tax year?	269		54
Is the corporation claiming a return of fuel charge proceeds to farmers tax credit?	273		63
Are you an employer reporting a non-qualified security agreement under subsection 110(1.9)?	274		59
Is the corporation claiming an air quality improvement tax credit?	275		65
Is the corporation subject to the additional 1.5% tax on banks and life insurers?	276		68

Additional information

Did the corporation use the International Financial Reporting Standards (IFRS) when it prepared its financial statements?	270	Yes	X	No	
Is the corporation inactive?	280	Yes		No	X

What is the corporation's main revenue-generating business activity? 221122 Electric Power Distribution

Specify the principal products mined, manufactured, sold, constructed, or services provided, giving the approximate percentage of the total revenue that each product or service represents.

284	Electrical Distribution	285	99.000 %
286		287	%
288		289	%

Did the corporation immigrate to Canada during the tax year?	291	Yes		No	X
Did the corporation emigrate from Canada during the tax year?	292	Yes		No	X
Do you want to be considered as a quarterly instalment remitter if you are eligible?	293	Yes		No	
If the corporation was eligible to remit instalments on a quarterly basis for part of the tax year, provide the date the corporation ceased to be eligible (Year Month Day)	294				
If the corporation's major business activity is construction, did you have any subcontractors during the tax year?	295	Yes		No	

Taxable income

Net income or (loss) for income tax purposes from Schedule 1, financial statements, or GIFI	300	-866,334	A
Deduct:			
Charitable donations from Schedule 2	311		
Cultural gifts from Schedule 2	313		
Ecological gifts from Schedule 2	314		
Gifts of medicine made before March 22, 2017, from Schedule 2	315		
Taxable dividends deductible under section 112 or 113, or subsection 138(6) from Schedule 3	320		
Part VI.1 tax deduction*	325		
Non-capital losses of previous tax years from Schedule 4	331		
Net capital losses of previous tax years from Schedule 4	332		
Restricted farm losses of previous tax years from Schedule 4	333		
Farm losses of previous tax years from Schedule 4	334		
Limited partnership losses of previous tax years from Schedule 4	335		
Taxable capital gains or taxable dividends allocated from a central credit union	340		
Prospector's and grubstaker's shares	350		
Employer deduction for non-qualified securities	352		
Subtotal		▶	B
Subtotal (amount A **minus** amount B) (if negative, enter "0")			C
Section 110.5 additions or subparagraph 115(1)(a)(vii) additions	355		D
Taxable income (amount C **plus** amount D)	360		
Taxable income for the year from a personal services business			Z.1

* This amount is equal to 3.5 times the Part VI.1 tax payable at line 724 on page 9.

Small business deduction

Canadian-controlled private corporations (CCPCs) throughout the tax year

Income eligible for the small business deduction from Schedule 7 . . . . . **400** A

Taxable income from line 360 on page 3, **minus** 100/28 (3.57143) of the amount on line 632* on page 8, **minus** 4 times the amount on line 636** on page 8, and **minus** any amount that, because of federal law, is exempt from Part I tax . . . . . **405** B

Business limit (see notes 1 and 2 below) . . . . . **410** 500,000 C

Notes:

1. For CCPCs that are not associated, enter $ 500,000 on line 410. However, if the corporation's tax year is less than 51 weeks, prorate this amount by the number of days in the tax year **divided** by 365, and enter the result on line 410.
2. For associated CCPCs, use Schedule 23 to calculate the amount to be entered on line 410.

Business limit reduction

Taxable capital business limit reduction for tax years starting before April 7, 2022

Amount C 500,000 x **415** *** 66,693 / 11,250 D = ... 2,964,133 E1

Taxable capital business limit reduction for tax years starting after April 6, 2022

Amount C 500,000 x **415** *** 66,693 / 90,000 D = ... E2

Amount E1 or amount E2, whichever applies 2,964,133 ▶ 2,964,133 E3

Passive income business limit reduction

Adjusted aggregate investment income from Schedule 7 **** **417** – 50,000 = . . F

Amount C 500,000 / 100,000 x Amount F = ... G

The greater of amount E3 and amount G **422** 2,964,133 H

Reduced business limit (amount C **minus** amount H) (if negative, enter "0") . . . . . **426** I

Business limit the CCPC assigns under subsection 125(3.2) (from line 515 below) . . . . . J

Reduced business limit after assignment (amount I **minus** amount J) . . . . . **428** K

Small business deduction – Amount A, B, C, or K, whichever is the least . . . . x 19 % = **430**

Enter amount from line 430 at amount K on page 8.

* Calculate the amount of foreign non-business income tax credit deductible on line 632 without reference to the refundable tax on the CCPC's investment income (line 604) and without reference to the corporate tax reductions under section 123.4.

** Calculate the amount of foreign business income tax credit deductible on line 636 without reference to the corporation tax reductions under section 123.4.

*** **Large corporations**

- If the corporation is not associated with any corporations in both the current and previous tax years, the amount to be entered on line 415 is: (total taxable capital employed in Canada for the **prior** year **minus** $10,000,000) x 0.225%.
- If the corporation is not associated with any corporations in the current tax year, but was associated in the previous tax year, the amount to be entered on line 415 is: (total taxable capital employed in Canada for the **current** year **minus** $10,000,000) x 0.225%.
- For corporations associated in the current tax year, see Schedule 23 for the special rules that apply.

**** Enter the total adjusted aggregate investment income of the corporation and all associated corporations for each tax year that ended in the preceding calendar year. Each corporation with such income has to file a Schedule 7. For a corporation's first tax year that starts after 2018, this amount is reported at line 744 of the corresponding Schedule 7. Otherwise, this amount is the total of all amounts reported at line 745 of the corresponding Schedule 7 of the corporation for each tax year that ended in the preceding calendar year.

Small business deduction (continued)

Specified corporate income and assignment under subsection 125(3.2)

	L1 Name of corporation receiving the income and assigned amount	L Business number of the corporation receiving the assigned amount 490	M Income paid under clause 125(1)(a)(i)(B) to the corporation identified in column L [3] 500	N Business limit assigned to corporation identified in column L [4] 505
1.				

Total 510 _____ Total 515 _____

Notes:

3. This amount is [as defined in subsection 125(7) **specified corporate income** (a)(i)] the total of all amounts each of which is income (other than specified farming or fishing income of the corporation for the year) from an active business of the corporation for the year from the provision of services or property to a private corporation (directly or indirectly, in any manner whatever) if
   (A) at any time in the year, the corporation (or one of its shareholders) or a person who does not deal at arm's length with the corporation (or one of its shareholders) holds a direct or indirect interest in the private corporation, and
   (B) it is not the case that all or substantially all of the corporation's income for the year from an active business is from the provision of services or property to
   (I) persons (other than the private corporation) with which the corporation deals at arm's length, or
   (II) partnerships with which the corporation deals at arm's length, other than a partnership in which a person that does not deal at arm's length with the corporation holds a direct or indirect interest.
4. The amount of the business limit you assign to a CCPC cannot be greater than the amount determined by the formula A – B, where A is the amount of income referred to in column M in respect of that CCPC and B is the portion of the amount described in A that is deductible by you in respect of the amount of income referred to in clauses 125(1)(a)(i)(A) or (B) for the year. The amount on line 515 cannot be greater than the amount on line 426.

General tax reduction for Canadian-controlled private corporations

Canadian-controlled private corporations throughout the tax year

Taxable income from line 360 on page 3			A
Lesser of amounts 9B and 9H from Part 9 of Schedule 27		B	
Amount 13K from Part 13 of Schedule 27		C	
Personal services business income	432	D	
Amount from line 400, 405, 410, or 428 on page 4, whichever is the least		E	
Aggregate investment income from line 440 on page 6*	27,620	F	
Subtotal (**add** amounts B to F)	27,620 ▶		27,620 G
Amount A **minus** amount G (if negative, enter "0")			H
General tax reduction for Canadian-controlled private corporations – Amount H **multiplied** by 13 %			I

Enter amount I on line 638 on page 8.

* Except for a corporation that is, throughout the year, a cooperative corporation (within the meaning assigned by subsection 136(2)) or a credit union.

General tax reduction

Do not complete this area if you are a Canadian-controlled private corporation, an investment corporation, a mortgage investment corporation, a mutual fund corporation, or any corporation with taxable income that is not subject to the corporation tax rate of 38%.

Taxable income from line 360 on page 3			J
Lesser of amounts 9B and 9H from Part 9 of Schedule 27		K	
Amount 13K from Part 13 of Schedule 27		L	
Personal services business income	434	M	
Subtotal (**add** amounts K to M)	▶		N
Amount J **minus** amount N (if negative, enter "0")			O
General tax reduction – Amount O **multiplied** by 13 %			P

Enter amount P on line 639 on page 8.

Refundable portion of Part I tax

Canadian-controlled private corporations throughout the tax year

Aggregate investment income from Schedule 7 . . . . . **440** 27,620 x 30 2/3 % = ... 8,470 A

Foreign non-business income tax credit from line 632 on page 8 . . . . . B

Foreign investment income from Schedule 7 . . . . . **445** x 8 % = C

Subtotal (amount B **minus** amount C) (if negative, enter "0") ▶ D

Amount A **minus** amount D (if negative, enter "0") . . . . . 8,470 E

Taxable income from line 360 on page 3 . . . . . F

Amount from line 400, 405, 410, or 428 on page 4, whichever is the least . . . . . G

Foreign non-business income tax credit from line 632 on page 8 . . . . x 75 / 29 = H

Foreign business income tax credit from line 636 on page 8 . . x 4 = I

Subtotal (**add** amounts G to I) ▶ J

Subtotal (amount F **minus** amount J) K x 30 2/3 % = L

Part I tax payable minus investment tax credit refund (line 700 **minus** line 780 from page 9) . . . . . M

Refundable portion of Part I tax – Amount E, L, or M, whichever is the least . . . . . **450** N

Refundable dividend tax on hand

Refundable dividend tax on hand (RDTOH) at the end of the previous tax year **460**
Dividend refund for the previous tax year **465**
Net RDTOH transferred on an amalgamation or the wind-up of a subsidiary **480**
Subtotal (line 460 **minus** line 465 **plus** line 480) — A

General rate income pool (GRIP) at the end of the previous tax year (from line 100 of Schedule 53) . . . . . — B

Total eligible dividends paid in the previous tax year (from line 300 of Schedule 53) . . . . . — C
Total excessive eligible dividend designation in the previous tax year (from line 310 of Schedule 53) . — D
Subtotal (amount C **minus** amount D) (if negative, enter "0") ▶ — E

Net GRIP at the end of the previous tax year (amount B **minus** amount E) (if negative, enter "0") . . . — F
GRIP transferred on an amalgamation or the wind-up of a subsidiary
(total of lines 230 and 240 of Schedule 53) . . . . . — G
Subtotal (amount F **plus** amount G) ▶ — H

Amount H **multiplied** by 38 1 / 3 % . . . . . — I

Eligible refundable dividend tax on hand (ERDTOH) at the end of the previous tax year (for the first tax year starting after 2018, amount A or I, whichever is less, otherwise, use line 530 _____ of the preceding tax year) . . . . . **520** — J

Non-eligible refundable dividend tax on hand (NERDTOH) at the end of the previous tax year (for the first tax year starting after 2018, amount A **minus** amount I, otherwise, use line 545_____ of the preceding tax year) (if negative, enter "0") **535** — K

Part IV tax payable on taxable dividends from connected corporations (amount 2G from Schedule 3) . — L
Part IV tax payable on eligible dividends from non-connected corporations (amount 2J from Schedule 3) — M
Subtotal (amount L **plus** amount M) ▶ — N

Net ERDTOH transferred on an amalgamation or the wind-up of a subsidiary . . . . . **525** — O
ERDTOH dividend refund for the previous tax year . . . . . **570** — P

Refundable portion of Part I tax (from line 450 on page 6) . . . . . — Q

Part IV tax before deductions (amount 2A from Schedule 3) . . . . . — R
Part IV tax allocated to ERDTOH (amount N) . . . . . — S
Part IV tax reduction due to Part IV.1 tax payable (amount 4D of Schedule 43) . . . . . — T
Subtotal (amount R **minus** total of amounts S and T) ▶ — U

Net NERDTOH transferred on an amalgamation or the wind-up of a subsidiary . . . . . **540** — V
NERDTOH dividend refund for the previous tax year . . . . . **575** — W
38 1/3% of the total losses applied against Part IV tax (amount 2D from Schedule 3) . . . . . — X
Part IV tax payable allocated to NERDTOH, net of losses claimed (amount U **minus** amount X) (if negative enter “0”) . . . . — Y
NERDTOH at the end of the tax year (total of amounts K, Q, V, and Y **minus** amount W) (if negative, enter "0") **545**
Part IV tax payable allocated to ERDTOH, net of losses claimed (amount N **minus** the amount, if any, by which amount X exceeds amount U) (if negative, enter "0") . . . . . — Z
ERDTOH at the end of the tax year (total of amounts J, O, and Z **minus** amount P) (if negative, enter "0") **530**

Dividend refund

38 1/3% of total eligible dividends paid in the tax year (amount 3A from Schedule 3) . . . . . — AA
ERDTOH balance at the end of the tax year (line 530) . . . . . — BB
Eligible dividend refund (amount AA or BB, whichever is less) . . . . . — CC
38 1/3% of total non-eligible taxable dividends paid in the tax year (amount 3B from Schedule 3) . . . . . 287,500 DD
NERDTOH balance at the end of the tax year (line 545) . . . . . — EE
Non-eligible dividend refund (amount DD or EE, whichever is less) . . . . . — FF
Amount DD **minus** amount EE (if negative, enter "0") . . . . . 287,500 GG
Amount BB **minus** amount CC (if negative, enter "0") . . . . . — HH
Additional non-eligible dividend refund (amount GG or HH, whichever is less) . . . . . — II
Dividend refund – Amount CC **plus** amount FF **plus** amount II . . . . . — JJ
Enter amount JJ on line 784 on page 9.

Part I tax

Base amount Part I tax – Taxable income (from line 360 on page 3) **multiplied** by 38 % . . . . . 550 _____ A

Additional tax on personal services business income (section 123.5)

Taxable income from a personal services business . . . . . 555 _____ x 5 % = 560 _____ B

Additional tax on banks and life insurers from Schedule 68 . . . . . 565 _____ C

Recapture of investment tax credit from Schedule 31 . . . . . 602 _____ D

Calculation for the refundable tax on the Canadian-controlled private corporation's (CCPC) investment income
(if it was a CCPC throughout the tax year)

Aggregate investment income from line 440 on page 6 . . . . . 27,620 E

Taxable income from line 360 on page 3 . . . . . _____ F

Deduct:

Amount from line 400, 405, 410, or 428 on page 4, whichever is the least . . . . . _____ G

Net amount (amount F **minus** amount G) _____ ▶ _____ H

Refundable tax on CCPC's investment income – 10 2 / 3 % of whichever is less: amount E or amount H . . . . . 604 _____ I

Subtotal (**add** amounts A, B, C, D, and I) _____ J

Deduct:

Small business deduction from line 430 on page 4 . . . . . _____ K

Federal tax abatement . . . . . 608 _____

Manufacturing and processing profits deduction and zero-emission technology manufacturing deduction from Schedule 27 . . . . . 616 _____

Investment corporation deduction . . . . . 620 _____

Taxed capital gains 624 _____

Federal foreign non-business income tax credit from Schedule 21 . . . . . 632 _____

Federal foreign business income tax credit from Schedule 21 . . . . . 636 _____

General tax reduction for CCPCs from amount I on page 5 . . . . . 638 _____

General tax reduction from amount P on page 5 . . . . . 639 _____

Federal logging tax credit from Schedule 21 . . . . . 640 _____

Eligible Canadian bank deduction under section 125.21 . . . . . 641 _____

Federal qualifying environmental trust tax credit . . . . . 648 _____

Investment tax credit from Schedule 31 . . . . . 652 _____

Subtotal _____ ▶ _____ L

Part I tax payable – Amount J **minus** amount L . . . . . _____ M

Enter amount M on line 700 on page 9.

Privacy notice

Personal information (including the SIN) is collected to administer or enforce the Income Tax Act and related programs and activities including administering tax, benefits, audit, compliance, and collection. The information collected may be used or disclosed for the purposes of other federal acts that provide for the imposition and collection of a tax or duty. It may also be disclosed to other federal, provincial, territorial, or foreign government institutions to the extent authorized by law. Failure to provide this information may result in paying interest or penalties, or in other actions. Under the Privacy Act, individuals have a right of protection, access to and correction of their personal information, or to file a complaint with the Privacy Commissioner of Canada regarding the handling of their personal information. Refer to Personal Information Bank CRA PPU 047 on Information about Programs and Information Holdings at canada.ca/cra-information-about-programs.

Summary of tax and credits

Federal tax

Part I tax payable from amount M on page 8	700	
Part III.1 tax payable from Schedule 55	710	
Part IV tax payable from Schedule 3	712	
Part IV.1 tax payable from Schedule 43	716	
Part VI tax payable from Schedule 38	720	
Part VI.1 tax payable from Schedule 43	724	
Part VI.2 tax payable from Schedule 67	725	
Part XIII.1 tax payable from Schedule 92	727	
Part XIV tax payable from Schedule 20	728	
Total federal tax		

Add provincial or territorial tax:

Provincial or territorial jurisdiction 750 ON
(if more than one jurisdiction, enter "multiple" and complete Schedule 5)

Net provincial or territorial tax payable (except Quebec and Alberta)	760	57,125
Total tax payable	770	57,125 A

Deduct other credits:

Investment tax credit refund from Schedule 31	780	
Dividend refund from amount JJ on page 7	784	
Federal capital gains refund from Schedule 18	788	
Federal qualifying environmental trust tax credit refund	792	
Return of fuel charge proceeds to farmers tax credit from Schedule 63	795	
Canadian film or video production tax credit (Form T1131)	796	
Film or video production services tax credit (Form T1177)	797	
Canadian journalism labour tax credit from Schedule 58	798	
Air quality improvement tax credit from Schedule 65	799	
Tax withheld at source	800	
Total payments on which tax has been withheld	801	
Provincial and territorial capital gains refund from Schedule 18	808	
Provincial and territorial refundable tax credits from Schedule 5	812	
Tax instalments paid	840	86,995
Total credits	890	86,995 ▶ 86,995 B

Balance (amount A **minus** amount B) -29,870

If the result is negative, you have **a refund**. If the result is positive, you have a **balance owing**.
Enter the amount below on whichever line applies.

Generally, the CRA does not charge or refund a difference of $2 or less.

Refund code 894 1

Refund 29,870

Balance owing

For information on how to enrol for direct deposit, go to **canada.ca/cra-direct-deposit**.

For information on how to make your payment, go to **canada.ca/payments**.

If the corporation is a Canadian-controlled private corporation throughout the tax year, does it qualify for the one-month extension of the date the balance of tax is due? 896 Yes ☐ No ☒

If this return was prepared by a tax preparer for a fee, provide their EFILE number 920 A6698

Certification

I, 950 Klassen (Last name) 951 Jeff (First name) 954 Vice President, Finance (Position, office, or rank),
am an authorized signing officer of the corporation. I certify that I have examined this return, including accompanying schedules and statements, and that the information given on this return is, to the best of my knowledge, correct and complete. I also certify that the method of calculating income for this tax year is consistent with that of the previous tax year except as specifically disclosed in a statement attached to this return.

955 2023/06/29 (Date (yyyy/mm/dd)) Signature of the authorized signing officer of the corporation 956 (905) 468-7268 (Telephone number)

Is the contact person the same as the authorized signing officer? If **no**, complete the information below 957 Yes ☒ No ☐

958 (Name of other authorized person) 959 (Telephone number)

Language of correspondence – Langue de correspondance

Indicate your language of correspondence by entering **1** for English or **2** for French.
Indiquez votre langue de correspondance en inscrivant **1** pour anglais ou **2** pour français. 990 1

Niagara-on-the-Lake Hydro Inc.

86360 5929 RC0001

December 31, 2022

Subsection 13(7.4)
Election to reduce capital cost of depreciable property where inducement received

I, Jeff Klassen, being Vice President, Finance and authorized signee for Niagara-on-the-Lake Hydro Inc., hereby elect under subsection 13(7.4) to reduce the capital cost of depreciable property acquired during the taxation year by an amount of assistance also received during the taxation year that would otherwise have been included in income under 12(1)(x). Details of the property acquired and the assistance received can be found below.

Capital Cost of Property Acquired During Taxation Year	Assitance Received During the Taxation Year	Net Capital Cost Included on Schedule 8
1,187,877	609,776	578,101

Jeff Klassen
Vice President, Finance

2023/06/29
Date

Financial Statements of

NIAGARA-ON-THE-LAKE HYDRO INC.

And Independent Auditor's Report thereon

Year ended December 31, 2022

KPMG LLP
Commerce Place
21 King Street West, Suite 700
Hamilton ON L8P 4W7
Canada
Tel 905-523-8200
Fax 905-523-2222

INDEPENDENT AUDITOR'S REPORT

To the Shareholder of Niagara-on-the-Lake Hydro Inc.

Opinion

We have audited the financial statements of Niagara-on-the-Lake Hydro Inc. (the "Entity"), which comprise:

- the statement of financial position as at December 31, 2022
- the statement of comprehensive income for the year then ended
- the statement of changes in equity for the year then ended
- the statement of cash flows for the year then ended
- and notes to the financial statements, including a summary of significant accounting policies

(Hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Entity as at December 31, 2022, and its financial performance and its cash flows for the year then ended in accordance with International Financial Reporting Standards (IFRS).

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the ***"Auditor's Responsibilities for the Audit of the Financial Statements"*** section of our auditor's report.

We are independent of the Entity in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled are other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with International Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Entity's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Entity or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Entity's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

  The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor’s report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor’s report. However, future events or conditions may cause the Entity to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

KPMG LLP

Chartered Professional Accountants, Licensed Public Accountants

Hamilton, Canada
March 30, 2023

NIAGARA-ON-THE-LAKE HYDRO INC.

Statement of Financial Position

As at December 31, 2022, with comparative information for 2021

	Note	2022	2021
Assets			
Current assets			
Accounts receivable	5	$ 2,847,152	$ 3,098,037
Unbilled revenue		2,410,969	2,629,403
Derivative asset	11	645,020	–
Material and supplies	6	604,175	540,850
Prepaid expenses		135,786	107,448
Due from related parties	21	160,561	48,572
Income tax receivable		147,694	119,549
Total current assets		6,951,357	6,543,859
Non-current assets			
Property, plant and equipment	7	38,373,753	37,077,739
Deferred tax asset	8	1,803,942	1,729,851
Investment		100	100
Total non-current assets		40,177,795	38,807,690
Total assets		47,129,152	45,351,549
Regulatory balances	9	2,965,078	1,461,952
Total assets and regulatory balances		$ 50,094,230	$ 46,813,501

NIAGARA-ON-THE-LAKE HYDRO INC.

Statement of Financial Position

As at December 31, 2022, with comparative information for 2021

	Note	2022	2021
Liabilities			
Current liabilities			
Bank indebtedness	4	$ 140,776	$ 1,383,140
Current portion of long-term debt	11	11,036,989	7,530,432
Derivative liability	11	–	27,889
Accounts payable and accrued liabilities	10	3,713,871	3,694,997
Customer deposits		592,381	595,987
Due to related parties	21	790,245	756,281
Deferred revenue		–	128,368
Total current liabilities		16,274,262	14,117,094
Non-current liabilities			
Long-term debt	11	2,673,372	3,468,440
Post-employment benefits	12	486,482	614,923
Deferred revenue		6,320,845	5,865,954
Deferred tax liability	8	3,428,015	2,748,661
Total non-current liabilities		12,908,714	12,697,978
Total liabilities		29,182,976	26,815,072
Equity			
Share capital	13	2,632,307	2,632,307
Paid-up capital		4,269,026	4,269,026
Retained earnings		13,618,293	12,695,580
Accumulated other comprehensive loss		75,467	(47,366)
Total equity		20,595,093	19,549,547
Total liabilities and equity		49,778,069	46,364,619
Regulatory balances	9	316,161	448,882
Total liabilities, equity and regulatory balances		$ 50,094,230	$ 46,813,501

See accompanying notes to the financial statements.

On behalf of the Board:

_____ Director _____ Director

NIAGARA-ON-THE-LAKE HYDRO INC.

Statement of Comprehensive Income

Year ended December 31, 2022, with comparative information for 2021

	Note	2022	2021
Revenue			
Distribution revenue		$ 5,609,264	$ 5,565,393
Other operating revenue	14	675,466	515,651
		6,284,730	6,081,044
Sale of energy		24,169,710	25,803,219
Total revenues	17	30,454,440	31,884,263
Operating expenses			
Operations and maintenance		1,261,749	1,247,805
Billing and collection		677,732	618,632
General administration		1,430,552	1,350,252
Depreciation and amortization	19	1,276,739	1,227,391
		4,646,772	4,444,080
Cost of power purchased		25,428,000	26,183,615
Total expenses		30,074,772	30,627,695
Income from operating activities		379,668	1,256,568
Finance income	16	712,621	310,748
Finance costs	16	(544,028)	(414,643)
Income before income taxes		548,261	1,152,673
Income tax expense	8	(511,395)	(437,662)
Net income		36,866	715,011
Net movement in regulatory balances		1,400,352	377,602
Regulatory recovery on future tax		235,495	206,574
Net income for the year and net movement In regulatory balances	9	1,672,713	1,299,187
Other comprehensive income			
Items that will not be reclassified to profit or loss:			
Remeasurements of post-employment benefits		167,120	–
Tax on remeasurements		(44,287)	–
Other comprehensive income for the year		122,833	–
Total comprehensive income for the year		$ 1,795,546	$ 1,299,187

See accompanying notes to the financial statements.

NIAGARA-ON-THE-LAKE HYDRO INC.

Statement of Changes in Equity

Year ended December 31, 2022, with comparative information for 2021

	Share capital	Paid-up capital	Retained earnings	Accumulated other comprehensive loss	Total
Balance at January 1, 2022	$ 2,632,307	$ 4,269,026	$12,695,580	$ (47,366)	$ 19,549,547
Comprehensive income	–	–	1,672,713	122,833	1,795,546
Dividends	–	–	(750,000)	–	(750,000)
Balance at December 31, 2022	$ 2,632,307	$ 4,269,026	$ 13,618,293	$ 75,467	$ 20,595,093
Balance at January 1, 2021	$ 2,632,307	$ 4,269,026	$ 12,146,393	$ (47,366)	$ 19,000,360
Comprehensive income	–	–	1,299,187	–	1,299,187
Dividends	–	–	(750,000)	–	(750,000)
Balance at December 31, 2021	$ 2,632,307	$ 4,269,026	$ 12,695,580	$ (47,366)	$ 19,549,547

See accompanying notes to the financial statements.

NIAGARA-ON-THE-LAKE HYDRO INC.

Statement of Cash Flows

Year ended December 31, 2022, with comparative information for 2021

	2022	2021
Operating activities		
Net Income and net movement in regulatory balances	$ 1,795,546	$ 1,299,187
Adjustments for:		
Depreciation and amortization	1,379,298	1,227,391
Amortization of deferred revenue	(154,885)	(139,925)
Post-employment benefits, net	(84,153)	37,034
Loss on disposal of property, plant and equipment	24,457	21,432
Change in derivatives	(672,909)	(287,093)
Net finance costs	504,316	390,988
Income tax expense	511,395	437,662
Contributions received from customers	609,776	656,519
	3,912,841	3,643,195
Change in non-cash operating working capital:		
Accounts receivable	250,885	(824,440)
Unbilled revenue	218,434	511,784
Due from related parties	(111,989)	15,639
Materials and supplies	(63,325)	(73,586)
Prepaid expenses	(28,338)	(1,629)
Accounts payable and accrued liabilities	18,874	278,343
Customer deposits	(3,606)	(59,839)
Due to related parties	33,964	7,130
Deferred revenue	(128,368)	–
	4,099,372	3,496,597
Regulatory balances	(1,635,847)	(584,176)
Income tax received	108,430	–
Income tax paid	(86,995)	(308,211)
Interest paid	(544,028)	(414,643)
Interest received	39,712	7,252
Net cash from operating activities	1,980,644	2,196,819
Investing activities		
Purchase of property, plant and equipment, net	(2,703,406)	(2,482,793)
Proceeds on disposal of assets	3,637	1,031
Net cash used by investing activities	(2,699,769)	(2,481,762)
Financing activities		
Dividends paid	(750,000)	(750,000)
Repayment of long-term debt	(1,288,511)	(1,095,580)
Proceeds from long-term debt	4,000,000	2,000,000
Net cash used in financing activities	1,961,489	154,420
Change in bank indebtedness	1,242,364	(130,523)
Bank indebtedness, beginning of year	(1,383,140)	(1,252,617)
Bank indebtedness, end of year	$ (140,776)	$ (1,383,140)

See accompanying notes to the financial statements.

