nationalgrid

VIA EXPRESS MAIL

January 13, 2006

Honorable Jaclyn Brilling
Secretary
State of New York
Public Service Commission
Three Empire State Plaza
Albany, NY 12223

RE: Case No. 04-M-0159 – Proceeding on Motion of the Commission to Examine the Safety of Electric Transmission and Distribution Systems

2005 ANNUAL REPORT

Dear Secretary Brilling:

Niagara Mohawk Power Corporation d/b/a National Grid (the "Company") is writing to submit an original and five (5) copies of the Company's 2005 Annual Report for "Elevated Voltage Testing and Facility Inspection" performed in accordance with the New York State Public Service Commission's, January 5, 2005 and July 21, 2005 orders (the "Safety Orders") in the above-referenced proceeding.[1] Also included with the 2005 Annual Report are the latest versions of the Company's procedures governing the testing and inspection programs, along with signed originals of the certifications required under the Safety Orders.

Kindly acknowledge receipt of this filing by date-stamping as received the enclosed duplicate copy of this letter and returning it in the enclosed, self-addressed envelope.

Respectfully submitted,

Jeremy J. Euto

Enclosures
c: Susan Pelkey

[1] Case No. 04-M-0159, *Proceeding on the Motion of the Commission to Examine the Safety of Electric Transmission and Distribution Systems*, "Order Instituting Safety Standards" (issued January 5, 2005); Case No. 04-M-0159, "Order on Petitions for Rehearing and Waiver" (issued July 21, 2005).

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STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

CASE NO. 04-M-0159

National Grid

Elevated Voltage Testing and Facility Inspection

2005 Annual Report

January 13, 2006

EXECUTIVE SUMMARY 1

BACKGROUND 4

TESTING AND INSPECTION 9

ELEVATED VOLTAGE TESTING 9
Distribution 10
Underground 13
Streetlights 15
Transmission 19
Substations 21
INSPECTION PROGRAMS 22
Distribution 22
Underground 23
Streetlights 25
Transmission 26
Substations 27

PERFORMANCE MECHANISMS 29

CERTIFICATION 31

ANALYSIS 32

Distribution Testing 32
Streetlight Testing 32
Underground, Transmission and Substation Testing 33
Database improvements 33

OTHER PERTINENT INFORMATION 35

Procedure Updates 35
Quality Assurance 36
Summary of Electric Shocks 40
Research and Development 42

ATTACHMENT SUMMARY 44

Attachment 1 - NG USA EOP–G0016 Elevated Equipment Voltage Testing
Attachment 2 - NG USA EOP-D004 Distribution Line Patrol and Maintenance
Attachment 3 - NG USA EOP-UG 06 Underground Inspection and Maintenance
Attachment 4 - NG USA EOP-T007 Transmission Line Patrol and Maintenance 23kV – 345kV
Attachment 5 - NG USA EOP-G017 Street Light Standard Inspection Program
Attachment 6 - NG USA EOP-400.06.1 Substation V&O Inspection Standard and EOP-400.06.2 Substation Inspection Procedure
Attachment 7 - Monthly Report to PSC Staff
Attachment 8 – Municipality List
Attachment 9 - Quality Assurance Program
Attachment 10 – Certifications

Executive Summary

On January 05, 2005, the New York State Public Service Commission issued an order in Case No. 04-M-0159 instituting safety standards for all regulated electric utilities (the "January Order").[1] The January Order directed utilities to annually:

- Test 100% of publicly accessible electrical facilities for the presence of elevated voltage;
- Visually inspect 20 % of facilities for defects;
- Implement a quality assurance (QA) process to monitor the program;
- Seek out and test certain municipally owned facilities; and
- Complete the program by November 30th of each year.

Targets for Elevated Voltage testing were modified in the Commission's July 21, 2005 Order in Case No. 04-M-0159 (the "July Order")[2] to include:

- Test 100% of publicly accessible conventional underground equipment annually;
- Test 100% of publicly accessible streetlight equipment annually;
- Test 100% of municipal owned streetlights and traffic controls annually;
- Test approximately half of their System by Nov 30, 2005 and complete the testing program for the entire system by Aug 31, 2006; and
- Inspect 20% annually, and 100% of all facilities every five years for visual defects.[3]

Targets for the Elevated Voltage testing program established in the January Order and July Order (the "Safety Orders") were met or exceeded by National Grid. The first cycle of results is quantified in the summary table below.

Elevated Voltage Testing			
Program	**Total Units**	**Units Completed**	**% Completed**
Distribution	1,205,034	771,278	64.0
Underground	109,783	109,783	100.0
Streetlights*	79,855	79,855	100.0
Transmission	103,881	22,081	21.3
Substation	803	0	0.0
Total	**1,499,356**	**982,997**	**65.6**

***Streetlight program includes streetlights, municipal streetlights and traffic controls**

[1] Case No. 04-M-0159, *Proceeding on the Motion of the Commission to Examine the Safety of Electric Transmission and Distribution Systems*, "Order Instituting Safety Standards" (issued January 5, 2005).
[2] Case No. 04-M-0159, "Order on Petitions for Rehearing and Waiver" (issued July 21, 2005).
[3] Pursuant to the Commission's July Order in Case No. 04-M-0159, the specific target for inspections during the first year is 17% (i.e., 85% of the annual 20% target). July Order, Appendix A, p. 6.

The same results are qualified to show only those facilities that exhibited voltage in the following table. These facilities are represented in units and as a percentage of all tests performed in a specific program.

EV Facility Testing with Voltage between ...					
Program	**1.0 – 4.4 volts**	**4.5 – 7.9 volts**	**8.0 – 24.9 volts**	**25 – 99 volts**	**> 100 volts**
Distribution (Units)	228	17	9	15	5
Distribution (%)	0.029 %	0.002 %	0.001 %	0.0019 %	0.0006 %
Underground (units)	17	0	1	1	0
Underground (%)	.015 %	0.00 %	0.0009 %	0.0009 %	0.00 %
Street Light (Units)	217	89	61	12	0
Street Light (%)	0.27 %	0.11 %	0.08 %	0.02 %	0.00 %
Transmission (Units)	80	0	0	0	0
Transmission (%)	0.36%	0.00 %	0.00 %	0.00 %	0.00 %
Substation (Units)	0	0	0	0	0
Substation (%)	0.00 %	0.00 %	0.00 %	0.00 %	0.00 %

- Units are simply a count of tests completed
- Percentages referenced are a percent of total tests performed for a particular program
- Only voltages greater than or equal to 4.5 volts are mitigated

Based upon the large population of voltage tests completed, conclusions drawn include:

- very few elevated voltage conditions are apparent on the system as a whole;
- the greatest number of elevated voltage conditions was found on Street Lights;
- there were no elevated voltage conditions exceeding the threshold 4.5 volts on the transmission system; and
- testing of distribution and underground system had minimal elevated voltage conditions reported.

Targets for Inspection programs as established by the Safety Orders were met or exceeded. The first cycle of results is quantified in the summary table below.

Visual Inspections					
Program	**Units / Miles Goal**	**Units / Miles Completed**	**% of Goal Completed**	**% of System Completed**	**YR 1 PSC Goal %***
Distribution	7,303 (mi)	8,149 (mi)	111.6	23.0	17.0
Underground	8,672	9,335	107.6	19.3	17.0
Streetlights	17,931	28,601	159.5	45.3	17.0
Transmission	1,968(mi)	2,253 (mi)	114.5	25.3	17.0
Substation	803	803	100.0	100.0	17.0

* Pursuant to the July Order, the specific target for inspections during the first year is 17% (i.e., 85% of the annual 20% target).

Inspections deficiencies are identified by code and priority. The priorities include: E – Emergency; A – As soon as practical; B- As directed by Distribution Engineering, C – Items being trended by and reviewed by Distribution Engineering.

Summary of maintenance code priorities collected during the 2005 Inspection program are identified in the following table.

Visual Inspections					
Program	**Priority E**	**Priority A**	**Priority B**	**Priority C**	**Other**
Distribution	75	6,280	97,275	63,228	45,855
Underground	8	208	2,758	1,909	6,267
Streetlights	0	291	2,094	21,159	3,378
Transmission	0	147	6,261	9,369	1,760
Substation	Data not available in the same format				

Given the population of inspections completed, conclusions can be drawn:

- distribution system inspection results are consistent with inspection results from prior years;
- this was the first year for underground system inspections - deficiencies identified included a minimal number of high priority items;
- this was the first year for streetlight inspections - most high priority deficiencies were completed in the field (e.g., access cover missing); and
- transmission system inspection results are consistent with inspection results from prior years.

Background

The New York State Public Service Commission (the "Commission") issued an Order Instituting Safety Standards in January of 2005 (the January Order). During the investigation of a contact incident in New York City, the Commission deemed there was sufficient justification to move forward with an order requiring all utilities to proactively search for evidence of "stray voltage". Stray voltage for the Order is defined as voltage conditions on electrical equipment that should not ordinarily exist. Based on discussions with the utilities, Department of Public Service Staff ("Staff"), and manufacturers of testing equipment, a level of 4.5 volts was established as a threshold voltage condition above which National Grid would consider the voltage condition stray or elevated. Utilities have historically used the term "stray voltage" in connection with neutral to earth voltage difference. For purposes of its internal operations and this report, National Grid uses the term "elevated voltage" ("EV") interchangeably with stray voltage to avoid any such confusion or misunderstanding.

In response to the January Order, National Grid and the other utilities filed plans for implementation and compliance with the order on February 22, 2005. Certain of the utilities also filed requests for waivers and rehearing and/or clarification of the requirements of the January Order. The Commission addressed the requests for rehearing and waiver requests in its July 21, 2005 Order (referred to collectively with the January Order as the "Safety Orders").

The plan filed on February 22, 2005 detailed the approach National Grid would take to meet the requirements of the Safety Orders. Staff stated that while they would review the plans submitted by the utilities, they did not expect the Commission to formally approve the utilities' plans. Staff indicated that they would notify the utilities of any deficiencies in the plans' compliance with the Safety Orders.

The Safety Orders called for EV testing of all publicly accessible facilities within the electric utility system. Specifically, if a facility was accessible to the public, within reach of the ground and contained conductive equipment, an EV test was to be performed with a qualified voltage detection device. In addition the Safety Orders called upon utilities to:

- visually inspect all facilities over a 5 year period;
- meet record keeping, certification and reporting requirements; and
- adopt the National Electric Safety Code (NESC) as the minimum standard governing utility construction, maintenance and operation.

As part of the reporting requirements the utilities were directed to file an annual report that would include:

- details of the voltage testing program and inspections program conducted over the last twelve months;
- discussion of the performance mechanism described in the Safety Orders;

- certifications regarding program implementation;
- discussion of the analysis undertaken on the causes of elevated voltage with the utility's electric system, the conclusions drawn there from, and the preventative and remedial measures identified, and the utility's plans to implement those measures; and
- all other pertinent information.

In its July 21, 2005 Order, the commission further clarified the requirements of the January Order, directing the utilities to:

- test 100% of their publicly accessible conventional underground equipment annually;
- test 100% of their publicly accessible streetlight equipment annually;
- test 100% of municipal owned streetlights and traffic controls annually;
- test approximately half of their System by Nov 30, 2005 and complete the testing program for the entire system by Aug 31, 2006; and
- inspect 20% annually, and 100% of all facilities every five years for visual defects.

In response to the Safety Orders, National Grid developed electric operating procedures, created an organization to manage the project, developed a database to house the information collected, purchased testing devices, developed training programs and hired contractors to perform the testing.

In order to meet the demands of the Safety Orders a program manager was hired to oversee the project. The project was broken down into several key areas. These included:

- EV testing for Distribution facilities
- EV testing for Underground facilities
- EV testing for Streetlight facilities
- EV testing for Transmission facilities
- EV testing for Substation fences
- Inspection of Distribution facilities
- Inspection of Underground facilities
- Inspection of Streetlight facilities
- Inspection of Transmission facilities
- Inspection of Substations

Each area of the project was managed with a combination of internal workforce and contractors. The Maintenance Inspection & Assessment group was created to manage EV testing work and follow up repairs and to manage the field inspections and subsequent repairs. The group is currently comprised of one manager, six divisional supervisors, one analyst, one coordinator for New England, and 41 represented employees.

There are approximately 1.5 million locations to be visited for EV testing in the Company's New York service territory, of which approximately 50% were required to be completed by November 30, 2005.

For inspections, 20% of installed assets are required to be visually inspected annually. Recognizing the difficulty for the first year, the Safety Orders allowed some leeway in year one for the Inspection goal, permitting utilities to complete 85% of the annual 20% goal or 17% of asset inspections in year one. The National Grid goal included approximately 7303 miles of distribution, 1968 miles of transmission, 8672 manhole /hand-hole inspections, and 17,931 streetlight inspections.

During 2005, a New York Utility group was established to discuss and compare individual testing and inspection programs. The group met monthly with the Staff to discuss progress and the expectations of Staff regarding the programs, collaborate with Staff for monthly report development, discuss how to interpret requirements of the Safety Orders, and generally review common issues that utilities were experiencing. The working group and Staff also held bi-monthly conference calls to discuss emerging issues.

The 2005 Annual Report is intended to reflect program status through November 30, 2005. This report is also intended to serve as a comprehensive update to the National Grid programs addressing the Safety Orders, details of which were originally filed with the Commission on February 22, 2005.

As suggested by the Commission in the January Order,[4] as National Grid develops a better understanding of the testing and inspection programs and results, the Company may, via separate filing, provide additional comments regarding how the testing and inspection programs may be modified and/or improved.

[4] January Order, p. 45.

Overview

National Grid New York service territory covers an enormous geographical area in upstate New York. The franchise covers approximately 24,700 square miles. There are approximately 1,500,000 electric customers within the franchise area. For this program the Company broke the electric system into a variety of subprograms to schedule and track the testing and inspections. The categories included distribution, underground, streetlights & traffic signals, transmission, and substations.

The distribution system consists of structures supporting circuits energized at voltages of up to 15kV. This system spans close to 35,449 miles and is made up of approximately 1,205,034 poles. The EV testing is currently performed by contractors. The facility inspections are currently performed by an internal workforce.

The underground system is made up of 109,783 manholes, hand-holes, vaults, URD pad mounted transformers, switchgear, etc. Pursuant to the Safety Orders, fiberglass hand holes were exempt from testing.[5] The EV testing of the underground system is currently performed by contractors. The facility inspections of the underground system are currently performed by an internal workforce.

The streetlight system contains approximately 79,855 underground fed metallic streetlight standards and municipally owned lights and traffic control devices. Overhead fed street lights on wooden poles are not counted within the street light program. EV testing of the overhead fed lights is contained within the distribution program. For the underground fed metallic streetlight standards EV testing, the tests were performed by contractors at night when the light is operational. The traffic control EV testing takes place in conjunction with the contractors' testing of the overhead and underground systems during the daytime hours. The streetlight facility inspections on Company owned facilities take place during the day and are performed by an internal workforce.

The transmission category includes the sub-transmission system for this program. This consists of structures that support circuits energized at voltages of 23kV, 34.5kV, 46kV, 69kV, 115kV, 230kV and 345kV. The transmission system spans the entire state, is approximately 8,902 miles in length and contains 103,881 structures (combined wood structures and steel towers). The EV testing on transmission is performed by a combination of contractors and internal workforce. In many instances, the most difficult part of testing a transmission tower is physically getting to the tower. Therefore, the database and the internal hand held computer were set up to accept EV tests on transmission while an employee was at the location for a visual inspection or the contractor was at the tower for an EV test.

There are 803 substations in the Company's New York system. EV testing of substations was not completed during 2005. Although some fences were tested during the contractors' testing of the overhead system, EV results for substation fences will be

[5] July Order, p. 23.

collected internally by the operating group. This work is scheduled to be completed prior to the August 31, 2006 deadline.

Since no database existed within the Company to track EV testing, a database needed to be developed. National Grid utilized a combination of internal employees and services from Computapole to develop the database and a means by which to move the data into the database. At the beginning of the project, the Company created a 'Data Document' for contractors to follow for receiving and returning data to National Grid in a consistent process. A series of data validations were put in place to perform a basic check on the data before receiving the information back into the database. Once the data are received, the supervisors and analysts can run reports against the data.

Testing and Inspection

Elevated Voltage Testing

The elevated voltage testing program was segmented into a number of categories. These include: distribution facility testing, underground testing, streetlights & municipally owned facility testing, overhead transmission facility testing, substation fence testing and daily work area testing. The details of the Company's elevated voltage testing procedures and protocols are included in the NG EOP – G0016 entitled "Elevated Equipment Voltage Testing," provided in Attachment 1. This EOP has been updated since the original National Grid filing in February 2005. The Company has included the most recent copy in this filing.

Recognizing the enormity of this undertaking, the Company determined that contracting the majority of the EV testing work would be necessary in order to meet the schedule demands of the Safety Orders. After a review of contractor proposals, the Company contracted with two companies to perform this work. Two contractors were selected due to the large number of variables to get the project started. Should a single contractor fail to achieve its objective, the second contractor would be available to increase its role to complete the required testing.

Test equipment selected for the program was the HD electric company LV-S-5. This unit was the only I.E.C. category IV rated device available. The company acquired 750 devices to be used for the EV testing of the system by the contractors as well as daily testing requirements by the Company's workforce. A list of approved multi meters was developed and communicated to the workforce. A 470 ohm shunt resistor is also necessary for use with the multi meter. Materials for the shunt resistors were purchased, assembled and tested by the Company's electrical test lab. The shunt resistors were distributed to the workforce along with the HD test equipment in August 2005.

The company trained the contractors' primary employees in May 2005. The contractors then hired and trained their employees on the safety requirements and the procedure for performing the EV testing. Contractors were trained in: Proper use of appropriate Personal Protective Equipment, Work Area Protection, Hazard Communication, First Aid CPR (for multi person crews), Proper use of the certified voltage detection units and multimeters, and Hazardous condition identification. During the training, contractors were provided with a review of our electric system in order to accurately convey to their employees what they were looking at and how to code the information.

As part of its program development and training, the Company used a 'trigger value' to initiate response when voltage was identified. This trigger voltage used was 4.5 volts. This value was derived from the approved voltage test device (HD Electric LV-S-5). The test equipment is designed to trigger or illuminate at 5 volts with a + or – 10% sensitivity range. In general, this means the unit could trigger at a value as low as 4.5 volts. If a voltage was identified using the HD detector, then a multi-meter with a 470 ohm shunt resistor was used to make an actual measurement. Should the voltage collapse below 4.5

volts, then the data was collected and no further action was taken. Should the voltage reading be sustained at 4.5-7.9 volts then the facility was to either be barricaded / flagged / or guarded depending on its location and volume of pedestrian traffic. Should the voltage reading exceed 8.0 volts then the facility was guarded until the Company responded to trouble shoot and eliminate the condition.

When EV conditions are identified by the contractors, they follow a procedure established to provide assurance that the Company can track the incident and immediately follow up. The procedure requires the contractor to call a centralized dispatch number at National Grid that is staffed 24 hours per day, 365 days per year. Pertinent information would be provided to the dispatcher including where the facility was located, what voltage was measured and whether the contractor was required to stand guard. The Dispatch center would then provide the various control centers with an order for a qualified crew to respond to each such location. The crew would investigate and resolve the hazardous condition. If the crew could not make repairs immediately, they would eliminate the hazard and provide sufficient information for follow up by the appropriate group. This information was then entered into the Elevated Voltage database.

In light of the magnitude of the undertaking and the amount of data initially generated, the data flow process between the contractors and National Grid required a series of procedural enhancements to work properly. The process required the contractors to structure their data in a very specific manner. The contractors would perform the testing, collect the data, and post data files to a controlled directory on the National Grid web. The data would have a validation program run against it by a National Grid analyst to ensure that key fields were populated properly. After validation, the data was either accepted into the database or it was rejected and returned to the contractor. Reasons for rejected data were communicated to the contractors (e.g., data structure, missing data, etc). This data flow process was established to provide assurance that information was collected and turned over to National Grid in a consistent manner, regardless of the contractor.

Distribution

Overview

The company queried its Geographical Information System (GIS) for data related to Overhead Distribution. It was determined that for the first round of testing, rather than just target distribution facilities with conductive equipment within reach of the ground, the contractors would visit 100% of the poles that were publicly accessible. The purpose of visiting 100% of the publicly accessible poles during the first cycle of testing was to insure that the Company captured data on poles that had conductive facilities added but not captured in the source database. As of November 30, 2005 the distribution system was totally completed in the Western division of National Grid's New York service territory and partially completed in Eastern and Central divisions. All three divisions are scheduled to be completed by the August 31, 2006 deadline.

It was recognized early in the program that the contractor may not be able to distinguish between poles for which the Company had provided data and customer owned poles. With this, the Company has seen the target number grow during the year to include the 'found poles' added to the original data set the Company preloaded to the contractors. Originally the Company provided the contractor with 1,196,283 poles to visit. Through November 30, 2005 they have tested 771, 278 poles and returned 8,751 as additions to the original records. This brings our target up to 1,205,034 poles to be tested. The Company anticipates this number will continue to grow until the Company completes the distribution system testing in August of 2006.

Results

As a consequence of meetings and discussions with Staff, a standard monthly report was established for all the New York utilities. This monthly report is shared with Staff to provide status information as to the progress for each utility. The standard report was developed so results from various utilities could be compared. A copy of the Company's November 2005 report is found in Appendix 7. The results of the Distribution program through November 30, 2005 are as follows:

Total Units	Units Completed	% Completed
1,205,034	771,278	64.0

The units tested relate to poles on the distribution system. Contractors are required to test anything on and around each pole to provide assurance that the area was clear of any elevated voltages. If a pole contained 2 guy wires, a ground wire, a conduit riser and a phone box adjacent to the pole, then the contractor was instructed to test all items and return a single record to National Grid.

For the testing completed, the following voltages were found.

Distribution Overhead # of Units with Voltage between ...					
Totals	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
274	228	17	9	15	5

% of Distribution Overhead with Voltage between ...					
Totals	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
0.036%	0.03%	0.002%	0.0012%	0.002%	0.00065%

When voltage was identified, the contractor captured the specific information on where the voltage was located. This breakdown is seen below.

Distribution facilities with Voltage between …					
Voltage on …	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
Pole	82	7	4	7	1
Ground	41	4	3	3	1
Guy	99	4	1	3	0
Riser	23	0	0	3	0
Other	32	3	2	7	4
Total Facilities*	228	17	9	15	5

* Note that totals of voltages found details (pole, ground, etc) may add up to more than the total facilities within a voltage range. This occurs because voltage may have been found on more than one item on the same pole. For example if a pole was tested and voltage was found on the guy wire and the ground, then both items are reflected in the details but only one location is identified in the Total Facilities line

Of the locations found with voltage, National Grid investigates and mitigates at locations that exceed 4.5 volts. The following table describes work performed to respond to locations with voltages found in excess of 4.5 volts.

Distribution Facilities Repairs Voltage > 4.5 volts	
Quantity	Work Description
18	Ground connections repaired / guy wire repairs / cable repair
1	Changed out lightning arresters on pole
2	Changed out insulators on pole
14	Procedure not properly followed (subsequent testing showed no voltage present
2	Customer electric fences isolated
4	Service wires for customer removed / re-hung / needed new service
5 *	Items Remaining open in the field
46**	Total

* As of January 12, 2006, there are 4 open items where permanent repairs have not been completed. These instances where permanent repairs are not completed have periodic site visits to provide assurance that the temporary repairs are not deteriorated or damaged and that the facility remains free from EV.

** Note that November 30, 2005 report previously submitted to Staff indicated 47 total facilities with voltage greater than 4.5 volts. Actual count was 46 facilities.

The locations identified as 'procedure not properly followed' generally occurred early in the testing program. These items should not be interpreted as the result of the Company not responding to an EV incident. It is quite the opposite. These were locations where the contractor was restricted from using the shunt resister because of the level of voltage initially identified at a facility. Initial procedures restricted the use of the shunt resistor to voltages detected at 30 volts or less. Subsequent modifications allowed the shunt resistor to be used to 100 volts and then eventually the Company removed the voltage limitation. The purpose of the initial restrictions was due to the nature of the shunt resistor that was

utilized for the tests. The unit was a 3 watt resistor that was not designed to withstand a full 120 volts for more than say, 30 seconds. If a voltage reading was collected and it exceeded the voltage limitation from the procedure (at that point in time) the contractor would call in the EV and stand guard. The responding crew began to investigate and make modification in an attempt to eliminate voltage. Neither the contractor nor the responding crew used a shunt resistor to bleed off any inductive voltage at these locations (i.e., to get a more accurate determinate of the found voltage). The Company included these locations as EV records even though the Company believes the majority would have shown no voltage had a suitable shunt resistor been used. Each of these locations was rechecked with the shunt resistor in place to ensure no real voltage source existed. After several procedural changes, use of the shunt resistor is now permitted at all times. This clarification significantly reduced the number of false positive reports of an elevated voltage condition.

Underground

Overview

The company queried its Geographical Information System (GIS) for data related to Underground facilities. Underground facilities included manholes, hand-holes, vaults, pad mounted transformers, pad mounted switchgear, etc. The GIS data were supplemented with paper and electronic maps for the underground transmission system. The Safety Orders set a schedule requiring testing for 100% of publicly accessible conventional underground equipment and priority URD equipment by November 30, 2005.

The company attempted to define priority URD equipment as URDs located within the large metropolitan areas of the franchise. Communication of the specific assets included in this definition became too cumbersome and the contractors were directed to simply complete testing of the entire underground system. This provided assurance that the Company did not miss facilities due to misinterpretation of conventional underground or priority URD equipment. Originally the Company provided the contractor with 106,205 underground units. Through November 30, 2005 the Contractor had tested 109,783 units. The total number of underground units increased since the contractor found an additional 3,578 units during testing in the field. This brings our target up to 109,783 underground items to be tested. These additional items will include facilities that are not owned or maintained by the Company. The Company expects to clean up the data collected over time to remove those items that are not part of the test program. For example, some underground facilities are not well marked, so a worker may not be able to differentiate between National Grid assets and items that are not part of the testing program (e.g., municipal sewer covers, etc.).

Results

A standard monthly reporting was established for all the New York utilities. This monthly report is shared with Staff to provide status information as to the progress for each utility. The standard report was developed so the various utilities could be

compared. A copy of the November 2005 report is found in Appendix 7. The results of the Underground system testing program through November 30, 2005 are as follows:

Total Units	Units Completed	% Completed
109,783	109,783	100.0

The results are in units. A unit relates to manholes, hand holes, vaults, pad mounted equipment, etc. on the underground system. Contractors are required to test anything on and around each manhole / hand hole to provide assurance that the area was clear of any elevated voltages.

For the testing completed, the following voltages were found.

Underground # Units with Voltage between ...					
Totals	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
19	17	0	1	1	0

% of Underground with Voltage between ...					
Totals	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
0.017%	0.015%	0.00%	0.0009%	0.0009%	0.00%

Locations where voltages were found were segmented off to show which equipment the voltage was found on. This breakdown is seen below.

Underground Facilities with Voltage between ...					
Voltage on ...	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
Hand hole	1	0	1	1	0
Man hole	3	0	0	0	0
PM Sw	0	0	0	0	0
PM Tran	1	0	0	0	0
Vault	0	0	0	0	0
Pedestal	0	0	0	0	0
Other	12	0	0	0	0
Total	17	0	1	1	0

Note that the 'Other' category in the preceding table is generally made up of codes for equipment that would not exist on the underground system. For example if the contractor tested a hand hole and found voltage, the Company may have received a code of guy wire back for that asset. There is a process of data cleanup underway to review these records and make sure they are in the proper category. Additional data validation checks were added that are intended to prevent these errors in the future.

Of the items that were found with voltage, National Grid investigates and mitigates at locations that exceeded 4.5 volts. The following table describes work performed to respond to locations on the underground system with voltages found in excess of 4.5 volts.

Underground Facilities Repairs Voltage > 4.5 volts	
Quantity	Work Description
1	Cleaned out hand hole / dried
1	Procedure not properly followed (subsequent testing showed no voltage present)
2	Total

The location identified as 'Procedure not properly followed', was found to not contain voltage when the National Grid crew responded and collected voltage readings. The final reading was milli-volts and it was determined that the contractor had failed to use a shunt resistor in his testing.

Streetlights

Overview

This portion of the program included the testing of publicly accessible metallic streetlights and traffic control equipment. The Company queried its Outdoor Lighting Data System (OLDS) for data related to Streetlight standards that were metallic. The Traffic Control data was housed in an Access database file. The Safety Orders set a schedule for 100% of publicly accessible street light facilities to be tested for elevated voltage by November 30, 2005. In addition to these facilities, the contractors were directed to locate any other municipally owned streetlights and traffic control structures that may not have been in the original lists.

Geographical Positioning System (GPS) coordinates did not exist for the majority of the known streetlights or for traffic control data. Contractors had to use a variety of techniques to find these facilities in the field. The most predominant way to find lights was to search for them at night. The contractors were also directed to look for streetlights during their daytime work and provide feedback to evening crews. This would be useful for areas not expected to have metallic streetlights. The contractors were provided a list of National Grid municipal accounts in New York State (Attachment 8). For each municipal account listed, the contractor had to check off that they found facilities and tested them or that they found nothing to test in the form of streetlights or traffic controls.

In April 2005, all municipal accounts were provided with a request for data regarding any type of streetlights or traffic controls they maintained in their locality. Information returned to National Grid was entered into a tracking database for use by the contractors.

Originally the Company provided the contractor with 60,393 streetlight / traffic control units. Through November 30, 2005 the contractor had tested 79,855 units. The additional 19,462 units are predominantly additional traffic control units.

The original data provided to the contractors for traffic controls was by intersection. The Company provided the contractor with a single data point for each location the Company had on record. The database and data collection process was designed to collect specific units and most intersections contained multiple items related to traffic controls.

Another reason for the increase in data points was related to locations that could not be matched to the original data provided to the contractor. Since the vast majority of streetlights and traffic controls did not have an associated GPS coordinate, the contractors could not readily plot these items on a map in their hand held computers. The contractor would follow along by street and attempt to match a facility on paper with a facility they were testing. If the facility was labeled the same as the paper record, the testing was completed and the data was stored as a match to the original data point. If the facility was not labeled, and the contractor had no means of matching to our original paper record, they would identify the original data as not found and then add the location as new. These additional facilities will include units that are not owned or maintained by the Company. The Company expects to clean up the data collected over time to remove those items that are not part of our test program and make attempts to match up added records to the original data record.

Results

A standard monthly reporting was established for the New York utilities. This monthly report is shared with Staff to provide status information as to the progress for each utility. The standard report was developed so that results from the various utilities could be compared. A copy of the November 2005 report is found in Appendix 7. The results of the streetlight program through November 30, 2005 are as follows:

Total Units	Units Completed	% Completed
79,855	79,855	100.0

The units tested relates to streetlights and traffic control. Contractors are required to test anything on and around each device to provide assurance that the area was clear of any elevated voltages.

For the testing completed, the following voltages were found.

Streetlight / Traffic Control # Units with Voltage between ...					
Totals	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
379	217	89	61	12	0

% of Streetlight / Traffic Control with Voltage between …					
Totals	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
0.47%	0.27%	0.11%	0.08%	0.02%	0.00%

Locations where voltages were found were segmented off to show which equipment the voltage was found on. This breakdown is seen below.

Streetlight / Traffic Control Facilities with Voltage between …					
Voltage on …	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
Metal pl.	217	89	61	12	0
Signal pl.	0	0	0	0	0
Controls	0	0	0	0	0
Ped. xing	0	0	0	0	0
Other	0	0	0	0	0
Total	217	89	61	12	0

Of the items that were found with voltage, National Grid investigates and mitigates at locations that exceeded 4.5 volts. The following table describes work performed to respond to locations on the streetlight system with voltages found in excess of 4.5 volts.

Streetlight / Traffic Facilities Repairs Voltage > 4.5 volts	
Quantity	Work Description
9	Streetlight head changes
117	New Connections, New Cable or New grounds
8	Photo eyes / sockets burned up
2	Circuit configurations changed and refused at source
26 *	Items remain open in the field
162	Total

* As of January 12, 2006, there are 11 open items where permanent repairs have not been completed. These instances where permanent repairs are not completed have periodic site visits to provide assurance that the temporary repairs are not deteriorated or damaged and that the facility remains free from EV

The streetlight data is further broken down by area.

Streetlight / Traffic Facilities Voltage > 4.5 volts by Division	
Area	Count
West	154
Central	4
East	4

What stands out is that the Western Division (specifically Buffalo) has the preponderance of locations with elevated voltage (i.e., exceeding 4.5 volts). The highest concentrations of underground fed streetlights are located in Buffalo, but this alone is not sufficient to

account for the volume of EV conditions in Buffalo. Although the majority of issues were resolved by modifying / changing connections, the sheer volume of locations identified in the West is cause to investigate further. The Company is currently reviewing a sample of circuits identified with and without reported EV conditions. The Company will retest the standards on these circuits and perform a load test of the circuit. The Company will examine the circuits for any common failures in an attempt to identify if there is a root cause contributing to the EV issue in the Western Division. Applicable information from this investigation will be utilized by the Company in future trouble shooting techniques.

Transmission

Overview

The company derived its Transmission and Sub-transmission data from a combination of databases. For the purpose of this report all transmission and sub-transmission structures are included under the title 'Transmission Structures'. The Safety Orders set a schedule for testing 100% of transmission that is publicly accessible by August 31, 2006.

It became apparent early in the testing that the HD Electric LV-S-5 test device would prove to be too cumbersome to use within transmission right of ways. The electric field present on / near / under transmission towers caused the device to 'trigger' or illuminate the majority of the time. Several attempts were made by HD Electric to design a ground shield for the test device which would eliminate the false positive trigger. One of these ground shields did prove to have superior results to eliminating the false positive readings, however by that point in time, the Company had decided to utilize the multi-meter/shunt resistor and retrieve a voltage reading from each structure.

Results

Monthly results of the EV testing program are forward to Staff. These results are included in Appendix 7. The results of the transmission program through November 30, 2005 are as follows:

Total Units	Units Completed	% Completed
103,881	22,081	21.3

The units tested relates to transmission structures. Contractors are required to test anything on and around each structure to provide assurance the area was clear of any elevated voltages. A structure could be made up of a metallic tower or wood pole(s) / guys. Some structures contained upwards of 6 poles. Each multi pole structure is counted as one item in the testing database.

For the testing completed, the following voltages were found.

Transmission Structures # Units with Voltage between ...					
Totals	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
80	80	0	0	0	0

% of Transmission Structures with Voltage between ...					
Totals	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
0.36%	0.36%	0.0%	0.0%	0.0%	0.0%

Locations where voltages were found were segmented off to show which equipment the voltage was found on. This breakdown is seen below.

Transmission Facilities with Voltage between …					
Voltage on …	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
Lattice St	0	0	0	0	0
Pole	21	0	0	0	0
Ground	57	0	0	0	0
Guy	0	0	0	0	0
Other	3	0	0	0	0
Total	80	0	0	0	0

The details for where voltage was measured may include readings on multiple devices at a single structure. Therefore, even thought here are 80 structures with voltage between 1.0 and 4.4 volts, there are actually 81 items indicating voltage measures. One location had voltage measured at multiple points on the same structure (i.e., on a ground and a guy).

Substations

Overview

The substation facilities are made up of 803 locations. Not all of these locations will require tests since not all substations have publicly accessible electric facilities (e.g., substations located in brick buildings). The data source for the identification of substation facilities will be the AIMMS (Asset Information Maintenance Management System). Internal workforce will be collecting this information during their routine inspections. The Safety Orders set a schedule for 100% of substation fence testing of August 31, 2006.

Results

To date the substation testing has not been completed. Testing is expected to be completed by April 2006. Monthly results of the EV testing program are forwarded to Staff. These results are included in Appendix 7. The results of the substation program as of November 30, 2005 are as follows:

Total Units	Units Completed	% Completed
803	0	0.0

The units tested relates to a substation facility.

Substation # Units with Voltage between ...					
Totals	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
0	0	0	0	0	0

% of Substations with Voltage between ...					
Totals	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Locations where voltages were found were segmented off to show what equipment the voltage was found on. This breakdown is seen below.

Substation Underground Facilities with Voltage between ...					
Voltage on ...	1.0 – 4.4 volts	4.5 – 7.9 volts	8.0 – 24.9 volts	25 – 99 volts	> 100 volts
Fence	0	0	0	0	0
Other	0	0	0	0	0
Total	0	0	0	0	0

Inspection Programs

Similar to the EV program, National Grid's inspection program was segmented into five categories: distribution facility inspection; underground facility inspections; streetlights inspections; transmission facility inspections; substation inspections. Each program is summarized by its associated Electric Operating Procedure. These inspections include visual inspections of the assets to determine if deficiencies exist. Deficiencies are captured by codes entered into handheld computers. Data is then downloaded for review and follow up work.

Distribution

Overview

The distribution inspections program was developed to meet the requirements of the Safety Orders to inspect distribution facilities over a five year period. The details for overhead inspection procedures and protocols for distribution overhead facilities are provided in NG-USA EOP D004, entitled "Distribution Line Patrol and Maintenance," provided in Attachment 2.

The Distribution Line Patrol and Maintenance program generally consists of patrols conducted by qualified workers that can identify deficiencies or non-standard construction conditions on the facilities. The patrols are scheduled in such a manner that each distribution feeder and associated equipment would be examined at least once every five years.

Distribution (15 kV and less) facilities requiring inspection include Company electric facilities on overhead structures. The database of this equipment is included in GIS and provided in electronic format to the inspector going to the site. The inspectors also utilize hardcopy maps for a distribution circuits to assist during field work. GPS latitude and longitude coordinates and other basic facility information for each pole are downloaded into Computapole hand held devices. The inspector electronically documents inspection of the facility in the Computapole hand held unit. Deficiencies captured are summarized in the EOP (Attachment 2). Deficiencies are prioritized to identify how quickly they should be addressed. The priorities include: E – Emergency; A – As soon as practical; B- As directed by Distribution Engineering, C – Items being trended by and reviewed by Distribution Engineering, F – Forestry Issue.

Results

Progress on the distribution inspection program is measured by mile of distribution circuits inspected. Results are reported through the Computapole database as the circuits are completed. The listed goals were established in the Company's February 2005 plan filed in response to the Safety Orders. Note that individual year goals will slightly exceed or fall short of 20% of the Distribution system due to the varying lengths of feeders that are inspected during a year.

Total Miles Goal *	Miles Completed	% Goal Completed
7,303	8,149	111.5

* Goals were established in the Feb 2005 submittal outlining National Grid's plan

A summary of deficiencies reported is attached. All codes reported have a 'default' priority that an inspector is allowed to raise or lower based on their evaluation.

Distribution Facilities Deficiencies found					
Deficiency	Priority E	Priority A	Priority B	Priority C	Other
Animal Guards	0	1	10,299	14	1
Cross arm	13	301	5,887	699	317
Equipment	7	491	4,032	391	8
Ground	3	393	5,546	39	40
Guy	4	101	24,011	7,064	5698
Insulator	3	269	2,433	323	19
Lighting Arrestor	0	16	449	1	0
Pole	26	171	32,932	9,379	3,688
Primary	11	120	2,393	21,873	3,452
ROW	1		2		408
Secondary	7	122	2,047	204	12,231
Stencil	0	844	233	22,573	19,988
Streetlight	0	3,451	7,011	668	5
Total	75	6,280	97,275	63,228	45,855

Deficiencies identified as E priority were addressed immediately or made safe and referred for additional follow up. 'A Priority' items identified before November 1, 2005 were scheduled to be completed by November 30, 2005.

Underground

Overview

The underground inspections program was developed to meet the requirements of the Safety Orders to inspect underground facilities over a five year period. The details for the underground inspection procedures and protocols provided in NG-USA EOP UG06, entitled "Underground Inspection and Maintenance," provided in Attachment 3.

The Underground program consists of patrols conducted by qualified workers that can identify deficiencies or non-standard construction conditions on the facilities.

