

Village of Hamilton

Stray Voltage

&

System Inspection Report

2014



2014 Stray Voltage Detection and Equipment Inspection Report Village of Hamilton Municipal Electric Department

On January 5, 2005, the Public Service Commission (“PSC”) issued an order instituting Electric Safety Standards. The Standards require utilities to conduct an annual system-wide stray voltage detection program and an equipment inspection program to mitigate stray voltage risks to the public.

This report describes the Village of Hamilton’s stray voltage detection program and equipment inspection program conducted in 2014 and addresses the following:

1. Results of the stray voltage testing program
2. Additional stray voltage detection
3. Results of the electrical facility inspection program
4. Adherence to PSC Performance Mechanism
5. Analysis of results
6. Additional stray voltage related initiatives
7. Future improvements
8. Certification of stray voltage and inspection program

Overview of Hamilton’s Electric System

The Village of Hamilton owns and operates a municipal electric utility which includes one substation with three 7.5 Mva and one 5 Mva transformer. The utility has no transmission facilities and continues to operate a 4160-volt distribution system. The distribution system consists of 1081 Village owned wooden poles, 323 Joint owned with the phone company, and 139 customer owned utility poles. 352 pole top transformers, 114 pad mount transformers, 34 switchgear, 22.2 miles of overhead conductors and 10.2 miles of underground conductors.

The Village of Hamilton has three intersections that have traffic control devices both for pedestrian and vehicular traffic. There are 9 traffic signal poles, 14 traffic signal hand holes, 9 crosswalk signal poles. The Village of Hamilton does not own or maintain these structures but has tested them for stray voltage. The Village owns and maintains 33 metal streetlights, 60 metal walkway lights, 8 decorative memorial lights and 7 additional other lighting fixtures. A complete inventory, spreadsheet, of Village owned electric distribution and lighting equipment is enclosed. The spreadsheet also includes all non-Village equipment tested.

Section 1 2014 Stray Voltage Testing Program

Introduction Hamilton conducted a separate test program for structures in each of four systems (UG, OH, SL, and SS) **Note:** See your implementation report. The Village does not own or maintains transmission facilities.

Overall Program

The program was started in July of 2014 and was completed in December of 2014. Personnel used for stray voltage testing included, Lineman Bart King, Journey Lineman Jeff Schindler, and Line Foreman David Rhyde. The Personnel referenced above recorded data in the field, and all data collected was entered into the department office computer. This data is available to the public upon request. All hard copies of the collected data are saved as well.

Test Procedure

The Village of Hamilton uses two GREENLEE GT-16 Adjustable Voltage Detectors, which are certified on a yearly basis. Again, the Village employees named above were responsible for recording the information collected. Each individual worked alone and/or together and was assigned certain circuits to test. The employees were instructed to test, all metal or conductive material or apparatus that was accessible or within reach of the general public regardless of ownership. Employees were also instructed to test and record any conductive surface that was in close proximity and owned by other private person's, state, county, or local governments.

Results

The total number of publicly accessible structures which include traffic control devices, pad mount transformers, switchgear, manholes, hand holes, and all other distribution apparatus equates to 1551 structures. The Village tested all underground conductive apparatus within reach of the public regardless of ownership. During testing there where zero (0) stray voltage detection documented within the system. This calculates to 0.000% of the total inventory of underground and overhead facilities tested.

Underground Scope

For the calendar year 2014, the Village of Hamilton tested 100% of their underground distribution system which consists of 34 distribution manholes, 114 pad-mount transformers, 34 pad-mount switchgear, 8 pad-mount translosures, and 81 communication pedestals which are adjacent to our equipment.

All Village owned underground structures have limited public accessibility. This is to say that all structures are located outside and the exterior of the structures are accessible to the public

Overhead

The Village of Hamilton tested 100% of their overhead distribution system, which includes 751 guys and anchors, 585 down grounds and 336 riser pipes. The program started in July 2014 and was completed in December 2014. Personnel used to collect the data included Lineman Bart King, Journeyman linemen Jeff Schindler and Line Foreman David Rhyde.

Employees responsible for testing overhead facilities for stray voltage were instructed to test all conductive surfaces within reach and accessible to the public. The meters used for the testing were GREENLEE GT-16 Adjustable Voltage Detectors. Employees were also instructed to test any conductive surface that was in close proximity to Village owned structures and owned by others, private person's, state, county or local governments. The Director of Utilities and Public Works periodically met with the testers and conducted quality control assessment. There is a discrepancy between the total number of distribution poles and the number of structures tested, as not every structure is a utility pole. Many poles may have more than one or all of the aforementioned apparatus attached to them.

Streetlights

The Village of Hamilton tested 100% of the Village metal streetlight poles. These poles consist of 33 metal streetlights, 60 metal walkway lights, 8 memorial decorative metal lights, and 7 other illuminated structures. The Village does own and maintain 420 pole top streetlights. These lights were not tested because they were not accessible to the general public. The testing program started in September 2014 and was completed during October 2014. None of the tests performed, indicated stray voltage.

Substations

The one and only substation consist of a control building, three 7.5 Mva transformers, one 5 Mva transformer, two shelter aisle switchgear, two open-air switchgear and three 46 Kv sf6 breakers. Also included in the substation equipment is the structure supporting NYSE&G 46 Kv feed to the substation and security fencing. Each individual structure was tested for stray voltage. This portion of the stray testing program was started and completed in October 2014. Each piece of equipment was tested using one of the two GREENLEE GT-16 Adjustable Voltage Detectors. The tests all indicated that there was no stray voltage found on the substation equipment. The Village of Hamilton Electric Department neither owns nor maintains any transmission facilities.