NIAGARA-ON-THE-LAKE HYDRO INC.

Notes to Financial Statements

Year ended December 31, 2022

1. Reporting entity

Niagara-on-the-Lake Hydro Inc. (the “Corporation”) is a wholly owned subsidiary of Niagara-on-the-Lake Energy Inc., which in turn is wholly owned by The Corporation of the Town of Niagara-on-the-Lake (the “Town”) and incorporated under the Business Corporations Act (Ontario), in accordance with the Electricity Act. The Corporation is located in the Town of Niagara-on-the-Lake. The address of the Corporation’s registered office is 8 Henegan Road, Virgil, Ontario, L0S 1T0.

The Corporation’s principal activity is to distribute electricity to the residents and businesses in the Town of Niagara-on-the-Lake under a license issued by the Ontario Energy Board (“OEB”). The Corporation is regulated by the OEB and adjustments to the Corporation’s distribution and power rates require OEB approval.

The financial statements are for the Corporation as at and for the year ended December 31, 2022.

2. Basis of presentation

(a) Statement of compliance

The Corporation's financial statements have been prepared in accordance with International Financial Reporting Standards ("IFRS").

The financial statements were approved by the Board of Directors on March 30, 2023.

(b) Basis of measurement

These financial statements have been prepared on the historical cost basis, unless otherwise stated.

(c) Functional and presentation currency

These financial statements are presented in Canadian dollars, which is the Corporation's functional currency.

(d) Rate regulation

The Corporation is regulated by the Ontario Energy Board (“OEB”), under the authority granted by the *Ontario Energy Board Act, 1998*. Among other things, the OEB has the power and responsibility to approve or set rates for the transmission and distribution of electricity, providing continued rate protection for electricity consumers in Ontario, and ensuring that transmission and distribution companies fulfill obligations to connect and service customers. The OEB may also prescribe license requirements and conditions of service to local distribution companies (“LDCs”), such as the Corporation, which may include, among other things, record keeping, regulatory accounting principles, separation of accounts for distinct businesses, and filing and process requirements for rate setting purposes.

2. Basis of presentation (continued)

(d) Rate regulation (continued)

Rate setting

(i) Distribution revenue

The Corporation is required to file a "Cost of Service" ("COS") rate application every five years, unless approved for a deferral, under which the OEB establishes the revenues required to recover the forecasted operating costs, including amortization and income taxes, of providing the regulated electricity distribution service and providing a fair return on the Corporation's rate base. The Corporation estimates electricity usage and the costs to service each customer class in order to determine the appropriate rates to be charged to each customer class. The COS application is reviewed by the OEB and any registered interveners. Rates are approved based upon the review of evidence and information, including any revisions resulting from that review.

In the intervening years an Incentive Rate Mechanism application ("IRM") is filed. An IRM application results in a formulaic adjustment to distribution rates that were set under the last COS application. The previous year's rates are adjusted for the annual change in the Gross Domestic Product Implicit Price Inflator for Final Domestic Demand ("GDP IPI-FDD") net of a productivity factor and a "stretch factor" determined by the relative efficiency of an electricity distributor.

As a licensed distributor, the Corporation is responsible for billing customers for electricity generated by third parties and the related costs of providing electricity service, such as transmission services and other services provided by third parties. The Corporation is required, pursuant to regulation, to remit such amounts to these third parties, irrespective of whether the Corporation ultimately collects these amounts from customers.

In 2021, the Corporation submitted an IRM Application to the OEB requesting approval to change distribution rates effective January 1, 2022. The IRM Application, which provided a mechanistic and formulaic adjustment to distribution rates and charges, was approved by the OEB on December 9, 2021. The GDP IPI–FDD for 2022-23 rates is 3.3%, the Corporation's stretch factor is 0.30% and the productivity factor determined by the OEB is 0%, resulting in a net adjustment of 3.0% to the previous year's rates.

2. Basis of presentation (continued)

(d) Rate regulation (continued)

(ii) Electricity rates

The OEB sets electricity prices for certain low-volume consumers each year (November) based on an estimate of how much it will cost to supply the province with electricity for the next year. In 2017, the OEB set new lower Regulated Price Plan ("RPP") prices established under the *Ontario Fair Hydro Act, 2017*. On May 9, 2019, the Government of Ontario enacted Bill 87, the *Fixing the Hydro Mess Act, 2020*. The legislation amended the *Ontario Rebate for Electricity Consumers Act*, *2016,* and the *Ontario Fair Hydro Plan Act, 2017.*

Effective November 1, 2019, the OEB set electricity prices under the RPP based on the estimated cost to supply the province with electricity. The Ministry of Energy, Northern Development and Mines set the amount of the rebate under the *Ontario Rebate for Electricity Consumers Act, 2016* such that the monthly bill for a typical customer increased by the rate of inflation.

In 2020, the OEB also adjusted the Regulated Price Plan (RPP) prices in March and June in response to the Government issued Emergency Orders under the *Emergency Management and Civil Protection Act* to assist Ontarians who were forced to stay home due to the COVID-19 pandemic. Throughout 2021 and into January 2022, the OEB continued to amend RPP prices as necessary due to the ongoing COVID-19 pandemic, including forgoing the RPP semi-annual price increase for November 1, 2021. Effective January 1, 2022, the OEB implemented an annual RPP price increase effective November 1st of each year. This directive replaced the previous semi-annual price increase structure of May 1st and November 1st. RPP prices were amended for all customers under RPP pricing effective November 1, 2022.

All remaining consumers pay the market price for electricity or the rate pursuant to their contract with a retailer. The Corporation is billed for the cost of the electricity that its customers use by the Independent Electricity System Operator and passes this cost on to the customer at cost without a mark-up.

(iii) Retail transmission rates

These are the costs of delivering electricity from generating stations across the Province to local distribution networks. These charges include the costs to build and maintain the transmission lines, towers, poles and operate provincial transmission systems. Revenues from retail transmission rates are passed through to the operators of transmission networks and facilities without a mark-up.

(iv) Wholesale market service rates

These are the costs of administering the wholesale electricity system and maintaining the reliability of the provincial grid and include the costs associated with funding Ministry of Energy conservation and renewable energy programs. The Corporation is billed for the cost of the wholesale electricity system by the Independent Electricity System Operator and passes this cost on to the customer at cost without a mark-up.

2. Basis of presentation (continued)

(e) Use of estimates and judgments

(i) Assumptions and estimation uncertainty

The preparation of financial statements in conformity with IFRS requires management to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses and disclosure of contingent assets and liabilities. Actual results may differ from those estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the year in which the estimates are revised and in any future years affected.

Information about assumptions and estimation uncertainties that have a significant risk of resulting in material adjustment is included in the following notes:

(i) Notes 3(d), (e), 7 – estimation of useful lives of its property, plant and equipment and related impairment tests on long-lived assets
(ii) Notes 3(h), 9 – recognition and measurement of regulatory balances
(iii) Notes 3(i) 12 – measurement of defined benefit obligations: key actuarial assumptions
(iv) Notes 3(g) 18 – recognition and measurement of provisions and contingencies

(ii) Judgments

Information about judgments made in applying accounting policies that have the most significant effects on the amounts recognized in the financial statements is included in the following notes:

(i) Note 3(j) – leases: whether an arrangement contains a lease; lease term, underlying leased asset value

(ii) Note 3(b) – determination of the performance obligation for contributions from customers and the related amortization period

(iii) Notes 3(h) and 9 – recognition of regulatory balances

3. Significant accounting policies

The accounting policies set out below have been applied consistently in all years presented in these financial statements.

(a) Financial instruments

All financial assets and all financial liabilities with the exception of derivatives are recognized initially at fair value plus any directly attributable transaction costs. Derivatives are classified as financial liabilities or financial assets at fair value through profit or loss and recognized at fair value. Subsequently, non-derivative financial instruments are measured at amortized cost using the effective interest method less any impairment for the financial assets as described in note 3(e).

Hedge accounting has not been used in the preparation of these financial statements.

(b) Revenue recognition

Sale and distribution of electricity

The performance obligations for the sale and distribution of electricity are recognized over time using an output method to measure the satisfaction of the performance obligation. The value of the electricity services transferred to the customer is determined on the basis of cyclical meter readings plus unbilled customer usage since the last billing date to the end of the year which represents the amount that the Corporation has the right to bill. Revenue includes the cost of electricity supplied, distribution, and any other regulatory charges. The related cost of power is recorded on the basis of power used.

For customer billings related to electricity generated by third parties and the related costs of providing electricity service, such as transmission services and other services provided by third parties, the Corporation has determined that it is acting as a principal for these electricity charges and, therefore, has presented electricity revenue on a gross basis.

Capital contributions

Developers are required to contribute towards the capital cost of construction of distribution assets in order to provide ongoing service. The developer is not a customer and therefore the contributions are scoped out of IFRS 15 *Revenue from Contracts with Customers*. Cash contributions, received from developers are recorded as deferred revenue. When an asset other than cash is received as a capital contribution, the asset is initially recognized at its fair value, with a corresponding amount recognized as deferred revenue. The deferred revenue, which represents the Corporation's obligation to continue to provide the customers access to the supply of electricity, is amortized to income on a straight-line basis over the useful life of the related asset.

3. Significant accounting policies (continued)

(b) Revenue recognition (continued)

Capital contributions (continued)

Certain customers are also required to contribute towards the capital cost of construction of distribution assets in order to provide ongoing service. These contributions fall within the scope of IFRS 15 *Revenue from Contracts with Customers*. The contributions are received to obtain a connection to the distribution system in order receive ongoing access to electricity. The Corporation has concluded that the performance obligation is the supply of electricity over the life of the relationship with the customer which is satisfied over time as the customer receives and consumes the electricity. Revenue is recognized on a straight-line basis over the useful life of the related asset.

Other revenue

Revenue earned from the provision of services is recognized as the service is rendered.

Government grants and the related performance incentive payments under Conservation and Demand Management ("CDM") programs are recognized as revenue in the year when there is reasonable assurance that the program conditions have been satisfied and the payment will be received.

(c) Materials and supplies

Materials and supplies, the majority of which is consumed by the Corporation in the provision of its services, is valued at the lower of cost and net realizable value, with cost being determined on a weighted average basis, and includes expenditures incurred in acquiring the materials and supplies and other costs incurred in bringing them to their existing location and condition.

(d) Property, plant and equipment

Items of property, plant and equipment ("PP&E") used in rate-regulated activities and acquired prior to January 1, 2014 are measured at deemed cost established on the transition date, less accumulated depreciation. All other items of PP&E are measured at cost, or, where the item is contributed by customers, its fair value, less accumulated depreciation.
Cost includes expenditures that are directly attributable to the acquisition of the asset. The cost of self-constructed assets includes contracted services, materials and transportation costs, direct labour, overhead costs, borrowing costs and any other costs directly attributable to bringing the asset to a working condition for its intended use.

Borrowing costs on qualifying assets are capitalized as part of the cost of the asset based upon the weighted average cost of debt incurred on the Corporation's borrowings. Qualifying assets are considered to be those that take in excess of 12 months to construct.

When parts of an item of PP&E have different useful lives, they are accounted for as separate items (major components) of PP&E.

3. Significant accounting policies (continued)

(d) Property, plant and equipment

When items of PP&E are retired or otherwise disposed of, a gain or loss on disposal is determined by comparing the proceeds from disposal, if any, with the carrying amount of the item and is included in profit or loss.

Major spare parts and standby equipment are recognized as items of PP&E.

The cost of replacing a part of an item of PP&E is recognized in the net book value of the item if it is probable that the future economic benefits embodied within the part will flow to the Corporation and its cost can be measured reliably. In this event, the replaced part of PP&E is written off, and the related gain or loss is included in profit or loss. The costs of the day-to-day servicing of PP&E are recognized in profit or loss as incurred.

The need to estimate the decommissioning costs at the end of the useful lives of certain assets is reviewed periodically. The Corporation has concluded it does not have any legal or constructive obligation to remove PP&E.

Depreciation is calculated to write off the cost of items of PP&E using the straight-line method over their estimated useful lives, and is generally recognized in profit or loss. Depreciation methods, useful lives, and residual values are reviewed at each reporting date and adjusted prospectively if appropriate. Land is not depreciated. Work in progress assets are not depreciated until the project is complete and the asset is available for use.

The estimated useful lives are as follows:

Asset	Years
Buildings	30 - 60
Transformer stations	45 - 55
Distribution lines – overhead	45 - 60
Distribution lines – underground	45 - 60
Distribution – transformers	45
Distribution – meters	15 - 40
Equipment and trucks	3 - 15

3. Significant accounting policies (continued)

(e) Impairment

(i) Financial assets measured at amortized cost

A loss allowance for expected credit losses on financial assets measured at amortized cost is recognized at the reporting date. The loss allowance is measured at an amount equal to the lifetime expected credit losses for the asset.

(ii) Non-financial assets

The carrying amounts of the Corporation's non-financial assets, other than materials and supplies, are reviewed at each reporting date to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated.

For the purpose of impairment testing, assets are grouped together into the smallest group of assets that generates cash inflows from continuing use that are largely independent of the cash inflows of other assets or groups of assets (the "cash-generating unit" or “CGU”). The recoverable amount of an asset or CGU is the greater of its value in use and its fair value less costs to sell. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset.

An impairment loss is recognized if the carrying amount of an asset or its CGU exceeds its estimated recoverable amount. Impairment losses are recognized in profit or loss.

For other assets, an impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization, if no impairment loss had been recognized.

For the regulated business, the carrying costs of most of the Corporation's non-financial assets are included in rate base (the aggregate of approved investment in PP&E and intangible assets, excluding construction in progress, less accumulated depreciation and amortization and unamortized capital contributions from customers, plus an allowance for working capital) where they earn an OEB-approved rate of return. Asset carrying values and the related return are recovered through approved rates. As a result, such assets are only tested for impairment in the event that the OEB disallows recovery, in whole or in part, or if such a disallowance is judged to be probable.

3. Significant accounting policies (continued)

(f) Customer deposits

Customer deposits represent cash deposits from electricity distribution customers and retailers to guarantee the payment of energy bills. Interest is paid on customer deposits.

Deposits are refundable to customers who demonstrate an acceptable level of credit risk as determined by the Corporation in accordance with policies set out by the OEB or upon termination of their electricity distribution service.

(g) Provisions

A provision is recognized if, as a result of a past event, the Corporation has a present legal or constructive obligation that can be estimated reliably, and it is probable that an outflow of economic benefits will be required to settle the obligation. Provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability.

(h) Regulatory balances

Regulatory deferral account debit balances represent costs incurred in excess of amounts billed to the customer. Regulatory deferral account credit balances represent amounts billed to the customer in excess of costs incurred by the Corporation.

Regulatory deferral account debit balances are recognized if it is probable that future billings in an amount at least equal to the deferred cost will result from inclusion of that cost in allowable costs for rate-making purposes. The offsetting amount is recognized in net movement in regulatory balances in profit or loss or Other Comprehensive Income ("OCI"). When the customer is billed at rates approved by the OEB for the recovery of the deferred costs, the customer billings are recognized in revenue. The regulatory debit balance is reduced by the amount of these customer billings with the offset to net movement in regulatory balances in profit or loss or OCI.

The probability of recovery of the regulatory deferral account debit balances is assessed annually based upon the likelihood that the OEB will approve rates to recover the balance. The assessment of likelihood of recovery is based upon previous decisions made by the OEB for similar circumstances, policies or guidelines issued by the OEB, etc. Any resulting impairment loss is recognized as a loss in the year incurred.

When the Corporation is required to refund amounts to ratepayers in the future, the Corporation recognizes a regulatory deferral account credit balance. The offsetting amount is recognized in net movement in regulatory balances in profit or loss or OCI. The amounts returned to the customers are recognized as a reduction of revenue. The credit balance is reduced by the amount of these customer repayments with the offset to net movement in regulatory balances in profit or loss or OCI.

3. Significant accounting policies (continued)

(i) Post-employment benefits

(i) Pension plan

The Corporation provides a pension plan for all its full-time employees through Ontario Municipal Employees Retirement System ("OMERS"). OMERS is a multi-employer pension plan which operates as the Ontario Municipal Employees Retirement Fund ("the Fund"), and provides pensions for employees of Ontario municipalities, local boards and public utilities. The Fund is a contributory defined benefit pension plan, which is financed by equal contributions from participating employers and employees, and by the investment earnings of the Fund. To the extent that the Fund finds itself in an under-funded position, additional contribution rates may be assessed to participating employers and members.

OMERS is a defined benefit plan. However, as OMERS does not segregate its pension asset and liability information by individual employers, there is insufficient information available to enable the Corporation to directly account for the plan. Consequently, the plan has been accounted for as a defined contribution plan. The Corporation is not responsible for any other contractual obligations other than the contributions. Obligations for contributions to defined contribution pension plans are recognized as an employee benefit expense in profit or loss when they are due.

(ii) Post-employment benefits, other than pension

The Corporation provides some of its retired employees with life insurance and medical benefits beyond those provided by government sponsored plans.

The obligations for these post-employment benefit plans are actuarially determined by applying the projected unit credit method and reflect management's best estimate of certain underlying assumptions. Re-measurements of the net defined benefit obligations, including actuarial gains and losses and the return on plan assets (excluding interest), are recognized immediately in other comprehensive income. When the benefits of a plan are improved, the portion of the increased benefit relating to past service by employees is recognized immediately in profit or loss.

3. Significant accounting policies (continued)

(j) Leased assets

At inception of a contract, the Corporation assess whether the contract is or contains a lease. A contract is determined to contain a lease if it provides the Corporation with the right to control the use of an identified asset for a period of time in exchange for consideration. Contracts determined to contain a lease are accounted for as leases. For leases and contracts that contain a lease, the Corporation recognizes a right-of-use asset and a lease liability at the lease commencement date. The right-of-use asset is initially measured at cost which comprises the initial amount of the lease liability adjusted for any lease payments made at or before the commencement date, plus any initial direct costs incurred and an estimate of costs to dismantle and remove the underlying asset or to restore the underlying asset or the site on which it is located, less any lease incentives received.

The right-of-use asset is subsequently depreciated using the straight-line method from the commencement date to the earlier of the end of the useful life of the right-of-use asset or the end of the lease term. The estimated useful lives of right-of-use assets are determined on the same basis as those of property, plant and equipment. Subsequent to initial recognition, the right-of-use asset is recognized at cost less any accumulated depreciation and any accumulated impairment losses, adjusted for certain remeasurements of the corresponding lease liability.

The lease liability is initially measured at the present value of lease payments plus the present value of lease payments that are not paid at the commencement date, discounted using the interest rate implicit in the lease, or if that rate cannot be readily determined, the Corporation's incremental borrowing rate.

The lease liability is subsequently measured at amortized cost using the effective interest method. It is remeasured when there is a change in future lease payments arising from a change in an index or rate, if there is a change in the Corporation's estimate of the amount expected to be payable under a residual value guarantee, or if the Corporation changes its assessment of whether it will exercise a purchase, extension or termination option. When the lease liability is remeasured in this way, a corresponding adjustment is made to the carrying amount of the right-of-use asset, or is recorded in profit or loss if the carrying amount of the right-of-use asset has been reduced to zero.

The Corporation has elected not to recognize right-of-use assets and lease liabilities for leases that have a lease term of 12 months or less or for leases of low value assets. The Corporation recognizes the lease payments associated with these leases as an expense on a straight-line basis over the lease term.

(k) Finance income and finance costs

Finance income is recognized as it accrues in profit or loss, using the effective interest method. Finance income comprises interest earned on cash balance and gain on derivatives.

Finance costs comprise interest expense on borrowings and realized losses on derivatives. Finance costs are recognized in profit or loss unless capitalized for qualifying assets.

3. Significant accounting policies (continued)

(l) Income taxes

The income tax expense comprises current and deferred tax. Income tax expense is recognized in profit or loss except to the extent that it relates to items recognized directly in equity, in which case, it is recognized in equity.

The Corporation is currently exempt from taxes under the Income Tax Act (Canada) and the Ontario Corporations Tax Act (collectively the "Tax Acts"). Under the *Electricity Act*, 1998, the Corporation makes payments in lieu of corporate taxes to the Ontario Electricity Financial Corporation ("OEFC"). These payments are calculated in accordance with the rules for computing taxable income and taxable capital and other relevant amounts contained in the Tax Acts as modified by the *Electricity Act*, 1998, and related regulations. Prior to October 1, 2001, the Corporation was not subject to income or capital taxes. Payments in lieu of taxes are referred to as income taxes.

Current tax comprises the expected tax payable or receivable on the taxable income or loss for the year, using tax rates enacted or substantively enacted at the reporting date, and any adjustment to tax payable in respect of previous years.

Deferred tax is recognized in respect of temporary differences between the tax basis of assets and liabilities and their carrying amounts for accounting purposes. Deferred tax assets are recognized for unused tax losses, unused tax credits and deductible temporary differences to the extent that it is probable that future taxable profits will be available against which they can be used. Deferred tax is measured at the tax rates that are expected to be applied to temporary differences when they reverse, using tax rates enacted or substantively enacted, at the reporting date.

4. (Bank indebtedness) cash

	2022	2021
Cash balances	$ 585,441	$ 589,046
Bank overdrafts used for cash management purposes*	(726,517)	(1,972,486)
Petty cash	300	300
	$ (140,776)	$ (1,383,140)

*The Corporation's bank overdraft is executed by way of a demand operating revolving credit facility with a credit limit of $3,000,000 and bears interest at prime plus 0.15% per annum and is secured by a general security agreement on the assets of the Corporation. As at December 31, 2022, $139,585 (2021 - $1,411,923) is drawn on the credit facility.

5. Accounts receivable

	2022	2021
Customer trade receivables	$ 2,887,152	$ 3,137,087
Less: loss allowance	(40,000)	(39,050)
	$ 2,847,152	$ 3,098,037

6. Materials and supplies

The amount of inventory consumed by the Corporation and recognized as an expense during the year was $38,543 (2021 - $10,155). An amount of $nil (2021 – $ nil) was written down due to obsolescence.

7. Property, plant and equipment

	January 1, 2022	Additions/ Depreciation	Transfers	Disposals/ Retirements	December 31, 2022
Cost					
Land	$ 307,134	$ –	$ –	$ (2,594)	$ 304,540
Buildings	1,234,529	8,186	–	–	1,242,715
Transformer stations	9,734,993	27,618	–	–	9,762,611
Distribution lines - overhead	9,327,271	405,584	–	(6,406)	9,726,449
Distribution lines – underground	12,541,288	438,088	–	(12,000)	12,967,376
Distribution - transformers	4,758,755	254,146	–	(27,515)	4,985,386
Distribution - meters	2,116,629	62,441	–	(8,759)	2,170,311
Equipment and trucks	2,804,360	198,101	–	(28,976)	2,973,485
Work in progress	479,546	2,613,254	(1,304,013)	–	1,788,787
	43,304,505	4,007,418	(1,304,013)	(86,250)	45,921,660
Accumulated Depreciation					
Buildings	157,497	26,805	–	–	184,302
Transformer stations	894,712	205,388	–	–	1,100,100
Distribution lines - overhead	131,326	276,182	–	(6,406)	401,102
Distribution lines - underground	1,989,044	307,503	–	(7,833)	2,288,714
Distribution - transformers	282,979	143,037	–	(17,731)	408,285
Distribution - meters	919,270	166,196	–	(3,584)	1,081,882
Equipment and trucks	1,851,938	254,187	–	(22,603)	2,083,522
Work in progress	–	–	–	–	–
	6,226,766	1,379,298	–	(58,157)	7,547,907
Carrying amount	$ 37,077,739	$ 2,628,120	$ (1,304,013)	$ (28,093)	$ 38,373,753

As at December 31, 2022, the property, plant and equipment are subject to a general security agreement as described in note 11.

There were no borrowing costs capitalized as part of the cost of property, plant and equipment in 2022 or 2021.

7. Property, plant and equipment

	January 1, 2021	Additions/ Depreciation	Transfers	Disposals/ Retirements	December 31, 2021
Cost					
Land	$ 307,134	$ –	$ –	$ –	$ 307,134
Buildings	874,597	359,932	–	–	1,234,529
Transformer stations	9,099,866	635,127	–	–	9,734,993
Distribution lines - overhead	8,652,655	768,409	–	(93,793)	9,327,271
Distribution lines – underground	12,062,875	478,413	–	–	12,541,288
Distribution - transformers	4,332,260	472,847	–	(43,352)	4,761,755
Distribution - meters	2,018,075	108,181	–	(9,627)	2,116,629
Equipment and trucks	2,560,935	289,296	–	(45,871)	2,804,360
Work in progress	998,037	2,498,828	(3,017,319)	–	479,546
	40,906,434	5,611,033	(3,017,319)	(195,643)	43,304,505
Accumulated Depreciation					
Buildings	133,760	23,737	–	–	157,497
Transformer stations	695,349	199,363	–	–	894,712
Distribution lines - overhead	(43,654)	265,171	–	(90,191)	131,326
Distribution lines - underground	1,691,255	297,789	–	–	1,989,044
Distribution - transformers	179,174	135,381	–	(31,576)	282,979
Distribution - meters	762,584	162,228	–	(5,542)	919,270
Equipment and trucks	1,643,167	254,642	–	(45,871)	1,851,938
Work in progress	–	–	–	–	–
	5,061,635	1,338,311	–	(173,180)	6,226,766
Carrying amount	$ 35,844,799	$ 4,272,722	$ (3,017,319)	$ (22,463)	$ 37,077,739

8. Income tax expense

Current tax expense

	2022	2021
Current period	$ (60,699)	$ 86,995
Prior period true-up	11,118	33,538
	$ (49,581)	$ 120,533

Income tax recovery of $44,287 (2021 - $ nil) has been recognized in other comprehensive income at the Corporations statutory income tax rate related to remeasurement of the Corporation's post-employment benefits.

