



Orange & Rockland  
a conEdison, inc. company

Reports  
04-M-0159  
OEGW  
OGC

**Matthew Sniffen**  
Director  
Electric Operations

January 14, 2008

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**By Hand Delivery**

Jaclyn A. Brillling  
Secretary  
New York Public Service Commission  
3 Empire State Plaza  
Albany, NY 12223-1350

**Re: Case 04-M-0159, Proceeding on the Motion of the Commission to  
Examine the Safety of Electric Transmission and Distribution Systems  
2007 Stray Voltage Detection and Electric Facility Inspection Report  
Consolidated Edison Company of New York, Inc.**

Dear Secretary Brillling:

Orange and Rockland Utilities, Inc. ("O&R") submits for filing an original and five (5) copies of its *2007 Stray Voltage Detection and Electric Facility Inspection Report* ("Report").

The Report details the results of O&R's Stray Voltage Detection Program and its Electric Facility Inspection Program for the year ended November 30, 2007 and provides the certification of O&R's Vice President – Operations that O&R has achieved its annual performance targets.

Sincerely,

Matthew Sniffen  
Director of Electric Operations

Enclosures

**ORIGINAL**

**Report on Orange and Rockland Utilities, Inc.'s  
Implementation of the Electric Safety Standards  
For the Period  
September 1, 2006 through November 30, 2007  
Case 04-M-0159**

**Pearl River, NY  
January 15, 2008**

**Report on Orange and Rockland Utilities, Inc.'s  
Implementation of the Electric Safety Standards  
For the Period  
September 1, 2006 through November 30, 2007  
Case 04-M-0159**

**Pearl River, NY  
January 15, 2008**

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**Report on Orange and Rockland Utilities, Inc.'s  
Implementation of the Electric Safety Standards  
For the 12-Month Period  
December 1, 2006 through November 30, 2007  
Case 04-M-0159**

**Section One  
Background**

The Public Service Commission's ("PSC" or "Commission") Electric Safety Standards ("Safety Standards"), issued on January 5, 2005 in Case 04-M-0159, require utilities to conduct an annual system-wide stray voltage detection program and a five-year cycle equipment inspection program to mitigate stray voltage risks to the public and promote reliability.

This report describes Orange and Rockland Utilities, Inc.'s ("Orange and Rockland", "O&R" or "Company") stray voltage detection program and equipment inspection program conducted in 2007 and addresses the following:

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

## **Section Two**

### **Overview of the Orange and Rockland Electric System**

O&R provides electric service to approximately 221,130 customers in a service area covering slightly more than 1,000 square miles. The Company operates an electric transmission and distribution (“T&D”) system that includes 166 distribution circuits with approximately 3,900 circuit miles of overhead and underground cable, nearly 300 miles of transmission right of way, 42 distribution substations, two distribution switchyards, four transmission substations, one transition structure and four transmission switchyards. The Company also owns the transmission interconnections to ten substations for single industrial customers.

The O&R service territory is separated geographically into two operating divisions, Eastern and Northern. The Eastern Division, which is the Company’s most densely populated Division, is supplied from an open-loop radial 13.2 kV distribution system. The Northern Division is fed from longer 4 kV, 13.2 kV and 34.5 kV radial circuits. The Company’s backbone transmission is 69 kV and 138 kV. In the Northern Division, 69 kV transmission is the predominate source, and a few 34.5 kV transmission lines serve limited load.

The O&R system load is principally residential in nature and includes a wide variety of commercial, light industrial, agricultural and recreational facilities. The Company’s New York service area encompasses all or portions of Rockland, Orange and Sullivan Counties, and includes 62 incorporated municipalities. The Company also supplies customers in northern New Jersey and northeastern Pennsylvania.

#### ***Transmission:***

The transmission system consists of 6,256 structures – 6,246 overhead facilities and ten underground manholes. Approximately 75% of the overhead transmission structures are wood poles, with the remaining 25% comprised of steel lattice towers and steel poles. Transmission line operating voltages are 345 kV, 138 kV, 69 kV and 34.5 kV. There are over 3,500 acres of right-of-way under the transmission lines. Third parties privately own approximately 93% of the right-of-ways.

O&R also maintains 345 kV and 500 kV overhead transmission lines located within the O&R service territory that are jointly owned with, or wholly owned by, Consolidated Edison Company of New York, Inc. (“Con Edison”)

#### ***Distribution:***

The O&R distribution system is an open-looped overhead radial system interspersed with underground residential distribution (“URD”).

## Underground

O&R does not have an underground network system as is typical in dense urban environments. The Company's underground system is comprised of URD, distribution-circuit exits originating at the substations, and short underground cable sections in place due to clearance considerations. All underground circuits originate from, or terminate to, overhead feeds.

The O&R underground system has 16,533 structures that require stray voltage testing and 16,564 structures that require visual inspection every five years pursuant to the Safety Standards<sup>1</sup>. The structures are comprised as follows:

|                                       | <u>Test (units)</u> | <u>Inspect (units)</u> |
|---------------------------------------|---------------------|------------------------|
| Single-phase pad mounted transformers | 13,199              | 13,199                 |
| Three-phase pad mounted transformers  | 1,348               | 1,348                  |
| Mat mounted transformers              | 7                   | 7                      |
| Submersible underground transformers  | 84                  | 84                     |
| Switches mounted on box pad           | 1,667               | 1,667                  |
| Manholes (distribution)               | 203                 | 203                    |
| Pull boxes                            | 25                  | 25                     |
| Vaults                                |                     | 31                     |

## Overhead

O&R is predominately an overhead distribution company, consisting of 166 distribution circuits over approximately 3,100 circuit miles. Service to customers is provided via a distribution system operating at a variety of primary voltages, including 4.16 kV, 4.8 kV, 13.2 kV and 34.5 kV. Primary conductor is typically supported on Class 2 - 45 foot distribution poles that are either solely owned, solely owned – jointly used, or jointly owned with one of several telecommunication companies including Verizon, Frontier and Citizens. A number of third parties have attachment rights to the distribution facilities, including competitive local exchange carriers and cable television providers.

O&R's pole population includes 136,307 structures, of which 131,190 structures require stray voltage testing and 136,307 structures require visual inspection every five years pursuant to the Safety Standards<sup>2</sup>. The structures are comprised as follows:

|                      | <u>Test (units)</u> | <u>Inspect (units)</u> |
|----------------------|---------------------|------------------------|
| Wood poles           | 114,514             | 114,514                |
| Risers               | 16,676              | 16,676                 |
| Pre-wired wood poles |                     | 3,737                  |
| Fiberglass poles     |                     | 1,380                  |

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<sup>1</sup> 31 units require visual inspection but no stray voltage testing because they are not accessible to the public.

<sup>2</sup> 5,117 units require visual inspection but no stray voltage testing because their electrically conductive surfaces are not accessible to the public (pre-wired wood poles) or are enclosed in fiberglass (non-conductive) structures.

### Streetlights

There are 1,541 streetlights mounted on metal poles throughout the O&R service territory. The majority of these streetlights are owned and maintained by a municipality or other third party. The Safety Standards require that O&R test all of these metal pole streetlights for stray voltage.<sup>3</sup>

### Traffic Signals

There are 498 traffic signals mounted on metal poles throughout the O&R service territory. The New York State Department of Transportation or local municipalities own these traffic signals. O&R does not own or maintain any traffic signals within its service territory. The Safety Standards require that O&R test all of these metal-pole-mounted traffic signals for stray voltage.

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<sup>3</sup> The large majority of streetlights in the Company's service area are mounted on wooden poles, and do not require stray voltage testing because their electrically conductive surfaces are not accessible to the public.

### **Section Three** **Testing and Inspection Results**

#### ***2007 Stray Voltage Testing Program:***

##### Summary

By order issued on July 21, 2005 in Case 04-M-0159, the Commission required that O&R complete annual stray voltage testing of its entire publicly accessible T&D systems by November 30, 2007.

All T&D facilities with publicly accessible components capable of conducting electricity were stray voltage tested by November 30, 2007. The Company also tested all publicly accessible third party facilities electrically bonded to and in close proximity to the tested O&R system components.

O&R conducted separate stray voltage test programs for the transmission and distribution systems. Non-Company labor (i.e. contractors) was used to perform the majority of the test work within each program. Non-Company labor was selected through O&R's bid selection process and was required to adhere to applicable Company safety requirements. O&R established an administrative group to manage and review contractor work and performance. In addition, O&R established a separate Quality Assurance group within its Operations Training and Compliance Department to further facilitate and ensure compliance.

Testing of the transmission system began in March 2007. Non-Company labor conducted the testing on overhead transmission structures, and Company personnel tested the transmission manhole covers.

O&R commenced stray voltage testing of its underground and overhead distribution system in September 2006 and completed its testing in November 2007. Non-Company labor conducted all the testing on distribution facilities and non-Company owned streetlights and traffic signals.

##### Underground

- Scope

In 2007, O&R tested a total of 16,256 publicly accessible URD facilities. Nearly all of the structures tested operated at a primary voltage of 13.2 kV (three-phase) or 7.62 kV (single-phase). Other metallic structures and objects within a 5'0" radius of a tested underground facility were also tested regardless of ownership, if electrically bonded to the distribution system.

A total of 308 underground units, or 1.9% of O&R's URD system, were not tested due to inaccessibility. Inaccessible structures include:

- Locked Gate/Fence - Structures behind locked gates and fences that are not accessible to the public are not included in the annual testing program. These structures will be inspected in accordance with existing Company maintenance cycle programs and at least once every five years consistent with the Safety Standards.
- Vaults - Structures located inside buildings. These structures are accessible only to Company and building maintenance personnel and not accessible to the public. These structures are not included in the annual testing program. These structures will be inspected in accordance with existing Company maintenance cycle programs and at least once every five years consistent with the Safety Standards.
- Orange and Rockland Property - Structures located on O&R Property, such as substations, are accessible only to Company personnel and authorized contractors and not accessible to the public. These facilities are not included in the annual testing program. These structures will be inspected in accordance with existing Company maintenance cycle programs and at least once every five years consistent with the Safety Standards.

- Overall Program

The testing of the underground distribution system commenced in September 2006 and concluded November 2007. Simultaneously with the testing of the underground system, the Company tested its electric structures in all high pedestrian trafficked areas. Non-Company labor conducted all testing. At the conclusion of the 2007 program, approximately 20 contract employees were engaged in field collection, information and data management, and administration. An O&R Program Manager, Data Analyst and a Line Supervisor managed the contractor's performance. The Stray Voltage Program Manager reports to the Company's Director – Electric Operations.

The contractor's field inspectors used O&R's distribution system maps in conjunction with handheld electronic devices<sup>4</sup> to record the testing and location of each structure. O&R Stray Voltage Program personnel and the contractor collaboratively managed and maintained the stray voltage testing data. The contractor and O&R collaboratively managed the field data utilizing an SQL database and O&R's Electric Information Management System ("EIMS").

- Test Procedure

O&R's Stray Voltage underground testing program is administered in accordance with the Company's February 18, 2005 Program filing with the Commission in Case 04-M-0159. At the conclusion of the 2007 Program, the Company's contractor had approximately 20 employees working on program related tasks. To test for stray voltage, the contractor's inspectors used HD Electric Company LV-S-5 Direct Contact Low Voltage Detectors in accordance with O&R's Stray

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<sup>4</sup> Dell Axim X50v Pocket PC and Holux GM270 Ultra GPS devices.

Voltage Procedure 2202 (“Procedure 2202”), set forth as Exhibit 1 to this Report. The HD device is an independently certified low voltage AC test probe<sup>5</sup>. These probes were used for detection of low AC voltage on conductive equipment or apparatus.

Upon detection of AC voltage equal to or greater than 1.0 volt, a follow-up test procedure was performed in accordance with O&R’s Stray Voltage Investigative Procedure 2203 (“Procedure 2203”), set forth as Exhibit 2 to this Report. If the results of the testing performed utilizing Procedure 2203 proved positive, then O&R immediately implemented corrective action to mitigate the stray voltage in the manner prescribed in Section 5 of Procedure 2203, or safeguarded the facility from the general public until the appropriate responsible entity was contacted to de-energize the structure pending repair.

The Company’s Quality Assurance Program (“QA Program”) selectively sampled and retested 3,335 distribution structures. This sample size exceeds the 800 units required by the latest version of ANSI Z1.4 (MIL-STD-105D) for the determination of statistically significant sample sizes for a lot size of 35,000 to 150,000 units. The sample selection was distributed across the various structure types. Of the 3,335 structures selected, 214 (6.4%) were underground structures. Quality Assurance identified no stray voltage conditions during retesting.

- Results

A total of 16,256 structures, or 98.1% of O&R’s publicly accessible URD system was tested throughout Rockland, Orange and Sullivan Counties. Three hundred and eight units were not tested due to inaccessibility to the public. These structures are typically located behind locked gates on private property, in vaults, or on restricted O&R property.

No stray voltage conditions were identified.

### Overhead

- Scope

O&R’s distribution pole population is 136,307, of which 5,117 units do not require stray voltage testing because their electrically conductive surfaces are not accessible to the public (pre-wired wood) or they are enclosed in fiberglass (non-conductive) structures. For the test period ending November 30, 2007, O&R tested appurtenances on a total of 101,303 poles that are Company solely owned, solely owned – jointly used, or jointly owned with one of several telecommunication companies including Verizon, Frontier and Citizens. This represents 74.3% of O&R’s overhead distribution system poles that require testing<sup>6</sup>. Nearly all of the structures tested operated at a primary voltage of 13.2 kV (three-phase) or 7.62 kV (single-

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<sup>5</sup> William J. McNulty, P.E. completed the testing and certification process for the HD Electric Company. In addition, Consolidated Edison validated the testing at the NTL test labs.

<sup>6</sup> The remaining 35,004 poles are fiberglass structures, wood poles that have no attached appurtenances capable of conducting electricity, are de-energized structures and / or are deemed inaccessible.

phase). Some facilities in northwest Orange County and portions of Sullivan County operate at a Primary voltage of 34.5 kV (three-phase) or 19.9 kV (single-phase).

Points tested include all attached appurtenances capable of conducting electricity on wood poles, such as guy wires, grounds, risers, and Company and non-Company owned attachments within 8'0" from ground level. Other metallic structures and objects within a 5'0" radius of a wood pole were also tested regardless of ownership if electrically bonded to the distribution system.

Five hundred and nine, or 0.4%, overhead units are de-energized structures or inaccessible to the public and were not tested. Inaccessible structures include:

- Locked Gate/Fence – Poles behind locked gates and fences that are not accessible to the public and are not included in the annual testing program. These structures will be inspected in accordance with existing Company maintenance cycle programs and at least once every five years consistent with the Safety Standards.
- Dangerous Grades (Cliffs) – Poles located on cliffs and other dangerous grades are generally inaccessible to even Company personnel and are approached only under urgent circumstances. The performance of the testing work would constitute an unacceptable risk to the employee. These poles are not accessible to the public and are not included in the annual testing program. These structures will be inspected in accordance with existing Company maintenance cycle programs and at least once every five years consistent with the Safety Standards.
- Orange and Rockland Property – Poles located on O&R property, such as substations, are accessible only to Company personnel and authorized contractors and are not accessible to the public. These facilities are not included in the annual testing program. These structures will be inspected in accordance with existing Company maintenance cycle programs and at least once every five years consistent with the Safety Standards.

- Overall Program

The testing of the overhead distribution system commenced in September 2006 and concluded November 30, 2007. Non-Company labor conducted all testing. At the conclusion of the 2007 program, approximately 20 contract employees were engaged in field collection, information and data management, and administration. An O&R Program Manager, Data Analyst and a Line Supervisor managed the contractor's performance. The Stray Voltage Program Manager reports to the Company's Director – Electric Operations.

The contractor's field inspectors used O&R's distribution system maps in conjunction with handheld electronic devices to record the testing and location of each structure. O&R Stray Voltage Program personnel and the contractor collaboratively managed and maintained the stray voltage testing data. The contractor and O&R collaboratively managed the field data utilizing an SQL database and O&R's Electric Information Management System ("EIMS").

- Test Procedure

O&R's Stray Voltage overhead distribution testing program is administered in accordance with the Company's February 18, 2005 Program filing with the Commission in Case 04-M-0159. At the conclusion of the 2007 Program, the Company's contractor had 20 employees working on various program related tasks. To test for stray voltage, the contractor's inspectors used HD Electric Company's LV-S-5 Direct Contact Low Voltage Detectors in accordance with O&R's Procedure 2202. The HD device is an independently certified low voltage AC test probe. These probes were used for detection of low AC voltage on conductive equipment or apparatus.

Upon detection of AC voltage equal to or greater than 1.0 volt, a follow-up test procedure was performed in accordance with O&R's Procedure 2203. If the results of the testing performed utilizing Procedure 2203 proved positive, O&R immediately implemented corrective action to mitigate the stray voltage in the manner prescribed in Section 5 of Procedure 2203, or safeguarded the facility from the general public until the appropriate responsible entity was contacted to de-energize the structure pending repair.

The Company's QA Program selectively sampled and retested 3,335 distribution structures. This sample size exceeds the 800 units required by the latest version of ANSI Z1.4 (MIL-STD-105D) for the determination of statistically significant sample sizes for a lot size of 35,000 to 150,000 units. The sample selection was distributed across the various structure types. Of the 3,335 structures selected, 2,851 (85.5%) were overhead structures. Quality Assurance identified no stray voltage conditions during retesting.

- Results

A total of 101,303 overhead poles, or 74.3% of O&R's overhead distribution system, was tested throughout Rockland, Orange and Sullivan Counties. Five hundred and nine units were not tested because they were either de-energized structures or deemed inaccessible. Inaccessibility is typically due to facilities being behind locked gates on private property, on dangerous grades (cliffs), or secured on restricted O&R property.

Of the poles tested, seven stray voltage conditions were identified. This represents 0.005% of the total distribution pole population tested. The contractor and O&R program management safeguarded all conditions, until crews arrived to perform the work. These conditions were mitigated within twenty-four (24) hours of detection. No injuries were associated with the following conditions:

1. Wires were exposed on a capacitor control due to a missing cover. The equipment was reinstalled and the cover sealed.

2. A lightning arrester was detached from the ground wire. The lightning arrester ground wire was reattached to the common neutral eliminating the voltage.
3. A tree limb took down a primary line, which made contact with and energized a fence. The primary line was repaired.
4. A dog was shocked near a pole because the buried service line at the base of the pole was defective. The hand hole was permanently repaired and service to the pole was disconnected. The pole is pending replacement.
5. A ground rod connection to a transformer was not sound. Another ground rod was installed and bonded to the ground lead, eliminating the voltage.
6. Faulty customer wiring in a junction box located on a riser caused the riser to become energized. The wiring was repaired, eliminating the voltage. The customer has been contacted requesting that the service to the home be reconfigured according to O&R standards.
7. The ground wire on a pole was detached. The ground wire was attached, eliminating the voltage.

### Streetlights and Traffic Signals

- Scope

O&R owns and maintains approximately 399 metal pole streetlights. An additional 1,142 metal pole streetlights and 498 traffic signals owned by various municipalities and Highway Departments<sup>7</sup> were identified by the Company's contractor.<sup>8</sup> Nearly all of the structures tested operated at a secondary voltage of 120/240 volts. The Company tested all 1,541 streetlights and 498 traffic signals by November 30, 2007.