Underground electrical facilities requiring inspection include all facilities that are used for housing primary and secondary circuits, but not the conduit systems between

facilities[6]. For example, two manholes on a street that house primary cable and cable splices would be visually inspected. However, the conduit systems connecting the 2 manholes and the cable within that conduit will not be inspected. The source database to provide the information of the location of the underground assets is primarily GIS. It is recognized that not all of the underground facilities reside in GIS and therefore underground maps will be used to support this effort.

GPS latitude and longitude coordinates and other basic facility information for each location are downloaded into Computapole hand held devices. The inspector electronically documents inspection of the facility in the Computapole hand held unit. Types of deficiencies captured are summarized in the EOP (Attachment 3). Deficiencies are prioritized to identify how quickly they should be addressed. The priorities include: E – Emergency; A – As soon as practical; B- As directed by Distribution Engineering, C – Items being trended by and reviewed by Distribution Engineering.

Results

The underground inspections program is executed and measured in units. A unit inspected could be a manhole, a pad mounted transformer, a hand hole, etc. Each unit is tracked in the Computapole database so the Company can measure the number of inspections and the work identified during the inspections. The listed goals were established in the Company's February 2005 plan filed in response to the Safety Orders. Note that individual year goals are anticipated to slightly exceed or fall short of 20% of the Underground system. Some areas with limited underground assets may be scheduled for completion in a single year as opposed to 20% per year (e.g., all Genesee region manholes/hand-holes were scheduled for year 5 of the program).

Total Unit Goal *	Units Completed	% Goal Completed
8,672	9,335	107.6

* Goals were established in the Feb 2005 submittal outlining National Grid's plan

A summary of deficiencies reported is attached. All codes reported have a 'default' priority that an inspector is allowed to raise or lower based on their evaluation

Underground Facilities Deficiencies found (by Priority)					
Deficiency	Priority E	Priority A	Priority B	Priority C	Other
Hand hole	0	8	671	165	812
Manhole	1	44	1,751	146	2,062
Transformers	3	143	256	1,498	3,233
Switchgear	4	6	16	72	154
Vault	0	1	33	11	0
Misc/Equip	0	6	31	17	6
Total	8	208	2,758	1,909	6,267

[6] Pursuant to the Commission's July Order, fiberglass hand holes are generally excluded from the underground inspection program

Deficiencies identified as E priority were addressed immediately or made safe and referred for additional follow up by Design. 'A Priority' items identified before November 1, 2005 were scheduled to be completed by November 30, 2005.

Streetlights

Overview

The streetlight inspections program was developed to meet the requirements of the Safety Orders to inspect all streetlights over a five year period. Streetlights mounted on distribution poles are inspected within the distribution inspection program. Therefore this portion of the inspection program only included underground fed lamp standards. The details for the streetlight inspection procedures and protocols are provided in NG-USA EOP G0017, entitled "Streetlight Standard Inspection Program," provided in Attachment 5.

The Streetlight inspection program consists of daytime patrols conducted by qualified workers that can identify deficiencies or non-standard construction conditions on the facilities. The patrols are scheduled in such a manner that all streetlights would be examined at least once every five years. Streetlights to be inspected are only those the company owns or maintains. Streetlights owned and maintained by others are not included within this inspection program. Traffic control equipment that is owned and maintained by others is not included in this inspection program.

The source database for this equipment is the Outdoor Lighting Data System (OLDS). An inspection application and handheld were developed specifically for this portion of the Order since none existed previously. The data was provided in an electronic format to the inspectors scheduled to inspect the standards. The majority of standards did not have GPS latitude and longitude coordinates within the source database. The inspector was instructed to select the appropriate light from the hand held and electronically document deficiencies. A summary table of deficiencies is found the EOP (Attachment 5). Deficiencies are prioritized to identify how quickly they should be addressed. The priorities include: E – Emergency; A – As soon as practical; B- As directed by Distribution Engineering, C – Items being trended by and reviewed.

Results

The streetlight inspection program is executed and measured in units. A unit inspected is equivalent to an underground fed streetlight. The streetlight inspections include underground fed streetlights owned or maintained by the Company. These lights may include fiberglass light standards (whereas the EV testing program does not include non-conductive fiberglass standards). Each unit is tracked in the Computapole database so the Company can measure the number of inspections and the work identified during the inspections.

Total Unit Goal *	Units Completed	% of Goal Completed
17,931	28,601	159.5

*Note that Streetlights excludes traffic controls but includes fiberglass standards. Goals were established in the Feb 2005 submittal outlining National Grid's plan

Streetlight Facilities Deficiencies found (by Priority)				
Deficiency	Priority E	Priority A	Priority B	Priority C / other
Standard	0	70	680	18,133
Luminaire	0	0	490	3,221
Wiring	0	221	924	3,183
Total	0	291	2,094	24,537

Transmission

Overview

The Transmission overhead inspections program was developed to meet the requirements of the Safety Orders to inspect all transmission facilities over a five year period. The details for overhead inspection procedures and protocols for distribution overhead facilities are provided in NG-USA EOP T007, entitled "Transmission Line patrol 23kv-345kv" provided in Attachment 4.

The Transmission line patrol program consists of patrols conducted by qualified workers that can identify deficiencies or non-standard construction conditions on the facilities. The patrols are scheduled in such a manner that each line and associated equipment would be examined at least once every five years.

Transmission electrical facilities requiring inspection include the Company's facilities on overhead structures. The database of this equipment is included in Corridor Manager for Transmission assets and in a separate database for the sub-transmission assets. The asset location data is provided in electronic format to the inspector going to the site. The inspectors also utilize hardcopy maps to assist during field work. GPS latitude and longitude coordinates and other basic facility information for each structure are downloaded into Computapole hand held devices. The inspector electronically documents inspection of the facility in the Computapole hand held unit. Deficiencies that can be captured are summarized in the EOP (Attachment 4). Deficiencies are prioritized to identify how quickly they should be addressed. The priorities include: E – Emergency; A – As soon as practical; B- As directed by Distribution Engineering, C – Items being trended by and reviewed by Distribution Engineering, F – Forestry Issue.

Results

The transmission inspection program is executed and measured by miles of transmission inspected. Transmission for the purpose of this report includes voltages of 23 kV and

above. These results are reported through the Computapole database as line inspections are completed

Total Miles Goal***	Miles Completed	% of Goal Completed
1,968	2,253	114.5

Transmission Facilities Deficiencies found (by Priority)					
Deficiency	Priority E	Priority A	Priority B	Priority C	Other
Conductor	0	53	169	599	2
Grounds	0	50	48	47	0
Foundations	0	0	29	29	0
Stencil	0	1	331	2,836	754
Hardware	0	6	570	334	18
Pole	0	27	2,871	3,085	101
ROW	0	4	35	60	355
Signs	0	0	1,917	1,662	0
Switch	0	0	3	2	1
Towers	0	6	280	708	531
Misc.	0	0	8	7	3
Total	0	147	6,261	9,369	1,765

'A Priority' items identified before November 1, 2005 were scheduled to be completed by November 30, 2005.

Substations

Overview

The Company conducted a Substation inspection program prior to the Safety Orders. Substations are inspected throughout each calendar year. The details for the Substation inspection procedures and protocols are provided in NG-USA EOP 400.06.1, entitled "Substation V&O Inspection Standard" and NG-USA EOP 400.06.2 entitled "Substation V&O Inspection Procedure", copies of which are provided in Attachment 6.

Substation inspections are more complex than other facility inspections. The information generated from an inspection is captured in the Asset Information Maintenance Management System (AIMMS). Work orders are created and supervisory review determines what is to be done to correct the work generated. Inspection schedules vary based on the type of substation, the criticality of the station, or the type of equipment contained within the substation. Inspection schedules may vary with the time of year or condition of the system. Substations are generally inspected on a two month schedule.

Results

For the calendar year 2005 all substations were visited for inspections. The majority of substations are visited more frequently; however, for the purpose of this program and reporting the Company will only utilize a single inspection per substation. Work orders created, completed or pending are prioritized in a different method than the other programs reported. Details to items found or corrected were not available at the time of this report.

The Company is currently evaluating how to most effectively apply the QA process implemented for the other inspection / testing programs to substation inspections.

Performance Mechanisms

Performance mechanisms outlined in the Safety Orders established that the Commission:

> "needs to establish metrics against which [the Commission] will measure and determine the utilities' performance and compliance." January Order, p.34.

As outlined in the results section of this report, the Safety Orders require the utilities to perform voltage testing on 100% of publicly accessible streetlights and traffic controls, 100% of publicly accessible conventional underground and priority URD, and approximately half of the overall electric system in total by November 30, 2005.

Elevated Voltage Testing			
Facilities	Total Units	Units Completed	% Completed
Distribution	1,205,034	771,278	64.0
Underground	109,783	109,783	100.0
Streetlights*	79,855	79,855	100.0
Transmission	103,881	22,081	21.3
Substation	803	0	0.0
Total	1,499,356	982,997	65.6

*Note that streetlights include traffic controls but excludes fiberglass standards

As noted in the attached certification, National Grid has implemented the EV testing program to comply with the requirements of the Safety Orders.

The Safety Orders recognized the challenges faced by the utilities in setting up the inspection programs.

> "The inspection program is more intensive than the testing program, and the utilities' contention that they need time to integrate it into their routine maintenance activities is reasonable. Therefore, we will phase-in the performance targets for annual inspections. Doing so, however, does not change the requirement that all facilities be inspected at least once every five years. Starting with this overall requirement, the utilities should inspect at least one-fifth of their facilities each year. We therefore base the performance targets on a percentage of the average number of facilities that must be inspected each year. The specific targets for purposes of the performance mechanism will be 85%, 90%, and 95% of the one-fifth amount for calendar years 2005, 2006, and 2007, respectively. Each year thereafter, the performance target will be 95%, except that in every fifth year, each utility must ensure that it has inspected all of its facilities." January Order, pp. 34-35

As outlined in the results section of this report, National Grid's inspection programs contemplated annual inspections on 20% of distribution, 20% of underground, 20% of streetlights, 20% of transmission and 100% of substations. It should be noted that

inspections performed by circuit will generally push the annual inspection rate slightly higher or lower than 20% due to the varying lengths of circuits. When schedules are established the 20% range is used as a guide, however 100% must be patrolled over the 5 year period. The PSC Order called for utilities to meet a minimum of 85% of the 20% goal in year one. This equates to 17% of the system total. In conversations with Staff, it was determined that measurements of meeting the established goal would be in total and not by individual program.

Also of note, is that the Streetlight Units for inspections is different than streetlight units for EV testing. Streetlight inspections do not include traffic controls or non company owned units, but they do include fiberglass standards (which were excluded from the EV testing program).

Facility Inspections					
Facilities	Units / Miles Goal***	Units / Miles Completed	% of Goal Completed	% of System Completed	% YR 1 PSC Goal
Distribution*	7,303 (mi)	8,149 (mi)	111.6	23.0	17
Underground	8,672	9,335	107.6	19.3	17
Streetlights**	17,931	28,601	159.5	45.3	17
Transmission*	1,968(mi)	2,253 (mi)	114.5	25.3	17
Substation	803	803	100.0	100	17

*Transmission and Distribution facilities are reported in Miles. All other facilities are measured in units.
**Note that Streetlights excludes traffic controls, exclude municipally owned/maintained standards, but includes fiberglass standards
***Goals were established in the February 2005 submittal outlining National Grid's Plan

Certification

In order to comply with the certification requirements of the Safety Orders, National Grid is submitting certification documents for both the Elevated Voltage Testing program and the Facility Inspection program. The signed certification documents are attached hereto as Attachment 10. The process of certification requires a 'Chain of Command' sign off. This process requires that the Supervisors of the Maintenance Inspection and Assessment group sign a certification that the inspection and the elevated voltage testing programs were performed in accordance with the prescribed procedures. The Manager for the Maintenance Inspection and Assessment group and the Vice President of Distribution Network Strategy are then required to sign off on the final report. This process of upward cascading signatures is to provide assurance to the Senior Vice President of Distribution Network Strategy that the program was properly implemented and the results are accurate. Only the final certification documents are provided in this annual report.

Analysis

This section includes information related to EV causes and modifications to the EV programs as the Company moves forward. For example, changes to the trouble shooting techniques on streetlight circuits should help us to determine if there are additional problems on a circuit that are required to be addressed, which did not reveal themselves during EV testing. In addition, the Company is working on changes required to improve the database, the database reporting and the information collected when resolving EV.

Distribution Testing

The volume of EV issues greater than 4.5 volts found during distribution testing is considered extremely small. The majority of items were either related to ground connections or to procedural issues. Certain procedural issues caused National Grid to react to locations reported to have EV during early testing, where it was subsequently determined that no voltage existed. These procedural issues have been addressed though training and reinforcement with the contractors and employees.

Proactively finding the EV conditions related to ground connections should, in part, be achieved as inspectors visually evaluate pole conditions. The inspectors visit 20% of facilities each year and currently look to identify broken or deteriorated ground conditions. To the extent the existing inspections programs have been identifying issues and additional work items, the programs have already helped to keep the number of EV conditions on distribution small. During annual training for the inspectors, past EV testing results for distribution will be discussed.

Distribution Facilities Repairs Voltage > 4.5 volts	
Quantity	Work Description
18	Ground connections repaired / guy wire repairs / cable repair
1	Changed out lightning arresters on pole
2	Changed out insulators on pole
14	Procedure not properly followed (subsequent testing showed no voltage present
2	Customer electric fences isolated
4	Service wires for customer removed / re-hung / needed new service
5*	Items Remaining open in the field

* As of January 12, 2006, there are 4 open items where permanent repairs have not been completed. Instances where permanent repairs are not completed will have periodic site visits to provide assurance that the temporary repairs are not deteriorated or damaged and that the facility remains free from EV.

Streetlight Testing

The majority of the EV conditions identified on streetlights were found in the western New York area. As noted in the Results section of this report, these EV conditions were related to poor connections, missing grounds and deficiencies in the cable and luminaires. The Company believes that by initiating a different trouble shooting technique, the

Company may be able to resolve other potential (future) EV conditions before they expose themselves during the evening EV testing on streetlights.

Streetlight / Traffic Facilities Repairs Voltage > 4.5 volts	
Quantity	Work Description
9	Streetlight head changes
117	New Connections, New Cable or New grounds
8	Photo eyes / sockets burned up
2	Circuit configurations changed and refused at source
26*	Items remain open in the field

* As of January 12, 2006, there are 11 open items where permanent repairs have not been completed. Instances where permanent repairs are not completed will have periodic site visits to provide assurance that the temporary repairs are not deteriorated or damaged and that the facility remains free from EV

Specifically, the Company is reviewing a process to load test lighting circuits as EV is identified on individual standards. This test, if successful, may allow other deteriorating connections or cable to be revealed. The field testing will take place on a sampling of circuits that had an EV condition reported on one or more lamps. When these tests are taking place, other common factors will be collected related to facility types (type of cable, circuits with direct bury cable or conduit, type of light, type of connections, installation conditions (grassy area vs. paved), etc.). The goal will be to identify common root causes for the EV found during the 2005 test cycle.

The Company will continue to look for any remaining conditions during the annual EV test or during maintenance on luminaires.

Underground, Transmission and Substation Testing

There were no issues to review related to EV testing for underground facilities, transmission facilities or substation fences.

Database improvements

The database for the EV testing program was developed quickly to respond to the original Safety Orders. Once testing started and data were submitted, the Company began to understand where additional fields could be established to improve the database. The database design was relatively static during the first cycle of testing. As the Company enters 2006, the Company will prioritize database changes to allow for addition of new fields. These additional fields would allow us to capture data specific to the resolutions (and subsequently the causes) of the EV condition. Currently, resolution categories are created by reviewing text fields that are populated once the data is returned from the field. This process is manually intensive and could create opportunities to introduce error in reporting. With standardization, the Company expects to be in a better position to review and react to root causes.

Reporting from the EV database will be enhanced with the goal of automatically generating a set of standard reports for Management and Staff. These reports are currently manually developed. Standard reports could ease the effort required to comply with the reporting requirements. Additionally, exception reports will be added to assist

supervision in monitoring open EV orders, report on assets not completed and report on items completed. Other modifications may include a tie to the Audit program to identify those assets that have had EV audits performed.

Other Pertinent Information

This section contains information that relates to the Elevated Voltage Testing program or the Inspection program for National Grid. Topics included are updates to the procedures originally filed with the Commission in February 2005 in the Company's original plan, updates to the QA program implemented, a summary of shock calls received by the Company for the period of December 2004 through November 2005, and R&D activities during 2005.

Procedure Updates

The original National Grid Plan filed in February 2005 included the following procedures:

EOP-211A Distribution Line Patrol
EOP-211B Underground Inspections and Maintenance
EOP-211C Street Light Inspections
EOP-211D Stray Voltage Testing
NG USA EOP T007 Transmission line patrol 23kv-345kv
EOP 400.06.1 and 400.06.2 – Substation V&O Inspections

These procedures were reviewed for updates after the original submittal to the Commission. Updates were necessary in order to provide sufficient time for review and further development by the persons that would use the procedures. Updates also included name changes to follow the National Grid format. The new procedures are:

NG USA EOP-D004 Distribution Line Patrol and Maintenance
NG USA EOP-UG06 Underground Inspections and Maintenance
NG USA EOP-G017 Street Light Inspections
NG USA EOP-G016 Elevated Equipment Voltage Testing
NG USA EOP T007 Transmission line patrol 23kv-345kv
NG USA EOP 400.06.1 and 400.06.2 – Substation V&O Inspections

Revised procedures are included with this filing as Attachments 1 through 6.

The most significant changes were associated with NG USA EOP-G016 Elevated Equipment Voltage Testing. Within this procedure a threshold value was established to assist the tester to qualify when a response would be required by Operations. Efforts to identify an appropriate threshold value were important to mitigate occurrences where voltage was naturally occurring or consistent with design. The threshold established was 4.5 volts. If 4.5 volts or greater is found, then follow up is required to determine the source of the voltage and address the problem or determine if the presence of voltage is otherwise consistent with design.

Quality Assurance

Overview

Quality Assurance programs have been developed to assure the integrity of the data developed during inspection and testing. It is the accuracy, thoroughness and integrity of the data that is sought; *not* what the data convey. The data characterize the condition of the assets. Having confidence in the data provides assurance that the actual condition of the assets (as provided by the data) is accurately known.

Statistical principles attest to the fact that the accuracy and thoroughness of inspections and tests (i.e., the "population") can be estimated by assessing the accuracy/thoroughness of a limited, randomly chosen subset (i.e., "sample") of such inspections/tests.

The Company considered two different objectives in a Quality Assurance program. Assessing the quality of the products (i.e., the data) of:

- **a completed program**
  - providing an initial estimate of the level of quality (percent compliance) as derived by assessing samples from such program;
  - choosing the level of confidence (i.e., degree of conservatism) desired of the published quality value; and
  - calculating the published, conservative quality value and the level of conservatism (confidence) inherent in such value; and
- **an on-going, long-term program:**
  - choosing and assessing samples from among the stream of products (inspection/test data) as such products are completed;
  - plotting the level of quality on a time-line graph; and
  - analyzing the graph:
    - comparing the level of quality of the samples against the minimal threshold sought;
    - examining trends that may be symptomatic of impending quality degradation; and
    - performing in-depth diagnosis, if warranted, to isolate potential root-causes of degradation to identify/implement corrective actions to defeat such root-causes and preserve program integrity prior to the development or significant accumulation of unacceptable data.

The former approach (**completed program**) is generally referred to as Sequential, Statistical Sampling and the level of quality is expressed, for example, as:

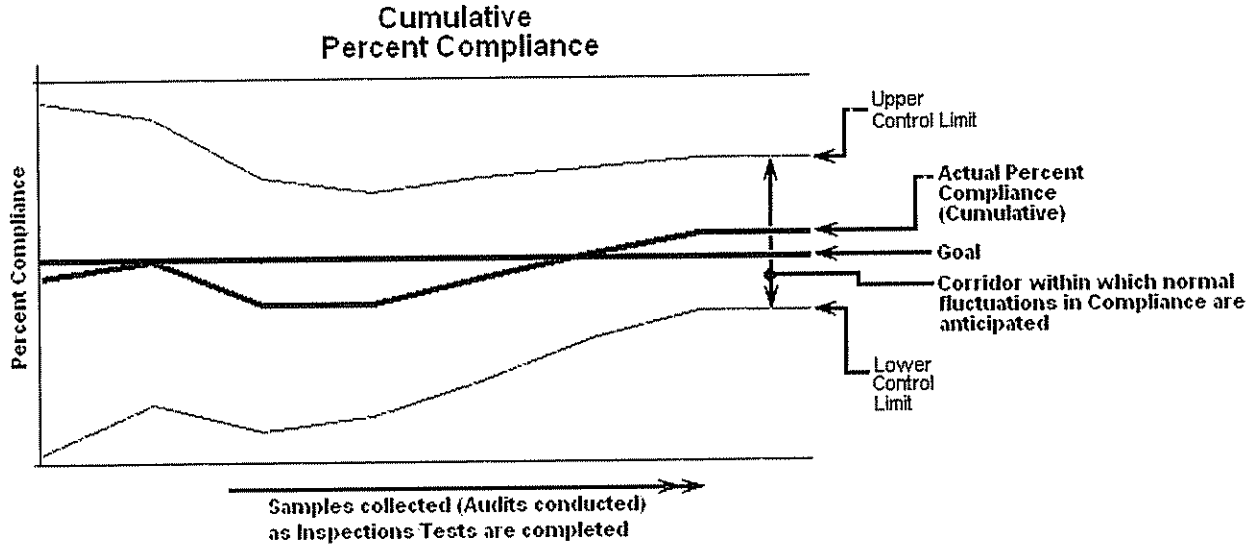
- Percent Compliance: the published, conservatively calculated proportion of products (data) that met the prescribed acceptance criteria

- Level of Confidence (degree of conservatism): the probability that the actual Percent Compliance of *all* products (data) is at least the value published, conservatively calculated

Thus, for example, the quality of a completed program (population of data) would be expressed as:

> 96.7% (*hypothetical*) Compliance calculated with a Confidence of 95% that the *actual* Level of Compliance had *all* data been assessed would be at least 96.7% (*hypothetical*)

The latter approach (**on-going, long-term program**) is referred to as Statistical Process Control (**SPC**) and is generally represented by a graph similar to the following.



The **SPC** approach was new to the personnel involved with National Grid's – New York EV testing and asset inspection programs. Its development, adjustments and modifications evolved in parallel with the execution of the 2005 testing and asset inspection programs and has become the template by which the quality of the programs will be measured and managed going forward in 2006.

Results

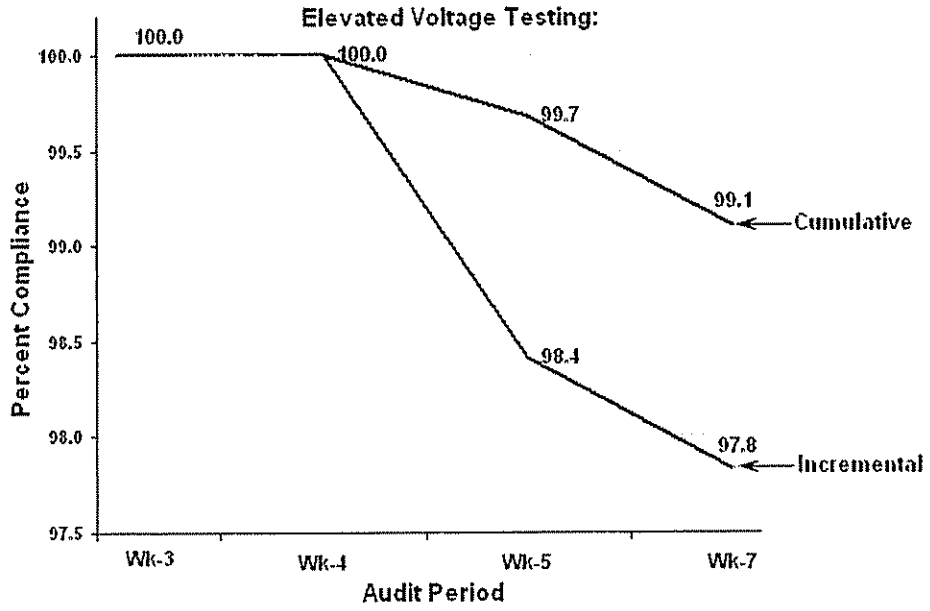
The two initiatives, Elevated Voltage Testing and Asset Inspections were initially combined for the purposes of calculating the level of quality (i.e., Percent Compliance). However, the two initiatives are radically different in the criteria evaluated and data collected:

> *Elevated Voltage* tests involve clear "Yes" versus "No" evaluations and are considered objective and concise.
>
> *Asset Inspections* involve the evaluation and visual inspection of as many as 87 separate characteristics; many of which are subjective and may be significantly influenced by experience and judgment.

Also, it was anticipated that commingling of the Test and Inspection Programs' quality assurance results might cloud potential quality issues. Therefore, quality assurance results were reported separately for test and inspection.

Elevated Voltage Testing:

One hundred and forty-nine (149) audits were conducted (i.e., tests repeated) and the **level of compliance** was conservatively calculated as: 99.1%.

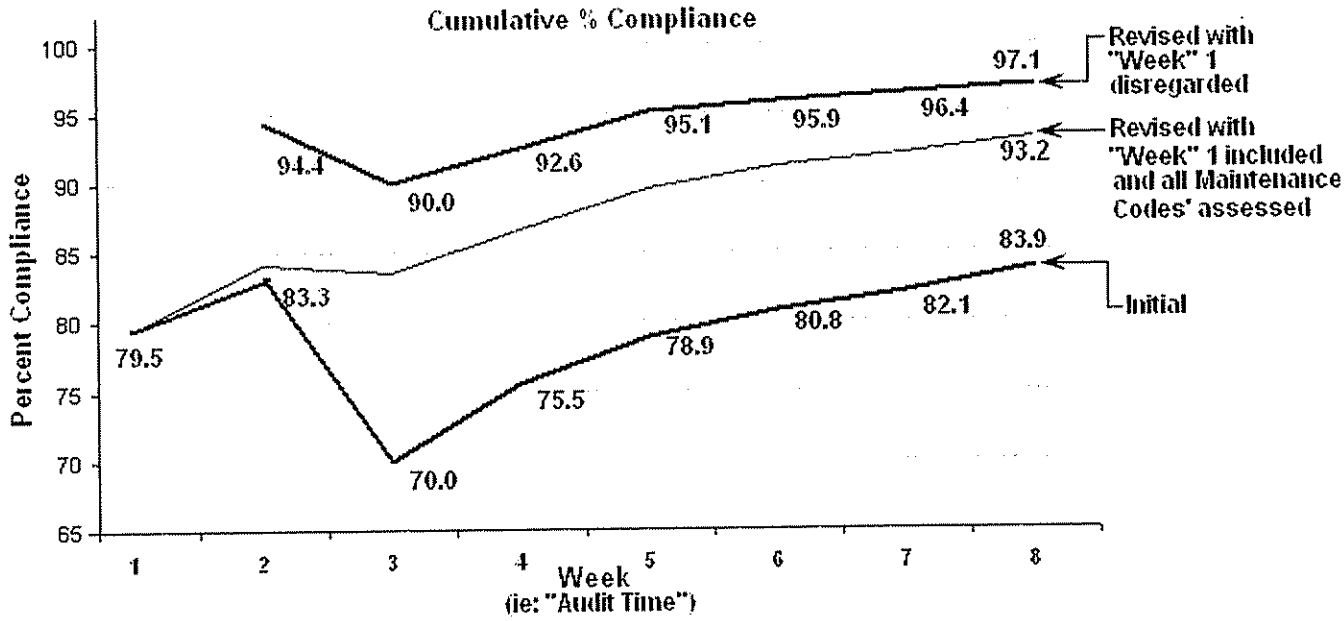


Asset Inspections:

Three hundred and fifty one (351) audits were conducted (i.e., inspections repeated). Recognizing the subjectivity, experience and judgment that are inherent in the inspections, the level of quality was measured considering the evaluation of:

1. all characteristics, for which the ***level of compliance*** calculated was 83.9%;
2. critical characteristics, viewed as potentially posing a potential risk to public health and safety, for which the ***level of compliance*** calculated was 93.2%.
3. Considering only the critical characteristics and eliminating the first 76 Audits (for which specific Maintenance Code designations are not available), the ***level of compliance*** calculated was 97.1%.

As mentioned previously, the **SPC** approach is being implemented for the entire testing and inspection programs. The graph below represents SPC results for the inspection program.



Summary of Electric Shocks

Staff requested that a summary of Electric Shock Reports for the calendar year be included in this annual report. This information was requested since most of the utilities do not currently provide a detailed annual summary to the PSC. National Grid does provide a quantitative summary in the Company's annual power quality report, however, a summary to show a breakdown of the total number of cases received does not appear in any single location of the reports.

Reported shock orders are qualified when a call comes to the Call Center. Once the order type is selected, an order is created and dispatched, based on the day or time, to the appropriate center for response. Once the order is worked, the System Operational Dispatch center is notified for status and follow up to the Commission Staff. Cases are faxed / emailed to the Staff within 24 hours of their occurrence.

The following is a summary of the Electric Shock Reports, received/handled by System Operations Dispatch and reported to the Commission during 2005. This data is YTD December 16, 2005.

Total Reported Electric Shock Incidents:

Customer Issues:	127	64%
National Grid Issues:	70	36%

Total Injuries Reported from Electric Shock Incidents:

Injuries Reported: 3

Western Division: None

Eastern Division

1. Individual walking near a Tractor Trailer, that pulled down wires on vehicle, reported being shocked and went to hospital for evaluation

Central Division

1. Customer dug up underground cable in yard and reported being shocked, went to hospital for evaluation;
2. Cable TV employee received shock from customer equipment, went to hospital for evaluation.

Electric Shock breakdown by area:

Customer Causes		
Western Division	34	27%
Eastern Division	42	33%
Central Division	51	40%
National Grid Causes		
Western Division	24	34%
Eastern Division	25	36%
CentralDivision	21	30%

Of the 70 incidents identified as National Grid causes:

- 25 were weather head issues (exposed connection or bad neutral, and 6 where nothing was found),
- 5 were tree related (broken insulator, feeder fault, meter channel problem, conductor in tree or tree brought conductor down),
- 4 were streetlight poles energized (including 'knockdowns'),
- 4 were broken neutrals,
- 3 were voltage on neutral,
- 2 were related to a pole or duct (bus sign installed directly through duct containing streetlight wire), and
- 21 miscellaneous (broken insulator, feeder faults, meter channel problems).

Research and Development

The Company intends to evaluate the Elevated Voltage testing results once the first round of testing had been completed in August 2006. At that time the Company will be in position to determine what R&D projects would merit further consideration.

During 2005, the Company did research and evaluate various products currently under development or available to determine if there would be value in their use for the Elevated Voltage Testing program or for the Facility Inspection programs. The following provides a synopsis of these efforts.

HD Electric

During the initial testing for the LV-S-5 voltage tester, the Company quickly found that the device was so sensitive, it would falsely trigger for the presence of voltage when walking along a transmission or sub transmission corridor. Due to the false triggering, it would be difficult to use the HD tester on transmission. An individual performing tests would be required to test with the HD device and then again with a multi meter / shunt resistor. The HD unit provided little to no advantage in this situation.

The Company provided this information back to the manufacturer and they made several attempts to develop a 'ground' shield. This shield was to prevent the triggering due to EMF present under or near transmission. The Company performed field tests with the initial shield under a variety of conditions. There results showed the shield was of little or no benefit.

The manufacturer redesigned the shield and returned to us for a second set of field tests. The redesign proved to be much more reliable, however, by the point this shield was developed, the contractor was already testing the transmission system using a multi meter on each structure. The Company removed the requirement to use the HD device on Transmission and directed the contractors and internal workforce to take a voltage reading on each structure.

SARNOFF

Early in July 2005, the Company contacted Sarnoff for a demonstration of the SVD 2000. Sarnoff developed equipment to scan for EV conditions from a moving vehicle. Sarnoff informed us that while the equipment worked well in an environment with predominantly underground facilities, it was extremely difficult or impossible to use in area that are populated with overhead facilities. The unit had such sensitivity that it would trigger for the presence of voltage when an area contained overhead secondary services or overhead primary. Further development would be required before National Grid could engage in wide scale utilization of this type of equipment.

In November 2005 a National Grid representative visited the Sarnoff plant for a demonstration of the device and the improvements that had been implemented. In

connection with this demo, National Grid is planning for a field demonstration in early 2006 to evaluate how or if the unit could benefit the EV testing program.

DayCor Corona Camera

Due to some unexplained interruptions to a radial sub-transmission line in Central NY, the Company contracted with Energy East to fly the line using their DayCor II Corona Camera. The expectation was that the Company might be able to detect problems not readily recognized by a person on the ground such as an insulator that is failing. The corona camera can detect discharge of an electric field and traditionally it has been used to pinpoint radio interference and television interference. Some utilities have expanded its use to look for reliability type problems that are difficult or impossible to detect by a person on a foot patrol.

The test flight was setup for August 29th, 2005. The flight included the pilot, a National Grid Operation employee, an Infrared technician and the corona camera technician. The results of the flight were inconclusive. The corona camera was unable to pick up on corona discharge along the line. There were two problems that diminished the value of the corona camera on this flight. The first problem was the speed that the helicopter needed to maintain greatly exceeded the speed the manufacturer recommends (the camera manufacture recommends a speed of 20 knots). The second problem was the lack of a stabilization table. This caused the images to be extremely difficult to follow due to bouncing during the flight.

If these two issues are overcome, then additional attempts to use this technique to locate reliability type problems may be recommended.

Electro-Magnetic Interference Device

The Company initiated discussions with another utility to discuss a device they have designed to detect EMI during Distribution foot patrols. The system looks for electro-magnetic interference and utilizes GPS coordinates and a GIS view of the distribution system to pinpoint electric problems such as bad insulators, broken ties, etc. The system stores the information on disk for later evaluation and requires no operator intervention during the drive by.

Attachment Summary

Attachment 1 - NG USA EOP–G0016 Elevated Equipment Voltage Testing

Attachment 2 - NG USA EOP-D004 Distribution Line Patrol and Maintenance

Attachment 3 - NG USA EOP-UG 06 Underground Inspection and Maintenance

Attachment 4 - NG USA EOP-T007 Transmission Line Patrol and Maintenance 23kV – 345kV

Attachment 5 - NG USA EOP-G017 Street Light Standard Inspection Program

Attachment 6 - NG USA EOP-400.06.1 Substation V&O Inspection Standard and EOP-400.06.2 Substation Inspection Procedure

Attachment 7 - Monthly Report to PSC Staff

Attachment 8 – Municipality List

Attachment 9 - Quality Assurance Program

Attachment 10 – Certifications

ATTACHMENT #1

nationalgrid **ELECTRIC OPERATING PROCEDURES**	**Doc No.:** NG-USA EOP G016 **Page:** Page 1 of 10 **Date:** 07/25/05
SUBJECT: Elevated Equipment Voltage Testing	**SECTION:** General

REFERENCE:

NYPSC Order 04-M-0159
Applicable National Grid Safety Rules & Procedures
Testing Equipment Operation Instructions

GENERAL INFORMATION:

The purpose of this procedure is to outline the requirements for the annual elevated equipment voltage testing on National Grid Facilities in New York as required by the New York Public Service Commission's "Electric Safety Standards" issued on January 5, 2005.

This procedure also outlines corporate requirements for elevated equipment voltage testing in New England. The variance in requirements between New York and New England is based on sound utility practice versus regulatory requirements.

PROGRAM ADMINISTRATOR:

Delivery Engineering Services

APPLICABILITY

This procedure applies to all personnel involved with or responsible for the testing of facilities designated by this EOP for elevated equipment voltage.

SCOPE:

I. Facilities Where Elevated Equipment Voltage Testing/Documentation is Required – New York
   A. Street Lights and Municipally Owned Facilities
   B. Substation Fences
   C. Overhead Distribution Facilities
   D. Overhead Transmission Facilities
   E. Underground Facilities
   F. Daily Work Areas
   G. Exemptions

II. Facilities Where Elevated Equipment Voltage Testing/Documentation is Required – New England
   A. Street Lights
   B. Substation Fences
   C. Overhead Distribution Facilities
   D. Underground Facilities
   E. Daily Work Areas
   F. Exemptions

III. Test Equipment
IV. Test Procedure
V. Corrective Action Requirements
VI. Database Requirements
VII. Annual Reporting and Certification Requirements
VIII. Responsibility
IX. Definitions
X. Training

I. FACILITIES WHERE ELEVATED EQUIPMENT VOLTAGE TESTING/DOCUMENTATION IS REQUIRED – NEW YORK

A. Street Lights and Municipally Owned Facilities
1. Company owned metallic street lighting standards are required to be tested for elevated equipment voltage annually. This test is to be performed while the light is operating.
2. Municipally owned street light systems that National Grid directly provides energy to must be tested for elevated equipment voltage annually. National Grid will complete this testing unless assurances of the completion of required testing and transfer of such test data are made by the appropriate municipality. This test is to be performed while the light is operating.
3. Municipal owned metallic traffic signal standards and accessible devices are to be tested annually for elevated equipment voltage by National Grid.
4. All street lights identified on public thoroughfares regardless of ownership are to be tested annually.
5. All street lights under a maintenance contract are to be tested annually.
6. Exceptions not requiring elevated equipment voltage testing: private lighting, park associations, parking lots, fiberglass (or other non-conductive) street light standards, and locations where street light standards are not publicly accessible, such as facilities located in the center of highways that cannot be accessed without stopping traffic or creating potentially hazardous situations for the worker and/or public.

B. National Grid Substation Fences
1. Metallic fencing surrounding substations with National Grid Facilities shall be tested for elevated equipment voltage annually. This fencing can be customer owned for customer stations, if a National Grid facility is part of the station.
2. See reference to NG-USA EOP 400.06.2 Substation - V&O Inspection Procedure.

C. Overhead Distribution Facilities
1. Towers and/or metallic poles with distribution facilities shall be tested annually for elevated equipment voltage.
2. The following equipment on wood distribution poles requires annual elevated equipment voltage testing:
    a. Metallic riser guard or conduit (company or non-company).
    b. Uncovered or uninsulated down ground (company or non-company).
    c. Down guy (company or non-company).
    d. Any other publicly accessible conductive piece of equipment (company or non-company) on the pole within reach from the ground.
3. Exceptions: Customer meters and customer meter poles are excluded.

D. Overhead Transmission Facilities
1. Towers and/or metallic poles with transmission facilities shall be tested annually for elevated equipment voltage.
2. The following equipment on wood transmission poles or structures require annual elevated equipment voltage testing:

a. Metallic riser guard or conduit (company or non-company).
b. Uncovered or uninsulated down ground (company or non-company).
c. Down guy (company or non-company).
d. Any other publicly accessible conductive piece of equipment (company or non-company) on the pole or structure within reach from the ground.

E. Underground Facilities
1. Annual elevated equipment voltage testing is required on all of the following equipment where accessible to the public.
a. All metallic manhole covers, vault covers and grates, junction box covers, handhole covers, pad mount transformers, and switchgear.
2. Exceptions: Non-metallic concrete or fiberglass pads or handholes are not required to be tested.

F. Daily Job Site Test Requirements
1. Each job site where National Grid personnel or its contractors complete a work assignment shall be tested for elevated equipment voltage at the end of the work day or the completion of the assignment. **This testing requirement is considered good utility practice and does not require specific documentation.**
2. Exceptions:
a. Substation fencing will not require elevated equipment voltage testing unless scheduled as part of the inspection program or if work was done on the fencing.
b. In a storm situation, where mutual aid is required, testing by other than National Grid personnel will not be required.

G. Exemptions
1. A completely fenced in area where access is denied to the general public and where access is only achieved by climbing a fence. Good judgment is required by the tester in these scenarios.

II. FACILITIES WHERE ELEVATED EQUIPMENT VOLTAGE TESTING/DOCUMENTATION IS REQUIRED – NEW ENGLAND

A. Company Owned Street Lights
1. Testing will be performed during each outage investigation notification and the data will be recorded for each instance.