Deferred tax expense

	2022	2021
Origination and reversal of temporary differences	$ 560,976	$ 325,333
Prior period true-up	–	(8,204)
	$ 560,976	$ 317,129

8. Income tax expense (continued)

Reconciliation of effective tax rate

	2022	2021
Income before taxes	$ 548,261	$ 1,152,673
Canada and Ontario statutory Income tax rates	26.5%	26.5%
Expected tax provision on income at statutory rates	145,289	305,458
Increase in income taxes resulting from:		
Permanent differences	226	508
Under provided in prior periods	11,118	25,333
Regulatory adjustments	371,093	100,065
CMT	52,613	6,298
Other	(68,944)	–
Income tax expense	$ 511,395	$ 437,662

Significant components of the Corporation's deferred tax balances

	2022	2021
Deferred tax liabilities:		
Property, plant and equipment	$(3,070,917)	$(2,748,661)
Other	(357,098)	–
	(3,428,015)	(2,748,661)
Deferred tax assets:		
Deferred revenue – contributed capital	1,675,024	1,554,478
Post-employment benefits	128,918	162,955
Other	–	12,418
	1,803,942	1,729,851
Net deferred tax liability	$(1,624,073)	$(1,018,810)

9. Regulatory balances

Reconciliation of the carrying amount for each class of regulatory balances:

Regulatory deferral account debit balances	January 1, 2022	Additions/ transfers	Recovery/ reversal	December 31, 2022	Remaining recovery/ reversal years
Settlement variances	$ 61,564	$ 800,377	$ 277,930	$ 1,139,871	2
Other regulatory accounts	379,508	138,479	50,845	568,832	1-5
Income tax	1,020,880	235,495	–	1,256,375	***
	$ 1,461,952	$ 1,174,351	$ 328,775	$ 2,965,078	

9. Regulatory balances (continued)

Regulatory deferral account debit balances	January 1, 2021	Additions/ transfers	Recovery/ reversal	December 31, 2021	Remaining recovery/ reversal years
Settlement variances	$ 21,144	$ 312,072	$ (271,652)	$ 61,564	2
Other regulatory accounts	403,768	(24,260)	–	379,508	1-5
Income tax	814,306	206,574	–	1,020,880	***
	$ 1,239,218	$ 494,386	$ (271,652)	$ 1,461,952	

Regulatory deferral account credit balances	January 1, 2022	Additions/ transfers	Recovery/ reversal	December 31, 2022	Remaining years
Settlement variances	$ (188,595)	$ (11,118)	$ 90,513	$ (109,200)	1
Other regulatory accounts	(260,287)	477,215	(423,889)	(206,961)	1-5
Income tax	–	–	–	–	***
	$ (448,882)	$ 466,097	$ (333,376)	$ (316,161)	

Regulatory deferral account credit balances	January 1, 2021	Additions/ transfers	Recovery/ reversal	December 31, 2021	Remaining years
Settlement variances	$ (614,557)	$ (91,913)	$ 517,875	$ (188,595)	3
Other regulatory accounts	(195,767)	(64,520)	–	(260,287)	1-5
Income tax	–	–	–	–	***
	$ (810,324)	$ (156,433)	$ 517,875	$ (448,882)	

The regulatory balances are recovered or settled through rates approved by the OEB which are determined using historical data. Future consumption is impacted by various factors including the economy and weather. The Corporation has received approval from the OEB to establish its regulatory balances.

*** These balances will reverse as the related deferred tax balance reverses.

9. Regulatory balances (continued)

The Corporation has determined that certain debit and credit balances arising from rate-regulated activities qualify for regulatory accounting treatment in accordance with IFRS 14 and the OEB's prescribed accounting procedures for electricity distributors. The regulatory balances are comprised of regulatory debit variances of $2,965,078 (2021 - $1,461,952) and regulatory credit balances for $316,161 (2021 - $448,882) for a net regulatory asset of $2,648,916 (2021 – asset of $1,013,070).

Regulatory balances attract interest at OEB prescribed rates, which are based on Bankers' Acceptances three-month rate plus a spread of 25 basis points, with the exception of the tax balances. In 2022, the rate was 0.57% for the period January to March, 1.02% for the period April to June, 2.20% for the period July to September and 3.87% for the period October to December.

The regulatory balances for the Corporation consist of the following:

(a) Settlement variances:

These accounts include the variances between amounts charged by the Corporation, based on regulated rates, and the corresponding cost of electricity and non-competitive electricity service costs incurred by the Corporation such as commodity charges, retail transmission rates and wholesale market services charges. The Corporation has deferred the variances and related recoveries in accordance with the criteria set out in the accounting principles prescribed by the OEB. This account also includes variances between the amounts approved for disposition by the OEB and the amounts collected or paid through OEB approved rate riders.

Settlement variances are reviewed annually as part of a COS or IRM application submitted to the OEB and a request for disposition is made if the aggregate of the settlement accounts exceeds the OEB's prescribed materiality level.

In the Corporation's 2022 IRM application, submitted in 2021, the Corporation obtained OEB approval for the disposition of the 2020 audited balances as they were above the OEB's prescribed materiality level. The OEB authorized the Corporation to dispose of a net credit balance of $423,889 through rate riders over a one-year period that took effect January 1, 2022.

(b) Income taxes:

The customer asset/liability for deferred taxes variance account relates to the expected regulatory asset or liability relating to deferred taxes arising from timing differences in the determination of income taxes as well as CCA acceleration.

(c) Lost revenue adjustment mechanism:

This deferral account includes the lost revenue adjustment variances in relation to the conservation and demand management ("CDM") programs or activities undertaken by the Corporation in accordance with OEB prescribed requirements (e.g. licence, codes and guidelines).

(d) Other:

This deferral account includes the amounts approved for disposition from settlement variances approved for disposition and recovery, allowable costs associated with cost assessments, retail charges and other miscellaneous regulatory accounts.

10. Accounts payable and accrued liabilities

	2022	2021
Accounts payable – energy purchases	$ 1,659,233	$ 1,915,967
Trade payables	1,466,212	1,622,974
Payroll payable	172,550	147,037
Other liabilities	415,876	9,019
	$ 3,713,871	$ 3,694,997

11. Long-term debt

	2022	2021
Notes payable	$ 2,621,647	$ 3,305,213
Demand loans	10,772,047	7,276,992
Ontario Infrastructure debenture	316,667	416,667
	13,710,361	10,998,872
Current portion	(11,036,989)	(7,530,432)
Long-term portion	$ 2,673,372	$ 3,468,440

The notes payable consists of three notes payable to the Corporation's parent company. The first note bears interest at 7.25%. The outstanding principal is $1,252,605 (2021 - $1,406,045) as at December 31, 2022. This note is unsecured and is repayable annually in the aggregate principal and interest of $250,346 (2021 - $250,346). During the year, the Corporation paid $153,440 (2021 - $142,740) in principal on the note. The second note bears interest at 3.50% and is due on February 1, 2025 and is repayable in blended monthly payments of $29,386. The outstanding balance is $734,715 (2021 - $1,055,524) at December 31, 2022. The third note bears interest at 3.50% and is due October 1, 2025 and is repayable in blended monthly payments of $19,625. The outstanding balance is $634,327 (2021 - $843,644) at December 31, 2022. The second and third loans are due on demand to the Town. The Town has waived its right to demand payment until January 1, 2024. These loans are postponed in favour of the demand instalment loan described below.

The Corporation has a demand instalment loan for which repayment commenced April, 2019 with an outstanding balance at year-end of $2,388,142 (2021 - $2,562,113) bearing interest at prime plus 0.75% per annum, maturing March, 2034. The Corporation has elected to use a swap contract to exchange the variable rate for a fixed rate of 3.168% per annum. The term loan of the swap contract is 15 years. Under the terms of the term loan and swap contract, repayment of the loan is in monthly installments of $21,052 of principal and interest. The swap contract is recorded at fair value and is in a net favorable position of $165,380 (2021 – unfavourable position of $88,739). The loan is secured by a General Security Agreement over the assets of the Corporation and by guarantees of a related party.

11. Long-term debt (continued)

The Corporation has a $3,000,000 non-revolving credit facility. The outstanding balance as at December 31, 2022 is $2,538,553 (2021 - $2,714,879) bearing interest at prime plus 0.75% per annum and matures February, 2035. The Corporation has elected to use a swap contract to exchange the variable rate for a fixed rate of 2.274% per annum. The term loan of the swap contract is 15 years. Under the terms of the term loan and swap contract, repayment of the loan is in monthly installments of $19,686 of principal and interest. The swap contract is recorded at fair value and is in a net favorable position of $319,357 (2021 - $60,850). The loan is secured by a General Security Agreement over the assets of the Corporation and by guarantees of a related party.

The Corporation has available a $3,000,000 revolving demand facility, which when drawn bears interest at prime plus 0.75%. The facility was fully drawn as at December 31, 2022. The outstanding balance as at December 31, 2022 is $2,856,812 (2021 - $2,000,000). The Corporation has elected to use a swap contract to exchange the variable rate for a fixed rate of 3.365% per annum. The term loan of the swap contract is 15 years. Under the terms of the term loan and swap contract, repayment of the loan is in monthly installments of $21,248 of principal and interest. The swap contract is recorded at fair value and is in an unfavourable position of $50,035 (2021 - $nil).

The Corporation has a demand installment loan for which repayment commenced November, 2022 with an outstanding balance at year-end of $2,988,540 (2021 - $nil) bearing interest at prime plus 0.75% per annum, maturing September, 2037. The Corporation has elected to use a swap contract to exchange the variable rate for a fixed rate of 4.75% per annum. The term loan of the swap contract is 15 years. Under the terms of the term loan and swap contract, repayment of the loan is in monthly installments of $23,335 of principal and interest. The swap contract is recorded at fair value and is in a favorable position of $210,318 (2021 - $nil). The loan is secured by a General Security Agreement over the assets of the Corporation and by guarantees of a related party.

The Corporation has an Ontario Infrastructure Projects Corporation (“OIPC”) fixed term debenture due February 16, 2026. The debenture bears interest at a rate of 4.27% per annum. The loan is payable in monthly principal payments in the amount of $8,333 plus interest. The loan is secured by a general security agreement over the assets of the Corporation.

12. Post-employment benefits

(a) OMERS pension plan

The Corporation provides a pension plan for its employees through OMERS. The plan is a multi-employer, contributory defined benefit pension plan with equal contributions by the employer and its employees. The Corporation provides a pension plan for its employees through OMERS. The plan is a multi–employer, contributory defined pension plan with equal contributions by the employer and its employees. The latest actuarial valuation as at December 31, 2022 reported a funding deficit of $6.7 billion (2021 - $3.1 billion). OMERS expects the contributions and policy changes made in response to the deficit to return the plan to a fully funded position by 2025. Contributions were made in the 2020 calendar year at rates ranging from 9.0% to 14.6% depending on the level of earnings. In 2022, the Corporation made

12. Post-employment benefits

(a) OMERS pension plan (continued)

employer contributions of $192,354 to OMERS (2021 - $185,098), of which $45,769 (2021 - $50,302) has been capitalized as part of PP&E and the remaining amount of $146,585 (2021 - $134,796) has been recognized in profit or loss. The Corporation estimates that a contribution of $198,603 to OMERS will be made during the next fiscal year.

(b) Post-employment benefits other than pension

The Corporation pays certain medical and life insurance benefits on behalf of some of its retired employees. The Corporation recognizes these post-employment benefits in the year in which employees' services were rendered. The Corporation is recovering its post-employment benefits in rates based on the expense and re-measurements recognized for post-employment benefit plans.

Reconciliation of the obligation	2022	2021
Defined benefit obligation, beginning of year	$ 614,923	$ 577,888
Included in profit or loss		
Current service cost	41,323	40,523
Interest cost	15,749	14,787
	671,995	633,198
Included in OCI		
Actuarial loss (gain) arising from changes in assumptions	(167,120)	–
	504,875	633,198
Benefits paid, cost incurred	(18,393)	(18,275)
Defined benefit obligation, end of year	$ 486,482	$ 614,923

Actuarial assumptions	2022	2021
General inflation	6.30%	3.40%
Discount (interest) rate	5.05%	2.60%
Salary levels	5.00%	3.30%
Medical costs	4.90%	4.70%
Dental costs	5.10%	4.90%

A 1% increase in the assumed discount rate would result in the defined benefit obligation decreasing by approximately $51,900. A 1% decrease in the assumed discount rate would result in the defined benefits obligation increasing by approximately $63,400.

13. Share capital

	2022	2021
Authorized:		
Unlimited number of common shares		
Issued:		
1,001 common shares	$ 2,632,307	$ 2,632,307

Dividends

The holders of the common shares are entitled to receive dividends as declared by the Corporation.

The Corporation paid dividends in the year on common shares of $750 per share (2021 - $750) which amount to total dividends paid in the year of $750,000 (2021 - $750,000).

14. Other revenue

	2022	2021
Pole rental	$ 162,580	$ 154,349
Late payment charges	33,156	34,255
Amortization of deferred revenue	154,886	139,925
Change of occupancy	29,040	35,130
Other	295,804	151,992
	$ 675,466	$ 515,651

15. Operating expenses

	2022	2021
Salaries and benefits	$ 1,665,775	$ 1,610,217
Depreciation and amortization	1,276,739	1,227,391
Contracted services/labour	–	860,093
Vehicle maintenance	43,689	96,317
Other	1,660,569	650,062
	$ 4,646,772	$ 4,444,080

16. Finance income and costs

	2022	2021
Finance income		
Interest income on bank deposits	$ 39,712	$ 23,655
Change in net unrealized gain (2021 - loss on swap adjustments)	672,909	287,093
	712,621	310,748
Finance costs		
Interest expense on long-term debt	(544,028)	(414,643)
Net finance income (costs) recognized in profit or loss	$ 168,593	$ (103,895)

17. Revenue from contracts with customers and other sources

	2022	2021
Revenue from contracts with customers:		
Energy sales	$ 24,169,710	$ 25,803,219
Distribution revenue	5,609,264	5,565,393
	29,778,974	31,368,612
Revenue from other sources:		
Amortization of deferred revenue	154,886	139,925
Other	520,580	375,726
	$ 30,454,440	$ 31,884,263

The following table disaggregates revenues from contracts with customers by type of customer:

	2022	2021
Revenue from contracts with customers:		
Residential	$ 3,028,256	$ 2,922,019
Commercial	2,335,230	2,420,185
Other customers	245,778	223,189
Energy	24,169,710	25,803,219
	$ 29,778,974	$ 31,368,612

18. Commitments and contingencies

General

From time to time, the Corporation is involved in various litigation matters arising in the ordinary course of its business. The Corporation has no reason to believe that the disposition of any such current matter could reasonably be expected to have a materially adverse impact on the Corporation's financial position, results of operations or its ability to carry on any of its business activities.

General Liability Insurance

The Corporation is a member of the Municipal Electric Association Reciprocal Insurance Exchange (MEARIE). MEARIE is a pooling of public liability insurance risks of many of the LDCs in Ontario. All members of the pool are subjected to assessment for losses experienced by the pool for the years in which they were members, on a pro-rata basis based on the total of their respective service revenues. As at December 31, 2022, no assessments have been made.

19. Amortization

	2022	2021
Amortization		
Amortization of capital assets charged to operations	$ 1,304,503	$ 1,227,391
Amortization of capital assets charged to capital assets through overhead capitalization	74,795	111,944
	$ 1,379,298	$ 1,339,335

20. Operating leases

The Corporation is committed to lease agreements for various low-dollar value leases.

The future minimum non-cancellable annual lease payments are as follows:

	2022	2021
Less than one year	$ 3,321	$ 2,159
Between one and five years	9,129	12,450
	$ 12,450	$ 14,609

During the year ended December 31, 2022, an expense of $3,320 (2021 - $5,713) was recognized in profit or loss in respect of operating leases.

21. Related party transactions

(a) Parent and ultimate controlling party

The sole shareholder of the Corporation is Niagara-on-the-Lake Energy Inc., which in turn is wholly-owned by the Town of Niagara-on-the-Lake (the "Town'). The Town produces consolidated financial statements that are available for public use.

(b) Outstanding balances due from (to) related parties:

	2022	2021
Energy Services Niagara Inc.	$ 112,643	$ 5,893
Niagara-on-the-Lake Energy Inc.	47,918	42,679
Town of Niagara-on-the-Lake	(790,245)	(756,281)
	$ (629,684)	$ (707,709)

Amounts are non-interest bearing with no fixed terms of repayment.

(c) Transactions with companies under common control

The Corporation received $190,580 (2021 - $203,361) for operations, billing and administrative services from a company under common control.

(d) Transactions with ultimate parent (the Town)

The Corporation had the following significant transactions with its ultimate parent, a government entity, in addition to those described in note 11.

The Corporation delivers electricity to the Town throughout the year for the electricity needs of the Town and its related organizations in the amount of $773,610 (2021 - $829,549). Electricity delivery charges are at prices and under terms approved by the OEB.

(e) Key management personnel

The key management personnel of the Corporation have been defined as members of the Board of Directors and executive managerial team members:

The compensation paid or payable is as follows:

	2022	2021
Salaries and benefits	$ 504,743	$ 465,066
OMERS contributions	36,695	36,695
Directors' fees	25,948	24,499
	$ 567,389	$ 526,621

22. Financial instruments and risk management

Fair value disclosure

The carrying values of cash balances, accounts receivable, unbilled revenue, due from/to related parties, bank indebtedness, line of credit and accounts payable and accrued liabilities approximate fair value because of the short maturity of these instruments. The carrying value of the customer deposits approximates fair value because the amounts are payable on demand. Derivatives are recognized at fair value.

The fair value of the long-term debt at December 31, 2022 is $12,066,000. The fair value is calculated based on the present value of future principal repayments, discounted at the current rate of interest at the reporting date. The interest rate used to calculate fair value at December 31, 2022 was 6.30% based upon the outstanding term of the loan.

Financial risks

The Corporation understands the risks inherent in its business and defines them broadly as anything that could impact its ability to achieve its strategic objectives. The Corporation's exposure to a variety of risks such as credit risk, interest rate risk, and liquidity risk, as well as related mitigation strategies are discussed below.

(a) Credit risk

Financial assets carry credit risk that a counterparty will fail to discharge an obligation which could result in a financial loss. Financial assets held by the Corporation, such as accounts receivable, expose it to credit risk. The Corporation earns its revenue from a broad base of customers located in the Town. No single customer accounts for a balance in excess of 10% of total accounts receivable.

The carrying amount of accounts receivable is reduced through the use of an allowance for estimated credit losses and the amount of the related impairment loss is recognized in profit or loss. Subsequent recoveries of receivables previously provisioned are credited to profit or loss. The balance of the allowance for impairment at December 31, 2022 is $40,000 (2021 - $39,050). An impairment gain of $12,892 (2021 - gain $22,000) was recognized during the year.

The Corporation's credit risk associated with accounts receivable is primarily related to payments from its electricity distribution customers. As a result of the COVID-19 pandemic, certain of the Corporation's customers have experienced business shut-downs and other disruptions. The Corporation has estimated the expected credit losses using its historical loss rates and recent trends for customer collections along with current and forecasted economic conditions and data. The Corporation has continued to monitor the extent of the impact of the COVID-19 pandemic on accounts receivable.

22. Financial instruments and risk management (continued)

(a) Credit risk (continued)

To support residential and small business customers struggling to pay their energy bills, the Government of Ontario provided funding for the COVID-19 Energy Assistance Program ("CEAP"). At December 31, 2022, $ 79,513 (2021 - $80,175) is considered 60 days past due. The Corporation has approximately 9,800 customers, the majority of whom are residential. Credit risk is mitigated through collection of security deposits from customers in accordance with directions provided by the OEB. As at December 31, 2022, the Corporation holds security deposits in the amount of $592,381 (2021 - $595,987).

(b) Market risk

Market risks primarily refer to the risk of loss resulting from changes in commodity prices, foreign exchange rates, and interest rates. The Corporation currently does not have any material commodity or foreign exchange risk. The Corporation is exposed to fluctuations in interest rates as the regulated rate of return for the Corporation's distribution business is derived using a complex formulaic approach which is in part based on the forecast for long-term Government of Canada bond yields. This rate of return is approved by the OEB as part of the approval of distribution rates. The Corporation's demand loans have a variable interest rate based on prime plus a margin. As a result, the Corporation is exposed to interest rate risk due to fluctuations in the prime rate. The Corporation has mitigated this risk through fixed-rate swap contracts.

(c) Liquidity risk

The Corporation monitors its liquidity risk to ensure access to sufficient funds to meet operational and investing requirements. The Corporation's objective is to ensure that sufficient liquidity is on hand to meet obligations as they fall due while minimizing interest exposure. The Corporation has access to a $3,000,000 credit facility and monitors cash balances daily to ensure that a sufficient level of liquidity is on hand to meet financial commitments as they become due. As at December 31, 2022, $139,585 (2021 - $1,411,923) had been drawn under the Corporation's credit facility.

The Corporation also has a bilateral facility for $1,550,000 (the "LC" facility) for the purpose of issuing letters of credit mainly to support the prudential requirements of the IESO with a limit of $1,550,000, of which $1,349,198 has been drawn and posted with the IESO (2021 - $1,349,198).

The majority of accounts payable, as reported on the statement of financial position, are due within 30 days.

22. Financial instruments and risk management (continued)

(d) Capital disclosures

The main objectives of the Corporation, when managing capital, are to ensure ongoing access to funding to maintain and improve the electricity distribution system, compliance with covenants related to its credit facilities, prudent management of its capital structure with regard for recoveries of financing charges permitted by the OEB on its regulated electricity distribution business, and to deliver the appropriate financial returns.

The Corporation's definition of capital includes shareholder's equity and long-term debt. As at December 31, 2022, shareholder's equity amounts to $20,828,285 (2021 - $19,549,547) and debt amounts to $13,710,361 (2021 - $10,998,872).

Schedule of Instalment Remittances

Name of corporation contact: Mr. Philip Wormwell
Telephone number: (905) 468-4235

Effective interest date	Description (instalment remittance, split payment, assessed credit)	Amount of credit
	Instalment	86,995

Total amount of instalments claimed (carry the result to line 840 of the T2 Return) 86,995 **A**

Total instalments credited to the taxation year per T9 86,995 **B**

Transfer

Account number	Taxation year end	Amount	Effective interest date	Description
From:				
To:				
From:				
To:				
From:				
To:				
From:				
To:				
From:				
To:				

Canada Revenue Agency / Agence du revenu du Canada

Net Income (Loss) for Income Tax Purposes

Schedule 1

Corporation's name	Business number	Tax year-end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

- Use this schedule to reconcile the corporation's net income (loss) as reported on the financial statements and its net income (loss) for tax purposes. For more information, see the T2 Corporation – Income Tax Guide.
- All legislative references are to the Income Tax Act.

Net income (loss) after taxes and extraordinary items from line 9999 of Schedule 125				1,795,546 A
Add:				
Provision for income taxes – current	101	555,682		
Amortization of tangible assets	104	1,379,298		
Loss on disposal of assets	111	24,457		
Charitable donations and gifts from Schedule 2	112	5,003		
Taxable capital gains from Schedule 6	113	27,620		
Non-deductible club dues and fees	120	3,895		
Non-deductible meals and entertainment expenses	121	852		
Reserves from financial statements – balance at the end of the year	126	526,482		
Subtotal of additions		2,523,289 ▶		2,523,289
Add:				
Other additions:				

	1 Description 605	2 Amount 295
1	Customer Deposits 12(1)(a)	592,381
2	Capital contributions received 12(1)(x)	609,776
	Total of column 2	1,202,157 ▶ 296 1,202,157

Subtotal of other additions	199	1,202,157 ▶	1,202,157 D
Total additions	500	3,725,446 ▶	3,725,446
Amount A **plus** line 500			5,520,992 B
Deduct:			
Gain on disposal of assets per financial statements	401	66,082	
Capital cost allowance from Schedule 8	403	1,955,703	
Reserves from financial statements – balance at the beginning of the year	414	653,973	
Contributions to deferred income plans from Schedule 15	417	45,769	
Subtotal of deductions		2,721,527 ▶	2,721,527
Deduct:			
Non-taxable/deductible other comprehensive income items	347	672,909	
Other deductions:			

	1 Description 705	2 Amount 395
1	Customer Deposits 20(1)(m)	592,381
2	Amortization of deferred capital contributions	154,886
3	Capital contributions received 13(7.4)	609,776
4	Tax included in net movement in regulatory balances	235,495
5	Regulatory adjustment	1,400,352
	Total of column 2	2,992,890 ▶ 396 2,992,890

Subtotal of other deductions	499	3,665,799 ▶	3,665,799	E
Total deductions	510	6,387,326 ▶	6,387,326	
Net income (loss) for income tax purposes (amount B **minus** line 510)			-866,334	C

Enter amount C on line 300 of the T2 return.

T2 SCH 1 E (19)

Canada

Canada Revenue Agency / Agence du revenu du Canada

Schedule 2

Charitable Donations and Gifts

Corporation's name	Business number	Tax year-end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

- For use by corporations to claim any of the following:
  - the eligible amount of charitable donations to qualified donees
  - the Ontario, Nova Scotia, and British Columbia food donation tax credits for farmers
  - the eligible amount of gifts of certified cultural property
  - the eligible amount of gifts of certified ecologically sensitive land or
  - the additional deduction for gifts of medicine made before March 22, 2017
- All legislative references are to the federal Income Tax Act, unless stated otherwise.
- The eligible amount of a gift is the amount by which the fair market value of the gifted property exceeds the amount of an advantage, if any, for the gift.
- The donations and gifts can be carried forward for 5 years except for gifts of certified ecologically sensitive land made after February 10, 2014, which can be carried forward for 10 years.
- Use this schedule to show a transfer of unused amounts from previous years following an amalgamation or the wind-up of a subsidiary as described under subsections 87(1) and 88(1).
- Subsection 110.1(1.2) provides as follows:
  - Where a particular corporation has undergone an acquisition of control, for tax years that end on or after the acquisition of control, no corporation can claim a deduction for a gift made by the particular corporation to a qualified donee before the acquisition of control.
  - If a particular corporation makes a gift to a qualified donee pursuant to an arrangement under which both the gift and the acquisition of control is expected, no corporation can claim a deduction for the gift unless the person acquiring control of the particular corporation is the qualified donee.
- An eligible medical gift made before March 22, 2017, to a qualifying organization for activities outside of Canada may be eligible for an additional deduction. Calculate the additional deduction in Part 5.
- File this schedule with your T2 Corporation Income Tax Return.
- For more information, see the T2 Corporation – Income Tax Guide.

Part 1 – Charitable donations

Charity/Recipient	Amount ($100 or more only)
United Way	5,003
Subtotal	5,003
Add: Total donations of less than $100 each	
Total donations in current tax year	5,003

Part 1 – Charitable donations

		Federal		Québec	Alberta
Charitable donations at the end of the previous tax year			1A		
Charitable donations expired after five tax years*	239				
Charitable donations at the beginning of the current tax year (amount 1A **minus** line 239)	240				
Charitable donations transferred on an amalgamation or the wind-up of a subsidiary	250				
Total charitable donations made in the current year (include this amount on line 112 of Schedule 1, Net Income (Loss) for Income Tax Purposes)	210	5,003		5,003	5,003
Subtotal (line 250 **plus** line 210)		5,003	1B	5,003	5,003
Subtotal (line 240 **plus** amount 1B)		5,003	1C	5,003	5,003
Adjustment for an acquisition of control	255				
Total charitable donations available (amount 1C **minus** line 255)		5,003	1D	5,003	5,003
Amount applied in the current year against taxable income (cannot be more than amount 2H in Part 2) (enter this amount on line 311 of the T2 return)	260				
Charitable donations closing balance (amount 1D **minus** line 260)	280	5,003		5,003	5,003

The amount of qualifying donations for the Ontario community food program donation tax credit for farmers included in the amount on line 260 (for donations made after December 31, 2013) **262**

Ontario community food program donation tax credit for farmers (amount on line 262 **multiplied** by 25 %) 1

Enter amount 1 on line 420 of Schedule 5, Tax Calculation Supplementary – Corporations. The maximum you can claim in the current year is whichever is less: the Ontario income tax otherwise payable or amount 1. For more information, see section 103.1.2 of the Taxation Act, 2007 (Ontario).

The amount of qualifying donations for the Nova Scotia food bank tax credit for farmers included in the amount on line 260 (for donations made after December 31, 2015) **263**

Nova Scotia food bank tax credit for farmers (amount on line 263 **multiplied** by 25 %) 2

Enter amount 2 on line 570 of Schedule 5, Tax Calculation Supplementary – Corporations. The maximum you can claim in the current year is whichever is less: the Nova Scotia income tax otherwise payable or amount 2. For more information, see section 50A of the Nova Scotia Income Tax Act.

The amount of qualifying gifts for the British Columbia farmers' food donation tax credit included in the amount on line 260 (for donations made after February 16, 2016, and before January 1, 2024) **265**

British Columbia farmers' food donation tax credit (amount on line 265 **multiplied** by 25 %) 3

Enter amount 3 on line 683 of Schedule 5, Tax Calculation Supplementary – Corporations. The maximum you can claim in the current year is whichever is less: the British Columbia income tax otherwise payable or amount 3. For more information, see section 20.1 of the British Columbia Income Tax Act.

