

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

| | | |
|-----------------------------------------------|---|------------------------|
| In the Matter of Union Electric Company d/b/a |) | |
| Ameren Missouri's 2015 Infrastructure |) | Case No. EO-2016-_____ |
| Inspection Annual Report. |) | |

**UNION ELECTRIC COMPANY d/b/a
AMEREN MISSOURI'S 2015 INFRASTRUCTURE
INSPECTION ANNUAL REPORT**

COMES NOW, Union Electric Company, d/b/a Ameren Missouri, and in compliance with 4 CSR 240-23.020(3)(C) submits the attached report.

Respectfully submitted,

**UNION ELECTRIC COMPANY,
d/b/a AMEREN MISSOURI**

/s/ Wendy K. Tatro

Wendy K. Tatro, # 60261

Director and Assistant General Counsel

1901 Chouteau Avenue

St. Louis, Missouri 63103

(314) 554-3484 (Telephone)

(314) 554-4014 (Facsimile)

AmerenMOService@ameren.com

Dated: June 30, 2016

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing have been electronically mailed to all counsel of record this 30th day of June, 2016.

General Counsel Office
Missouri Public Service Commission
200 Madison Street, Suite 800
P.O. Box 360
Jefferson City, MO 65102
staffcounsel@psc.mo.gov

Office Of Public Counsel
200 Madison Street, Suite 650
P.O. Box 2230
Jefferson City, MO 65102-2230
opcservice@ded.mo.gov

/s/ Wendy K. Tatro

Wendy K. Tatro



Ameren Missouri 4 CSR 240-23.020 Electrical Corporation Infrastructure Standards Annual Inspection Report for Calendar Year 2015

Introduction

This document is Union Electric (dba Ameren Missouri) Company's annual report detailing its compliance with Missouri Public Service Commission Rule 4 CSR 240-23.020, Electrical Corporation Infrastructure Standards (referred to in the remainder of this document as "the Rule"). This annual report is required by Section (3) (C) of the Rule which states, "*Each electrical corporation subject to this rule shall file...an annual report detailing its compliance with this rule during the prior calendar year....*" This report details the results of the infrastructure inspections conducted in calendar year 2015.

Definitions

For the purposes of this report, the following definitions shall apply:

1. Patrol – A simple visual inspection, of applicable electrical corporation equipment and structures, which is designed to identify obvious structural problems and hazards. Patrols may be carried out in the course of other electrical corporation business.
2. Visual Inspection – A careful visual examination of equipment and structures designed to identify structural problems, hazards, and defective or improperly operating equipment. Equivalent to "Detailed Inspection" as defined in Section (2) (B) of the Rule.
3. Ground Line Inspection – A complete intrusive inspection of overhead poles whereby the pole is excavated to a depth of 18 to 24 inches, tested for internal and external decay, treated with a preservative, and then backfilled. Equivalent to "Intrusive Inspection" as defined in Section (2) (C) of the Rule.
4. Overhead Equipment – Equipment used in the operation of the transmission and distribution system mounted on overhead poles including, but not limited to, conductors, transformers, fuses, switches, insulators, and lightning arresters.
5. Underground Pad-Mounted Equipment – Underground Residential Distribution (URD) system equipment including single phase and three phase pad-mounted transformers, pad-mounted switchgear, junction boxes, non-traffic rated vaults, and pedestals. Equivalent to "Underground-direct buried and conduit" and the equipment noted under Note 3 on the table entitled, "Electrical Corporation System Inspection Cycles (Maximum Intervals in Years)" included with the Rule.
6. Transmission System – That portion of the Ameren Missouri system operated at voltages of 100 kilovolts (kV) and above.
7. Distribution System – That portion of the Ameren Missouri system operated at voltages below 100kV.
8. Streetlights – Automatically controlled lighting for lighting of streets, alleys, walkways, and other thoroughfares open to and reserved for general public use when such lighting facilities are operated and maintained as an extension of Ameren Missouri's distribution system as described in Service Classification 5(M). This definition does not apply to lighting installed on public or private premises for the purpose of providing area or security lighting (i.e., "dusk-to-dawn" lights), customer-owned street and outdoor lighting as described in Service Classification 6(M), and incandescent municipal streetlighting or private streetlighting described under Service Classifications 7(M) and 8(M).