Section 2 **Additional Stray Voltage Detection**

Routine Work Stray Voltage Testing

During the normal work day employees will test any village owned equipment upon notification, complaint or visual evidence of damage or tampering. During normal work hours each day electric department employees visually inspect the overhead distribution system for hazards.

For the year 2014, the village has received no calls from the public indicating shock from any village owned electric apparatus, but received one call for an issue on their personal property.

See attached sheet at end, NOTE 1.

Section 3

2014 Electrical Facility Inspection Program

Introduction

The Village of Hamilton Electric Utility conducted separate inspection programs for the equipment in each of the three systems: OH distribution, UG distribution, and SS, (Substation).
Note: see schedule of inspection on the CD provided.

The Hamilton Electric Utility inspected all of circuit # 4 which is approximately 18.38% of its OH and UG system equipment in 2014. OH/UG equipment population of circuit # 4 is 285 structures; OH equipment inspections 208 structures: UG equipment inspections 77 structures. Over the last five years the Utility has completed 100% of inspections required by the PSC.

- Requires inspections on all UG distribution system equipment during routine work
- The Village of Hamilton inspected 18.38 % of OH and UG distribution equipment in 2014. The Village of Hamilton does not own or maintain any OH or UG transmission facilities.

Overhead Distribution

- Scope

The inspections of overhead equipment include poles, wire span, insulators, down grounds, down guys, and pipe risers. A utility pole, which would include some or all of the aforementioned apparatus, are considered a structures. Each structure/pole inspection counts as one.

- Procedure

The Utility Line Foreman assigned Electric Utility Department employees inspection areas. Each pole/structure was inspected individually and all data was tabulated and entered into the department's computer. One Electric Department employee was assigned the duty of collecting the inspection data. The inspection information was recorded on pre-designed .xlsx data sheets. All data was then entered into the department computer and an electronic file was created.

- Results

As stated above there were 285 structure inspections completed in 2014.

Daily inspections of the OH distribution system found no hazardous problems. Tree trimming is done in the early spring and fall and on an as needed basis.

UG Distribution

Underground equipment inspected this period includes pad mount transformers, pad mount switchgear, and manholes. Certified Electric Department employees were assigned the duty of inspecting the underground distribution system. All data was then entered into the department computer and an electronic file was created. A total of 77 UG structures were inspected during this inspection period.

Substations

The substation is visually inspected on a daily basis, seven days a week. This inspection and all daily inspections have found no hazardous conditions.

Transmission

The Village of Hamilton neither owns nor maintains any transmission lines for their use.

Streetlights (applicable to companies that own streetlights)

The Village of Hamilton owns and /or operates 420 pole top streetlights and the public has no access to them. Additionally, the Village owns 33 metal streetlight poles, and 60 metal walkway light poles, along with 8 memorial decorative metal lights, and 7 other illuminated structures. No hazards were detected.

Section 4 **Public Service Commission Performance Mechanism**

The PSC Safety Order requires 100% of publicly accessible electric facilities and streetlights be tested for stray voltage. (Above Section 1&2 should account for all stray voltage testing to meet the 100% requirement, Summarize results stated in Section 1&2.)

The PSC Safety Order requires 20% of all electrical facilities to be inspected in 2014. The Village of Hamilton has completed 100% inspection of the system as of 2014. (Above Section 3 should account for all electrical facility inspections to meet the 20% threshold, Summarize results stated in Section 3.)

Section 5 **Analysis of Results**

As indicated above the Village of Hamilton Electric Utility had **1 (one)** positive stray voltage test. If any stray voltage was identified, it would be corrected and retested with a Fluke 87 V True RMS Multimeter in accordance with Document CASE 04-M-0159. (See Note 1)

Section 6 **Stray Voltage Initiatives**

No additional programs have been developed. However, the electric utility employees have been directed to test for stray voltage after every repair, replacement or installation of new structures or facilities.

Section 7

Future Improvements

Lessons learned, double-check all new installations and repairs of electrical equipment for stray voltage. The Village Electric Utility has kept improving its tree maintenance program. To that effect, the Mayor of the Village of Hamilton has appointed a “Tree Committee”. Their mission was to appraise the situation and determine what trees were hazardous and which needed trimming, without altering the natural beauty of our Village tree line. To date the Committee has been successful in removing 350 (+-) hazardous trees. In conjunction with the tree removal plan the Utility Department and the Public Works Department have joined forces to trim trees both in the utility and public rights-of-way. To date the Electric Utility and the Public Works Department have replanted approximately 250 new trees.

Section 8

Certification of Stray Voltage and Inspection Program

The due diligence and test-completion certification of the company’s officer responsible for overseeing stray voltage testing follows in Appendix A.

The due diligence and inspection-completion certification of the company officer responsible for overseeing facility inspections follows in Appendix B.

As identified in the “Test Equipment and Tools” section of the Village of Hamilton Implementation Report of February 2005. The Village of Hamilton has two GREENLEE GT-16 Adjustable Voltage Detectors, and a Fluke 87 V True RMS DMM with a W.E.I. Stray Voltage Module. All have prior certification of operating in the 5 to 600 volt range.

NOTE 1

On the 10th of July, at the end of the shift, a call was received from a customer with an issue with an outside outlet on the side of her house. After work one of the linemen stopped by to investigate the issue, and found 7 to 8 vac on her ground line. The next day Job # 19 was started to find the cause. She is fed from pole 28 on Horton Road. During the work, grounds were checked from pole 36 to pole 20. It was determined that, pole 20 to pole 22, had a defective neutral wire. After replacing this section of neutral and changing the connections for her service, the voltage drop to less than 0.2 vac using the Fluke 87 V True RMS Multi-meter S/N 22860068, Calibration date 1-19-2014, with the SV-5003W-W0001 Stray Voltage Module.

The problem at the customer home was removed, and no other issues were found.