* For federal and Alberta tax purposes, donations and gifts expire after five tax years. For Québec tax purposes, donations and gifts made in a tax year that ended before March 24, 2006, expire after five tax years; otherwise, donations and gifts expire after twenty tax years.

Amounts carried forward – Charitable donations

Year of origin:		Federal	Québec	Alberta
1st prior year	2021-12-31			
2nd prior year	2020-12-31			
3rd prior year	2019-12-31			
4th prior year	2018-12-31			
5th prior year	2017-12-31			
6th prior year*	2016-12-31			
7th prior year	2015-12-31			
8th prior year	2014-12-31			
9th prior year	2013-12-31			
10th prior year	2012-12-31			
11th prior year	2011-12-31			
12th prior year	2010-12-31			
13th prior year	2009-12-31			
14th prior year	2008-12-31			
15th prior year	2007-12-31			
16th prior year	2006-12-31			
17th prior year	2005-12-31			
18th prior year	2004-12-31			
19th prior year	2003-12-31			
20th prior year	2002-12-31			
21st prior year*	2001-12-31			
Total (to line A)				

***** For federal and Alberta tax purposes, donations and gifts included on line *6th prior year* expire automatically in the current tax year. For Québec tax purposes, donations and gifts made in a tax year that ended before March 24, 2006, that are included on line *6th prior year* and donations and gifts that are included on line *21st prior year* expire automatically in the current tax year.

Part 2 – Maximum allowable deduction for charitable donations

Net income for tax purposes [Note 1] **multiplied** by 75 % 2A

Taxable capital gains arising in respect of gifts of capital property included in Part 1 [Note 2] **225**

Taxable capital gain in respect of a disposition of a non-qualifying security under subsection 40(1.01) **227**

The amount of the recapture of capital cost allowance in respect of charitable donations **230**

Proceeds of disposition, **less** outlays and expenses [Note 2] 2B

Capital cost [Note 2] 2C

Amount 2B or 2C, whichever is less **235**

Amount on line 230 or 235, whichever is less 2D

Subtotal (**add** lines 225, 227, and amount 2D) 2E

Amount 2E **multiplied** by 25 % 2F

Subtotal (amount 2A **plus** amount 2F) 2G

Maximum allowable deduction for charitable donations
(enter amount 1D from Part 1, amount 2G, or net income for tax purposes, whichever is the least) 2H

Note 1: For credit unions, subsection 137(2) states that this amount is before the deduction of payments pursuant to allocations in proportion to borrowing and bonus interest.

Note 2: This amount must be prorated by the following calculation, eligible amount of the gift **divided** by the proceeds of disposition of the gift.

Part 3 – Gifts of certified cultural property

		Federal	Québec	Alberta
Gifts of certified cultural property at the end of the previous tax year	3A			
Gifts of certified cultural property expired after five tax years*	439			
Gifts of certified cultural property at the beginning of the current tax year (amount 3A **minus** line 439)	440			
Gifts of certified cultural property transferred on an amalgamation or the wind-up of a subsidiary	450			
Total gifts of certified cultural property in the current year (include this amount on line 112 of Schedule 1)	410			
Subtotal (line 450 **plus** line 410)	3B			
Subtotal (line 440 **plus** amount 3B)	3C			
Adjustment for an acquisition of control	455			
Amount applied in the current year against taxable income (enter this amount on line 313 of the T2 return)	460			
Subtotal (line 455 **plus** line 460)	3D			
Gifts of certified cultural property closing balance (amount 3C **minus** amount 3D)	480			

* For federal and Alberta tax purposes, donations and gifts expire after five tax years. For Québec tax purposes, donations and gifts made in a tax year that ended before March 24, 2006, expire after five tax years; otherwise, donations and gifts expire after twenty tax years.

Amount carried forward – Gifts of certified cultural property

Year of origin:		Federal	Québec	Alberta
1st prior year	2021-12-31			
2nd prior year	2020-12-31			
3rd prior year	2019-12-31			
4th prior year	2018-12-31			
5th prior year	2017-12-31			
6th prior year*	2016-12-31			
7th prior year	2015-12-31			
8th prior year	2014-12-31			
9th prior year	2013-12-31			
10th prior year	2012-12-31			
11th prior year	2011-12-31			
12th prior year	2010-12-31			
13th prior year	2009-12-31			
14th prior year	2008-12-31			
15th prior year	2007-12-31			
16th prior year	2006-12-31			
17th prior year	2005-12-31			
18th prior year	2004-12-31			
19th prior year	2003-12-31			
20th prior year	2002-12-31			
21st prior year*	2001-12-31			
Total				

* For federal and Alberta tax purposes, donations and gifts included on line *6th prior year* expire automatically in the current tax year. For Québec tax purposes, donations and gifts made in a tax year that ended before March 24, 2006, that are included on line *6th prior year* and donations and gifts that are included on line *21st prior year* expire automatically in the current tax year.

Part 4 – Gifts of certified ecologically sensitive land

		Federal		Québec	Alberta
Gifts of certified ecologically sensitive land at the end of the previous tax year			4A		
Gifts of certified ecologically sensitive land expired after 5 tax years, or after 10 tax years for gifts made after February 10, 2014*	539				
Gifts of certified ecologically sensitive land at the beginning of the current tax year (amount 4A **minus** line 539)	540				
Gifts of certified ecologically sensitive land transferred on an amalgamation or the wind-up of a subsidiary	550				
Total current-year gifts of certified ecologically sensitive land (include this amount on line 112 of Schedule 1)	520				
Subtotal (line 550 **plus** line 520)			4B		
Subtotal (line 540 **plus** amount 4B)			4C		
Adjustment for an acquisition of control	555				
Amount applied in the current year against taxable income (enter this amount on line 314 of the T2 return)	560				
Subtotal (line 555 **plus** line 560)			4D		
Gifts of certified ecologically sensitive land closing balance (amount 4C **minus** amount 4D)	580				

***** For federal and Alberta tax purposes, donations and gifts made before February 11, 2014, expire after five tax years and gifts made after February 10, 2014, expire after ten tax years. For Québec tax purposes, donations and gifts made during a tax year that ended before March 24, 2006, expire after five tax years; otherwise, donation and gifts expire after twenty tax years.

Amounts carried forward – Gifts of certified ecologically sensitive land

Amount of carried forward gifts made on or after February 11, 2014, in the tax year including this date

Year of origin:		Federal	Québec	Alberta
1st prior year	2021-12-31			
2nd prior year	2020-12-31			
3rd prior year	2019-12-31			
4th prior year	2018-12-31			
5th prior year	2017-12-31			
6th prior year*	2016-12-31			
7th prior year	2015-12-31			
8th prior year	2014-12-31			
9th prior year	2013-12-31			
10th prior year	2012-12-31			
11th prior year*	2011-12-31			
12th prior year	2010-12-31			
13th prior year	2009-12-31			
14th prior year	2008-12-31			
15th prior year	2007-12-31			
16th prior year	2006-12-31			
17th prior year	2005-12-31			
18th prior year	2004-12-31			
19th prior year	2003-12-31			
20th prior year	2002-12-31			
21st prior year*	2001-12-31			
Total				

***** For federal and Alberta tax purposes, donations and gifts made before February 11, 2014, that are included on line *6th prior year* and gifts that are included on line *11th prior year* expire automatically in the current year.

The field "Amount of carried forward gifts made on or after February 11, 2014, in the tax year including this date" is used to distinguish the portion of the gifts made in the tax year straddling February 11, 2014, that expires after ten tax years, from the portion that expires in the current tax year.

For Québec tax purposes, donations and gifts made during a tax year that ended before March 24, 2006, that are included on line *6th prior year* and gifts that are included on line *21st prior year* expire automatically in the current tax year.

Part 5 – Additional deduction for gifts of medicine

		Federal		Québec	Alberta
Additional deduction for gifts of medicine at the end of the previous tax year	5A				
Additional deduction for gifts of medicine expired after five tax years*	639				
Additional deduction for gifts of medicine at the beginning of the current tax year (amount 5A **minus** line 639)	640				
Additional deduction for gifts of medicine made before March 22, 2017 transferred on an amalgamation or the wind-up of a subsidiary	650				
Additional deduction for gifts of medicine made before March 22, 2017:					
Proceeds of disposition	602				
Cost of gifts of medicine made before March 22, 2017	601				
Subtotal (line 602 **minus** line 601)	5B				
Amount 5B **multiplied** by 50 %	5C				
Eligible amount of gifts	600				

Federal

a _____ x (b _____ / c) = Additional deduction for gifts of medicine made before March 22, 2017 . . . . . 610 _____

Québec

a _____ x (b _____ / c) = Additional deduction for gifts of medicine made before March 22, 2017 . . . . . _____

Alberta

a _____ x (b _____ / c) = Additional deduction for gifts of medicine made before March 22, 2017 . . . . . _____

where:

a is the **lesser** of line 601 and amount 5C

b is the eligible amount of gifts (line 600)

c is the proceeds of disposition (line 602)

Subtotal (line 650 **plus** line 610)	5D			
Subtotal (line 640 **plus** amount 5D)	5E			
Adjustment for an acquisition of control	655			
Amount applied in the current year against taxable income (enter this amount on line 315 of the T2 return)	660			
Subtotal (line 655 **plus** line 660)	5F			
Additional deduction for gifts of medicine closing balance (amount 5E **minus** amount 5F)	680			

***** For federal and Alberta tax purposes, donations and gifts expire after five tax years. For Québec tax purposes, donations and gifts made in a tax year that ended before March 19, 2007, expire after five tax years; otherwise, donations and gifts expire after twenty tax years.

Amounts carried forward – Additional deduction for gifts of medicine

Year of origin:		Federal	Québec	Alberta
1st prior year	2021-12-31			
2nd prior year	2020-12-31			
3rd prior year	2019-12-31			
4th prior year	2018-12-31			
5th prior year	2017-12-31			
6th prior year*	2016-12-31			
7th prior year	2015-12-31			
8th prior year	2014-12-31			
9th prior year	2013-12-31			
10th prior year	2012-12-31			
11th prior year	2011-12-31			
12th prior year	2010-12-31			
13th prior year	2009-12-31			
14th prior year	2008-12-31			
15th prior year	2007-12-31			
16th prior year	2006-12-31			
17th prior year	2005-12-31			
18th prior year	2004-12-31			
19th prior year	2003-12-31			
20th prior year	2002-12-31			
21st prior year*	2001-12-31			
Total				

* For federal and Alberta tax purposes, donations and gifts included on line *6th prior year* expire automatically in the current tax year. For Québec tax purposes, donations and gifts made in a tax year that ended before March 19, 2007, that are included on line *6th prior year* and donations and gifts that are included on line *21st prior year* expire automatically in the current tax year.

Québec – Gifts of musical instruments

Gifts of musical instruments at the end of the previous tax year		A
Deduct: Gifts of musical instruments expired after twenty tax years		B
Gifts of musical instruments at the beginning of the tax year		C
Add:		
Gifts of musical instruments transferred on an amalgamation or the wind-up of a subsidiary		D
Total current-year gifts of musical instruments		E
Subtotal (line D **plus** line E)		F
Deduct: Adjustment for an acquisition of control		G
Total gifts of musical instruments available		H
Deduct: Amount applied against taxable income (enter this amount on line 255 of form CO-17)		I
Gifts of musical instruments closing balance		J

Amounts carried forward – Gifts of musical instruments

Year of origin:		Québec
1st prior year	2021-12-31	
2nd prior year	2020-12-31	
3rd prior year	2019-12-31	
4th prior year	2018-12-31	
5th prior year	2017-12-31	
6th prior year*	2016-12-31	
7th prior year	2015-12-31	
8th prior year	2014-12-31	
9th prior year	2013-12-31	
10th prior year	2012-12-31	
11th prior year	2011-12-31	
12th prior year	2010-12-31	
13th prior year	2009-12-31	
14th prior year	2008-12-31	
15th prior year	2007-12-31	
16th prior year	2006-12-31	
17th prior year	2005-12-31	
18th prior year	2004-12-31	
19th prior year	2003-12-31	
20th prior year	2002-12-31	
21st prior year*	2001-12-31	
Total		

* These gifts expired in the current year.

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Schedule 3

Dividends Received, Taxable Dividends Paid, and Part IV Tax Calculation

Corporation's name	Business number	Tax year-end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

- Corporations must use this schedule to report:
  - non-taxable dividends under section 83
  - deductible dividends under subsection 138(6)
  - taxable dividends deductible from income under section 112, subsection 113(2) and paragraphs 113(1)(a), (a.1), (b) or (d)
  - taxable dividends paid in the tax year that qualify for a dividend refund (see page 3)
- All legislative references are to the federal Income Tax Act.
- The calculations in this schedule apply only to private or subject corporations (as defined in subsection 186(3)).
- A payer corporation is **connected** with a recipient corporation at any time in a tax year, if at that time the recipient corporation meets either of the following conditions:
  - it controls the payer corporation, other than because of a right referred to in paragraph 251(5)(b)
  - it owns more than 10% of the issued share capital (with full voting rights), and shares that have a fair market value of more than 10% of the fair market value of all shares of the payer corporation
- If you need more space, continue on a separate schedule.
- File this schedule with your T2 Corporation Income Tax Return.
- Column A1 – Enter "X" if dividends were received from a foreign source.
  Column F1 – Enter the code that applies to the deductible taxable dividend.

Part 1 – Dividends received in the tax year

- Do **not** include dividends received from foreign non-affiliates.
- Complete columns B, C, D, H, H.1, I, I.1, I.2 and L **only if** the payer corporation is **connected**.

Important instructions to follow if the payer corporation is connected

- If your corporation's tax year-end is different than that of the **connected** payer corporation, dividends could have been received from more than one tax year of the payer corporation. If so, **use a separate line** to provide the information according to each tax year of the payer corporation.
- When completing columns J, K and L use the **special calculations provided in the notes**.

	A Name of payer corporation (from which the corporation received the dividend) 200	A1	B Enter 1 if payer corporation is **connected** 205	C Business number of **connected** corporation 210	D Tax year-end of the payer corporation in which the sections 112/113 and subsection 138(6) dividends in column F were paid YYYYMMDD 220	E Non-taxable dividends under section 83 230
1			2			

Total of column E (enter amount on line 402 of Schedule 1)

Part 1 – Dividends received in the tax year (continued)

	F Taxable dividends deductible from taxable income under section 112, subsections 113(2) and 138(6), and paragraphs 113(1)(a), (a.1), (b), or (d) [1] 240	F1	G Eligible dividends included in column F 242	H Total taxable dividends paid by the **connected** payer corporation (line 460 in Schedule 3 for the tax year in column D) 250	H.1 Total eligible dividends paid by the **connected** payer corporation (line 465 in Schedule 3 for the tax year in column D)	I Dividend refund of the **connected** payer corporation (for tax year in column D) [2] 260
1						

	I.1 Eligible dividend refund of the **connected** payer corporation from its eligible refundable dividend tax on hand (ERDTOH) (amount CC from T2 return for the tax year in column D)	I.2 Additional non-eligible dividend refund of the **connected** payer corporation from its ERDTOH (amount II from T2 return for the tax year in column D)	J Part IV tax for eligible dividends. Dividends (from column G) **multiplied** by 38 1/3% [3] 265	K Part IV tax before deductions. Dividends (from column F) **multiplied** by 38 1/3% [4] 275	L Part IV tax before deductions on taxable dividends received from **connected** corporations [5] 280
1					

Total of column L (enter amount on line 2E in Part 2)

Taxable dividends received from connected corporations (total amounts from column F with code 1 in column B) 1A

Taxable dividends received from non-connected corporations (total amounts from column F with code 2 in column B) 1B

Subtotal (amount 1A **plus** amount 1B, include this amount on line 320 of the T2 return) 1C

Eligible dividends received from connected corporations (total amounts from column G with code 1 in column B) 1D

Eligible dividends received from non-connected corporations (total amounts from column G with code 2 in column B) 1E

Part IV tax before deductions on taxable dividends received from connected corporations (total amounts from column K with code 1 in column B) 1F

Part IV tax before deductions on taxable dividends received from non-connected corporations (total amounts from column K with code 2 in column B) 1G

Subtotal (amount 1F **plus** amount 1G) ▶ 1H

Part IV tax on eligible dividends received from connected corporations (total amounts from column J with code 1 in column B) 1I

Part IV tax on eligible dividends received from non-connected corporations (total amounts from column J with code 2 in column B) 1J

Subtotal (amount 1I **plus** amount 1J) ▶ 1K

Part IV tax before deductions on taxable dividends (other than eligible dividends) (amount 1H **minus** amount 1K) 1L

1 If taxable dividends are received, enter the amount in column F, but if the corporation is not subject to Part IV tax (such as a public corporation other than a subject corporation as defined in subsection 186(3)), enter "0" in column K (and column J, if applicable). Life insurers are not subject to Part IV tax on subsection 138(6) dividends.

2 If the **connected** payer corporation's tax year ends after the corporation's balance-due day for the tax year (two or three months, as applicable), you have to estimate the payer's dividend refund when you calculate the corporation's Part IV tax payable.

3 For eligible dividends received from **connected** corporations, Part IV tax on dividends is equal to column I **divided** by column H **multiplied** by column G.

4 For taxable dividends received from **connected** corporations, Part IV tax on dividends is equal to column I **divided** by column H **multiplied** by column F.

5 For the purpose of calculating your eligible refundable dividend tax on hand (ERDTOH), Part IV tax on taxable dividends received from **connected** corporations (with a tax year starting after 2018) is equal to the sum of Part IV tax on eligible dividends and non-eligible dividends received from **connected** corporations to the extent that such dividends caused a dividend refund to those corporations from their ERDTOH.

Part IV tax before deductions on taxable dividends received from **connected** corporations for purposes of column L is the sum of (i) and (ii), where

(i) Part IV tax on eligible dividends received from **connected** corporations is equal to amount CC of the **connected** payer corporation (on page 7 of the T2 return) **divided** by line 465 of the **connected** payer corporation, **multiplied** by column G; and

(ii) Part IV tax on non-eligible dividends received from **connected** corporations is equal to amount II of the **connected** payer corporation (on page 7 of the T2 return) **divided** by line 470 of the **connected** payer corporation, **multiplied** by the difference between columns F and G.

Part 2 – Calculation of Part IV tax payable

Part IV tax on dividends received before deductions (amount 1H in part 1) 2A

Part IV.I tax payable on dividends subject to Part IV tax (from line 360 of Schedule 43) 320

Subtotal (amount 2A **minus** line 320) ▶ 2B

Current-year non-capital loss claimed to reduce Part IV tax 330

Non-capital losses from previous years claimed to reduce Part IV tax 335

Current-year farm loss claimed to reduce Part IV tax 340

Farm losses from previous years claimed to reduce Part IV tax 345

Total losses applied against Part IV tax (total of lines 330 to 345) 2C

Amount 2C **multiplied** by 38 1 / 3 % 2D

Part IV tax payable (amount 2B **minus** amount 2D, if negative enter "0") 360

(enter amount on line 712 of the T2 return)

If your tax year begins after 2018, complete the following part to determine the required amount of Part IV taxes payable in order to calculate the eligible refundable dividend tax on hand (ERDTOH) at the end of the tax year.

Part IV tax before deductions on taxable dividends received from connected corporations (total of column L in part 1) 2E

Amount 4A from Schedule 43 . . . . . 2F

Part IV tax payable on taxable dividends received from connected corporations
(amount 2E **minus** amount 2F, if negative enter "0") 2G

(enter at amount L on page 7 of the T2 return)

Part IV tax on eligible dividends received from non-connected corporations (amount 1J in part 1) 2H

Amount 4C from Schedule 43 . . . . . 2I

Part IV tax payable on taxable dividends received from non-connected corporations
(amount 2H **minus** amount 2I, if negative enter "0") 2J

(enter at amount M on page 7 of the T2 return)

Part 3 – Taxable dividends paid in the tax year that qualify for a dividend refund

If your corporation's tax year-end is different than that of the recipient corporation with which you are connected, your corporation could have paid dividends in more than one tax year of the recipient corporation. If so, use a separate line to provide the information according to each tax year of the recipient corporation.

	L Name of recipient corporation with which you are connected 400	M Business number 410	N Tax year-end of recipient corporation in which the dividends in column O were received YYYYMMDD 420	O Taxable dividends paid to recipient corporations with which you are connected 430	P Eligible dividends included in column O 440
1	NIAGARA-ON-THE-LAKE ENERGY INC.	86376 1490 RC0001	2022-12-31	750,000	
2					
				750,000 (Total of column O)	(Total of column P)

Part 3 – Taxable dividends paid in the tax year that qualify for a dividend refund (continued)

Total taxable dividends paid in the tax year to other than connected corporations	450	
Eligible dividends included in line 450	455	
Total taxable dividends paid in the tax year that qualify for a dividend refund (total of column O **plus** line 450)	460	750,000
Total eligible dividends paid in the tax year (total of column P **plus** line 455)	465	
Total non-eligible taxable dividends paid in the tax year (line 460 **minus** line 465)	470	750,000

Complete this part to determine the following amounts in order to calculate the dividend refund.

Line 465 **multiplied** by 38 1 / 3 % 3A
(enter at amount AA on page 7 of the T2 return)

Line 470 **multiplied** by 38 1 / 3 % 287,500 3B
(enter at amount DD on page 7 of the T2 return)

Part 4 – Total dividends paid in the tax year

Complete this part **if** the total taxable dividends paid in the tax year that qualify for a dividend refund (line 460) is different from the total dividends paid in the tax year.

Total taxable dividends paid in the tax year for the purposes of a dividend refund (from above)		750,000
Other dividends paid in the tax year (total of 510 to 540)		
Total dividends paid in the tax year	500	750,000
Dividends paid out of capital dividend account	510	
Capital gains dividends	520	
Dividends paid on shares described in subsection 129(1.2)	530	
Taxable dividends paid to a controlling corporation that was bankrupt at any time in the year	540	
Subtotal (total of lines 510 to 540) ▶		4A

Total taxable dividends paid in the tax year that qualify for a dividend refund (Line 500 **minus** amount 4A) 750,000 4B

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Schedule 4

Corporation Loss Continuity and Application

Corporation's name	Business number	Tax year-end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

- Use this form to determine the continuity and use of available losses; to determine a current-year non-capital loss, farm loss, restricted farm loss, or limited partnership loss; to determine the amount of restricted farm loss and limited partnership loss that can be applied in a year; and to ask for a loss carryback to previous years.
- A corporation can choose whether or not to deduct an available loss from income in a tax year. The corporation can deduct losses in any order. However, for each type of loss, deduct the oldest loss first.
- According to subsection 111(4) of the federal Income Tax Act, when control has been acquired, no amount of capital loss incurred for a tax year ending before that time is deductible in computing taxable income in a tax year ending after that time. Also, no amount of capital loss incurred in a tax year ending after that time is deductible in computing taxable income of a tax year ending before that time.
- When control has been acquired, subsection 111(5) provides for similar treatment of non-capital and farm losses, except as listed in paragraphs 111(5)(a) and (b).
- For information on these losses, see the T2 Corporation – Income Tax Guide.
- File this schedule with the T2 return, or send the schedule by itself to the tax centre where the return is filed.
- All legislative references are to the federal Income Tax Act.

Part 1 – Non-capital losses

Determination of current-year non-capital loss

Net income (loss) for income tax purposes			-866,334 1A
Net capital losses deducted in the year (enter as a positive amount)		1B	
Taxable dividends deductible under section 112 or subsections 113(1) or 138(6)		1C	
Amount of Part VI.1 tax deductible under paragraph 110(1)(k)		1D	
Amount deductible as prospector's and grubstaker's shares – Paragraph 110(1)(d.2)		1E	
Employer deduction for non-qualified securities – Paragraph 110(1)(e)		1F	
Subtotal (total of amounts 1B to 1F)		▶	1G
Subtotal (amount 1A **minus** amount 1G; if positive, enter "0"			-866,334 1H
Section 110.5 or subparagraph 115(1)(a)(vii) – Addition for foreign tax deductions			1I
Subtotal (amount 1H **minus** amount 1I)			-866,334 1J
Current-year farm loss (the lesser of: the net loss from farming or fishing included in income and the non-capital loss before deducting the farm loss)			1K
Current-year non-capital loss (amount 1J **plus** amount 1K; if positive, enter "0")			-866,334 1L

If amount 1L is negative, enter it on line 110 as a positive.

Continuity of non-capital losses and request for a carryback

Non-capital loss at the end of the previous tax year			1M	
Non-capital loss expired **(note 1)**	100			
Non-capital losses at the beginning of the tax year (amount 1M **minus** line 100)	102		▶	
Non-capital losses transferred on an amalgamation or on the wind-up of a subsidiary **(note 2)** corporation	105			
Current-year non-capital loss (from amount 1L)	110	866,334		
Subtotal (line 105 **plus** line 110)		866,334	▶	866,334 1N
Subtotal (line 102 **plus** amount 1N)				866,334 1O

Note 1: A non-capital loss expires after **20 tax years** and an allowable business investment loss becomes a net capital loss after **10 tax years**.

Note 2: Subsidiary is defined in subsection 88(1) as a taxable Canadian corporation of which 90% or more of each class of issued shares are owned by its parent corporation and the remaining shares are owned by persons that deal at arm's length with the parent corporation.

Part 1 – Non-capital losses (continued)

Other adjustments (includes adjustments for an acquisition of control)	150		
Section 80 – Adjustments for forgiven amounts	140		
Subsection 111(10) – Adjustments for fuel tax rebate			
Non-capital losses of previous tax years applied in the current tax year	130		
Enter line 130 on line 331 of the T2 return.			
Current and previous years non-capital losses applied against current-year taxable dividends subject to Part IV tax **(note 3)**	135		
Subtotal (total of lines 150, 140, 130 and 135)			1P
Non-capital losses before any request for a carryback (amount 1O **minus** amount 1P)		866,334	1Q

Request to carry back non-capital loss to:

First previous tax year to reduce taxable income	901		
Second previous tax year to reduce taxable income	902	446,381	
Third previous tax year to reduce taxable income	903	419,953	
First previous tax year to reduce taxable dividends subject to Part IV tax	911		
Second previous tax year to reduce taxable dividends subject to Part IV tax	912		
Third previous tax year to reduce taxable dividends subject to Part IV tax	913		
Total of requests to carry back non-capital losses to previous tax years (total of lines 901 to 913)		866,334	866,334 1R
Closing balance of non-capital losses to be carried forward to future tax years (amount 1Q **minus** amount 1R)	180		

Note 3: Line 135 is the total of lines 330 and 335 from Schedule 3, Dividends Received, Taxable Dividends Paid, and Part IV Tax Calculation.

Part 2 – Capital losses

Continuity of capital losses and request for a carryback

Capital losses at the end of the previous tax year	200	44,560	
Capital losses transferred on an amalgamation or on the wind-up of a subsidiary corporation	205		
Subtotal (line 200 **plus** line 205)		44,560	44,560 2A
Other adjustments (includes adjustments for an acquisition of control)	250		
Section 80 – Adjustments for forgiven amounts	240		
Subtotal (line 250 **plus** line 240)			2B
Subtotal (amount 2A **minus** amount 2B)			44,560 2C
Current-year capital loss (from the calculation on Schedule 6, Summary of Dispositions of Capital Property)	210		
Unused non-capital losses from the 11th previous tax year **(note 4)**			2D
Allowable business investment losses (ABILs) that expired as non-capital losses at the end of the previous tax year **(note 5)**			2E
Enter amount 2D or 2E, whichever is less	215		
ABILs expired as non-capital losses: line 215 **multiplied** by 2.000000	220		
Subtotal (amount 2C **plus** line 210 **plus** line 220)			44,560 2F

Note

If there has been an amalgamation or a wind–up of a subsidiary, do a separate calculation of the ABIL expired as non-capital loss for each predecessor or subsidiary corporation. Add all these amounts and enter the total on line 220.

Note 4: Determine the amount of the non-capital loss from the **11th previous tax year**, and enter the part of the non-capital loss that was not deducted in the **previous 11 years**.

Note 5: Enter the amount of the ABILs from the **11th previous tax year**. Enter the full amount on amount 2E.