Transmission System Inspections

Ameren Missouri conducted inspections on its Transmission System during calendar year 2015 as required by Missouri Public Service Commission Rule 4 CSR 240-23.020, Electrical Corporation Infrastructure Standards. The inspections conducted, as well as the deficiencies discovered and repaired as a result of these inspections, are described below.

Transmission Circuits Inspected in 2015:

| Inspection Type | Inspections Scheduled | Inspections Completed | Inspections Not Completed |
|-----------------|-----------------------|-----------------------|---------------------------|
| “Patrol”* | 140 | 140 | 0 |
| “Detailed”* | 13 | 17 | 0 |
| Ground Line* | 13 | 17 | 0 |

The results of the lines inspected are summarized as follows:

Results of Inspections

| Component | Number Inspected | Number Requiring Repairs | % |
|---------------------|------------------|--------------------------|--------|
| Wood Poles | 4,076 | 25 | 0.613% |
| Wood Structures | 14,645 | 71 | 0.048% |
| Non-Wood Structures | 5,637 | 6 | 0.106% |
| Conductors** | 20,282 | 5 | 0.020% |
| Insulators** | 20,282 | 5 | 0.025% |

The numbers of components requiring repairs in the period are summarized below:

| Component | Number Requiring Repairs in the Period | Number of Repairs Completed in the Period | % | Number of Repairs Not Completed in the Period | % |
|------------------------------|----------------------------------------|-------------------------------------------|--------|-----------------------------------------------|--------|
| Wood Poles | 12 | 0 | 0.0% | 12 | 100.0% |
| Wood Structures [#] | 0 | 10 | 100.0% | 0 | 0.0% |
| Non-Wood Structures | 2 | 2 | 100.0% | 0 | 0.0% |
| Conductors** | 1 | 1 | 100.0% | 0 | 0.0% |
| Insulators** | 4 | 0 | 0.0% | 4 | 100.0% |

*Note: For manpower and budgetary reasons, four inspections scheduled for year following the reporting period were conducted in the reporting year.



****Note:** Because Ameren Missouri's Transmission System Inspection Program is carried out on a per line basis and only those components which required repair are recorded, the number of individual conductors and insulators inspected is not recorded. The number of wood structures (which includes poles) and non-wood structures inspected will be used as the reference for the percentage of equipment requiring corrective action in this annual report.

#Note: The 10 structures were not in need of immediate repair but were repaired in conjunction with other line work.

The following equipment was not repaired as scheduled:

| Component | Component Number | Reason Repairs Not Completed | Date Repairs Will be Completed |
|------------|----------------------------------|----------------------------------------|--------------------------------|
| Wood Pole | Bland-Franks-3 STR 247 | Delayed due to contractor availability | 12/31/2016 |
| Wood Pole | Bland-Franks-3 STR 322 | Delayed due to contractor availability | 12/31/2016 |
| Wood Pole | Bland-Franks-3 STR 340 | Delayed due to contractor availability | 12/31/2016 |
| Wood Pole | Bland-Franks-3 STR 365 | Delayed due to contractor availability | 12/31/2016 |
| Wood Pole | Bland-Franks-3 STR 384 | Delayed due to contractor availability | 12/31/2016 |
| Wood Pole | Bland-Franks-3 STR 403 | Delayed due to contractor availability | 12/31/2016 |
| Wood Pole | Joachim-St Francois-2 STR 225 | Delayed due to contractor availability | 12/31/2016 |
| Wood Pole | Labadie-Bland-3 STR 217 | Delayed due to contractor availability | 12/31/2016 |
| Wood Pole | Meramec-Joachim-2 STR 77 | Delayed due to contractor availability | 12/31/2016 |
| Wood Pole | Miner-Sikeston-1 STR 81 | Delayed due to contractor availability | 12/31/2016 |
| Wood Pole | Overton-Moberly-1 STR 475 | Delayed due to contractor availability | 12/31/2016 |
| Wood Pole | Rush Island-St Francois-2 STR 7A | Delayed due to contractor availability | 12/31/2016 |
| Insulators | JU132404 | Outage Availability | 12/31/2016 |
| Insulators | JU156998 | Outage Availability | 12/31/2016 |
| Insulators | JU157555 | Outage Availability | 05/30/2017 |
| Insulators | JU160926 | Outage Availability | 05/30/2017 |