- Overall Program

The testing of the streetlight and traffic signal metal poles commenced in September 2007 and concluded November 30, 2007. Non-Company labor conducted all testing. At the conclusion of the 2007 program, approximately 5 contract employees were engaged in field collection, information and data management, and administration. An O&R Program Manager, Data Analyst and a Line Supervisor managed the contractor's performance. The Stray Voltage Program Manager reports to the Company's Director – Electric Operations.

The contractor's field inspectors used O&R's distribution system maps and street surveys, in conjunction with handheld electronic devices, to record the testing and location of each structure. O&R Stray Voltage Program personnel and the contractor collaboratively managed and maintained the stray voltage testing data.

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<sup>7</sup> Traffic signals in the O&R service territory are generally owned by the New York State Department of Transportation or the County Highway Departments.

<sup>8</sup> These do not include streetlight metal poles located on limited access highways. These poles are not accessible to the public and their location makes stray voltage testing dangerous. These poles are not included in the annual testing program.

The contractor and O&R collaboratively managed the field data utilizing an SQL database and O&R's Electric Information Management System ("EIMS").

- Test Procedure

The Company's Stray Voltage testing program for streetlight and traffic signal metal poles is administered in accordance with the Company's February 18, 2005 Program filing with the Commission in Case 04-M-0159. At the conclusion of the 2007 Program, the Company's contractor had 20 employees working on various program related tasks. The contractor's inspectors used HD Electric Company LV-S-5 Direct Contact Low Voltage Detectors to test for stray voltage, in accordance with O&R's Procedure 2202. The HD device is an independently certified low voltage AC test probe. These probes were used for detection of low AC voltage on conductive equipment or apparatus.

Upon detection of AC voltage equal to or greater than 1.0 volt, a follow-up procedure was performed in accordance with O&R's Procedure 2203. If the results of the testing performed utilizing Procedure 2203 proved positive, then O&R immediately implemented corrective action. O&R mitigated the stray voltage in the manner prescribed in Section 5 of Procedure 2203, or safeguarded the facility from the general public until the appropriate responsible entity was contacted to de-energize the structure pending repair.

The Company's QA Program selectively sampled and retested 3,335 distribution structures. This sample size exceeds the 800 units required by the latest version of ANSI Z1.4 (MIL-STD-105D) for the determination of statistically significant sample sizes for a lot size of 35,000 to 150,000 units. The sample selection was distributed across the various structure types. Of the 3,335 structures selected, 135 (6.6%) were streetlights and traffic signals structures. Quality Assurance identified no stray voltage conditions during retesting.

- Results

A total of 1,541 metal pole streetlights and 498 traffic signal poles, were tested throughout Rockland, Orange and Sullivan Counties. Streetlights on limited access highways were not tested because they are not accessible to the public and due to the danger to the test personnel in performing testing on highways. Nearly all the structures tested operated at a secondary voltage of 120/240 volts.

No stray voltage conditions were identified on streetlights and traffic signals.

## Substations

- Scope

During 2007, O&R tested the publicly accessible fencing of all of its New York substations consisting of 42 distribution substations, two distribution switchyards, four transmission substations, one transmission transition structure, four transmission switch yards and ten substations for single industrial customers.

These tests were conducted in conjunction with stray voltage testing on the transmission system.

- Overall Program

The substation fence tests commenced in March 2007 and concluded in October 2007. Non-Company labor separate from the vendor employed for distribution testing, conducted all of the substation fence tests. At the conclusion of the 2007 program, four contract employees were engaged in field collection, information and data management, and administration. An O&R Program Manager and Extra High Voltage (“EHV”) personnel managed the contractor’s performance. The O&R Program Manager reports to the Company’s Director – Electric Operations.

The contractor’s field inspectors used O&R’s substation location maps, in conjunction with handheld electronic devices, to record the testing and location of each substation fence test. O&R EHV personnel, Stray Voltage personnel, and the contractor collaboratively managed the stray voltage testing. The field data was maintained through proprietary data management software known as Fastgate.

- Test Procedure

O&R’s Stray Voltage substation testing program is administered in accordance with the Company’s February 18, 2005 Program filed with the Commission in Case 04-M-0159. At the conclusion of the 2007 Program, the Company’s contractor had approximately four employees working on various program-related tasks. To test for stray voltage, the contractor’s inspectors used HD Electric Company LV-S-5 Direct Contact Low Voltage Detectors in accordance with O&R’s Procedure 2202. The HD device is an independently certified low voltage AC test probe. These probes were used for detection of low AC voltage on conductive equipment or apparatus.

Although no stray voltage was detected on substation fences, O&R’s Procedure 2203 specifies that upon detection of an AC voltage, a follow-up test procedure is performed. If the results of the testing performed utilizing Procedure 2203 prove positive, O&R would immediately implement corrective action to mitigate the stray voltage in the manner prescribed in Section 5 of the Procedure.

The Company's QA Program selectively sampled and retested 3,335 distribution structures. This sample size exceeds the 800 units required by the latest version of ANSI Z1.4 (MIL-STD-105D) for the determination of statistically significant sample sizes for a lot size of 35,000 to 150,000 units. The sample selection was distributed across the various structure types based on the potential risk to public safety. Of the 3,335 structures selected, 10 (0.30%) were substation fences. Quality Assurance identified no stray voltage conditions during retesting.

- Results

The exterior fences at 100% of O&R's New York substations, a total of 63 substation fences, were tested throughout Rockland, Orange and Sullivan Counties. No stray voltage conditions were identified.

### Transmission

- Scope

O&R's transmission system currently consists of 6,256 structures; 6,246 overhead facilities and ten underground manholes, including 345 kV and 500 kV overhead transmission lines located within the O&R service territory that are jointly owned with, or wholly owned by, Con Edison. Approximately 75% of the overhead transmission structures are wood poles with the remaining 25% comprised of steel lattice towers and steel poles. Transmission line operating voltages are 345 kV, 138 kV, 69 kV and 34.5 kV. There are over 3,500 acres of right-of-way under the transmission lines. Third parties privately own approximately 93.0% of the right-of-ways.

During the 2007 test program, 6,256 structures, or 100% of the transmission system was tested, and no stray voltage conditions were identified. None of the transmission pole plant was classified as inaccessible.

- Overall Program

The testing of the transmission system commenced in March 2007, and the overhead component concluded in October 2007. Non-Company labor conducted all the overhead testing. O&R labor conducted the underground testing. At the conclusion of the 2007 program, four contract employees were engaged in field collection, information and data management, and administration. An O&R Program Manager and EHV personnel managed the contractor's performance. The O&R Program Manager reports to the Company's Director – Electric Operations.

The contractor's field inspectors used transmission plan and profile maps, in conjunction with handheld electronic devices, to record the testing and location of each structure. O&R EHV personnel, Stray Voltage personnel, and the contractor collaboratively managed the stray voltage testing and visual inspection data. The contractor maintained the field data at its business office, utilizing proprietary data management software known as Fastgate.

- Test Procedure

O&R's Stray Voltage transmission testing program is administered in accordance with the Company's February 18, 2005 Program filed with the Commission in Case 04-M-0159. The work is contracted to a vendor who, at the conclusion of the 2007 Program, had four employees working on various program related tasks. The contractor's inspectors used HD Electric Company LV-S-5 Direct Contact Low Voltage Detectors in accordance with O&R's Procedure 2202. The HD device is an independently certified low voltage AC test probe. These probes were used for detection of low AC voltage on conductive equipment or apparatus.

Although no stray voltage was detected on transmission structures, O&R's Procedure 2203 specifies that upon detection of an AC voltage, a follow-up test procedure is performed. If the results of the testing performed utilizing Procedure 2203 prove positive, O&R would immediately implement corrective action to mitigate the stray voltage in the manner prescribed in Section 5 of the Procedure.

In 2007, the Quality Assurance Program selectively sampled 125 (3.8%) of the 3,335 overhead structure towers for retesting. The sample size was developed from the latest version of ANSI Z1.4 (MIL-STD-105D) for the determination of statistically significant sample sizes for QA testing. Quality Assurance identified no stray voltage conditions on retesting.

- Results

All of O&R's New York transmission system, consisting of 6,246 overhead structures and ten underground transmission manhole covers, were tested throughout Rockland, Orange and Sullivan Counties. No stray voltage conditions were identified.

## ***2007 Electrical Facility Inspection Program:***

### Summary

Pursuant to the Safety Standards, O&R is required to visually inspect 100% of its electric equipment over a five-year cycle and inspect approximately 20% of its equipment annually. In 2007, O&R visually inspected approximately 23.6% of the Company's T&D system. This included 20.4% of the overhead distribution system, 21.6% of the underground distribution system, and 99.8% of the transmission system. In addition, all O&R substations were visually inspected in 2007 through the Company's Class One Inspection Program performed by its Substation Operations Department<sup>9</sup>.

In total, O&R has visually inspected approximately 75.5% of the Company's T&D facilities during the annual inspection cycles from 2005 through 2007. This includes 99.8% of the transmission system, 96.8% of the overhead distribution system, 80.7% of the underground distribution system, and 100% of its New York substations.

Non-Company labor performed the majority of the transmission and distribution system inspection work. O&R established an administrative group to manage and review contractor work and performance. In addition, O&R established a separate Quality Assurance group within its Operations Training and Compliance Department to further facilitate and ensure compliance.

O&R conducted the Company's Substation Class One Inspections to ensure compliance with the Safety Standard's visual inspection requirements for substations, which are inspected at least once a month. In 2007, Company personnel conducted the inspections of all of O&R's 63 New York substations.

O&R continued its annual overhead transmission facility inspection program in 2007. O&R inspects all of its 6,246 overhead transmission facilities annually. This represents 99.8% of the transmission system.<sup>10</sup> Inspection of the overhead transmission system commenced in March 2007 and concluded in October 2007. Non-Company labor conducted the inspections.

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<sup>9</sup> A Class One Inspection is a monthly visual inspection of O&R substations to ensure the various components of the substation and its appurtenances are properly maintained and functional. All Substation maintenance programs, including Class One Inspections are further defined in the Company's Annual Service Reliability Filing to Staff (Case 90-E-1119).

<sup>10</sup> O&R also has ten underground transmission manholes that are not part of the overhead transmission program and will be inspected separately by Company personnel.

## Underground

- Scope

The O&R URD system consists of 16,564 structures. A total of 3,570 units of underground distribution equipment were visually inspected in 2007, or 21.6% of the URD system. O&R prioritized identified defects in accordance with the requirements outlined in the Company's Underground Work Procedure 2201-3, Inspection for Underground Distribution Structures and Equipment ("Procedure 2201-3") set forth as Exhibit 3 to this Report.

- Inspection Procedure

The Company's Underground Visual Inspection Program is administered in accordance with the Company's February 18, 2005 Program filed with the Commission in Case 04-M-1059. The visual inspection of the URD system commenced in December 2006 and concluded November 30, 2007. Non-Company labor conducted all inspections and worked within the guidelines established by Procedure 2201-3. An O&R Program Manager, Data Analyst, and a Line Supervisor managed the contractor's performance. The O&R Program Manager reports to the Company's Director – Electric Operations.

The contractor field inspectors used O&R's distribution system maps in conjunction with handheld electronic devices to record the inspections of each structure. O&R Visual Inspection Program personnel and the contractor collaboratively managed and maintained the inspection data. O&R and the contractor collaboratively managed the field data utilizing an SQL database and O&R's Electric Information Management System ("EIMS").

The contractor, consistent with Procedure 2201-3, categorized defects as Priority 5 (highest priority) to Priority 1 (lowest priority). Priority 5 defects require immediate attention and permanent repair to be completed within 24 hours. Priority 4 defects must be permanently repaired within seven days. Priorities 3 through 1 defects are scheduled to be repaired in conjunction with normal routine work.

The Company's QA Program selectively sampled and re-inspected 4,048 distribution structures. This sample size exceeds the 800 units required by the latest version of ANSI Z1.4 (MIL-STD-105D) for the determination of statistically significant sample sizes for a lot size of 35,000 to 150,000 units. The sample selection was distributed across the various structure types. Of the 4,048 structures selected, 214 (5.3%) were underground devices. QA noted that the contractor inspectors had reported equipment problems consistent with the inspection requirement.

- Results

A total of 3,570 underground structures, or 21.6% of the URD system, were visually inspected in 2007. Of the 3,570 structures inspected, 65 Priority 5 defects were identified and all were repaired within 24 hours. Forty-seven Priority 4 defects were identified and all were repaired within seven days. In addition, 703 Priorities 3 through 1 defects were found and will be repaired during normal routine work. Examples of Priority 5 situations included padmount transformers knocked off their base and corroded exteriors.

### Overhead

- Scope

The O&R overhead distribution system consists of 136,307 structures. The equipment associated with 27,796 structures, or 20.4% of the overhead distribution system, was visually inspected in 2007. The equipment visually inspected included poles, guy wires, grounds, risers, cross arms, conductors, and other appurtenances. O&R prioritized identified defects in accordance with the requirements outlined in O&R's Overhead Work Procedure 2200-3, Inspection Procedure for Overhead Distribution Structures and Equipment ("Procedure 2200-3") set forth as Exhibit 4 to this Report.

- Inspection Procedure

O&R's Overhead Visual Inspection Program is administered in accordance with the Company's February 18, 2005 Program filed in Case 04-M-1059. The visual inspection of the overhead distribution system commenced in December 2006 and concluded November 30, 2007. Non-Company labor conducted all inspections and worked within the guidelines established by Procedure 2200-3. An O&R Program Manager, Data Analyst and a Line Supervisor managed the contractor's performance. The O&R Program Manager reports to the Company's Director – Electric Operations.

The contractor's field inspectors used O&R's distribution system maps in conjunction with handheld electronic devices to record the inspections of each structure. O&R Visual Inspection Program personnel and the contractor collaboratively managed and maintained the inspection data utilizing an SQL database and O&R's Electric Information Management System ("EIMS").

The contractor, consistent with Procedure 2200-3, categorized defects as Priority 5 (high priority) to Priority 1 (low priority). Priority 5 defects require immediate attention and permanent repairs to be completed within 24 hours. Priority 4 defects must be permanently repaired within seven days. Priorities 3 through 1 defects are scheduled to be repaired in conjunction with normal routine work.

The Company's QA Program selectively sampled and reinspected 4,048 distribution structures. This sample size exceeds the 800 units required by the latest version of ANSI Z1.4 (MIL-STD-105D) for the determination of statistically significant sample sizes for a lot size of 35,000 to 150,000 units. The sample selection was distributed across the various structure types. Of the 4,048 structures selected, 3,564 (88%) were overhead devices. QA noted that the contractor inspectors had reported equipment problems consistent with the inspection requirement.

- Results

A total of 27,796 overhead structures, or 20.4% of the overhead system, were visually inspected. Of the structures inspected, 60 Priority 5 defects were identified and all were repaired within 24 hours. Nine Priority 4 defects were identified and all were repaired within seven days. In addition, 1,044 Priorities 3 through 1 defects were found and will be repaired during normal routine work. Examples of Priority 5 and 4 defects include a tree on the primary, detached riser pipes and bonding grounds.

### Substations

- Scope

During 2007, 100% of O&R's New York substations, a total of 42 distribution substations, two distribution switchyards, four transmission substations, one transmission transition structure, four transmission switchyards, and ten substations for single industrial customers, were visually inspected pursuant to the requirements of the Safety Standards. These inspections were conducted in conjunction with Substation Operations' annual Class 1, Class 3 and Class 4 inspection programs.

- Inspection Procedure

O&R's Substation Inspection Program is administered in accordance with the Company's February 18, 2005 Program filed with the Commission in Case 04-M-1059. Company labor conducted all inspections and repairs. The Substation Operations Department manages the substation inspection and maintenance programs.

- Results

All of the O&R substations were visually inspected. All critical defects identified during the visual inspections were properly repaired. The remaining defects identified will be repaired as system contingencies allow or with normal routine work. The remaining defects do not affect integrity, safety or reliability of the O&R system.

## Transmission

- Scope

The O&R transmission system consists of 6,246 overhead structures and ten underground manholes. All of the overhead structures, 99.8% of the transmission system, were visually inspected in 2007. The overhead transmission equipment visually inspected included poles, towers, guy wires, grounds, arms, conductors, and other appurtenances. O&R prioritized identified defects in accordance with the requirements outlined in the Company's Transmission Line Maintenance General Specifications ("General Specification"), set forth as Exhibit 5 to this Report.

- Inspection Procedure

O&R's Transmission Visual Inspection Program is administered in accordance with the Company's February 18, 2005 Program filed with the Commission in Case 04-M-1059. The testing of the overhead transmission system commenced in March 2007 and concluded in October 2007. Non-Company labor, separate from the vendor employed for distribution inspections, conducted all the overhead inspections. At the conclusion of the 2007 program, four contract employees were engaged in field collection, information and data management, and administration. An O&R Program Manager, and EHV personnel, managed the contractor's performance. The O&R Program Manager reports to the Company's Director – Electric Operations.

The contractor's field inspectors used transmission plan and profile maps, in conjunction with handheld electronic devices, to record the inspection of each structure. O&R Inspection Program management and the contractor collaboratively managed the visual inspection data. The contractor maintained the field data at its business office, utilizing proprietary data management software known as Fastgate.

The contractor categorized defects as Priority 3 (high priority) to Priority 1 (low priority)<sup>11</sup>. Priority 3 defects require immediate attention and permanent repairs to be completed as system contingencies allow. Priority 2 defects are conditions that should be corrected as manpower and system requirements permit. Priority 1 defects are conditions that should be evaluated as routine maintenance is performed.

In 2007, the Quality Assurance program selectively sampled 125 of the 4,048 overhead structures. The sample size selected was developed from the latest version of ANSI Z1.4 (MIL-STD-105D) for the determination of statistically significant sample sizes for QA testing. The reinspections verified the visual inspection results reported by the contractor.

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<sup>11</sup> The Fastgate data management system utilizes a Priority 3 – 1 classification scale. Previous inspection years were classified on a Priority 5 – 1 scale.

- Results

A total of 6,246 transmission structures, 99.8% of O&R's New York transmission system, were visually inspected throughout Rockland, Orange and Sullivan Counties in 2007. Of the 6,246 transmission structures inspected, 2,353 conditions were identified during the transmission visual inspections. Of the structures inspected, 295 Priority 3 defects were located and all were repaired. Five hundred ninety four Priority 2 defects were located and 381 were repaired. The remaining 213 Priority 2 defects require careful planning and scheduling to minimize impacting customer reliability. The majority of the remaining Priority 2 defects are woodpecker holes. Of the 1,464 Priority 1 defects identified, 80 have been repaired. The remaining 1,384 deficiencies do not affect integrity, safety or reliability of the O&R system and will be utilized as short interval maintenance tasks in the future.

**Section 4**  
**Public Service Commission Performance Mechanism**

As required by the Safety Standards and the Commission's July 21, 2005 Order issued in Case 04-M-0159, O&R stray voltage tested 100% of its publicly accessible T&D system with components capable of conducting electricity including 100% of its transmission system and New York substation fences, 98.2% of its URD system<sup>12</sup> and 74% of its overhead distribution system<sup>13</sup> and publicly accessible metal pole streetlights and traffic signals by November 30, 2007. Accordingly, O&R has met the stray voltage testing requirements for 2007 and is not subject to the revenue adjustment provided in the Safety Standards Performance Mechanism.