Part 2 – Capital losses (continued)

Capital losses from previous tax years applied against the current-year net capital gain **(note 6)** . . . . . **225** _____

Capital losses before any request for a carryback (amount 2F **minus** line 225) 44,560 2G

Request to carry back capital loss to (note 7):

	Capital gain (100%)		Amount carried back (100%)	
First previous tax year	_____	**951**	_____	
Second previous tax year	_____	**952**	_____	
Third previous tax year	_____	**953**	_____	
Subtotal (total of lines 951 to 953)	_____	▶	_____	2H

Closing balance of capital losses to be carried forward to future tax years (amount 2G **minus** amount 2H) **(note 8)** **280** 44,560

Note 6: To get the net capital losses required to reduce the taxable capital gain included in the net income (loss) for the current tax year, enter the amount from line 225 **divided** by 2 at line 332 of the T2 return.

Note 7: On line 225, 951, 952, or 953, whichever applies, enter the actual amount of the loss. When the loss is applied, **divide** this amount by 2. The result represents the 50% inclusion rate.

Note 8: Capital losses can be carried forward indefinitely.

Part 3 – Farm losses

Continuity of farm losses and request for a carryback

Farm losses at the end of the previous tax year . . . . . _____ 3A

Farm loss expired **(note 9)** . . . . . **300** _____

Farm losses at the beginning of the tax year (amount 3A **minus** line 300) . . . . . **302** _____ ▶ _____

Farm losses transferred on an amalgamation or on the wind–up of a subsidiary corporation . **305** _____

Current-year farm loss (amount 1K in Part 1) . . . . . **310** _____

Subtotal (line 305 **plus** line 310) _____ ▶ _____ 3B

Subtotal (line 302 **plus** amount 3B) _____ 3C

Other adjustments (includes adjustments for an acquisition of control) . . . . . **350** _____

Section 80 – Adjustments for forgiven amounts . . . . . **340** _____

Farm losses of previous tax years applied in the current tax year . . . . . **330** _____

Enter line 330 on line 334 of the T2 Return.

Current and previous years farm losses applied against current-year taxable dividends subject to Part IV tax **(note 10)** . . . . . **335** _____

Subtotal (total of lines 350, 340, 330 and 335) _____ ▶ _____ 3D

Farm losses before any request for a carryback (amount 3C **minus** amount 3D) _____ 3E

Request to carry back farm loss to:

First previous tax year to reduce taxable income . . . . . **921** _____

Second previous tax year to reduce taxable income . . . . . **922** _____

Third previous tax year to reduce taxable income . . . . . **923** _____

First previous tax year to reduce taxable dividends subject to Part IV tax . . . . . **931** _____

Second previous tax year to reduce taxable dividends subject to Part IV tax . . . . . **932** _____

Third previous tax year to reduce taxable dividends subject to Part IV tax . . . . . **933** _____

Subtotal (total of lines 921 to 933) _____ ▶ _____ 3F

Closing balance of farm losses to be carried forward to future tax years (amount 3E **minus** amount 3F) **380** _____

Note 9: A farm loss expires after **20 tax years**.

Note 10: Line 335 is the total of lines 340 and 345 from Schedule 3.

Part 4 – Restricted farm losses

Current-year restricted farm loss

Total losses for the year from farming business **485**

(line 485 _____ – $2,500) **divided** by 2 . . . . . 4A

Amount 4A or $ 15,000 , whichever is less 4B

2,500 4C

Subtotal (amount 4B **plus** amount 4C) 2,500 ▶ 2,500 4D

Current-year restricted farm loss (line 485 **minus** amount 4D) 4E

Continuity of restricted farm losses and request for a carryback

Restricted farm losses at the end of the previous tax year 4F

Restricted farm loss expired **(note 11)** **400**

Restricted farm losses at the beginning of the tax year (amount 4F **minus** line 400) . . . . . **402** ▶

Restricted farm losses transferred on an amalgamation or on the wind-up of a subsidiary corporation **405**

Current-year restricted farm loss (from amount 4E) **410**

Enter line 410 on line 233 of Schedule 1, Net Income (Loss) for Income Tax Purposes.

Subtotal (line 405 **plus** line 410) ▶ 4G

Subtotal (line 402 **plus** amount 4G) 4H

Restricted farm losses from previous tax years applied against current farming income **430**

Enter line 430 on line 333 of the T2 return.

Section 80 – Adjustments for forgiven amounts **440**

Other adjustments **450**

Subtotal (total of lines 430 to 450) ▶ 4I

Restricted farm losses before any request for a carryback (amount 4H **minus** amount 4I) 4J

Request to carry back restricted farm loss to:

First previous tax year to reduce farming income **941**

Second previous tax year to reduce farming income **942**

Third previous tax year to reduce farming income **943**

Subtotal (total of lines 941 to 943) ▶ 4K

Closing balance of restricted farm losses to be carried forward to future tax years (amount 4J **minus** amount 4K) **480**

Note

The total losses for the year from all farming businesses are calculated without including scientific research expenses.

Note 11: A restricted farm loss expires after **20 tax years**.

Part 5 – Listed personal property losses

Continuity of listed personal property loss and request for a carryback

Listed personal property losses at the end of the previous tax year 5A

Listed personal property loss expired **(note 12)** 500

Listed personal property losses at the beginning of the tax year (amount 5A **minus** line 500) . 502 ▶

Current-year listed personal property loss (from Schedule 6) 510

Subtotal (line 502 **plus** line 510) 5B

Listed personal property losses from previous tax years applied against listed personal property gains 530

Enter line 530 on line 655 of Schedule 6.

Other adjustments 550

Subtotal (line 530 **plus** line 550) ▶ 5C

Listed personal property losses remaining before any request for a carryback (amount 5B **minus** amount 5C) 5D

Request to carry back listed personal property loss to:

First previous tax year to reduce listed personal property gains 961

Second previous tax year to reduce listed personal property gains 962

Third previous tax year to reduce listed personal property gains 963

Subtotal (total of lines 961 to 963) ▶ 5E

Closing balance of listed personal property losses to be carried forward to future tax years (amount 5D **minus** amount 5E) 580

Note 12: A listed personal property loss expires after **7 tax years**.

Part 7 – Limited partnership losses

Current-year limited partnership losses

	1 Partnership account number 600	2 Tax year ending YYYY/MM/DD 602	3 Corporation's share of limited partnership loss 604	4 Corporation's at-risk amount 606	5 Total of corporation's share of partnership investment tax credit, farming losses, and resource expenses 608	6 Column 4 **minus** column 5 (if negative, enter "0")	7 Current -year limited partnership losses (column 3 **minus** column 6) 620
1.							

Total (enter this amount on line 222 of Schedule 1)

Limited partnership losses from previous tax years that may be applied in the current year

	1 Partnership account number 630	2 Tax year ending YYYY/MM/DD 632	3 Limited partnership losses at the end of the previous tax year and amounts transferred on an amalgamation or on the wind-up of a subsidiary 634	4 Corporation's at-risk amount 636	5 Total of corporation's share of partnership investment tax credit, business or property losses, and resource expenses 638	6 Column 4 **minus** column 5 (if negative, enter "0")	7 Limited partnership losses that may be applied in the year (the lesser of columns 3 and 6) 650
1.							

Continuity of limited partnership losses that can be carried forward to future tax years

	1 Partnership account number 660	2 Limited partnership losses at the end of the previous tax year 662	3 Limited partnership losses transferred in the year on an amalgamation or on the wind-up of a subsidiary 664	4 Current-year limited partnership losses (from line 620) 670	5 Limited partnership losses applied in the current year (must be equal to or less than line 650) 675	6 Current year limited partnership losses closing balance to be carried forward to future years (column 2 **plus** column 3 **plus** column 4 **minus** column 5) 680
1.						

Total (enter this amount on line 335 of the T2 return)

Note

If you need more space, you can attach more schedules.

Part 8 – Election under paragraph 88(1.1)(f)

If you are making an election under paragraph 88(1.1)(f), tick the box . . . . . **190** Yes ☐

In the case of the wind-up of a subsidiary, if the election is made, the non-capital loss, restricted farm loss, farm loss, or limited partnership loss of the subsidiary—that otherwise would become the loss of the parent corporation for a particular tax year starting after the wind–up began—will be considered as the loss of the parent corporation for its immediately preceding tax year and not for the particular year.

Note

This election is only applicable for wind-ups under subsection 88(1) that are reported on Schedule 24, First-Time Filer after Incorporation, Amalgamation, or Winding-up of a Subsidiary into a Parent.

Non-Capital Loss Continuity Workchart

Part 6 – Analysis of balance of losses by year of origin

Non-capital losses

Year of origin	Balance at beginning of year	Loss incurred in current year	Adjustments and transfers	Loss carried back Parts I & IV	Applied to reduce		Balance at end of year
					Taxable income	Part IV tax	
Current	N/A	866,334		866,334	N/A		
1st preceding taxation year 2021-12-31		N/A		N/A			
2nd preceding taxation year 2020-12-31		N/A		N/A			
3rd preceding taxation year 2019-12-31		N/A		N/A			
4th preceding taxation year 2018-12-31		N/A		N/A			
5th preceding taxation year 2017-12-31		N/A		N/A			
6th preceding taxation year 2016-12-31		N/A		N/A			
7th preceding taxation year 2015-12-31		N/A		N/A			
8th preceding taxation year 2014-12-31		N/A		N/A			
9th preceding taxation year 2013-12-31		N/A		N/A			
10th preceding taxation year 2012-12-31		N/A		N/A			
11th preceding taxation year 2011-12-31		N/A		N/A			
12th preceding taxation year 2010-12-31		N/A		N/A			
13th preceding taxation year 2009-12-31		N/A		N/A			
14th preceding taxation year 2008-12-31		N/A		N/A			
15th preceding taxation year 2007-12-31		N/A		N/A			
16th preceding taxation year 2006-12-31		N/A		N/A			
17th preceding taxation year 2005-12-31		N/A		N/A			
18th preceding taxation year 2004-12-31		N/A		N/A			
19th preceding taxation year 2003-12-31		N/A		N/A			
20th preceding taxation year 2002-12-31		N/A		N/A			*
Total		866,334		866,334			

* **This balance expires this year and will not be available next year.**

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Schedule 5

Tax Calculation Supplementary – Corporations

Corporation's name	Business Number	Tax year-end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

- Use this schedule if any of the following apply to your corporation during the tax year:
  - it had a permanent establishment in more than one jurisdiction (corporations that have no taxable income should only complete columns A, B, and D in Part 1)
  - it is claiming provincial or territorial tax credits or rebates (see Part 2)
  - it has to pay taxes, other than income tax, for Newfoundland and Labrador or Ontario (see Part 2)
- All legislative references are to the federal Income Tax Regulations (the Regulations).
- For more information, see the T2 Corporation – Income Tax Guide.
- For the regulation number to be entered in field 100 of Part 1, see the chart below.

Part 1 – Allocation of taxable income

100 _____ Enter the regulation that applies (402 to 413)

A Jurisdiction. Tick yes if your corporation had a permanent establishment in the jurisdiction during the tax year Note 1		B Total salaries and wages paid in jurisdiction	C (B x taxable income) / G	D Gross revenue attributable to jurisdiction	E (D x taxable income) / H	F Allocation of taxable income (C + E) x 1/2 Note 2 (where either G or H is nil, do not multiply by 1/2)
Newfoundland and Labrador	003 Yes ☐	103		143		
Newfoundland and Labrador Offshore	004 Yes ☐	104		144		
Prince Edward Island	005 Yes ☐	105		145		
Nova Scotia	007 Yes ☐	107		147		
Nova Scotia Offshore	008 Yes ☐	108		148		
New Brunswick	009 Yes ☐	109		149		
Quebec	011 Yes ☐	111		151		
Ontario	013 Yes ☐	113		153		
Manitoba	015 Yes ☐	115		155		
Saskatchewan	017 Yes ☐	117		157		
Alberta	019 Yes ☐	119		159		
British Columbia	021 Yes ☐	121		161		
Yukon	023 Yes ☐	123		163		
Northwest Territories	025 Yes ☐	125		165		
Nunavut	026 Yes ☐	126		166		
Outside Canada	027 Yes ☐	127		167		
Total		129 G		169 H		

Note 1: **Permanent establishment** is defined in subsection 400(2).

Note 2: For corporations other than those described under section 402, use the appropriate calculation described in the Regulations to allocate taxable income.

Notes:

1. After determining the allocation of taxable income, you have to calculate the corporation's provincial or territorial tax payable. For more information on how to calculate the tax for each province or territory, see the instructions for Schedule 5 in the T2 Corporation – Income Tax Guide.
2. If your corporation has provincial or territorial tax payable, complete Part 2.
3. If your corporation is a member of a partnership and the partnership had a permanent establishment in a jurisdiction, select the jurisdiction in Column A and include your proportionate share of the partnership's salaries and wages and gross revenue in columns B and D, respectively.

Part 2 – Ontario tax payable, tax credits, and rebates

Total taxable income	Income eligible for small business deduction	Provincial or territorial allocation of taxable income	Provincial or territorial tax payable before credits

Ontario basic income tax (from Schedule 500) 270

Ontario small business deduction (from Schedule 500) 402

Subtotal (line 270 **minus** line 402) ▶ 5A

Ontario transitional tax debits (from Schedule 506) 276

Recapture of Ontario research and development tax credit (from Schedule 508) 277

Subtotal (line 276 **plus** line 277) ▶ 5B

Gross Ontario tax (amount 5A **plus** amount 5B) 5C

Ontario resource tax credit (from Schedule 504) 404

Ontario tax credit for manufacturing and processing (from Schedule 502) 406

Ontario foreign tax credit (from Schedule 21) 408

Ontario credit union tax reduction (from Schedule 500) 410

Ontario political contributions tax credit (from Schedule 525) 415

Ontario non-refundable tax credits (total of lines 404 to 415) ▶ 5D

Subtotal (amount 5C **minus** amount 5D) (if negative, enter "0") 5E

Ontario research and development tax credit (from Schedule 508) 416

Ontario corporate income tax payable before Ontario corporate minimum tax credit and Ontario community food program donation tax credit for farmers (amount 5E **minus** line 416) (if negative, enter "0") 5F

Ontario corporate minimum tax credit (from Schedule 510) 418

Ontario community food program donation tax credit for farmers (from Schedule 2) 420

Ontario corporate income tax payable (amount 5F **minus** the total of lines 418 and 420) (if negative, enter "0") 5G

Ontario corporate minimum tax (from Schedule 510) 278 57,125

Ontario special additional tax on life insurance corporations (from Schedule 512) 280

Subtotal (line 278 **plus** line 280) 57,125 ▶ 57,125 5H

Total Ontario tax payable before refundable tax credits (amount 5G **plus** amount 5H) 57,125 5I

Ontario qualifying environmental trust tax credit 450

Ontario co-operative education tax credit (from Schedule 550) 452

Ontario apprenticeship training tax credit (from Schedule 552) 454

Ontario computer animation and special effects tax credit (from Schedule 554) 456

Ontario film and television tax credit (from Schedule 556) 458

Ontario production services tax credit (from Schedule 558) 460

Ontario interactive digital media tax credit (from Schedule 560) 462

Ontario book publishing tax credit (from Schedule 564) 466

Ontario innovation tax credit (from Schedule 566) 468

Ontario business-research institute tax credit (from Schedule 568) 470

Ontario regional opportunities investment tax credit (from Schedule 570) 472

Ontario refundable tax credits (total of lines 450 to 472) ▶ 5J

Net Ontario tax payable or refundable tax credit (amount 5I **minus** amount 5J) 290 57,125

(if a credit, enter amount in brackets) Include this amount on line 255.

Summary

Enter the total net tax payable or refundable tax credits for all provinces and territories on line 255.

Net provincial and territorial tax payable or refundable tax credits 255 57,125

If the amount on line 255 is positive, enter the net provincial and territorial tax payable on line 760 of the T2 return.
If the amount on line 255 is negative, enter the net provincial and territorial refundable tax credits on line 812 of the T2 return.

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Schedule 6

Summary of Dispositions of Capital Property

Corporation's name	Business number	Tax year-end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

- Use this schedule if your corporation disposed of (actual or deemed) capital property or claimed an allowable business investment loss (ABIL), or both, in the tax year.
- All legislative references are to the federal Income Tax Act.
- Also use this schedule to make a designation under paragraph 111(4)(e) if control of the corporation has been acquired by a person or a group of persons.
- For more information, see the section called "Schedule 6, Summary of Dispositions of Capital Property" in the T2 Corporation Income Tax Guide.
- If you need more space, attach additional schedules.

Designation under paragraph 111(4)(e)

Are any dispositions shown on this schedule related to deemed dispositions designated under paragraph 111(4)(e)? . . . . 050 Yes ☐ No ☒

If **yes**, attach a statement specifying which properties such a designation applies to.

In the various sections of this form:

- The abbreviation **FS** (for foreign source) is used to indicate the capital gain or loss arising from foreign property;
- The abbreviation **PA** (for passive asset) is used to indicate the capital gain or loss arising from the disposition of an asset other than an active asset of the corporation.

Part 1 – Shares

1 Number of shares 100	2 Name of corporation in which the shares were held 105	3 Class of shares 106	4 Date of acquisition YYYYMMDD 110	5 Proceeds of disposition 120	6 Adjusted cost base 130	7 Outlays and expenses from disposition 140	8 Gain (or loss) (column 5 **minus** columns 6 and 7) 150	A FS	A PA
			Totals						

Total adjustment under subsection 112(3) to all losses identified in column 8 160

Actual gain or loss from the disposition of shares (total of column 8 **plus** line 160) . . . . . A

Part 2 – Real estate (Do not include losses on depreciable property)

1 Municipal address of real estate (1 = Address 1, 2 = Address 2, 3 = City, 4 = Province, Country, Postal Code and Zip Code or Foreign Postal Code) 200	2 Date of acquisition YYYYMMDD 210	3 Proceeds of disposition 220	4 Adjusted cost base 230	5 Outlays and expenses from disposition 240	6 Gain (or loss) (column 3 **minus** columns 4 and 5) 250	A FS	A PA
729 Line 1 Road		57,834	2,595		55,239		
Niagara-on-the-Lake							
ON							
	Totals	57,834	2,595		55,239	B	

Part 3 – Bonds

1 Face value of bonds 300	2 Maturity date YYYYMMDD 305	3 Name of bond issuer 307	4 Date of acquisition YYYYMMDD 310	5 Proceeds of disposition 320	6 Adjusted cost base 330	7 Outlays and expenses from disposition 340	8 Gain (or loss) (column 5 **minus** columns 6 and 7) 350	A FS	A PA
			Totals					C	

Part 4 – Other properties (Do not include losses on depreciable property)

1 Description of other property 400	2 Date of acquisition YYYYMMDD 410	3 Proceeds of disposition 420	4 Adjusted cost base 430	5 Outlays and expenses from disposition 440	6 Gain (or loss) (column 3 **minus** columns 4 and 5) 450	A FS	A PA
Totals						**D**	

Note
Other property includes capital debts, debts in respect of the disposition of a personal-use property per subsection 50(2), and amounts that arise from foreign currency transactions.

Part 5 – Personal-use property (Do not include listed personal property)

1 Description of personal-use property 500	2 Date of acquisition YYYYMMDD 510	3 Proceeds of disposition 520	4 Adjusted cost base 530	5 Outlays and expenses from disposition 540	6 Gain only (column 3 **minus** columns 4 and 5; if negative, enter "0") 550	A FS	A PA
Totals						**E**	

Note
You **cannot** deduct losses on dispositions of personal-use property (other than listed personal property or a debt that is a personal-use property) from your income.

Part 6 – Listed personal property

1 Description of listed personal property 600	2 Date of acquisition YYYYMMDD 610	3 Proceeds of disposition 620	4 Adjusted cost base 630	5 Outlays and expenses from disposition 640	6 Gain (or loss)* (column 3 **minus** columns 4 and 5) 650	A FS	A PA
Totals							

Unapplied listed personal property losses from other years (amount from line 530 of Schedule 4, Corporation Loss Continuity and Application) . . . . . 655 _____

Net gains (or losses) from the disposition of listed personal property (total of column 6 **minus** line 655) . . . . . _____ **F**

Note

Net listed personal property losses can only be applied against listed personal property gains.

* Do **not** include gains arising on the disposition of certain certified cultural property to a designated cultural institution. See subparagraph 39(1)(a)(i.1) for more information.

Part 7 – Property qualifying for and resulting in an allowable business investment loss

1 Name of small business corporation 900	2 Shares, enter **1**; debt, enter **2** 905	3 Date of acquisition YYYYMMDD 910	4 Proceeds of disposition 920	5 Adjusted cost base 930	6 Outlays and expenses from disposition 940	7 Loss only (column 4 **minus** columns 5 and 6) 950	A FS	A PA
Totals								

Allowable business investment losses (ABILs) . . . . . Total of Column 7 _____ x 50.0000 % = _____ **G**

Enter amount G on line 406 of Schedule 1, Net Income (Loss) for Income Tax Purposes.

Note
Properties listed in Part 7 should **not** be included in any other parts of this schedule.

Part 8 – Capital gains or losses

Total of amounts A to F (do **not** include amount F if it is a loss) . . . . . 55,239 H

			FS	PA
Capital gains dividend received in the year	875		☐	☐
Capital gains reserve opening balance (from Part 1 of Schedule 13, Continuity of Reserves)	880			
Subtotal (amount H **plus** total of lines 875 and 880)		55,239 I		
Capital gains reserve closing balance (from Part 1 of Schedule 13, Continuity of Reserves)	885			
Capital gains or losses, excluding ABILs (amount I **minus** line 885)	890	55,239		

Part 9 – Taxable capital gains and total capital losses

Capital gains or losses, excluding ABILs (amount from line 890 in Part 8) . . . . . 55,239 J

Deduct the following amounts included in amount J, that are subject to the zero inclusion rate:

Note
When a taxpayer is entitled to an advantage in respect of a donation, the zero inclusion rate is restricted to only part of the taxpayer's capital gain on disposition of the property. See section 38.2 for more information.

			FS	PA
Gain on the donation to a qualified donee of a share, debt obligation, or right listed on a designated stock exchange and other securities under paragraphs 38(a.1)(i) and (iii)	895		☐	☐
Gain on the donation to a qualified donee of ecologically sensitive land under subsection 38(a.2)*	896		☐	☐
Exempt portion of the gain on the donation of securities arising from the exchange of a partnership interest under subsection 38(a.3)		a	☐	☐
Subtotal (line 895 **plus** line 896 **plus** line a)		▶		K
Subtotal (amount J **minus** amount K)		55,239 L		

Deemed capital gain from the donation of property included in a flow-through share class of property to a qualified donee under subsection 40(12):

			FS	PA
Exemption threshold at time of disposition	897			
The total of all capital gains from the actual disposition of the property	898			
Line 897 or line 898, whichever is less		M	☐	☐

Taxable capital gains under section 34.2 (line 275 of Schedule 73, Income Inclusion Summary for Corporations that are Members of Partnerships)		x	2 =	899	
Subtotal (total of amounts L and M **plus** line 899)				55,239	N
Allowable capital losses under section 34.2 (line 285 of Schedule 73, Income Inclusion Summary for Corporations that are Members of Partnerships)		x	2 =	901	
Subtotal (amount N **minus** line 901)				55,239	O
Portion of the capital gain that is subject to a 100% inclusion rate per 100(1) **		x	2 =	902	
Total capital gains or losses (amount O **plus** line 902)				55,239	P

Taxable capital gains or total capital losses

Total capital losses (if amount P is negative, enter amount P; if amount P is positive, enter "0") . . . . . Q

Enter amount Q on line 210 of Schedule 4.

Taxable capital gains (if amount P is positive, enter the result of amount P 55,239 multiplied by 50.0000 %; if amount P is negative, enter "0") . . . . . 27,620 R

Enter amount R on line 113 of Schedule 1.

* Do **not** include gains on donations of ecologically sensitive land to a private foundation.

** Do **not** include any portion of the capital gain that is subject to the 50% inclusion rate. Enter any such portion in Part 4.

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Schedule 7

Aggregate Investment Income and Income Eligible for the Small Business Deduction

Corporation's name	Business number	Tax year-end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

- Use this schedule if you are a Canadian-controlled private corporation (CCPC) to calculate:
  - your aggregate investment income and foreign investment income, as defined in subsection 129(4), to determine the refundable portion of Part I tax, and your adjusted aggregate investment income, as defined in subsection 125(7), for the purpose of the business limit reduction
  - your **specified partnership income**, as defined in subsection 125(7), if you are a member (or **designated member**) of one or more partnerships, and
  - your income from an active business carried on in Canada eligible for the small business deduction including any **specified corporate income** as defined in subsection 125(7)
- Use this schedule if another CCPC is making an assignment of **business limit** under subsection 125(3.2) to you.
- Use this schedule if you are a member of a partnership to assign **specified partnership business limit** to a **designated member** under subsection 125(8).

  Note: If you are an individual, a trust, or a corporation that is not a CCPC, **only** complete Table 1 (columns A1, B1, C1, G1, H1 and J1) and Table 3 to make this assignment. Individuals and trusts can attach the pages with these completed tables to their respective tax returns.
- The adjusted aggregate investment income, for the purpose of the business limit reduction, also applies to a tax year of a corporation that begins before 2019 and ends after 2018 under the following circumstances:
  - the corporation's preceding tax year was, because of a transaction or event or a series of transactions or events, shorter than it would have been in the absence of that transaction, event or series, and
  - one of the reasons for the transaction, event or series was to defer the application of subsections 125(5.1), (5.2) and (7) to the corporation
- All legislative references are to the federal Income Tax Act.
- For more information, see **Small Business Deduction** and **Refundable Portion of Part I Tax** in Guide T4012, T2 Corporation – Income Tax Guide.

Part 1 – Aggregate investment income

Aggregate investment income is all **world** source income.

Eligible portion of taxable capital gains for the year	002	27,620	
Eligible portion of allowable capital losses for the year (including allowable business investment losses)	012		
Net capital losses of previous years claimed on line 332 on the T2 return	022		
Subtotal (line 012 **plus** line 022)			A
Line 002 **minus** amount A (if negative, enter "0")		27,620	B
Total income from property (include income from a specified investment business carried on in Canada other than income from a source outside Canada)	032		
Exempt income	042		
Amounts received from AgriInvest Fund No. 2 that were included in computing the corporation's income for the year	052		
Taxable dividends deductible (total of column F on Schedule 3 **minus** related expenses)	062		
Business income from an interest in a trust that is considered property income under paragraph 108(5)(a)	072		
Subtotal (**add** lines 042, 052, 062 and 072)			C
Subtotal (line 032 **minus** amount C)			D
Amount B **plus** amount D		27,620	E
Total losses from property (include losses from a specified investment business carried on in Canada other than a loss from a source outside Canada)	082		
Amount E **minus** line 082 (if negative, enter "0") (enter on line 440 of the T2 return)	092	27,620	

Part 2 – Adjusted aggregate investment income

Eligible portion of taxable capital gains for the year (other than taxable capital gains from the disposition of an active asset [note 13]) **705**

Eligible portion of allowable capital losses for the year (including allowable business investment losses) (other than allowable capital losses from the disposition of an active asset [note 13]) **710**

Subtotal (line 705 **minus** line 710) (if negative, enter "0") F

Total income from property [note 14] **715**

Exempt income **720**

Amounts received from AgriInvest Fund No. 2 that were included in computing the corporation's income for the year . **725**

Dividends from connected corporations **730**

Business income from an interest in a trust that is considered property income under paragraph 108(5)(a) **735**

Subtotal (**add** lines 720, 725, 730 and 735) ▶ G

Subtotal (line 715 **minus** amount G) ▶ H

Amount F **plus** amount H I

Total losses from property [note 14] **740**

Amount, if any, deducted under subsection 91(4) in computing the corporation's income for the year **741**

Adjusted aggregate investment income (amount I **minus** line 740, **plus** line 741) (if negative, enter "0") **745**

If this is your first tax year starting after 2018, complete the following portion.

