

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

LOUISVILLE GAS & ELECTRIC)	
_____)	CASE NO.
)	2012-00103
ALLEGED FAILURE TO COMPLY WITH)	
KRS 278.042)	

ORDER

Louisville Gas & Electric (“LG&E”), a Kentucky corporation which engages in the distribution of electricity to the public for compensation for lights, heat, power, and other uses, is a utility subject to Commission jurisdiction.¹

KRS 278.042 requires the Commission to ensure that each electric utility constructs and maintains its plant and facilities in accordance with accepted engineering practices as set forth in the Commission’s administrative regulations and orders and in the most recent edition of the National Electrical Safety Code (“NESC”).

KRS 278.030 requires every utility to furnish adequate, efficient and reasonable service. KRS 278.260 permits the Commission, upon its own motion, to investigate any act or practice of a utility that affects or is related to the service of a utility. KRS 278.280(1) further permits the Commission, after conducting such investigation and finding that a practice is unreasonable, unsafe, improper, or inadequate, to determine the reasonable, safe, proper, or adequate practice or methods to be observed and to fix the same by Order.

¹ KRS 278.010(3)(a).

Pursuant to 278.280(2), which directs the Commission to prescribe rules and regulations for the performance of services by utilities, the Commission has promulgated Administrative Regulation 807 KAR 5:006, Section 24, which requires all utilities to adopt and execute a safety program.

Commission Staff submitted an Incident Investigation Report ("Report") to the Commission regarding this incident, which is attached as Appendix A. The report alleges that, on July 20, 2011, at 15500 Bridal Gate Drive in Louisville, Kentucky, Matthew Christy, an employee of The Fishel Company ("Fishel"), a contractor for LG&E, sustained burn injuries as a result of an accident while making repairs to an underground residential distribution ("URD").

According to the Report, on the day of the incident, the victim was working under the supervision of another Fishel employee, Jimmy Williams. Both Mr. Christy and Mr. Williams were making repairs to a 12 kV underground primary conductor. An arc occurred while the crew was making repairs in a pull box at this location. Mr. Christy and Mr. Williams had been at the site on June 30, 2011 to locate the fault on the conductor, at which time they isolated and stood off the damaged conductor at Transformer #85782. At the time of the incident, they were preparing to replace the damaged conductor. According to Fishel's report and the statement of Mr. Williams, the crew used the voltage detector at the elbow terminator in Transformer #85782 and it showed no voltage. At that time, Mr. Williams instructed Mr. Christy to open the pull box, remove the conductors from the pull box, and test the conductors. According to Fishel's report, Mr. Christy tested the conductors twice. According to LG&E's report, Mr. Williams stated that Mr. Christy put on his 20,000 volt gloves and sleeves to do the

testing. After the testing, both LG&E and Fishel state that Mr. Christy removed his gloves and sleeves to make repairs to the conductor. According to LG&E's seven-day report, Mr. Christy pulled the elbow off the feed-through and touched it to the eye bolt on the feed-through causing an arc. Mr. Christy received injuries to both hands and his left foot.

Based on Commission Staff's investigation of the incident, information contained in the Report, and the information provided by LG&E in its seven-day summary report (Attachment A to the Report), Commission Staff alleges that LG&E has violated the following provisions of the NESC:

1. 2007 NESC Section 42, Rule 420.C—General Rules for Employees—Personal General Precautions—Safeguarding Oneself and Others

4. Employees who work on or in the vicinity of energized lines shall consider all of the effects of their actions, taking into account their own safety as well as the safety of other employees on the job site, or on some other part of the affected electric system, the property of others, and the public in general.

5. No employee shall approach or bring any conductive object, without a suitable insulating handle, closer to any exposed energized part than allowed by Rule 431 (communication) or Rule 441 (supply), as applicable.

2. 2007 NESC Section 42, Rule 420.H—Personal General Precautions—Tools and Protective Equipment

Employees shall use the personal protective equipment, the protective devices, and the special tools provided for their work. Before starting work, these devices and tools shall be carefully inspected to make sure that they are in good condition.

3. 2007 NESC Section 42, Rule 421.A—Duties of a first-level supervisor or person in charge

This individual shall: 1. Adopt such precautions as are within the individual's authority to prevent accidents. 2. See that safety rules

and operating procedures are observed by the employee under the direction of this individual 5. Prohibit the use of tools or devices unsuited to the work at hand or that have not been tested or inspected as required.

4. 2007 NESC Section 44, Rule 441.1—Additional Rules for supply employees—Energized Conductors or Parts—Minimum Approach Distance to Live Parts—General

Employees shall not approach, or knowingly permit others to approach any exposed ungrounded part normally energized except as permitted by this rule. Minimum Approach Distance to live parts. Employees shall not approach or bring any conductive objects within the minimum approach distance listed in Table 441-1 or Table 441-4 to exposed parts unless one of the following is met: a. The line or part is de-energized and grounded per Rule 444D. b. The employee is insulated from the energized line or part. Electrical protective equipment insulated for the voltage involved, such as tools, gloves, rubber gloves or rubber gloves with rubber sleeves, shall be considered effective insulation for the employee from the energized part being worked. c. The energized line or part is insulated from the employee and from any other line or part at different voltages. d. The employee is performing barehand live-line work according to Rule 446.

5. 2007 NESC Section 44, Rule 443.A.3—Work on Energized Lines and Equipment—General Requirements

All employees working on or in the vicinity of lines or equipment exposed to voltages higher than those guarded against by the safety protective equipment provided shall assure themselves that the equipment or lines on which they are working are free from dangerous leakage or induction, or have been effectively grounded.