B. National Grid Substation Fences
1. Metallic fencing surrounding substations with National Grid Facilities shall be tested for elevated equipment voltage annually.
2. See reference to NG-USA EOP 400.06.2 Substation – V&O Inspection Procedure.

C. Overhead Distribution Facilities
1. Wood distribution poles require testing to be completed on metallic risers in conjunction with the distribution patrol program covered by NG-USA EOP D004.
2. Documentation is only required on metallic risers found to be at an elevated voltage requiring repair. Testing data is not required for a facility that is found to be operating as designed.

D. Underground Facilities
1. Testing for elevated equipment voltage shall be done while completing scheduled inspections of underground equipment covered by NG-USA EOP UG006, Underground Inspection and Maintenance. The following items are to be tested on a five year cycle, padmount transformers, switchgears, and metallic handhole covers.

2. Testing for elevated equipment voltage shall be completed on underground facilities while completing working inspections covered by NG-USA EOP UG006. The metallic items to be tested are manholes covers, vault covers, handhole covers, splice box covers, junction box covers, padmount transformers, switchgear, and submersible equipment covers.

E. Daily Job Site Test Requirements
1. Each job site where National Grid personnel or its contractors complete a work assignment shall be tested for elevated equipment voltage at the end of the work day or the completion of the assignment. **This testing requirement is considered good utility practice and does not require specific documentation.**
2. Exceptions:
    a. Substation fencing will not require elevated equipment voltage testing unless scheduled as part of the inspection program or if work was done on the fencing.
    b. In a storm situation, where mutual aid is required, testing by other than National Grid personnel will not be required.

F. Exemptions
1. A completely fenced in area where access is denied to the general public and where access is only achieved by climbing a fence. Good judgment is required by the tester in these scenarios.

III. TEST EQUIPMENT

A. A hand held device (proximity detection unit) that is capable of detecting voltage from 8 volts to 600 volts.
B. A portable AC digital high impedance volt meter must have the ability to take readings with and without an input load impedance of 500 ohms.
C. The handheld devices utilized must be certified to indicate a minimum of 8 volts and be capable of withstanding a maximum of 1000 volts by an independent laboratory. The portable AC digital voltmeter must be capable of measuring a minimum of 0.1 volt and a maximum of 1000 volts, the following units has been certified:

1. HD Electric model LV-S-5 (5-600 volts).
2. Fluke 85
3. Fluke 87
4. Fluke 170 series or equivalent
5. Fluke 175
6. Fluke 177
7. Fluke 179
8. Fluke 187
9. Fluke 189

IV. TEST PROCEDURE

A. Job Briefing

1. At minimum, the following information must be communicated to all personnel at the beginning of each shift for elevated equipment voltage testing:

    a. Structures are never to be touched with a bare hand while performing the tests, only the voltage detector or meter probe is to be used to make contact with the facilities.
    b. Appropriate PPE must be worn.
    c. Each individual needs to be aware of his/her surroundings at all times.

d. Make sure to observe all traffic before entering a street, either at intersections or any other point.
e. Traffic safety vest (DOT Compliant Class II) is to be worn at all times when exposed to traffic. Be aware that when bending down, the visibility benefits of the traffic safety vest are diminished.
f. Obey all traffic control devices.
g. When working in the street, face oncoming traffic whenever possible.

B. Measurements for voltages will be performed in accordance with the following:

1. Initial measurements for the presence of voltage shall be made using a certified proximity detection unit as noted in the testing equipment certified equipment list in Section II C.
   a. To verify the proper operation of the proximity detector, follow operating instructions for the particular certified unit being utilized, this is to be done daily.
   b. After verification that the detection unit is working, approach the area/equipment to be tested. The proximity detector will illuminate prior to touching the area/equipment being tested if voltage is present. If the proximity detector does not illuminate in close proximity to the area/equipment touch the area/equipment to be tested with the probe of the unit.

2. If this test detects voltage, repeat the test with the portable AC voltmeter:

   a. Measurements with a portable AC voltmeter shall be taken on clean bare metallic surface (structure, ground wire, etc.)
   b. When using a portable AC voltmeter, connection shall be made to suitable neutral or ground source with the common (black) lead.

      i. In locations where the neutral or ground point is at a distance in excess of the voltmeter lead length, the connection to the neutral/ground shall be made with up to 25' of # 16 stranded copper lead wire (covered), the other end of which shall be securely connected to the negative (black) probe of the meter. When using such "extension leads" appropriate care shall be taken in the placement of such leads so as to not create a physical hazard to workers, pedestrian or vehicular traffic.
      ii. In locations where a system ground is not available, or the existing ground registered voltage upon the proximity test, a metal rod shall be firmly embedded into the earth to a depth of no less than 6" to create a ground reference point for the measurement to be taken. The reference point should be as close as practicable to the facility being tested to simulate an elevated equipment voltage situation (3' to 4'.) On occasion longer leads may be necessary to find undisturbed earth (up to 25'.)

   c. The "live" meter probe lead shall then be placed into contact with the structure under inspection.
      i. Install a 500 ohm input load impedance on the volt meter. Measure the voltage and record this voltage in the database for the site.

V. CORRECTIVE ACTION REQUIREMENTS

A. If an elevated equipment voltage condition is found and verified by the Test Procedure in Section IV, the site is to be guarded until made safe by Company personnel or if municipally owned, made safe by the owner or company. Guarded for the purposes of this EOP is defined as guarded by a person or a protective barrier that prevents public contact if the elevated equipment voltage found is greater than 4.5 volts. **If the voltage measures less than 4.5 volts and is found to be consistent with system operation design (no visual evidence of a problem upon review) no further action is required.** If the voltage measures greater than 4.5 volts and less than 8 volts it can either be guarded in person or by a protective barrier that prevents public contact, contact your supervisor for required action. It is expected that sound judgment shall be utilized in this application. If the voltage measures greater than 8 volts immediate response is required using the notification in section B below.

B. The following notification process for personnel to respond shall be utilized.

1. Notification by location:
   a. New York: contact Systems Operations Dispatch 1-877-716-4996
   b. Bay State West, and Bay State North & Granite: Westboro Control Center 508-389-9032.
   c. Bay State South, and Ocean State: Lincoln Control Center 401-335-6075.
2. Inform the operator that this is an elevated equipment voltage call, giving inspector name, company (if not National Grid), unique ID, address where problem is identified, facility number, circuit number , ownership, type of equipment, voltage found and whether they are physically guarding or leaving the site after flagging and installing a protective barrier. National Grid personnel or designee will be assigned to respond.

C. Temporary repairs may be used to correct the elevated equipment voltage thereby removing the need to guard the site.

D. Except as noted in V.E, permanent repairs to the equipment shall be made within 45 days of the occurrence.

E. If permanent repairs can not be made within 45 days due to extraordinary circumstances, the company shall periodically perform site visits to monitor the condition of the temporary repair. For New York, all exceptions must be identified and justified in the annual reporting of the program to the NYPSC.

F. The Tester/Inspector may detect a minimal voltage level that is attributable to the design of the facility and not the result of an improper condition, no corrective action is required in this instance.

G. The individuals conducting the elevated equipment voltage tests on street light standards shall have a supply of "Angel guards" available for installation if the cover is missing or wires are found to be exposed to the public at the time of testing. Angel guards shall only be installed after the testing of the street light standard is complete and 1) there is no indication of elevated equipment voltage above 4.5 volts, or 2) repairs have been completed to correct the elevated equipment voltage.

H. The elevated equipment voltage tester shall report any potentially hazardous conditions found on National Grid facilities seen visually during the survey process.

I. Customer Owned Equipment

1. Where the Company finds elevated equipment voltage above 4.5 volts and identifies its source as customer-owned equipment, the Company shall guard the site and notify the customer or a responsible person, as appropriate, that a potentially hazardous situation exists. The Company shall advise the customer or responsible person that the cause of the elevated equipment voltage must be immediately remedied.

2. Company personnel are encouraged to work with the customer to determine and rectify the problem. If the customer agrees to accept the Company's assistance, the Company may charge a reasonable cost for this effort.
3. The Company may temporarily remove a customer's meter or take such other actions as are appropriate and necessary to protect the public.

VI. DATABASE REQUIREMENTS

A. The database in use shall be easily searchable for information and reporting.

B. Information fields required to be completed for facilities:

1. Survey Date
2. Region
3. District
4. Contractor
5. GIS ID/Asset # (Unique ID)
6. Facility Type
7. Owner
8. Feeder/Circuit
9. Line #
10. Tax District
11. Pole/Structure/Equipment ID
12. Street Name
13. Inspectors Name
14. GPS Taken
15. Pre-load Match
16. Elevated Equipment Voltage Test Required
17. Voltage Found Y/N
18. Voltage Measurement
19. Type of Equipment (See Appendix A)
20. Immediate Action Taken
21. Person Notified
22. Permanent Repair Date
23. Type of Repair
24. Person Responsible for repair (Employee ID)

VII. NEW YORK ANNUAL REPORTING AND CERTIFICATION REQUIREMENTS

A. Each Regional program supervisor shall provide certification to the program manager that the Region they supervise has complied with the elevated equipment voltage testing and inspection program as ordered by the PSC.

B. The program manager shall provide certification to the Vice President Distribution Network Strategy and the Senior Vice President of Distribution Network Strategy that the organization has complied with the elevated equipment voltage testing and inspection program as ordered by the PSC.

C. Written certification of the completion and results of every elevated equipment voltage test and inspection shall be completed, as well as a certification that all unsafe conditions identified have been remediated by appropriate company personnel.

D. The President or officer with direct responsibility for overseeing the elevated equipment voltage testing and inspection shall provide an annual certification to the NYPSC that the Company has tested all of its publicly accessible conductive surface electric facilities and all street lights, as well as completed all required inspections.

E. The annual reporting and certification is required by January 15 of each year. In addition to certifications, it shall address the following:
   1. Analyses of elevated equipment voltage data to show trends or common causes.
   2. Discussion of performance mechanism, if required.
   3. Changes to program implementation due to lessons learned.

F. The Company shall maintain its written certification and other documentary proof of its testing at its' Albany, Buffalo, and Syracuse office facilities. These documents shall be made available to the public for review upon request.

VIII. RESPONSIBILITY

A. Delivery Engineering Services
   1. Update program as necessary.
   2. Provide field support and training upon request.
   3. Act as liaison with existing database vendor when required.

B. Field Operations
   1. Ensure the elevated equipment voltage program as outlined in this EOP is implemented properly and timely.
   2. Ensure that the program as outlined in the EOP is completed each year.
   3. Provide qualified personnel to complete elevated equipment voltage testing.
   4. Ensure all elevated equipment voltage testers have been trained.

C. C&MS Management
   1. When requested by Field Operations/Distribution Network Strategy obtain, schedule and manage contractors to perform elevated equipment voltage testing.
   2. Ensure all elevated equipment voltage testers have been trained.
   3. Manage contractual terms and conditions including all change orders and resource requirements.
   4. Establish a process for the delivery of work, collection of data, invoice verification and payment, and reporting to local management and Distribution Network Strategy.
   5. Manage any established support processes such as back office support or data entry clerks.

D. Elevated Equipment Voltage Inspector
   1. Demonstrate the ability and proficiency to perform elevated equipment voltage testing per this EOP.
   2. Demonstrate the ability to become proficient in the use of the appropriate database.
   3. Possess the ability to do walking patrols, collect information, edit data, and guard unsafe facilities.
   4. Attend elevated equipment voltage training program.

E. T&D Technical Training
   1. Provide training upon request.

F. Distribution Network Strategy

1. Provide input into program revisions.
2. Ensure the elevated equipment voltage program as outlined in this EOP is implemented properly and timely.
3. Ensure the program as outlined in the EOP is completed each year.
4. Provide qualified personnel to complete elevated equipment voltage testing.
5. Ensure all elevated equipment voltage testers have been trained.
6. Provide program management.

G. Process and Systems
   1. Provide and support database.

IX. DEFINITIONS:

A. "Stray Voltage" – As defined by NYPSC the term "Stray Voltage" means voltage conditions on electric facilities that should not ordinarily exist.

B. Proximity Detection Unit – A low voltage hand held detector used to test exposed metallic surfaces and conductors for the presence of low voltage from 8V to 600V.

C. Elevated Equipment Voltage Inspector – The individual performing the elevated equipment voltage inspection.

D. Handheld Computer - An electronic Data recording device that is used in the field to create a record of conditions found.

E. Elevated Equipment Voltage – An A.C. rms voltage difference between utility equipment and the earth, or to nearby grounded facilities that exceeds the lowest perceptible voltage levels for humans.

X. TRAINING:

A. Delivery Engineering Services with assistance from the database vendor will provide training on the utilization of handheld computers and the selected database.

B. At a minimum, each worker conducting these tests should have knowledge and training in the following areas:

   1. Proper use of appropriate Personal Protective Equipment.
   2. Work Area Protection.
   3. Hazard Communication.
   4. First Aid CPR (This is required only on multi-person crews.)
   5. The proper use of certified voltage detection units and voltmeters.
   6. Hazardous condition identification.

The attendance of this training shall be documented.

TYPE OF EQUIPMENT
APPENDIX A

TYPE	CODE	EQUIPMENT DESCRIPTION
Distribution	910	Pole
	911	Regulator
	912	Sectionalizer
	913	Recloser
	914	Ground
	915	Guy
	916	Riser
	917	Switch Handle Mechanical Operated
	929	Distribution – Other (use comments)
Transmission	930	Pole
	931	Tower
	932	Guy
	933	Ground
	934	Riser
	935	Switch Hand Mechanical Operator
	949	Transmission – Other (use comments)
Underground	950	Handhole
	951	Manhole
	952	Switchgear
	953	Transformer
	954	Vault – Cover/Door
	969	Underground – Other (use comments)
Street Light	970	Handhole
	971	Standard
	979	Street light – Other (use comments)
Customer Street Light/Other	980	Handhole
	981	Standard
	989	Customer SL/Other – Other (use comments)
Traffic Control	990	Handhole
	991	Standard
	992	Control Box
	993	Pedestrian Crossing Pole
	999	Traffic control – Other (use comments)

NG-USA EOP G016

"Elevated Equipment Voltage Testing"

07/25/05

This is a new procedure.

ATTACHMENT #2

nationalgrid **ELECTRIC OPERATING PROCEDURES**	**Doc No.:** NG-USA EOP D004 **Page:** 1 of 8 **Date:** 07/25/05
SUBJECT: Distribution Line Patrol and Maintenance	**SECTION:** Transmission & Distribution

REFERENCE:

Applicable National Grid Safety Rules and Procedures
NY PSC Order 04-M-0159
Elevated Equipment Voltage Testing NG USA EOP-G016
Underground Inspection NG USA EOP-UG006

GENERAL INFORMATION:

The purpose of this procedure is to outline the requirements for the patrol and maintenance activities associated with National Grid Distribution circuits. The Distribution Maintenance Program was designed to provide for a patrol and subsequent maintenance of each distribution circuit once every five years. The patrols are conducted by a Distribution Inspector identifying all required maintenance on a hand held computer. The maintenance items identified through this patrol are separated into five priority categories A, B, C, E and F priority. The problem codes identified default to the appropriate priority. The default priority can be adjusted by the individual performing the inspection based on actual field conditions. These priority categories are defined as follows:

A Priority - An identified facility/component or tree condition that must be repaired/replaced as soon as practicable.

B Priority – An identified facility/component condition that shall be considered for repair/replacement as the feeder is scheduled for maintenance by Distribution Planning and Engineering. These identified conditions will be corrected as preventive maintenance and or facility life extension.

C Priority – An identified facility/component condition that is being trended and reviewed by Distribution Planning and Engineering that may require replacement through the engineering process (Requires project/Capital expenditures). Non-capital conditions identified under this priority will be corrected at the discretion of field operations.

E Priority – An identified facility/component that must be replaced/repaired immediately to address public safety or system reliability. The inspector shall notify the appropriate operations department for immediate response and corrective action any time an E priority is found during an inspection.

F Priority – An identified forestry condition that should be scheduled as time permits, within the routine right-of-way maintenance and danger tree removal schedules.

ALL "A PRIORITY" CONDITIONS IDENTIFIED PRIOR TO NOVEMEBR 1ST MUST BE REPAIRED/CORRECTED BY NOVEMBER 3OTH

ALL "E PRIORITY" CONDITIONS SHALL BE CORRECTED IMMEDIATELY UPON NOTIFICATION.

ALL "F PRIORITY" CONDITIONS IDENTIFIED DURING THE PATROL ARE TRANSMITTED TO THE SYSTEM FORESTRY GROUP ON AN ANNUAL BASIS FOR INCLUSION IN THE RIGHT-OF-WAY MAINTENANCE PROGRAM.

PROGRAM ADMINISTRATOR:

Delivery Engineering Services

APPLICABILITY

This procedure applies to all personnel involved with or responsible for the inspection and repair of OH Distribution facilities. Additionally all URD's and UCD's will be scheduled for inspection on the circuit schedule for this OH Distribution Line Patrol and Maintenance EOP. Refer to Underground Inspection and Maintenance NG USA EOP-UG006 for further information on the underground program.

SCOPE:

Distribution Maintenance

I. Patrol (Hand Held Computer)
II. Equipment To Be Inspected and Maintenance Codes
III. Maintenance Data Base
IV. Maintenance
V. Work Management
VI. Completion
VII. Definitions
VIII. Responsibilities
IX. Training

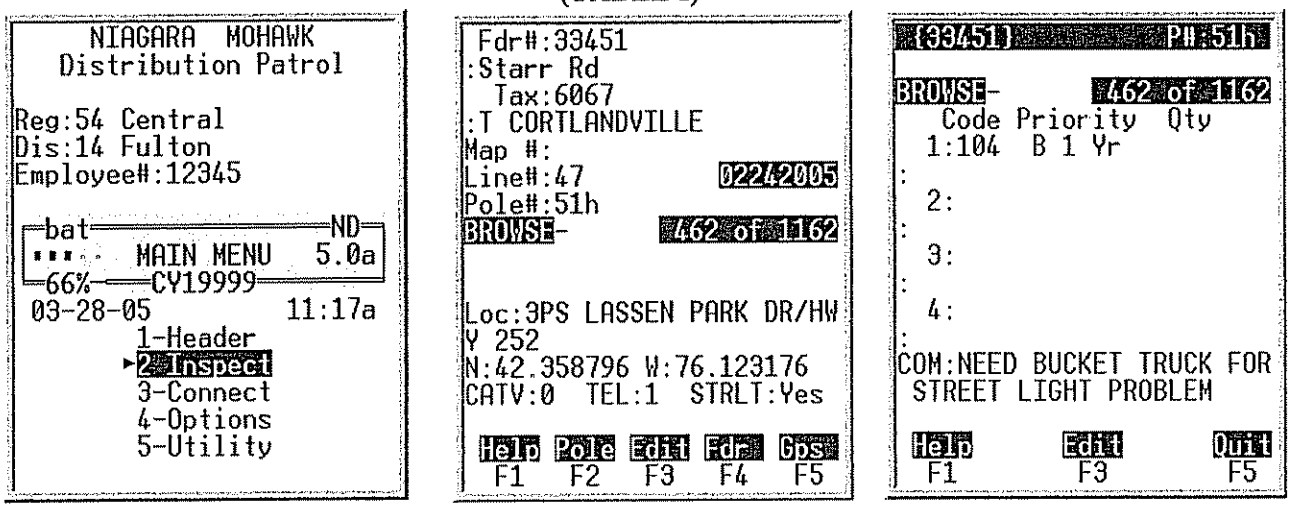
I. PATROLS (HAND HELD COMPUTER)

Distribution Patrols are conducted by a Distribution Inspector that can identify deficiencies or non-standard construction conditions on National Grid facilities. One–fifth of all overhead distribution circuits should be inspected each year. The patrols are scheduled in such a manner that each distribution feeder is examined in the field once every **five** years. The Distribution patrol schedule/status is found in report RPT1310 Feeder Patrol Status. The T&D Superintendents are responsible to create this schedule for their respective Regions. Any new facilities added to the system will be incorporated through our Geographic Information System (GIS) system and added to the appropriate inspection cycle. The Distribution Inspector uses a hand held computer to record region, district, employee ID, feeder number, pole number, tax zone, line number, GPS location, attachments, comments and maintenance problem codes. The Distribution Inspector while patrolling shall also complete maintenance code 118, stencil pole required, if found deficient upon inspection. The Distribution Inspector will input the code into the handheld as required, as well as completing the work unit in the hand held upon field completion while at the site. If the Distribution Inspector finds unmapped facilities from the information supplied from GIS, refer to NG-USA EOP G011, Preparation and Distribution of Electric Facilities Records, for required procedure for corrections.

The maintenance hand held screens are shown in Table I. The Maintenance Problem code listing is shown on the Distribution Field Survey Worksheet (Exhibit 1).

The hand held computer is to be used as the primary vehicle for recording maintenance problems in the field. There will be times where it is not practicable to use the hand held computer due to unfamiliarity or access to one (example: line crew finds maintenance problem and needs to document/record). The method to be used to document/record maintenance in these situations shall be the Distribution Field Survey Worksheet, Exhibit 1. This worksheet must be inputted into the Distribution database through the desk top computer by the inspector, clerk, or supervisor.

HAND HELD FIELD COMPUTER SCREENS
(TABLE I)



II. EQUIPMENT TO BE INSPECTED AND MAINTENANCE CODES

- Wood Pole Mounted Street Light
- Poles
- Crossarms
- Insulators
- Primary
- Transformers
- Capacitor
- Regulator
- Sectionalizer
- Recloser
- Cutout
- Arrester
- Switch
- Ground
- Guy
- Anchor
- Secondary
- Service
- ROW

SUBJECT: Distribution Line Patrol & Maintenance **Doc. No.** NG-USA EOP D004
Date: 07/25/05

EXHIBIT 1

DISTRIBUTION FIELD SURVEY WORKSHEET

REGION	DISTRICT	EMPLOYEE ID
FEEDER	TAX DISTRICT/TOWN	MAP #
LINE#/ROUTE #	POLE#/SUFFIX #	
LOCATION		

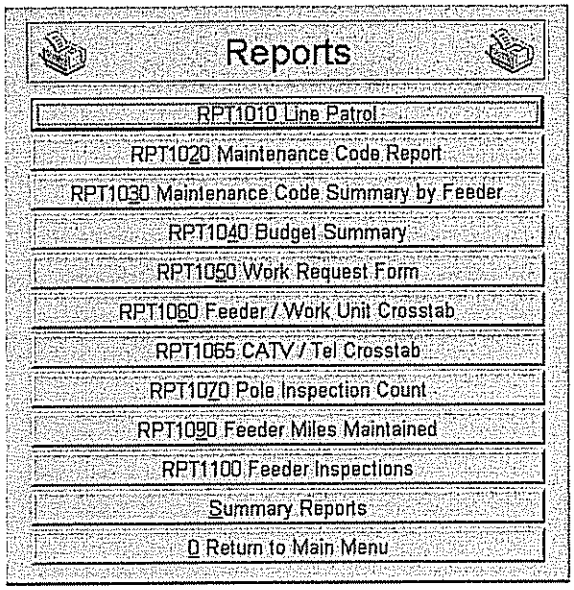
NUMBER MAIN LINE CATV ATTACHMENT (Circle One)	NUMBER MAIN LINE TELEPHONE ATTACHMENT (Circle One)	STREET LIGHT ATTACHED (Circle One)
0 1 2 3 4 5	0 1 2 3 4 5	YES NO

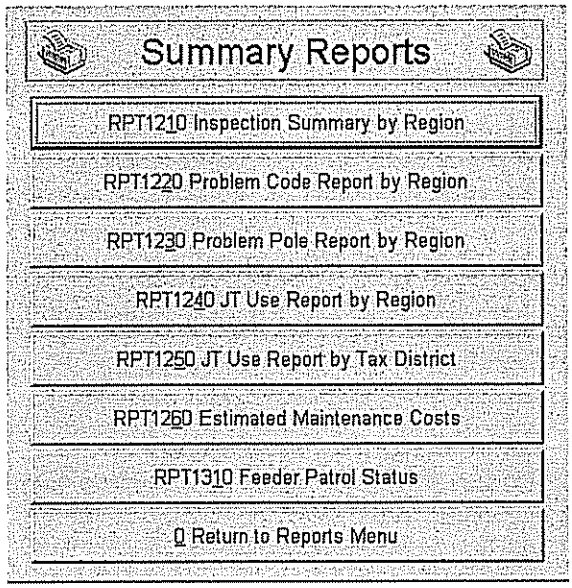
	STREET LIGHT	Priority/ Qty		TRANSFORMER	Priority/ Qty		GUY	Priority/ Qty
099 A	Not Bonded	/	150 A	Oil Weeping	/	220 B	Guy Wire Marker	/
100 B	Not Bonded To Standards	/	151 B	Bushings Brk/Cracked	/	221 A	Install/Repl Strain Ins	/
101 C	Glass Broken/ Damaged	/	152 A	Missing Ground Wire	/	222 B	Excessive Slack	/
102 C	Arm Broken/Damaged	/	153 B	Lighting Arrester	/	223 B	Broken Wire	/
103 C	Damaged Head	/	156 B	Non Std Install of Gap	/	225 B	NonStd Bonding/Insul	/
104 C	Light on Day	/		CAPACITOR			ANCHOR	
105 C	Conductor Repair Req'd	/	160 A	Oil Weeping	/	226 A	Req'd – Jt Owned	/
	POLE		161 A	Bulging	/	227 A	Req'd – Sole NM	/
106 C	D'bl Wood-NM Trnsf Req'd	/	162 B	Bushgs Brkn/Cracked	/		SECONDARY	
107 I	D'bl Wood-Tel Trnsf Req'd	/	163 A	Missing Ground Wire	/	231 F	In Trees	/
108 I	D'bl Wood-CATV TrnsfReq'd	/	164 B	Blown Fuse	/	232 B	Improper Sag	/
110 A	Broken	/		REGULATOR		234 B	Floating	/
111 B	Visual Rotting Grd Line	/	170 A	Oil Weeping	/		SERVICE	
112 B	Excess Checking	/	171 B	Bushings/Brkn/Crkd	/	240 B	Insul. Loose House	/
113 B	Cunap Treated Birthmark Year	/	172 A	Missing Ground Wire	/	241 F	In Trees	/
115 B	Riser Guard Req'd	/	174 B	Ctrl Cab Hght/Grnd		243 B	Non Std/Unsecured NM Action	/
116 B	Visual Rotting Pole Top	/		SECTIONALIZER			ROW	
117 C	Leaning Pole	/	180 A	Oil Weeping	/	250 F	Brush/Tree	/
118 A	Stencil /Correction Req'd	/	181 B	Bushings Brkn/Crkd	/			
	CROSSARM		182 A	Missing Grd Wire	/			
120 B	Damage Arm	/	183 B	Ctrl Cab Hght/Grnd				
121 B	Loose/Defective Pins	/		RECLOSER				
122 B	Wooden Pins 13.2kv	/	190 A	Oil Weeping	/			
123 B	Loose Brace, Hrdwr	/	191 B	Busings Brkn/Crk	/			
124 B	Dmg Dbl Crossarm	/	192 A	Missing Grd Wire	/			
125 B	Damage Alley Arm	/	193 B	Ctrl Cab Hght/Grd	/			
	INSULATOR			CUTOUT				
130 B	Broken/Cracked/ Flashed	/	200 A	Defective Cutout	/			
131 A	Floating	/		ARRESTER				
133 B	Non-Standard Voltage	/	201 B	Blown Arrestors	/			
134 B	I-7 Assoc W/Switch/Fuse			ANIMAL PROTECTION				
	PRIMARY		202 B	Animal Guards Req'd	/			
140 A	Insuff. Grnd Clearance	/		SWITCH				
141 A	Damaged Cond/Brkn Strands	/	203 B	Gang Operated Defectuve	/			
142 F	In Trees	/	204 B	Single Phase Defective	/			
143 B	Space Cable Dmgd Spacr			GROUND				
145 C	Stirrups	/	210 A	Wire Broken/Loose	/			
146 B	Improper Sag	/	211 A	Hazard Condition	/			
147 B	Spacer Cable Bracket Defective	/	212 B	Guard Req'd	/			
148 B	Spacer Cable Bracket Not Bonded	/	213 B	Non Standard				

Comments:

III. MAINTENANCE DATA BASE

The Maintenance data base consists of data down loaded from the hand held, used in the field and data gathered from other sources entered from the desktop computer. The field hand held can be down loaded to any National Grid desk top computer that is connected to the network and the inspector is logged on as a valid user of the T&D Maintenance program. The National Grid desktop computer is also used to generate various reports and work tickets depending on the users need. These reports are utilized to schedule and accomplish distribution maintenance work.





IV. MAINTENANCE

The maintenance activities are scheduled by priority categories, with the exception of "E Priority" which requires immediate repair. All "A Priority" conditions identified prior to November 1 must be repaired/corrected by November 30th. The "B Priority" conditions are scheduled based on the reliability of the circuit, load served, and condition of facilities. The "B Priority" maintenance is to be performed on circuits selected by Distribution Planning and Engineering, and identified in the "Energy Delivery Work Plan". All "B Priority" maintenance as outlined in the "Energy Delivery Work Plan" must be completed by November 30 of that year. The "C Priority" maintenance work will be completed as planned and directed by the Distribution Planning and Engineering department (Capital expenditures) after reviewing annually for trends that would require expenditures. Any "C Priority" work that is not capital expense will be completed at the discretion of the T&D operating department.

ALL MAINTENANCE WORK IS TO BE COMPLETED PER NATIONAL GRID DISTRIBUTION STANDARDS

V. WORK MANAGEMENT

The time recording of both patrol and maintenance activities is accomplished in the Severn Trent Operating Resource Management System (STORMS).

STORMS requires that the Distribution Inspector/Operations Personnel fill out a daily time sheet. The Distribution Inspectors would record their time actually performing the foot patrol inspection of the Distribution system under the DO1100 Activity along with the appropriate work order or a work request if the patrol has been scheduled. Work orders or work request numbers can be obtained from the Operations Supervisor or from the Distribution Planning/Area Resource Coordinator (ARC).

Operations Personnel performing scheduled maintenance on the Distribution System should record their time actually performing maintenance activities under the appropriate work request number set up by their Distribution Planning/ARC in their respective area. Operations Personnel performing maintenance activities that have been not been scheduled should charge the DM1100 activity along with appropriate work order number. STORMS work request numbers are created when the work has been scheduled by Distribution Planning/ARC. Work orders or work request numbers can be obtained from the Operations Supervisor or from the Distribution Planning/ARC.

VI. COMPLETION

The replacement/repair of an identified maintenance problem code after completed in the field must be updated in the database. The completion of the maintenance problem codes can be done through the edit screen found on the desktop computer. Field personnel that perform the work are required to complete the work order form providing the date completed, and employee ID number. The work order form is returned to the T&D Supervisor who will close out the completed maintenance problem codes in the database at their desk top computer or designate the inspector or clerk to perform the close out. Additional maintenance problems that maybe discovered and completed by personnel must be noted on the work order ticket so they can be recorded as work completed on that specific facility.

ALL MAINTENANCE WORK PERFORMED THAT WAS IDENTIFIED ON THE WORK ORDER OR DISCOVERED DURING THE REPAIR/CORRECTION OF THE ORIGINAL MAINTENANCE PROBLEM MUST BE LISTED ON THE DATABASE AND THEN CLOSED OUT WHEN COMPLETE.

VII. DEFINITIONS

Patrol - A walking assessment of National Grid distribution facilities for the purpose of determining the condition of the facility and it's associated components.

Hand Held Computer - An electronic Data recording device that is used in the field to create a record of conditions found.

Desktop Computer – A personal computer that is connected to the National Grid network that is used to download the Hand Held device and retrieve the information in the form of reports.

Distribution Inspector – A line-qualified worker that can identify deficiencies or non-standard construction conditions on National Grid facilities.

Valid User – An individual that has been authorized to use the Transmission and Distribution maintenance program by the program administrator.

VIII. RESPONSIBILITIES:

Delivery Engineering Services

1. Update program as necessary.
2. Provide field support and training as requested.
3. Report System Maintenance progress monthly by Region.

Field Operations

1. Ensure the Maintenance Program as outlined in this NG-USA EOP 004 is implemented properly and timely.
2. Select circuits to be patrolled for a running five-year cycle.

C&MS Management

1. At the request of Field Operations obtain, schedule and manage contractors to perform inspections and perform required maintenance.

Distribution Inspector

1. Demonstrate the ability to identify maintenance concerns and the aptitude to become proficient in the use of a hand held computer and desktop computer.
2. Demonstrate the understanding and requirements of this NG-USA EOP D004.
3. Possess the ability to do walking patrols, collect information on a hand held, download to a desk top computer, edit data, provide requested information/reports/work tickets to supervision, and track/close out work completed in the database system.

Distribution Asset Strategy

1. Ensure circuits scheduled for patrol are completed each year.
2. Provide input into program revisions.
3. Provide qualified line personnel as inspectors to provide consistent and accurate identified maintenance concerns/problems.
4. Provide program management.

Process and Systems

1. Provide and support database.

T&D Technical Training

1. Provide training upon request.

IX. TRAINING:

1. Delivery Engineering Services with assistance from the database vendor will provide training on the utilization of handheld computers and the selected database.
2. Delivery Engineering Services along with the training department will provide training for the identification of A, B, C, E, and F maintenance items to the qualified employee who will be performing the inspections.

NG-USA EOP D004

"Distribution Line Patrol and Maintenance"

Revision 07/25/05

Revisions throughout this procedure.

ATTACHMENT #3

nationalgrid	Doc No.: NG-USA EOP UG006
	Page: Page 1 of 8
ELECTRIC OPERATING PROCEDURES	Date: 07/25/05
SUBJECT: Underground Inspection and Maintenance	**SECTION:** Underground

REFERENCE:

NY PSC Order 04-M-0159
Applicable National Grid Safety Rules and Procedures
Distribution Line Patrol and Maintenance NG-USA EOP D004
Elevated Equipment Voltage Testing NG USA EOP-G016
Transmission Line Patrol and Maintenance NG USA EOP – T007

GENERAL INFORMATION:

The purpose of this procedure is to outline the requirements for the patrol and maintenance activities associated with National Grid's underground transmission and distribution facilities.
The variance in inspection procedures in New York and New England service territories is due to the requirements of New York Public Service Order 04-M-0159, which is incremental to National Grid in New York.

This program is designed for the patrol and designated maintenance of underground facilities on a five year schedule. The Inspector will record all required maintenance on an approved National Grid database.

The underground distribution facility maintenance items identified through this patrol are separated into four priority categories A, B, C, and E priority. The problem codes identified default to the appropriate priority. The default priority can be adjusted by the individual performing the inspection based on actual field conditions. These priority categories are defined as follows:

A Priority - An identified facility/component that must be repaired/replaced as soon as practicable.

B Priority – An identified facility/component condition that shall be considered for repair/replacement as the feeder is scheduled for maintenance by Distribution Planning and Engineering. These identified conditions will be corrected as preventive maintenance and or facility life extension.

C Priority – An identified facility/component condition that is being trended and reviewed by Distribution Planning and Engineering that may require replacement through the engineering process (Requires project/Capital expenditures). Non-capital conditions identified under this priority will be corrected at the discretion of field operations.

E Priority – An identified facility/component that must be replaced/repaired immediately to address public safety or system reliability. The inspector shall notify the appropriate operations department for immediate response and corrective action any time an E priority is found during an inspection.

ALL "E" PRIORITY CONDITIONS SHALL BE CORRECTED IMMEDIATELY UPON NOTIFICATION.

ALL "A PRIORITY" CONDITIONS IDENTIFIED PRIOR TO NOVEMEBR 1ST MUST BE REPAIRED/CORRECTED BY NOVEMBER 3OTH.

PROGRAM ADMINISTRATOR:

Delivery Engineering Services

APPLICABILITY

This procedure applies to all personnel involved with or responsible for the inspection or maintenance of underground transmission and distribution facilities.

SCOPE:

Distribution Maintenance

I. Patrols
II. Equipment to be Inspected and Maintenance Codes
III. Maintenance database
IV. Maintenance
V. Work management
VI. Completion
VII. Definitions
VIII. Responsibilities
IX. Training

I. PATROLS

1. New York

Inspection of underground equipment will be scheduled in such a manner that each Underground Facility will be examined once every five years. These patrols shall be completed by November 30th of the schedule year.

One-fifth of all underground utility components should be inspected each year. URD and UCD facilities shall be inspected on the existing overhead distribution circuit schedule. Additionally all riser poles are inspected in accordance with the Transmission and Distribution Overhead Inspection Programs, NG-USA EOP T007 and NG-USA EOP D004. Customer owned manholes and vaults that enclose National Grid equipment shall require the inspection of these National Grid facilities.

The T&D Superintendent's are responsible to create the patrol schedule for their respective Regions for the remainder of underground facilities. The Distribution inspector uses a hand held computer to record region, district, employee ID, feeder number, structure ID number, GPS location, tax zone, line number, comments and maintenance problem codes. The Inspector while patrolling shall also complete the following maintenance codes if found deficient upon inspection:617 – manhole missing nomenclature, 639 - network transformer- missing nomenclature, 660 – switchgear missing nomenclature, 681 – transformer missing nomenclature, 707 – vaults improper nomenclature. The Inspector will input the code into the handheld as required, as well as completing the work unit in the handheld upon field completion while at the site. If the Distribution Inspector finds unmapped facilities from the information supplied from the Geographic Information System (GIS), refer to NG-USA EOP G011, Preparation and Distribution of Electric Facilities Records, for required procedure for corrections.

2. New England - Massachusetts, New Hampshire and Rhode Island

Inspection of designated underground equipment will be scheduled in such a manner that each designated Underground Facility will be examined once every five years. These patrols shall be completed by November 30th of the schedule year.

One-fifth of all metallic handhole covers, padmount transformers and switchgear shall be inspected annually. These facilities shall be opened for a visual inspection. Additionally all separable components in these facilities are to be inspected by infrared. Refer to NG-USA EOP UG001 for infrared procedure. An "E Priority" shall be assigned to a temperature gradient greater than 20°. An "A Priority" shall be assigned to a temperature gradient between 10° and 20°. A "B Priority" shall be assigned to a temperature gradient less than 10°. Additionally, an elevated equipment voltage test shall be completed at each location, refer to NG-USA EOP-G016.

A working inspection on underground facilities is required for all manholes, vaults, handholes, splice boxes, junction boxes, padmount transformers, switchgear and submersible equipment, each time a crew performs work at one of these facilities. The format for data collected shall follow this EOP. Additionally an elevated equipment voltage test shall be completed at each location, refer to NG-USA EOP-G016.

All transmission riser poles are inspected in accordance with the Transmission NG-USA EOP-T007.

The T&D Superintendent's are responsible to create the patrol schedule for their respective Regions for the designated underground facilities. The Distribution inspector uses a hand held computer to record region, district, employee ID, feeder number, structure ID number, GPS location, line number, comments and maintenance problem codes. The Inspector, while patrolling or crew while inspecting, shall also complete the following maintenance codes if found deficient upon inspection, 617 – manhole missing nomenclature, 639 - network transformer- missing nomenclature, 660 – switchgear missing nomenclature, 681 – transformer missing nomenclature, 707 – vaults improper nomenclature. The Inspector will input the code into the handheld as required, as well as completing the work unit in the handheld upon field completion while at the site. If the Distribution Inspector finds unmapped facilities from the information supplied from GIS, refer to NG-USA EOP G011, Preparation and Distribution of Electric Facilities Records, for required procedure for corrections. Crews performing working inspections are to follow the same protocol for inspections by using either a handheld data entry unit or paper inspection logs requiring data entry by clerical support.

II. EQUIPMENT TO BE INSPECTED AND MAINTENANCE CODES

This EOP requires the visual inspection of the following facilities as designated above for either New York or New England, which require opening, and may require pumping on some items to assure a proper inspection:

- Manholes
- Vaults
- Handholes – non-fiberglass
- Splice boxes
- Junction boxes
- Pad mount transformers
- Pad mount switchgears
- Submersible equipment
- Handholes – fiberglass do not require opening

Table 1 on page 4 details the Inspection Program and Maintenance Codes.