Eligible portion of taxable capital gains for each tax year that ended in the preceding calendar year (other than taxable capital gains from the disposition of an active asset [note 13]) 2A

Eligible portion of allowable capital losses for each tax year that ended in the preceding calendar year (including allowable business investment losses)(other than allowable capital losses from the disposition of an active asset [note 13]) 2B

Subtotal (amount 2A **minus** amount 2B) (if negative, enter "0") 2C

Total income from property for each tax year that ended in the preceding calendar year [note 14] . 2D

Exempt income for each tax year that ended in the preceding calendar year 2E

Amounts received from AgriInvest Fund No. 2 that were included in computing the corporation's income for each tax year that ended in the preceding calendar year 2F

Dividends from connected corporations for each tax year that ended in the preceding calendar year 2G

Business income from an interest in a trust that is considered property income under paragraph 108(5)(a) for each tax year that ended in the preceding calendar year 2H

Subtotal (**add** amounts 2E, 2F, 2G and 2H) ▶ 2I

Subtotal (amount 2D **minus** amount 2I) ▶ 2J

Amount 2C **plus** amount 2J 2K

Total losses from property for each tax year that ended in the preceding calendar year [note 14] 2L

Amount, if any, deducted under subsection 91(4) in computing the corporation's income for each tax year that ended in the preceding calendar year **742**

Adjusted aggregate investment income (amount 2K **minus** amount 2L, **plus** line 742) (if negative, enter "0") **744**

(enter the total of line 744 and the adjusted aggregate investment income of all associated corporations on line 417 of the T2 return)

Part 3 – Foreign investment income

Foreign investment income is all income from sources **outside Canada**.

Eligible portion of taxable capital gains for the year	001		
Eligible portion of allowable capital losses for the year (including allowable business investment losses)	009		
Subtotal (line 001 **minus** line 009) (if negative, enter "0")			J
Total income from property from a source **outside Canada** (net of related expenses)	019		
Exempt income	029		
Taxable dividends deductible (total of column F on Schedule 3 **minus** related expenses)	049		
Business income from an interest in a trust that is considered property income under paragraph 108(5)(a)	059		
Subtotal (**add** lines 029, 049, and 059)		▶	K
Subtotal (line 019 **minus** amount K)		▶	L
Amount J **plus** amount L			M
Total losses from property from a source **outside Canada**	069		
Amount M **minus** line 069 (if negative, enter "0") (enter on line 445 of the T2 return)	079		

Part 3A – Canadian and foreign investment income and adjusted aggregate investment income calculation

	A Canadian investment income	B Foreign investment income	C Adjusted aggregate investment income*	
Eligible portion of the taxable capital gains for the year before taking into account the capital gains reserves (federal) of Schedule 13*	27,620			1.1
Eligible portion of capital gains reserves (addition/deduction)*, **				1.2
Taxable capital gains under section 34.2 (line 275 on Schedule 73)**				1.3
Eligible portion of the taxable capital gains for the year (**add** amounts 1.1, 1.2, and 1.3)	27,620			1
Eligible portion of allowable capital losses for the year (including allowable business investment losses)*				2.1
Net capital losses of previous years (line 332 on the T2 return)				2.2
Allowable capital losses under section 34.2 (line 285 of Schedule 73)**				2.3
Allowable capital losses for the year (**add** amounts 2.1, 2.2 and 2.3)				2
Amount 1 **minus** amount 2 (if negative, enter "0")	27,620			3
Taxable dividends				4.1
Rental property income (under regulation 1100(11))				4.2
Other property income*				4.3
Property income under section 34.2 (line 280 of Schedule 73)**				4.4
Total property income (**add** amounts 4.1, 4.2, 4.3 and 4.4)				4
Exempt income				5.1
Amounts received from AgriInvest Fund No. 2 that were included in computing the corporation's income for the year				5.2
Taxable dividends deductible (total of column F on Schedule 3 **minus** related expenses)*				5.3
Business income from an interest in a trust that is considered property income under paragraph 108(5)(a)				5.4
Add amounts 5.1, 5.2, 5.3 and 5.4				5
Amount 4 **minus** amount 5				6
Amount 3 **plus** amount 6	27,620			7
Rental property losses (under regulation 1100(11))				8.1
Dividend losses				8.2
Other property losses*				8.3
Property losses under section 34.2 (line 280 of Schedule 73)**				8.4
Total property losses (**add** amounts 8.1, 8.2, 8.3 and 8.4)				8
Amount 7 **minus** amount 8 (if negative, enter "0")	27,620			9
Amount, if any, deducted under subsection 91(4) in computing the corporation's income for the year				10
Amount 7 **minus** amount 8 **plus** amount 10 (if negative, enter “0”)				11

* To calculate the adjusted aggregate investment income under column C:

- On lines 1.1, 1.2, 1.3, 2.1 and 2.3, only capital gains and losses resulting from the disposition of property other than an active asset (as defined under subsection 125(7) ITA) are to be taken into account.
- On line 4.3, include amounts in respect of a life insurance policy that are included in computing the corporation's income for the year (even if those amounts are not included in the calculation of the corporation's investment income in column A and B) as well as the income from a specified foreign investment business.
- On line 5.3, only the dividends received from a connected corporation should be included.
- On line 8.3, include the loss from a specified foreign investment business.

For more information on the calculation of the adjusted aggregate investment income, consult notes 13 and 14 at the end of this form as well as the Help (F1).

** When an amount is entered on these lines in column B, it reduces the corresponding amount in column A. For more information, consult the Help (F1).

Net taxable dividends		**Canadian**	**Foreign**	**Total**
Taxable dividends deducted per Schedule 3				
Less: Expenses related to such dividends	**A***			
Total expenses				
Net taxable dividends				

* Column A – Enter an “X” if the expense is related to a dividend received from a connected corporation.

Part 4 – Specified partnership income

Table 1 – Specified partnership income

A	A1	1A
Is the corporation a designated member of the partnership?	Partnership name 200	Partnership's account number
Yes ☐ No ☐		

B1	C1	D1	1D	2D	E1	F1
Total income (loss) of partnership from an active business 300	Your share of amount in column B1 310	Income of the corporation from providing (directly or indirectly) services or property to the partnership 311	Prorated amounts calculated under section 34.2 note 1	Expenses the corporation incurred to earn partnership income	Adjustments (column 1D **minus** column 2D) 315	Corporation's income (loss) in respect of the partnership note 2 (**add** columns C1, D1 and E1) 320

Total 350 _____

G1	H1	I1	J1	K1	L1	M1
Number of days in the partnership's fiscal period note 15 325	Prorated business limit notes 2 and 3 (column C1 ÷ column B1) × [$ 500 000 × (column G1 ÷ 365)] (if column C1 is negative, enter "0") 330	Specified partnership business limit **assigned to you** (from H2 in Table 2) note 5 335	Specified partnership business limit **assigned by you** from F3 in Table 3) note 6 336	Specified partnership business limit amount (column H1 **plus** column I1 **minus** column J1)	Column F1 **minus** column K1 (if negative, enter "0")	Lesser of columns F1 and K1 (if column F1 is negative, enter "0") note 4 340

Total 385 _____ 360 _____

Corporation's losses for the year from an active business carried on in Canada (other than as a member of a partnership) – enter as a positive amount . . . . . 370 _____

Specified partnership loss of the corporation for the year – enter as a positive amount (total of all negative amounts in column F1) . . . . . 380 _____

Subtotal (line 370 **plus** line 380) _____ N

Amount at line 385 or amount N, whichever is less . . . . . 390 _____

Specified partnership income (line 360 **plus** line 390) . . . . . 400 _____

(enter at amount R in Part 5)

Part 4 – Specified partnership income (continued)

Tables 2 and 3 are used to make an assignment of **specified partnership business limit** under subsection 125(8). A person that is a member of a partnership can make an assignment of **specified partnership business limit** under subsection 125(8) to a **designated member**.

If you are a CCPC that is a designated member and **receiving** specified partnership business limit from a person that is a member of the partnership, complete Table 2.

If you are a member of the partnership and are **assigning** specified partnership business limit to a designated member, complete Table 3.

Table 2 – A member is assigning to you specified partnership business limit under subsection 125(8)

A2	2A	B2
Partnership name 405	Partnership's account number	Name of the member 406

C2	D2	E2	F2	G2	H2
Business number of the member (if applicable) 410	Social insurance number of the member (if applicable) 411	Trust account number of the member (if applicable) 412	Tax year start of the member (YYYYMMDD) 415	Tax year-end of the member (YYYYMMDD) 416	Specified partnership business limit assigned to you by the member note 7 420

Table 3 – You are assigning to a designated member (CCPC) specified partnership business limit under subsection 125(8)

A3	3A	B3
Partnership name 425	Partnership's account number	Name of the designated member 426

C3	D3	E3	F3
Business number of the designated member 430	Tax year start of the designated member (YYYYMMDD) 435	Tax year-end of the designated member (YYYYMMDD) 436	Specified partnership business limit assigned by you to the designated member note 8 440

Part 5 – Partnership income not eligible for the small business deduction

Corporation's income from active businesses carried on in Canada as a member or designated member of a partnership (after deducting related expenses) – from line 350 in Part 4 (if the net amount is negative, enter "0" on line 450) . . . . . O

Specified partnership loss (from line 380 in Part 4) . . . . . P

Subtotal (amount O **plus** amount P) Q

Specified partnership income (from line 400 in Part 4) . . . . . R

Partnership income not eligible for the small business deduction (amount Q **minus** amount R) 450

(enter at amount Z in Part 6)

Part 6 – Income eligible for the small business deduction

Net income for income tax purposes from line 300 of the T2 return		-866,334 S	
Allowable business investment loss from line 406 of Schedule 1		T	
Subtotal (amount S **plus** amount T)		-866,334 ▶	-866,334 U
Foreign business income after deducting related expenses [note 9]	500		
Taxable capital gains from line 113 of Schedule 1		27,620 V	
Net property income (line 032 [note 10] **minus** the total of lines 042, 052 and 082 [note 9] in Part 1)		W	
Personal services business income after deducting related expenses [note 9]		e1	
Other income after deducting related expenses [note 9]		e2	
Subtotal (amount e1 **plus** amount e2) [note 9]	520	▶	
Subtotal (**add** line 500, amount V, amount W and line 520)		27,620 ▶	27,620 X
Net amount (amount U **minus** amount X)			-893,954 Y
Partnership income not eligible for the small business deduction (line 450 in Part 5)		Z	
Partnership income allocated to your corporation under subsection 96(1.1)	530		
Income referred to in clause 125(1)(a)(i)(C)	540		
Income referred to in clause 125(1)(a)(i)(B) (from line 615 in Part 7)		AA	
Subtotal (**add** amount Z, line 530, line 540 and amount AA)		▶	BB
Specified corporate income (from line 625 in Part 7)			CC
Income eligible for the small business deduction (amount Y **minus** amount BB, **plus** amount CC) (enter amount DD on line 400 of the T2 return - if negative, enter "0")			DD

Part 7 – Specified corporate income and assignment under subsection 125(3.2)

	1EE Name of the corporation	EE Business number of the corporation 600	FF Income described under clause 125(1)(a)(i)(B) received from the corporation identified in column EE [note 11] 610	GG Business limit assigned from the corporation identified in column EE [note 12] 620
1				

Total 615 _____ Total 625 _____

See the privacy notice on your return.

Notes

1. Do **not** include expenses that were deducted in computing the income of the corporation in column D1.

   In general, amounts included under subsections 34.2(2) and 34.2(3) or claimed under subsection 34.2(4) are deemed to have the **same character** and be in the **same proportions** as the partnership income they relate to. For example, if a corporation receives $100,000 of partnership income for the partnership's fiscal period ending in its tax year, and that income is made up of $40,000 of active business income, $30,000 of income from property, and $30,000 as a taxable capital gain, the corporation's adjusted stub period accrual (ASPA) in respect of the partnership would be 40% active business income, 30% property income, and 30% taxable capital gains. Add or deduct only the portion of the following amounts that are characterized as **active business income** in accordance with subsection 34.2(5):

   Add:
   - the ASPA under subsection 34.2(2) (column 4 of Schedule 73)
   - the income inclusion for a new corporate member of a partnership under subsection 34.2(3) (column 6 of Schedule 73)

   Deduct:
   - the previous-year ASPA under subsection 34.2(4) (column 5 of Schedule 73)
   - the previous-year income inclusion for a new corporate member of a partnership under subsection 34.2(4) (column 7 of Schedule 73)

2. When a partnership carries on more than one business, one of which generates income and another of which realizes a loss, the loss is **not** netted against the partnership's income when calculating the prorated business limit (column H1). Enter on line 380 the total of all losses from column F1.

3. **If** you are a **designated member** of the partnership, enter "0".

4. You must enter "0" **if** the partnership provides services or property to either:

   (A) a private corporation (directly or indirectly in any manner whatever) in the year, if:
   - you (or one of your shareholders) or a person that does **not** deal at arm's length with you (or one of your shareholders) holds a direct or indirect interest in the private corporation, and
   - it is not the case that all or substantially all of the partnership's income for the year from an active business is from providing services or property to
     - persons (other than the private corporation) that deal at arm's length with the partnership and each person that holds a direct or indirect interest in the partnership, or
     - partnerships with which the partnership deals at arm's length, other than a partnership in which a person that does **not** deal at arm's length with you holds a direct or indirect interest, or

   (B) a particular partnership (directly or indirectly in any manner whatever) in the year, if:
   - you (or one of your shareholders) do **not** deal at arm's length with the particular partnership or a person that holds a direct or indirect interest in the particular partnership, and
   - it is not the case that all or substantially all of the partnership's income for the year from an active business is from providing services or property to
     - persons that deal at arm's length with the partnership and each person that holds a direct or indirect interest in the partnership, or
     - partnerships (other than the particular partnership) with which the partnership deals at arm's length, other than a partnership in which a person that does **not** deal at arm's length with you holds a direct or indirect interest.

5. If you are a CCPC that is a **designated member** receiving an assignment of **specified partnership business limit,** complete Table 2 to determine the amounts to enter in Table 1 column I1.

6. If you are a **member** of the partnership and you are assigning **specified partnership business limit**, complete Table 3 to determine the amounts to enter in Table 1 column J1.

7. Add the amounts in column H2 that are for the same partnership and enter it in Table 1 column I1, in the row of the applicable partnership.

8. Add the amounts in column F3 that are for the same partnership and enter it in Table 1 column J1, in the row of the applicable partnership. This amount **cannot** be higher than the amount of prorated business limit you would otherwise be entitled to in Table 1 column H1 for that partnership.

9. If negative, enter amount in brackets, and **add** instead of subtracting.

10. Net of related expenses.

11. This amount is [as defined in subsection 125(7) **specified corporate income** (a)(i)] the total of all amounts, each of which is your income from an active business for the year from providing services or property to a private corporation (directly or indirectly, in any manner whatever) if

    (A) at any time in the year, you (or one of your shareholders) or a person that does not deal at arm's length with you (or one of your shareholders) holds a direct or indirect interest in the private corporation, and

    (B) it is not the case that all or substantially all of your income for the year from an active business is from providing services or property to

    (I) persons (other than the private corporation) with which you deal at arm's length, or

    (II) partnerships with which you deal at arm's length, other than a partnership in which a person that does not deal at arm's length with you holds a direct or indirect interest.

    Do **not** include specified farming or fishing income. If the conditions described in subsection 125(10) are met, do not include income from an associated corporation.

12. The amount of business limit that a CCPC can assign to you cannot be greater than the amount in column FF that is from providing services or property **directly** to that CCPC. If there is an amount included in column FF that is deductible by that CCPC in respect of the amount of its income referred to in clause 125(1)(a)(i)(A) or (B) for its tax year, you need to deduct it from column FF for the purpose of determining the amount that can be assigned to you.

Notes (continued)

13. Active asset, of a particular corporation at any time, means property that is:

    (A) used at that time principally in an active business carried on primarily in Canada by the particular corporation or by a Canadian-controlled private corporation that is related to the particular corporation,

    (B) a share of the capital stock of another corporation if, at that time,
    - the other corporation is connected with the particular corporation (within the meaning assigned by subsection 186(4) on the assumption that the other corporation is at that time a payer corporation within the meaning of that subsection), and
    - the share would be a qualified small business corporation share (as defined in subsection 110.6(1)) if:
      – the references in that definition to an "individual" were references to the particular corporation, and
      – that definition were read without reference to "the individual's spouse or common-law partner", or

    (C) an interest in a partnership, if:
    - at that time, the fair market value of the particular corporation's interest in the partnership is equal to or greater than 10% of the total fair market value of all interests in the partnership,
    - throughout the 24-month period ending before that time, more than 50% of the fair market value of the property of the partnership was attributable to property described in this paragraph or in paragraph (A) or (B), and
    - at that time, all or substantially all of the fair market value of the property of the partnership was attributable to property described in this paragraph or in paragraph (A) or (B).

14. Income or loss from property of a particular corporation, for the purposes of calculating the corporation's adjusted aggregate investment income, includes income or loss from a specified investment business, as well as all amounts in respect of a life insurance policy that are included in computing the corporation’s income for the year (even if those amounts were not included in the computation of the corporation’s aggregate investment income in Part 1).

15. The maximum number of days that can be entered in column G1 for a partnership's fiscal period is 365, it is not adjusted for a leap year.

Canada Revenue Agency / Agence du revenu du Canada

Schedule 8

Capital Cost Allowance (CCA)

Corporation's name	Business number	Tax year-end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

For more information, see the section called "Capital Cost Allowance" in the T2 Corporation Income Tax Guide.

Is the corporation electing under Regulation 1101(5q)? **101** Yes ☐ No ☒

Part 1 – Agreement between associated eligible persons or partnerships (EPOPs)

Are you associated in the tax year with one or more EPOPs with which you have entered into an agreement under subsection 1104(3.3) of the Regulations? . . . . . **105** Yes ☒ No ☐

If you answered **yes**, complete Part 1. Otherwise, go to Part 2.

Enter a percentage assigned to each associated EPOP (including your corporation) as determined in the agreement.

This percentage will be used to allocate the immediate expensing limit. The total of all the percentages assigned under the agreement should not exceed 100%. If the total is more than 100%, then the associated group has an immediate expensing limit of nil. For more information about the immediate expensing limit, see note 12 in Part 2.

	1 Name of EPOP **110**	2 Identification number See **note 1** **115**	3 Percentage assigned under the agreement **120**
1.	NIAGARA-ON-THE-LAKE HYDRO INC.	863605929RC0001	
2.	NIAGARA-ON-THE-LAKE ENERGY INC.	863761490RC0001	
3.	Energy Services Niagara Inc	863606125RC0001	
		Total	

Immediate expensing limit allocated to the corporation (see **note 2**) **125**

Note 1: The identification number is the social insurance number, business number, or partnership account number of the EPOP.

Note 2: If the total of column 3 is more than 100%, enter 0.

Part 2 – CCA calculation

	1 Class number See **note 3** **200**	Description	2 Undepreciated capital cost (UCC) at the beginning of the year **201**	3 Cost of acquisitions during the year (new property must be available for use) See **note 4** **203**	4 Cost of acquisitions from column 3 that are designated immediate expensing property (DIEP) See **note 5** **232**	5 Adjustments and transfers See **note 6** **205**	6 Amount from column 5 that is assistance received or receivable during the year for a property, subsequent to its disposition See **note 7** **221**	7 Amount from column 5 that is repaid during the year for a property, subsequent to its disposition See **note 8** **222**	8 Proceeds of dispositions See **note 9** **207**
1.	1	Buildings	375,985						0
2.	1	Dist'n Plant >87	3,563,312						0
3.	1	Meters > 87	126,275						0
4.	1	SCADA system	141,263						0
5.	1	Transformers > 87	2,743,769						0
6.	1b	Buildings	468,025	8,186					0
7.	2	Dist'n Plant < 88	1,444,310						0
8.	2	Dist'n Stations	130,913						0
9.	2	Invent Dist'n Meter	19,715						0
10.	2	Meters < 88	47,144						0
11.	2	Transformers < 88	277,433						0
12.	6	Fencing	1,421						0
13.	8	Inventory spare part	2,999						0
14.	8	Lighting	66						0
15.	8	Office equipment	124,841	25,838					0
16.	8	PCB Storage	94,150						0
17.	8	Smart grid	249,452						0
18.	8	Stores/Comm/Supe etc	16,411						0
19.	10	Motor Vehicles	14,701						0
20.	10	Vehicles, trailers, transport equipment	147,454	81,513					5,400
21.	14.1		5,335						0
22.	17	Paving	5,547						0
23.	17	Telephone System	6,389						0
24.	45	Computer hardware - new	74						0
25.	47	Distribution assets after Feb 22, 2005	15,740,969	532,332					5,392
26.	50	Computer Hardware	96,919	23,047					0
27.	10.1	2019 GMC Sierra 2500	14,119						N/A
28.	10.1	2018 GMC Sierra SLE 1500	14,119						N/A
29.	10.1	21 GMC Canyon Ext Cab VIN 1GTH6BEN6M1102212	20,149						N/A
30.	10.1	Equipment	25,500						0

	1 Class number See **note 3** **200**	Description	2 Undepreciated capital cost (UCC) at the beginning of the year **201**	3 Cost of acquisitions during the year (new property must be available for use) See **note 4** **203**	4 Cost of acquisitions from column 3 that are designated immediate expensing property (DIEP) See **note 5** **232**	5 Adjustments and transfers See **note 6** **205**	6 Amount from column 5 that is assistance received or receivable during the year for a property, subsequent to its disposition See **note 7** **221**	7 Amount from column 5 that is repaid during the year for a property, subsequent to its disposition See **note 8** **222**	8 Proceeds of dispositions See **note 9** **207**
31.	38	Mini Excavator		67,703					0
		Totals	25,918,759	738,619					10,792

	1 Class number **234**	Description	9 Proceeds of dispositions of the DIEP (enter amount from column 8 that relates to the DIEP reported in column 4)	10 UCC (column 2 **plus** column 3 **plus** or **minus** column 5 **minus** column 8) See **note 10**	11 UCC of the DIEP (enter the UCC amount that relates to the DIEP reported in column 4) See **note 11** **236**	12 Immediate expensing See **note 12** **238**	13 Cost of acquisitions on remainder of Class (column 3 **minus** column 4 **plus** column 11 **minus** column 12)	14 Cost of acquisitions from column 13 that are accelerated investment incentive properties (AIIP) or properties included in Classes 54 to 56 See **note 13** **225**	15 Remaining UCC (column 10 **minus** column 12) (if negative, enter "0")	16 Proceeds of disposition available to reduce the UCC of AIIP and property included in Classes 54 to 56 (column 8 **minus** column 9 **plus** column 6 **minus** column 13 **plus** column 14 **minus** column 7) (if negative, enter "0") See **note 14**
1.	1	Buildings		375,985					375,985	
2.	1	Dist'n Plant >87		3,563,312					3,563,312	
3.	1	Meters > 87		126,275					126,275	
4.	1	SCADA system		141,263					141,263	
5.	1	Transformers > 87		2,743,769					2,743,769	
6.	1b	Buildings		476,211			8,186		476,211	
7.	2	Dist'n Plant < 88		1,444,310					1,444,310	
8.	2	Dist'n Stations		130,913					130,913	
9.	2	Invent Dist'n Meter		19,715					19,715	
10.	2	Meters < 88		47,144					47,144	
11.	2	Transformers < 88		277,433					277,433	
12.	6	Fencing		1,421					1,421	
13.	8	Inventory spare part		2,999					2,999	
14.	8	Lighting		66					66	
15.	8	Office equipment		150,679			25,838		150,679	
16.	8	PCB Storage		94,150					94,150	
17.	8	Smart grid		249,452					249,452	
18.	8	Stores/Comm/Supe etc		16,411					16,411	
19.	10	Motor Vehicles		14,701					14,701	

	1 Class number	Description	9 Proceeds of dispositions of the DIEP (enter amount from column 8 that relates to the DIEP reported in column 4) **234**	10 UCC (column 2 **plus** column 3 **plus** or **minus** column 5 **minus** column 8) See **note 10**	11 UCC of the DIEP (enter the UCC amount that relates to the DIEP reported in column 4) See **note 11** **236**	12 Immediate expensing See **note 12** **238**	13 Cost of acquisitions on remainder of Class (column 3 **minus** column 4 **plus** column 11 **minus** column 12)	14 Cost of acquisitions from column 13 that are accelerated investment incentive properties (AIIP) or properties included in Classes 54 to 56 See **note 13** **225**	15 Remaining UCC (column 10 **minus** column 12) (if negative, enter "0")	16 Proceeds of disposition available to reduce the UCC of AIIP and property included in Classes 54 to 56 (column 8 **minus** column 9 **plus** column 6 **minus** column 13 **plus** column 14 **minus** column 7) (if negative, enter "0") See **note 14**
20.	10	Vehicles, trailers, transport equipment		223,567			81,513		223,567	
21.	14.1			5,335					5,335	
22.	17	Paving		5,547					5,547	
23.	17	Telephone System		6,389					6,389	
24.	45	Computer hardware - new		74					74	
25.	47	Distribution assets after Feb 22, 2005		16,267,909			532,332		16,267,909	
26.	50	Computer Hardware		119,966			23,047		119,966	
27.	10.1	2019 GMC Sierra 2500		14,119					14,119	
28.	10.1	2018 GMC Sierra SLE 1500		14,119					14,119	
29.	10.1	21 GMC Canyon Ext Cab VIN 1GTH6BE		20,149					20,149	
30.	10.1	Equipment		25,500					25,500	
31.	38	Mini Excavator		67,703			67,703		67,703	
		Totals		26,646,586			738,619		26,646,586	

Part 2 – CCA calculation (continued)

	1 Class number	Description	17 Net capital cost additions of AIIP and property included in Classes 54 to 56 acquired during the year (column 14 **minus** column 16) (if negative, enter "0")	18 UCC adjustment for AIIP and property included in Classes 54 to 56 acquired during the year (column 17 **multiplied** by the relevant factor) See **note 15**	19 UCC adjustment for property acquired during the year other than AIIP and property included in Classes 54 to 56 (0.5 **multiplied** by the result of column 13 **minus** column 14 **minus** column 6 **plus** column 7 **minus** column 8 **plus** column 9) (if negative, enter "0") See **note 16** **224**	20 CCA rate % See **note 17** **212**	21 Recapture of CCA See **note 18** **213**	22 Terminal loss See **note 19** **215**	23 CCA (for declining balance method, the result of column 15 **plus** column 18 **minus** column 19, **multiplied** by column 20, or a lower amount, **plus** column 12) See **note 20** **217**	24 UCC at the end of the year (column 10 **minus** column 23) **220**
1.	1	Buildings				4	0	0	15,039	360,946
2.	1	Dist'n Plant >87				4	0	0	142,532	3,420,780
3.	1	Meters > 87				4	0	0	5,051	121,224
4.	1	SCADA system				4	0	0	5,651	135,612
5.	1	Transformers > 87				4	0	0	109,751	2,634,018
6.	1b	Buildings			4,093	6	0	0	28,327	447,884
7.	2	Dist'n Plant < 88				6	0	0	86,659	1,357,651
8.	2	Dist'n Stations				6	0	0	7,855	123,058
9.	2	Invent Dist'n Meter				6	0	0	1,183	18,532
10.	2	Meters < 88				6	0	0	2,829	44,315
11.	2	Transformers < 88				6	0	0	16,646	260,787
12.	6	Fencing				10	0	0	142	1,279
13.	8	Inventory spare part				20	0	0	600	2,399
14.	8	Lighting				20	0	0	13	53
15.	8	Office equipment			12,919	20	0	0	27,552	123,127
16.	8	PCB Storage				20	0	0	18,830	75,320
17.	8	Smart grid				20	0	0	49,890	199,562
18.	8	Stores/Comm/Supe etc				20	0	0	3,282	13,129
19.	10	Motor Vehicles				30	0	0	4,410	10,291
20.	10	Vehicles, trailers, transport equipment			38,057	30	0	0	55,653	167,914
21.	14.1					5	0	0	500	4,835
22.	17	Paving				8	0	0	444	5,103
23.	17	Telephone System				8	0	0	511	5,878
24.	45	Computer hardware - new				45	0	0	33	41
25.	47	Distribution assets after Feb 22, 2005			263,470	8	0	0	1,280,355	14,987,554
26.	50	Computer Hardware			11,524	55	0	0	59,643	60,323
27.	10.1	2019 GMC Sierra 2500				30	N/A	N/A	4,236	9,883
28.	10.1	2018 GMC Sierra SLE 1500				30	N/A	N/A	4,236	9,883

	1 Class number	Description	17 Net capital cost additions of AIIP and property included in Classes 54 to 56 acquired during the year (column 14 **minus** column 16) (if negative, enter "0")	18 UCC adjustment for AIIP and property included in Classes 54 to 56 acquired during the year (column 17 **multiplied** by the relevant factor) See **note 15**	19 UCC adjustment for property acquired during the year other than AIIP and property included in Classes 54 to 56 (0.5 **multiplied** by the result of column 13 **minus** column 14 **minus** column 6 **plus** column 7 **minus** column 8 **plus** column 9) (if negative, enter "0") See **note 16** **224**	20 CCA rate % See **note 17** **212**	21 Recapture of CCA See **note 18** **213**	22 Terminal loss See **note 19** **215**	23 CCA (for declining balance method, the result of column 15 **plus** column 18 **minus** column 19, **multiplied** by column 20, or a lower amount, **plus** column 12) See **note 20** **217**	24 UCC at the end of the year (column 10 **minus** column 23) **220**
29.	10.1	21 GMC Canyon Ext Cab VIN 1GTH6BEN6M110221				30	N/A	N/A	6,045	14,104
30.	10.1	Equipment				30	0	N/A	7,650	17,850
31.	38	Mini Excavator			33,852	30	0	0	10,155	57,548
		Totals			363,915				1,955,703	24,690,883

Enter the total of column 21 on line 107 of Schedule 1.
Enter the total of column 22 on line 404 of Schedule 1.
Enter the total of column 23 on line 403 of Schedule 1.