The following equipment was scheduled for repairs outside the reporting period:

| Component | Total Number Requiring Repairs Outside the Reporting Period | Number of Open Repairs Outside the Reporting Period | Corrective Action Scheduled Complete | | | Percent of Equipment in Need of Corrective Action, but with a Scheduled Date Beyond the Reporting Period |
|-------------------------|----------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------|------|-------|----------------------------------------------------------------------------------------------------------------------------|
| | | | 2016 | 2017 | Later | |
| Wood Poles* | 13 | 13 | 13 | 0 | 0 | 100.0% |
| Wood Structures* | 71 | 61 | 23 | 12 | 26 | 85.9% |
| Non-Wood Structures* | 4 | 4 | 0 | 0 | 4 | 100.0% |
| Conductors* | 4 | 4 | 4 | 0 | 0 | 100.0% |
| Insulators* | 1 | 1 | 0 | 0 | 1 | 100.0% |

*Note: Wood pole changes scheduled beyond 2016 are being deferred to coincide with the NERC ground clearance study and remediation effort. The NERC effort is expected to be completed by the end of 2018. Other repair activities deferred beyond 2016 are low priority items such as monitoring structures near creeks that could wash out.



Distribution System Inspections

Ameren Missouri conducted inspections on its Distribution System during calendar year 2015 as required by Missouri Public Service Commission Rule 4 CSR 240-23.020, Electrical Corporation Infrastructure Standards. The inspections conducted, as well as the deficiencies discovered and repaired as a result of these inspections, are described below.

Distribution Circuits and Components Inspected in 2015

| Inspection | Inspection Units | Inspections Scheduled | Inspections Completed | Inspections Not Completed |
|--------------------------------|------------------|-----------------------|-----------------------|---------------------------|
| Overhead Visual* | Circuit | 369 | 369 | 0 |
| Overhead Ground Line* | Circuit | 269 | 269 | 0 |
| Capacitors | Equipment | 2636 | 2636 | 0 |
| Voltage Regulators | Equipment | 540 | 540 | 0 |
| Underground Patrol* # | Circuit | 218 | 218 | 0 |
| Underground Detailed* # | Circuit | 200 | 200 | 0 |
| Network Vaults | Equipment | 128 | 128 | 0 |
| Manholes | Equipment | 1595 | 1595 | 0 |
| Other Underground Structures** | Equipment | 97 | 97 | 0 |

*Note: Streetlight inspections were performed in conjunction with Overhead Visual and Ground Line inspections, as well as the Underground Patrol and Detailed inspections.

**Note: Other Underground Structures include Indoor Rooms and Manhole Transformers.

#Note: During the Underground Patrol and Detailed circuit inspections, Ameren Missouri inspectors encountered various obstructions that prevented inspection of some individual pieces of equipment such as pad-mounted transformers. The obstructions encountered were customer facilities such as fences or landscaping in close proximity to equipment, thereby preventing its full inspection. Many of these situations require negotiations with customers to determine the best remedy for the customer and Ameren Missouri. Ameren Missouri has resolved most of the issues and continues to work with customers to resolve the remaining obstructions in order to complete the inspections of the equipment.