O&R visually inspected approximately 23.6% of the Company's T&D system during 2007, including 20.4% of the overhead system, 21.6% of the URD system, 99.8% of the transmission system and all New York substations by November 30, 2007.

In total, O&R has visually inspected approximately 75.5 % of the Company's T&D facilities.<sup>14</sup> This includes 99.8% of the transmission system, 96.8% of the overhead distribution system, 80.7% of the URD system, and 100% of its New York substations.

Accordingly, O&R has exceeded the 2007 performance goal for inspections and is not subject to the revenue adjustment provided in the Safety Standards Performance Mechanism.

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<sup>12</sup> Of the 16,564 underground structures that required testing, 308 (1.9%) were deemed inaccessible.

<sup>13</sup> Of the 136,307 total pole population plant, 35,004 structures (25.7%) are fiberglass poles, wood poles with no attached appurtenances capable of conducting electricity, de-energized poles and / or inaccessible poles.

<sup>14</sup> Total percentage of visual inspections includes 2005 - 2007 Inspection Programs.

**Section 5**  
**Certification of Program**

Corporate certifications of the Stray Voltage Testing Program and the Visual Inspection Program are attached as Appendix 1.

## **Section 6**

### **Analysis of Results**

O&R visited 156,018 electrical structures and performed 125,917 stray voltage tests as part of its stray voltage-testing program in its service territory for 2007.

Seven confirmed cases of stray voltage were identified on its overhead distribution system. With such a small population of stray voltage cases, there are no major trends to analyze or root causes to address. O&R addressed the circumstances of each of these cases.

O&R visually inspected 37,622 T&D structures, identifying 125 Priority 5 incidents and 56 Priority 4 incidents on its system. The 60 Priority 5 conditions identified on the overhead system were either a tree on the primary or a phase off a pin. The 65 Priority 5 conditions identified on the underground system were either transformers knocked off their base or units with corroded casings. The 448 Priority 3 conditions on the transmission system were primarily woodpecker holes and vegetation issues. The small population of priority conditions reflects O&R's successful and continuing evaluation and maintenance of its T&D systems through circuit reliability initiatives, the vegetation management program, and equipment maintenance programs. There are no major trends to analyze or root causes to address with such a small population of priority conditions.

## **Section 7**

### **Other Pertinent Information**

#### ***Additional Stray Voltage Detection:***

##### **Daily Job Site Testing Requirements**

- Overall Program

As required by the Safety Standards, O&R has incorporated daily job-site stray voltage test requirements into its routine work practices. This practice obligates O&R personnel to test each job site for stray voltage at the end of each day and before departing the site upon completion of the work assignment. The testing is in accordance with O&R's Procedure 2202, set forth in Exhibit 1 to this Report. O&R is not conducting this testing during major system emergencies such as storm response.

- Results

No stray voltage was identified during routine testing in 2007.

##### **Reports from the Public**

- Overall Program

For 2007, O&R received 18 calls from customers reporting a stray voltage or shock hazard. Of the 18 calls received, twelve were valid cases and O&R immediately mitigated the conditions. No injuries were associated with these incidents.

In compliance with the Order's Appendix B, Event Notification Requirements, O&R made written or telephonic notification to the Office of Electricity and Environment in a manner prescribed by that Office.

- Results

A total of 18 incidents were reported; 6 incidents proved to be unsubstantiated, while 12 cases were validated. Of the 12 substantiated cases, five were attributable to O&R system problems and seven were due to third party problems.

The causes of the five cases attributable to O&R system problems were two bad connections at the building, a downed wire, a bad connection in a handhole and an open neutral at the residence. The seven cases attributable to third parties were four faulty customers wiring, one case of improper grounding, a grounding problem at the customer's pool, and one customer that unplugged electrical equipment while standing in a flooded basement.

### ***Quality Assurance & Quality Control:***

Utilizing the resources of O&R's Quality Assurance and Compliance Department, the Company expanded its comprehensive QA Program for the Gas transmission and distribution system to include its electric system. In addition to assuring compliance with the requirements of the Safety Standards by those charged with implementing its provisions, the Company's electric QA Program is designed to promote the health and safety of the public; provide for the reliable and economical operation for the Company's electric system; promote compliance with applicable electric codes and regulations; and ensure utilization of Company resources in an efficient manner.

The O&R Electric QA Program also includes a Corrective Action Documentation and Trending procedure<sup>15</sup>. The purpose of this procedure is to define the process by which Quality Assurance and Compliance maintains a corrective action database and trend discrepancies identified by the QA Program. O&R personnel implementing the electric QA Program are independent from the Electric Operations and Electric Engineering Groups and Company personnel responsible for the implementation of the Stray Voltage Testing and Visual Inspection Programs.

QA conducted a review of the Stray Voltage Testing and Visual Inspection Program (Program) from September 1, 2006 to November 30, 2007. Quality Assurance performed stray voltage testing and visual inspection on a selective sample of Company and municipal streetlights, traffic signals, overhead and underground distribution facilities and transmission structures to ensure testing of equipment and the accuracy of data and records. Quality Assurance conducted announced and unannounced field observations of field testers to verify tests were performed on all required structures. Quality Assurance found the testing and inspections effectively performed and producing results consistent with the Program's objectives.

### ***Stray Voltage Initiatives:***

O&R has worked and communicated with the PSC Staff on issues attendant with the implementation of the Safety Standards. O&R continues to attend joint meetings with the other New York utilities and PSC staff to seek best practices, employ lessons learned, and ensure a high degree of consistency in the implementation of the Safety Standards requirements. O&R personnel also attended the national stray voltage conference conducted by Consolidated Edison, Inc. this past summer.

As a result of its ongoing experience and clarifications provided by Staff, O&R modified its work practices and procedures for implementation of the Safety Standards. The Company's current work procedures are attached as Exhibits 1, 2, 3 and 4 to this Report.

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<sup>15</sup> Details on the O&R Electric QA Program and the Corrective Action Documentation were included with the Company's February 18, 2005 filing with the Commission in Case 04-M-0159.

O&R, as a subsidiary of Consolidated Edison, Inc. (“CEI”), has availed itself of the shared research and development (“R&D”) activities of CEI’s subsidiary, Consolidated Edison Company of New York, Inc. (“Con Edison”). Con Edison’s R&D department is involved in several initiatives that may lead to a reduction in stray voltage or better detection techniques. Those activities relevant to the O&R system include:

#### Isolation Transformers (“IT”)

This project is a proactive step to address possible stray voltage concerns at streetlight facilities.

With regard to streetlights, failures of either the phase conductor or neutral wires (or associated connectors) may occur in the body of the lamp, service conduit, or service box. ITs reduce the hazard of these occurrences by providing an isolated loop that prevents the flow of current from an energized structure through an individual to ground.

An IT provides electrical separation between line and load side of a streetlight circuit. The only electrical connection present is the coupling of the primary and secondary coils via a magnetic field. Since the use of an IT requires the existing grounding bond between the lamp neutral and ground to be removed, there is no direct path or circuit present unless an IT fault was to occur. An isolated closed loop provides the benefit of no return path for stray voltage from bad connections or shorted phase conductors. Therefore, stray current will not flow, as no circuit is present.

ITs are in widespread use for medical equipment, swimming pools, and desk lamps. The use of this technology to protect streetlights from stray voltage was tested by Con Edison. Based on the positive results of their research, O&R introduced a pilot program in 2006 and installed 31 ITs within metallic streetlight bases and handholes in two residential areas of Rockland County. During 2007, O&R monitored and tested these structures and found all to be functioning properly. Due to the added public safety this technology provides, O&R plans to continue the pilot project and install additional units (approximately 69) throughout Orange and Rockland counties in 2008.

#### Exacter Outage-Avoidance System

Exacter is an outage-avoidance system that identifies and locates failing electrical distribution equipment before a power outage occurs. Exacter equipment identifies arc sources that signify failing electrical equipment and disregards normal emissions like corona, industrial loads, etc. that occur within electrical systems. Reports of line equipment disturbances, with GPS locations, are generated. This technology promotes pre-emptive maintenance action to minimize outages and ensure public safety.

### ***Future Improvements:***

O&R continues to initiate programs and work practices to improve on stray voltage detection, data management, and maximizing the number of facility inspections performed. This section discusses these improvements.

#### Low Priority Repair Program

O&R will implement a Low Priority Repair Program in conjunction with the 2008 inspection cycle. During each inspection cycle, low priority defects are reported, such as, disconnected grounds, incorrect stenciling of Company facilities, disconnected moulding and broken/missing guy guards. Such defects identified in 2008 will be targeted to be repaired within the 2008 inspection cycle. Contractors and Company personnel will perform the work. An analysis of the low priority repairs reported in previous inspection years will be performed to assist in developing a plan and schedule to address pertinent low priority defects.

#### Electric Inspection Management System (“EIMS”)

EIMS was developed collaboratively by O&R’s Stray Voltage Program management and O&R’s Information Technology Department, and is a data management tool designed to accept and retain all stray voltage program test information and follow-up mitigation. EIMS will become the central data management warehouse for all transmission and distribution inspection and maintenance programs. Phase 1 was completed in 2007, with subsequent releases bringing greater functionality, scheduled through the end of 2008.

#### Radio Frequency Identification (RFID)

The majority of streetlights and all traffic signals in the O&R service territory are municipality and / or DOT owned. As such, and unlike the Company’s electric facilities, the structures are not labeled with mapping grid coordinates or any unique identifiers. This has presented a challenge for contractor inspectors when identifying these facilities in the field.

Aesthetic considerations prevent the Company from installing the typical mapping grid stencil to identify these facilities. RFID technology allows information to be captured from the RFID chip without the need for line of sight. Thus, RFID tags can be placed in inconspicuous locations on these structures for use in accurately locating and recording the testing of non Company-owned equipment. The Company plans to install the RFID devices on non-Company owned streetlights and traffic signals during 2008.

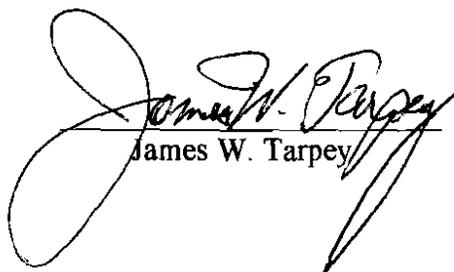
**Appendix One**

**Certification of Program**

## CERTIFICATION OF STRAY VOLTAGE TESTING

James W. Tarpey, on this 9<sup>th</sup> day of January 2008, certifies as follows:

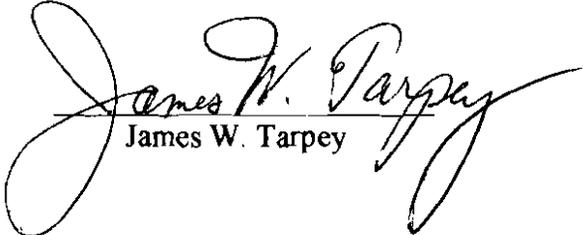
1. I am Vice President of Orange and Rockland Utilities, Inc (“Orange and Rockland” or “the Company”).
2. I am responsible for overseeing Orange and Rockland’s stray voltage testing program, and in that capacity I have monitored the Company’s stray voltage testing program during the test period September 1, 2006 to November 30, 2007. During the 2007 test period, Orange and Rockland instituted and diligently carried out a program designed to meet the stray voltage testing requirements of the Public Service Commission’s Safety Standards, issued and effective January 5, 2005 as modified by Order issued July 21, 2005 in Case 04-M-0159, *Proceeding Instituting Safety Standards*.
3. To the best of my knowledge, information and belief, during the 2007 test period, Orange and Rockland identified and tested for stray voltage all Company-owned publicly accessible electric facilities and components capable of conducting electricity located in the Company’s New York service territory except for such facilities that are identified in the Company’s Annual Report submitted herewith.

  
James W. Tarpey

## CERTIFICATION OF INSPECTIONS

James W. Tarpey, on this 9<sup>th</sup> day of January 2008, certifies as follows:

1. I am Vice President of Orange and Rockland Utilities, Inc. ("Orange and Rockland" or "the Company").
2. I am responsible for overseeing Orange and Rockland's electric facility visual inspection program, and in that capacity I have monitored the Company's visual inspection program during the twelve months ended November 30, 2007 (the twelve-month period). During the twelve-month period, Orange and Rockland instituted and diligently carried out a program designed to meet the visual inspection requirements established by the Public Service Commission's Safety Standards, issued and effective January 5, 2005 as modified by Order issued July 21, 2005 in Case 04-M-0159, *Proceeding Instituting Safety Standards*.
3. To the best of my knowledge, information and belief, during the twelve-month period, Orange and Rockland has visually inspected the requisite number of electric facilities, defined as towers, poles, guy wires, risers, overhead cable and conductors, transformers, breakers, switches and other above ground equipment and facilities, and the interior of manholes, service boxes, vaults and other underground structures, except those that are ordinarily encased in sealed compartments, and except those that would require the utility to perform a destructive test as part of the visual inspection program, and except those exempted by the July 21, 2005 Order, including the requirement to have conducted a visual inspection of at least 54% of its New York electric facilities through November 30, 2007.\*

  
James W. Tarpey

\*54% is the cumulative facility inspection total for 2005, 2006, and 2007. The 2005 requirement was 17%; the 2006 requirement was 18%; and the 2007 requirement is 19%.

**Appendix Two**

**Year End Public Service Commission Report**

| <b>Orange and Rockland Utilities, Inc.</b> |                            |   |   |  |   |   |
|--|----------------------------|---|---|--|---|---|
| <b>2007 - Testing Summary</b>              |                            |   |   |  |   |   |
|  | <b>*System Units Total</b> | <b>**YTD Units Completed/<br/>Monthly Units Completed</b> | <b>YTD % Completed/<br/>Monthly % Completed</b> | <b>Units with Voltage<br/>Found &gt;=1.0 v</b> | <b>Percent of Units<br/>Tested with Voltage<br/>&gt;= 1.0 v</b> | <b>Units Classified as<br/>Inaccessible</b> |
| Monthly Update                             |                            | 1,147   | 0.84%   |  |   | 0   |
| Monthly Update                             |                            | 1,948   | 11.75%  |  |   | 0   |
| Monthly Update                             |                            | 696   | 34.13%  | 0  |   | 0   |
| Monthly Update                             |                            | 10  | 15.87%  | 0  |   | 0   |
| Monthly Update                             |                            | 2,750   | 43.86%  | 0  |   | 0   |
| Monthly Update                             |                            | 6,549   | 4.06%   | 0  |   | 0   |

Data Collected through 11/30/2007  
Update covers 10/16/2007 through 11/30/2007

\* Revised target numbers is due to data reconciliation, system upgrades and reclassification of 34.5 kV lines from distribution to transmission.

\*\* Distribution Poles - Of the 138,307 structures, 101,303 poles were stray voltage tested and 35,004 poles did not require testing. Those not tested are fiberglass structures, pre-wired wood poles, woods with no metal attached appurtenances capable of conducting electricity, de-energized structures or deemed inaccessible.

Definition of Inaccessible:  
Inaccessible to the public (fenced in facilities, O&R facilities, facilities located within buildings, dangerous grade, etc).

Monthly Update = totals since previous report  
Report to include date through the 15th of the month  
Report due to PSC Staff by the end of each month

Footnote any differences that a Utility may have

| Orange and Rockland Utilities, Inc.         |                          | # of units<br>voltage level<br>not recorded | # of units<br>between 1.0v<br>and 4.4v | # of units<br>between 4.6v<br>and 7.9v | # of units<br>between 8v -<br>24.9v | # of units<br>between 25 -<br>99.9v | # of units<br>greater than<br>100v | Unit Total |
|---|--------------------------|---|--|--|-------------------------------------|-------------------------------------|------------------------------------|------------|
| Test Year 2007<br>Summary of Voltages Found |                          |   |  |  |                                     |                                     |                                    |            |
|   | Pole                     | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Ground                   | 0   | 1                                      | 1                                      | 0                                   | 0                                   | 0                                  | 2          |
|   | Guy                      | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Riser                    | 0   | 0                                      | 0                                      | 1                                   | 0                                   | 0                                  | 1          |
|   | Other                    | 2   | 0                                      | 0                                      | 0                                   | 1                                   | 1                                  | 4          |
|   | Handhole / Pull box      | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Manhole                  | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Padmount Switchgear      | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Padmount Transformer     | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Vault - Cover/Door       | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Pedestal                 | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Other                    | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Metal Street Light Pole  | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Traffic Signal Pole      | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Control Box              | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Pedestrian Crossing Pole | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Other                    | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Fence                    | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Other                    | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Lattice Tower            | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Pole                     | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Ground                   | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Guy                      | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Riser                    | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Other                    | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Lattice Tower            | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Pole                     | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Ground                   | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Guy                      | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Riser                    | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Other                    | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Lattice Tower            | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Pole                     | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Ground                   | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Guy                      | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Riser                    | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |
|   | Other                    | 0   | 0                                      | 0                                      | 0                                   | 0                                   | 0                                  | 0          |

| Orange and Rockland Utilities, Inc. | Units with Voltage Found >= 1 Volt | Units Permanently Repaired by Utility | Units Referred to Others for Permanent Repair | Comments  |
|-------------------------------------|------------------------------------|---------------------------------------|---|---|
| Test Year 2007 - Mitigation         |                                    |                                       |   |   |
|                                     | 1                                  | 1                                     |   | Wires were exposed on a capacitor clock due to a missing cover. The equipment was reinstalled and the cover sealed.   |
|                                     | 1                                  | 1                                     |   | A lightning arrester was detached from the ground wire. The lightning arrester ground wire was reattached to the common neutral eliminating the voltage.  |
|                                     | 1                                  | 1                                     |   | A tree limb took down a primary line, which made contact with and energized a fence. The primary line was repaired.   |
|                                     | 1                                  | 1                                     |   | A dog was shocked near a pre-wired wood pole because the service line at the base of the pole was defective. The hand hole was permanently repaired and service to the pole was disconnected. The pole is pending replacement.                                      |
|                                     | 1                                  | 1                                     |   | A ground rod connection to a transformer was not sound. Another ground was installed and bonded to the ground lead, eliminating the voltage.  |
|                                     | 1                                  | 1                                     |   | Faulty customer wiring in a junction box located on a riser caused the riser to be energized. The wiring was repaired, eliminating the voltage. The customer has been contacted requesting that the service to the home be reconfigured according to O&R standards. |
|                                     | 1                                  | 1                                     |   | Ground wire on a pole was detached. The ground wire was attached, eliminating the voltage.  |
|                                     |                                    |                                       |   |   |
|                                     |                                    |                                       |   |   |
|                                     |                                    |                                       |   |   |
|                                     |                                    |                                       |   |   |
|                                     |                                    |                                       |   |   |

## **Appendix Three**

### **2005 – 2007 Visual Inspection Program Report**

**Orange and Rockland Utilities, Inc.**  
**2007 Inspection Program Results Report by Priority & Structure Type**

|                               |     |     |     |       |     |              |  |     |       |
|-------------------------------|-----|-----|-----|-------|-----|--------------|--|-----|-------|
| <b>Distribution Poles</b>     | 60  | 9   | 456 | 162   | 422 | <b>1,109</b> |  | 69  | 1,040 |
| <b>Underground Facilities</b> | 65  | 47  | 664 | 18    | 25  | <b>819</b>   |  | 112 | 707   |
| <b>Transmission</b>           | N/A | N/A | 448 | 1,240 | 665 | <b>2,353</b> |  | 448 | 1,905 |