Note 3: If a class number has not been provided in Schedule II of the Income Tax Regulations for a particular class of property, use the subsection provided in Regulation 1101.

Note 4: Include any property acquired in previous years that has now become available for use, net of any government assistance received or entitled to be received in the year from a government, municipality or other public authority, or a reduction of capital cost after the application of section 80. This property would have been previously excluded from column 3. List separately any acquisitions of property in the class that are not subject to the 50% rule. See Income Tax Folio S3-F4-C1, General Discussion of Capital Cost Allowance, for exceptions to the 50% rule.

Note 5: A DIEP reported in column 4 is a property acquired after April 18, 2021, by a corporation that was a Canadian-controlled private corporation (CCPC) throughout the year, which became available for use in the tax year (before 2024) and was designated as such on or before the day that is 12 months after the filing-due date for the tax year to which the designation relates. It includes all capital property subject to the CCA rules, if certain conditions are met, other than property included in Classes 1 to 6, 14.1, 17, 47, 49, and 51. A property can only qualify as DIEP in the year in which it becomes available for use. See subsection 1104(3.1) of the Regulations for more information.

Note 6: Enter in column 5, "Adjustments and transfers", amounts that increase or reduce the UCC (column 10). Items that increase the UCC include amounts transferred under section 85, or transferred on amalgamation or winding-up of a subsidiary. Items that reduce the UCC (show amounts that reduce the UCC in brackets) include assistance received or receivable during the year for a property, subsequent to its disposition, if such assistance would have decreased the capital cost of the property by virtue of paragraph 13(7.1)(f). See the T2 Corporation Income Tax Guide for other examples of adjustments and transfers to include in column 5.
Also include property acquired in a non-arm's length transaction (other than by virtue of a right referred to in paragraph 251(5)(b) of the Act) if the property was a depreciable property acquired by the transferor at least 364 days before the end of your tax year and continuously owned by the transferor until it was acquired by you.

Note 7: Include all amounts of assistance you received (or were entitled to receive) after the disposition of a depreciable property that would have decreased the capital cost of the property by virtue of paragraph 13(7.1)(f) if received before the disposition.

Part 2 – CCA calculation (continued)

Note 8: Include all amounts you have repaid during the year for any legally required repayment, made after the disposition of a corresponding property, of:

- assistance that would have otherwise increased the capital cost of the property under paragraph 13(7.1)(d) and
- an inducement, assistance, or any other amount contemplated in paragraph 12(1)(x) received, that otherwise would have increased the capital cost of the property under paragraph 13(7.4)(b)

Include the UCC of each property of a prescribed class acquired in the course of a corporate reorganization described under paragraph 55(3)(b) of the Act (also known as "butterfly reorganization") or include property acquired in a non-arm's length transaction (other than by virtue of a right referred to in paragraph 251(5)(b) of the Act) if the property was a depreciable property acquired by the transferor less than 364 days before the end of your tax year and continuously owned by the transferor until it was acquired by you.

Note 9: For each property disposed of during the year, deduct from the proceeds of disposition any outlays and expenses to the extent that they were made or incurred for the purpose of making the disposition(s). The amount reported in respect of the property cannot exceed the property's capital cost, unless that property is a timber resource property as defined in subsection 13(21).
If the cost of a zero-emission passenger vehicle (or a passenger vehicle that was, at any time, a DIEP) exceeds the prescribed amount, the proceeds of disposition will be adjusted based on a factor equal to the prescribed amount as a proportion of the actual cost of the vehicle.

Note 10: If the amount in column 5 (as shown in brackets) reduces the undepreciated capital cost, you must subtract it for the purposes of the calculation. Otherwise, add the amount in column 5 for the purposes of the calculation.

Note 11: The only amounts incurred before April 19, 2021, to be included in this column are certain inventory purchases from arm's length persons or partnerships where the conditions in paragraphs 1100(0.3)(a) to (c) are met.

Note 12: Immediate expensing applies to a DIEP included in column 11. The total immediate expensing for the tax year (total of column 12) should not exceed the lesser of:

1. Immediate expensing limit: it is equal to one of the following five amounts, whichever is applicable:

- $1.5 million, if you are not associated with any other EPOP in the tax year
- amount from line 125, if you are associated in the tax year with one or more EPOPs
- nil, if the total of the percentages assigned in Part 1 is more than 100% or you are associated in the tax year with one or more EPOPs and have not filed an agreement in prescribed form as required under subsection 1104(3.3) of the Regulations
- the amount determined under subsection 1104(3.5) of the Regulations for any second or subsequent tax years ending in a calendar year, if you have two or more tax years ending in the calendar year in which you are associated with another EPOP that has a tax year ending in that calendar year
- any amount allocated by the minister under subsection 1104(3.4) of the Regulations

The immediate expensing limit has to be prorated if your tax year is less than 365 days. You cannot carry forward any unused amount of the immediate expensing limit.

2. UCC of the DIEP: total of column 11
You have to maintain the CCPC status throughout the relevant tax year in order to claim the immediate expensing.

Note 13: An AIIP is a property (other than property included in Classes 54 to 56) that you acquired after November 20, 2018, and that became available for use before 2028.
Classes 54 and 55 include zero-emission vehicles that you acquired after March 18, 2019, and that became available for use before 2028.
Class 56 applies to eligible zero-emission automotive equipment and vehicles (other than motor vehicles) that are acquired after March 1, 2020, and that became available for use before 2028.
See the T2 Corporation Income Tax Guide for more information.

Note 14: Include only elements from columns 6 and 7 that are not related to the DIEP.

Note 15: The relevant factors for property of a class in Schedule II, that is an AIIP or included in Classes 54 to 56, available for use before 2024 are:

- 2 1/3 for property in Classes 43.1, 54, and 56
- 1 1/2 for property in Class 55
- 1 for property in Classes 43.2 and 53
- 0 for property in Classes 12, 13, 14, and 15, as well as properties that are Canadian vessels included in paragraph 1100(1)(v) of the Regulations (see note 20 for additional information) and
- 0.5 for all other property that is an AIIP

Part 2 – CCA calculation (continued)

Note 16: The UCC adjustment for property acquired during the year (formerly known as the half-year rule or 50% rule) does not apply to certain property (including AIIP, property included in Classes 54 to 56, and property to which the immediate expensing was applied). Include only elements from columns 6 and 7 that are not related to the DIEP.
For special rules and exceptions, see Income Tax Folio S3-F4-C1, General Discussion of Capital Cost Allowance.

Note 17: Enter a rate only if you are using the declining balance method. For any other method (for example, the straight-line method, where calculations are always based on the cost of acquisitions), enter N/A. Then enter the amount you are claiming in column 23.

Note 18: If the amount in column 10 is negative, you have a recapture of CCA. If applicable, enter the negative amount from column 10 in column 21 as a positive. The recapture rules do not apply to passenger vehicles in Class 10.1. However, they do apply to a passenger vehicle that was, at any time, a DIEP.

Note 19: If no property is left in the class at the end of the tax year and there is still a positive amount in the column 10, you have a terminal loss. If applicable, enter the positive amount from column 10 in column 22. The terminal loss rules do not apply to:

- passenger vehicles in Class 10.1
- property in Class 14.1, unless you have ceased carrying on the business to which it relates
- limited-period franchises, concessions, or licences in Class 14 if, at the time of acquisition, the property was a former property of the transferor or any similar property attributable to the same fixed place of business, and you had jointly elected with the transferor to have the replacement property rules apply, unless certain conditions are met

Note 20: If the tax year is shorter than 365 days, prorate the CCA claim. Some classes of property do not have to be prorated. See the T2 Corporation Income Tax Guide for more information. For property in class 10.1 disposed of during the year, deduct a maximum of 50% of the regular CCA deduction if you owned the property at the beginning of the tax year. For AIIP listed below, the maximum first year allowance you can claim is determined as follows:

- Class 13: the lesser of 150% of the amount calculated in Schedule III of the Regulations and the UCC at the end of the tax year (before any CCA deduction)
- Class 14: the lesser of 150% of the allocation for the year of the capital cost of the property apportioned over the remaining life of the property (at the time the cost was incurred) and the UCC at the end of the tax year (before any CCA deduction)
- Class 15: the lesser of 150% of an amount computed on the basis of a rate per cord, board foot, or cubic metre cut in the tax year and the UCC at the end of the tax year (before any CCA deduction)
- Canadian vessels described under paragraph 1100(1)(v) of the Regulations: the lesser of 50% of the capital cost of the property and the UCC at the end of the tax year (before any CCA deduction)
- Class 41.2: use a 25% CCA rate. The additional allowance under paragraphs 1100(1)(y.2) (for single mine properties) and 1100(1)(ya.2) (for multiple mine properties) of the Regulations is not eligible for the accelerated investment incentive. The additional allowance in respect of natural gas liquefaction under paragraph 1100(1)(yb) of the Regulations is eligible for the accelerated investment incentive

The AIIP also apply to property (other than a timber resource property) that is a timber limit or a right to cut timber from a limit as well as to industrial mineral mine or a right to remove minerals from an industrial mineral mine. See the Income Tax Regulations for more detail.

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SCHEDULE 9

RELATED AND ASSOCIATED CORPORATIONS

Name of corporation	Business Number	Tax year end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

- Complete this schedule if the corporation is related to or associated with at least one other corporation.
- For more information, see the *T2 Corporation Income Tax Guide*.

	Name 100	Country of residence (other than Canada) 200	Business number (see note 1) 300	Relationship code (see note 2) 400	Number of common shares you own 500	% of common shares you own 550	Number of preferred shares you own 600	% of preferred shares you own 650	Book value of capital stock 700
1.	NIAGARA-ON-THE-LAKE ENERGY IN		86376 1490 RC0001	1					7,054,844
2.	Energy Services Niagara Inc		86360 6125 RC0001	3					143,511
3.	Town of Niagara-on-the-Lake		NR	3					

Note 1: Enter "NR" if the corporation is not registered or does not have a business number.
Note 2: Enter the code number of the relationship that applies from the following order: 1 - Parent 2 - Subsidiary 3 - Associated 4 - Related but not associated

T2 SCH 9 (11)

Canada

Continuity of financial statement reserves (not deductible)

Financial statement reserves (not deductible)

	Description	Balance at the beginning of the year	Transfer on an amalgamation or the wind-up of a subsidiary	Add	Deduct	Balance at the end of the year
1	EMPLOYEE FUTURE BENEFITS	614,923		486,482	614,923	486,482
2	AFDA	39,050		40,000	39,050	40,000
3						
	Reserves from Part 2 of Schedule 13					
	Totals	653,973		526,482	653,973	526,482

The total opening balance plus the total transfers should be entered on line 414 of Schedule 1 as a deduction.
The total closing balance should be entered on line 126 of Schedule 1 as an addition.

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Schedule 15

Deferred Income Plans

Corporation's name	Business number	Tax year end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

- Complete the information below if the corporation deducted payments from its income made to a registered pension plan (RPP), a registered supplementary unemployment benefit plan (RSUBP), a deferred profit sharing plan (DPSP), a pooled registered pension plan (PRPP), or an employee profit sharing plan (EPSP).
- If the trust that governs an employee profit sharing plan is **not resident** in Canada, please indicate if the T4PS, *Statement of Employees Profit Sharing Plan Allocations and Payments*, Supplementary slip(s) were filed for the last calendar year, and whether they were filed by the trustee or the employer.

	Type of plan (see note 1) 100	Amount of contribution $ (see note 2) 200	Registration number (RPP, RSUBP, PRPP, and DPSP only) 300	Name of EPSP trust 400	Address of EPSP trust 500	T4PS slip(s) (see note 3) 600
1	1	192,354	490251			

Note 1

Enter the applicable code number:

1 – RPP
2 – RSUBP
3 – DPSP
4 – EPSP
5 – PRPP

Note 2

You do not need to add to Schedule 1 any payments you made to deferred income plans. To reconcile such payments, calculate the following amount:

Total of all amounts indicated in column 200 of this schedule	192,354	A
Less:		
Total of all amounts for deferred income plans deducted in your financial statements	146,585	B
Deductible amount for contributions to deferred income plans (amount A **minus** amount B) (if negative, enter "0")	45,769	C

Enter amount C on line 417 of Schedule 1

Note 3

T4PS slip(s) filed by: 1 – Trustee
2 – Employer
(EPSP only)

T2 SCH 15 (13)

Canada

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Schedule 23

Agreement Among Associated Canadian-Controlled Private Corporations to Allocate the Business Limit

- For use by a Canadian-controlled private corporation (CCPC) to identify all associated corporations and to assign a percentage for each associated corporation. This percentage will be used to allocate the business limit for the small business deduction. Information from this schedule will also be used to determine the date the balance of tax is due and to calculate the reduction to the business limit.
- An associated CCPC that has more than one tax year ending in a calendar year must file an agreement for each tax year ending in that calendar year.

Column 1: Enter the legal name of each of the corporations in the associated group, including those deemed to be associated under subsection 256(2) of the Income Tax Act.

Column 2: Provide the business number for each corporation (if a corporation is not registered, enter "NR").

Column 3: Enter the association code from the list below that applies to each corporation:

1 – Associated for purposes of allocating the business limit (unless association code 5 applies)

2 – CCPC that is a **third corporation** as referred to in subsection 256(2) and has filed Schedule 28, Election not to be Associated Through a Third Corporation

3 – Non-CCPC that is a **third corporation**

4 – Associated non-CCPC

5 – Associated CCPC to which association code 1 does not apply because a **third corporation** has filed Schedule 28

Column 4: Enter the business limit for the year of each corporation in the associated group. Enter "0" if the corporation has association code 2, 3 or 4 in column 3 (except if the corporation is a cooperative or a credit union eligible for the SBD and it has association code 4).

Column 5: Assign a percentage to allocate the business limit to each corporation that has association code 1 in column 3. The total of all percentages in column 5 cannot exceed 100%.

Column 6: Enter the business limit allocated to each corporation by multiplying the amount in column 4 by the percentage in column 5. Add all business limits allocated in column 6 and enter the total at line A.

Ensure that the total at line A does not exceed $500,000.

Allocating the business limit

Date filed (do not use this area) . . . . . **025** Year Month Day

Enter the calendar year the agreement applies to . . . . . **050** Year: 2022

Is this an amended agreement for the above calendar year that is intended to replace an agreement previously filed by any of the associated corporations listed below? . . . . . **075** ☐ Yes ☒ No

	1 Name of associated corporations **100**	2 Business number of associated corporations **200**	3 Association code **300**	4 Business limit for the year before the allocation $	5 Percentage of the business limit % **350**	6 Business limit allocated* $ **400**
1	NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	1	500,000	100.0000	500,000
2	NIAGARA-ON-THE-LAKE ENERGY INC.	86376 1490 RC0001	1	500,000		
3	Energy Services Niagara Inc	86360 6125 RC0001	1	500,000		
4	Town of Niagara-on-the-Lake	NR	4			
				Total	100.0000	500,000 A

Business limit reduction under subsection 125(5.1) of the Act

The business limit reduction is calculated in the small business deduction area of the T2 return. One of the factors used in this calculation is the "large corporation amount" at line 415 of the T2 return. The amount at line 415 is determined using the formula 0.225% x (C - $10,000,000). Another factor is the "adjusted aggregate investment income" from lines 744 and 745 of Schedule 7, Aggregate Investment Income and Income Eligible for the Small Business Deduction. Details of these formulas and variable C are in subsection 125(5.1) of the Act.

* Each corporation will enter on line 410 of the T2 return, the amount allocated to it in column 6. However, if the corporation's tax year is less than 51 weeks, prorate the amount in column 6 by the number of days in the tax year divided by 365, and enter the result on line 410 of the T2 return.

Special rules for business limit

Special rules apply under subsection 125(5) if a CCPC has more than one tax year ending in the same calendar year and it is associated in more than one of those tax years with another CCPC that has a tax year ending in that calendar year. The business limit for the second or later tax year will be equal to the lesser of: the business limit determined for the first tax year ending in the calendar year or the business limit determined for the second or later tax year ending in the same calendar year.

T2 SCH 23 E (19)

Canada

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Schedule 33

Taxable Capital Employed in Canada – Large Corporations

Corporation's name	Business number	Tax year-end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

- Use this schedule in determining if the total taxable capital employed in Canada of the corporation (other than a financial institution or an insurance corporation) and its related corporations is greater than $10,000,000.
- If the total taxable capital employed in Canada of the corporation and its related corporations is greater than $10,000,000, file a completed Schedule 33 with your T2 *Corporation Income Tax Return* no later than six months from the end of the tax year.
- Unless otherwise noted, all legislative references are to the *Income Tax Act* and the *Income Tax Regulations*.
- Subsection 181(1) defines the terms **financial institution**, **long-term debt**, and **reserves**.
- Subsection 181(3) provides the basis to determine the carrying value of a corporation's assets or any other amount under Part I.3 for its capital, investment allowance, taxable capital, or taxable capital employed in Canada, or for a partnership in which it has an interest.
- If the corporation was a non-resident of Canada throughout the year and carried on a business through a permanent establishment in Canada, go to Part 4, **Taxable capital employed in Canada**.

Part 1 – Capital

Add the following year-end amounts:

Reserves that have not been deducted in calculating income for the year under Part I	101	3,954,497	
Capital stock (or members' contributions if incorporated without share capital)	103	2,632,307	
Retained earnings	104	13,618,293	
Contributed surplus	105		
Any other surpluses	106	4,269,026	
Deferred unrealized foreign exchange gains	107		
All loans and advances to the corporation	108	21,413,832	
All indebtedness of the corporation represented by bonds, debentures, notes, mortgages, hypothecary claims, bankers' acceptances, or similar obligations	109		
Any dividends declared but not paid by the corporation before the end of the year	110		
All other indebtedness of the corporation (other than any indebtedness for a lease) that has been outstanding for more than 365 days before the end of the year	111		
The total of all amounts, each of which is the amount, if any, in respect of a partnership in which the corporation held a membership interest at the end of the year, either directly or indirectly through another partnership (see note below)	112		
Subtotal (**add** lines 101 to 112)		45,887,955 ▶	45,887,955 A

Note:

Line 112 is determined by the formula (A – B) x C/D (as per paragraph 181.2(3)(g)) where:

A is the total of all amounts that would be determined for lines 101, 107, 108, 109, and 111 in respect of the partnership for its last fiscal period that ends at or before the end of the year if

a) those lines applied to partnerships in the same manner that they apply to corporations, and

b) those amounts were computed without reference to amounts owing by the partnership

(i) to any corporation that held a membership interest in the partnership either directly or indirectly through another partnership, or

(ii) to any partnership in which a corporation described in subparagraph (i) held a membership interest either directly or indirectly through another partnership.

B is the partnership's deferred unrealized foreign exchange losses at the end of the period,

C is the share of the partnership's income or loss for the period to which the corporation is entitled either directly or indirectly through another partnership, and

D is the partnership's income or loss for the period.

Part 1 – Capital (continued)

		Subtotal A (from page 1)	45,887,955 A
Deduct the following amounts:			
Deferred tax debit balance at the end of the year	121	1,803,942	
Any deficit deducted in calculating its shareholders' equity (including, for this purpose, the amount of any provision for the redemption of preferred shares) at the end of the year	122		
To the extent that the amount may reasonably be regarded as being included in any of lines 101 to 112 above for the year, any amount deducted under subsection 135(1) in calculating income under Part I for the year.	123		
Deferred unrealized foreign exchange losses at the end of the year	124		
		Subtotal (**add** lines 121 to 124) 1,803,942 ▶	1,803,942 B
Capital for the year (amount A **minus** amount B) (if negative, enter "0")	190		44,084,013

Part 2 – Investment allowance

Add the carrying value at the end of the year of the following assets of the corporation:

A share of another corporation	401	100
A loan or advance to another corporation (other than a financial institution)	402	296,347
A bond, debenture, note, mortgage, hypothecary claim, or similar obligation of another corporation (other than a financial institution)	403	
Long-term debt of a financial institution	404	
A dividend payable on a share of the capital stock of another corporation	405	
A loan or advance to, or a bond, debenture, note, mortgage, hypothecary claim or similar obligation of, a partnership each member of which was, throughout the year, another corporation (other than a financial institution) that was not exempt from tax under this Part (otherwise than because of paragraph 181.1(3)(d)), or another partnership described in paragraph 181.2(4)(d.1)	406	
An interest in a partnership (see note 2 below)	407	
Investment allowance for the year (add lines 401 to 407)	490	296,447

Notes:

1. Lines 401 to 405 should not include the carrying value of a share of the capital stock of, a dividend payable by, or indebtedness of a corporation that is exempt from tax under Part I.3 (other than a non-resident corporation that at no time in the year carried on business in Canada through a permanent establishment).
2. Where the corporation has an interest in a partnership held either directly or indirectly through another partnership, refer to subsection 181.2(5) for additional rules regarding the carrying value of an interest in a partnership.
3. Where a trust is used as a conduit for loaning money from a corporation to another related corporation (other than a financial institution), the loan will be considered to have been made directly from the lending corporation to the borrowing corporation. Refer to subsection 181.2(6) for special rules that may apply.

Part 3 – Taxable capital

Capital for the year (line 190)		44,084,013 C
Deduct: Investment allowance for the year (line 490)		296,447 D
Taxable capital for the year (amount C **minus** amount D) (if negative, enter "0")	500	43,787,566

Part 4 – Taxable capital employed in Canada

To be completed by a corporation that was resident in Canada at any time in the year

Taxable capital for the year (line 500) 43,787,566 x (Taxable income earned in Canada / Taxable income) **610** 1,000 / 1,000 = **Taxable capital employed in Canada** **690** 43,787,566

Notes:
1. Regulation 8601 gives details on calculating the amount of taxable income earned in Canada.
2. Where a corporation's taxable income for a tax year is "0," it shall, for the purposes of the above calculation, be deemed to have a taxable income for that year of $1,000.
3. In the case of an airline corporation, Regulation 8601 should be considered when completing the above calculation.

To be completed by a corporation that was a non-resident of Canada throughout the year and carried on a business through a permanent establishment in Canada

Total of all amounts each of which is the carrying value at the end of the year of an asset of the corporation used in the year or held in the year, in the course of carrying on any business during the year through a permanent establishment in Canada . . **701**

Deduct the following amounts:

Corporation's indebtedness at the end of the year [other than indebtedness described in any of paragraphs 181.2(3)(c) to (f)] that may reasonably be regarded as relating to a business it carried on during the year through a permanent establishment in Canada **711**

Total of all amounts each of which is the carrying value at the end of year of an asset described in subsection 181.2(4) of the corporation that it used in the year, or held in the year, in the course of carrying on any business during the year through a permanent establishment in Canada **712**

Total of all amounts each of which is the carrying value at the end of year of an asset of the corporation that is a ship or aircraft the corporation operated in international traffic, or personal or movable property used or held by the corporation in carrying on any business during the year through a permanent establishment in Canada (see note below) **713**

Total deductions (**add** lines 711, 712, and 713) ▶ E

Taxable capital employed in Canada (line 701 **minus** amount E) (if negative, enter "0") **790**

Note: Complete line 713 only if the country in which the corporation is resident did not impose a capital tax for the year on similar assets, or a tax for the year on the income from the operation of a ship or aircraft in international traffic, of any corporation resident in Canada during the year.

Part 5 – Calculation for purposes of the small business deduction

This part is applicable to corporations that are not associated in the current year, but were associated in the prior year.

Taxable capital employed in Canada (amount from line 690) . . . . . F

Deduct: . . . . . 10,000,000 G

Excess (amount F **minus** amount G) (if negative, enter "0") H

Calculation for purposes of the small business deduction (amount H x 0.225%) I

Enter this amount at line 415 of the T2 return.

Attached Schedule with Total

Part 1 – All loans and advances to the corporation

Title Part 1 – All loans and advances to the corporation

Description	Operator (Note)	Amount
Current portion of LT debt		11,036,989 00
Long-term portion of LT debt	+	2,673,372 00
Customer Deposits	+	592,381 00
Due to related parties	+	790,245 00
Deferred Revenue	+	
Deferred Revenue LT	+	6,320,845 00
	+	
	Total	21,413,832 00

Note: The calculations are performed one at a time, from the first to the last line, and not according to the priority rules of the operations. For example, the formula 1+2*3 will not result in the same thing as the formula 1+3*2.

Attached Schedule with Total

Part 2 – A loan or advance to another corporation (other than a financial institution)

Title Part 2 – A loan or advance to another corporation (other than a financial inst

Description	Operator (Note)	Amount
Due from related parties		160,561 00
Prepaids per BS	+	135,786 00
	+	
	Total	296,347 00

Note: The calculations are performed one at a time, from the first to the last line, and not according to the priority rules of the operations. For example, the formula 1+2*3 will not result in the same thing as the formula 1+3*2.

Attached Schedule with Total

Part 1 – Reserves that have not been deducted in calculating income for the year under Part I

Title Part 1 – Reserves that have not been deducted in computing income for the

Description	Operator (Note)	Amount
Sch 13S reserves		526,482 00
Deferred tax liability (per FS)	+	3,428,015 00
	+	
	Total	3,954,497 00

Note: The calculations are performed one at a time, from the first to the last line, and not according to the priority rules of the operations. For example, the formula 1+2*3 will not result in the same thing as the formula 1+3*2.

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Schedule 50

Shareholder Information

Corporation's name	Business number	Tax year-end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

- All private corporations must complete this schedule for any shareholder who holds 10% or more of the corporation's common and/or preferred shares.
- Provide only one number (business number, partnership account number, social insurance number or trust number) per shareholder.