INSPECTION PROGRAM AND MAINTENANCE CODES

TABLE 1

Maintenance Code	Description	Expense or Capital	Default priority
600	Handholes - Broken/damaged/unsecured	E	B
602	Handholes - Missing nomenclature	E	C
603	Handholes - Secondary needs repair	E	B
604	Handholes – Other (use comments)	E	B
605	Infrared Inspection – Separable Components	E	B
610	Manhole - Bonded	E	B
611	Manholes - Cable/Joint leaking	E	A
612	Manholes - Cables bonded	E	B
614	Manholes - Cracked/broken	C	B
615	Manholes - Fire proofing	E	C
616	Manholes - Improper grade	E	B
617	Manholes - Missing nomenclature	E	A
620	Manholes - Rerack	E	B
621	Manholes - Ring/cover repair/replace	C	B
630	Network Protector - Barriers broken/dama	E	A
632	Network Protector - Oil leak	E	A
633	Network Protector - Worn/damaged gasket	E	A
635	Network transformer - Bushing Broken/Cra	E	B
637	Network transformer - Low oil	E	B
638	Network transformer - Missing Ground	E	A
639	Network transformer - Missing nomenclature	E	A
642	Network transformer - Oil Weeping	E	A
643	Network transformer - Rusted/ Paint peel	E	C
651	Switchgear - Barrier broken/damaged/unsecured	E	A
652	Switchgear - Base broken/damaged	C	B
654	Switchgear - Cable Not Bonded	E	A
656	Switchgear - Door Broken/Damaged	E	A
657	Switchgear – Excessive vegetation	E	C
659	Switchgear - Missing ground	E	A
660	Switchgear - Missing Nomenclature	E	A
661	Switchgear – Other	E	C
662	Switchgear - Rusted/Paint peeling	E	C
672	Transformer - Bushing Broken/Cracked	E	B
673	Transformer - Door Broken/damaged/unsecured	E	A
675	Transformer - Elbows tracking/burned	E	B
676	Transformer – Excessive vegetation	E	C
680	Transformer - Missing Ground	E	A
681	Transformer - Missing nomenclature	E	A
682	Transformer – Mud/debris	E	C
684	Transformer - Oil Weeping	E	A
685	Transformer - Pad broken/damaged	E	B
686	Transformer - Protection (ballards) damaged	C	B
687	Transformer - Rusted/ Paint peeling	E	C
690	Trench - Exposed Cable	E	A
692	Trench Path - Sunken	E	B

700	Vaults - Cable missing bond	E	A
702	Vaults - Cracked/broken	C	B
703	Vaults - Damaged/broken cover	E	B
704	Vaults - Damaged/broken door	E	B
705	Vaults - Damaged/broken ladder	E	A
706	Vaults - Improper grade	E	B
707	Vaults - Improper nomenclature	E	A
708	Vaults - Light not working	E	B
713	Vaults - Ventilation failure	E	B
720	Submersible equip. - Excess corrosion	E	C
721	Submersible equip. - Physical damage	E	C
722	Submersible equip. - Leaking	E	C
730	Anodes - Missing	E	C
731	Anodes - Need replacement	C	C

III. MAINTENANCE DATABASE

The Maintenance database consists of data downloaded from the hand held and data entered from the desktop computer. The field hand held can be downloaded to any National Grid desk top computer that is connected to the network and the inspector is logged on as a valid user of the UG Maintenance program. The National Grid desktop computer is also used to generate various reports and work tickets depending on the user's need. These reports are utilized to schedule and accomplish distribution maintenance work.

IV. MAINTENANCE

The maintenance activities are scheduled by priority categories with all "A Priority" conditions identified prior to November 1 repaired/corrected by November 30th. The "B Priority" conditions are scheduled based on the reliability of the circuit, load served, and condition of facilities. The "B Priority" maintenance is to be performed on circuits selected by Distribution Planning and Engineering, and identified in the "Energy Delivery Work Plan". All "B Priority" maintenance as outlined in the "Energy Delivery Work Plan" must be completed by November 30 of that year. The "C Priority" maintenance work will be completed as planned and directed by the Distribution Planning and Engineering department (Capital expenditures) after reviewing annually for trends that would require expenditures. All "E Priority" conditions shall be responded to immediately upon notification for correction.

V. WORK MANAGEMENT

The time recording of both patrol and maintenance activities is accomplished in the Severn Trent Operating Resource Management System (STORMS).

STORMS requires that the Distribution Inspector/Operations Personnel fill out a daily time sheet. The Distribution Inspector would record their time actually performing the foot patrol inspection of the Distribution system under the DO2105 Activity along with the appropriate work order or a work request if the patrol has been scheduled. For Transmission and Sub-transmission facilities the inspector shall utilize activity TO2100. Work orders or work request numbers can be obtained from the Operations Supervisor or from the Distribution Planning/Area Resource Coordinator (ARC).

Operations Personnel performing scheduled maintenance on the Distribution System should record their time actually performing maintenance activities under the appropriate work request number set up by their Distribution Planning/ARC in their respective area. Operations Personnel performing maintenance activities that have not been scheduled should charge the DM2105 activity along with appropriate work order number.

For Transmission and Sub-transmission utilize activity TM2100. STORMS work request numbers are created when the work has been scheduled by Distribution Planning/ARC. Work orders or work request numbers can be obtained from the Operations Supervisor or from the Distribution Planning/ARC.

VI. COMPLETION

The replacement/repair of an identified maintenance problem code after completion in the field must be updated in the database. The completion of the maintenance problem codes can be done through the edit screen found on the desktop computer. Field personnel that perform the work are required to complete the work order form providing the date completed, and employee ID number. The work order form is returned to the T&D Supervisor who will close out the completed maintenance problem codes in the database at their desk top computer or designate the inspector or clerk to perform the close out. Additional maintenance problems that may be discovered and completed by personnel must be noted on the work order ticket so they can be recorded as work completed on that specific facility.

ALL MAINTENANCE WORK PERFORMED THAT WAS IDENTIFIED ON THE WORK ORDER OR DISCOVERED DURING THE REPAIR/CORRECTION OF THE ORGINAL MAINTENANCE PROBLEM MUST BE LISTED ON THE DATABASE AND THEN CLOSED OUT WHEN COMPLETE.

VII. DEFINITIONS

Desktop Computer: A personal computer that is connected to the National Grid network and used to download the Hand Held device and retrieve the information in the form of reports.

Elevated Equipment Voltage Test: An A.C. rms voltage difference between utility equipment and the earth, or to nearby grounded facilities that exceeds the highest perceptible voltage levels for humans.

Hand Held Computer: An electronic data recording device that is used in the field to create a record of conditions found.

Hand-Hole: An enclosure identified for use in underground systems, provided with an open or closed bottom, and sized to allow personnel to reach into, but not enter, for the purpose of installing, operating, or maintaining equipment or wiring or both.

Infrared Inspection: An inspection conducted to detect abnormal heating conditions associated with separable connectors. An infrared inspection is required before work begins in an enclosed space, enclosure, padmounted transformer or padmounted switchgear.

Inspector: An underground qualified worker who can identify deficiencies or non-standard construction conditions on National Grid facilities.

Manhole: An enclosure identified for use in underground systems, provided with an open or closed bottom, and sized to allow personnel to enter, for the purpose of installing, operating, or maintaining equipment or wiring or both.

Patrol: An assessment of National Grid facilities for the purpose of determining the condition of the facility and any associated components.

Service Box: See Hand-hole

Submersible Equipment: Electric equipment such as transformers and switches that, are generally located within a Hand-hole, Manhole, or Vault.

URD: Underground Residential Distribution

UCD: Underground Commercial Distribution

Underground Distribution Facilities: Manholes, vaults, hand-holes and service boxes, padmounted equipment and the components and equipment contained in these structures. (See GENERAL INFORMATION above).

User: An individual who the program administrator has authorized to use the inspection reporting program.

Vault: An enclosure, above or below ground, which personnel may enter and which is used for the purpose of installing, operating, or maintaining equipment or wiring or both.

VIII. RESPONSIBILITIES

Delivery Engineering Services

1. Update program as necessary.
2. Provide field support and training as requested.
3. Report System Maintenance progress monthly by Region.

Field Operations

1. Ensure the Underground Maintenance Program as outlined in this EOP is implemented properly and timely.
2. Select circuits to be patrolled for a running five-year cycle and ensure that the circuits scheduled for patrol are completed each year.
3. Provide qualified personnel as the inspectors, to provide consistent and accurate identified maintenance concerns/problems.

Distribution Inspector

1. Demonstrate the ability to identify maintenance concerns and the aptitude to become proficient in the use of a hand held computer and desktop computer.
2. Demonstrate the understanding and requirements of this EOP.
3. Possess the ability to do walking patrols, collect information on a hand held, download to a desk top computer, edit data, provide requested information/reports/work tickets to supervision, and track/close out work completed in the database.

C&MS

1. At the request of Field Operations obtain, schedule and manage contractors to perform inspections and perform required maintenance.

Distribution Network Strategy

1. Provide inspectors where applicable.
2. Provide input into program revisions.
3. Provide program management.
4. Ensure program is completed annually as required.
5. Ensure inspectors are trained.

Process and Systems

1. Provide and support database.

T&D Technical Training

1. Provide training upon request.

IX. TRAINING

1. Delivery Engineering Services with assistance from the database vendor will provide training on the utilization of handheld computers and the selected database.
2. Delivery Engineering Services along with the training department will provide training for the identification of A, B, C, and E maintenance items to the qualified employee who will be performing the inspections.

NG-USA EOP UG006

"Underground Inspection and Maintenance"

07/25/05

This is a new procedure.

ATTACHMENT #4

nationalgrid ELECTRIC OPERATING PROCEDURES	**Doc No.** NG-USA EOP T007 **Page** 1 of 10 **Date** 07/25/05
SUBJECT: Transmission Line Patrol & Maintenance 23kV-345kV	**SECTION** Transmission & Distribution

REFERENCE:

NY PSC Order 04-M-0159
Applicable National Grid Safety Rules and Procedures
Elevated Equipment Voltage Testing NG-USA EOP G016

GENERAL INFORMATION:

The purpose of this procedure is to outline the requirements for the patrol and maintenance activities associated with National Grid USA Transmission circuits. The Transmission Maintenance Program is designed to address a variety of maintenance activities required to maintain a safe and reliable Transmission System. Due to the diverse service territories, system construction and voltages, National Grid will utilize the following definitions below to designate which maintenance activities in this EOP are completed in the sections discussed.

- Transmission NY 115kV and above
- Sub-transmission NY 23kV up to and including 69kV
- Transmission New England 69kV and above
- Sub-transmission New England 23kV up to and including 46kV

These patrol and maintenance activities include a ground based patrol on a five year cycle, aerial Infrared on a three year cycle, Transmission Tower footing inspection and repair on a twenty year cycle, Transmission Wood Pole Inspection and Treatment on a ten year cycle, general aerial patrols on a one year cycle, Comprehensive Helicopter Inspections as needed, and Transmission Tower Painting on a twenty year basis. Elevated Equipment Voltage testing on Transmission and Sub-transmission facilities is covered by EOP G016.

APPLICABILITY:

This procedure applies to all personnel involved with or responsible for the inspection and repair of Transmission facilities.

PROGRAM ADMINISTRATOR:

Delivery Engineering Services

SUBJECT: Transmission Line Patrol & Maintenance 23kV-345Kv **Doc. No.** NG-USA EOP T007
Date: 07/25/05

SCOPE:

Transmission Maintenance

I. Ground Based Patrol and Maintenance
II. Aerial Helicopter Patrol
III. Tower Footing Inspection and Repair
IV. Wood Pole Inspection and Treatment
V. Aerial Helicopter Infrared Patrols
VI. Comprehensive Helicopter Patrol
VII. Tower Painting
VIII. Maintenance Database
IX. Maintenance
X. Time Reporting
XI. Completion
XII. Definitions
XIII. Responsibilities
XIV. Training

I. GROUND BASED PATROL INSPECTION AND MAINTENANCE
Transmission
Sub-transmission

1. Transmission patrols are conducted by a line qualified worker that can identify hazards, deficiencies or non-standard construction conditions on National Grid facilities. The patrols are scheduled in such a manner that each transmission circuit is examined in the field once every **five** years. Any new facilities added to the system will be incorporated through our Geographic Information System and added to the appropriate inspection cycle.

The patrols are conducted by an Inspector identifying all required maintenance on a hand held computer. The maintenance items identified through this patrol are separated into five priority categories A, B, C, E and F priority. The problem codes identified default to the appropriate priority. The default priority can be adjusted by the individual performing the inspection based on actual field conditions. These priority categories are defined as follows:

A Priority - An identified facility/component or tree condition that must be repaired/replaced as soon as practicable.

B Priority – An identified facility/component condition that shall be considered for repair/replacement as the circuit is scheduled for maintenance by Transmission Asset Management. These identified conditions will be corrected as preventive maintenance and or facility life extension.
C Priority – An identified facility/component condition that is being trended and reviewed by Transmission Asset Management annually that may require replacement through the engineering process (requires project/capital expenditures). Non-capital conditions identified under this priority will be corrected at the discretion of field operations in consultation with Transmission Asset Management.

E Priority – An identified facility/component that must be replaced/repaired immediately to address public safety or system reliability. The inspector shall notify the appropriate operations department for immediate response and corrective action any time an E priority is found during an inspection.

F Priority – An identified forestry condition that should be scheduled as time permits, within the routine

right-of-way maintenance and danger tree removal schedules.

ALL "A PRIORITY" CONDITIONS IDENTIFIED PRIOR TO NOVEMBER1ST MUST BE REPAIRED/CORRECTED BY NOVEMBER 30TH

ALL "E PRIORITY" CONDITIONS SHALL BE CORRECTED IMMEDIATELY UPON NOTIFICATION

ALL "F PRIORITY" CONDITIONS IDENTIFIED DURING THE PATROL ARE TRANSMITTED TO THE SYSTEM FORESTRY GROUP ON AN ANNUAL BASIS FOR INCLUSION IN THE RIGHT-OF-WAY MAINTENANCE PROGRAM

The Transmission patrol schedule/status is created and tracked by report RPT 3100 Circuit Patrol Status. The T&D Superintendent's or Transmission Line Services management are responsible to create this schedule for their respective areas. The inspector uses a hand held computer to inspect scheduled circuits recording area, district, employee ID, circuit, pole number, GPS location, type, material make up, condition of steel/concrete, wood pole inspection year and treatment, specific pole information, maintenance problem codes and comments. The Maintenance Problem code listing is shown on the Transmission Field Survey Worksheet (Exhibit 1). The material make up screen will also include prompts for condition information when either steel or lattice is chosen. The condition rating for steel will be on a 1 to 6 scale and concrete condition will be on a 1-5 scale. These scales are as shown:

Steel Condition		Concrete Condition	
1	Serviceable	1	Serviceable
2	Intact	2	Light Deterioration
3	Light Corrosion	3	Medium Deterioration
4	Light Pitting	4	Severe Deterioration
5	Significant Pitting	5	Very Severe Deterioration
6	Very Severe Deterioration		

The Inspector, while patrolling, shall also complete maintenance codes "532 – Tower numbers missing" and "581 – stencil required", if found deficient upon inspection. For these two codes, the Inspector will input the code into the handheld as required, as well as completing the work unit in the handheld upon field completion while at the site.

The hand held computer is to be used as the primary vehicle for recording maintenance problems in the field. There will be times where it is not practicable to use the hand held computer due to unfamiliarity or access to one (example: line crew finds maintenance problem and needs to document/record). The method to be used to document/record maintenance in these situations shall be the Transmission Field Survey worksheet, Exhibit 1. This worksheet must be entered into the Transmission database through the desk top computer by inspector, clerk, or supervisor.

SUBJECT: Transmission Line Patrol & Maintenance 23kV-345Kv **Doc. No.** NG-USA EOP T007
Date: 07/25/05

EXHIBIT 1

TRANSMISSION FIELD SURVEY WORKSHEET

Patrolled Circuit/No	Unique ID	Pole/Tower No	Voltage	District
Additional Circuit/No	Unique ID			
Area	Between _____ Rd And _____ Rd	Date	Employee ID	

TYPE

A) Single B) H Frame C) 3 Pole D) 4 Pole E) 5 Pole F) 6 Pole
G) Flex-Tower H) Square-Tower I) Hairpin J) Other

MATERIAL

A) Wood (fill in information for each pole i e 2 pole, 3 pole. 4 pole, etc)

Height _____ Class _____ Year Set _____ Manufacturer _____

Year Last Treated _____ Treatment A) External B) Internal C) Both D) Other E) Unknown F) None

B) Steel C) Lattice

CONFIGURATION

Deadend Tanget Switch Structure Davit Arm Stand Off Other

STEEL/LATTICE CONDITION	(Circle One) 1 2 3 4 5 6	FOUNDATION: STEEL CONCRETE	(Circle One) 1 2 3 4 5 6 1 2 3 4 5

POLE *		Sub. No.	Priority/ QTY
510 A	BROKEN		/
511 B	VISUAL ROTTING		/
512 C	LEANING		/
513 B	REPLACE SINGLE ARMS		/
514 B	REPL DOUBLE ARM		/
515 B	REPAIR BRACES		/
516 B	REPLACE BRACES		/
517 B	REPLACE ANCHOR		/
518 B	INSTALL ANCHOR		/
519 B	REPAIR/REPLACE GUY WIRE		/
521 B	TIGHTEN GUY WIRE		/
522 B	REPLACE/INSTALL GUY SHIELD		/
524 B	GUY NOT BONDED		/
525 B	LIGHTNING DAMAGE		/
526 B	WOODPECKER DMG		/
527 B	INSECTS		/
	TOWER		
531 A	TOWER LEGS BROKEN		/
532 A	NUMBERS MISSING		/
534 B	LOOSE BOLTS/HARD		/
535 B	REPAIR ANTI-CLIMB		
536 F	VEGETATION ON TOWER		/
537 B	STRUCTURE DAMAGE		/
538 B	STRAIGHTEN TOWER		/
539 B	ARMS DAMAGED		/
* Enter Sub No. if a multiple Structure			/
** Enter Circuit No if more than circuit on pole			/
			/

CONDUCTOR **		Circuit No.	Priority/ QTY
541 B	CONDUCTOR		/
542 B	STATIC		/
543 A	GROUND WIRE		/
544 B	SLEEVE/CONN		/
545 B	RESAG		/
546 B	UNDER 25 FT.		/
	LINE HARDWARE		
551 B	INSULATORS/DAM		/
552 B	INSULATOR PLUMB		/
553 B	HARDWARE DAM		/
555 I	LIGHTING ARRESTOR		/
	FOUNDATION – GENERAL		
563 B	EROSION		/
	RIGHT OF WAY		
571 F	EROSION		/
572 F	ENCROACHMENTS		/
573 F	DEBRIS		/
574 F	DANGER TREE		/
575 F	GATE BROKE		/
576 A	OIL/GAS LEAK		/
	MISCELLANEOUS		
581 A	STENCIL STRUCTURE		/
582 B	SWITCH DAMAGED		/
583 B	DAMAGED GROUND		/
584 B	INSTALL WRNG SIGN		/
585 B	REPLACE SIGNS		/
586 B	REMOVE STEPS		/
587 B	ADD DIRT & TAMP		/

SUBJECT: Transmission Line Patrol & Maintenance 23kV-345Kv **Doc. No.** NG-USA EOP T007
Date: 07/25/05

Comments:

2. EQUIPMENT TO BE INSPECTED AND MAINTENANCE CODES

- Towers
- Poles
- Crossarms
- Insulators
- Switches
- Reclosers & Sectionalizers
- Conductor
- Grounds
- Guys
- Anchors
- Risers
- Foundations
- ROW

II. AERIAL HELICOPTER PATROL

Transmission
Sub-transmission NY

Aerial Helicopter Patrols shall be done on a one-year cycle providing for a visual examination of all Transmission lines. This patrol shall be accomplished by a line-qualified worker recording items such as broken or flashed insulators, leaning structures, broken hardware, tree conditions, ROW problems, and conductor clearance problems. Any item that is observed that might affect the operation, reliability, or safety of the general public must be reported and documented. The use of Exhibit I as a template along with a tape recorder during flight is highly recommended. Conditions/Maintenance problems identified are to be prioritized "A, B, C, E, F" as described in this procedure and must be entered into the database for scheduling and tracking. Additional guidance for tree and insulator problems is shown in Table III and IIIA.

TREE CLEARANCE
(TABLE III)

Priority A

Voltage	Vertical or Lateral Clearance
23-46 kV	4' or less
69 kV	6' or less
115 kV	10' or less
230 kV	14' or less
345 kV	18' or less

INSULATOR GUIDANCE TABLE
(TABLE IIIA)

	Number of Good Vertical Insulators in String
Priority A:	
Voltage	
115 KV	4 or less out of 7
230 KV	7 or less out of 14
345 KV	10 or less out of 17
Priority B:	
Voltage	
115 KV	5 or less out of 7
230 KV	9 or less out of 14
345 KV	12 or less out of 17
Priority C:	
Voltage	
115 KV	6 or more
230 KV	10 or more
345 KV	13 or more

III. TOWER FOOTING INSPECTION AND REPAIR
Transmission

The tower footing inspection and repair maintenance activity is scheduled for a 20-year cycle. This activity consists of excavating the tower footing a minimum of 24" below grade, cleaning the footer, visual inspection, welding or concrete repair if required, application of a protective coating, backfill and compact soil.

IV. WOOD POLE INSPECTION AND TREATMENT
Transmission

The wood pole inspection and treatment maintenance activity is scheduled for a 10-year cycle. This activity consists of excavating the base of a wood pole 18" below grade, shaving/removal of any decayed wood, measurements of the circumference, drilling, measurements for voids, evaluate pole strength per NESC requirements, treat with preservatives, plug drilled holes, backfill and compact soil and perform an overall visual inspection of the structure.

V. AREIAL HELICOPTER INFRARED PATROLS
Transmission
Sub-transmission NY

The Aerial Helicopter Infrared Patrol maintenance activity is scheduled for a 3-year cycle with bulk power circuits done yearly. This activity consists of an aerial viewing of transmission line components through a thermal imaging camera. Transmission components found with a temperature between 1 and 20 degrees Centigrade above the "reference temperature"* should be monitored for change and addressed accordingly. Components found to be greater than 20 degrees Centigrade above the "reference temperature" are to be addressed within the next year. Transmission components found to be greater than 40 degrees Centigrade above the reference temperature are to be addressed as soon as possible as system operating conditions

allow. In order to verify the location of the component identified by IR with a temperature anomaly, it is suggested that repair crews utilize a live line micro ohmmeter, such as the SensorLink Corp. Ohmstik, as a confirmation tool.

*Reference Temperature – Reference Temperature refers to the normal real time operating temperature of the conductor or apparatus, which includes all influences that create this temperature such as load, weather and condition. The thermovision camera must have the capability to accurately detect the temperature differential, in degrees C, between the "hot spot" temperature and the nearest point which reflects the expected reference temperature, so as to identify and prioritize the defects found.

VI. COMPREHENSIVE HELICOPTER PATROL
Transmission

The Comprehensive Helicopter Patrol maintenance activity is a comprehensive methodical examination of all components comprising the transmission system by helicopter. The patrol is documented on a structure by structure component based in a data format with pictures. Components that are identified as critical carry the same definitions as "A Priority" work. This type of maintenance activity is conducted on an as needed basis to identify specific problems, reliability issues, or to document condition for planned rebuilds or upgrades.

VII. TOWER PAINTING
Transmission

The Tower painting maintenance activity consists of applying a protective coating system to steel transmission structures. This activity is usually scheduled on a 20-year basis to extend the service life of the steel or meet specific aerial marking requirements per FAA regulations.

VIII. MAINTENANCE DATA BASE

The Maintenance database consists of information (data) downloaded from the hand held and information (data) entered from the desktop computer. The field hand held can be down loaded to any National Grid desk top computer that is connected to the network, and is logged on as a valid user of the T&D Maintenance program. The National Grid desktop computer is also used to generate various reports and work tickets depending on the users needs. These reports are utilized to schedule and accomplish transmission maintenance work.

IX. MAINTENANCE

The maintenance activities are scheduled by priority categories. "E Priority" requires immediate repair. All "A Priority" conditions identified prior to November 1 must be repaired/corrected by November 30th. The "B Priority" conditions are scheduled based on the reliability of the circuit, load served, Line Importance Factor, and condition of facilities. The "B Priority" maintenance is to be performed on circuits selected by Transmission Asset Management (transmission) and Distribution Network Strategy (sub-transmission) and identified in the "Energy Delivery Work Plan". All "B Priority" maintenance as outlined in the "Energy Delivery Work Plan" must be completed by November 30 of that year. The "C Priority" maintenance work will be completed as planned and directed by Transmission Asset Management and Distribution Network Strategy (Capital expenditures) after reviewing annually for trends that would require expenditures. Any "C Priority" work that is not capital expense will be completed at the discretion of the T&D Operating department in consultation with Transmission Asset Management or Distribution Network Strategy.

ALL MAINTENANCE WORK IS TO BE COMPLETED PER NATIONAL GRID STANDARDS

X. TIME REPORTING

The time recording of both patrol and maintenance activities is accomplished in the Severn Trent Operating Resource Management System (STORMS).

STORMS requires that the Transmission Inspector/Operations Personnel fill out a daily time sheet. The Transmission Inspector would record their time actually performing the foot patrol inspection of the Transmission and Sub-transmission system under the TO1160 Activity along with the appropriate work order or a work request if the patrol has been scheduled. Work orders or work request numbers can be obtained from the Operations Supervisor or from the Transmission Planning/Area Resource Coordinator (ARC).

Operations Personnel performing scheduled maintenance on the Transmission and Sub-transmission systems should record their time actually performing maintenance activities under the appropriate work request number set up by their Transmission Planning/ARC in their respective area. Operations Personnel performing maintenance activities that have not been scheduled should charge the TM1160 activity along with appropriate work order number. STORMS work request numbers are created when the work has been scheduled by Transmission Planning/ARC. Work orders or work request numbers can be obtained from the Operations Supervisor or from the Transmission Planning/ARC.

XI. COMPLETION

The replacement/repair of an identified maintenance problem code must be completed in the database upon field completion. The completion of the maintenance problem codes can be done through the edit screen found on the desktop computer. Field personnel that perform the work are required to complete the work order form providing the date completed, and employee ID number. The work order form is returned to the T&D Supervisor or Transmission Line Services Supervisor who will close out the completed maintenance problem codes in the database at their desk top computer or designate the inspector or clerk to perform the close out. Additional maintenance problems that maybe discovered and completed by personnel must be noted on the work order ticket so they can be recorded as work completed on that specific facility.

ALL MAINTENANCE WORK PREFORMED THAT WAS IDENTIFIED ON THE WORK ORDER OR DISCOVERED DURING THE REPLACEMENT/REPAIR/CORRECTION OF THE ORGINAL MAINTENANCE PROBLEM MUST BE LISTED ON THE DATABASE AND THEN CLOSED OUT WHEN COMPLETE

XII. DEFINITIONS:

Ground Based Patrol - A walking/vehicle assessment of National Grid transmission facilities for the purpose of determining the condition of the facility and its associated components.

Hand Held Computer - An electronic Data recording device that is used in the field to create a record of conditions found.

Desktop Computer – A personal computer that is connected to the National Grid network that is used to down load the Hand Held device and retrieve the information in the form of reports.

Transmission Inspector – A line-qualified worker that can identify deficiencies or non-standard construction conditions on National Grid facilities.

Aerial Infrared – Helicopter based thermographic imaging of connections and equipment.

Tower Footing – Embedded support structure that supports a Transmission tower.

Aerial Patrols – Helicopter based visual examination of Transmission facilities and equipment.

Comprehensive Helicopter Patrol – A comprehensive methodical examination of all components comprising the transmission system by helicopter.

XIII. RESPONSIBILITIES

Delivery Engineering Services
1. Update program as necessary.
2. Provide field support and training as requested.
3. Report System Maintenance progress monthly.

Field Operations/Transmission Line Services
1. Ensure the Maintenance Program as outlined in this NG-USA EOP T007 is implemented properly and timely.
2. Select circuits to be patrolled for a running five-year cycle and ensure that the circuits scheduled for patrol are completed each year.
3. Provide a qualified line personnel as the inspector, to provide consistent and accurate identified maintenance concerns/problems.

C&MS Management
1. At the request of Field Operations obtain, schedule and manage contractors to perform inspections and perform required maintenance.

Inspector
1. Demonstrate the ability to identify Transmission maintenance concerns and the aptitude to become proficient in the use of a hand held computer and desktop computer.
2. Demonstrate the understanding and requirements of this NG-USA EOP T007.
3. Possess the ability to do walking patrols, collect information on a hand held, down load to a desk top computer, edit data, provide requested information/reports/work tickets to supervision, and track/close out work completed in the database system.

Distribution Network Strategy
1. Provide input into program revisions.
2. Provide qualified personnel to complete inspection where applicable.
3. Ensure the program as outlined in this EOP is completed each year where applicable.
4. Ensure inspectors are trained where applicable.
5. Provide program management.

Process and Systems
1. Provide and support database.

T&D Technical Training

1. Provide training upon request.

Transmission Network Asset Strategy

1. Provide input into program revisions.
2. Provide schedule for Tower Footing Inspection, Wood Pole Inspection and Treatment, Aerial Helicopter Infrared Patrols, Comprehensive Helicopter Patrols, and Tower Painting.

XIV. TRAINING

1. Delivery Engineering Services with assistance from the database vendor will provide training on the utilization of handheld computers and the selected database.
2. Delivery Engineering Services along with the training department will provide training for the identification of A, B, C, E, and F maintenance items to the qualified worker who will be performing the inspections.

NG-USA EOP T007

"Transmission Line Patrol – 23kV-345Kv"

Revision 07/25/05

Supersedes EOP 211 dated 02/01/02.

ATTACHMENT #5

nationalgrid **ELECTRIC OPERATING PROCEDURES**	**Doc No.:** NG-USA EOP G017 **Page:** Page 1 of 6 **Date:** 07/25/05
SUBJECT: Street Light Standard Inspection Program	**SECTION:** General

REFERENCE:

Applicable National Grid Safety Rules and Procedures
NY PSC Order 04-M-0159
Elevated Equipment Voltage NG-USA EOP G016

GENERAL INFORMATION:

The purpose of this procedure is to outline the requirements for the inspection cycle for Street Light Standard installations owned by National Grid in New York as required by the New York Public Service Commission's "Electric Safety Standards" issued on January 5, 2005. **This procedure specifies the inspection interval and requirements for New York only.**

The inspection shall include identifying and reporting the physical condition of street lighting equipment on street lighting standards. Street lights attached to wood poles are inspected as part of the Overhead Distribution Inspection Patrol covered by NG-USA EOP D004.

All street lighting equipment will be inspected for physical damage, potentially hazardous conditions or obvious deterioration.

Inspections will be recorded on a hand held computer. The maintenance items identified during this inspection will be separated into four priority categories A, B, C, and E priority. The problem codes identified default to the appropriate priority. The default priority can be adjusted by the individual performing the inspection based on actual field conditions.
These priority categories are defined as follows:

A Priority - An identified facility/component that must be repaired/replaced as soon as practicable.

B Priority – An identified facility/component condition that shall be considered for repair/replacement as the facilities are scheduled for maintenance by Distribution Planning and Engineering. These identified conditions will be corrected as preventive maintenance and or facility life extension.

C Priority – An identified facility/component condition that is being trended and reviewed by Distribution Planning and Engineering that may require replacement through the engineering process (Requires project/Capital expenditures). Non-capital conditions identified under this priority will be corrected at the discretion of field operations.

E Priority – An identified facility/component that must be replaced/repaired immediately to address public safety or system reliability. The inspector shall notify the appropriate operations department for immediate response and corrective action any time an E priority is found during an inspection.

ALL "A PRIORITY" CONDITIONS IDENTIFIED PRIOR TO NOVEMEBR 1ST MUST BE REPAIRED/CORRECTED BY NOVEMBER 3OTH.

ALL "E PRIORITY" CONDITIONS SHALL BE CORRECTED IMMEDIATELY UPON NOTIFICATION.

Equipment will be inspected on a five year cycle such that one-fifth of the inspections should be scheduled on an established annual basis.

PROGRAM ADMINISTRATOR:

Delivery Engineering Services

APPLICABILITY

This procedure applies to all personnel involved with or responsible for the inspection and maintenance of street lighting standards and associated facilities owned by National Grid in New York.

SCOPE:

I. Patrols
II. Equipment to be Inspected and Maintenance Codes
III. Maintenance Data Base/Reports
IV. Maintenance
V. Work Management
VI. Completion
VII. Definitions
VIII. Responsibilities
IX. Training

I. PATROLS:

Street Lighting inspections will be performed as patrols and are conducted by a street light qualified worker. The patrols are scheduled in such a manner that street lighting facilities are inspected once every five years. Street Light Asset Management is responsible for creating this schedule for their respective areas. The Distribution Inspector uses a hand held computer to record employee ID, region, district, street lighting installation standard number, GPS location, Priority A, B, C and E maintenance items, and comments. The listing of these maintenance items are shown in Table I. Any new facilities added to the system will be incorporated through our Street Light Inventory Data (OLDS) and added to the appropriate inspection cycle. The street light standards inspections scheduled for the year shall be completed by November 30th. The inspector shall place the street light standard number on the facility if not found numbered during the patrol.

II. EQUIPMENT TO BE INSPECTED AND MAINTENANCE CODES:

- Luminaires
- Arms
- Standards
- Foundations
- Conductor

TABLE I

PRIORITY A, B and C MAINTENANCE ITEMS FOR OUTDOOR LIGHTING

Category	CODE	Default Priority	Description
Luminaire	300	B	Light "ON" Day
	301	B	Replace Lens
	302	C	Clean
	303	C	Paint
	304	C	Replace Wattage Label
	305	A	Wires Exposed
	306	B	Damaged - Replace
	307	I	Missing
	308	C	Other - Comments
Arm	320	B	Damaged - Replace
	321	C	Damaged - Repair
	322	C	Rust - Paint
	323	C	Other - Comments
Standard	330	B	Struct Damage - Replace
	331	C	Damaged/Leaning - Repair
	332	C	Paint/Maintenance
	333	A	Access Cover - Replace
	334	B	Bad Wiring - Repair
	335	C	Stencil Required
	336	B	Temporary Overhead
	337	A	Ground - Repair
	338	I	Knockdown/Missing
	339	C	Other - Comments
Foundation	350	B	Damaged/Leaning - Repair
	351	B	Anchor Bolts Damaged
	352	B	Elevated - Repair
	353	C	Other - Comments

Note: The default priority of "I" for missing luminaries and street light standards is utilized for informational use only. If the standard is missing or missing a street light head, the item shall be reviewed with records, if found to be a required and an active asset it shall be changed to an A priority

III. MAINTENANCE DATA BASE/REPORTS

The maintenance data base consists of records downloaded from the hand held computers and information entered from the desktop computers. The records can be downloaded to the database through any desktop computer that is connected to the network and the inspector is logged on as a valid user of the Street Light Standard Inspection program. The desktop computer is also used to generate various reports and work tickets, depending on the user's need. These reports/work tickets are utilized to schedule and accomplish distribution maintenance work.

IV. MAINTENANCE

The maintenance activities are scheduled by priority categories, with the exception of "E Priority" which requires immediate repair. All "A Priority" conditions identified prior to November 1 repaired/corrected by November 30th. The "B Priority" conditions are scheduled based on the reliability of the circuit, and age of facilities. The "B Priority" maintenance is to be performed as selected by Distribution Planning and Engineering and identified in the "Energy Delivery Work Plan". All "B Priority" maintenance as outlined in the "Energy Delivery Work Plan" must be completed by November 30 of that year. The "C Priority" maintenance work will be completed as planned and directed by the Distribution Planning and Engineering department and Street Light Asset Management (Capital expenditures) after reviewing annually for trends that would require expenditures. Any "C Priority" work that is not capital expense will be completed at the discretion of the T&D operating department.

V. WORK MANAGEMENT

The time recording of both patrol and maintenance activities is accomplished in the Severn Trent Operating Resource Management System (STORMS).

STORMS requires that the Distribution Inspector/Operations Personnel fill out a daily time sheet. The Distribution Inspector would record their time actually performing the foot patrol inspection of the Distribution system under the DO4025 Activity along with the appropriate work order or a work request if the patrol has been scheduled. Work orders or work request numbers can be obtained from the Operations Supervisor or from the Distribution Planning/Area Resource Coordinator (ARC).

Operations Personnel performing scheduled maintenance on the Distribution System should record their time actually performing maintenance activities under the appropriate work request number set up by their Distribution Planning/ARC in their respective area. Operations Personnel performing maintenance activities that have been not been scheduled should charge the DM4025 activity along with appropriate work order number. STORMS work request numbers are created when the work has been scheduled by Distribution Planning/ARC. Work orders or work request numbers can be obtained from the Operations Supervisor or from the Distribution Planning/ARC.

VI. COMPLETION

The repair/correction of an identified maintenance item must be reported in the database. This reporting can be done through the edit screen found on the desktop computer. Field personnel that perform the repair/correction are required to complete the work order form providing the date completed, and employee ID number. The work order form is returned to the T&D Supervisor who will report the completed maintenance items in the database at their desktop computer, or designate the distribution inspector or a clerk to perform the reporting. Additional maintenance items, not in the database, that may be discovered and completed by personnel must be noted on the work order ticket so they can be recorded as work completed on that specific facility.

ALL MAINTENANCE WORK PERFORMED THAT WAS IDENTIFIED ON THE WORK ORDER OR DISCOVERED DURING THE REPAIR/CORRECTION OF THE ORIGINAL MAINTENANCE ITEM MUST BE LISTED IN THE DATABASE AND THEN REPORTED WHEN COMPLETE.

VIII. DEFINITIONS

Patrol – A walking assessment of distribution facilities for the purpose of determining the condition of the facility and it's associated components.

Hand Held Computer – A portable, self-contained electronic data recording device used to create a record of conditions found in the field.

Distribution Inspector – A street light qualified employee who can identify deficiencies, or non-standard construction conditions, on the Company's distribution facilities.

Valid User – An individual who has been authorized to use the Street Lighting Maintenance Program by the Program Administrator.

Street Light Standard – A metallic or fiberglass pole which supports street lighting luminaire(s) and associated wiring.

IX. RESPONSIBILITIES

Delivery Engineering Services

1. Update program as necessary
2. Provide field support and training as requested.
3. Report System Maintenance progress monthly by Region.

Field Operations

1. Provide qualified personnel as the distribution inspectors, to provide consistent and accurate data or to contact C&MS for contracting where applicable.

Distribution Inspector

1. Demonstrate the ability to identify maintenance items and the aptitude to become proficient in the use of a hand held computer and desktop computer.
2. Demonstrate the understanding and requirements of this National Grid EOP.
3. Possess the ability to do patrols, collect information on a hand held, down load to a desktop computer, edit data, provide requested information/reports/work tickets to supervision, and track/close out work completed in the database.

C&MS

1. At the request of Field Operations/Distribution Network Strategy obtain, schedule and manage contractors to perform inspections and perform required maintenance.

Street Light Asset Management

1. To develop a five-year inspection schedule of all facilities covered by this EOP.

Distribution Network Strategy

1. Provide input into program revisions.
2. Ensure the program as outlined in this EOP is completed each year.
3. Provide qualified personnel to inspect where applicable.
4. Ensure all inspectors have been trained.
5. Provide program management.

Process and Systems

1. Provide and support database.

T&D Technical Training

1. Provide training upon request.

VII. TRAINING

1. Delivery Engineering Services with assistance from the database vendor will provide training on the utilization of handheld computers and the selected database.
2. Delivery Engineering Services along with the training department will provide training for the identification of A, B, C and E maintenance items to the qualified worker who will be performing the inspections.

NG-USA EOP G017

"Street Light Standard Inspection Program"

07/25/05

This is a new procedure.

ATTACHMENT #6

Substation V&O Inspection Standard

Introduction

Substation Inspection or Visual and Operational (V&O) Inspection of each Substation and Switchyard is a key element in the National Grid USA preventive maintenance program. V&O Inspections are performed with the apparatus in service and are designed to detect abnormal conditions before the apparatus is damaged or a customer outage occurs. Data collected during the V&O Inspection is one of the elements used by MPS to prioritize individual apparatus for complete and diagnostic inspections.