**Priority by Structure Type**

**Defect by Structure Type**

|                       |     |    |     |            |            |            |                               |            |            |              |            |              |
|-----------------------|-----|----|-----|------------|------------|------------|-------------------------------|------------|------------|--------------|------------|--------------|
| <b>Priority 5</b>     | 50  | 0  | 10  | <b>60</b>  | <b>60</b>  | <b>0</b>   | <b>Conductor</b>              | 1          | 0          | 4            | <b>4</b>   | <b>1</b>     |
| <b>Priority 4</b>     | 5   | 0  | 4   | <b>9</b>   | <b>9</b>   | <b>0</b>   | <b>Crossarm</b>               | 33         | 0          | 0            | <b>0</b>   | <b>33</b>    |
| <b>Priority 3</b>     | 422 | 34 | 0   | <b>456</b> | <b>0</b>   | <b>456</b> | <b>Cut outs</b>               | 2          | 0          | 0            | <b>0</b>   | <b>2</b>     |
| <b>Priority 2</b>     | 148 | 14 | 0   | <b>162</b> | <b>0</b>   | <b>162</b> | <b>Grounds</b>                | 359        | 30         | 0            | <b>47</b>  | <b>342</b>   |
| <b>Priority 1</b>     | 382 | 40 | 0   | <b>422</b> | <b>0</b>   | <b>422</b> | <b>Guywire/anchor</b>         | 484        | 43         | 0            | <b>0</b>   | <b>527</b>   |
|                       |     |    |     |            |            |            | <b>Insulator</b>              | 9          | 1          | 1            | <b>1</b>   | <b>10</b>    |
|                       |     |    |     |            |            |            | <b>Other</b>                  | 11         | 0          | 3            | <b>3</b>   | <b>11</b>    |
|                       |     |    |     |            |            |            | <b>Pole</b>                   | 54         | 5          | 0            | <b>0</b>   | <b>59</b>    |
|                       |     |    |     |            |            |            | <b>Riser</b>                  | 2          | 7          | 0            | <b>0</b>   | <b>9</b>     |
|                       |     |    |     |            |            |            | <b>Secondary</b>              | 0          | 0          | 6            | <b>6</b>   | <b>0</b>     |
|                       |     |    |     |            |            |            | <b>Switch/disconnect</b>      | 0          | 0          | 0            | <b>0</b>   | <b>0</b>     |
|                       |     |    |     |            |            |            | <b>Tie wire</b>               | 42         | 2          | 0            | <b>0</b>   | <b>44</b>    |
|                       |     |    |     |            |            |            | <b>Transformer</b>            | 5          | 0          | 0            | <b>3</b>   | <b>2</b>     |
|                       |     |    |     |            |            |            | <b>Tree</b>                   | 5          | 0          | 0            | <b>5</b>   | <b>0</b>     |
|                       |     |    |     |            |            |            |                               |            |            |              |            |              |
| <b>Priority 5</b>     | 61  | 4  | 0   | <b>65</b>  | <b>65</b>  | <b>0</b>   | <b>Active leak</b>            | 39         | 0          | 0            | <b>39</b>  | <b>0</b>     |
| <b>Priority 4</b>     | 46  | 0  | 1   | <b>47</b>  | <b>47</b>  | <b>0</b>   | <b>Broken/rust/hole cover</b> | 20         | 6          | 0            | <b>14</b>  | <b>12</b>    |
| <b>Priority 3</b>     | 649 | 15 | 0   | <b>664</b> | <b>0</b>   | <b>664</b> | <b>Cable system</b>           | 3          | 0          | 1            | <b>2</b>   | <b>2</b>     |
| <b>Priority 2</b>     | 18  | 0  | 0   | <b>18</b>  | <b>0</b>   | <b>18</b>  | <b>Ground</b>                 | 4          | 0          | 0            | <b>4</b>   | <b>0</b>     |
| <b>Priority 1</b>     | 25  | 0  | 0   | <b>25</b>  | <b>0</b>   | <b>25</b>  | <b>Inactive leak</b>          | 42         | 0          | 0            | <b>1</b>   | <b>41</b>    |
|                       |     |    |     |            |            |            | <b>Off base/misaligned</b>    | 177        | 4          | 0            | <b>52</b>  | <b>129</b>   |
|                       |     |    |     |            |            |            | <b>Rusted/missing bolt</b>    | 514        | 9          | 0            | <b>0</b>   | <b>523</b>   |
|                       |     |    |     |            |            |            |                               |            |            |              |            |              |
| <b>Priority 5-N/A</b> | 0   | 0  | 0   | <b>0</b>   | <b>0</b>   | <b>0</b>   | <b>0</b>                      | <b>0</b>   | <b>0</b>   | <b>0</b>     | <b>0</b>   | <b>0</b>     |
| <b>Priority 4-N/A</b> | 0   | 0  | 0   | <b>0</b>   | <b>0</b>   | <b>0</b>   | <b>0</b>                      | <b>0</b>   | <b>0</b>   | <b>0</b>     | <b>0</b>   | <b>0</b>     |
| <b>Priority 3</b>     | 10  | 6  | 18  | <b>3</b>   | <b>133</b> | <b>0</b>   | <b>0</b>                      | <b>12</b>  | <b>113</b> | <b>295</b>   | <b>295</b> | <b>0</b>     |
| <b>Priority 2</b>     | 0   | 1  | 21  | <b>4</b>   | <b>502</b> | <b>3</b>   | <b>0</b>                      | <b>1</b>   | <b>83</b>  | <b>594</b>   | <b>381</b> | <b>213</b>   |
| <b>Priority 1</b>     | 33  | 35 | 235 | <b>22</b>  | <b>327</b> | <b>7</b>   | <b>0</b>                      | <b>533</b> | <b>251</b> | <b>1,464</b> | <b>80</b>  | <b>1,384</b> |

**Orange and Rockland Utilities, Inc.**  
**2006 Inspection Program Results Report by Priority & Structure Type**

|                               |    |    |       |       |       |              |  |    |       |
|-------------------------------|----|----|-------|-------|-------|--------------|--|----|-------|
| <b>Distribution Poles</b>     | 4  | 8  | 238   | 538   | 3,221 | <b>4,009</b> |  | 12 | 3,997 |
| <b>Underground Facilities</b> | 11 | 88 | 1,514 | 69    | 180   | <b>1,862</b> |  | 99 | 1,763 |
| <b>Transmission</b>           | 2  | 69 | 1,328 | 2,561 | 1,347 | <b>5,307</b> |  | 71 | 5,236 |

**Priority by Structure Type** **Defect by Structure Type**

|                   |       |     |   |       |    |       |                          |       |     |   |    |              |
|-------------------|-------|-----|---|-------|----|-------|--------------------------|-------|-----|---|----|--------------|
| <b>Priority 5</b> | 1     | 0   | 3 | 4     | 4  | 0     | <b>Conductor</b>         | 38    | 2   | 1 | 1  | <b>40</b>    |
| <b>Priority 4</b> | 0     | 0   | 8 | 8     | 8  | 0     | <b>Crossarm</b>          | 12    | 0   | 0 | 0  | <b>12</b>    |
| <b>Priority 3</b> | 222   | 16  | 0 | 238   | 36 | 202   | <b>Cut outs</b>          | 13    | 5   | 0 | 0  | <b>18</b>    |
| <b>Priority 2</b> | 478   | 60  | 0 | 538   | 1  | 537   | <b>Grounds</b>           | 664   | 92  | 0 | 1  | <b>755</b>   |
| <b>Priority 1</b> | 2,864 | 357 | 0 | 3,221 | 0  | 3,221 | <b>Guywire/anchor</b>    | 2,243 | 288 | 0 | 36 | <b>2,495</b> |
|                   |       |     |   |       |    |       | <b>Insulator</b>         | 20    | 0   | 0 | 0  | <b>20</b>    |
|                   |       |     |   |       |    |       | <b>Other</b>             | 8     | 0   | 2 | 2  | <b>8</b>     |
|                   |       |     |   |       |    |       | <b>Pole</b>              | 512   | 24  | 0 | 1  | <b>535</b>   |
|                   |       |     |   |       |    |       | <b>Riser</b>             | 3     | 16  | 0 | 0  | <b>19</b>    |
|                   |       |     |   |       |    |       | <b>Secondary</b>         | 0     | 0   | 2 | 2  | <b>0</b>     |
|                   |       |     |   |       |    |       | <b>Switch/disconnect</b> | 2     | 1   | 0 | 0  | <b>3</b>     |
|                   |       |     |   |       |    |       | <b>Tie wire</b>          | 18    | 0   | 1 | 1  | <b>18</b>    |
|                   |       |     |   |       |    |       | <b>Transformer</b>       | 32    | 5   | 0 | 0  | <b>37</b>    |
|                   |       |     |   |       |    |       | <b>Tree</b>              | 0     | 0   | 5 | 5  | <b>0</b>     |

|                   |       |    |   |       |    |       |                               |       |    |   |    |              |
|-------------------|-------|----|---|-------|----|-------|-------------------------------|-------|----|---|----|--------------|
| <b>Priority 5</b> | 11    | 0  | 0 | 11    | 11 | 0     | <b>Active leak</b>            | 7     | 0  | 0 | 7  | <b>0</b>     |
| <b>Priority 4</b> | 80    | 7  | 1 | 88    | 88 | 0     | <b>Broken/rust/hole cover</b> | 88    | 9  | 1 | 29 | <b>69</b>    |
| <b>Priority 3</b> | 1,487 | 27 | 0 | 1,514 | 0  | 1,514 | <b>Cable system</b>           | 20    | 0  | 0 | 0  | <b>20</b>    |
| <b>Priority 2</b> | 68    | 1  | 0 | 69    | 0  | 69    | <b>Ground</b>                 | 2     | 0  | 0 | 0  | <b>2</b>     |
| <b>Priority 1</b> | 172   | 8  | 0 | 180   | 0  | 180   | <b>Inactive leak</b>          | 10    | 0  | 0 | 0  | <b>10</b>    |
|                   |       |    |   |       |    |       | <b>Off base/misaligned</b>    | 111   | 5  | 0 | 46 | <b>70</b>    |
|                   |       |    |   |       |    |       | <b>Rusted/missing bolt</b>    | 1,580 | 29 | 0 | 17 | <b>1,592</b> |

|                   |    |    |     |     |       |    |     |     |     |       |     |              |
|-------------------|----|----|-----|-----|-------|----|-----|-----|-----|-------|-----|--------------|
| <b>Priority 5</b> | 0  | 0  | 1   | 0   | 1     | 0  | 0   | 0   | 0   | 2     | 2   | <b>0</b>     |
| <b>Priority 4</b> | 0  | 0  | 2   | 0   | 61    | 3  | 0   | 3   | 0   | 69    | 29  | <b>40</b>    |
| <b>Priority 3</b> | 10 | 16 | 122 | 112 | 706   | 10 | 161 | 44  | 147 | 1,328 | 438 | <b>890</b>   |
| <b>Priority 2</b> | 27 | 46 | 311 | 13  | 1,506 | 5  | 22  | 251 | 380 | 2,561 | 289 | <b>2,272</b> |
| <b>Priority 1</b> | 5  | 73 | 77  | 6   | 1,045 | 5  | 5   | 100 | 31  | 1,347 | 216 | <b>1,131</b> |

**Orange and Rockland Utilities, Inc.**

**2005 Inspection Program Results Report by Priority & Structure Type**

|                               |    |    |       |       |       |       |  |    |       |
|-------------------------------|----|----|-------|-------|-------|-------|--|----|-------|
| <b>Distribution Poles</b>     | 1  | 6  | 184   | 2,021 | 3,381 | 5,593 |  | 7  | 5,586 |
| <b>Underground Facilities</b> | 16 | 51 | 70    | 68    | 116   | 321   |  | 67 | 254   |
| <b>Transmission</b>           | 2  | 32 | 1,322 | 2,510 | 1,351 | 5,217 |  | 34 | 5,183 |

**Priority by Structure Type**

**Defect by Structure Type**

|            |       |     |   |       |   |       |                   |       |     |   |       |
|------------|-------|-----|---|-------|---|-------|-------------------|-------|-----|---|-------|
| Priority 5 | 1     | 0   | 0 | 1     | 1 | 0     | Conductor         | 29    | 5   | 0 | 34    |
| Priority 4 | 6     | 0   | 0 | 8     | 6 | 0     | Crossarm          | 0     | 0   | 0 | 0     |
| Priority 3 | 151   | 33  | 0 | 184   | 0 | 184   | Cut outs          | 10    | 8   | 0 | 18    |
| Priority 2 | 1,705 | 316 | 0 | 2,021 | 0 | 2,021 | Grounds           | 1,997 | 298 | 0 | 2,295 |
| Priority 1 | 2,871 | 510 | 0 | 3,381 | 0 | 3,381 | Guywire/anchor    | 2,141 | 407 | 1 | 2,547 |
|            |       |     |   |       |   |       | Insulator         | 21    | 3   | 0 | 24    |
|            |       |     |   |       |   |       | Other             | 69    | 17  | 1 | 85    |
|            |       |     |   |       |   |       | Pole              | 384   | 85  | 0 | 469   |
|            |       |     |   |       |   |       | Riser             | 20    | 25  | 2 | 43    |
|            |       |     |   |       |   |       | Secondary         | 1     | 0   | 1 | 0     |
|            |       |     |   |       |   |       | Switch/disconnect | 1     | 0   | 0 | 1     |
|            |       |     |   |       |   |       | Tie wire          | 23    | 5   | 0 | 28    |
|            |       |     |   |       |   |       | Transformer       | 36    | 6   | 0 | 42    |
|            |       |     |   |       |   |       | Tree              | 2     | 0   | 2 | 0     |

|            |     |   |   |     |    |     |                        |     |    |    |     |
|------------|-----|---|---|-----|----|-----|------------------------|-----|----|----|-----|
| Priority 5 | 15  | 1 | 0 | 16  | 16 | 0   | Active leak            | 0   | 0  | 0  | 0   |
| Priority 4 | 45  | 4 | 2 | 51  | 51 | 0   | Broken/rust/hole cover | 86  | 7  | 17 | 103 |
| Priority 3 | 63  | 3 | 4 | 70  | 0  | 70  | Cable system           | 3   | 0  | 0  | 3   |
| Priority 2 | 59  | 6 | 3 | 68  | 0  | 68  | Ground                 | 1   | 0  | 0  | 1   |
| Priority 1 | 103 | 4 | 9 | 116 | 0  | 116 | Inactive leak          | 2   | 0  | 0  | 2   |
|            |     |   |   |     |    |     | Off base/misaligned    | 102 | 0  | 0  | 41  |
|            |     |   |   |     |    |     | Rusted/missing bolt    | 91  | 11 | 1  | 84  |

|            |    |    |     |    |       |   |  |     |     |     |       |     |
|------------|----|----|-----|----|-------|---|--|-----|-----|-----|-------|-----|
| Priority 5 | 0  | 0  | 1   | 0  | 1     | 0 |  | 0   | 0   | 2   | 2     | 0   |
| Priority 4 | 0  | 0  | 2   | 0  | 27    | 0 |  | 0   | 3   | 0   | 32    | 8   |
| Priority 3 | 10 | 14 | 121 | 84 | 707   | 4 |  | 161 | 73  | 148 | 1,322 | 398 |
| Priority 2 | 27 | 42 | 310 | 12 | 1,461 | 4 |  | 22  | 254 | 378 | 2,510 | 275 |
| Priority 1 | 5  | 72 | 77  | 6  | 1,051 | 4 |  | 5   | 101 | 30  | 1,351 | 205 |

\*\* Previously reported as 845 repairs completed and 4,372 remaining defects.

**Exhibit One**

**O&R Stray Voltage Test Procedure 2202**

**Stray Voltage Test Procedure**

1. Purpose .....Page 2

2. General Information .....Page 2

3. Equipment to be Tested .....Page 2

4. Test Equipment .....Page 3 - 6

5. Validating Test Equipment .....Page 6 - 8

6. Test Procedure .....Page 9 -10

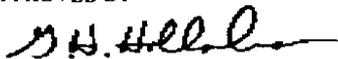
**ORANGE AND ROCKLAND UTILITIES, INC.**

DATE:  
12/16/05

REVISION: 2

DEPT.  
Electric Overhead Line

APPROVED BY



Reference:

PROCEDURE NUMBER:  
2202-1

**WORK PROCEDURE:****Stray Voltage Test Procedure****1.) Purpose:**

The purpose of this procedure is to define the process of conducting "Stray Voltage" testing in the field. The steps described in this procedure are in accordance with the Public Service Commission Safety Standard Case 04-M-0159.

**2.) General Information:**

In January 2005 the Public Service Commission issued a new Safety Standard that mandates testing of all structures that are "**capable of conducting electricity, and publicly accessible**" for stray voltage. The Safety Standard has defined "Stray Voltage" as voltage conditions on electric facilities that should not exist, at a level of 8.0 Volts AC or higher.

However, any voltage detected even if it is less than 8.0 Volts must be treated as stray voltage and made safe. To determine the presence of and actual stray voltage level follow the **Stray Voltage Investigation Procedure No. 2203**.

**3.) Equipment to be tested:**

The following equipment and structures must be tested for the presence of stray voltage.

- a. Street Lights – Company owned i.e. company number, Municipal owned in public thoroughfares. **Metal Poles only!**
- b. Utility poles - ground down lead and exposed ground rods.
- c. Guy Wires and anchors. (O&R and other Utility facilities.)
- d. Control Boxes (Recloser, Sectionalizer, Voltage Regulator, Capacitor, Traffic, and any other controls accessible to the public. Even if they are not owned or maintained by O&R
- e. Traffic Light Structures
- f. UG Risers (Metal)
- g. Pad Mount Transformers and box pads.
- h. UG Switching Equipment
- i. Any metallic parts or surfaces of accessible utility manhole and hand hole covers.
- j. Fencing around the perimeter of substations and Customer owned equipment.

**NOTE:** Any positive indications for stray voltage discovered during this test procedure must be reported immediately. The location must be safe guarded until the problem has been resolved or made safe.

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12/16/05

REVISION: 2

DEPT.  
Electric Overhead Line

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Reference:

PROCEDURE NUMBER:  
2202-2

**WORK PROCEDURE:****Stray Voltage Test Procedure****4.) Test Equipment:**

The test equipment to be used for stray voltage testing are the **LV-S-5 Direct Contact Low Voltage Detector** and the **GS-LV Ground Shield**, manufactured by HD Electric Company.

The LV-S-5 is a hand held low voltage detector for testing exposed metallic surfaces and conductors for the presence of low voltage 60Hz AC. This detector is designed to be hand held as shown and to detect AC voltage on any metallic surface or conductor that is in direct contact with the metallic tip of the detector. The presence of AC voltage greater than 5 volts is indicated by a flashing red light. (See Diagram 1)

The detector **MUST** be hand held as shown. The use of heavy gloves such as lineman's insulating gloves may reduce the sensitivity of the detector. Keep hands and fingers behind the hand guard as shown at all times (See Diagram 2). This probe can be used to detect voltages up to 600VAC with direct contact and higher voltages may be detected at a distance. Do not exceed 600VAC with direct contact. Maintain a safe distance from voltages greater than 600VAC at all times.