	Name of shareholder (after name, indicate in brackets if the shareholder is a corporation, partnership, individual, or trust) **100**	Business number or partnership account number (9 digits, 2 letters, and 4 digits. If not registered, enter "**NR**") **200**	Social insurance number (9 digits) **300**	Trust number (T followed by 8 digits) **350**	Percentage common shares **400**	Percentage preferred shares **500**
1	Niagara-on-the-Lake Energy Inc.	863761490RC0001			100.000	
2						
3						
4						
5						
6						
7						
8						
9						
10						

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Schedule 55

Part III.1 Tax on Excessive Eligible Dividend Designations

Corporation's name	Business number	Tax year-end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

- Every corporation resident in Canada that pays a taxable dividend (other than a capital gains dividend within the meaning assigned by subsection 130.1(4) or 131(1)) in the tax year must file this schedule.
- Canadian-controlled private corporations (CCPC) and deposit insurance corporations (DIC) must complete Part 1 of this schedule. All other corporations must complete Part 2.
- Every corporation that has paid an eligible dividend must also file Schedule 53, General Rate Income Pool (GRIP) Calculation, or Schedule 54, Low Rate Income Pool (LRIP) Calculation, whichever is applicable.
- File the schedules with your T2 Corporation Income Tax Return no later than six months from the end of the tax year.
- All legislative references are to the Income Tax Act and the Income Tax Regulations.
- Subsection 89(1) defines the terms **eligible dividend**, **excessive eligible dividend designation**, **general rate income pool**, and **low rate income pool**.
- The calculations in Part 1 and Part 2 do not apply if the excessive eligible dividend designation arises from the application of paragraph (c) of the definition of excessive eligible dividend designation in subsection 89(1). This paragraph applies when an eligible dividend is paid to artificially maintain or increase the GRIP or to artificially maintain or decrease the LRIP.

Do not use this area

Part 1 – Canadian-controlled private corporations and deposit insurance corporations

Taxable dividends paid in the tax year **not included** in Schedule 3			
Taxable dividends paid in the tax year **included** in Schedule 3		750,000	
Total taxable dividends paid in the tax year	100	750,000	
Total eligible dividends paid in the tax year	150		
GRIP at the end of the tax year (line 590 on Schedule 53) (if negative, enter "0")	160	840,722	
Excessive eligible dividend designation (line 150 **minus** line 160)			A
Excessive eligible dividend designations elected under subsection 185.1(2) to be treated as ordinary dividends *	180		
Subtotal (amount A **minus** line 180)			B
Part III.1 tax on excessive eligible dividend designations – CCPC or DIC (amount B **multiplied** by 20 %)	190		

Enter the amount from line 190 on line 710 of the T2 return.

Part 2 – Other corporations

Taxable dividends paid in the tax year **not included** in Schedule 3			
Taxable dividends paid in the tax year **included** in Schedule 3			
Total taxable dividends paid in the tax year	200		
Total excessive eligible dividend designations in the tax year (amount A of Schedule 54)			C
Excessive eligible dividend designations elected under subsection 185.1(2) to be treated as ordinary dividends *	280		
Subtotal (amount C **minus** line 280)			D
Part III.1 tax on excessive eligible dividend designations – Other corporations (amount D **multiplied** by 20 %)	290		

Enter the amount from line 290 on line 710 of the T2 return.

* You can elect to treat all or part of your excessive eligible dividend designation as a separate taxable dividend in order to eliminate or reduce the Part III.1 tax otherwise payable. You must file the election on or before the day that is 90 days **after** the day the notice of assessment for Part III.1 tax was sent. We will accept an election before the assessment of the tax.

Canada Revenue Agency / Agence du revenu du Canada

Schedule 510

Ontario Corporate Minimum Tax

Corporation's name	Business number	Tax year-end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

- File this schedule if the corporation is subject to Ontario corporate minimum tax (CMT). CMT is levied under section 55 of the *Taxation Act, 2007* (Ontario), referred to as the "Ontario Act".
- Complete Part 1 to determine if the corporation is subject to CMT for the tax year.
- A corporation not subject to CMT in the tax year is still required to file this schedule if it is deducting a CMT credit, has a CMT credit carryforward, or has a CMT loss carryforward or a current year CMT loss.
- A corporation that has Ontario special additional tax on life insurance corporations (SAT) payable in the tax year must complete Part 4 of this schedule even if it is not subject to CMT for the tax year.
- A corporation is exempt from CMT if, throughout the tax year, it was one of the following:
  1) a corporation exempt from income tax under section 149 of the federal *Income Tax Act*;
  2) a mortgage investment corporation under subsection 130.1(6) of the federal Act;
  3) a deposit insurance corporation under subsection 137.1(5) of the federal Act;
  4) a congregation or business agency to which section 143 of the federal Act applies;
  5) an investment corporation as referred to in subsection 130(3) of the federal Act; or
  6) a mutual fund corporation under subsection 131(8) of the federal Act.
- File this schedule with the *T2 Corporation Income Tax Return*.

Part 1 – Determination of CMT applicability

Total assets of the corporation at the end of the tax year *	112	50,094,230
Share of total assets from partnership(s) and joint venture(s) *	114	
Total assets of associated corporations (amount from line 450 on Schedule 511)	116	62,981,029
Total assets (total of lines 112 to 116)		113,075,259
Total revenue of the corporation for the tax year **	142	30,454,440
Share of total revenue from partnership(s) and joint venture(s) **	144	
Total revenue of associated corporations (amount from line 550 on Schedule 511)	146	101,195,314
Total revenue (total of lines 142 to 146)		131,649,754

The corporation is subject to CMT if:
- for tax years ending before July 1, 2010, the total assets at the end of the year of the corporation or the associated group of corporations are more than $5,000,000, or the total revenue for the year of the corporation or the associated group of corporations is more than $10,000,000.
- for tax years ending after June 30, 2010, the total assets at the end of the year of the corporation or the associated group of corporations are equal to or more than $50,000,000, and the total revenue for the year of the corporation or the associated group of corporations is equal to or more than $100,000,000.

If the corporation is not subject to CMT, do not complete the remaining parts unless the corporation is deducting a CMT credit, or has a CMT credit carryforward, a CMT loss carryforward, a current year CMT loss, or SAT payable in the year.

* **Rules for total assets**
- Report total assets according to generally accepted accounting principles, adjusted so that consolidation and equity methods are not used.
- Do not include unrealized gains and losses on assets and foreign currency gains and losses on assets that are included in net income for accounting purposes but not in income for corporate income tax purposes.
- The amount on line 114 is determined at the end of the last fiscal period of the partnership or joint venture that ends in the tax year of the corporation. Add the proportionate share of the assets of the partnership(s) and joint venture(s), and deduct the recorded asset(s) for the investment in partnerships and joint ventures.
- A corporation's share in a partnership or joint venture is determined under paragraph 54(5)(b) of the Ontario Act and, if the partnership or joint venture had no income or loss, is calculated as if the partnership's or joint venture's income were $1 million. For a corporation with an indirect interest in a partnership or joint venture, determine the corporation's share according to paragraph 54(5)(c) of the Ontario Act.

** **Rules for total revenue**
- Report total revenue in accordance with generally accepted accounting principles, adjusted so that consolidation and equity methods are not used.
- If the tax year is less than 51 weeks, **multiply** the total revenue of the corporation or the partnership, whichever applies, by 365 and **divide** by the number of days in the tax year.
- The amount on line 144 is determined for the partnership or joint venture fiscal period that ends in the tax year of the corporation. If the partnership or joint venture has 2 or more fiscal periods ending in the filing corporation's tax year, **multiply** the sum of the total revenue for each of the fiscal periods by 365 and **divide** by the total number of days in all the fiscal periods.
- A corporation's share in a partnership or joint venture is determined under paragraph 54(5)(b) of the Ontario Act and, if the partnership or joint venture had no income or loss, is calculated as if the partnership's or joint venture's income were $1 million. For a corporation with an indirect interest in a partnership or joint venture, determine the corporation's share according to paragraph 54(5)(c) of the Ontario Act.

Part 2 – Adjusted net income/loss for CMT purposes

Net income/loss per financial statements *			210	1,795,546
Add (to the extent reflected in income/loss):				
Provision for current income taxes/cost of current income taxes	220	555,682		
Provision for deferred income taxes (debits)/cost of future income taxes	222			
Equity losses from corporations	224			
Financial statement loss from partnerships and joint ventures	226			
Dividends deducted on financial statements (subsection 57(2) of the Ontario Act), excluding dividends paid by credit unions under subsection 137(4.1) of the federal Act	230			
Other additions (see note below):				
Share of adjusted net income of partnerships and joint ventures **	228			
Total patronage dividends received, not already included in net income/loss	232			
281	282			
283	284			
Subtotal		555,682 ▶		555,682 A
Deduct (to the extent reflected in income/loss):				
Provision for recovery of current income taxes/benefit of current income taxes	320			
Provision for deferred income taxes (credits)/benefit of future income taxes	322			
Equity income from corporations	324			
Financial statement income from partnerships and joint ventures	326			
Dividends deductible under section 112, section 113, or subsection 138(6) of the federal Act	330			
Dividends not taxable under section 83 of the federal Act (from Schedule 3)	332			
Gain on donation of listed security or ecological gift	340			
Accounting gain on transfer of property to a corporation under section 85 or 85.1 of the federal Act ***	342			
Accounting gain on transfer of property to/from a partnership under section 85 or 97 of the federal Act ****	344			
Accounting gain on disposition of property under subsection 13(4), subsection 14(6), or section 44 of the federal Act *****	346			
Accounting gain on a windup under subsection 88(1) of the federal Act or an amalgamation under section 87 of the federal Act	348			
Other deductions (see note below):				
Share of adjusted net loss of partnerships and joint ventures **	328			
Tax payable on dividends under subsection 191.1(1) of the federal Act **multiplied** by 3	334			
Interest deducted/deductible under paragraph 20(1)(c) or (d) of the federal Act, not already included in net income/loss	336			
Patronage dividends paid (from Schedule 16) not already included in net income/loss	338			
381 Tax included in net movement in regulatory balances	382	235,495		
383	384			
385	386			
387	388			
389	390			
Subtotal		235,495 ▶		235,495 B
Adjusted net income/loss for CMT purposes (line 210 **plus** amount A **minus** amount B)			490	2,115,733

If the amount on line 490 is positive and the corporation is subject to CMT as determined in Part 1, enter the amount on line 515 in Part 3.

If the amount on line 490 is negative, enter the amount on line 760 in Part 7 (enter as a positive amount).

Note

In accordance with *Ontario Regulation 37/09*, when calculating net income for CMT purposes, accounting income should be adjusted to:

- exclude unrealized gains and losses due to mark-to-market changes or foreign currency changes on specified mark-to-market property (assets only);
- include realized gains and losses on the disposition of specified mark-to-market property not already included in the accounting income, if the property is not a capital property or is a capital property disposed in the year or in a previous tax year ended after March 22, 2007.

"Specified mark-to-market property" is defined in subsection 54(1) of the Ontario Act.

These rules also apply to partnerships. A corporate partner's share of a partnership's adjusted income flows through on a proportionate basis to the corporate partner.

* **Rules for net income/loss**

- Banks must report net income/loss as per the report accepted by the Superintendent of Financial Institutions under the federal *Bank Act*, adjusted so consolidation and equity methods are not used.

Part 2 – Calculation of adjusted net income/loss for CMT purposes (continued)

– Life insurance corporations must report net income/loss as per the report accepted by the federal Superintendent of Financial Institutions or equivalent provincial insurance regulator, before SAT and adjusted so consolidation and equity methods are not used. If the life insurance corporation is resident in Canada and carries on business in and outside of Canada, **multiply** the net income/loss by the ratio of the Canadian reserve liabilities **divided** by the total reserve liability. The reserve liabilities are calculated in accordance with Regulation 2405(3) of the federal Act.

– Other corporations must report net income/loss in accordance with generally accepted accounting principles, except that consolidation and equity methods must not be used. When the equity method has been used for accounting purposes, equity losses and equity income are removed from book income/loss on lines 224 and 324 respectively.

– Corporations, other than insurance corporations, should report net income from line 9999 of the GIFI (Schedule 125) on line 210.

** The share of the adjusted net income of a partnership or joint venture is calculated as if the partnership or joint venture were a corporation and the tax year of the partnership or joint venture were its fiscal period. For a corporation with an indirect interest in a partnership through one or more partnerships, determine the corporation's share according to clause 54(5)(c) of the Ontario Act.

*** A joint election will be considered made under subsection 60(1) of the Ontario Act if there is an entry on line 342, and an election has been made for transfer of property to a corporation under subsection 85(1) of the federal Act.

**** A joint election will be considered made under subsection 60(2) of the Ontario Act if there is an entry on line 344, and an election has been made under subsection 85(2) or 97(2) of the federal Act.

***** A joint election will be considered made under subsection 61(1) of the Ontario Act if there is an entry on line 346, and an election has been made under subsection 13(4) or 14(6) and/or section 44 of the federal Act.

For more information on how to complete this part, see the *T2 Corporation – Income Tax Guide*.

Part 3 – CMT payable

Adjusted net income for CMT purposes (line 490 in Part 2, if positive) **515** 2,115,733

Deduct:

CMT loss available (amount R from Part 7) . . . . . _____

Minus: Adjustment for an acquisition of control * . . . . . **518** _____

Adjusted CMT loss available . . . . . ▶ _____ C

Net income subject to CMT calculation (if negative, enter "0") **520** 2,115,733

Amount from line 520 2,115,733 x (Number of days in the tax year before July 1, 2010 / Number of days in the tax year 365) _____ x 4 % = _____ 1

Amount from line 520 2,115,733 x (Number of days in the tax year after June 30, 2010 / Number of days in the tax year 365) 365 x 2.7 % = 57,125 2

Subtotal (amount 1 **plus** amount 2) 57,125 3

Gross CMT: amount on line 3 above x OAF ** **540** 57,125

Deduct:

Foreign tax credit for CMT purposes *** . . . . . **550** _____

CMT after foreign tax credit deduction (line 540 **minus** line 550) (if negative, enter "0") . . . . . 57,125 D

Deduct:

Ontario corporate income tax payable before CMT credit (amount F6 from Schedule 5) . . . . . _____

Net CMT payable (if negative, enter "0") . . . . . 57,125 E

Enter amount E on line 278 of Schedule 5, *Tax Calculation Supplementary – Corporations*, and complete Part 4.

* Enter the portion of CMT loss available that exceeds the adjusted net income for the tax year from carrying on a business before the acquisition of control. See subsection 58(3) of the Ontario Act.

*** Enter "0" on line 550 for life insurance corporations as they are not eligible for this deduction. For all other corporations, enter the cumulative total of amount J for the province of Ontario from Part 9 of Schedule 21 on line 550.

** **Calculation of the Ontario allocation factor (OAF):**

If the provincial or territorial jurisdiction entered on line 750 of the T2 return is "Ontario," enter "1" on line F.

If the provincial or territorial jurisdiction entered on line 750 of the T2 return is "multiple," complete the following calculation, and enter the result on line F:

Ontario taxable income **** / Taxable income ***** _____ = _____

Ontario allocation factor . . . . . 1.00000 F

**** Enter the amount allocated to Ontario from column F in Part 1 of Schedule 5. If the taxable income is nil, calculate the amount in column F as if the taxable income were $1,000.

***** Enter the taxable income amount from line 360 or amount Z of the T2 return, whichever applies. If the taxable income is nil, enter "1,000".

Part 4 – Calculation of CMT credit carryforward

CMT credit carryforward at the end of the previous tax year * . . . . . G

Deduct:

CMT credit expired * 600

CMT credit carryforward at the beginning of the current tax year * (see note below) . . . . . ▶ 620

Add:

CMT credit carryforward balances transferred on an amalgamation or the windup of a subsidiary (see note below) 650

CMT credit available for the tax year (amount on line 620 **plus** amount on line 650) . . . . . H

Deduct:

CMT credit deducted in the current tax year (amount P from Part 5) I

Subtotal (amount H **minus** amount I) J

Add:

Net CMT payable (amount E from Part 3) 57,125

SAT payable (amount O from Part 6 of Schedule 512) . . . . .

Subtotal 57,125 ▶ 57,125 K

CMT credit carryforward at the end of the tax year (amount J **plus** amount K) . . . . . 670 57,125 L

* For the first harmonized T2 return filed with a tax year that includes days in 2009:
- do not enter an amount on line G or line 600;
- for line 620, enter the amount from line 2336 of Ontario CT23 Schedule 101, *Corporate Minimum Tax (CMT)*, for the last tax year that ended in 2008.

For other tax years, enter on line G the amount from line 670 of Schedule 510 from the previous tax year.

Note: If you entered an amount on line 620 or line 650, complete Part 6.

Part 5 – Calculation of CMT credit deducted from Ontario corporate income tax payable

CMT credit available for the tax year (amount H from Part 4) . . . . . M

Ontario corporate income tax payable before CMT credit (amount F6 from Schedule 5) 1

For a corporation that is not a life insurance corporation:

CMT after foreign tax credit deduction (amount D from Part 3) . . 57,125 2

For a life insurance corporation:

Gross CMT (line 540 from Part 3) 3

Gross SAT (line 460 from Part 6 of Schedule 512) 4

The **greater** of amounts 3 and 4 5

Deduct: line 2 or line 5, whichever applies: 57,125 6

Subtotal (if negative, enter "0") ▶ N

Ontario corporate income tax payable before CMT credit (amount F6 from Schedule 5) . . . . .

Deduct:

Total refundable tax credits excluding Ontario qualifying environmental trust tax credit (amount J6 **minus** line 450 from Schedule 5) . . . . .

Subtotal (if negative, enter "0") ▶ O

CMT credit deducted in the current tax year (least of amounts M, N, and O) . . . . . P

Enter amount P on line 418 of Schedule 5 and on line I in Part 4 of this schedule.

Is the corporation claiming a CMT credit earned before an acquisition of control? . . . . . 675 1 Yes ☐ 2 No ☒

If you answered **yes** to the question at line 675, the CMT credit deducted in the current tax year may be restricted. For information on how the deduction may be restricted, see subsections 53(6) and (7) of the Ontario Act.

Part 6 – Analysis of CMT credit available for carryforward by year of origin

Complete this part if:

- the tax year includes January 1, 2009; or
- the previous tax year-end is deemed to be December 31, 2008, under subsection 249(3) of the federal Act.

Year of origin		CMT credit balance *
10th previous tax year	680	
9th previous tax year	681	
8th previous tax year	682	
7th previous tax year	683	
6th previous tax year	684	
5th previous tax year	685	
4th previous tax year	686	
3rd previous tax year	687	
2nd previous tax year	688	
1st previous tax year	689	
Total **		

* CMT credit that was earned (by the corporation, predecessors of the corporation, and subsidiaries wound up into the corporation) in each of the previous 10 tax years and has not been deducted.

** Must equal the total of the amounts entered on lines 620 and 650 in Part 4.

Part 7 – Calculation of CMT loss carryforward

CMT loss carryforward at the end of the previous tax year * . . . . . Q

Deduct:

CMT loss expired * 700

CMT loss carryforward at the beginning of the tax year * (see note below) . . . . . ▶ 720

Add:

CMT loss transferred on an amalgamation under section 87 of the federal Act ** (see note below) 750

CMT loss available (line 720 **plus** line 750) . . . . . R

Deduct:

CMT loss deducted against adjusted net income for the tax year (lesser of line 490 (if positive) and line C in Part 3) . . . . . .

Subtotal (if negative, enter "0") S

Add:

Adjusted net loss for CMT purposes (amount from line 490 in Part 2, if **negative**) (enter as a positive amount) 760

CMT loss carryforward balance at the end of the tax year (amount S **plus** line 760) . . . . . 770 T

* For the first harmonized T2 return filed with a tax year that includes days in 2009:

- do not enter an amount on line Q or line 700;
- for line 720, enter the amount from line 2214 of Ontario CT23 Schedule 101, *Corporate Minimum Tax (CMT)*, for the last tax year that ended in 2008.

For other tax years, enter on line Q the amount from line 770 of Schedule 510 from the previous tax year.

** Do not include an amount from a predecessor corporation if it was controlled at any time before the amalgamation by any of the other predecessor corporations.

Note: If you entered an amount on line 720 or line 750, complete Part 8.

Part 8 – Analysis of CMT loss available for carryforward by year of origin

Complete this part if:

- the tax year includes January 1, 2009; or
- the previous tax year-end is deemed to be December 31, 2008, under subsection 249(3) of the federal Act.

Year of origin	Balance earned in a tax year ending before March 23, 2007 *	Balance earned in a tax year ending after March 22, 2007 **
10th previous tax year	810	820
9th previous tax year	811	821
8th previous tax year	812	822
7th previous tax year	813	823
6th previous tax year	814	824
5th previous tax year	815	825
4th previous tax year	816	826
3rd previous tax year	817	827
2nd previous tax year	818	828
1st previous tax year		829
Total ***		

* Adjusted net loss for CMT purposes that was earned (by the corporation, by subsidiaries wound up into or amalgamated with the corporation before March 22, 2007, and by other predecessors of the corporation) in each of the previous 10 tax years that ended before March 23, 2007, and has not been deducted.

** Adjusted net loss for CMT purposes that was earned (by the corporation and its predecessors, but not by a subsidiary predecessor) in each of the previous 20 tax years that ended after March 22, 2007, and has not been deducted.

*** The total of these two columns must equal the total of the amounts entered on lines 720 and 750.

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SCHEDULE 511

ONTARIO CORPORATE MINIMUM TAX – TOTAL ASSETS AND REVENUE FOR ASSOCIATED CORPORATIONS

Name of corporation	Business Number	Tax year-end Year Month Day
NIAGARA-ON-THE-LAKE HYDRO INC.	86360 5929 RC0001	2022-12-31

- For use by corporations to report the total assets and total revenue of all the Canadian or foreign corporations with which the filing corporation was associated at any time during the tax year. These amounts are required to determine if the filing corporation is subject to corporate minimum tax.
- Total assets and total revenue include the associated corporation's share of any partnership(s)/joint venture(s) total assets and total revenue.
- Attach additional schedules if more space is required.
- File this schedule with the *T2 Corporation Income Tax Return.*

	Names of associated corporations 200	Business number (Canadian corporation only) (see Note 1) 300	Total assets* (see Note 2) 400	Total revenue** (see Note 2) 500
1	NIAGARA-ON-THE-LAKE ENERGY INC.	86376 1490 RC0001	7,058,728	750,240
2	Energy Services Niagara Inc	86360 6125 RC0001	5,922,301	445,074
3	Town of Niagara-on-the-Lake	NR	50,000,000	100,000,000
		Total	450 62,981,029	550 101,195,314

Enter the total assets from line 450 on line 116 in Part 1 of Schedule 510, *Ontario Corporate Minimum Tax*.
Enter the total revenue from line 550 on line 146 in Part 1 of Schedule 510.

Note 1: Enter ¨NR¨ if a corporation is not registered.

Note 2: If the associated corporation does not have a tax year that ends in the filing corporation's current tax year but was associated with the filing corporation in the previous tax year of the filing corporation, enter the total revenue and total assets from the tax year of the associated corporation that ends in the previous tax year of the filing corporation.

*** Rules for total assets**

- Report total assets in accordance with generally accepted accounting principles, adjusted so that consolidation and equity methods are not used.
- Include the associated corporation's share of the total assets of partnership(s) and joint venture(s) but exclude the recorded asset(s) for the investment in partnerships and joint ventures.
- Exclude unrealized gains and losses on assets that are included in net income for accounting purposes but not in income for corporate income tax purposes.

**** Rules for total revenue**

- Report total revenue in accordance with generally accepted accounting principles, adjusted so that consolidation and equity methods are not used.
- If the associated corporation has 2 or more tax years ending in the filing corporation's tax year, **multiply** the sum of the total revenue for each of those tax years by 365 and **divide** by the total number of days in all of those tax years.
- If the associated corporation's tax year is less than 51 weeks and is the only tax year of the associated corporation that ends in the filing corporation's tax year, **multiply** the associated corporation's total revenue by 365 and **divide** by the number of days in the associated corporation's tax year.
- Include the associated corporation's share of the total revenue of partnerships and joint ventures.
- If the partnership or joint venture has 2 or more fiscal periods ending in the associated corporation's tax year, **multiply** the sum of the total revenue for each of the fiscal periods by 365 and **divide** by the total number of days in all the fiscal periods.

T2 SCH 511

Canada

Niagara on-the-Lake HYDRO

APPENDIX 7-VECC-35A

INTERROGATORY REPONSES

EB-2023-0041

7.0-VECC-35A - Billing Weighting factors

		Rate Classes	6						Customers	8,404	1,523	127	1	5	60	10,119
								Allocation					-	-	-	-
5315	**2024 Budget**	**Residential**	**GS<50**	**GS>50 Interval**	**Large User**	**Street**	**Unmetered**	**Total**		**Residential**	**GS<50**	**GS>50 Interval**	**Large User**	**Street**	**Unmetered**	**Total**
Customer Information System	198,738	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 165,053	$ 29,902	$ 2,487	$ 20	$ 98	$ 1,178	198,738
Miscellaneous Expenses	3,613	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 3,000	$ 544	$ 45	$ 0	$ 2	$ 21	3,613
Office Supplies	2,660	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 2,210	$ 400	$ 33	$ 0	$ 1	$ 16	2,660
Bill Stock and Printing	17,072	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 14,178	$ 2,569	$ 214	$ 2	$ 8	$ 101	17,072
Postage	60,544	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 50,282	$ 9,110	$ 758	$ 6	$ 30	$ 359	60,544
Bank Fees	21	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 17	$ 3	$ 0	$ 0	$ 0	$ 0	21
Bill Inserts	4,688	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 3,893	$ 705	$ 59	$ 0	$ 2	$ 28	4,688
Training	3,978	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 3,304	$ 599	$ 50	$ 0	$ 2	$ 24	3,978
Interval Meter Billing	49,995	-	-	1.00	1.00	1.00	-	3.00		$ -	$ -	$ 47,733	$ 377	$ 1,885	$ -	49,995
IT	52	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 43	$ 8	$ 1	$ 0	$ 0	$ 0	52
Phone	756	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 628	$ 114	$ 9	$ 0	$ 0	$ 4	756
Retailer Billing	5,958	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 4,948	$ 896	$ 75	$ 1	$ 3	$ 35	5,958
5315 - Other Expenses	**348,075**	**11.00**	**11.00**	**12.00**	**12.00**	**12.00**	**11.00**	**69.00**		**247,556.47**	**44,849.37**	**51,462.95**	**406.42**	**2,032.10**	**1,767.46**	**348,075**
5320																
Bank Fees	16,976	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 14,099	$ 2,554	$ 212	$ 2	$ 8	$ 101	16,976
Miscellaneous Expenses	471	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 391	$ 71	$ 6	$ 0	$ 0	$ 3	471
Postage	2,795	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 2,322	$ 421	$ 35	$ 0	$ 1	$ 17	2,795
5320 - Other Expenses	**20,243**	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**	**18.00**		**16,811.76**	**3,045.76**	**253.31**	**2.00**	**10.00**	**120.03**	**20,243**
5340																
Phone	3,154	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 2,620	$ 475	$ 39	$ 0	$ 2	$ 19	3,154
Miscellaneous	31	1.00	1.00	1.00	1.00	1.00	1.00	6.00		$ 25	$ 5	$ 0	$ 0	$ 0	$ 0	31
5340 - Other Expenses	**3,185**	**2.00**	**2.00**	**2.00**	**2.00**	**2.00**	**2.00**	**12.00**		**2,645.09**	**479.21**	**39.86**	**0.31**	**1.57**	**18.89**	**3,185**
Labour																
5315	157,860	1.00	1.00	1.50	1.50	1.50	1.00	7.50		$ 130,250	$ 23,597	$ 2,944	$ 23	$ 116	$ 930	157,860
5320	78,325	1.00	1.00	1.00	1.00	-	-	4.00		$ 65,470	$ 11,861	$ 986	$ 8	$ -	$ -	78,325
Total Labour	**236,185**	**2.00**	**2.00**	**2.50**	**2.50**	**1.50**	**1.00**	**11.50**		**195,719.29**	**35,458.12**	**3,930.30**	**31.04**	**116.24**	**929.93**	**236,185**
Total	**607,687**								Total Allocated Costs	462,732.62	83,832.45	55,686.41	439.77	2,159.92	2,836.31	**607,687**
									Forecast Customers	8,403.79	1,522.50	126.63	1.00	5.00	60.00	
									Cost per Customer	55.06	55.06	439.77	439.77	431.98	47.27	
									Overall Weighting Factor	1.0	1.0	8.0	8.0	7.8	0.9	