Schedule

Each transmission and distribution substation will have a V&O Inspection at least bimonthly. Major transmission substations and generation switchyards will be inspected at least monthly.

V&O Guidelines

To provide uniform and effective V&O Inspections throughout National Grid, the EOP Book should be referenced for detailed information on the inspection of each type of apparatus. Some of the typical items to be checked include: air, hydraulic and gas pressures, operation counters, oil levels and temperatures, and visual condition.

The station should be inspected for cracked or broken line terminators, bus supports and post insulators, heat discolored wire and wire terminations and blown surge arresters. All fuses and disconnects should be checked for proper seating and heat discoloration.

Alarm and communication radios operation should be verified. The telephones are checked for proper operation.

Station Service secondary supplies should be checked alive and transfer switches checked for correct position.

Structures and foundations should be inspected for deterioration, damage and paint condition.

Substation security measures must be checked for proper operation and signs of unauthorized entry. This includes: fencing, gates, warning signs, entry alarms, locks and chains.

General substation housekeeping should also be taken care of at this time.

Substation Fence – Test for stray voltage at the point of entry. Class 2 rubber gloves are required until the fence is tested clear of stray voltage. If a stray voltage condition is found and verified by the Test Procedure in EOP 211D Section III, the site is to be guarded until made safe by Company personnel or if municipally owned, made safe by the owner or company. Guarded for the purposes of this EOP is defined as guarded by a person if the stray voltage found is greater than 8 volts. If the stray voltage measures less than 8 volts it can be guarded either in person or by a protective barrier that prevents public contact. It is expected that sound judgment shall be utilized in this application. Reference EOP 211D Stray Voltage Testing.

SUBSTATION - V & O INSPECTION PROCEDURE

PURPOSE

The following procedure describes how to properly complete a Substation - V&O Inspection, using the computer generated Substation - V&O Inspection Report and Checklist.

V&O (Visual and Operational) Inspection of each Substation and Switchyard is a key element in the National Grid USA (N-Grid) preventive maintenance program. V&O Inspections are performed with the apparatus in service and are designed to detect abnormal conditions before the apparatus is damaged or a customer outage occurs. Data collected during the V&O Inspection is one of the items used by MPS to prioritize individual apparatus for inspections.

This procedure is based on the philosophy that a crew consisting of two persons will be utilized to perform the V&O Inspection and in conjunction with the inspection minor problems will be repaired as they are found. One person may perform this procedure alone, however no repair work can be done.

PROCEDURE CONTENTS

Page

1.0 Safety and Entering Property 2
2.0 Report Heading 2
3.0 Control House 3
4.0 Battery & Charger 7
5.0 Security Inspection 9
6.0 Yard Inspection 10
7.0 Circuit Breakers & Reclosers 11
8.0 Voltage Regulators & LTC's 15
9.0 Transformers 17
10.0 Capacitors 19
11.0 Surge Arresters 21
12.0 Motor Operated Disconnect and Circuit Switchers 21
13.0 Miscellaneous Apparatus 22
14.0 Final Checklist 23

APPENDIX

A. Required Tools and Equipment 24
B. Trouble Reporting 26
C. Oil Leak Reporting 28
D. Substation - V&O Inspection Report EMS-FRM-00.1
E. Substation - V&O Inspection Checklist EMS-FRM-00.1.1

SUBSTATION - V & O INSPECTION PROCEDURE

PROCEDURE

1.0 Safety and Entering Property

1.1 Lower Antenna on Vehicle.

The Safety Manual [1301C] requires before entering a substation or switchyard care shall be taken to see that the antenna is well clear of any conductors or equipment with which it may come in contact.

1.2 Wear Hard Hat and Safety Glasses.

The Safety Manual [403(A) & 404(A)(B)] requires the use of class B head protection (hard hats) and eye protection at all times where electrical, mechanical or structural work is being performed, or where hazard of injury to the head or eyes exists.

1.3 Test the Substation Fence – Test for stray voltage at the point of entry. Class 2 rubber gloves are required until the fence is tested clear of stray voltage. If a stray voltage condition is found and verified by the Test Procedure in Section III, the site is to be guarded until made safe by Company personnel or if municipally owned, made safe by the owner or company. Guarded for the purposes of this EOP is defined as guarded by a person if the stray voltage found is greater than 8 volts. If the stray voltage measures less than 8 volts it can be guarded either in person or by a protective barrier that prevents public contact. It is expected that sound judgment shall be utilized in this application.

1.4 Check Yard - Quick inspection for anything broken, vandalized, grounds cut or removed, noises, fence condition, gates, locks, warning signs, alarms.

1.5 Notify the Control Authority - Inform them of the V&O Inspection and of alarm testing.

a) The Safety Manual - Sections [1301(A) and 1302(A)] requires that the person in charge of the station and the Control Authority be notified of any work within the station.

b) Ask Control Authority if any equipment has been tagged out or relays blocked.

1.6 Review Lists - Check for Approved Apparatus Lists, Ungrounded Apparatus Lists, and Energized Apparatus Lists.

2.0 Report Heading

Fill out top of both sides of the Substation - V&O Inspection Report and top of the Checklist.

SUBSTATION - V & O INSPECTION PROCEDURE

During the V&O Inspection all abnormal conditions should be marked in red pen or pencil, this includes check blocks. Abnormal check blocks should also be explained under remarks. Check that job order number has been entered.

2.1 Substation – Verify that the complete name and number of the substation being inspected has been entered.

2.2 Inspected by - Fill the names of the person or persons performing the inspection.

2.3 Sheet - Number each sheet used in the inspection and put the total pages used for the station on all sheets.

2.4 Date - Fill in date of V&O Inspection.

2.5 Time - Record starting time of inspection including am/pm. The time helps coordinate the information and its meaning.

2.6 Ambient Temperature - Record the general outside temperature. The temperature is required for gas circuit breakers and power transformers.

2.7 Control House Temperature - Record the inside control house temperature.

3.0 Control House

3.1 Station Log Book -

a) Enter the date, time and employee names who are performing the V&O Inspection.

b) Check the Station Log Book for abnormal conditions that can be corrected during the V&O Inspection.

c) After the V&O Inspection, record in the Log Book, with red pen, all abnormal problems found, corrected or not.

Note: Record in red pen anything abnormal and notify supervisor of major problems.

3.2 Control Panels -

a) Indicating Lights - Check that the indicating lights are working on the Control Board. Check the available stock of spare bulbs; stock as necessary.

b) Inspect rear of Control boards for any signs of overheating, burned wiring, moisture, etc.

c) Noises - Listen for any unusual noises from relays, modules, RAPRs, timer circuits.

d) Relay Targets - (for control panel mounted relays)

SUBSTATION - V & O INSPECTION PROCEDURE

1) Check for relay targets or alarms on the control boards.

2) Record targets and alarms on the V&O Report with the apparatus affected and in Log Book. Be sure to indicate Dispatcher Designation, phase and type of relays or alarm descriptions.

3) Reset and report relay targets and alarms to the Control Authority and supervisor.

If relays are located in breaker cabinet, this should be done during the Breaker Inspection (7.4).

e) Reclosing Relay - Check that reclosing relay and/or switch is in the normal position and that the relay is in the start or zero position.

1) If blocked with a DO NOT OPERATE tag, currently dated. Note, but leave blocked.

2) If blocked without a tag or with an out dated tag, notify the control authority and/or supervisor.

f) Ground Trip - Check that ground trip switch is normal position.

1) If blocked with a DO NOT OPERATE tag, currently dated. Note, but leave blocked.

2) If blocked without a tag or with an out dated tag, notify the control authority and/or supervisor.

3.3 Annunciator and Test Switches -

a) Annuciator panel

1) Move toggle switches, that are not tagged, to the test position to check lights (this will send an alarm to dispatch).

2) To clear trouble condition, turn the toggle switch to the reset position.

3) Leave toggle switches in the on position.

4) Any switches found in the off position or tagged, check with supervisor before testing.

b) Test Switches

1) Check for alarm light. If on, continue with steps 2 and 3.

2) Open knife blades one by one and leave open until the light goes out and the alarm clears.

SUBSTATION - V & O INSPECTION PROCEDURE

3) Now close the other knife switches just opened, checking for alarm indications. Operating the knife switches does not reset this type of alarm system. The light only stays out when the condition has cleared.

3.4 Station Alarms -

a) Inspect condition of radio system for damage, and proper operation.

b) Send a test alarm to control authority for general alarm check of all points.

c) Make sure door is closed so the receiver for voice communication will be disabled.

3.5 Tags and Switching Order Pads -

a) Check the available stock of Operating Tags, stock as necessary.

RED Tags

BLUE Tags (if required)

DO NOT OPERATE Tags

Grounding Device Identification Tickets

b) Check the stock of Switching Order Pads, stock as necessary.

c) Check that pens (red and blue/black) and pencils are available, stock as necessary.

3.6 Lighting -

a) Inspect lighting in control house, replace any burned out bulbs. Record if Ballasts or sockets are needed.

b) Test emergency lighting.

3.7 Heaters - Inspect heaters and thermostats for proper operation. Make sure fans are not broken or bound up and they are in good working order.

3.8 Station Service and Transfer Switch -

a) Transfer Switch - Check transfer switch to be on preferred supply and any signs of trouble or overheating.

b) Preferred Voltage - Check and record secondary supply voltages at transfer panel.

SUBSTATION - V & O INSPECTION PROCEDURE

c) Emergency Voltage - Check and record secondary supply voltages at transfer panel.

d) AC and DC Panels - Check that switches or circuit breakers are in the proper position.

3.9 Heavy Duty Station Grounds -

a) Check that 4/0 grounds in station are in sets of 3 and that they are hung up properly.

b) Check that the equipment end and jug handle clamps are in good working order. Lubricate as required.

c) Check that the insulation is not cracked or cut and that none of the conductor strands are broken.

d) Replace or repair damaged protective grounds. Do Not leave damaged grounds at the station.

3.10 Switch Sticks -

a) Inspect Switch Sticks and Grounding Sticks for damage and proper operation.

b) Switch Sticks and Grounding Sticks should be stored properly and cleaned if necessary.

3.11 Fire Equipment -

a) Inspect fire extinguishers to be properly stored in their marked locations. Update inspection cards.

b) Note any out of date fire extinguishers on the V&O Report for future replacement.

c) The Safety Manual [115(D)] requires discharged fire extinguishers to be reported to the appropriate supervisor for recharging. Under no circumstances shall a discharged or partially discharged fire extinguisher be left at a substation.

3.12 SPCC Plan Posted - (if an SPCC Location)

a) Check that the notification list is posted.

b) Check that the SPCC Plan is available at the substation.

3.13 SPCC Equipment Checklist - (if an SPCC Location)

SUBSTATION - V & O INSPECTION PROCEDURE

Check that oil spill clean-up equipment is available and in good condition.

3.14 Phone Lists Updates - Check that local area cards and Control Authority cards are updated and posted to ensure that phone numbers are available for switching and trouble calls. Check that the emergency telephone list is correct and posted at each telephone location.

3.15 Clean and General Condition -

a) Clean control house floors, facilities, empty wastebaskets and dust switch board.

b) Inspect for water leaks in roof and walls.

c) Check for signs of animal entry into control house.

d) Re-install panel or cabinet covers, which may have been removed during maintenance, or trouble.

e) Put on yard lights, so they can be checked during the Yard Inspection.

4.0 Battery & Charger

Safety - The Safety Manual [1306(D)] Personal protective equipment needed: safety glasses, face shield, acid resistant gloves and apron.

Note: The Safety Manual [1306(A)] Do not smoke or introduce any flames or sparks near the battery area.

4.1 Reference Number or Designation – Verify that the proper designation of battery and charger shown in this column, such as #1 Battery, NEPCo Battery or the N-Grid Reference Number assigned matches the equipment in the field. Some stations have more than one battery and charger in the control house or other locations.

4.2 Voltage Rating – Record or verify voltage rating of the battery bank. This is another way to determine which battery is being inspected.

4.3 Pilot Cell -

a) Cell Number - Check and record the cell number of the pilot cell.

b) Temperature - Check and record the temperature of pilot cell. This represents the battery temperature.

c) Specific Gravity - Check and record specific gravity of pilot cell. Never add water before taking specific gravity readings.

SUBSTATION - V & O INSPECTION PROCEDURE

d) Volts - Check and record pilot cell voltage.

4.4 Charger -

a) Load Amps - Check and record constant load amps on charger ammeter.

b) Float Voltage - Check and record float voltage on charger voltmeter. If the float voltage is above or below the required value, it should be adjusted and noted on the V&O Report.

4.5 Grounds - Check and record voltage to ground indicators on charger in positive and in negative direction. Any severe grounds should be investigated and recorded in red pen in the log book and on the V&O Report.

4.6 Overall -

a) Volts -

1) Turn off charger's AC supply. Wait for 2 minutes.

2) Check and record the over-all battery voltage.

3) Turn on charger's AC supply and make check of it's operation.

b) Liquid Level - Check each cell for proper electrolyte level. The proper amount is between high and low level marks on the battery. Add distilled water to each cell that is low. Record the total amount of distilled water added to the battery.

4.7 Equalize charge - If water was added or specific gravity of pilot cell was low, the battery should be equalized for 24 hours.

Note: Charger should be checked the following day to see if cycle was completed and battery came up to proper voltage and charger return to float level.

4.8 Checklist -

a) No Smoking Sign - Check that a No Smoking sign is in the vicinity of battery area. If not, signs should be ordered.

b) Eye Wash Bottle - Check that an Eye wash bottle is located in the vicinity of batteries. Check that the bottle is unopened and that the expiration date is not expired. (three years from date on bottle) Replace if necessary.

c) Vent Caps/Arresters - Check that the vent caps or flame arresters and dust caps are properly installed and are clean and dry.

SUBSTATION - V & O INSPECTION PROCEDURE

d) Connections - Check each terminal posts for any corrosion, dirt, moisture or accumulation of power. Clean as necessary. Observe electrical connections of each cell, looking for discoloration, pitting, or burn marks. Gently tug on each connection to ensure tightness.

e) Plates Buckling - Check for excessive buckling or bending of the plates or separator material.

f) Sediment - Check for excessive sediment laying in the bottom of the battery container or wedged between the plates and walls of the container.

g) Rack and Paint Condition - Notice the general condition of rack and nearby walls and floor. Look for dirt, moisture, and corrosive stains from battery. Also, check painted finish on both rack and floor.

h) Grounding - Inspect grounding of charger and battery rack.

i) Leakage - Check for any leakage of electrolyte on floors, batteries, rack or walls. Neutralize and wipe up area of floors and tops of batteries, if necessary.

4.9 Remarks - List remarks if any.

5.0 Security Inspection

5.1 Vandalism - Switchyards and substations are enclosed by security fences and walls, which protect people and wildlife from the electrical hazards inside. For security purposes, walk the perimeter fence, inspecting for any signs of damage or signs of vandalism.

Security problems will be corrected and reported immediately to supervisor.

5.2 Fence and Barbed Wire -

a) Barbed Wire - Inspect the barbed wire strands to be intact and tight. Repair and record any abnormal condition.

b) Fabric - Inspect for holes or breaks in the chain link. Make the fence secure before leaving substation. Repair and record any abnormal condition.

c) Ties - Inspect for loose or missing fence tie wires. Tighten or replace any ties found to have a problems.

d) Erosions - Inspect the area along the fence for signs of erosion or digging under the fence. Space below fence should be less than 3 inches.

e) Grounding - Inspect ground conductor and connection to be intact and connected to every other fence post. Posts on both sides of gates should be grounded also.

f) Posts - Inspect post to be sound and not rusted through at ground level. Check that the post has not been raised by frost.

5.3 Gates - Check gates for proper operation. Gates should swing easily out of the way. When closed, the gates should meet in the middle with minimal space and should be secured with lock and chain. Both gate posts should be grounded. Make required repairs or adjustments.

5.4 Gate Locks and Chains - Check to see that all gate locks operate properly. Chain should be made-up as tight as possible, not allowing entrance between gates. Replace any poor operating lock with new W.B. lock. Check control house door locks to be operational.

5.5 Warning Signs - Check for proper "Danger High Voltage" warning signs every 50 feet along perimeter of fence, on gates and on non-hinged side of gate. (see N-Grid Standard #0105)

5.6 Yard Lights - Check all yard lights for proper operation. (Yard lights should have been turned on during control house inspection.) Repair broken bulbs, glass fixtures, spot light heads, or other lighting that needs attention.

If work can not be completed safely while maintaining safe work clearances or if special equipment such as a bucket truck is needed, note requirements on the V&O report.

Yard Lighting is important for responding to night time trouble or for emergency maintenance work that may be required.

5.7 Vegetation - Check for any growth of vegetation in fence and gate area. Record, so the Arborist can be notified to have it removed or sprayed.

6.0 Yard Inspection

These checks are to identify problems and initiate corrective procedures. This check actually begins at the entrance to the substation switchyard and is to verify that all equipment is in good order

6.1 Checklist -

a) All Porcelain - Check visually for any broken or chipped skirts, carbon traces or flashed over insulators and general deterioration, dirt accumulation on exterior surfaces of porcelain.

Broken or damaged insulators should be recorded on V&O Report.

Broken porcelain should be picked up off the ground.

b) Noises - Upon walking through yard, note any unusual noises in the substation. Record on V&O Report.

SUBSTATION - V & O INSPECTION PROCEDURE

c) Ground Connections - Check visually throughout the V&O Inspections for any cut, broken or missing ground connections to structures or guy wires. Static wires are inspected at this time and any abnormalities should be noted.

d) Evidence of Heating - Check for any signs of damage to equipment, or heating of disconnects, bushings connections, bus supports, structures and any flashovers.

Note: Rain usually does most of the required cleaning of insulators, but substations near generating plants or industry may require cleaning of insulators. Scheduled when out of service and should be noted.

e) Disconnects, Switches, Fuses - Check visually for signs of overheating, discoloring, pitting, improper alignment, broken operating rods and linkage, ground connections, fuse indicators, cleanliness, carbon traces, support insulators and proper grounding of switch handle.

f) Station Service Transformers

1) Oil Leaks - Check for oil leaks on transformer tank, bushings and the ground.

2) Bushing - Check for broken, overheated or discolored bushings.

3) Fuses - Check visually fuses on primary of transformers.

4) Output Voltage - Check and record secondary output voltage with Multimeter. (if not recorded previously during control house checks)

g) Paint Condition - Check overall paint condition of the buildings and the structures. Record equipment needing attention.

h) Clean and General Conditions - Clean up substation yard of trash or general debris left around. If area requires major clean up or crushed stone requires leveling, note on V&O Report.

7.0 Circuit Breakers & Reclosers

7.1 Circuit Designation - Check circuit breaker to be labeled properly and verify circuit designation as shown on V&O inspection form.

7.2 Previous Date and Counter Reading – Shows date and counter reading from last recorded V&O inspection.

7.3 Counter - Check and record operations counter on breaker mechanism. Update counter card assigned to breaker.

7.4 Faults – List how many fault operations since last V&O inspection.

7.5 Relays and Targets - (for breaker cabinet mounted relays)

SUBSTATION - V & O INSPECTION PROCEDURE

a) Relay Targets - Check and record breaker relay targets on the counter card and V&O Report. Reset targets. At completion of the V&O Inspection, record targets in Log Book and report them to control authority and supervision.

Be sure to indicate Dispatcher Designation, phase and type of relays or alarm descriptions.

If relays are located in control house, this should have been previously done during the Control House Inspection (3.2b).

b) Reclosing Relay - Check that reclosing relay or switch is in the normal position and that the relay is in the start or zero position.

1) If blocked with a DO NOT OPERATE tag, currently dated. Note, but leave blocked.

2) If blocked without a tag or with an out dated tag, notify the control authority and/or supervisor.

c) Ground Trip - Check that ground trip switch is normal position.

1) If blocked with a DO NOT OPERATE tag, currently dated. Note, but leave blocked.

2) If blocked without a tag or with an out dated tag, notify the control authority and/or supervisor.

7.5 Indicating Lights - Check and record that the indicating lights are working in the Breaker Control Cabinet.

7.6 Previous Recloser Battery Voltage – Shows recloser battery voltage from last recorded V&O inspection.

7.7 Reclosers Battery Check -

Perform load test on recloser control battery. Record D.C. voltage before and during the test. The voltage swing should be no more than three volts and the voltage level should be above 23 volts.

Fully charged batteries will normally read 26 to 28 volts.

Refer to field testing battery write-up and change battery write-up.

7.8 Air Compressor -

Any oil or moisture should be wiped down inside cabinet at this time to check where leaks are coming from.

a) Cut-In - Drain down air receiver tank slowly to remove any accumulated moisture. Drain until compressor starts and record cut-in pressure.

SUBSTATION - V & O INSPECTION PROCEDURE

Note:	If all of the moisture is not removed, before the compressor starts, let the compressor build pressure and stop before continuing to drain. This will prevent the possible tripping of some breakers or the sending of additional alarms.
Note:	If the temperature is below 40°F do not perform blow down, because the valve may freeze.

b) Cut-Out - Record cut-out pressure when compressor stops.

c) Previous Hours – Shows compressor operating hours from last V&O inspection.

d) Hours - Record compressor operating hours.

e) Oil Level - Check the compressor oil level with the compressor stopped.

f) Checklist - (Air Compressor)

1) V-Belts - Check for any broken, cracked or loose belts. If the belt needs to tighten, be sure not to over tighten because this will cause excessive strain on the motor and compressor bearings. (**WARNING - deenergize motor before adjusting belts.**)

2) Compressor Motor - Make sure the motor frame is not loose. The motor should be checked for noises and over heating during the cut in and cut out pressure checks.

3) Air Filters - Check the condition of air filters associated with the air compressor system. Clean or replace as necessary.

4) Gaskets - Check to see if any gaskets are leaking oil or air when the compressor is running.

5) Valves - Listen for any leaks from valves.

7.9 Hydraulic -

Any oil or moisture should be wiped from inside cabinet at this time to check where the leaks are coming from.

a) Cut-In - Transfer hydraulic fluid from high pressure to receiver tank slowly until pump starts and record cut in pressure.

b) Cut-Out - Record cut-out pressure when pump stops.

c) Previous Hours – Shows the pumps operating hours from last V&O inspection.

d) Hours - Record the pumps operating hours.

SUBSTATION - V & O INSPECTION PROCEDURE

e) Oil Level - Check and record the hydraulic fluid level in sight gauge. The fluid should be visible in the lower end of the sight gauge at all times.

f) Checklist - (Hydraulic)

1) Gaskets - Check to see if any oil is leaking out the gaskets.

2) Tubing/Fittings - Check for oil leaks in tubing and fittings.

3) Accumulator - Check for leaks and any indication of damage.

7.10 Oil (Oil Circuit Breaker/Recloser) -

a) Level - Check and record breaker oil level and indicate which phase, if any are low.

b) Leaks - Check and record any leaks on the bushings, tanks, door covers or valves. Clean any leak that can be done safely and report as described in the Leak Section. (Appendix C)

7.11 Gas (Gas Circuit Breakers) -

a) Pressure - Check and record gas pressure.

b) Temperature - Check and record gas/ambient temperatures.

c) Normal - Check pressure versus temperature chart and record normal fill pressure for ambient temperature. Note if the breaker gas pressure is abnormal.

7.12 Checklist (Circuit Breaker) -

a) Bushing Damage - Check for any damage to bushings from ground level. Determine if any broken glass, pitting, flash over, overheating, chipping, or cracks need to be reported. If needed, inspect with binoculars.

b) Bushing Oil Level - Check each bushing oil level to be at normal levels.

c) Position Indicator - Check that position indicator agrees with breaker position (open or closed).

d) Spring charged - Check that the charging springs are charged for the operating mechanism of the breaker.

e) Painted Surfaces - Check conditions of painted areas. Note areas where there is rust or corrosion which needs repair.

f) Reclosing Relay – see section 7.3 (b)

SUBSTATION - V & O INSPECTION PROCEDURE

g) Noise - Check and report unusual noises from the mechanism, air compressor or miscellaneous equipment of breaker.

h) Control Fuses - Check control and heater circuits for voltage to prove fuses are not blown.

i) Moisture - Check for signs of moisture and animal entry in control cubicles. Inspect weatherproofing and cabinets for leaks.

j) Cabinet Vents (air) - Check vents in doors and cabinet are not blocked and air filters are clean.

k) Cabinet Heater - Check thermostats and heaters are in proper working order. Heater control switches are in the "ON" position during the required season.

Vacuum Beakers and Reclosers - Check the heat is on for primary cabinet. For VSA Reclosers the underside of the tank can be felt.

l) Foundation - Inspect for any erosion, cracking or cement broken away indicating weakness. Inspect breaker leads expansion joints for signs of over extension.

7.13 Remarks - List remarks if any.

8.0 Voltage Regulators & L.T.C.

8.1 Circuit Designation - Check regulators to be properly labeled and verify circuit designation as shown on V&O inspection form. If an LTC, describe as LTC of transformer. (i.e. LTC #1Trf)

8.2 Phase Designation - Verify phase designation as shown on V&O inspection form.

Note: Keep legal clearance from all energized parts.

8.3 Reference Number - Verify voltage regulator or LTC reference number as shown on V&O inspection form.

8.4 Previous Date and Counter Reading – Shows date and counter reading from last recorded V&O inspection.

8.5 Counter - Check and record operations counter.

8.6 Position Indicator -

a) Minimum, Present and Maximum - Check and record drag hands on the position indicator.

b) Reset - Reset minimum and maximum drag hands.

SUBSTATION - V & O INSPECTION PROCEDURE

8.7 Volts - Check and record voltage across terminals marked output voltage with multimeter.

8.8 Load Management 2.5% (5%)Check - Perform load management test by:

a) Placing the remote/local switch to local control

b) Turn the selector switch to 2.5% (5%) position or position #1 on G.E. regulators.

c) Observe the regulators operation. Note if regulator does not step in the lower direction or the counter does not operate.

d) Place controls in normal operating position.

e) Observe the regulators operation in the raise direction.

f) Reset drag hands.

8.9 Oil -

a) Oil Level - Check and record oil level in sight glass.

b) Oil Color - Check and record oil color in sight glass. This indicates signs of overheating, burning, high carbon content or internal problems.

c) Leaks - Check for any leaks from tank, valve or breather system. Clean any leak that can be done safely and report as described in the Leak Section. (Appendix C)

8.10 Checklist -

a) Bushing Damage - Inspect all bushings for cracks, breakage or chipping. Check connections for signs of overheating.

Note: Keep legal clearance from all energized parts.

b) Tank Grounds - Check that all ground connections are properly connected and are not cut or broken.

c) Noise - Check for abnormal noise in operation of voltage regulator during V&O Inspection checks.

d) Cabinet Vents (air) - Check and clean any cabinets vents that might be blocked by papers, duct seal, etc. and if needed order new screens to prevent bees from entering cabinets.

e) Arresters - Check external by-pass arrester for discolor, signs of overheating or blown. If arrester is blown, regulator should be turned off in place. Notify Supervisor immediately.

SUBSTATION - V & O INSPECTION PROCEDURE

f) Breather - Breather at bottom of regulator tank should be checked to verify that it is not plugged so circulation of air will go through regulator and out upper breather to prevent condensation and keeps walls dry and free from rust.

8.9 LTC's with Vacuum bottles (GE LRT 200) - Test protective circuit as follows.

a) If red fault light on control panel is not lit (this is the normal condition).

1) Hold test switch on panel in the test position.

2) Place control switch to the raise position.

3) If the protective system is functioning properly. The drive motor will raise, then lower it self momentarily. At this point the red fault light will light and lock out the controls. Check by operating in the raise and lower directions, no movement should occur.

4) Press reset switch

5) Repeat the test placing the control switch in the lower position. The protective system should function the same as in step 3.

6) Press reset switch and repeat test in lower direction.

7) If any steps fail contact supervisor.

b) If red fault light on control panel is lit.

1) Reset alarm light

2) Place control switch in the raise position.

3) If mechanism successfully completes tap change leave control in the normal position.

4) If Red fault light comes on, place controls in the off position and contact supervisor.

8.10 Remarks - List remarks if any.

9.0 Transformers

9.1 Circuit Designation - Check transformer to be labeled properly and verify circuit and phase designation as shown on V&O inspection form. LTC information is recorded with voltage regulators.

9.2 Nitrogen Pressures (gas checks) -

SUBSTATION - V & O INSPECTION PROCEDURE

a) Cylinder (Blanketed System) - Check and record nitrogen cylinder pressure on transformer gas system. Cylinder should be changed if pressure is 200 lbs. or less.

b) Transformer - Check and record nitrogen pressure in transformer from gas pressure indicator gauge.

1. Blanketed System - Pressure should be between .5 and 5 lbs. in positive direction. This positive pressure is controlled by a combination of a pressure regulator and relief devices.

2. Sealed Tank Systems - Pressure in this type of system can vary from positive 5 lbs. to negative 5 lbs. and is kept between those values by a vacuum/pressure device. If the pressure is below 1 lb., gas can be added to the system. If there is a leak in the system, lost gas will be made up by air and the leak will go undetected.

3. Gas/Oil Sealed Systems - Pressure should be 1.5 lbs. to 3 lbs. positive. The pressure is kept positive by a head of oil in a two part expansion tank. If the pressure is below 1 lb., gas can be added to the system to raise the oil back into the upper compartment.

4. Atmoseal/COPS Conservator Systems - These systems protect the oil by using an air bag in a conservator tank, sealing the transformer. There is no nitrogen or nitrogen pressure.

5. Free Breathing Conservator Systems - This system has a conservator tank partially filled with oil. The tank is vented to atmosphere through a breather. There is no nitrogen or nitrogen pressure.

9.3 Fans and Pumps - (Cooling Equipment)

a) Fans - Check and operate fans. Switch control from auto to manual and run for 15 minutes do not turn off and on intermittently. Bad capacitors in capacitance-run motors result in excessive motor current causing trip off on thermal overload. When cooled, motor restarts. Note any unusual noises, leaking capacitors and slow or non-running fans. Inspect all external electrical connections to the fans. Check for fan blade clearance and fan guards to be secure.

b) Pumps - Check and operate oil pumps and verify that the oil flow indicators work properly. Clean any leak that can be done safely and report as described in the leak section (Appendix C).

SUBSTATION - V & O INSPECTION PROCEDURE

Controls - Change selector switch from group 1 to group 2 or back, if so equipped.

9.4 Temp °C max/ind. - (Operating Temperatures)

a) Top Oil - Check and record top oil temperatures (maximum and indicating values) from the liquid temperature gauge.

b) H, X & Y Winding Temperature - Check and record winding temperature (maximum and indicating values) from the winding temperature indicators. Some transformers have a winding temperature gauges on each winding.

c) Reset - Reset maximum drag hands.

1. The maximum temperature drag hands on instruments with a reset stem are reset by unscrewing the cover knob and pulling the stem down.

2. The maximum temperature drag hands on instruments with a reset magnet are reset by placing a magnet against the glass directly opposite the indicator and moving the magnet in the desired direction. This can be done by taping a magnet to a switch stick for indicators near top of transformer.

9.5 Oil level - Check and record oil level on the oil level indicator. The 25°C mark indicates the correct oil level for the transformer which is operating at 25°C.

9.6 Leaks - Check any leaks on the bushings, tanks, covers, flanges, pump or valves. Clean any leak that can be done safely and report as described in the leak section (Appendix C).

9.7 Checklist -

a) Bushing Damage - using binoculars, if needed, examine for any cracks, porcelain chipping, damage, surface leakage, loose connections.

Note: Keep legal clearance from all energized parts.

b) Bushing Oil Level - Check bushing oil level sight glass for proper level. Unless mechanical damage, the fill level should be satisfactory for life of the bushing.

c) Tank Grounds - Check that all ground connections and pads are okay and have not been disturbed.

d) Cabinet Heater & Vents - The transformer cabinet is checked for signs of leaks, such as watermarks, moisture, etc. Verify that cabinet thermostats and heaters are in working order and all vents are free of any obstruction. It is good practice to clean and remove paper, leaves, mice nests, beehives or any foreign objects that might effect operation of the controls.

SUBSTATION - V & O INSPECTION PROCEDURE

e) Silica Gel - Check for proper color (proper color is blue). If it is any other color it must be replaced. Silica gel absorbs moisture before it enters the transformer.

f) Mechanical Relief - Mechanical relief device relieves excessive pressure (greater than 10 to 15 lbs.) by venting gas from transformer to atmosphere. Located on top of transformer most devices have a visual signal flag that pops up. If up, notify supervisor immediately.

g) Coolers - Examine for dirt, leaves, paper or anything else that may prevent air flow. If possible, obstructions are to be removed. If not, obstructions are noted for future maintenance. Also, wiring to fans and pumps are checked for cracks, in insulation, fraying and other signs of deterioration.

i) Noise Level - Check and report unusual noises from the transformer, fans, pumps and other auxiliary equipment.

9.8 Remarks - List any remarks.

10.0 Capacitors

10.1 Circuit Designation - Check capacitor to be labeled properly and verify circuit designation as shown on V&O inspection form.

Note: Keep legal clearance from all energized parts.

10.2 Switch Position - Check and record the as found capacitor switch position. (open/closed)

10.2 Counters -

a) Controls - Check and record the control's operations counter. Note: Record operations counter on vacuum switch or breaker of capacitor bank in circuit breaker & reclosers section of V&O inspection form.

10.3 Control Operation - Verify the automatic operation of capacitor bank control by comparing the previous counter reading. If operation can not be verified, test capacitor controls.

Note: Capacitor should be operated, if possible, by automatic control.
Capacitors must not be re-energized for five minutes.

10.4 Time Clock -

a) Indicating - Check and record the time on the time clock.

b) Actual - Check and record the actual time.

c) Corrected - If the time difference is more than one half hour, reset the time clock to proper time.

SUBSTATION - V & O INSPECTION PROCEDURE

10.5 Bulges - Visually inspect each unit for any abnormal tank bulges, ruptures and corrosion. Record any abnormal conditions on V&O Report.

10.6 Leaks - Visually inspect each unit for any leaks. Record any leaks on V&O Report. Care should be taken to prevent any leakage from entering the environment.

10.7 Fuses -

a) Check and record blown individual capacitor fuses. If more than two fuses are blown in one phase, the capacitor bank should be removed from service.

b) Check and record blown capacitor bank fuses. If a bank fuse has blown the capacitor bank should be removed from service.

10.8 Checklist -

a) Bushing Damage - Visually inspect for any cracks, porcelain chipping, damage, surface leakage, loose connections.

Note: Keep legal clearance from all energized parts.

b) Grounds - Visually inspect that all neutral/ground connections are made to each capacitor unit. Check that the rack base is connected to the system ground.

c) Bank Guard System - Control and sensing transformer.

10.9 Remarks - List any remarks on V&O form.

11.0 Surge Arresters

V&O Inspections include a visual inspection of the distribution class arresters in the substation. No information need be recorded, except for abnormal conditions. Distribution class surge arresters are used to protect getaway cables and bus sections.

11.1 Circuit Designation - Verify circuit designation for each transformer or bus surge arresters as shown on V&O inspection form.

11.2 Relief Diaphragm - Visually check for any signs of blow out at top and bottom of arrester. Check the 3 phases okay, if no visible signs of problems are found.

11.3 A, B and C Phase - (for each phase)

a) Counter - Check and record discharge counter on arrester counter device.

b) Milliamps - Check and record milliamp reading on arrester milliamp gauge, if so equipped.

SUBSTATION - V & O INSPECTION PROCEDURE

11.4 Checklist -

a) Porcelain - Check porcelain for damage or flashes.

b) Connections - Visually check the primary and ground connections for heating or discoloration.

11.5 Remarks - List any remarks.

12.0 Motor Operated Disconnects and Circuit Switchers

12.1 Circuit Designation - Check the disconnect/airbreak to be labeled properly and verify circuit designation as shown on V&O inspection form.

12.2 Previous Counter - Shows counter reading of motor operator from last recorded V&O inspection.

12.3 Counters - Check and record operations counter located in motor operator.

12.4 Live Line Indicator - Check and record that live line indicator lights are on at the control panel.

12.5 Timers Reset - Check that the sequence timers are in their normal position.

12.6 Preferred/Emergency - Check and record if the airbreak is designated as preferred or emergency.

12.7 Closed/Opened - Check and record airbreaks position, open or closed. Also, check open and close indicating lights on control panel. On Circuit Switchers, check that the interrupter is closed (yellow target indicates contacts open).

12.8 Automatic/Manual - Check and record position of auto/manu switch. Contact control authority if not in proper position.

12.9 Gas Indicator (Circuit Switchers) - Record color of target on brain section of Circuit Switcher - If target is red this indicates loss of gas, notify supervisor immediately.

12.10 Checklist -

a) Fully Open or Closed - Visually check that all switches are in proper operating position.

b) Locks - Check that all airbreaks are properly locked and that the lock is in good condition.

The Safety Manual - Section [1305(B)] requires that all gang operated airbreak switches at substations must be locked whether in the open or closed position.

SUBSTATION - V & O INSPECTION PROCEDURE

c) Interlocks - Check all key interlocks for any broken keys, cylinders, or any other broken parts. Verify visually that all are in good working order.

d) Rods and Linkage - Check and verify that all rods and linkage are in good condition. Note anything broken or loose parts, or any signs of wear.

e) Handle Grounded - Check to be sure braided strap on airbreak rod is in good condition and connected to the ground grid.

f) Grounds - Check for proper ground connections from ground grid to motor mechanism and structure.

g) Fuses - Check control and heater circuits for voltage to prove fuses are not blown.

h) Heaters and Vents - Check thermostats and heaters are in proper working order. Heater control switches are in the "ON" position during the required season. Check vents in mechanism are not blocked.

12.11 Remarks - List any remarks.

13.0 Miscellaneous Apparatus Checklists

13.1 Instrument/Metering Transformers - C.T. and P.T.

a) Noise - Check for any abnormal noises.

b) Level - Check for oil level on oil filled apparatus.

c) Leaks - Check for oil leaks. Clean any leak that is safe and report as described in the leak section (Appendix C).

d) Porcelain - Check for cracks in porcelain or butyl.

e) Overheating - Check for any signs of overheating.

f) Connections - Check primary and secondary connections visually.

13.2 Line Traps/Reactors - Dry Type

a) Cleanliness - Check visually for cleanliness. Check for any foreign materials on coils. (i.e. bird nests)

b) Support Insulators - Check support insulators to be clean and intact.

c) Connections - Check primary and secondary connections visually. (over heating)

d) Concrete - Check concrete reactor frame for any cracks or breakage.

e) Winding Distortion - Visually check for any distortion on coils.

13.3 Cables and Terminations (Potheads) -

a) Tracking - Check for tracking along termination and base of pothead.

b) Overheating - Check for signs of overheating.

c) Leaks - Check for leaking compound from termination.

13.4 Busses

a) Noise - Check for any abnormal noises with bus in operation.

b) Overheating - Check for any signs of overheating.

d) Insulators - Visually check bus for distortion or broken, damaged or tracked insulators.

13.5 Arrestors

a) Porcelain – Check porcelain for damage or flashes.

b) Connections – Visually check the primary and ground connections for heating or discoloration.

14.0 Final Checklist

a) Yard lights - Shut off yard lights, at control panel.

b) Station Log Book - Observations should be entered in log book such as: targets found, breaker operations, any defective or broken equipment.

c) Control Authority - Call control authority to notify them that the V&O Inspection has been completed and you will be leaving the station. Report any abnormal conditions, alarms or relay targets.

d) Securing Station - Make sure control house lights are off and doors secured. Closed gate and locked securely with chain.

e) V&O Report - Turn in V&O Inspection Report to supervisor.