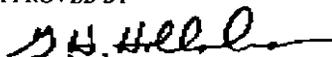
The GS-LV is used in areas where high voltage lines or other energized conductors are present and it prevents the strong electric fields from these lines from interfering with normal voltage tests. The ground shield is attached to the detector by sliding it over the detector handle until it locks in place (See Diagram 3). The ground shield has an attached ground lead and an alligator clip, which is to be connected to a driven earth ground.

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DEPT.  
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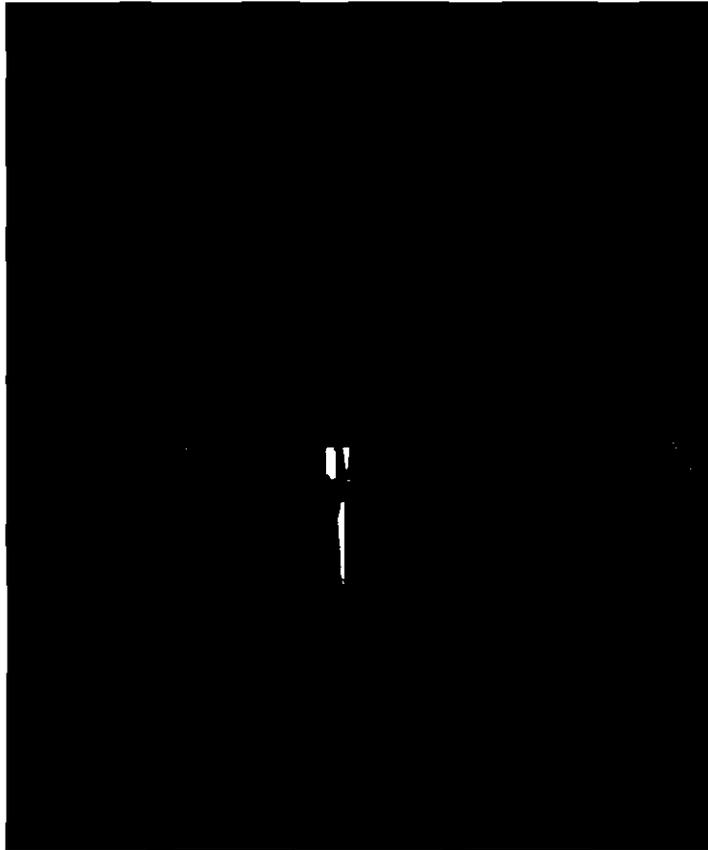
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2202-3

**WORK PROCEDURE:**

**Stray Voltage Test Procedure**

**Diagram1**



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**WORK PROCEDURE:**

**Stray Voltage Test Procedure**

**Diagram 2**



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**Diagram 3**



**5.) Validating Test Equipment:**

Prior to commencing with the testing of the equipment in the field the LV-S-5 Detector must be tested for proper operation. This test must be performed at the beginning of each day, and again at the end of each workday.

Test the LV-S-5 Detector with the PT-LV-5 Detector Tester before and after each use. The PT-LV-5 supplies a non-lethal low voltage AC signal at the metal plate on the end shown with the large arrow. (Diagram 4)

To test the LV- S-5 Detector, hold the Tester as shown, (Diagram 5) press the ON button, hold the Detector as shown and make direct contact between the metal tip on the Detector and the metal pate on the Detector Tester. A red light on the Detector Tester indicates the battery is OK. A flashing red light on the Detector means voltage is detected. Replace the battery in the Tester with a 9V alkaline type when the red light is not visible. Note that both units should be hand held as shown for testing. Your hands are part of the test circuit and hand placement can affect test results.

Once the LV-S-5 detector has been successfully tested, it may be inserted into the **GS-LV Ground Shield** when the testing environment requires.

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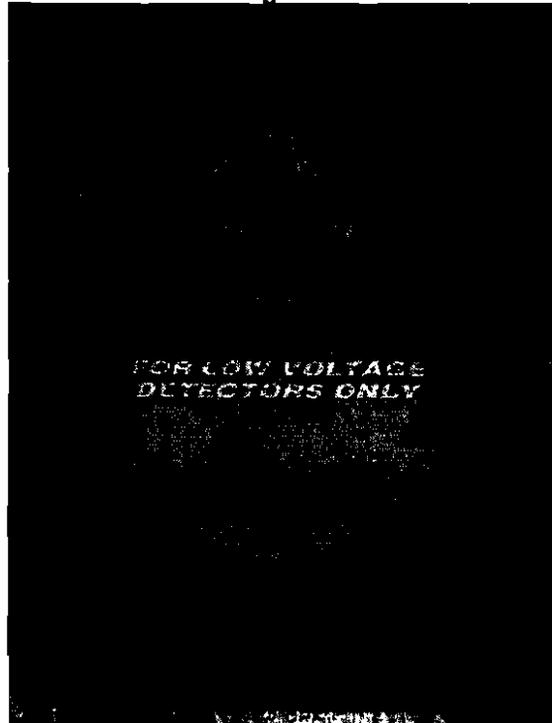
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**WORK PROCEDURE:**

**Stray Voltage Test Procedure**

**CAUTION:** For use by trained personnel only. This device generates 6VAC for testing LV-S-5 low voltage AC voltage detectors. There is no danger of electric shock when this tester is used as directed.

**Diagram 4**



↑  
**Metal Plate**

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WORK PROCEDURE:

Stray Voltage Test Procedure

Diagram 5



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**WORK PROCEDURE:****Stray Voltage Test Procedure****6.) Test Procedure:****Conducting Field Test**

Once the LV-S-5 Low Voltage Detector has been tested for use in the field the following procedure can be used.

Hold the LV-S-5 detector as shown in diagram 2 at all times. **The hand of the user becomes the second terminal of the measurement circuit and the ground reference.** The Metal tip of the detector must make contact with the surface or the equipment being tested.

If the LV-S-5 Low Voltage Detector detects stray voltage then place the ground shield onto the detector. Attach the alligator clip of the ground shield to a driven ground. Hold the foam portion of the ground shield and touch the metal tip of the detector to the equipment as was previously done.

**NOTE: Substation personnel** testing the substation fence before entering and after exiting are only to test using both the Low Voltage Detector and the Ground Shield Record the results of each stray voltage test on the STRAY VOLTAGE TEST FORM FOR O.H & U. G. DISTRIBUTION STRUCTURES.

**NOTE: If the LV-S-5 Low Voltage Detector detects stray voltage while the GS-LV Ground Shield is in place, refer to the Orange and Rockland Stray Voltage Investigation Procedure 2203 to determine the source of the voltage.**

- I. Street Lights – Place the metal tip of the LV-S-5 detector on the surface of the metal street light pole.
- II. Utility Pole Ground Down Leads – Place the detector on the ground down lead and exposed ground rod. Record the results of your test on the data sheet. Test all utility down leads on the pole i.e. telephone and cable.
- III. Guy Wires and Anchors - Place the detector on the guy wire surface and exposed anchor rod. Record the results of your test on the data sheet. Test all utility guy wires and anchors associated with the pole being tested i.e. telephone and cable.

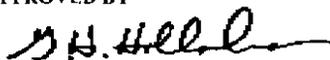
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**WORK PROCEDURE:****Stray Voltage Test Procedure****PRIMARY ANCHOR GUY****SECONDARY ANCHOR GUY**

- IV. Control Boxes - Place the metal tip of the LV-S-5 detector on the surface of the metal control box and associated cables. The term control box includes the equipment listed in section 3 d. and any other hardware that is accessible to the public.
- V. Traffic Light Structures - Place the metal tip of the LV-S-5 detector on the surface of the metal traffic light structure and control panel.
- VI. UG Risers (Metal) - Place the metal tip of the LV-S-5 detector on the surface of the metal primary or secondary riser.
- VII. Pad Mount Transformers - Place the metal tip of the LV-S-5 detector on the surface of the metal surface of the pad mount transformer.
- VIII. UG Switching Equipment - Place the metal tip of the LV-S-5 detector on the metal or conducting surface of the UG switch.
- IX. Utility Manhole Covers - Place the metal tip of the LV-S-5 detector on the metal surface of the manhole cover.
- X. Hand Hole Covers - Place the metal tip of the LV-S-5 detector on the metal surface of the hand hole cover or metal hold down bolts.
- XI. Fencing – Place the metal tip of the LV-S-5 detector on the fence support posts and fencing.

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**Exhibit Two**

**O&R Stray Voltage Investigation Procedure 2203**

**WORK PROCEDURE:****Stray Voltage Investigation Procedure****Purpose:**

The purpose of this procedure is to establish the process for the investigation of reported stray voltage conditions, and stray voltages detected during the annual stray voltage-testing program. This procedure encompasses the initial investigation process, how to perform preliminary measurements, test data collection, identifying the possible cause, and suggested mitigation procedures.

**NOTE:** This procedure provides recommended investigation processes only. The investigation steps outlined in the procedure may have to be modified to suit the situation being investigated. Any confirmed stray voltage discovered during the execution of this test procedure must be reported to a **SUPERVISOR** immediately.

**General Information:**

This procedure is formatted for the investigation of reported Stray Voltage conditions. Stray voltage conditions for investigation are determined by a positive response to the initial **Stray Voltage Test procedure No. 2202** or a reported shock situation.

The following procedure is designed to help identify the source of the stray voltage and formulate a root cause for the condition. Additionally, several mitigations methods are included although they should not be limited to the scope of this procedure. Stray voltage situations may be very complex and the resolution may require an engineered solution. Therefore, it is extremely important to maintain detailed documentation to assist with the engineering evaluation.

In some cases, further evaluation is required and the installation of a recording voltmeter and a detailed engineering study may become necessary. The installation of these devices and all the data necessary for an engineering evaluation **will not** be covered in this work procedure.

**Test Equipment:**

The following is a list of test equipment and materials required to properly test for stray voltage.

- a. (1) Ground Resistance Tester<sup>1</sup>
- b. (1) 4 ft. Ground Rod (Additional Rods may be used)
- c. (1) Digital Multi-meter (Fluke Model 87 DVM or equivalent)<sup>2</sup>
- d. **(1) Set of Fused Test Leads Model 131479 with 1/8 amp fast acting fuse**
- e. (1) Clamp on Amp Meter
- f. (1) 500Ω 5-Watt shunt resistor. **(Dual test adapter Banana Plug with set screws)**

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**WORK PROCEDURE:****Stray Voltage Investigation Procedure**

- g. (1) Reel of #12 Awg. Copper wire. (Optional for use when a ground cannot be established in close proximity to the points being tested.)

<sup>1</sup> The AEMC ground resistance detector currently employed by O&R cannot be used to measure the resistance of an individual or test ground rod. It is capable of measuring ground resistances in multi-grounded WYE systems only. However, it is capable of measuring current in the individual ground down leads.

**NOTE:** In areas where a reference ground rod cannot be established, such as a downtown area where concrete sidewalks are prevalent the following process can be performed.

- 1.) Establish test points between two conductive surfaces. (Use the 500Ω shunt resistor when performing this test. As an example, a ground down lead and fence or drainage system cover.
- 2.) Try to simulate a person by obtaining a reading in the areas someone would be able to reach.

<sup>2</sup> The threshold for mitigation is  $\geq 1.0$  volt. Any loaded voltage readings of less than 1.0 volt is to be recorded as found, however, no mitigation is required below this value. <sup>1</sup>

**Test Procedure:**

The following is the recommended procedure for confirming the existence of stray voltage when it is detected during the Stray Voltage Test Procedure 2202 or a reported shocking incident.

**Note:** Documentations is extremely important when conducting a stray voltage investigation and must be maintained through out the investigation period.

**I.) General Procedures:****A.) Visual Inspection:**

- 1.) Identify and record the system type.

<sup>1</sup> At the Upstate Utilities meeting held September 29, 2005, in Binghamton, NY, PSC staff Christian Bovin and Jason Pause prescribed the  $\geq 1.0$  Volt threshold for stray voltage testing as it relates to testing in accordance with PSC Case 04-M-0159.

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**WORK PROCEDURE:****Stray Voltage Investigation Procedure**

- 2.) Visually examine the neutral system present in the area where the stray voltage has been recorded or a shock has been reported. Look for broken neutrals and bad connectors in the neutral itself. Record this information in the Investigation Data Sheet.
- 3.) Visually examine the condition of the utility ground rod connections, and note any additional ground rods present for the other utilities. Examine the condition of the bonding between all the ground rods present at this location.
- 4.) Examine the condition of the secondary system including neutral grounding, and the service to facility being tested.
- 5.) Look for blown fuses on capacitor banks in the area.

**B.) Test Results:**

- 1.) If voltage levels of **(5.0 Volts AC) <sup>2</sup>** and above are measured using the following procedures refer to **Section 5** of this procedure for possible mitigation procedures.
- 2.) In the Upstate Utility Meeting held in Binghamton, NY dated September 29, 2005. The PSC established a minimum mitigation level of  $\geq 1.0$  volt. The amount of reduction in the voltage level after mitigation may vary depending on a number of circumstances. In some situations, it is impossible to establish voltage levels to 1.0 volt and most mitigation steps will not change this situation. These situations may be classified as "Naturally Occurring Voltages."
3. **Prior to commencing any stray voltage testing the fuse in the test leads must be tested for continuity. This is done by:**
  - a. Place the Digital Volt Meter setting to measure resistance
  - b. Touch the two test leads together completing the circuit
  - c. The meter should indicate zero ohms or near zero.

If the meter indicates infinity or open circuit replace the fuse in the test leads and repeat the steps above. Stray voltage testing cannot commence until this test has been completed successfully.

This test can be performed with the shunt resistor installed. If the test is conducted with the shunt resistor install the meter will read the value of the shunt resistor.

**II.) Equipment Testing:****ORANGE AND ROCKLAND UTILITIES, INC.**

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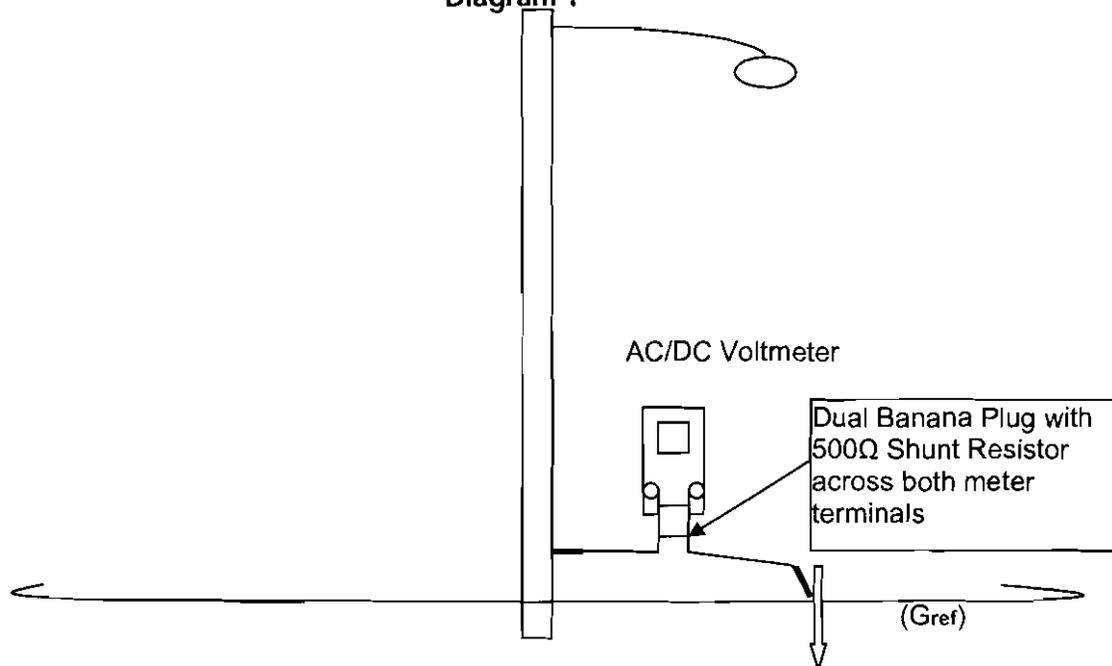
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2203-4

**WORK PROCEDURE:****Stray Voltage Investigation Procedure****A.) Street Light Investigation:**

- 1.) Examine the bonding of the grounding connections at the location under test. Including the service entrance cable and all grounding connections to the secondary system.
- 2.) Establish a temporary reference ground approximately 4 feet from the streetlight to be tested. Measure and document the resistance of the reference ground rod. Place one of the multi-meter leads on the streetlight to be tested, and the other end on the temporary ground reference. Measure and document the voltage between the (See Diagram 1 below for test points.) This test is considered an **open circuit**<sup>3</sup> test. Record the voltage level in the data sheet in Appendix A.
- 3.) Place one end of the multi-meter lead with the 500Ω resistor inserted across the terminals on the streetlight to be tested and the other end on the temporary ground reference. (See Diagram 1 below for test points.) Record the voltage readings observed in the data sheets.

**Diagram 1**

<sup>3</sup>NOTE: Open circuit tests should be performed prior to inserting the load resistor in each of the following tests.

**B.) Ground Down Lead:****ORANGE AND ROCKLAND UTILITIES, INC.**

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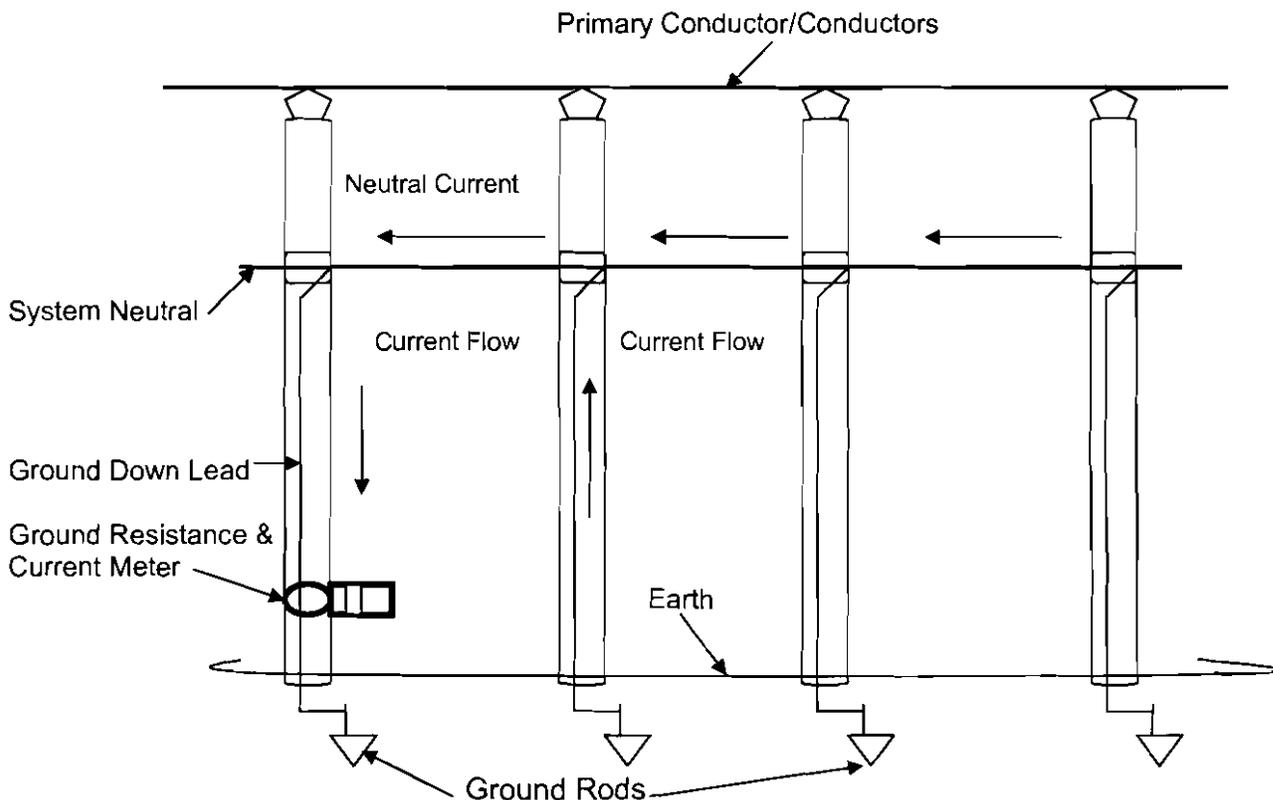
**WORK PROCEDURE:**

**Stray Voltage Investigation Procedure**

1. Examine the primary neutral and ground down lead bonds to the primary system neutral and the connections at the driven ground rods. Record your observations in the data sheets.
2. Using an approved test device measure and record the current flow in the ground down lead being tested.
3. Using the ground rod resistance tester, test and document the ground rod resistance and current at the location where stray voltage has been detected.