The results of the inspections are summarized as follows:

Results of Inspections

| Component | Number Inspected | Number Requiring Repairs | Percentage |
|---------------------------------|------------------|--------------------------|------------|
| Poles/Towers | 177,172 | 6,729 | 3.8% |
| Lightning Arresters* | 177,172 | 558 | 0.3% |
| Crossarms* | 177,172 | 2,613 | 1.5% |
| Crossarm Braces* | 177,172 | 1,366 | 0.8% |
| Fuses* | 177,172 | 73 | 0.0% |
| Insulators* | 177,172 | 3,576 | 2.0% |
| Overhead Transformers* | 177,172 | 8,267 | 4.7% |
| Conductors* | 177,172 | 430 | 0.2% |
| Switches* | 177,172 | 12 | 0.0% |
| Guy Wires* | 177,172 | 8,044 | 4.5% |
| Grounding* | 177,172 | 7,082 | 4.0% |
| Anchors* | 177,172 | 44 | 0.0% |
| Minor Hardware*# | 177,172 | 15,934 | 9.0% |
| Reclosers* | 177,172 | 12 | 0.0% |
| Sectionalizers* | 177,172 | 0 | 0.0% |
| Capacitors | 2,636 | 304 | 11.5% |
| Voltage Regulators | 540 | 33 | 6.1% |
| UG Pad-Mounted Equipment** | 38,456 | 3,339 | 8.7% |
| Vaults | 128 | 63 | 49.2% |
| Manholes | 1,595 | 130 | 8.2% |
| Other Underground Structures*** | 97 | 0 | 0.0% |
| Streetlights | 53,550 | 2,786 | 5.2% |

*Note: Because Ameren Missouri's Distribution System Circuit Inspection and Ground Line Inspection programs were performed on a per circuit basis and only those components which required repair were recorded, the numbers of these individual devices inspected were not recorded. For these components, the number of poles where problems were identified divided by the number of poles inspected was used as the reference for the percentage of equipment requiring corrective action. Where the actual number of components inspected, such as voltage regulators and capacitors could be ascertained, these numbers were used to calculate the percentage of equipment requiring corrective action.

#Note: Minor Hardware includes risers, pins, jumpers, connectors, splices, terminations, and spacer cable brackets.



**Note: Underground Pad-Mounted Equipment includes pad-mounted transformers, switchgear, junction boxes, non-traffic rated vaults, and pedestals.

***Note: Other Underground Structures includes indoor rooms and manhole transformers.

The numbers of components requiring repairs in the period are summarized below:

| Component | Number of Repairs Scheduled in the Period | Number of Repairs Completed in the Period | % | Number of Repairs Not Completed in the Period | % |
|------------------------------|-------------------------------------------|-------------------------------------------|--------|-----------------------------------------------|------|
| Poles/Towers | 735 | 735 | 100.0% | 0 | 0.0% |
| Lightning Arresters | 102 | 102 | 100.0% | 0 | 0.0% |
| Crossarms | 511 | 511 | 100.0% | 0 | 0.0% |
| Crossarm Braces | 231 | 231 | 100.0% | 0 | 0.0% |
| Fuses | 18 | 18 | 100.0% | 0 | 0.0% |
| Insulators | 727 | 727 | 100.0% | 0 | 0.0% |
| Overhead Transformers | 1,793 | 1,793 | 100.0% | 0 | 0.0% |
| Conductors | 78 | 78 | 100.0% | 0 | 0.0% |
| Switches | 2 | 2 | 100.0% | 0 | 0.0% |
| Guy Wires | 1,437 | 1,437 | 100.0% | 0 | 0.0% |
| Grounding | 1,101 | 1,101 | 100.0% | 0 | 0.0% |
| Anchors | 8 | 8 | 100.0% | 0 | 0.0% |
| Minor Hardware | 3,707 | 3,707 | 100.0% | 0 | 0.0% |
| Reclosers | 1 | 1 | 100.0% | 0 | 0.0% |
| Sectionalizers | 0 | 0 | 100.0% | 0 | 0.0% |
| Capacitors | 183 | 183 | 100.0% | 0 | 0.0% |
| Voltage Regulators | 20 | 20 | 100.0% | 0 | 0.0% |
| UG Pad-Mounted Equipment | 1,793 | 1,793 | 100.0% | 0 | 0.0% |
| Vaults | 13 | 13 | 100.0% | 0 | 0.0% |
| Manholes | 136 | 136 | 100.0% | 0 | 0.0% |
| Other Underground Structures | 0 | 0 | 100.0% | 0 | 0.0% |
| Streetlights | 2,298 | 2,298 | 100.0% | 0 | 0.0% |