SUBSTATION - V & O INSPECTION PROCEDURE

Appendix A. - REQUIRED TOOLS AND EQUIPMENT

Personal Items

1. Rubber gloves and covers
2. Hard hat and safety glasses

Truck Items

1. Ladder
2. Multi-meter
3. Flashlight
4. Magnet
5. Broom and dust pan
6. Rags
7. Electrical tape
8. Trash bags
9. Binoculars (if available)
10. Recloser Battery load check meter
11. Small screwdriver and pliers
12. Acid resistant gloves
13. Face Shield and Apron

V&O Items

1. Substation - V&O Inspection Report forms and clipboard
2. Station Log Books
3. Dispatching cards
4. Spare counter cards
5. Pen, pencils and erasers (red pencil for trouble)
6. Tags
   - RED Tags
   - BLUE Tags
   - DO NOT OPERATE Tags
   - Grounding Device Identification Tickets
7. Switching Order pads
8. Spare W.B. Locks:

SUBSTATION - V & O INSPECTION PROCEDURE

	long shank	S.C. 105873
	short shank	S.C. 105872
9.	Chain for gates	
10.	Spare approved warning signs	S.C. 483450
11.	Switch Board Lamps:	
	Swbd. LED (Red)	S.C.100183
	Lens Cap (Red)	S.C. 695322
	Swbd. LED (Green)	S.C. 100184
	Lens Cap (Green)	S.C. 695321
	Swbd. LED (Amber & White)	S.C. 100185
	Lens Cap (Amber)	S.C. 695320
	Lens Cap (White)	S.C. 100186
	Swbd.Lamp 24EX	S.C. 844590
	Swbd.Indicator 145 Volt, 15W	S.C. 841410
	Indicating Bulb 49 miniature 2v, .06A	S.C. 843078
	Indicating Bulb 47	S.C. 843100
	18 Volt Miniature 0.11A Automotive	S.C. 843110
	Indicating 35V, .06A	S.C. 843132
	Indicating 43A	S.C. 843250
	Swbd.Lamp 24X	S.C. 844610
	Swbd.Lamp 55C	S.C. 844630
	Indicating Lamp 120 P.S.B. (for V.S.A. Reclosers)	S.C. 841359
12.	Incandescent Lamps:	
	Incandescent Lamp 75 Watt	S.C. 841739
	Incandescent Lamp 100 Watt	S.C. 841840
	Incandescent Lamp 135 Watt	S.C. 842001
	Incandescent Lamp 200 Watt	S.C. 842150
	Mogul Base Lamp 500 Watt	S.C. 842390
	Floodlamp PAR 38 100 Watt	S.C. 842045
13.	Fluorescent Lamps:	
	8 FT Single Pin Lamp 75 Watt	S.C. 841050
	4 FT Bi - Pin Lamp 40 Watt	S.C. 840950
	4 FT Single Pin Lamp 40 Watt	S.C. 840940

	8 FT Recessed Pin Lamp 105 Watt	S.C. 841130
14.	Spare fuses (control and trip)	
15.	Spare nitrogen bottles	

Battery Items

1.	5 Gallon distilled water and battery filler	S.C. 599778
2.	Battery NO SMOKING Signs	S.C. 483448
3.	Extra hydrometer	S.C. 474448
4.	Extra thermometer	S.C. 487304
5.	Baking Soda	
6.	Spare eyewash bottles	S.C. 890600
7.	Brush to clean battery posts	
8.	Battery grease	

Appendix B. - TROUBLE REPORTING

Trouble - The term trouble is defined as any condition which occurs on the equipment that has or will terminate the ability of that equipment to perform its required function.

1. SEVERE TROUBLE - A severe trouble condition is a situation that is immediately hazardous to the system and/or personnel. These troubles are immediately reported to the Control Authority and to the person in charge of the substation. The employee shall secure the area and warn unauthorized people to stay clear of the danger.

Examples

- Dead station battery
- Blown bushings or cable terminator
- Downed live lines
- Multiple broken support insulators
- Electrical fires
- Grounds cut in station
- Loss of station service power
- Broken pole or structure
- Blown by pass/shunt arresters on regulators

SUBSTATION - V & O INSPECTION PROCEDURE

- Unusually noise

II. NOT IMMEDIATELY FIXABLE TROUBLE - These troubles are reported to the Control Authority. The person in charge of the substation shall also be notified of the non-fixable items and it shall be noted on the V&O form in red, to be fixed at a later date.

Examples

- Surge Arrester blown
- Broken operating rods on disconnects
- Broken bus support insulators
- Low oil levels

III. FIXABLE TROUBLE - Fixable items should be repaired as they are discovered during the V&O Inspection. This insures that the station is maintained in the best possible operating condition and prevents unnecessary return trips. The items fixed should be noted on the V&O Report.

Examples

- Battery electrolyte filling
- Replacing broken lamps
- Changing filters
- Installing missing covers
- Installing signs (if missing)
- Repairing holes in fence
- Installing new locks
- Cleaning and repairing oil leaks
- Tightening compressor belts
- Changing recloser batteries
- Replacing control fuses
- Changing nitrogen bottles
- Changing Silica Gel turned pink or white
- Cleaning and repairing leaks

SUBSTATION - V & O INSPECTION PROCEDURE

Appendix C. - OIL LEAK REPORTING

Oil filled apparatus must be inspected for any signs of leaks. The V&O Inspection Report now requires that the oil leak status be indicated for each piece of oil filled apparatus.

When inspecting the apparatus during a V&O Inspection, mark the appropriate column with the letter that indicates the leak status. The available status ratings are:

Clean (C) - This indicates the apparatus is dry and shows no evidence of oil leaks.

Repaired (R) - If a leak is found and repaired during the V&O Inspection, use the repaired status and note the repairs made.

Leak(minor) (L) - A Leak is defined by the PCB Manual as anytime the external surface of a piece of apparatus is wet with oil. Must write remark of what was leaking.

Moderate Leak (M) - By definition is any instance when oil is detected running off or about to run off the external surface of containers or electrical apparatus.

No status letter is defined for an oil leak that is more severe than a moderate leak. Any leak considered to be of a magnitude greater than a moderate leak shall be responded to as an oil spill. Notify the supervisor of the condition at once and begin repair and the clean up.

The repaired leak may then be reported on the V&O Inspection Report as an "R", with a description the repairs made and the clean up done for the leak.

ATTACHMENT #7

Montlhly Elevated Voltage Status Report

nationalgrid **Testing Summary**	Total System Units Requiring Testing	Units Completed	Percent Completed	Units with Voltage Found (>= 1.0v)	Percent of Units Tested with Voltage (>= 1.0v)	Units Classified as Inaccessible
Distribution Facilities	1,205,034	771,278	64.00%	274	0.036%	23926
Monthly Update		13,847	1.15%	3	0.022%	-1918
Underground Facilities	109,783	109,783	100.00%	19	0.017%	4680
Non-URD (Nov. deadline)	51,198	51,198	100.00%	19	0.037%	2235
Monthly Update		18,256	16.63%	1	0.005%	1039
Street Lights / Traffic Signals	79,855	79,855	100.00%	379	0.475%	7105
Monthly Update		32,469	40.66%	231	0.711%	5689
Substation Fences	803	0	0.00%	0	0.000%	0
Monthly Update		0	0.00%	0	0.000%	0
Transmission	103,881	22,081	21.26%	80	0.362%	447
Monthly Update		135	0.13%	0	0.000%	1
TOTAL	1,499,356	982,997	65.56%	752	0.077%	36,158
Monthly Update		64,707	4.32%	235	0.363%	4,811

Update covers Testing completed through November 30

Definition of Inaccessible: **Unable to get to a location due to fence, animals, dense brush, swamp, terrain, highway**

Additional Notes: **At this time Tranmission includes all structures 23kv - 345kv**

To be consistent with other NYS utility reporting, we have modified the 'Total System Units Requireing Test' to include facilites found in the field during testing. Previously we were only reporting known facilities in this cell

Units Classified as inaccessible shows a -1918 due to contractor auditing efforts

Monthly Elevated Voltage Status Report

nationalgrid **Summary of Voltages Found**	# of units between 1.0v and 4.4v	# of units between 4.5v and 7.9v	# of units between 8.0v - 24.9v	# of units between 25.0v - 99.9v	# of units greater than 100.0v	Total
Distribution Facilities	228	17	9	15	5	274
Pole	82	7	4	7	1	101
Ground	41	4	3	3	1	52
Guy	99	4	1	3	0	107
Riser	23	0	0	3	0	26
Other	32	3	2	7	4	48
Underground Facilities	17	0	1	1	0	19
Handhole / Pull box	1	0	1	1	0	3
Manhole	3	0	0	0	0	3
Padmount Switchgear	0	0	0	0	0	0
Padmount Transformer	1	0	0	0	0	1
Vault -- Cover/Door	0	0	0	0	0	0
Pedestal	0	0	0	0	0	0
Other	12	0	0	0	0	12
Street Lights / Traffic Signals	217	89	61	12	0	379
Metal Street Light Pole	217	89	61	12	0	379
Traffic Signal Pole	0	0	0	0	0	0
Control Box	0	0	0	0	0	0
Pedestrian Crossing Pole	0	0	0	0	0	0
Other	0	0	0	0	0	0
Substation Fences	0	0	0	0	0	0
Fence	0	0	0	0	0	0
Other	0	0	0	0	0	0
Transmission	80	0	0	0	0	80
Lattice Tower	0	0	0	0	0	0
Pole	21	0	0	0	0	21
Ground	57	0	0	0	0	57
Guy	0	0	0	0	0	0
Other	3	0	0	0	0	3
Totals	542	106	71	28	5	752

NOTE - National Grid is only mitigating those locations where voltage is confirmed to be 4.5 volts or greater

NOTE - Individual facility counts (pole, ground, guy, etc) may add up to more than the total on a summary line due to voltage on multiple facilties at a single location or pole

NOTE - "Other" category generally includes incorrect facility types reported (example - a pole code turned in for voltage found on an underground device).

Monthly Elevated Voltage Status Report

nationalgrid **Mitigation Efforts**	Units with Voltage Found >=4.5 volts	Units Permanently Repaired by Utility	Units Scheduled for Repaired by Utility	Units Referred to Others for Permanent Repair	Comments
Distribution Facilities	47	42	5	0	19 guy wire/ ground / ground connection repairs / cable 1 changed out arresters on pole 2 changed out insulators on pole 14 locations where procedure was not followed with res. in place 2 customer electric fences isolated 4 service wires removed / rehung
Underground Facilities	2	2	0	0	1 Handhole inspected, cleaned out and driec 1 procedure not followed - no votage with shunt resistor in place
Street Lights / Traffic Signals	162	135	26	6	9 Street light head changes 116 cable / connection / ground connections problems 8 Changed photo eyes 2 Changed circuit configuration & replaced fuses (T/O Cheektowaga repaired the 6 lights referred to them)
Substation Fences	0	0	0	0	
Transmission	0	0	0	0	

ATTACHMENT #8

01/04/2006 8:55

Davey Resource and ECSM Municipality Listing
STREET LIGHT LISTING

TAX DIST	MUNICIPALITY	Contractor	REGION	Y	N	COMPLETED
5051	CITY OF BUFFALO	Davey	48	X		X
5058	CITY OF LACKAWANNA	Davey	48	X		X
5101	CITY OF LOCKPORT	Davey	48		X	X
5082	CITY OF NIAGARA FALLS	Davey	48	X		X
5002	CITY OF NORTH TONAWANDA	Davey	48	X		X
5001	CITY OF TONAWANDA	Davey	48	X		X
5054	TOWNSHIP OF AMHERST	Davey	48	X		X
5116	TOWNSHIP OF CAMBRIA	Davey	48		X	X
5167	TOWNSHIP OF CHEEKTOWAGA	Davey	48	X		X
5168	TOWNSHIP OF CONCORD	Davey	48	X		X
5011	TOWNSHIP OF GRAND ISLAND	Davey	48	X		X
5083	TOWNSHIP OF LEWISTON	Davey	48	X		X
5119	TOWNSHIP OF LOCKPORT	Davey	48		X	X
5120	TOWNSHIP OF NEWFANE	Davey	48	X		X
5081	TOWNSHIP OF NIAGARA	Davey	48		X	X
5169	TOWNSHIP OF ORCHARD PARK	Davey	48		X	X
5122	TOWNSHIP OF PENDLETON	Davey	48		X	X
5085	TOWNSHIP OF PORTER	Davey	48		X	X
5638	TOWNSHIP OF SOMERSET	Davey	48		X	X
5052	TOWNSHIP OF TONAWANDA	Davey	48	X		X
5057	TOWNSHIP OF WEST SENECA	Davey	48	X		X
5014	TOWNSHIP OF WHEATFIELD	Davey	48	X		X
5125	TOWNSHIP OF WILSON	Davey	48		X	X
5059	VILLAGE OF BLASDELL, TOWNSHIP OF HAMBURG	Davey	48		X	X
5157	VILLAGE OF DEPEW, TOWNSHIP OF CHEEKTOWAGA	Davey	48		X	X
5156	VILLAGE OF DEPEW, TOWNSHIP OF LANCASTER	Davey	48		X	X
5053	VILLAGE OF KENMORE, TOWNSHIP OF TONAWANDA	Davey	48	X		X
5159	VILLAGE OF LANCASTER, TOWNSHIP OF LANCASTER	Davey	48		X	X
5084	VILLAGE OF LEWISTON, TOWNSHIP OF LEWISTON	Davey	48	X		X
5061	VILLAGE OF SLOAN, TOWNSHIP OF CHEEKTOWAGA	Davey	48	X		X
5055	VILLAGE OF WILLIAMSVILLE, TOWNSHIP OF AMHERST	Davey	48	X		X
5056	VILLAGE OF WILLIAMSVILLE, TOWNSHIP OF CHEEKTOWAGA	Davey	48		X	X
5107	VILLAGE OF WILSON, TOWNSHIP OF WILSON	Davey	48		X	X
5086	VILLAGE OF YOUNGSTOWN, TOWNSHIP OF PORTER	Davey	48		X	X
5551	CITY OF BATAVIA	Davey	50	X		X
5817	CITY OF ROCHESTER	Davey	50		X	X
5570	TOWNSHIP OF ALABAMA	Davey	50		X	X
5625	TOWNSHIP OF ALBION	Davey	50		X	X
5571	TOWNSHIP OF ALEXANDER	Davey	50		X	X
5760	TOWNSHIP OF ARCADIA	Davey	50		X	X
5572	TOWNSHIP OF ATTICA	Davey	50		X	X
5820	TOWNSHIP OF AVON	Davey	50	X		X
5626	TOWNSHIP OF BARRE	Davey	50		X	X
5573	TOWNSHIP OF BATAVIA	Davey	50	X		X
5574	TOWNSHIP OF BERGEN	Davey	50		X	X
5575	TOWNSHIP OF BETHANY	Davey	50		X	X
5821	TOWNSHIP OF BRIGHTON	Davey	50		X	X
5853	TOWNSHIP OF BUTLER	Davey	50		X	X
5576	TOWNSHIP OF BYRON	Davey	50		X	X
5822	TOWNSHIP OF CALEDONIA	Davey	50		X	X
5823	TOWNSHIP OF CANADICE	Davey	50		X	X
5627	TOWNSHIP OF CARLTON	Davey	50		X	X
5824	TOWNSHIP OF CHILI	Davey	50		X	X
5628	TOWNSHIP OF CLARENDON	Davey	50		X	X
5629	TOWNSHIP OF CLARKSON	Davey	50		X	X
5825	TOWNSHIP OF CONESUS	Davey	50		X	X
5577	TOWNSHIP OF COVINGTON	Davey	50		X	X
5578	TOWNSHIP OF DARIEN	Davey	50		X	X
5826	TOWNSHIP OF EAST BLOOMFIELD	Davey	50		X	X
5579	TOWNSHIP OF ELBA	Davey	50		X	X
5769	TOWNSHIP OF FARMINGTON	Davey	50		X	X
5630	TOWNSHIP OF GAINES	Davey	50		X	X
5827	TOWNSHIP OF GATES	Davey	50		X	X
5828	TOWNSHIP OF GENESEO	Davey	50		X	X
5830	TOWNSHIP OF GROVELAND	Davey	50		X	X
5631	TOWNSHIP OF HAMLIN	Davey	50		X	X

01/04/2006 8:55

Davey Resource and ECSM Municipality Listing
STREET LIGHT LISTING

TAX DIST	MUNICIPALITY	Contractor	REGION	Y	N	COMPLETED
5117	TOWNSHIP OF HARLAND	Davey	50		X	X
5831	TOWNSHIP OF HENRIETTA	Davey	50		X	X
5632	TOWNSHIP OF KENDALL	Davey	50		X	X
5580	TOWNSHIP OF LEROY	Davey	50		X	X
5832	TOWNSHIP OF LIMA	Davey	50	X		X
5833	TOWNSHIP OF LIVONIA	Davey	50	X		X
5846	TOWNSHIP OF MACEDON	Davey	50		X	X
5775	TOWNSHIP OF MANCHESTER	Davey	50		X	X
5834	TOWNSHIP OF MENDON	Davey	50		X	X
5852	TOWNSHIP OF MOUNT MORRIS	Davey	50		X	X
5633	TOWNSHIP OF MURRAY	Davey	50		X	X
5581	TOWNSHIP OF NEWSTEAD	Davey	50		X	X
5582	TOWNSHIP OF OAKFIELD	Davey	50		X	X
5815	TOWNSHIP OF OGDEN	Davey	50		X	X
5583	TOWNSHIP OF ORANGEVILLE	Davey	50		X	X
5781	TOWNSHIP OF PALMYRA	Davey	50		X	X
5641	TOWNSHIP OF PARMA	Davey	50		X	X
5584	TOWNSHIP OF PAVILION	Davey	50		X	X
5585	TOWNSHIP OF PEMBROKE	Davey	50		X	X
5835	TOWNSHIP OF PERINTON	Davey	50		X	X
5785	TOWNSHIP OF PHELPS	Davey	50		X	X
5836	TOWNSHIP OF PITTSFORD	Davey	50		X	X
5837	TOWNSHIP OF RICHMOND	Davey	50		X	X
5635	TOWNSHIP OF RIDGEWAY	Davey	50		X	X
5838	TOWNSHIP OF RIGA	Davey	50		X	X
5104	TOWNSHIP OF ROYALTON	Davey	50		X	X
5839	TOWNSHIP OF RUSH	Davey	50		X	X
5637	TOWNSHIP OF SHELBY	Davey	50		X	X
5638	TOWNSHIP OF SOMERSET	Davey	50		X	X
5845	TOWNSHIP OF SPARTA	Davey	50		X	X
5586	TOWNSHIP OF STAFFORD	Davey	50		X	X
5639	TOWNSHIP OF SWEDEN	Davey	50	X		X
5840	TOWNSHIP OF WEST BLOOMFIELD	Davey	50		X	X
5587	TOWNSHIP OF WETHERSFIELD	Davey	50		X	X
5841	TOWNSHIP OF WHEATLAND	Davey	50		X	X
5640	TOWNSHIP OF YATES	Davey	50		X	X
5842	TOWNSHIP OF YORK	Davey	50		X	X
5556	VILLAGE OF AKRON, TOWNSHIP OF NEWSTEAD	Davey	50		X	X
5605	VILLAGE OF ALBION, TOWNSHIP OF ALBION	Davey	50	X		X
5606	VILLAGE OF ALBION, TOWNSHIP OF GAINES	Davey	50		X	X
5552	VILLAGE OF ALEXANDER, TOWNSHIP OF ALEXANDER	Davey	50		X	X
5592	VILLAGE OF ATTICA, TOWNSHIP OF ALEXANDER	Davey	50		X	X
5553	VILLAGE OF ATTICA, TOWNSHIP OF ATTICA	Davey	50		X	X
5805	VILLAGE OF AVON, TOWNSHIP OF AVON	Davey	50	X		X
5607	VILLAGE OF BARKER, TOWNSHIP OF SOMERSET	Davey	50		X	X
5559	VILLAGE OF BERGEN, TOWNSHIP OF BERGEN	Davey	50		X	X
5608	VILLAGE OF BROCKPORT, TOWNSHIP OF SWEDEN	Davey	50	X		X
5806	VILLAGE OF CALEDONIA, TOWNSHIP OF CALEDONIA	Davey	50	X		X
5807	VILLAGE OF CHURCHVILLE, TOWNSHIP OF RIGA	Davey	50		X	X
5717	VILLAGE OF CLIFTON SPRINGS, TOWNSHIP OF MANCHESTER	Davey	50		X	X
5716	VILLAGE OF CLIFTON SPRINGS, TOWNSHIP OF PHELPS	Davey	50		X	X
5554	VILLAGE OF CORFU, TOWNSHIP OF PEMBROKE	Davey	50		X	X
5558	VILLAGE OF ELBA, TOWNSHIP OF ELBA	Davey	50		X	X
5809	VILLAGE OF FAIRPORT, TOWNSHIP OF PERINTON	Davey	50		X	X
5844	VILLAGE OF GENESEO, TOWNSHIP OF GENESEO	Davey	50		X	X
5609	VILLAGE OF HOLLEY, TOWNSHIP OF MURRAY	Davey	50		X	X
5810	VILLAGE OF HONEOYE FALLS, TOWNSHIP OF MENDON	Davey	50		X	X
5561	VILLAGE OF LEROY, TOWNSHIP OF LEROY	Davey	50		X	X
5811	VILLAGE OF LIMA, TOWNSHIP OF LIMA	Davey	50	X		X
5812	VILLAGE OF LIVONIA, TOWNSHIP OF LIVONIA	Davey	50	X		X
5610	VILLAGE OF LYNDONVILLE, TOWNSHIP OF YATES	Davey	50		X	X
5722	VILLAGE OF MACEDON, TOWNSHIP OF MACEDON	Davey	50		X	X
5714	VILLAGE OF MANCHESTER, TOWNSHIP OF MANCHESTER	Davey	50		X	X
5611	VILLAGE OF MEDINA, TOWNSHIP OF RIDGEWAY	Davey	50	X		X
5612	VILLAGE OF MEDINA, TOWNSHIP OF SHELBY	Davey	50		X	X
5105	VILLAGE OF MIDDLEPORT, TOWNSHIP OF HARTLAND	Davey	50		X	X

01/04/2006 8:55

Davey Resource and ECSM Municipality Listing
STREET LIGHT LISTING

TAX DIST	MUNICIPALITY	Contractor	REGION	Y	N	COMPLETED
5106	VILLAGE OF MIDDLEPORT, TOWNSHIP OF ROYALTON	Davey	50		X	X
5562	VILLAGE OF OAKFIELD, TOWNSHIP OF OAKFIELD	Davey	50		X	X
5725	VILLAGE OF PALMYRA, TOWNSHIP OF PALMYRA	Davey	50		X	X
5813	VILLAGE OF PITTSFORD, TOWNSHIP OF PITTSFORD	Davey	50		X	X
5814	VILLAGE OF SCOTTSVILLE, TOWNSHIP OF WHEATLAND	Davey	50		X	X
5302	CITY OF DUNKIRK	Davey	51	X		X
5301	CITY OF JAMESTOWN	Davey	51		X	X
5400	CITY OF OLEAN	Davey	51	X		X
5401	CITY OF SALAMANCA	Davey	51		X	X
5421	TOWNSHIP OF ALLEGANY	Davey	51	X		X
5425	TOWNSHIP OF ALMA	Davey	51		X	X
5427	TOWNSHIP OF ANDOVER	Davey	51		X	X
5322	TOWNSHIP OF ARKWRIGHT	Davey	51		X	X
5423	TOWNSHIP OF ASHFORD	Davey	51		X	X
5166	TOWNSHIP OF BOSTON	Davey	51		X	X
5216	TOWNSHIP OF BRANT	Davey	51		X	X
5325	TOWNSHIP OF BUSTI	Davey	51		X	X
5431	TOWNSHIP OF CARROLLTON	Davey	51		X	X
5331	TOWNSHIP OF CARROLL	Davey	51		X	X
5432	TOWNSHIP OF CENTERVILLE	Davey	51		X	X
5334	TOWNSHIP OF CHARLOTTE	Davey	51		X	X
5335	TOWNSHIP OF CHAUTAUQUA	Davey	51	X		X
5380	TOWNSHIP OF CLYMER	Davey	51		X	X
5433	TOWNSHIP OF COLD SPRING	Davey	51		X	X
5222	TOWNSHIP OF COLLINS	Davey	51	X		X
5436	TOWNSHIP OF CUBA	Davey	51		X	X
5336	TOWNSHIP OF DUNKIRK	Davey	51		X	X
5442	TOWNSHIP OF EAST OTTO	Davey	51		X	X
5217	TOWNSHIP OF EDEN	Davey	51	X		X
5342	TOWNSHIP OF ELLERY	Davey	51		X	X
5338	TOWNSHIP OF ELLICOTT	Davey	51	X		X
5443	TOWNSHIP OF ELLICOTTVILLE	Davey	51		X	X
5215	TOWNSHIP OF EVANS	Davey	51		X	X
5447	TOWNSHIP OF FARMERSVILLE	Davey	51		X	X
5445	TOWNSHIP OF FRANKLINVILLE	Davey	51		X	X
5449	TOWNSHIP OF FREEDOM	Davey	51		X	X
5345	TOWNSHIP OF FRENCH CREEK	Davey	51		X	X
5448	TOWNSHIP OF FRIENDSHIP	Davey	51	X		X
5450	TOWNSHIP OF GENESEE	Davey	51		X	X
5348	TOWNSHIP OF GERRY	Davey	51		X	X
5452	TOWNSHIP OF GREAT VALLEY	Davey	51		X	X
5172	TOWNSHIP OF HAMBURG	Davey	51	X		X
5350	TOWNSHIP OF HANOVER	Davey	51		X	X
5351	TOWNSHIP OF HARMONY	Davey	51		X	X
5456	TOWNSHIP OF HINSDALE	Davey	51		X	X
5457	TOWNSHIP OF HUMPHREY	Davey	51		X	X
5461	TOWNSHIP OF INDEPENDENCE	Davey	51		X	X
5463	TOWNSHIP OF ISCHUA	Davey	51		X	X
5356	TOWNSHIP OF KIANTONE	Davey	51		X	X
5466	TOWNSHIP OF LITTLE VALLEY	Davey	51		X	X
5467	TOWNSHIP OF LYNDON	Davey	51		X	X
5470	TOWNSHIP OF MACHIAS	Davey	51		X	X
5471	TOWNSHIP OF MANSFIELD	Davey	51		X	X
5359	TOWNSHIP OF MINA	Davey	51		X	X
5414	TOWNSHIP OF NAPOLI	Davey	51		X	X
5474	TOWNSHIP OF NEW ALBION	Davey	51		X	X
5476	TOWNSHIP OF NEW HUDSON	Davey	51		X	X
5219	TOWNSHIP OF NORTH COLLINS	Davey	51		X	X
5362	TOWNSHIP OF NORTH HARMONY	Davey	51	X		X
5479	TOWNSHIP OF OLEAN	Davey	51		X	X
5481	TOWNSHIP OF OTTO	Davey	51		X	X
5223	TOWNSHIP OF PERRYSBURG	Davey	51		X	X
5365	TOWNSHIP OF POLAND	Davey	51		X	X
5367	TOWNSHIP OF POMFRET	Davey	51		X	X
5368	TOWNSHIP OF PORTLAND	Davey	51		X	X
5484	TOWNSHIP OF PORTVILLE	Davey	51		X	X

01/04/2006 8:55

Davey Resource and ECSM Municipality Listing
STREET LIGHT LISTING

TAX DIST	MUNICIPALITY	Contractor	REGION	Y	N	COMPLETED
5486	TOWNSHIP OF RANDOLPH	Davey	51		X	X
5487	TOWNSHIP OF RED HOUSE	Davey	51		X	X
5363	TOWNSHIP OF RIPLEY	Davey	51		X	X
5490	TOWNSHIP OF SALAMANCA	Davey	51		X	X
5170	TOWNSHIP OF SARDINIA	Davey	51		X	X
5492	TOWNSHIP OF SCIO	Davey	51		X	X
5375	TOWNSHIP OF SHERIDAN	Davey	51		X	X
5374	TOWNSHIP OF SHERMAN	Davey	51		X	X
5493	TOWNSHIP OF SOUTH VALLEY	Davey	51		X	X
5377	TOWNSHIP OF STOCKTON	Davey	51		X	X
5496	TOWNSHIP OF WELLSVILLE	Davey	51		X	X
5379	TOWNSHIP OF WESTFIELD	Davey	51		X	X
5497	TOWNSHIP OF WILLING	Davey	51		X	X
5498	TOWNSHIP OF WIRT	Davey	51		X	X
5500	TOWNSHIP OF YORKSHIRE	Davey	51		X	X
5403	VILLAGE OF ALLEGANY, TOWNSHIP OF ALLEGANY	Davey	51	X		X
5404	VILLAGE OF ANDOVER, TOWNSHIP OF ANDOVER	Davey	51		X	X
5205	VILLAGE OF ANGOLA, TOWNSHIP OF EVANS	Davey	51		X	X
5303	VILLAGE OF BEMUS POINT, TOWNSHIP OF ELLERY	Davey	51	X		X
5304	VILLAGE OF BROCTON, TOWNSHIP OF PORTLAND	Davey	51		X	X
5307	VILLAGE OF CASSADAGA, TOWNSHIP OF STOCKTON	Davey	51		X	X
5405	VILLAGE OF CATTARAUGUS, TOWNSHIP OF NEW ALBION	Davey	51		X	X
5406	VILLAGE OF CUBA, TOWNSHIP OF CUBA	Davey	51		X	X
5499	VILLAGE OF DELEVAN, TOWNSHIP OF YORKSHIRE	Davey	51		X	X
5416	VILLAGE OF ELLICOTTVILLE, TOWNSHIP OF ELLICOTTVILLE	Davey	51	X		X
5310	VILLAGE OF FALCONER, TOWNSHIP OF ELLICOTT	Davey	51		X	X
5206	VILLAGE OF FARNHAM, TOWNSHIP OF BRANT	Davey	51		X	X
5408	VILLAGE OF FRANKLINVILLE, TOWNSHIP OF FRANKLINVILLE	Davey	51		X	X
5311	VILLAGE OF FREDONIA, TOWNSHIP OF POMFRET	Davey	51	X		X
5158	VILLAGE OF HAMBURG, TOWNSHIP OF HAMBURG	Davey	51	X		X
5313	VILLAGE OF LAKEWOOD, TOWNSHIP OF BUSTI	Davey	51		X	X
5410	VILLAGE OF LIMESTONE, TOWNSHIP OF CARROLLTON	Davey	51		X	X
5411	VILLAGE OF LITTLE VALLEY, TOWNSHIP OF LITTLE VALLEY	Davey	51		X	X
5314	VILLAGE OF MAYVILLE, TOWNSHIP OF CHAUTAUQUA	Davey	51	X		X
5207	VILLAGE OF NORTH COLLINS, TOWNSHIP OF NORTH COLLINS	Davey	51	X		X
5317	VILLAGE OF PANAMA, TOWNSHIP OF HARMONY	Davey	51		X	X
5413	VILLAGE OF PORTVILLE, TOWNSHIP OF PORTVILLE	Davey	51		X	X
5485	VILLAGE OF RANDOLPH, TOWNSHIP OF RANDOLPH	Davey	51	X		X
5319	VILLAGE OF SHERMAN, TOWNSHIP OF SHERMAN	Davey	51		X	X
5315	VILLAGE OF SILVER CREEK, TOWNSHIP OF HANOVER	Davey	51		X	X
5320	VILLAGE OF SINCLAIRVILLE, TOWNSHIP OF CHARLOTTE	Davey	51		X	X
5321	VILLAGE OF SINCLARIVILLE, TOWNSHIP OF GERRY	Davey	51		X	X
5415	VILLAGE OF WELLSVILLE, TOWNSHIP OF WELLSVILLE	Davey	51		X	X
5323	VILLAGE OF WESTFIELD, TOWNSHIP OF WESTFIELD	Davey	51	X		X
6066	CITY OF CORTLAND	ECSM	54	X		X
6009	CITY OF FULTON	ECSM	54	X		X
6001	CITY OF OSWEGO	ECSM	54	X		X
6017	CITY OF SYRACUSE	ECSM	54	X		X
6031	TOWNSHIP OF ALBION	ECSM	54		X	X
6092	TOWNSHIP OF BOYLSTON	ECSM	54		X	X
6105	TOWNSHIP OF BRUTUS	ECSM	54		X	X
6037	TOWNSHIP OF CAMILLUS	ECSM	54	X		X
6038	TOWNSHIP OF CAZENOVIA	ECSM	54	X		X
6039	TOWNSHIP OF CICERO	ECSM	54	X		X
6040	TOWNSHIP OF CLAY	ECSM	54	X		X
6041	TOWNSHIP OF CONSTANTIA	ECSM	54	X		X
6067	TOWNSHIP OF CORTLANDVILLE	ECSM	54	X		X
6042	TOWNSHIP OF CUYLER	ECSM	54		X	X
6043	TOWNSHIP OF DERUYTER	ECSM	54		X	X
6044	TOWNSHIP OF DEWITT	ECSM	54	X		X
6046	TOWNSHIP OF ELBRIDGE	ECSM	54		X	X
6047	TOWNSHIP OF FABIUS	ECSM	54		X	X
6048	TOWNSHIP OF FENNER	ECSM	54		X	X
6483	TOWNSHIP OF FLORENCE	ECSM	54		X	X
6106	TOWNSHIP OF GALEN	ECSM	54		X	X
6049	TOWNSHIP OF GEDDES	ECSM	54	X		X

01/04/2006 8:55

Davey Resource and ECSM Municipality Listing
STREET LIGHT LISTING

TAX DIST	MUNICIPALITY	Contractor	REGION	Y	N	COMPLETED
6011	TOWNSHIP OF GRANBY	ECSM	54		X	X
6050	TOWNSHIP OF HANNIBAL	ECSM	54		X	X
6051	TOWNSHIP OF HASTINGS	ECSM	54	X		X
6080	TOWNSHIP OF HOMER	ECSM	54	X		X
6052	TOWNSHIP OF LAFAYETTE	ECSM	54		X	X
6053	TOWNSHIP OF LINCKLAEN	ECSM	54		X	X
6107	TOWNSHIP OF LYONS	ECSM	54		X	X
6076	TOWNSHIP OF LYSANDER	ECSM	54	X		X
6054	TOWNSHIP OF MANLIUS	ECSM	54	X		X
6084	TOWNSHIP OF MARCELLUS	ECSM	54	X		X
6108	TOWNSHIP OF MENTZ	ECSM	54		X	X
6055	TOWNSHIP OF MEXICO	ECSM	54	X		X
6005	TOWNSHIP OF MINETTO	ECSM	54	X		X
6109	TOWNSHIP OF MONTEZUMA	ECSM	54		X	X
6088	TOWNSHIP OF NELSON	ECSM	54		X	X
6006	TOWNSHIP OF NEW HAVEN	ECSM	54	X		X
6090	TOWNSHIP OF NILES	ECSM	54		X	X
6056	TOWNSHIP OF ONONDAGA	ECSM	54	X		X
6068	TOWNSHIP OF ORWELL	ECSM	54		X	X
6089	TOWNSHIP OF OSCEOLA	ECSM	54		X	X
6003	TOWNSHIP OF OSWEGO	ECSM	54	X		X
6057	TOWNSHIP OF OTISCO	ECSM	54		X	X
6058	TOWNSHIP OF PALERMO	ECSM	54		X	X
6059	TOWNSHIP OF PARISH	ECSM	54		X	X
6085	TOWNSHIP OF PHOENIX, TOWNSHIP OF SCHROEPPEL	ECSM	54	X		X
6060	TOWNSHIP OF POMPEY	ECSM	54		X	X
6072	TOWNSHIP OF PREBLE	ECSM	54		X	X
6081	TOWNSHIP OF REDFIELD	ECSM	54	X		X
6032	TOWNSHIP OF RICHLAND	ECSM	54		X	X
6061	TOWNSHIP OF SALINA	ECSM	54	X		X
6083	TOWNSHIP OF SANDY CREEK	ECSM	54	X		X
6110	TOWNSHIP OF SAVANNAH	ECSM	54		X	X
6013	TOWNSHIP OF SCHROEPPEL	ECSM	54		X	X
6074	TOWNSHIP OF SCOTT	ECSM	54		X	X
6004	TOWNSHIP OF SCRIBA	ECSM	54		X	X
6111	TOWNSHIP OF SENECA FALLS	ECSM	54		X	X
6103	TOWNSHIP OF SENNETT	ECSM	54		X	X
6091	TOWNSHIP OF SKANEATELES	ECSM	54	X		X
6073	TOWNSHIP OF SOLON	ECSM	54		X	X
6062	TOWNSHIP OF SULLIVAN	ECSM	54		X	X
6113	TOWNSHIP OF THROOP	ECSM	54		X	X
6063	TOWNSHIP OF TRUXTON	ECSM	54		X	X
6064	TOWNSHIP OF TULLY	ECSM	54		X	X
6112	TOWNSHIP OF TYRE	ECSM	54		X	X
6014	TOWNSHIP OF VAN BUREN	ECSM	54	X		X
6075	TOWNSHIP OF VIRGIL	ECSM	54		X	X
6012	TOWNSHIP OF VOLNEY	ECSM	54		X	X
6114	TOWNSHIP OF WATERLOO	ECSM	54		X	X
6065	TOWNSHIP OF WEST MONROE	ECSM	54	X		X
6034	VILLAGE OF ALTMAR, TOWNSHIP OF ALBION	ECSM	54	X		X
6015	VILLAGE OF BALDWINSVILLE, TOWNSHIP OF LYSA	ECSM	54	X		X
6016	VILLAGE OF BALDWINSVILLE, TOWNSHIP OF VAN BUREN	ECSM	54		X	X
6018	VILLAGE OF CAMILLUS, TOWNSHIP OF CAMILLUS	ECSM	54	X		X
6094	VILLAGE OF CAZENOVIA, TOWNSHIP OF CAZENOVIA	ECSM	54	X		X
6019	VILLAGE OF CENTRAL SQUARE, TOWNSHIP OF HASTINGS	ECSM	54	X		X
6020	VILLAGE OF CHITTENANGO, TOWNSHIP OF SULLIVAN	ECSM	54	X		X
6021	VILLAGE OF CLEVELAND, TOWNSHIP OF CONSTANTIA	ECSM	54		X	X
6022	VILLAGE OF DERUYTER, TOWNSHIP OF DERUYTER	ECSM	54		X	X
6023	VILLAGE OF EAST SYRACUSE, TOWNSHIP OF DEWITT	ECSM	54	X		X
6045	VILLAGE OF ELBRIDGE, TOWNSHIP OF ELBRIDGE	ECSM	54		X	X
6024	VILLAGE OF FABIUS, TOWNSHIP OF FABUIS	ECSM	54	X		X
6025	VILLAGE OF FAYETTEVILLE, TOWNSHIP OF MANLIUS	ECSM	54	X		X
6026	VILLAGE OF HANNIBAL, TOWNSHIP OF HANNIBAL	ECSM	54	X		X
6070	VILLAGE OF HOMER, TOWNSHIP OF CORTLANDVILLE	ECSM	54	X		X
6069	VILLAGE OF HOMER, TOWNSHIP OF HOMER	ECSM	54	X		X
6077	VILLAGE OF LACONA, TOWNSHIP OF SANDY CREEK	ECSM	54		X	X