**NOTE:** This step it to be repeated for every location where testing is performed on a multi-grounded WYE system. This test may be omitted if it is a ground down lead for an equipment location on a delta primary system.

**Diagram 2**



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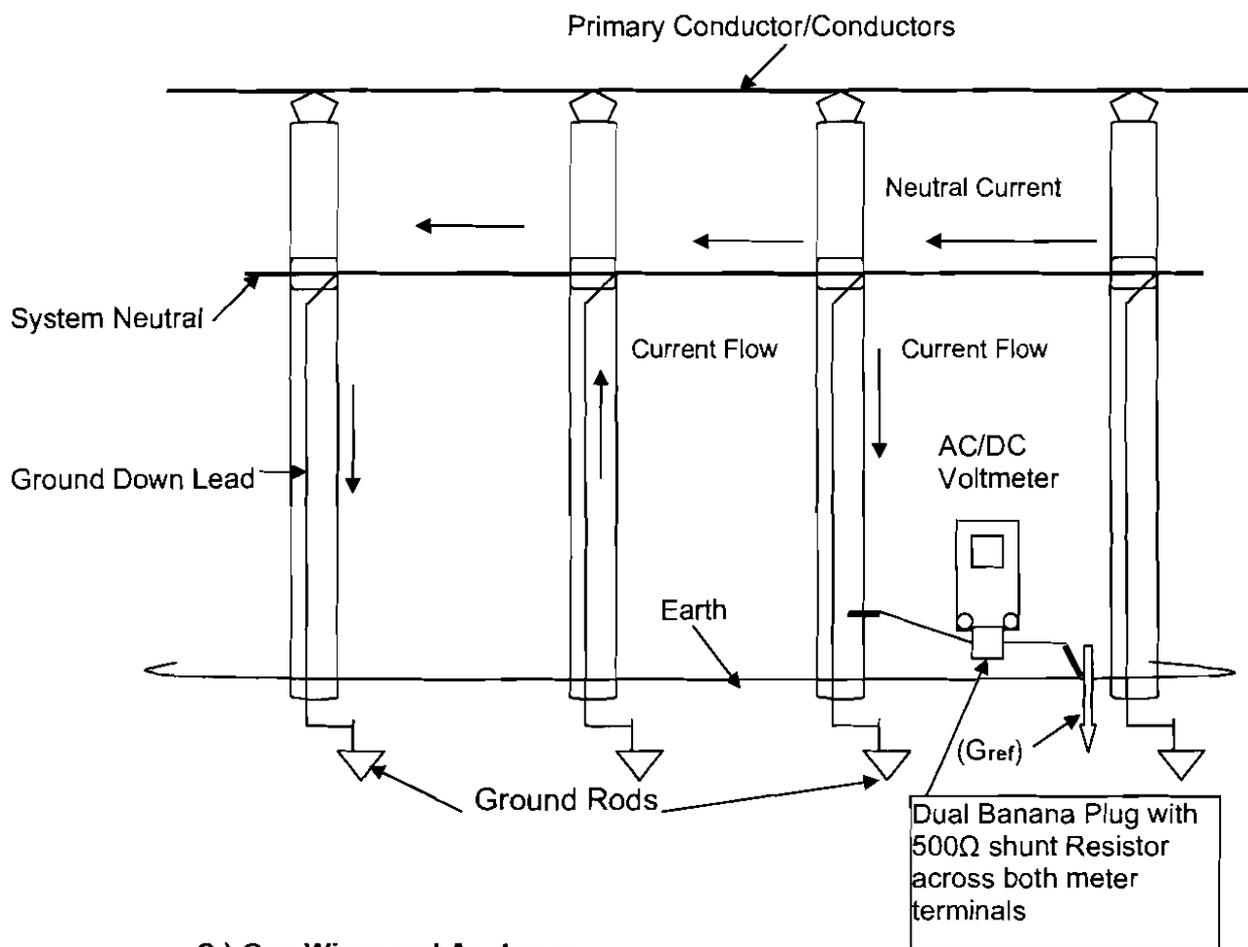
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**2203-6**

**WORK PROCEDURE:**

**Stray Voltage Investigation Procedure**

3. Test for Neutral to Earth Voltage levels. Establish a temporary driven ground 4 feet from the ground down lead. Measure and document the open circuit voltage as described in note 3 above. Measure and document the voltage between the primary neutral ground down lead and the reference ground rod. (See Diagram 3) If a temporary ground reference cannot be established, refer to the instructions above.

**Diagram 3**



**C.) Guy Wires and Anchors:**

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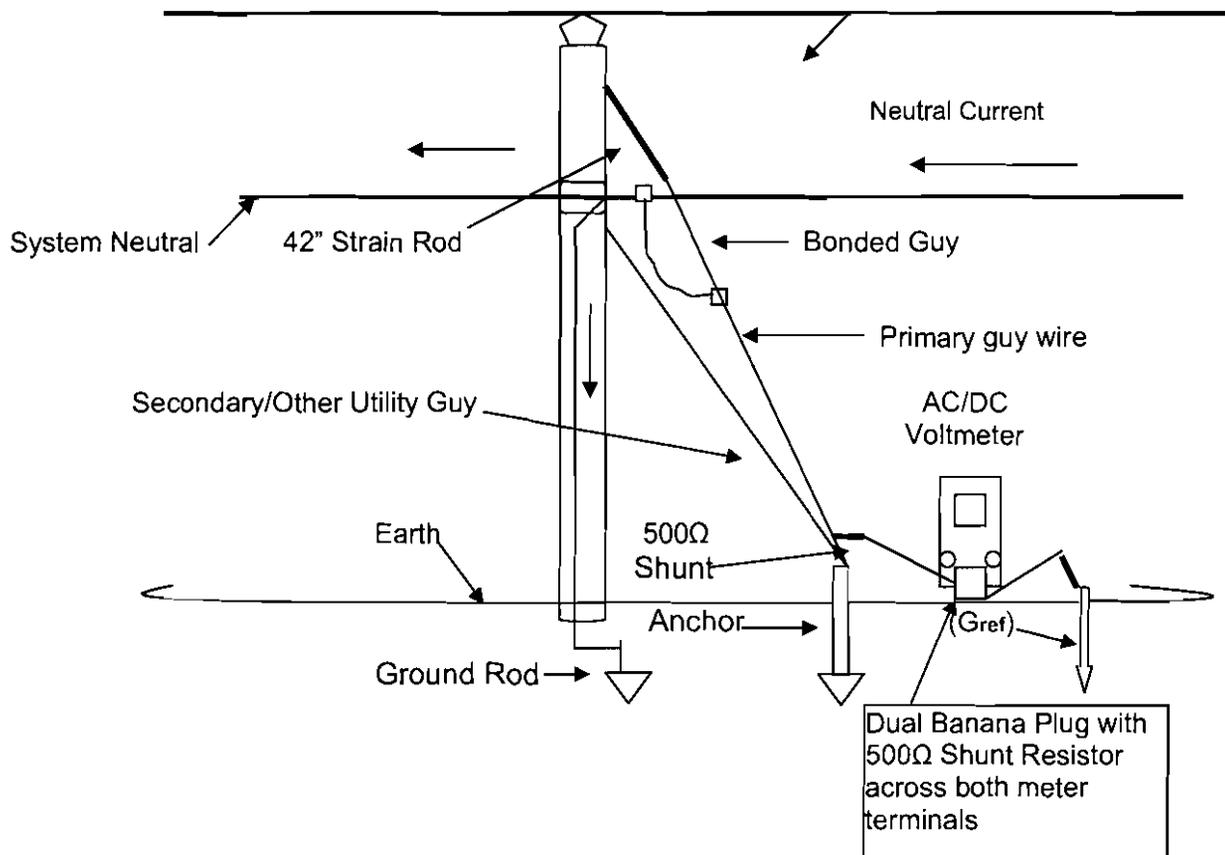
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**WORK PROCEDURE:**

**Stray Voltage Investigation Procedure**

- 1.) Perform a visual inspection of the facilities that supply power to the location, examine the bonding on the primary system neutral and all grounding connections, including the guy wire bond to the system neutral.
- 2.) Using the ground rod resistance tester, test and document the ground rod resistance and current (when present) at the location where stray voltage has been detected.
- 3.) Test for Neutral to Earth Voltage levels. Establish a temporary driven ground 4 feet from the guy wire anchor(s). Measure and document the open circuit voltage as described in note 3 above. Measure and document the voltage between the guy wire and anchors and the reference ground rod with a 500Ω shunt resistor installed. Record this voltage.

**Diagram 4**



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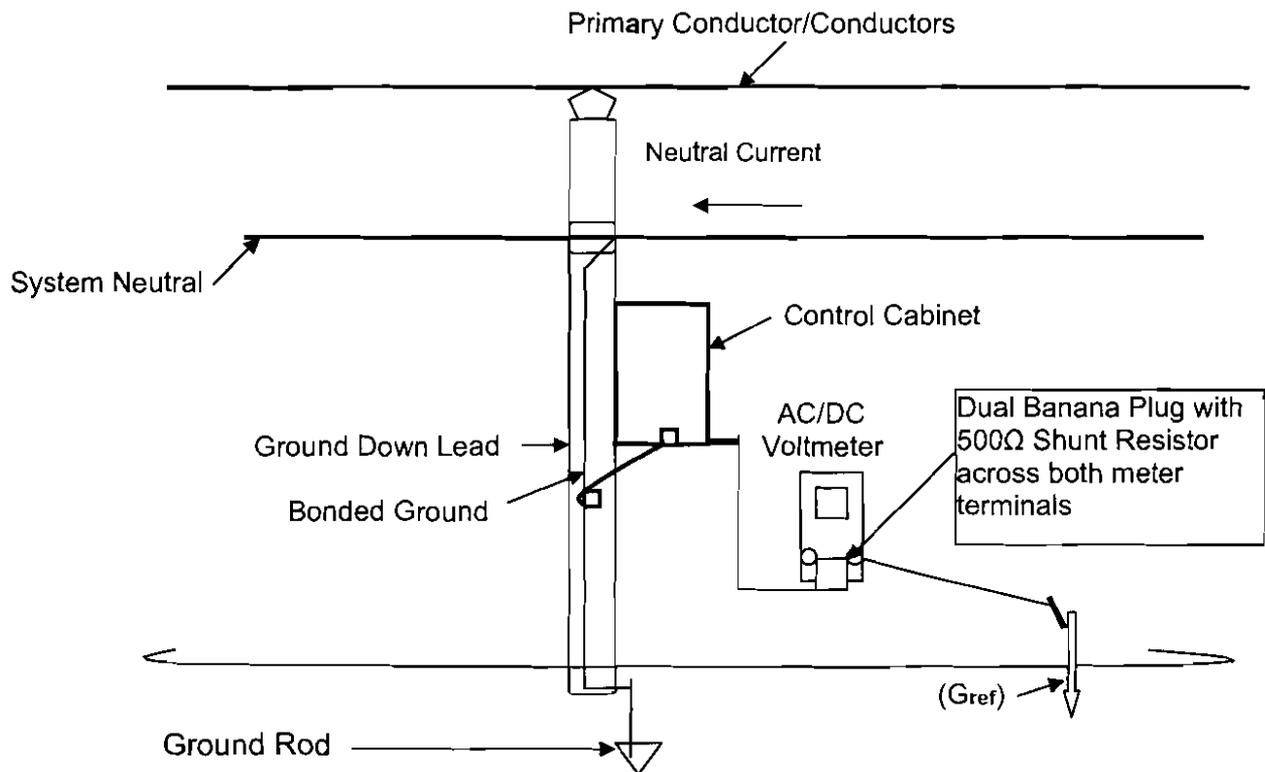
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2203-8

**WORK PROCEDURE:****Stray Voltage Investigation Procedure****D.) Control Box:**

- 1.) Perform a visual inspection of the facilities that supply power to the location, including the service entrance cable and all grounding connections. The control cabinet must be grounded externally. Examine for the presence of a ground connection and quality of the connection.
- 2.) Using the ground rod resistance tester, test and document the ground rod resistance and current at the location where stray voltage has been detected.
- 3.) Test for Neutral to Earth Voltage levels. Establish a temporary driven ground 4 feet from the ground down lead. Measure and document the open circuit voltage as described in note 3 above. Measure and document the voltage between the reference ground rod and control cabinet with a 500Ω shunt resistor installed.

**Diagram 5****ORANGE AND ROCKLAND UTILITIES, INC.**

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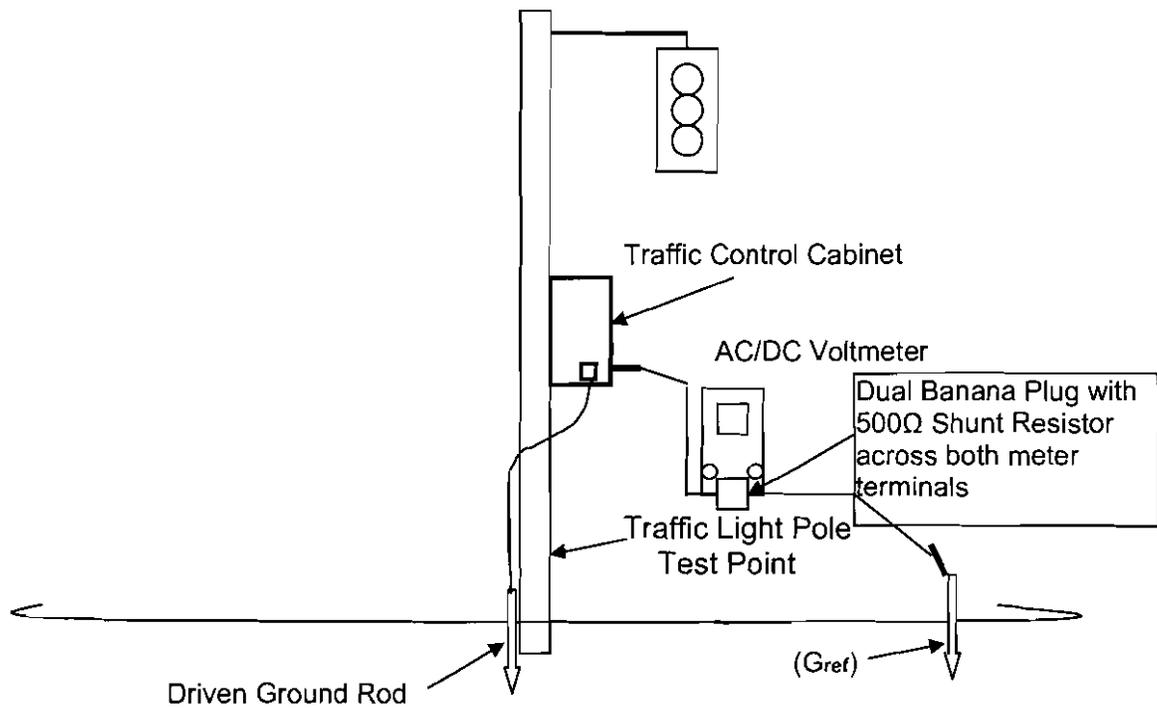
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**E.) Traffic Light Investigation:**

- 1.) Perform a visual inspection of the facilities that supply power to the location, including the service entrance cable and all grounding connections. The control cabinet must be grounded externally. Examine for the presence of a ground connection and quality of the connection.
- 2.) Establish a temporary driven ground 4 feet from the ground down lead. Place one end of the multi-meter meter lead on the streetlight support structure to be tested and the other end on the ground reference. Measure and document the voltage between the test points. Record the voltage level in the data sheet in Appendix A.
- 3.) Place one end of the multi-meter lead with the 500Ω shunt resistor installed on the streetlight control cabinet to be tested and the other end on the ground reference. (See Diagram 1 below for test points.)

**Diagram 6**



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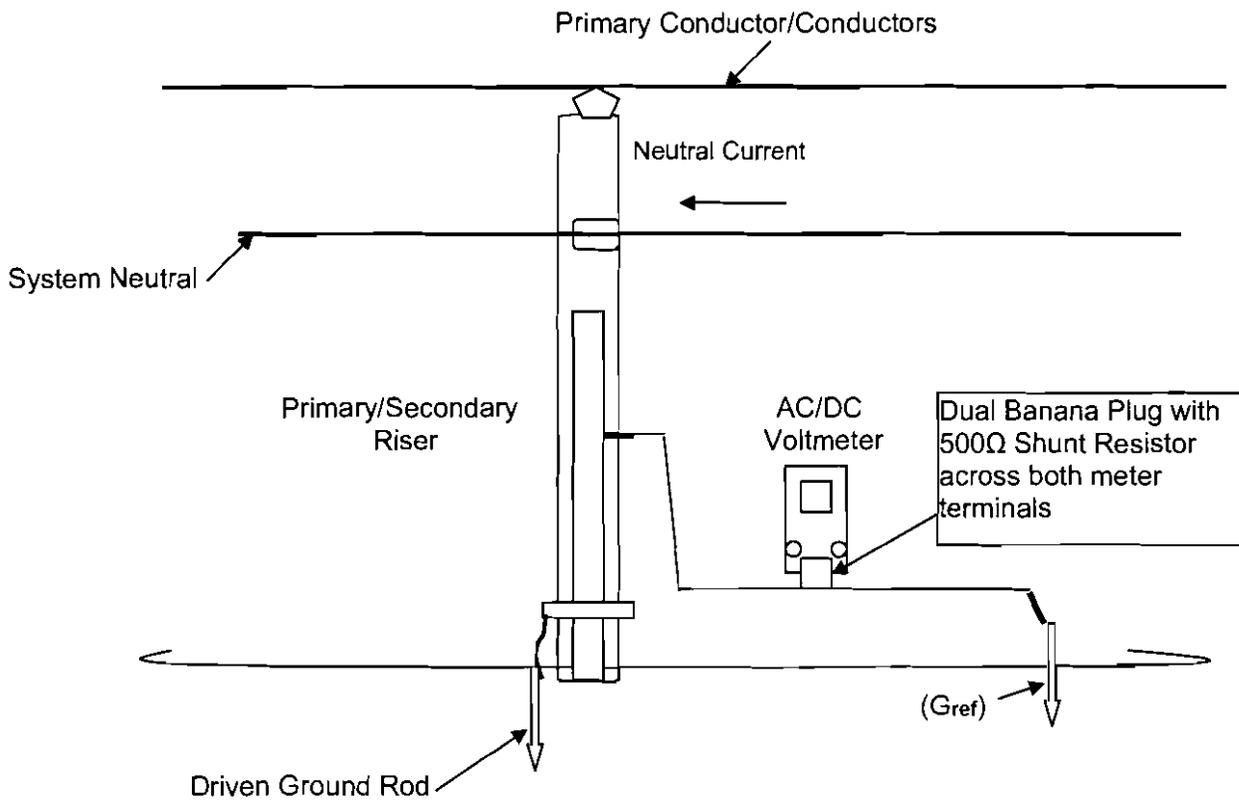
**WORK PROCEDURE:**

**Stray Voltage Investigation Procedure**

**F.) Underground Riser Primary/Secondary:**

- 1.) Perform a visual inspection of the facilities that supply power to the location, including the service entrance cable and all grounding connections.
- 2.) Establish a temporary driven ground 4 feet from the riser pole under test. Measure and document the open circuit voltage as described in note 3 above. Place one end of the multi-meter lead with the 500Ω shunt resistor installed on the steel conduit to be tested and the other end on the ground reference. Measure and document the voltage between the (See Diagram 1 below for test points.)