All equipment repairs required in the reporting period were completed in the period.



The following equipment was scheduled for repairs outside the reporting period:

| Component | Total Number Requiring Repairs Outside the Reporting Period (Completed or Scheduled) | Number of Open Repairs Outside the Reporting Period | Corrective Action Scheduled To Be Completed | | | Percent of Equipment in Need of Corrective Action, but with a Scheduled Date Beyond the Reporting Period |
|------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------|------|-------|----------------------------------------------------------------------------------------------------------|
| | | | 2015 | 2016 | Later | |
| Poles/Towers | 5,994 | 3,027 | 0 | 3027 | 0 | 50.5% |
| Lightning Arresters | 456 | 214 | 0 | 214 | 0 | 46.9% |
| Crossarms | 2,102 | 1,230 | 0 | 1230 | 0 | 58.5% |
| Crossarm Braces | 1,135 | 653 | 0 | 653 | 0 | 57.5% |
| Fuses | 55 | 26 | 0 | 26 | 0 | 47.3% |
| Insulators | 2,849 | 1,347 | 0 | 1347 | 0 | 47.3% |
| Overhead Transformers | 6,474 | 2,654 | 0 | 2654 | 0 | 41.0% |
| Conductors | 352 | 159 | 0 | 159 | 0 | 45.2% |
| Switches | 10 | 5 | 0 | 5 | 0 | 50.0% |
| Guy Wires | 6,607 | 3,073 | 0 | 3073 | 0 | 46.5% |
| Grounding | 5,981 | 3,219 | 0 | 3219 | 0 | 53.8% |
| Anchors | 36 | 14 | 0 | 14 | 0 | 38.9% |
| Minor Hardware | 12,227 | 5,919 | 0 | 5919 | 0 | 48.4% |
| Reclosers | 11 | 2 | 0 | 2 | 0 | 18.2% |
| Sectionalizers | 0 | 0 | 0 | 0 | 0 | 0.0% |
| Capacitors | 121 | 100 | 11 | 89 | 0 | 82.6% |
| Voltage Regulators | 13 | 9 | 0 | 9 | 0 | 69.2% |
| UG Pad-Mounted Equipment | 1,546 | 511 | 5 | 500 | 6 | 33.1% |
| Vaults | 50 | 50 | 20 | 14 | 16 | 100.0% |
| Manholes | 130 | 130 | 0 | 0 | 130 | 100.0% |
| Other Underground Structures | 0 | 0 | 0 | 0 | 0 | 0.0% |
| Streetlights | 488 | 118 | 0 | 118 | 0 | 24.2% |

[illegible]

STATE OF MISSOURI)
) ss
CITY OF ST. LOUIS)

1. My name is David N. Wakeman. I work in the City of St. Louis, Missouri, and I am employed by Union Electric Company d/b/a Ameren Missouri as Senior Vice President, Customer Operations.

David N. Wakeman
David N. Wakeman

Subscribed and sworn to before me this 30th day of June, 2016.

Julia H. By
Notary Public

NE
Julie Irby - Notary Public
Notary Seal, State of
Missouri - St. Louis County
Commission #13753418
My Commission Expires 1/15/2017