01/04/2006 8:55

Davey Resource and ECSM Municipality Listing
STREET LIGHT LISTING

TAX DIST	MUNICIPALITY	Contractor	REGION	Y	N	COMPLETED
6027	VILLAGE OF LIVERPOOL, TOWNSHIP OF SALINA	ECSM	54	X		X
6099	VILLAGE OF LYONS, TOWNSHIP OF LYONS	ECSM	54		X	X
6028	VILLAGE OF MANLIUS, TOWNSHIP OF MANLIUS	ECSM	54	X		X
6071	VILLAGE OF MCGRAW, TOWNSHIP OF CORTLANDVILLE	ECSM	54	X		X
6029	VILLAGE OF MEXICO, TOWNSHIP OF MEXICO	ECSM	54	X		X
6030	VILLAGE OF MINOA, TOWNSHIP OF MANLIUS	ECSM	54	X		X
6086	VILLAGE OF NORTH SYRACUSE, TOWNSHIP OF CICERO	ECSM	54	X		X
6082	VILLAGE OF NORTH SYRACUSE, TOWNSHIP OF CLAY	ECSM	54	X		X
6033	VILLAGE OF PARISH, TOWNSHIP OF PARISH	ECSM	54	X		X
6078	VILLAGE OF PULASKI, TOWNSHIP OF RICHLAND	ECSM	54	X		X
6079	VILLAGE OF SANDY CREEK, TOWNSHIP OF SANDY CREEK	ECSM	54	X		X
6100	VILLAGE OF SKANEATELES, TOWNSHIP OF SKANEATELES	ECSM	54	X		X
6035	VILLAGE OF SOLVAY, TOWNSHIP OF GEDDES	ECSM	54	X		X
6036	VILLAGE OF TULLY, TOWNSHIP OF TULLY	ECSM	54		X	X
6480	CITY OF LITTLE FALLS	ECSM	56	X		X
6401	CITY OF ONEIDA, INSIDE	ECSM	56	X		X
6402	CITY OF ONEIDA, OUTSIDE	ECSM	56	X		X
6439	CITY OF ROME, INSIDE	ECSM	56	X		X
6475	CITY OF ROME, OUTSIDE	ECSM	56	X		X
6428	CITY OF SHERRILL, TOWNSHIP OF VERNON	ECSM	56	X		X
6412	CITY OF UTICA	ECSM	56	X		X
6093	TOWNSHIP OF AMBOY	ECSM	56		X	X
6474	TOWNSHIP OF ANNSVILLE	ECSM	56	X		X
6494	TOWNSHIP OF ARIETTA	ECSM	56		X	X
6476	TOWNSHIP OF AVA	ECSM	56	X		X
6445	TOWNSHIP OF BOONVILLE	ECSM	56		X	X
6482	TOWNSHIP OF CAMDEN	ECSM	56	X		X
6429	TOWNSHIP OF COLUMBIA	ECSM	56	X		X
6430	TOWNSHIP OF DANUBE	ECSM	56		X	X
6446	TOWNSHIP OF DEERFIELD	ECSM	56	X		X
6431	TOWNSHIP OF FAIRFIELD	ECSM	56		X	X
6447	TOWNSHIP OF FLOYD	ECSM	56		X	X
6448	TOWNSHIP OF FORESTPORT	ECSM	56		X	X
6432	TOWNSHIP OF FRANKFORT	ECSM	56	X		X
6433	TOWNSHIP OF GERMAN FLATTS	ECSM	56		X	X
6434	TOWNSHIP OF HERKIMER	ECSM	56	X		X
6488	TOWNSHIP OF INLET	ECSM	56		X	X
6449	TOWNSHIP OF KIRKLAND	ECSM	56		X	X
6473	TOWNSHIP OF LEE	ECSM	56		X	X
6423	TOWNSHIP OF LENOX	ECSM	56		X	X
6331	TOWNSHIP OF LEWIS	ECSM	56		X	X
6427	TOWNSHIP OF LINCOLN	ECSM	56		X	X
6435	TOWNSHIP OF LITCHFIELD	ECSM	56	X		X
6436	TOWNSHIP OF LITTLE FALLS	ECSM	56	X		X
6489	TOWNSHIP OF LONG LAKE	ECSM	56		X	X
6437	TOWNSHIP OF MANHEIM	ECSM	56	X		X
6451	TOWNSHIP OF MARCY	ECSM	56	X		X
6462	TOWNSHIP OF MARSHALL	ECSM	56		X	X
6450	TOWNSHIP OF MOREHOUSE	ECSM	56	X		X
6452	TOWNSHIP OF NEW HARTFORD	ECSM	56	X		X
6438	TOWNSHIP OF NEWPORT	ECSM	56		X	X
6413	TOWNSHIP OF NORWAY	ECSM	56		X	X
6486	TOWNSHIP OF OHIO	ECSM	56	X		X
6426	TOWNSHIP OF OPPENHEIM	ECSM	56		X	X
6453	TOWNSHIP OF PARIS	ECSM	56	X		X
6454	TOWNSHIP OF REMSEN	ECSM	56	X		X
6440	TOWNSHIP OF RUSSIA	ECSM	56	X		X
6441	TOWNSHIP OF SALISBURY	ECSM	56		X	X
6442	TOWNSHIP OF SCHUYLER	ECSM	56		X	X
6492	TOWNSHIP OF SMITHFIELD	ECSM	56		X	X
6455	TOWNSHIP OF STEUBEN	ECSM	56	X		X
6421	TOWNSHIP OF STOCKBRIDGE	ECSM	56		X	X
6472	TOWNSHIP OF STRATFORD	ECSM	56	X		X
6456	TOWNSHIP OF TRENTON	ECSM	56	X		X
6424	TOWNSHIP OF VERNON	ECSM	56	X		X
6425	TOWNSHIP OF VERONA	ECSM	56	X		X

01/04/2006 8:55

Davey Resource and ECSM Municipality Listing
STREET LIGHT LISTING

TAX DIST	MUNICIPALITY	Contractor	REGION	Y	N	COMPLETED
6484	TOWNSHIP OF VIENNA	ECSM	56	X		X
6496	TOWNSHIP OF WARREN	ECSM	56	X		X
6457	TOWNSHIP OF WESTERN	ECSM	56		X	X
6422	TOWNSHIP OF WESTMORELAND	ECSM	56	X		X
6458	TOWNSHIP OF WHITESTOWN	ECSM	56	X		X
6490	TOWNSHIP OF WILLIAMSTOWN	ECSM	56		X	X
6485	VILLAGE OF BOONVILLE, TOWNSHIP OF BOONVILLE	ECSM	56		X	X
6481	VILLAGE OF CAMDEN, TOWNSHIP OF CAMDEN	ECSM	56	X		X
6408	VILLAGE OF CANASTOTA, TOWNSHIP OF LENNOX	ECSM	56	X		X
6414	VILLAGE OF CLAYVILLE, TOWNSHIP OF PARIS	ECSM	56	X		X
6415	VILLAGE OF CLINTON, TOWNSHIP OF KIRKLAND	ECSM	56	X		X
6403	VILLAGE OF COLD BROOK, TOWNSHIP OF RUSSIA	ECSM	56		X	X
6404	VILLAGE OF DOLGEVILLE, TOWNSHIP OF MANHEIM	ECSM	56		X	X
6443	VILLAGE OF DOLGEVILLE, TOWNSHIP OF OPPENHEIM	ECSM	56		X	X
6405	VILLAGE OF FRANKFORT, TOWNSHIP OF FRANKFORT	ECSM	56	X		X
6444	VILLAGE OF HERKIMER, TOWNSHIP OF HERKIMER	ECSM	56	X		X
6416	VILLAGE OF HOLLAND PATENT, TOWNSHIP OF TRENTON	ECSM	56		X	X
6459	VILLAGE OF ILION, TOWNSHIP OF GERMAN FLATTS	ECSM	56		X	X
6465	VILLAGE OF MIDDLEVILLE, TOWNSHIP OF FAIRFIELD	ECSM	56		X	X
6461	VILLAGE OF MIDDLEVILLE, TOWNSHIP OF NEWPORT	ECSM	56		X	X
6466	VILLAGE OF MOHAWK, TOWNSHIP OF GERMAN FLATTS	ECSM	56	X		X
6410	VILLAGE OF MUNNSVILLE, TOWNSHIP OF STOCKBRIDGE	ECSM	56		X	X
6417	VILLAGE OF NEW HARTFORD, TOWNSHIP OF NEW HARTFORD	ECSM	56	X		X
6460	VILLAGE OF NEW YORK MILLS, TOWNSHIP OF NEW HARTFORD	ECSM	56	X		X
6418	VILLAGE OF NEW YORK MILLS, TOWNSHIP OF WHITESTOWN	ECSM	56	X		X
6467	VILLAGE OF NEWPORT, TOWNSHIP OF NEWPORT	ECSM	56	X		X
6406	VILLAGE OF ONEIDA CASTLE, TOWNSHIP OF VERNON	ECSM	56	X		X
6419	VILLAGE OF ORISKANY, TOWNSHIP OF WHITESTOWN	ECSM	56	X		X
6411	VILLAGE OF POLAND, TOWNSHIP OF NEWPORT	ECSM	56		X	X
6463	VILLAGE OF POLAND, TOWNSHIP OF RUSSIA	ECSM	56		X	X
6420	VILLAGE OF PROSPECT, TOWNSHIP OF TRENTON	ECSM	56	X		X
6469	VILLAGE OF REMSEN, TOWNSHIP OF REMSEN	ECSM	56	X		X
6470	VILLAGE OF REMSEN, TOWNSHIP OF TRENTON	ECSM	56	X		X
6495	VILLAGE OF SYLVAN BEACH, TOWNSHIP OF VIENNA	ECSM	56	X		X
6471	VILLAGE OF TRENTON, TOWNSHIP OF TRENTON	ECSM	56	X		X
6407	VILLAGE OF VERNON, TOWNSHIP OF VERNON	ECSM	56	X		X
6409	VILLAGE OF WAMPSVILLE, TOWNSHIP OF LENNOX	ECSM	56	X		X
6478	VILLAGE OF WHITESBORO, TOWNSHIP OF WHITESTOWN	ECSM	56	X		X
6479	VILLAGE OF YORKVILLE, TOWNSHIP OF WHITESTOWN	ECSM	56	X		X
6201	CITY OF OGDENSBURG	ECSM	57	X		X
6211	CITY OF WATERTOWN	ECSM	57	X		X
6230	TOWNSHIP OF ADAMS	ECSM	57	X		X
6233	TOWNSHIP OF ALEXANDRIA	ECSM	57	X		X
6344	TOWNSHIP OF ALTAMONT	ECSM	57	X		X
6295	TOWNSHIP OF ANTWERP	ECSM	57		X	X
6306	TOWNSHIP OF BANGOR	ECSM	57		X	X
6307	TOWNSHIP OF BELLMONT	ECSM	57		X	X
6337	TOWNSHIP OF BLACKBROOK	ECSM	57		X	X
6308	TOWNSHIP OF BOMBAY	ECSM	57		X	X
6250	TOWNSHIP OF BRANDON	ECSM	57		X	X
6309	TOWNSHIP OF BRASHER	ECSM	57		X	X
6346	TOWNSHIP OF BRIGHTON	ECSM	57		X	X
6238	TOWNSHIP OF BROWNVILLE	ECSM	57		X	X
6220	TOWNSHIP OF CANTON	ECSM	57	X		X
6240	TOWNSHIP OF CAPE VINCENT	ECSM	57	X		X
6241	TOWNSHIP OF CHAMPION	ECSM	57		X	X
6242	TOWNSHIP OF CLARE	ECSM	57		X	X
6243	TOWNSHIP OF CLAYTON	ECSM	57	X		X
6244	TOWNSHIP OF CLIFTON	ECSM	57	X		X
6251	TOWNSHIP OF COLTON	ECSM	57		X	X
6310	TOWNSHIP OF CONSTABLE	ECSM	57		X	X
6246	TOWNSHIP OF CROGHAN	ECSM	57		X	X
6311	TOWNSHIP OF DEKALB	ECSM	57		X	X
6247	TOWNSHIP OF DENMARK	ECSM	57		X	X
6312	TOWNSHIP OF DEPEYSTER	ECSM	57		X	X
6256	TOWNSHIP OF DIANA	ECSM	57		X	X

01/04/2006 8:55

Davey Resource and ECSM Municipality Listing
STREET LIGHT LISTING

TAX DIST	MUNICIPALITY	Contractor	REGION	Y	N	COMPLETED
6313	TOWNSHIP OF DICKINSON	ECSM	57		X	X
6333	TOWNSHIP OF DUANE	ECSM	57		X	X
6249	TOWNSHIP OF EDWARDS	ECSM	57		X	X
6104	TOWNSHIP OF ELLISBURG	ECSM	57		X	X
6314	TOWNSHIP OF FINE	ECSM	57		X	X
6315	TOWNSHIP OF FORT COVINGTON	ECSM	57		X	X
6316	TOWNSHIP OF FOWLER	ECSM	57		X	X
6347	TOWNSHIP OF FRANKLIN	ECSM	57		X	X
6317	TOWNSHIP OF GOUVERNEUR	ECSM	57	X		X
6252	TOWNSHIP OF GREIG	ECSM	57		X	X
6228	TOWNSHIP OF HAMMOND	ECSM	57		X	X
6348	TOWNSHIP OF HARRIETSTOWN	ECSM	57		X	X
6253	TOWNSHIP OF HARRISBURG	ECSM	57		X	X
6254	TOWNSHIP OF HENDERSON	ECSM	57		X	X
6231	TOWNSHIP OF HERMON	ECSM	57		X	X
6255	TOWNSHIP OF HIGH MARKET	ECSM	57		X	X
6319	TOWNSHIP OF HOPKINTON	ECSM	57		X	X
6263	TOWNSHIP OF HOUNSFIELD	ECSM	57		X	X
6320	TOWNSHIP OF LAWRENCE	ECSM	57		X	X
6278	TOWNSHIP OF LERAY	ECSM	57		X	X
6331	TOWNSHIP OF LEWIS	ECSM	57		X	X
6258	TOWNSHIP OF LEYDEN	ECSM	57		X	X
6232	TOWNSHIP OF LISBON	ECSM	57		X	X
6259	TOWNSHIP OF LORRAINE	ECSM	57		X	X
6321	TOWNSHIP OF LOUISVILLE	ECSM	57		X	X
6260	TOWNSHIP OF LOWVILLE	ECSM	57	X		X
6261	TOWNSHIP OF LYME	ECSM	57		X	X
6290	TOWNSHIP OF LYONSDALE	ECSM	57		X	X
6322	TOWNSHIP OF MACOMB	ECSM	57	X		X
6323	TOWNSHIP OF MADRID	ECSM	57		X	X
6324	TOWNSHIP OF MALONE	ECSM	57	X		X
6262	TOWNSHIP OF MARTINSBURG	ECSM	57		X	X
6326	TOWNSHIP OF MOIRA	ECSM	57		X	X
6288	TOWNSHIP OF MONTAGUE	ECSM	57		X	X
6239	TOWNSHIP OF MORRISTOWN	ECSM	57		X	X
6264	TOWNSHIP OF NEW BREMEN	ECSM	57		X	X
6266	TOWNSHIP OF NORFOLK	ECSM	57		X	X
6339	TOWNSHIP OF NORTH ELBA	ECSM	57		X	X
6267	TOWNSHIP OF ORLEANS	ECSM	57		X	X
6328	TOWNSHIP OF OSWEGATCHIE	ECSM	57		X	X
6269	TOWNSHIP OF PAMELIA	ECSM	57		X	X
6329	TOWNSHIP OF PARISHVILLE	ECSM	57		X	X
6296	TOWNSHIP OF PHILADEPHIA	ECSM	57		X	X
6234	TOWNSHIP OF PIERCEFIELD	ECSM	57		X	X
6270	TOWNSHIP OF PIERREPONT	ECSM	57		X	X
6289	TOWNSHIP OF PINCKNEY	ECSM	57		X	X
6271	TOWNSHIP OF PITCAIRN	ECSM	57		X	X
6272	TOWNSHIP OF POTSDAM	ECSM	57		X	X
6284	TOWNSHIP OF RODMAN	ECSM	57		X	X
6236	TOWNSHIP OF ROSSIE	ECSM	57		X	X
6291	TOWNSHIP OF RUSSELL	ECSM	57		X	X
6277	TOWNSHIP OF RUTLAND	ECSM	57		X	X
6248	TOWNSHIP OF SANTA CLARA	ECSM	57	X		X
6338	TOWNSHIP OF SARANAC	ECSM	57	X		X
6342	TOWNSHIP OF ST ARMAND	ECSM	57		X	X
6268	TOWNSHIP OF STOCKHOLM	ECSM	57		X	X
6279	TOWNSHIP OF THERESA	ECSM	57	X		X
6280	TOWNSHIP OF TURIN	ECSM	57		X	X
6245	TOWNSHIP OF WADDINGTON	ECSM	57		X	X
6281	TOWNSHIP OF WATERTOWN	ECSM	57	X		X
6282	TOWNSHIP OF WATSON	ECSM	57		X	X
6318	TOWNSHIP OF WAVERLY	ECSM	57		X	X
6493	TOWNSHIP OF WEBB	ECSM	57		X	X
6285	TOWNSHIP OF WEST TURIN	ECSM	57		X	X
6327	TOWNSHIP OF WESTVILLE	ECSM	57		X	X
6286	TOWNSHIP OF WILNA	ECSM	57		X	X

01/04/2006 8:55

Davey Resource and ECSM Municipality Listing
STREET LIGHT LISTING

TAX DIST	MUNICIPALITY	Contractor	REGION	Y	N	COMPLETED
6287	TOWNSHIP OF WORTH	ECSM	57		X	X
6335	VILLAGE OF ADAMS, TOWNSHIP OF ADAMS	ECSM	57	X		X
6214	VILLAGE OF ALEXANDRIA BAY, TOWNSHIP OF ALEXANDRIA	ECSM	57		X	X
6292	VILLAGE OF ANTWERP, TOWNSHIP OF ANTWERP	ECSM	57	X		X
6235	VILLAGE OF BLACK RIVER, TOWNSHIP OF LERAY	ECSM	57	X		X
6203	VILLAGE OF BLACK RIVER, TOWNSHIP OF RUTLAND	ECSM	57	X		X
6350	VILLAGE OF BLOOMINGDALE, TOWNSHIP OF ST ARMAND	ECSM	57		X	X
6205	VILLAGE OF BROWNVILLE, TOWNSHIP OF BROWNVILLE	ECSM	57	X		X
6202	VILLAGE OF BRUSHTON, TOWNSHIP OF MORIAH	ECSM	57		X	X
6351	VILLAGE OF CANTON, TOWNSHIP OF CANTON	ECSM	57	X		X
6265	VILLAGE OF CAPE VINCENT, TOWNSHIP OF CAPE VINCENT	ECSM	57	X		X
6212	VILLAGE OF CARTHAGE, TOWNSHIP OF WILNA	ECSM	57	X		X
6207	VILLAGE OF CASTORLAND, TOWNSHIP OF DENMARK	ECSM	57	X		X
6273	VILLAGE OF CHAUMONT, TOWNSHIP OF LYME	ECSM	57	X		X
6274	VILLAGE OF CLAYTON, TOWNSHIP OF CLAYTON	ECSM	57	X		X
6332	VILLAGE OF CONSTABLEVILLE, TOWNSHIP OF WEST TURIN	ECSM	57		X	X
6334	VILLAGE OF COPENHAGEN, TOWNSHIP OF DENMARK	ECSM	57	X		X
6210	VILLAGE OF CROGHAN, TOWNSHIP OF CROGHAN	ECSM	57	X		X
6215	VILLAGE OF CROGHAN, TOWNSHIP OF NEW BREMEN	ECSM	57		X	X
6216	VILLAGE OF DEFERIET, TOWNSHIP OF WILNA	ECSM	57		X	X
6217	VILLAGE OF DEXTER, TOWNSHIP OF BROWNVILLE	ECSM	57	X		X
6218	VILLAGE OF EDWARDS, TOWNSHIP OF EDWARDS	ECSM	57		X	X
6116	VILLAGE OF ELLISBURG, TOWNSHIP OF ELLISBURG	ECSM	57		X	X
6219	VILLAGE OF EVANS MILLS, TOWNSHIP OF LERAY	ECSM	57	X		X
6221	VILLAGE OF GLEN PARK, TOWNSHIP OF BROWNVILLE	ECSM	57	X		X
6222	VILLAGE OF GLEN PARK, TOWNSHIP OF PAMELIA	ECSM	57		X	X
6275	VILLAGE OF GOUVERNEUR, TOWNSHIP OF GOUVERNEUR	ECSM	57	X		X
6276	VILLAGE OF HAMMOND, TOWNSHIP OF HAMMOND	ECSM	57	X		X
6223	VILLAGE OF HARRISVILLE, TOWNSHIP OF DIANA	ECSM	57	X		X
6206	VILLAGE OF HERMON, TOWNSHIP OF HERMON	ECSM	57	X		X
6224	VILLAGE OF HERRINGS, TOWNSHIP OF WILNA	ECSM	57		X	X
6299	VILLAGE OF HEUVELTON, TOWNSHIP OF OSWEGATCHIE	ECSM	57		X	X
6340	VILLAGE OF LAKE PLACID, TOWNSHIP OF NORTH ELBA	ECSM	57		X	X
6213	VILLAGE OF LOWVILLE, TOWNSHIP OF LOWVILLE	ECSM	57		X	X
6301	VILLAGE OF LYONS FALLS, TOWNSHIP OF LYONSDALE	ECSM	57	X		X
6297	VILLAGE OF LYONS FALLS, TOWNSHIP OF WEST TURIN	ECSM	57	X		X
6208	VILLAGE OF MALONE, TOWNSHIP OF MALONE	ECSM	57	X		X
6336	VILLAGE OF MANNSVILLE, TOWNSHIP OF ELLISBURG	ECSM	57		X	X
6209	VILLAGE OF MASSENA, TOWNSHIP OF MASSENA	ECSM	57	X		X
6325	VILLAGE OF MASSENA, TOWNSHIP OF MASSENA	ECSM	57	X		X
6300	VILLAGE OF MORRISTOWN, TOWNSHIP OF MORRISTOWN	ECSM	57		X	X
6225	VILLAGE OF NORWOOD, TOWNSHIP OF NORFOLK	ECSM	57		X	X
6298	VILLAGE OF NORWOOD, TOWNSHIP OF POTSDAM	ECSM	57		X	X
6293	VILLAGE OF PHILADELPHIA, TOWNSHIP OF PHILADELPHIA	ECSM	57		X	X
6226	VILLAGE OF PORT LEYDEN, TOWNSHIP OF LEYDEN	ECSM	57	X		X
6227	VILLAGE OF PORT LEYDEN, TOWNSHIP OF LYONSDALE	ECSM	57	X		X
6302	VILLAGE OF POTSDAM, TOWNSHIP OF POTSDAM	ECSM	57	X		X
6303	VILLAGE OF RENSSELAER FALLS, TOWNSHIP OF CANTON	ECSM	57		X	X
6304	VILLAGE OF RICHVILLE, TOWNSHIP OF DEKALB	ECSM	57		X	X
6237	VILLAGE OF SACKETS HARBOR, TOWNSHIP OF HAUNSFIELD	ECSM	57	X		X
6349	VILLAGE OF SARANAC LAKE, TOWNSHIP OF HARRIETSTOWN	ECSM	57	X		X
6341	VILLAGE OF SARANAC LAKE, TOWNSHIP OF NORTH ELBA	ECSM	57	X		X
6343	VILLAGE OF SARANAC LAKE, TOWNSHIP OF ST ARMAND	ECSM	57	X		X
6294	VILLAGE OF THERESA, TOWNSHIP OF THERESA	ECSM	57		X	X
6345	VILLAGE OF TUPPER LAKE, TOWNSHIP OF ALTAMONT	ECSM	57	X		X
6200	VILLAGE OF TURIN, TOWNSHIP OF TURIN	ECSM	57		X	X
6305	VILLAGE OF WADDINGTON, TOWNSHIP OF WADDINGTON	ECSM	57		X	X
6229	VILLAGE OF WEST CHARTHAGE, TOWNSHIP OF CHAMPION	ECSM	57	X		X
7101	CITY OF ALBANY	ECSM	60	X		X
7302	CITY OF COHOES	ECSM	60		X	X
7401	CITY OF HUDSON	ECSM	60	X		X
7102	CITY OF RENSSELAER	ECSM	60	X		X
7201	CITY OF SCHENECTADY	ECSM	60	X		X
7301	CITY OF TROY	ECSM	60	X		X
7303	CITY OF WATERVLIET	ECSM	60	X		X
8320	TOWNSHIP OF ATHENS	ECSM	60		X	X

01/04/2006 8:55

Davey Resource and ECSM Municipality Listing
STREET LIGHT LISTING

TAX DIST	MUNICIPALITY	Contractor	REGION	Y	N	COMPLETED
7226	TOWNSHIP OF BALLSTON	ECSM	60		X	X
7123	TOWNSHIP OF BETHLEHEM	ECSM	60		X	X
7326	TOWNSHIP OF BRUNSWICK	ECSM	60		X	X
7229	TOWNSHIP OF CHARLTON	ECSM	60		X	X
7422	TOWNSHIP OF CHATHAM	ECSM	60		X	X
7426	TOWNSHIP OF CLAVERACK	ECSM	60		X	X
7430	TOWNSHIP OF CLERMONT	ECSM	60		X	X
7230	TOWNSHIP OF CLIFTON PARK	ECSM	60	X		X
8375	TOWNSHIP OF CLINTON	ECSM	60	X		X
7126	TOWNSHIP OF COEYMANS	ECSM	60		X	X
7121	TOWNSHIP OF COLONIE	ECSM	60		X	X
8383	TOWNSHIP OF COXSACKIE	ECSM	60	X		X
7131	TOWNSHIP OF EAST GREENBUSH	ECSM	60	X		X
7223	TOWNSHIP OF FLORIDA	ECSM	60	X		X
7433	TOWNSHIP OF GALLATIN	ECSM	60		X	X
7431	TOWNSHIP OF GERMANTOWN	ECSM	60		X	X
7428	TOWNSHIP OF GHENT	ECSM	60		X	X
7224	TOWNSHIP OF GLENVILLE	ECSM	60		X	X
7327	TOWNSHIP OF GRAFTON	ECSM	60	X		X
7427	TOWNSHIP OF GREENPORT	ECSM	60		X	X
7122	TOWNSHIP OF GUILDERLAND	ECSM	60		X	X
7329	TOWNSHIP OF HALFMOON	ECSM	60	X		X
7330	TOWNSHIP OF HOOSICK	ECSM	60	X		X
8405	TOWNSHIP OF HYDE PARK	ECSM	60		X	X
7423	TOWNSHIP OF KINDERHOOK	ECSM	60		X	X
7429	TOWNSHIP OF LIVINGSTON	ECSM	60		X	X
8318	TOWNSHIP OF MILAN	ECSM	60		X	X
7129	TOWNSHIP OF NASSAU	ECSM	60		X	X
8384	TOWNSHIP OF NEW BALTIMORE	ECSM	60	X		X
7124	TOWNSHIP OF NEW SCOTLAND	ECSM	60		X	X
7227	TOWNSHIP OF NISKAYUNA	ECSM	60	X		X
7127	TOWNSHIP OF NORTH GREENBUSH	ECSM	60		X	X
8406	TOWNSHIP OF PETERSBURG	ECSM	60		X	X
7325	TOWNSHIP OF PITTSTOWN	ECSM	60	X	X	X
8331	TOWNSHIP OF PLEASANT VALLEY	ECSM	60		X	X
7323	TOWNSHIP OF POESTENKILL	ECSM	60	X		X
7228	TOWNSHIP OF PRINCETOWN	ECSM	60		X	X
7435	TOWNSHIP OF RED HOOK	ECSM	60		X	X
7231	TOWNSHIP OF ROTTERDAM	ECSM	60	X		X
7133	TOWNSHIP OF SAND LAKE	ECSM	60	X		X
7324	TOWNSHIP OF SCHAGHTICOKE	ECSM	60		X	X
7128	TOWNSHIP OF SCHODACK	ECSM	60		X	X
7134	TOWNSHIP OF STEPHENTOWN	ECSM	60		X	X
7425	TOWNSHIP OF STOCKPORT	ECSM	60	X		X
7130	TOWNSHIP OF STUYVESANT	ECSM	60		X	X
7432	TOWNSHIP OF TAGHKANIC	ECSM	60		X	X
7328	TOWNSHIP OF WATERFORD	ECSM	60	X		X
7935	TOWNSHIP OF WHITE CREEK	ECSM	60		X	X
7111	VILLAGE OF ALTAMONT, TOWNSHIP OF GUILDERLAND	ECSM	60	X		X
8314	VILLAGE OF ATHENS, TOWNSHIP OF ATHENS	ECSM	60	X		X
7110	VILLAGE OF CASTLETON ON HUDSON, TOWNSHIP OF SCHODACK	ECSM	60		X	X
7107	VILLAGE OF COLONIE, TOWNSHIP OF COLONIE	ECSM	60		X	X
7308	VILLAGE OF GREEN ISLAND, TOWNSHIP OF GREEN ISLAND	ECSM	60	X		X
7312	VILLAGE OF HOOSICK FALLS, TOWNSHIP OF HOOSICK	ECSM	60	X		X
7407	VILLAGE OF KINDERHOOK, TOWNSHIP OF KINDERHOOK	ECSM	60	X		X
7106	VILLAGE OF MENANDS, TOWNSHIP OF COLONIE	ECSM	60	X		X
7109	VILLAGE OF NASSAU, TOWNSHIP OF NASSAU	ECSM	60	X		X
7112	VILLAGE OF NASSAU, TOWNSHIP OF SCHODACK	ECSM	60	X		X
7113	VILLAGE OF RAVENA, TOWNSHIP OF COEYMANS	ECSM	60		X	X
7311	VILLAGE OF SCHAGHTICOKE, TOWNSHIP OF SCHAGHTICOKE	ECSM	60	X		X
7206	VILLAGE OF SCOTIA, TOWNSHIP OF GLENVILLE	ECSM	60		X	X
7406	VILLAGE OF VALATIE, TOWNSHIP OF KINDERHOOK	ECSM	60	X		X
7309	VILLAGE OF VALLEY FALLS, TOWNSHIP OF PITTS	ECSM	60	X		X
7310	VILLAGE OF VALLEY FALLS, TOWNSHIP OF SCHAGHTICOKE	ECSM	60	X		X
7108	VILLAGE OF VOORHEESVILLE, TOWNSHIP OF NEW SCOTLAND	ECSM	60	X		X
7307	VILLAGE OF WATERFORD, TOWNSHIP OF WATERFORD	ECSM	60	X		X

01/04/2006 8:55

Davey Resource and ECSM Municipality Listing
STREET LIGHT LISTING

TAX DIST	MUNICIPALITY	Contractor	REGION	Y	N	COMPLETED
7601	CITY OF AMSTERDAM	ECSM	62	X		X
8001	CITY OF GLENS FALLS	ECSM	62	X		X
7801	CITY OF GLOVERSVILLE	ECSM	62	X		X
7802	CITY OF JOHNSTOWN	ECSM	62	X		X
7901	CITY OF SARATOGA SPRINGS, INSIDE	ECSM	62	X		X
7902	CITY OF SARATOGA SPRINGS, OUTSIDE	ECSM	62	X		X
7935	TOWN OF WHITE CREEK	ECSM	62		X	X
7233	TOWNSHIP OF AMSTERDAM	ECSM	62	X		X
7939	TOWNSHIP OF ARGYLE	ECSM	62		X	X
7839	TOWNSHIP OF ARIETTA	ECSM	62		X	X
7834	TOWNSHIP OF BENSON	ECSM	62		X	X
7132	TOWNSHIP OF BERNE	ECSM	62		X	X
7841	TOWNSHIP OF BLEEKER	ECSM	62		X	X
7531	TOWNSHIP OF BLENHEIM	ECSM	62	X		X
8127	TOWNSHIP OF BOLTON	ECSM	62	X		X
7629	TOWNSHIP OF BROADALBIN	ECSM	62		X	X
7537	TOWNSHIP OF BROOME	ECSM	62		X	X
7936	TOWNSHIP OF CAMBRIDGE	ECSM	62	X		X
7721	TOWNSHIP OF CANAJOHARIE	ECSM	62	X		X
7532	TOWNSHIP OF CARLISLE	ECSM	62		X	X
7825	TOWNSHIP OF CAROGA	ECSM	62		X	X
7541	TOWNSHIP OF CHARLESTON	ECSM	62		X	X
7724	TOWNSHIP OF CHERRY VALLEY	ECSM	62		X	X
8129	TOWNSHIP OF CHESTER	ECSM	62	X		X
7521	TOWNSHIP OF COBLESKILL	ECSM	62	X		X
7929	TOWNSHIP OF CORINTH	ECSM	62	X		X
8222	TOWNSHIP OF CROWN POINT	ECSM	62	X		X
7733	TOWNSHIP OF DANUBE	ECSM	62		X	X
7843	TOWNSHIP OF DAY	ECSM	62		X	X
7543	TOWNSHIP OF DECATUR	ECSM	62		X	X
8030	TOWNSHIP OF DRESDEN	ECSM	62	X		X
7225	TOWNSHIP OF DUANESBURG	ECSM	62	X		X
7938	TOWNSHIP OF EASTON	ECSM	62		X	X
7832	TOWNSHIP OF EDINBURG	ECSM	62	X		X
7826	TOWNSHIP OF EPHRATAH	ECSM	62		X	X
7525	TOWNSHIP OF ESPERANCE	ECSM	62		X	X
8026	TOWNSHIP OF FORT ANN	ECSM	62	X		X
7934	TOWNSHIP OF FORT EDWARD	ECSM	62	X		X
7530	TOWNSHIP OF FULTON	ECSM	62	X		X
7232	TOWNSHIP OF GALWAY	ECSM	62		X	X
7624	TOWNSHIP OF GLEN	ECSM	62		X	X
8033	TOWNSHIP OF GRANDVILLE	ECSM	62		X	X
7923	TOWNSHIP OF GREENFIELD	ECSM	62		X	X
7933	TOWNSHIP OF GREENWICH	ECSM	62	X		X
8125	TOWNSHIP OF HADLEY	ECSM	62		X	X
8128	TOWNSHIP OF HAGUE	ECSM	62		X	X
8028	TOWNSHIP OF HAMPTON	ECSM	62	X		X
8024	TOWNSHIP OF HARTFORD	ECSM	62		X	X
8402	TOWNSHIP OF HEBRON	ECSM	62		X	X
7835	TOWNSHIP OF HOPE	ECSM	62	X		X
8133	TOWNSHIP OF HORICON	ECSM	62		X	X
8140	TOWNSHIP OF INDIAN LAD	ECSM	62		X	X
7937	TOWNSHIP OF JACKSON	ECSM	62	X		X
8131	TOWNSHIP OF JOHNSBURG	ECSM	62		X	X
7634	TOWNSHIP OF JOHNSTOWN	ECSM	62	X		X
8023	TOWNSHIP OF KINGSBURY	ECSM	62		X	X
7125	TOWNSHIP OF KNOX	ECSM	62		X	X
8040	TOWNSHIP OF LAKE GEORGE	ECSM	62	X		X
8123	TOWNSHIP OF LAKE LUZERNE	ECSM	62		X	X
7838	TOWNSHIP OF LAKE PLEASANT	ECSM	62		X	X
7927	TOWNSHIP OF MALTA	ECSM	62	X		X
7727	TOWNSHIP OF MANHEIM	ECSM	62		X	X
7522	TOWNSHIP OF MARYLAND	ECSM	62	X		X
7830	TOWNSHIP OF MAYFIELD	ECSM	62		X	X
7136	TOWNSHIP OF MIDDLEBURGH	ECSM	62		X	X
7738	TOWNSHIP OF MIDDLEFIELD	ECSM	62		X	X

01/04/2006 8:55

Davey Resource and ECSM Municipality Listing
STREET LIGHT LISTING

TAX DIST	MUNICIPALITY	Contractor	REGION	Y	N	COMPLETED
7635	TOWNSHIP OF MILTON	ECSM	62	X		X
7729	TOWNSHIP OF MINDEN	ECSM	62		X	X
8134	TOWNSHIP OF MINERVA	ECSM	62		X	X
7626	TOWNSHIP OF MOHAWK	ECSM	62	X		X
8022	TOWNSHIP OF MOREAU	ECSM	62	X		X
8221	TOWNSHIP OF MORIAH	ECSM	62	X		X
8132	TOWNSHIP OF NORTH HUDSON	ECSM	62	X		X
7831	TOWNSHIP OF NORTHHAMPTON	ECSM	62	X		X
7928	TOWNSHIP OF NORTHUMBERLAND	ECSM	62	X		X
7728	TOWNSHIP OF OPPENHEIM	ECSM	62		X	X
7628	TOWNSHIP OF PALATINE	ECSM	62		X	X
7627	TOWNSHIP OF PERTH	ECSM	62	X		X
7228	TOWNSHIP OF PRINCETOWN	ECSM	62		X	X
7833	TOWNSHIP OF PROVIDENCE	ECSM	62	X		X
8034	TOWNSHIP OF PUTNAM	ECSM	62		X	X
8021	TOWNSHIP OF QUEENSBURY	ECSM	62	X		X
7535	TOWNSHIP OF RICHMONDVILLE	ECSM	62		X	X
7540	TOWNSHIP OF ROOT	ECSM	62		X	X
7544	TOWNSHIP OF ROSEBOOM	ECSM	62		X	X
7630	TOWNSHIP OF SAINT JOHNSVILLE	ECSM	62		X	X
7921	TOWNSHIP OF SARATOGA	ECSM	62	X		X
7523	TOWNSHIP OF SCHOHARIE	ECSM	62	X		X
8130	TOWNSHIP OF SCHROON	ECSM	62	X		X
7529	TOWNSHIP OF SEWARD	ECSM	62		X	X
7539	TOWNSHIP OF SHARON	ECSM	62		X	X
7735	TOWNSHIP OF SPRINGFIELD	ECSM	62	X		X
6468	TOWNSHIP OF STARK	ECSM	62		X	X
7730	TOWNSHIP OF STARK	ECSM	62		X	X
7924	TOWNSHIP OF STILLWATER	ECSM	62		X	X
8043	TOWNSHIP OF STONY CREEK	ECSM	62		X	X
7736	TOWNSHIP OF STRATFORD EAST	ECSM	62		X	X
7536	TOWNSHIP OF SUMMIT	ECSM	62		X	X
8042	TOWNSHIP OF THURMAN	ECSM	62		X	X
8036	TOWNSHIP OF TICONDEROGA	ECSM	62	X		X
8121	TOWNSHIP OF WARRENSBURG	ECSM	62	X		X
7836	TOWNSHIP OF WELLS	ECSM	62		X	X
8225	TOWNSHIP OF WESTPORT	ECSM	62		X	X
8029	TOWNSHIP OF WHITEHALL	ECSM	62	X		X
7922	TOWNSHIP OF WILTON	ECSM	62		X	X
7526	TOWNSHIP OF WORCESTER	ECSM	62		X	X
7135	TOWNSHIP OF WRIGHT	ECSM	62		X	X
7711	VILLAGE OF AMES, TOWNSHIP OF CANAJOHARIE	ECSM	62		X	X
8006	VILLAGE OF ARGYLE, TOWNSHIP OF ARGYLE	ECSM	62		X	X
7907	VILLAGE OF BALLSTON SPA, TOWNSHIP OF BALLSTON	ECSM	62		X	X
7906	VILLAGE OF BALLSTON SPA, TOWNSHIP OF MILTON	ECSM	62		X	X
7808	VILLAGE OF BROADALBIN, TOWNSHIP OF BROADALBIN	ECSM	62		X	X
7812	VILLAGE OF BROADALBIN, TOWNSHIP OF MAYFIELD	ECSM	62		X	X
7908	VILLAGE OF CAMBRIDGE, TOWNSHIP OF CAMBRIDGE	ECSM	62	X		X
7909	VILLAGE OF CAMBRIDGE, TOWNSHIP OF WHITE CREEK	ECSM	62		X	X
7706	VILLAGE OF CANAJOHARIE, TOWNSHIP OF CANAJOHARIE	ECSM	62	X		X
7708	VILLAGE OF CHERRY VALLEY, TOWNSHIP OF CHERRY VALLEY	ECSM	62		X	X
7506	VILLAGE OF COBLESKILL, TOWNSHIP OF COBLESKILL	ECSM	62	X		X
8012	VILLAGE OF CORINTH, TOWNSHIP OF CORINTH	ECSM	62	X		X
7510	VILLAGE OF DELANSON, TOWNSHIP OF DUANESBURG	ECSM	62		X	X
7509	VILLAGE OF ESPERANCE, TOWNSHIP OF ESPERANCE	ECSM	62		X	X
7806	VILLAGE OF FONDA, TOWNSHIP OF MOHAWK	ECSM	62	X		X
8007	VILLAGE OF FORT ANN, TOWNSHIP OF FORT ANN	ECSM	62	X		X
8008	VILLAGE OF FORT EDWARD, TOWNSHIP OF FORT EDWARD	ECSM	62	X		X
7606	VILLAGE OF FORT JOHNSON, TOWNSHIP OF AMSTERDAM	ECSM	62		X	X
7714	VILLAGE OF FORT PLAIN, TOWNSHIP OF CANAJOHARIE	ECSM	62	X		X
7712	VILLAGE OF FORT PLAIN, TOWNSHIP OF MINDEN	ECSM	62		X	X
7715	VILLAGE OF FORT PLAIN, TOWNSHIP OF PALATINE	ECSM	62		X	X
7807	VILLAGE OF FULTONVILLE, TOWNSHIP OF GLEN	ECSM	62	X		X
7607	VILLAGE OF GALWAY, TOWNSHIP OF GALWAY	ECSM	62		X	X
7911	VILLAGE OF GREENWICH, TOWNSHIP OF EATON	ECSM	62	X		X
7910	VILLAGE OF GREENWICH, TOWNSHIP OF GREENWICH	ECSM	62	X		X

01/04/2006 8:55

Davey Resource and ECSM Municipality Listing
STREET LIGHT LISTING

TAX DIST	MUNICIPALITY	Contractor	REGION	Y	N	COMPLETED
7608	VILLAGE OF HAGAMAN, TOWNSHIP OF AMSTERDAM	ECSM	62		X	X
8009	VILLAGE OF HUDSON FALLS, TOWNSHIP OF KINGSBURY	ECSM	62	X		X
8106	VILLAGE OF LAKE GEORGE, TOWNSHIP OF LAKE GEORGE	ECSM	62	X		X
7809	VILLAGE OF MAYFIELD, TOWNSHIP OF MAYFIELD	ECSM	62		X	X
7508	VILLAGE OF MIDDLEBURGH, TOWNSHIP OF MIDDLEBURGH	ECSM	62	X		X
7713	VILLAGE OF NELLISTON, TOWNSHIP OF PALATINE	ECSM	62		X	X
7810	VILLAGE OF NORTHVILLE, TOWNSHIP OF NORTHHAMPTON	ECSM	62	X		X
7707	VILLAGE OF PALATINE BRIDGE, TOWNSHIP OF PALATINE	ECSM	62		X	X
8206	VILLAGE OF PORT HENRY, TOWNSHIP OF MORIAH	ECSM	62		X	X
7512	VILLAGE OF RICHMONDVILLE, TOWNSHIP OF RICHMONDVILLE	ECSM	62		X	X
7609	VILLAGE OF SAINT JOHNSVILLE, TOWNSHIP OF SAINT JOHNSVILL	ECSM	62	X		X
7511	VILLAGE OF SCHENEVUS, TOWNSHIP OF MARYLAND	ECSM	62		X	X
7507	VILLAGE OF SCHOHARIE, TOWNSHIP OF SCHOHARIE	ECSM	62	X		X
7912	VILLAGE OF SCHUYLERVILLE, TOWNSHIP OF SARATOGA	ECSM	62	X		X
7710	VILLAGE OF SHARON SPRINGS, TOWNSHIP OF SHARON	ECSM	62		X	X
8010	VILLAGE OF SOUTH GLENS FALLS, TOWNSHIP OF MOREAU	ECSM	62	X		X
7811	VILLAGE OF SPECULATOR, TOWNSHIP OF LAKE PLEASANT	ECSM	62	X		X
8313	VILLAGE OF STILLWATER, TOWNSHIP OF STILLWATER	ECSM	62	X		X
8207	VILLAGE OF TICONDEROGA, TOWNSHIP OF TICONDEROGA	ECSM	62	X		X
7913	VILLAGE OF VICTORY MILLS, TOWNSHIP OF SARATOGA	ECSM	62		X	X
8208	VILLAGE OF WESTPORT, TOWNSHIP OF WESTPORT	ECSM	62	X		X
8011	VILLAGE OF WHITEHALL, TOWNSHIP OF WHITEHALL	ECSM	62	X		X

ATTACHMENT #9

I. Quality Assurance Approach for the Elevated Voltage Test and Asset Inspection Programs:

A. General:

The accuracy, thoroughness and integrity of the information and data developed by the Programs will be measured by the implementation of the Statistical Process Control (***SPC***) quality assurance approach. ***SPC*** is typically applied to manufacturing processes and is a universally accepted method by which mass-production processes are monitored to verify the respective process is:

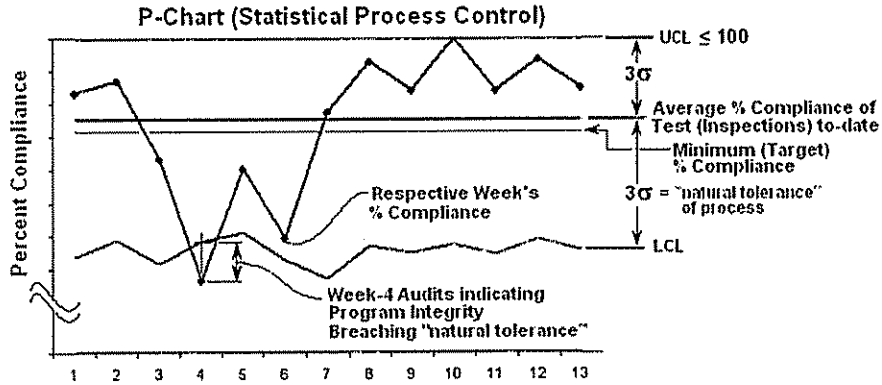
- in control (ie: not trending towards wide variation/inconsistencies)
- quantitatively compliant with the level of quality sought

In addition, ***SPC*** provides an "early warning" of the onset of quality degradation, facilitates the determination of root-causes, the development/implementation of corrective actions and the restoration of Test/Inspection Program integrity prior to the significant accumulation of deficient information/data.