**Diagram 7**



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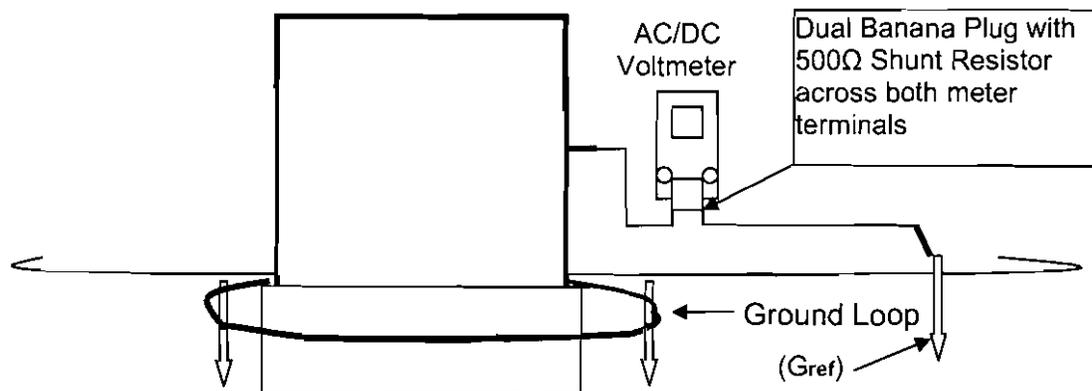
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**WORK PROCEDURE:****Stray Voltage Investigation Procedure****G.) Pad mount Transformers and Box Pads:**

- 1.) Perform a visual inspection of the facilities that supply power to the location, including the service entrance cable and all grounding connections.
- 2.) Establish a temporary driven ground 4 feet from the ground down lead. Measure and document the open circuit voltage as described in note 3 above. Place one end of the multi-meter lead with the 500Ω shunt resistor installed on the transformer to be tested and the other end on the ground reference. Measure and document the voltage between the (See Diagram 1 below for test points.)

**Diagram 8**

Pad Mount Transformer & Box Pads  
U.G Switching Equipment

**H.) Manhole and Hand hole Test:**

- 1.) Perform a visual inspection of the facilities that supply power to the location, including the service entrance cable and all grounding connections.
- 2.) Establish a temporary driven ground 4 feet from the ground down lead. Measure and document the open circuit voltage as described in note 3 above. Place one

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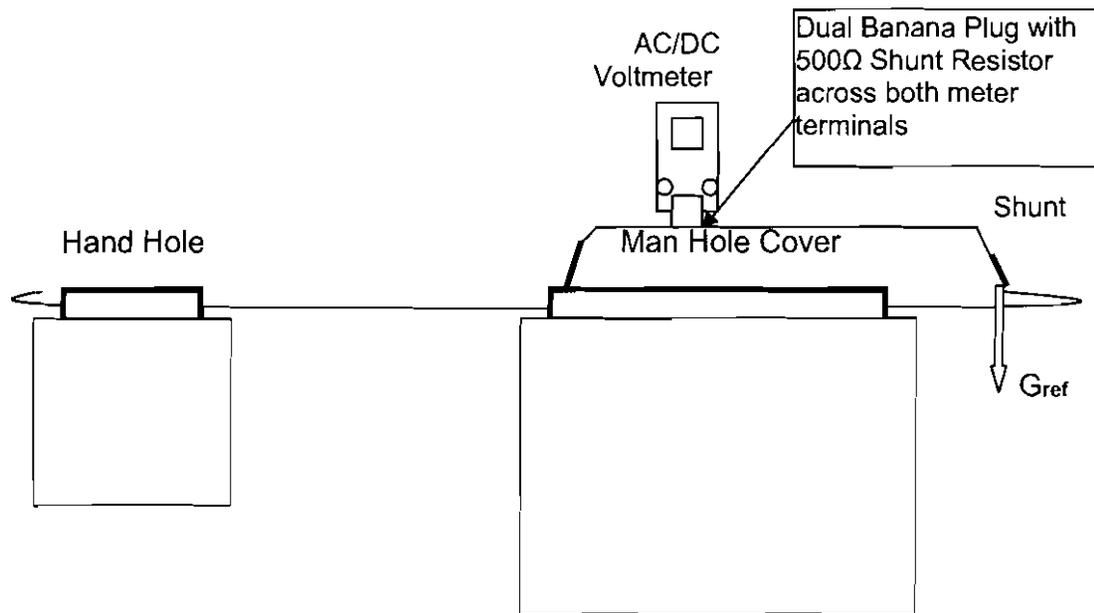
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**WORK PROCEDURE:****Stray Voltage Investigation Procedure**

end of the multi-meter lead with the 500Ω shunt resistor installed on the manhole or hand-hole cover to be tested and the other end on the ground reference. Measure and document the voltage between the test surface and the reference ground rod. (See Diagram 9 below for test points.)

**Diagram 9****I.) Fencing Test:**

- 1.) Perform a visual inspection of the facilities that supply power to the location, including the service entrance cable and all grounding connections.
- 2.) Establish a temporary driven ground 4 feet from the ground down lead. Measure and document the open circuit voltage as described in note 3 above. Place one end of the multi-meter lead with the 500Ω shunt resistor installed on the fence to

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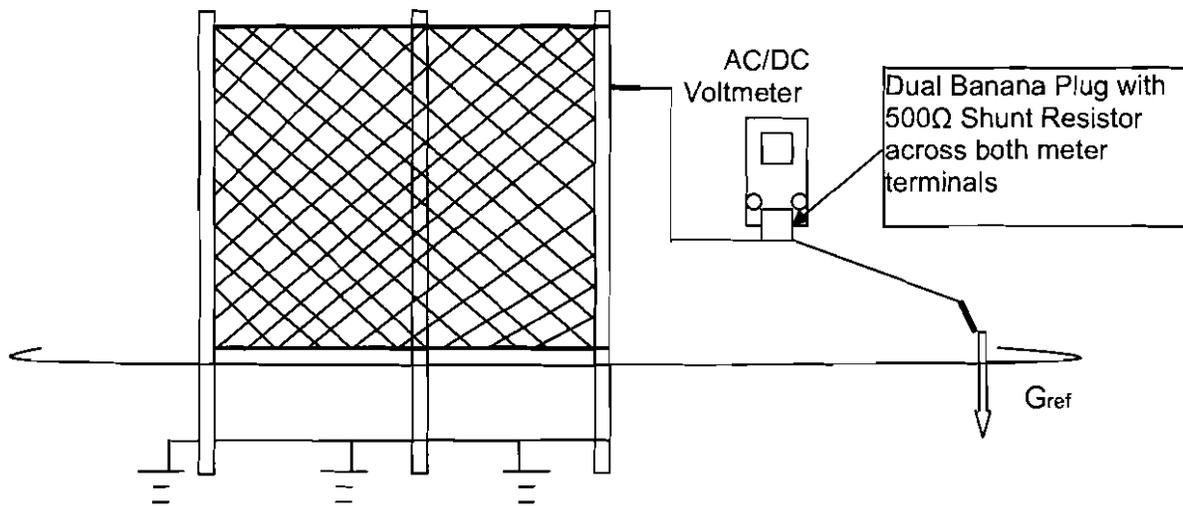
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**WORK PROCEDURE:**

**Stray Voltage Investigation Procedure**

be tested and the other end on the ground reference. Measure and document the voltage between the ground reference rod and the surface being tested.  
(See Diagram 10 below for test points.)

**Diagram 10**



**5.) Mitigation**

The mitigation of stray voltage situations can very difficult in some situations. For the purpose of this work procedure mitigation has be broken into general areas. There may be several subparts to each area. Not all are listed, only some examples are provided as a reference.

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**A.) Grounding**

One of the more obvious and simplest solutions to stray voltage problems is the proper installation of grounds and proper bonding. However, there are situations where additional grounding can cause the stray voltage levels to increase. **It is important to monitor the voltage levels every time a change is made.** Whether the bonding has been redone or additional grounding points are installed. Retest the point as you proceed.

The grounding practices employed shall comply with the NESC standards for grounding methods.

- a.) On a multi-grounded WYE distribution, system there must be as a minimum four grounding points per mile. This includes neutral and equipment grounds. Install additional ground rods if less than four. Each piece of equipment attached to the distribution circuit shall have a bonded connection to the system neutral and a driven ground rod.
  
- b.) Examine the quality of the bonding of the secondary systems to the primary neutral system, and the quality of the system connections to the ground rods.
  
- c.) Install additional grounding points at the point you are trying to mitigate. This may require the installation of several ground rods spaced at least 10 feet apart to obtain maximum effectiveness. (If you are applying the ground to a specific test area.)
  
- d.) Install bonded connections to any guy wires that are not bonded to the system neutral. These guy wire and anchor assemblies significantly aid in improving the effectiveness of out grounding facilities.

**A.) Isolation**

In some instances, isolation from the primary system neutral will be the only way to alleviate the stray voltage issue. The examples listed below are isolation practices

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**WORK PROCEDURE:****Stray Voltage Investigation Procedure**

allowed by the NESC. Employing of any of practices requires the approval of Distribution Engineering.

- a.) Secondary facilities bond may be separated from the primary system bond only if a separate grounding electrode is employed. The grounding electrode for the primary system and the secondary system shall be at least 20 feet apart where practical.
- b.) Interconnection of independent grounding conductors is allowed only when the multi-grounded WYE distribution system has sufficiently heavy grounding electrodes.
- c.) Interconnection of primary grounding conductor and the secondary conductor may be made through a spark gap device only if a multi-grounded neutral system is present.
- d.) Interconnection of independent grounding conductors is allowed though an approved neutral isolation device. (Ronk Blocker®) This device should be employed only when there is a sufficiently multi-grounded neutral system available.
- e.) Cable and telephone system neutrals **must** be isolated from the service neutral being isolated. This requires coordination with the cable and telephone engineering departments.

**A.) Engineered Solution(s)**

In some instances, mitigation of the stray voltage situation is not easily obtained. In these instances, an engineered solution may be required. In this case, additional testing and research outside of the scope of this procedure will be required. Some examples of these solutions are as follows.

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**WORK PROCEDURE:****Stray Voltage Investigation Procedure**

- a) Primary system evaluation by the Engineering Department may be required. Evaluation of the phase balancing and neutral currents present.
- b) Evaluation of the primary neutral system conductor size. In some cases, an undersized or insufficient neutral system may be present.
- c) Ground rod resistances may be required to perform a proper analysis.

**ORANGE AND ROCKLAND UTILITIES, INC.**

DATE: May 10, 2006

REVISION: 4

DEPT.  
Electric Overhead Line

APPROVED BY



Reference:

PROCEDURE NUMBER:  
**2203-17**

**Exhibit Three**

**O&R Inspection Procedure 2201-3 for Underground Distribution  
Structures and Equipment**

**WORK PROCEDURE:**

**Inspections Procedure for Underground Distribution Structures and Equipment**

**Inspections Procedure for Underground Distribution Structures and Equipment**

- 1. Purpose.....2
- 2. General Information.....2
- 3. Equipment to be Inspected.....2, 3
- 4. Failure Classifications and Repair Schedule.....3, 4

**ORANGE AND ROCKLAND UTILITIES, INC.**

**DATE:**  
1/04/08

**REVISION:** 3 (1/08)

**DEPT.**  
Electric Overhead Line

**APPROVED BY**

*[Signature]*

**Reference:**

**PROCEDURE NUMBER:**  
2201-3

|                 |  |
|-----------------|--|
| WORK PROCEDURE: | <b>Inspections Procedure for Underground Distribution Structures and Equipment</b> |
|-----------------|--|

**1.) Purpose:**

The purpose of this procedure is to establish a uniform method for inspecting and recording the condition of underground distribution facilities.

**2.) General Information:**

In January 2005, the Public Service Commission issued Case 04-M-0159, Order Instituting Safety Standards that mandates the visual inspection of 20% of the electrical distribution system each year with the requirement that 100% of the electric distribution system be inspected by the end of each fifth year. This inspection is designed to identify hazardous conditions and assess the overall condition of all underground equipment.

The results of all the Underground Inspections performed shall be recorded on the **SAFETY INSPECTION FORM FOR UNDERGROUND DISTRIBUTION STRUCTURES AND EQUIPMENT**. See appendix A.

**3.) Underground Equipment to be Inspected:**

The following equipment and structures must be visually inspected for overall condition and damage.

- a.) **Manholes** – Are to be visual inspected for structure integrity and overall condition of the cable system. Frame and covers must be properly set. The manholes should be opened in accordance with Underground Work Procedures 1503-1, 1504-1, and 1505-1. The cable system will be visually inspected for cracking, tracking, hardware corrosion, integrity of cable support system, and swelling of the accessories. Ten digit grid numbers shall be installed, if not previously installed.

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WORK PROCEDURE:

**Inspections Procedure for Underground Distribution Structures and Equipment**

- b.) **Switchgear** – An exterior and interior visual inspection will be completed on each above grade switch enclosure. Inspect enclosure for corrosion, hardware damage, equipment lock, accessibility, and overall condition. The enclosure shall be opened and an internal visual inspection shall be completed. The cable system will be visually inspected for cracking, tracking, swelling of the accessories, and dielectric media leakage. Install ten digit grid numbers on outside of enclosure, if not previously installed.
- c.) **Transformers** – An exterior and interior visual inspection will be completed on all underground distribution transformers. Inspect transformer for corrosion, hardware damage, equipment lock, accessibility, and overall condition. The transformer will be opened and an internal visual inspection shall be completed. The cable system will be visually inspected for cracking, tracking, swelling of the accessories, and leaking dielectric fluid. Install ten digit grid numbers on outside of enclosure, if not previously installed.
- d.) **Box Pads** – An exterior and interior visual inspection will be completed on all accessible underground distribution box pads. Inspect box pads for exterior damage to fiberglass and make sure box pad covers are securely fastened. The box pad will be opened and an internal visual inspection shall be completed. The cable system will be visually inspected for cracking, tracking, swelling of the accessories, and corrosion indications. Install ten digit grid numbers, if not previously installed.
- e.) **Hand Holes** – An exterior and general visual inspection will be completed on all accessible underground distribution hand holes. Inspection will check for exterior damage and to ensure covers are securely fastened.
- f.) **Grounds** – All equipment ground conductors shall be visual inspected to ensure continuity and proper connection.

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|                        |  |
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| <b>WORK PROCEDURE:</b> | <b>Inspections Procedure for Underground Distribution Structures and Equipment</b> |
|------------------------|--|

**4.) Failure Classifications and Repair Schedule**

All defects and anomalies identified shall be categorized and prioritized for repair. Repair priorities and corrective action shall be defined as follows.

1. **Priority Five** – Is a condition that requires correction immediately. All repairs must be made within 24 hours of identification. Priority 5 repairs can be, but are not limited to, any condition that could result in danger to the public or imminently cause an interruption of service. The ability to immediately correct will be subject to maintaining the integrity of the distribution system and therefore may be delayed if loading, safety, and other reliability concerns require that the repair be deferred. If deferred, the condition shall be monitored regularly until system conditions allow the repair to commence.
  
2. **Priority Four** – Is a condition that should be corrected within 7 calendar days, subject to system constraints.
  
3. **Priority Three** – Is a condition that should be corrected as manpower and system requirements permit. These conditions typically have no impact on the short-term safety or performance of the electric system, but likely will as time passes.
  
4. **Priority Two** – Is a condition that should be evaluated as routine maintenance is performed.
  
5. **Priority One** – Is a condition that can be recorded and monitored. The repair and/or replacement are not a priority.

**ORANGE AND ROCKLAND UTILITIES, INC.**

|                                   |                    |                                 |
|-----------------------------------|--------------------|---------------------------------|
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**Exhibit Four**

**O&R Inspection Procedure 2200-3 for Overhead Distribution  
Structures and Equipment**

**WORK PROCEDURE:**

**Inspections Procedure for Overhead Distribution Structures and Equipment**

- 1. Purpose.....2
- 2. General Information.....2
- 3. Equipment to be Inspected.....2, 3
- 4. Failure Classifications and Repair Schedule.....3, 4

**ORANGE AND ROCKLAND UTILITIES, INC.**

**DATE:**  
1/04/2008

**REVISION: 3 (1/08)**

**DEPT.**  
Electric Overhead Line

**APPROVED BY**

*[Handwritten Signature]*

**Reference:**

**PROCEDURE NUMBER:**  
2200-3

|  |   |  |
|--|---|--|
| <b>WORK PROCEDURE:</b>   | <b>Inspections Procedure for Overhead Distribution Structures and Equipment</b> |  |
| <p><b>1.) Purpose:</b></p> <p>The purpose of this procedure is to establish a uniform method for inspecting and recording the condition of overhead distribution facilities.</p> <p><b>2.) General Information:</b></p> <p>In January 2005, the Public Service Commission issued Case 04-M-0159, Order Instituting Safety Standards that mandates the visual inspection of 20% of the electrical distribution system each year with the requirement that 100% of the electric distribution system be inspected by the end of each fifth year. This inspection is designed to identify hazardous conditions, and assess the over all condition of all overhead equipment.</p> <p>The results of all the Overhead Inspections performed shall be recorded on the <b>SAFETY INSPECTION FORM FOR OVERHEAD DISTRIBUTION STRUCTURES AND EQUIPMENT</b>. See appendix A.</p> <p><b>3.) Overhead Equipment to be Inspected:</b></p> <p>The following equipment and structures must be visually inspected for overall condition and damage. The intent is to perform these inspections from the ground.</p> <ul style="list-style-type: none"> <li>a.) <b>Distribution Poles</b> – Are to be visually observed for any condition that may decrease the structures ability to support loading imposed on them.</li> <li>b.) <b>Conductor Supports</b> – Visual observation of the cross arms for breakage, significant cracking, blistering and overall condition. Braces and brackets are to be inspected also, and missing support bolts and hardware are to be reported.</li> <li>c.) <b>Transformer Inspections</b> – Overhead distribution transformers shall be carefully observed for leaking dielectric fluid, integrity of the supporting brackets, mechanical defects or damage. Observations shall include reviewing for the presence of animal guards, the condition of the primary and secondary conductor, and condition of the lightning arresters.</li> </ul> |   |  |
| <b>ORANGE AND ROCKLAND UTILITIES, INC.</b>   |   |  |
| <b>DATE:</b><br>1/04/08  | <b>REVISION:</b> 3 (1/08)   | <b>DEPT.</b><br>Electric Overhead Line |
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WORK PROCEDURE:

**Inspections Procedure for Overhead Distribution Structures and Equipment**

- d.) **Insulators** – All the overhead distribution insulators shall be carefully observed for visual signs of breakage, cracking, flash over and displacement.
- e.) **Cut outs** – All cut out (fuse) assemblies shall be visually inspected for breakage, cracking and signs of flashover. The condition of lightning protection system at the cut out pole shall also be determined through visual observation.
- f.) **Tie Wires** – All tie in points at the pole top shall be reviewed for damaged, broken, or missing tie wires.
- g.) **Trees/Vines** – Inspect for tree and vine impingements at each pole top. Look for dead branches or leaders that are over or in close proximity to the distribution lines and structures.
- h.) **Guy wires and Anchors** – All guy wires and anchors shall be reviewed for damaged or loose connections. The anchor shall be secure and not exposed as to pose a hazard to public traffic.
- i.) **Conductors** – All overhead primary and secondary conductors shall be visually inspected for general condition. The conductor shall be secured at all tie points. Additional visual observations shall be made for vertical clearance above the ground and horizontal clearance to adjacent structures and conductors.
- j.) **Riser Poles** – All riser poles shall be visually observed for general condition of the support system, - (i. e. cross arms, braces, and hardware). Additional observation of the lightning protection system and the presence of animal guards are also required.

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**WORK PROCEDURE:****Inspections Procedure for Overhead Distribution Structures and Equipment**

- k.) **Other Equipment** – Visual observations shall be performed on other overhead distribution equipment such as reclosers, sectionalizers, voltage regulators, and capacitor banks in accordance with their annual maintenance programs.
- l.) **Switches and Disconnects** – A visual observation shall be performed on all overhead disconnect and Gang Operated Air Breaks (GOABs) for broken and cracked insulators, flashed over insulators, defective or missing lightning protection, and overall condition of the support structures – (i.e. single phase disconnect device cross arms). The review of the GOAB handles is also required. The switch handles shall be examined for tightness of all mounting bolts, proper grounding of the handle and a locking device for security is in place.
- m.) **Grounds** – All ground conductors shall be visually observed to ensure continuity and proper connection. Exposed bare copper ground wires within 8' from the base of the pole shall be noted.

**4.) Failure Classifications and Repair Schedule**

All defects and anomalies identified shall be categorized and prioritized for repair. Repair priorities and corrective action shall be defined as follows.

1. **Priority Five** – Is a condition that requires correction immediately. All repairs must be made within 24 hours of identification. Priority 5 repairs can be, but are not limited to, any condition that could result in danger to the public or imminently cause an interruption of service. The ability to immediately correct will be subject to maintaining the integrity of the distribution system and therefore may be delayed if loading, safety, and other reliability concerns require that the repair be deferred. If deferred, the condition shall be monitored regularly until system conditions allow the repair to commence.

**ORANGE AND ROCKLAND UTILITIES, INC.**

|   |                           |  |
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**Inspections Procedure for Overhead Distribution Structures and Equipment**

2. **Priority Four** – Is a condition that should be corrected within 7 calendar days, subject to system constraints.
3. **Priority Three** – Is a condition that should be corrected as manpower and system requirements permit. These conditions typically have no impact on the short-term safety or performance of the electric system, but likely will as time passes.
4. **Priority Two** – Is a condition that should be evaluated as routine maintenance is performed.
5. **Priority One** – Is a condition that can be recorded and monitored. The repair and/or replacement are not a priority.

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**Exhibit Five**

**Transmission Line Maintenance General Specification**

# ORANGE AND ROCKLAND UTILITIES, INC.

## PROCEDURE MANUAL

Subject: TRANSMISSION LINE MAINTENANCE

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Effective Date of: January 15, 1979

Subject: I. General Specifications

Original Release: January 15, 1979

Procedure Number:

Revision: October 2, 2002

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### 1.1 PURPOSE

To establish specifications and procedures for inspecting and recording conditions of transmission line facilities within the Orange and Rockland Utilities, Inc., and Rockland Electric Company franchise areas.

### 1.2 INSPECTION SCHEDULES

#### A. Helicopter Patrol

All overhead transmission lines and structures in the Orange and Rockland Utilities, Inc. and Rockland Electric Company franchise areas will be patrolled bi-monthly. An infrared inspection will be made bi-annually in spring and summer. Emergency patrols will be made as required during daylight hours and in accordance with appropriate weather conditions. Aerial Patrol Specification OP-1-76 defines the type of aircraft to be used, conduct of the patrol and methods of invoicing.

#### B. Ground Patrol

All overhead transmission lines and structures within the Orange and Rockland Utilities, Inc. and Rockland Electric Company franchise areas will be patrolled once each year. This patrol will be conducted to assess damage to facilities, rights-of-way and access roads, so that corrective action may be taken to ensure that the lines are in proper condition to withstand winter storms. This patrol will also note three conditions and classify the same (See Section I, paragraph 1.4C).

#### C. Climbing Inspections

All climbing inspections must be coordinated with System Operations. Climbing inspections, with the exception of the river crossing tower and structures above 345KV, will not be made on a routine basis. Climbing inspections may be requested to verify observations made from the ground or to assess conditions on similar structures or adjacent structures in a line which has experienced problems or where potential problems were observed during regular maintenance. Towers or poles climbed in the course of normal maintenance are to be inspected in accordance with the following:

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### Items to Inspect

#### (1) Lattice Towers

- (a) All bolts along the entire length of one tower leg
- (b) All bolts in crossarms and hangers, including connections to the tower body
- (c) Suspension and dead-end plates where hardware connects to arms
- (d) Conductors and shield wires
- (e) Hardware and insulators
- (f) General conditions

#### (2) Steel Poles

- (a) All bolts connecting arms to pole and bolts connecting cap plate to the top of the pole
- (b) Horizontal seam welds and longitudinal seam welds
- (c) All crossarm welds
- (d) Cap plate welds at pole top
- (e) Slip joints
- (f) Suspension and dead-end plates where hardware connects to arms
- (g) Conductors and shield wires
- (h) Hardware and insulators
- (i) Pole drains
- (j) General conditions

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(3) Procedure to Use

(a) Bolts: All bolts and palnuts shall be inspected for tightness. Loose bolts shall be tightened and reported. All this work shall be done in accordance with the following criteria:

1. A tower bolt shall be considered loose if the parts it joins are not in good contact with each other, or if the bolt can be turned by the full effort of a man using an ordinary spud wrench. If a bolt is loose because its unthreaded length is too long, the bolt shall be replaced with a shorter one, or the grip increased by adding washers. All loose bolts shall be tightened by the "turn-of-nut" method.
2. Where originally installed, if a palnut is missing, it should be replaced. A wrench applied to the palnut and turned through  $120\pm$  or  $180\pm$  ( $1/3$  to  $1/2$  turn) beyond finger tight provides proper tightening. Before tightening, a palnut has straight hex faces. After proper tightening, the hex faces become slightly concave. By inspection, it can be determined if the palnuts are tight and, and those that are loose shall be tightened.
3. If more than 5% of all of the bolts or palnuts inspected are found to be loose, all bolts and palnuts in the tower shall be inspected and tightened where required.

(b) Welds: All welds shall be visually inspected for cracks. Excessive rust is a good indication that a crack may exist. If cracks are found, they shall be reported as listed below.

1. Horizontal seam welds, longitudinal seam welds, crossarm welds and slip joint welds are critical points for a steel pole. If found cracked, they should be considered an EMERGENCY.

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2. Steel pole cap plate welds shall be inspected for cracks and reported.
  3. Inspect drain holes.
- (c) Steel Pole Slip Joints: Slip joints are critical points for a steel pole. They shall be visually inspected for cracks at plate bends and welded seams. Excessive rust of the bend or welded seam is a good indication that a crack may exist. If found, they shall be considered an EMERGENCY.
- (d) Suspension and Dead-End Plates: Friction points shall be inspected, and excessive wear shall be reported.
- (e) Conductor and Shield Wires: The climbing inspector shall look at the conductors and their connections to the tower. Any broken strands or burnt spots shall be reported.
- (f) Insulators: The climbing inspector shall look at all insulators closely. All broken, cracked or flashed insulators shall be counted. They shall be cleaned or replaced as required by Specification Section 1.4. Cotter keys shall be checked. Any missing or crushed cotter keys shall be replaced and reported.
- (g) Hardware: The climbing inspector shall look at all hardware. Any loose nuts shall be tightened and reported. Cotter keys shall be checked. Any missing or crushed cotter keys shall be replaced and reported. Friction points shall be inspected and excessive wear shall be reported. Particular care shall be taken in inspecting:
1. Preformed shield wire dead-ends and any damaged or burnt marks shall be reported.
  2. Shield wire suspension assemblies for excessive wear at the friction points.

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(h) General Conditions: In addition to items specified, the climbing inspector shall report any condition which may affect the expected reliability or serviceability of the transmission line, such as:

1. Any non-conformities such as missing members and bolts shall be reported.
2. Areas of excessive rust shall be reported.
3. Sharply kinked or excessively bowed members shall be reported.

### 1.3 OBSERVATION OF CONDITIONS

#### A. Electrical Conditions

Any condition which may decrease clearances below safe minimums or impair operation of the line to its full rated capacity.

Examples:

1. Insulators; broken or flashed
2. Downleads and counterpoise; broken or loose connections
3. Conductor clearances; note impaired clearance to structure, other lines, shield wire, etc.
4. Check conductor for broken or separated strands
5. Conductor hardware and accessories; damaged or discoloration due to heat; spacers
6. Tree clearances; general height of trees in each section

#### B. Structural Conditions

Any condition may decrease a structure's ability to support loadings imposed on it. The condition may be caused by normal deterioration or an outside force.

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Examples:

1. Rot, insect or woodpecker attach on wood poles and arms
2. Loose, bent or broken steel, severe deterioration on lattice towers. (Special attention to be given steel where it enters ground or concrete.)
3. Cracks in or around welds, including the base plate and missing or loose anchor bolt nuts on steel poles
4. Missing or severely rusted bolts, nuts and, where originally installed, palnuts
5. Extreme deterioration of exposed surfaces on foundations
6. Erosion or backfill around structure bases

C. Right-Of-Way Conditions

Any condition on a Right-Of-Way (R.O.W.) or access road which may endanger the line or impair ability to maintain the line

Examples:

1. Right-of-Way encroachment
2. Activity on or near the right-of-way which could cause damage to facilities or create a hazardous condition
3. New roads to, on or across the right-of-way
4. New utilities constructed on, over or across the right-of-way
5. Installation of fences, pools, etc., which may block access
6. Fallen trees, boulders or erosion on access roads making them impassible

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### D. General

Examples:

1. Dumping of debris, abandon vehicles
2. Condition of gates
3. Condition of structure marking and danger signs
4. Aircraft warning lights and associated equipment where applicable

## 1.4 CLASSIFICATIONS

### A. Definitions

1. Priority Five - A condition that requires correction immediately, as system contingency allows.
2. Priority Four - A condition that should be corrected as system contingency allows.
3. Priority Three - A condition that should be scheduled for repair within a two-year period. Outage schedule will dictate.
4. Priority Two - A condition that should be corrected when time or situation permits; evaluated every 30-calendar days to insure that priority has not changed.
5. Priority One - A condition that can be recorded and monitored. This condition can be repaired whenever scheduling permits.

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B. Classification, Insulators

1. Broken or chipped suspension insulators:

| <u>Voltage</u> | <u>No. of Good Insulators Left in a String</u> | <u>Classification</u> |
|----------------|--|-----------------------|
| 500KV          | 15 or less                                     | Priority #5           |
|                | 16 to 20                                       | Priority #4           |
|                | 20 to one less than full string                | Priority #3           |
| 345KV          | 10 or less                                     | Priority #5           |
|                | 11 to 12                                       | Priority #4           |
|                | 13 to one less than full string                | Priority #3*          |
| 138KV          | 4 or less                                      | Priority #5           |
|                | 5 or 6   | Priority #4           |
|                | 7 to one less than full string                 | Priority #3           |
| 69KV           | 2 or less                                      | Priority #5           |
|                | 3  | Priority #4           |
|                | 4 to one less than full string                 | Priority #3           |

NOTE: On 345KV and 500KV lines, broken insulators are to be replaced within 12 months of the observation of the damage.

\* 18 unit strings having 16-17 good insulators shall be corrected within 24 months.

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**CLEARANCE BETWEEN TREES AND CONDUCTORS**

| Voltage Class | Clearance at Structure            |               | Clearance at Mid-span (Spans up to 500 ft.) |               | Clearance at Mid-span (Spans over 500ft.) |               |
|---------------|-----------------------------------|---------------|---|---------------|---|---------------|
|               | <u>Classification</u><br>*LATERAL | VERTICAL      | *LATERAL                                    | VERTICAL      | *LATERAL                                  | VERTICAL      |
| 500KV         | Less than 16'<br>Priority #5      | Less than 16' | Less than 22'                               | Less than 18' | Less than 42'                             | Less than 22' |
|               | 16' to 20'<br>Priority #4         | 16' to 20'    | 22' to 26'                                  | 18' to 22'    | 42' to 46'                                | 22' to 26'    |
|               | 21' to 25'<br>Priority #3         | 21' to 25'    | 27' to 31'                                  | 23' to 27'    | 47' to 51'                                | 27' to 31'    |
| 345KV         | Less than 12'<br>Priority #5      | Less than 12' | Less than 18'                               | Less than 14' | Less than 35'                             | Less than 17' |
|               | 12' to 16'<br>Priority #4         | 12' to 16'    | 18' to 22'                                  | 14' to 18'    | 35' to 39'                                | 17' to 21'    |
|               | 17' to 21'<br>Priority #3         | 17' to 21'    | 23' to 27'                                  | 19' to 23'    | 40' to 44'                                | 22' to 26'    |
| 138KV         | Less than 6'<br>Priority #5       | Less than 4'  | Less than 16'                               | Less than 9'  | Less than 30'                             | Less than 10' |
|               | 6' to 10'<br>Priority #4          | 4' to 8'      | 16' to 20'                                  | 9' to 13'     | 30' to 34'                                | 10' to 14'    |
|               | 11' to 15'<br>Priority #3         | 9' to 13'     | 21' to 25'                                  | 14' to 18'    | 35' to 39'                                | 15' to 19'    |
| 69KV          | Less than 3'<br>Priority #5       | Less than 2'  | Less than 14'                               | Less than 6'  | Less than 27'                             | Less than 7'  |
|               | 3' to 7'<br>Priority #4           | 2' to 6'      | 14' to 18'                                  | 6 to 10'      | 27' to 31'                                | 7' to 11'     |
|               | 8' to 12'<br>Priority #3          | 7' to 11'     | 19' to 23'                                  | 11' to 15'    | 32' to 36'                                | 12' to 16'    |

\*NOTE: 500KV clearances for restrained suspension as shown. For other voltages, if the construction is of the restrained suspension type, lateral clearances at mid-span may be reduced by: 4 ft. for 345KV, 2 ft. for 138KV and 1 ft. for 69KV. Two examples of the restrained suspension are: V-String and Side posts.

#NOTE: Priority Four - This condition should be corrected within seven days or as soon thereafter as possible. Until corrective measures are taken, the condition should be kept under surveillance and frequent evaluations made as to a possible change in classification.

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1. Broken or chipped sidepost insulators:

a. Supporting a span conductor

138KV - damage to both sections  
or the base section only - Priority #4

138KV - damage to the head section only - Priority #3

69KV - any damage - Priority #4

b. Supporting jumper loops

138KV - damage to 50% or more of the skirts - Priority #4

138KV - damage to less than 50% of the skirts - Priority #3

69KV - damage to 50% or more of the skirts - Priority #4

69KV - damage to less than 50% of the skirts - Priority #3

C. Classification, Tree Conditions

1. Clearance between trees and conductors:

2. Danger trees (500, 345, 138 or 69KV). All trees or parts of trees which, in the opinion of the Environmental, Health and Safety Representative, if they were to fall towards the line, would endanger either conductors or structures. All trees fitting the above description will be classified Priority #4.

D. Object hanging on line conductors or ground wires (500, 345, 138 or 69KV)

Object

Classification

Metal

Priority #5

Non-metal

Priority #4

If the object hanging on the line cannot be visually classified as to its composition, it would be considered metallic.

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### 1.5 INSPECTION REPORT

- A. Priority #5 conditions as defined in paragraph 1.4 shall be reported as soon as possible by Company radio or telephone to the EHV Superintendent or his authorized representative. The EHV Superintendent will contact the Manager of Operations and the System Operator.
- B. The Ground Patrol Reports and the Aerial Patrol Summary Reports will be submitted to the Director of Electric Operations. The Director of Electric Operations, or his authorized representative, will review these reports and initiate corrective action. Reports listing conditions found which require maintenance not considered routine will be submitted to the appropriate department and section for review. All reports containing tree conditions shall be forwarded to the Environmental Health and Safety Department for review and follow-up.
- C. Ground Patrol Reports, Aerial Patrol Summary Report, Grounding Summary Reports and Climbing Inspection Reports listing conditions found on the lines owned in whole or in part by Consolidated Edison will be submitted to the Manager of Transmission Line Maintenance, Eastview, Consolidated Edison, Eastview, NY. (See Appendix A.) An annual meeting will be held to review the established program. The results of this review will be a document recommending acceptance or revision where necessary to the existing program.
- D. The EHV Superintendent is responsible for preparing a Monthly Transmission Line Patrol Summary Report. This report will summarize, by transmission line, all priority #5 and priority #4 conditions reported for electrical, structural and right-of-way situations. (These reports, which will summarize both aerial and foot patrols, will be attached to the actual patrol forms and forwarded to the EHV Supervisor for consolidation into the departmental report.)

The EHV Supervisor will also be responsible for notifying the date of corrective action for each reported condition.

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The EHV Supervisor will maintain, by transmission line and division, the consolidated, cumulative Transmission Line Report for the department. In addition to the patrol data, Transmission and Distribution Maintenance will maintain the vegetation right-of-way status for locations in litigation, areas of minimal ground to conductor clearance and road crossing. Transmission and Distribution Maintenance will also report on the status and progress of the Transmission Tree Program.

A complete monthly status report will be prepared by the EHV Supervisor, a copy of which will be provided to the Director of Electric Operations and the Director of Transmission Operations.

The following form will be utilized for both the Superintendent's Summary Report and the Technical Services cumulative department report.

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APPENDIX A

Transmission facilities owned wholly or in part by others within the franchise area of Orange and Rockland Utilities, Inc., and its subsidiaries:

LINE NUMBER

OWNERS

5018 - New York Portion

Consolidated Edison

Y88

Consolidated Edison, O&RU, Inc.

W-72

Consolidated Edison, O&RU, Inc.

94

Consolidated Edison, O&RU, Inc.

67

Consolidated Edison, O&RU, Inc.

68

Consolidated Edison, O&RU, Inc.

77

Consolidated Edison

69 & 70 - New York Portion

Consolidated Edison, O&RU, Inc.

69 & 70 - New Jersey Portion

Public Service Elec. & Gas, O&RU, Inc.