Charting and Evaluating SPC Information:

Literature indicates that processes are always subject to a certain amount of variation due to "chance"; that such variation is inevitable. "Natural variation" has generically been quantified by industry as being 3 Standard Deviations (or 3σ). Variations below 3σ are considered "special causes" and prompts the investigation for its root-cause and corrective action.

The quality goal sought is to maintain the Average Percent Compliance (as cumulative calculated as the Program continues) at or above that targeted.



Sample/Audit Sizes:

Literature also indicates that sample sizes should be on the order of 1/p 2; where "p" is the targeted maximum fraction of non-compliances. Thus, for p = 5%, 1/p = 20 Samples

B. Quality Measurement:

i. General:

Compliance audits (sampling) consists of repeating completed Elevated Voltage Tests or completed Asset Inspections. Audit results are compare with the previously completed Tests/Inspection results and such Tests/Inspections are rated as Compliant or Non-Compliant.

The ratio of the number of Audits resulting in a Compliant rating to the total number of Audits conducted (expressed as percent) constitutes the quality level being achieved in the Test/Inspection Program.

ii. Elevated Voltage Tests:

Elevated Voltage (EV) Testing needs to provide results that

- precisely match Audit results

or

- are conservative with respect to Audit results

Unlike Asset Inspections, only three "attributes" are assessed for EV Testing

a) Voltage Test is Required
b) Test indicated presence of Voltage
c) Voltage measured was equal to/conservative with respect to the Audit

The level of compliance for each EV Test is quantified in Step 2 as described below

Step 1:

a.) Voltage Test Req'd
b.) Voltage Detected

Test	Audit	Compliance Evaluation
No (=0)	No (=0)	Compliant
No (=0)	Yes (=1)	Non-Compliant
Yes (=1)	No (=0)	Compliant
Yes (=1)	Yes (=1)	Compliant

c.) Voltage Level Measured

Comparison	Compliance Evaluation
Test > Audit	Compliant
Test = Audit	Compliant
Test < Audit	Non-Compliant

Step 2:

Compliance Rating Convention:

Attribute:	Audit Finding:	Score:
Voltage Test Req'd	Compliant	1
Voltage Test Req'd	Non-Compliant	0
Voltage Detected	Compliant	1
Voltage Detected	Non-Compliant	0
Voltage Level Messured	Compliant	1
Voltage Level Messured	Non-Compliant	0

Rating = 100*Σ Score/3

Special Circumstance:

Explanation:

Each of the 3 attrubutes (Test Req'd, Voltage Detected, Am't Measured) are generally evaluated independently and then combined to provide an over-all compliance rating

However, IF

1.) Inspection/Test records indicate that "Voltage Test Req'd" was "No"
and
2.) Audit records indicate that "Voltage Test Req'd" was "Yes"

Inspection Compliance for Voltage Detected and Mount Measured will be considered Non-Compliant and the Inspection/Test of the Asset Non-Compliant in total

iii. Asset Inspections:

There are many generic attributes assessed in the course of inspecting an asset; some being subjective and based on experience and judgment.

Therefore, it is unreasonable to expect an exact correlation between the results of Inspections and those of Audits.

Instead, Inspection compliance will be based on Inspection results:

- precisely matching

or

- being conservative with respect to Audit results.

The following is a brief description of the two-step process used for Asset Inspection Compliance evaluations:

1. Comparison review of *each* individual attribute identified as an issue for an Asset (ie: designation of appropriate Maintenance Codes). The chart below illustrates the three possible outcomes for each Maintenance Code identified during Inspections and/or Audits.

Treatment of Code-by-Code Comparisons:

Asset	Maintenance Codes Inspection	Audit
xxxxxx	A	B

Possible Outcomes	Dispostion	Key
A = B	Match (Compliance)	0
A is a Code & B is Null	Inspection Conservative	1
A is Null & B is a Code	Inspection Non-Compliance	2

2. Final Rating of an Asset's Inspection. The following chart illustrates the full spectrum of Inspection versus Audit Comparison possibilities:

Audit Summary Labels applied to Assets;
Summary Treatment of Inspection vs. Audit Code:

	Key Assigned:			
Key --->	2	1	0	Label:
Case 1:	N	N	Y	Compliance
Case 2:	N	Y	Y	Compliant & Conservative -1
Case 3:	N	Y	N	Compliant & Conservative - 2
Case 4:	Y	N	Y	Non-Compliance - 1
Case 5:	Y	Y	Y	Non-Compliance - 2
Case 6:	Y	Y	N	Non-Compliance - 3
Case 7:	Y	N	N	Non-Compliance - 4

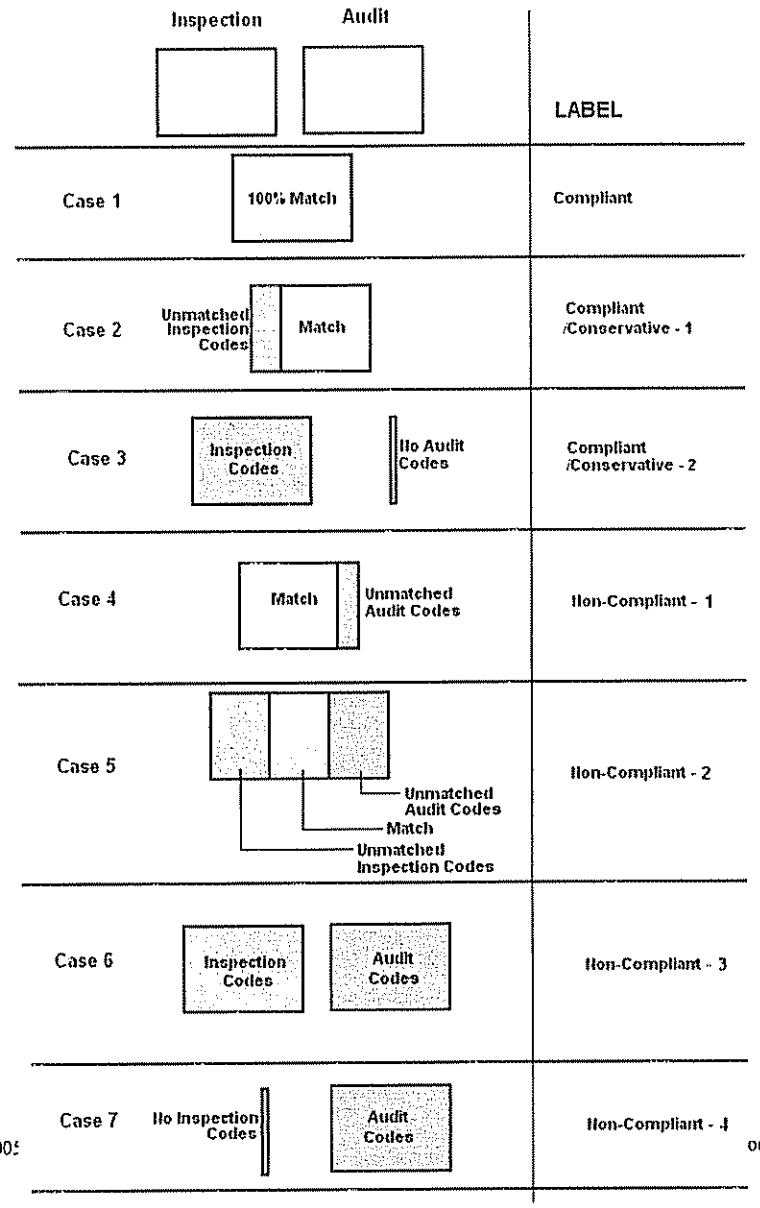
- should all comparisons be any or all of Cases 1, 2 or 3, Inspection results were in agreement or conservative with respect to Audits. As such, the respective Inspection is deemed compliant
- should any comparison be Case 4, 5, 6 or 7, Inspection results were not in agreement nor conservative with respect to Audits; the respective Inspection is deemed non-compliant

The following is a pictorial representation of the effect of this two-step process.

Each rectangle is viewed as containing the Maintenance Codes identified in the Inspection and the follow-up Audit; Codes appearing in

- o both the Inspection and Audit rectangles are matches
- o the Inspection rectangle but absent from the Audit rectangle are "Unmatched Inspection Codes"
- o the Audit rectangle but absent from the Inspection rectangle are "Unmatched Audit Codes"

The treatment of the appearance of those three possibilities in rating the Inspection Compliance of the respective Asset is addressed in the "Label" column of this pictorial.



C. Results:

i. Elevated Voltage Testing:

Each Test (or asset ***visited*** and potentially requiring Testing) consisted of 3 components that were audited and evaluated for compliance rating:

a) whether Testing was required
b) whether Voltage was detected
c) level of Voltage measured (with flagging of those instancse when Voltage equal to/greater than 4.5)

Generally, each component constituted 33-1/3% of a maximum possible total of 100% compliance for each asset visited and would stand on its own merit. However, if component "**a**" was recorded as "no" in the initial test (asset visit) and indicated as "yes" in the audit, the level quality of the respective asset would be indicated as 0% regardless of whether Voltage was detected in the Audit.

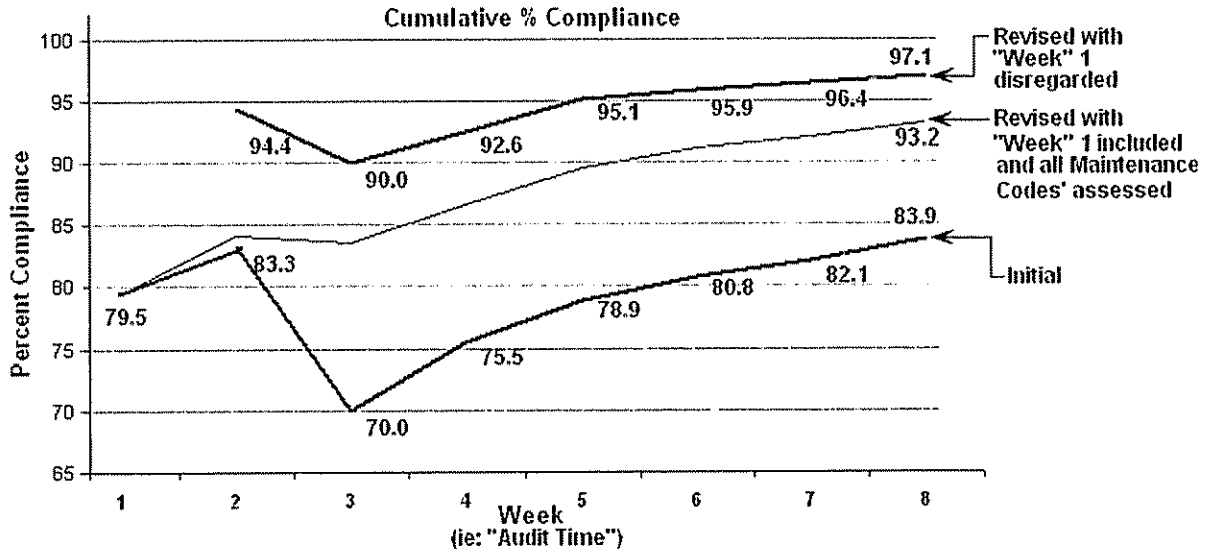
One hundred and seventy (170) audits were conducted (ie: tests repeated) and the level of compliance was calculated as 99.1%. Due to the high rate of compliance, an SPC chart need not be plotted.

ii. Asset Inspection:

Three hundred and fifty one (351) Audits of Inspections were conducted (ie: inspections repeated). Recognizing the subjectivity, experience and judgment that is inherent in the Inspections and the strong likelihood of results differing between initial Inspections and the Audits, the level of quality was measured considering the evaluation of :

- of only those ***critical characteristics*** viewed as potentially posing an imminent risk to public health and safety; level of compliance was calculated at:
  97.1% (assessing Week 2 forward)
  93.2% (assessing Week 1 forward; Week 1 Non-Compliances not being re-assessed
- ***all characteristics***
  level of compliance calculated was 83.9%

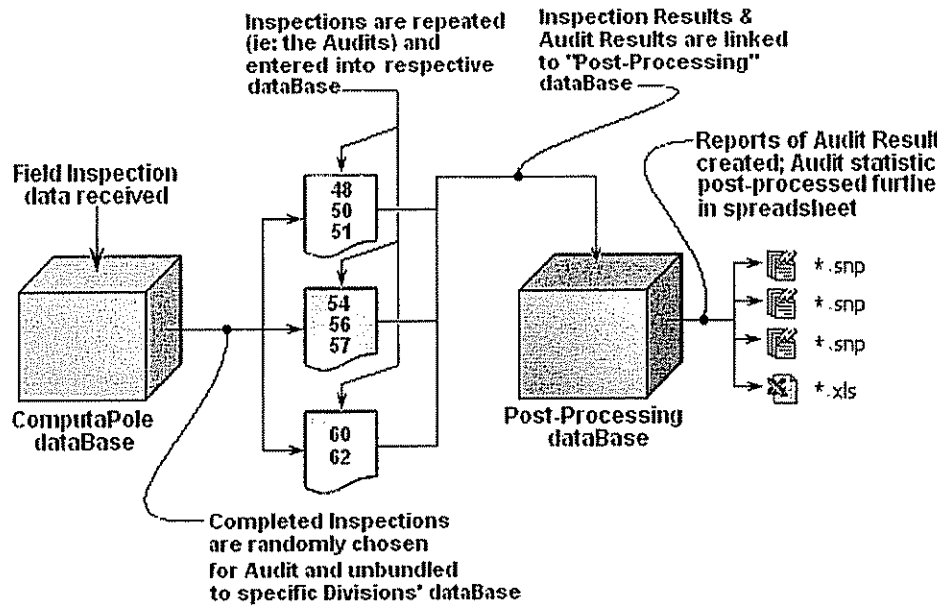
The following Compliance charts correspond to these statistics.



D. Quality Assurance System; Documentation/Traceability:

i. General Architecture:

As the following "paste" illustrates, the data conveyed by the "*.snp" reports originates from respective sets of databases which contain (1) initial Inspection results, (2) Re-Inspection (ie: Audit results for the same respective Assets), (3) post-processing linking Inspection, Audit results for respective Assets and rendering Compliance ratings (ie: Non-Compliant or Compliant).



ii. Elevated Voltage:

The following table provides summary Audit data; number of Audits performed and number of compliances for each "Audit Period". Also, associated with each "Audit Period" is the source Report (eg: "*SV-Wk-1-Global.snp*").

	Sample Size							
Region	Wk-1	Wk-2	Wk-3	Wk-4	Wk-5	Wk-6	Wk-7	Wk-8
48				11				
50			6		10		7	
51					11		9	
54			10	9				
56								
57				10			10	
60			10	7			10	
62			10	9			10	
Total:			36	46	21		46	
	Number of Non-Compliances							
Region	Wk-1	Wk-2	Wk-3	Wk-4	Wk-5	Wk-6	Wk-7	Wk-8
48				0				
50					0.333			
51				0				
54			0	0			1	
56								
57				0				
60			0	0				
62			0	0				
Total:			0	0.000	0.333333333		1	
			SV-Wk-1-Global.snp data source	SV-Wk-4 2-Global.doc data source	SV-Wk-4 3-West.snp data source		SV-Wk-12.snp data source	

iii. Asset Inspections:

In a similar manner, Asset Inspection Audit results are tabulated (to the rights) with their respective data source (eg: "Distr-Wk-1-Summary.snp") identified.

Microsoft Excel - Non-Conform-Rev1.xls

Region	ONE Distrib Late-Aug/Early Sept Compl	ONE Total	TWO Distrib Early-Sept Compl	TWO Total	THREE Distrib Mid-Sept Compl	THREE Total	FOUR Distrib Late-Sept Compl	FOUR Total
48	12	12			5	8	4	4
50	0	1			0	6		
51			7	9			11	12
54	7	15	8	10			8	8
56	12	13						
57	12	14	5	5			4	6
60	13	16	5	6			3	6
62	8	7	5	6			6	8
	62	78	30	36	5	14	36	44
	% Compl>	79.5	% Compl>	83.3		35.7		81.8
	Distr-Wk-1-Summary.snp (data source)		Distr-Wk-2-Summary.snp (data source)		Distr-Wk-3-Summary.snp (but omit Reg 51, 54, 57, 60 & 62) (data source)		Distr-Wk-4.1-Summary.snp (data source)	

Region	FIVE Trans Oct. Compl	FIVE Total	SIX Distrib Late-Oct. Compl	SIX Total	SEVEN Streetlights Late-Oct. Compl	SEVEN Total	EIGHT Distrib Mid-Nov Compl	EIGHT Total
48	7	7	5	10	9	10	8	10
50					18	20		
51	5	10	10	10				
54	10	11	9	10			8	10
56								
57	10	10					10	10
60			10	11			10	10
62	9	10	10	10			10	10
	41	48	44	51	27	30	46	50
		85.4		86.3		90.0		92.0
	Trans-Wk 5.1a-Summary.snp Trans-Wk 8.1-Detailed.snp Omit Regions 48, 54 and 62 (data source)		Distr-Wk-6.2-Detailed.snp data source		SL-Wk-7.2-Summary.snp (data source)		Distr-Wk-7.1-Summary.snp (data source)	

iv. Asset Inspections – Special Topic:

Inspection Compliance; treatment of Maintenance Codes

It's recognized that Inspection Maintenance Codes describe a full spectrum of Asset conditions. It's also recognized that such conditions imply a wide variety of potential consequences; from trivial to reliability to safety and to hazardous.

An initiative is planned to reflect each Inspection Maintenance Code's implications regarding safety/hazards. Subsequent Audits of Inspections will then focus on Maintenance Codes that imply a potential for reliability, safety and/or hazardous issues.

For the Inspections and Audits conducted in 2005, all Maintenance Codes carried equal weights of importance and any could trigger the rating of an Inspection as Non-Compliant.

This section details the basis by which 2005 Inspections/Audits were re-evaluated considering only those Maintenance Codes implying a potential for hazardous consequences.

Maintenance Codes that Trigger initial Assessment of Non-Compliance

AA	AB	AC
Priority	Code	Description
0	000	None
1	100	Not Bonded to Strand
1	104	Light on in Day Light
1	106	NMPC Transfer Req'd
1	107	Tel Transfer Req'd
99	111	Visual Rotting - Grnd Level
99	112	Excessive Checking
1	116	Visual Rotting - Pole Top
1	117	Leaning Pole
1	118	Stencil Req'd
1	120	Damaged Arm
1	121	Loose/Defective Pins
1	125	Damaged Alley Arm
1	145	Stirrups
1	152	Missing Ground Wire
1	191	Recloser - Bushing Brk/Cracked
1	200	Defective Cut-Out
1	202	Animal Guard req'd
1	212	Ground Guard req'd
1	213	Non-Standard
1	220	Guy Wire Marker
1	223	Broken Guy Wire
1	241	In Trees
1	243	Non-Std/Unsecured
1	335	Stencil Req'd
1	336	Temporary Overhead
1	339	Other Comments
1	522	Repair/Replace Guy Shield
1	573	ROW Debris
1	581	Stencil Req'd

"99" = Maint. Code judged as potentially posing eminate risk to healt/safety

Assets initially assessed as Non-Compliant

Microsoft Excel - Non-Conform-Rev1.xls

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1																
2																
3									Struct	Maint-Codes		Priority		Non-	Asset	Audit
4		Index	Week	Region	Op-Distr	Feeder	Line	Pole	ID-A	Insp	Aud	Insp	Aud	Compliance	Rand #	Time
5		1	2	51	08	6355	23	62	1	100	000	1	0		1	2
6		2	2	51	08	6355	23	62	1	121	000	1	0		1	2
7		3	2	51	10	4457	30	17	2	000	111	0	99	1	2	2
8		4	2	51	10	4457	30	17	2	000	112	0	99	1	2	2
9		5	2	51	10	4457	30	17	2	000	200	0	1		2	2
10		6	2	54	14	25455	10	37	3	241	000	1	0		3	2
11		7	2	54	14	25455	10	37	3	243	000	1	0		3	2
12		8	2	54	14	25455	10	37	3	000	117	0	1		3	2
13		9	2	54	15	25455	141	12	4	202	000	1	0		4	2
14		10	2	54	15	25455	141	12	4	000	152	0	1		4	2
15		11	2	60	30	42054	456	3	5	100	000	1	0		5	2
16		12	2	60	30	42054	456	3	5	000	112	0	99	1	5	2
17		13	2	62	39	36952	33	2-S	6	000	220	0	1		6	2
18		14	3	48	03	21052	3	177	7	000	112	0	99	1	7	3

(partial list of 2005 Non-Compliances)

Assign Generic (New) Priority based on respective Maintenance Code's potential, eminate hazard to Health/Safety

If "Priority Audit" is 99 and is greater than "Priority Inspection"; place 1 in "Non-Compliance" Column

Assets initially assessed as Non-Compliant

Microsoft Excel - Non-Conform-Rev1.xls

	Index	Week	Region	Op-Distr	Feeder	Line	Pole	Struct ID-A	Maint-Codes Insp	Maint-Codes Aud	Priority Insp	Priority Aud	Non-Compliance	Asset Rand #	Audit Time
5	1	2	51	08	6355	23	62	1	100	000	1	0		1	2
6	2	2	51	08	6355	23	62	1	121	000	1	0		1	2
7	3	2	51	10	4457	30	17	2	000	111	0	99	1	2	2
8	4	2	51	10	4457	30	17	2	000	112	0	99	1	2	2
9	5	2	51	10	4457	30	17	2	000	200	0	1		2	2
10	6	2	54	14	25455	10	37	3	241	000	1	0		3	2
11	7	2	54	14	25455	10	37	3	243	000	1	0		3	2
12	8	2	54	14	25455	10	37	3	000	117	0	1		3	2
13	9	2	54	15	25455	141	12	4	202	000	1	0		4	2
14	10	2	54	15	25455	141	12	4	000	152	0	1		4	2
15	11	2	60	30	42054	456	3	5	100	000	1	0		5	2
16	12	2	60	30	42054	456	3	5	000	112	0	99	1	5	2
17	13	2	62	39	36952	33	2-S	6	000	220	0	1		6	2
18	14	3	48	03	21052	3	177	7	000	112	0	99	1	7	3

(partial list of 2005 Non-Compliances)

Assign Generic (New) Priority based on respective Maintenance Code's potential, eminate hazard to Health/Safety

If "Priority Audit" is 99 and is greater than "Priority Inspection"; place 1 in "Non-Compliance" Column

Inspection Compliance was then re-evaluated; evaluating only those Maintenance Codes implying a potential for hazardous consequences. Asset Inspections that were formerly rated as Non-Compliant were re-evaluated and those remain Non-Compliant are summed for each Audit Period.

	Asset	Sum NC's on Assets	Assign 1 If Sum >0	Audit Time
17				
18	1	0	0	2
19	2	2	1	2
20	3	0	0	2
21	4	0	0	2
22	5	1	1	2
23	6	0	0	2
24	7	1	1	3
25	8	0	0	3
26	9	1	1	3
27	10	1	1	3
28	11	0	0	3
29	12	0	0	3

Audit Time	Sum NC's
2	2
3	3
4	2
5	0
6	1
7	0
8	0

(partial list)

Sum Non-Compliances (NC's) on Assets

Flag those Assets having at least 1 NC

Note Audit Time of Asset and respective NC

Sum NC Assets on Audit Times

Results (Inspections):

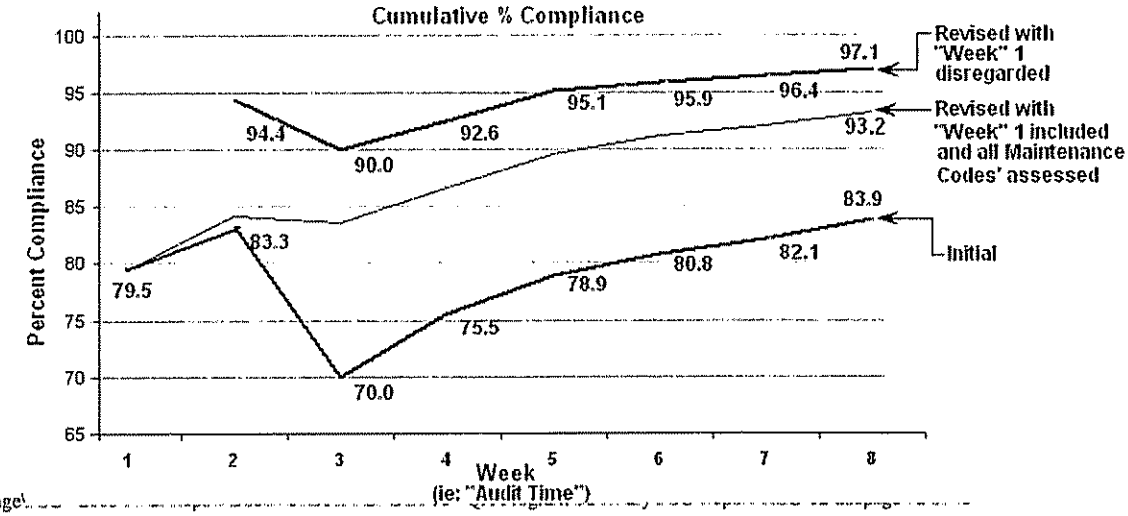
The "paste" below shows the initial and revised compliance statistics. Individual Audit statistics were not readily available for "Audit Time" 1 for Compliance re-evaluations; Cumulative Percent Compliance was calculated from "Audit Time" 2 forward and is based on 273 Audits. Had "Audit Time" 1 statistics been included (but not revised reflecting Maintenance Code re-evaluations), the Cumulative Percent Compliances would have been conservatively calculated at 93.2% for 351 Audits

	R	S	T	U	V	W	X	Y
1								
2					Incremental		Cumulative	
3	Audit	Non-Compl. Assets			Percent Compliance		Percent	
4	Time	Initial	Revised	Audits	Initial	Revised	Initial	Revised
5	1	16	16	78	79.5	79.5		
6	2	6	2	36	83.3	94.4	83.3	94.4
7	3	9	3	14	35.7	78.6	70.0	90.0
8	4	8	2	44	81.8	95.5	75.5	92.6
9	5	7	0	48	85.4	100.0	78.9	95.1
10	6	7	1	51	86.3	98.0	80.8	95.9
11	7	3	0	30	90.0	100.0	82.1	96.4
12	8	4	0	50	92.0	100.0	83.9	97.1
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

Re-Calculate Compliance Values

Audit Time	Sum NC's
2	2
3	3
4	2
5	0
6	1
7	0
8	0

Reflect "Revised" NC Instances



file: M:\Stray Voltage\

II. Quality Assurance Approach – Moving Forward:

A. General:

The Statistical Process Control (**SPC**) Quality Assurance approach has many merits and features that make it extremely suitable for monitoring and managing the integrity, thoroughness and accuracy of Test and Inspection information/data. Based on the statistics provided by SPC, the intensity of Audits can be shifted from aspects of the Test/Inspection Program that are shown to be of high quality and shifted to aspects that merit enhanced Audit focus. Thus, Quality Assurance resources are effectively used by directing such resources where they are most beneficial.

The **SPC** approach was non-existent and new to the personnel involved with the National Grid – New York 2005 Test/Inspection Program. Its development, adjustments and modifications evolved in parallel with the execution of the 2005 New York Test/Inspection Program and has become the template by which the quality of the Program will be measured and managed going forward in 2006.

B. Continuous Improvement; Expanding Quality Assurance/Control Initiatives:

1. Planning:

   With the development and "fine-tuning" of the Quality Assurance approach well under way, focus will be devoted to developing a plan to formalize the application of Quality Assurance approaches to the Elevated Voltage Test/Asset Inspection Program. The aspects of the Program addressed and the tentative schedule of respective Quality Assurance Audits will be defined in this Plan

2. Training:

   Audits conducted in 2005 have taught us that those Asset Inspection activities having subjective evaluation criteria create a significant potential for wide variations and inconsistencies in the results reported.

Enhancing consistency lies in training Inspectors. Training will ground the basis of Inspectors' judgment to a scale that will be common to all.

Formulating this training program has begun with the effort to collect photographs of Distribution, Transmission, Underground and Streetlight assets in a wide variety of conditions. Collectively, these photographs will provide the common scale by which Inspectors will be trained and the consistency of their inspection results achieved.

3. EV Testing – Inaccessible Assets:

   Thoroughness of the Testing initiative is based on accessing all assets identified as warranting examination for the purpose of potentially testing.

   It is recognized that some assets may not reasonably be accessible but that such determination is frequently a matter of judgment.

   Therefore, to promote the thoroughness of the Testing initiative (that all assets that are reasonably accessible have been examined), sampling of those assets identified as inaccessible will be conducted to confirm or refute their designation as inaccessible.

   The frequency and extent of this sampling will be contingent upon the findings of completed sampling

4. Special Audits – Underground Asset Inspections and Elevated Voltage Testing:

   The inspection of Underground Assets generally has a significant impact on the public (eg: interrupting, re-diverting traffic and pedestrians) and involves significant mobilization/demobilization effort. A completely independent re-inspection that's characteristic of a typical audit is not practical under these circumstances. Moving forward in 2006, focus will be made on selecting Underground Inspections and performing Audits simultaneously with the inspection.

Random Audits of the Elevated Voltage Testing initiative have generally been applied to all assets affected by such Testing. In this coming year, focus will be made on Auditing Tests that resulted in the detection of Voltage and the adherence to follow-on actions to procedures.

5. Asset Inspections; A-Priority Work

Inspections provide the identification of high priority work and procedures prescribe the time-frame within which such work must be completed. Input to a Work-Management computer system is an indicator that respective high priority work was complete and procedures complied with.

Audits will be conducted in 2006 to provide assurance that high priority work was completed according to procedures

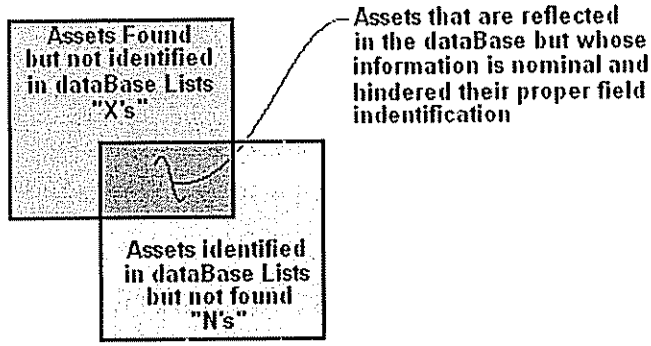
6. Dispositioning Asset Identification/Location Outliers of the EV Test Program

The sketch below illustrates the two categories of Asset Outliers encountered during the course of the EV Test Program

- Assets found in the field that were not reflected in database records
- Assets not found in the field that were reflected in database records

There is a subset of Assets that, due to nominal information, are in the database *and* were found in the field; but are presently not linked with one another.

Initiatives are underway to determine causes of the broken data-link, repair such link before or during field Testing and to efficiently establish links in those instances where field resolution was not achievable



ATTACHMENT #10

CERTIFICATION - ELEVATED VOLTAGE TESTING

COMMONWEALTH OF MASSACHUSETTS)
) ss.:
COUNTY OF WORCESTER)

Edward Dienst, on this 10 day of January, 2006, certifies as follows:

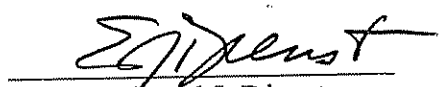
1. I am the Senior Vice President of Niagara Mohawk Power Corporation d/b/a National Grid (the "Company"), and in that capacity I make this Certification for the annual period ending November 30, 2005 based on my knowledge of the testing program adopted by the Company in accordance the Public Service Commission's orders issued and effective January 5, 2005 and July 21, 2005 in Case 04-M-0159 (the "Orders"), including the Quality Assurance Program filed by the Company with the Commission.

2. In accordance with the requirements of the Orders, the Company developed a program designed to test (i) all of the publicly accessible Electric Facilities owned by the Company ("Facilities") and (ii) all Streetlights located in public thoroughfares in the Company's service territory ("Streetlights"), as identified through a good faith effort by the Company, for elevated voltage (the "Elevated Voltage Testing Program").

3. I am responsible for overseeing the Company's Elevated Voltage Testing Program and in that capacity I have monitored the Company's Elevated Voltage Testing Program during the twelve months ended November 30, 2005 (the "Twelve-Month Period").

4. I hereby certify that, to the best of my knowledge, information and belief, the Company has implemented and completed its Elevated Voltage Testing program for the Twelve Month Period. Except for untested structures that are identified as temporarily inaccessible in the Company's Annual Report, submitted herewith, the Company is unaware of any Facilities or Streetlights that were not tested during the Twelve-Month Period.

5. I make this certification subject to the condition and acknowledgment that it is reasonably possible that, notwithstanding the Company's good faith implementation and completion of the Elevated Voltage Testing Program, there may be Facilities and Streetlights that, inadvertently, may not have been tested or were not discovered or known after reasonable review of Company records and reasonable visual inspection of the areas of the service territory where Facilities and Streetlights were known to exist or reasonably expected to be found.



Edward J. Dienst

Sworn to before me this 10th day of January, 2006
Notary Public: Karen A. Lemmon
4-4-08

CERTIFICATION - INSPECTIONS

COMMONWEATLH OF MASSACHUSETTS)
) ss.:
COUNTY OF WORCESTER)

Edward Dienst, on this 10 day of January, 2006, certifies as follows:

1. I am the Senior Vice President of Niagara Mohawk Power Corporation d/b/a National Grid (the "Company"), and in that capacity I make this Certification for the annual period ending November 30, 2005 based on my knowledge of the inspection program adopted by the Company in accordance the Public Service Commission's orders, issued and effective January 5, 2005 and July 21, 2005 in Case 04-M-0159 (the "Orders"), including the Quality Assurance Program filed by the Company with the Commission.
2. The Company has an inspection program that is designed to inspect all of its electric facilities on a five-year inspection cycle, as identified through a good faith effort by the Company ("Facilities"), in accordance with the requirements of the Orders (the "Facility Inspection Program").
3. I am responsible for overseeing the Company's Facility Inspection Program and in that capacity I have monitored the program during the twelve months ended November 30, 2005 (the "Twelve-Month Period").
4. I hereby certify that, to the best of my knowledge, information and belief, the Company has implemented and completed its Facility Inspection Program to inspect 17% of its Facilities during the year 2005, in order to comply with the five-year inspection cycle required under the Orders.

Edward J. Dienst

Sworn to before me this 10th day of January, 2006
Notary Public: Karee Geronemo