6. 2007 NESC Section 44, Rule 444—De-energizing Equipment or Lines to Protect Employees—D. Employee's Protective Grounds

When all the switches and disconnectors designated have been operated, rendered inoperable where practical, and tagged in accordance with Rule 444C, and the employee has been given permission to work by the designated person, the employee in charge should immediately proceed to make the employees own protective grounds or verify that adequate grounds have been applied (see Rule 445) on the disconnected lines equipment. During the testing for potential and/or application of grounds, distances not less than those shown in Table 441-1, Table 441-2,

and Table 441-3, as applicable, shall be maintained. Grounds shall be placed at each side of the work location and as close as practical to the work location or a worksite ground shall be placed at the work location. If work is to be performed at more than one location on a line section, the line section shall be grounded and short-circuited at one location on the line section and the conductor to be worked on shall be grounded at each location. The distance in Table 441-1, Table 441-2, or Table 441-3, as applicable, shall be maintained from ungrounded conductors at the work location. Where the making of a ground is impractical, or the conditions resulting therefrom are more hazardous than working on the lines or equipment without grounding, the ground may be omitted by special permission of the designated person.

E. Proceeding with work—1. After the equipment or lines have been de-energized and grounded per Rule 444D, the employee in charge, and those under the direction of the employee in charge, may proceed with work on the de-energized parts. Equipment may be re-energized for testing purposes only under the supervision of the employee in charge and subject to authorization by the designated person.

7. 2007 NESC Section 44, Rule 446—Protective grounds—A. Installing grounds—2. Initial connections

Before grounding any previously energized part, the employee shall first securely connect one end of the grounding device to an effective ground. Grounding switches may be employed to connect the equipment or lines being grounded to the actual ground connections.

4. Completing Grounds—*a.* If the part shows no voltage, the grounding may be completed. *b.* If voltage is present, the source shall be determined to ensure that presence of this voltage does not prohibit completion of the grounding. *c.* After the initial connections are made to ground, the grounding device shall next be brought into contact with the previously energized part using insulating handles or other suitable devices and securely clamped or otherwise secured thereto. Where bundled conductor lines are being grounded, grounding of each subconductor should be made. Only then may the employee come within the distances from the previously energized parts specified in Rule 441A or proceed to work upon the parts as upon a grounded part.

8. 2007 NESC Section 41, Rule 411—Protective methods and devices—E. Identification and location

Means shall be provided so that identification of supply and communication lines can be determined before work is undertaken. Persons responsible for underground facilities shall be able to indicate the location of their facilities.

Commission Staff also alleges that LG&E has violated the following provision of 807 KAR 5:006:

Section 22. System Maps and Records.

(1) Each utility shall have on file at its principal office located within the state and shall file upon request with the commission a map or maps of suitable scale of the general territory it serves or holds itself ready to serve showing the following:

- (a) Operating districts.
- (b) Rate districts.
- (c) Communities served.
- (d) Location and size of transmission lines, distribution lines and service connections.
- (e) Location and layout of all principal items of plant.
- (f) Date of construction of all items of plant by year and month.

(2) In each division or district office there shall be available information relative to the utility's system that will enable the local representative to furnish necessary information regarding the rendering of service to existing and prospective customers.

(3) In lieu of showing the above information on maps, a card record or other suitable means may be used. For all construction the records shall also show the date of construction by month and year.

Based on its review of the Report and being otherwise sufficiently advised, the Commission finds that prima facie evidence exists that LG&E has failed to comply with KRS 278.042. We further find that a formal investigation into the incident that is the subject matter of the Report should be conducted and that this investigation should also examine the adequacy, safety, and reasonableness of LG&E's practices related to the construction, installation and repair of electric facilities.

The Commission, on its own motion, HEREBY ORDERS that:

1. LG&E shall submit to the Commission, within 20 days of the date of this Order, a written response to the allegations contained in the Report.

2. LG&E shall appear on September 25, 2012, at 10:00 a.m., Eastern Time, in Hearing Room 1 of the Commission's offices at 211 Sower Boulevard in Frankfort, Kentucky for the purpose of presenting evidence concerning the alleged violations of KRS 278.042 and of showing cause why it should not be subject to the penalties prescribed in KRS 278.990(1) for these alleged violations.

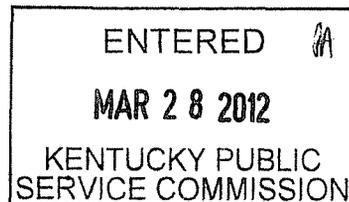
3. At the scheduled hearing in this matter, LG&E shall also present evidence on the adequacy, safety, and reasonableness of its practices related to the construction, installation, and repair of electric facilities and whether such practices require revision as related to this incident.

4. The September 25, 2012 hearing shall be recorded by videotape only.

5. The Report in Appendix A is made a part of the record in this case.

6. Any requests for an informal conference with Commission Staff shall be set forth in writing and filed with the Commission within 20 days of the date of this Order.

By the Commission



ATTEST:

A handwritten signature in black ink, appearing to be "M. J. Over", written over a horizontal line. Below the line is the text "Executive Director".

Executive Director

Case No. 2012-00103

APPENDIX A

APPENDIX TO AN ORDER OF THE KENTUCKY PUBLIC SERVICE
COMMISSION IN CASE NO. 2012-00103 DATED MAR 28 2012



Steven L. Beshear
Governor

David L. Armstrong
Chairman

Leonard K. Peters
Secretary
Energy and Environment Cabinet

Commonwealth of Kentucky
Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, Kentucky 40602-0615
Telephone: (502) 564-3940
Fax: (502) 564-1582
psc.ky.gov

James W. Gardner
Vice Chairman

KENTUCKY PUBLIC SERVICE COMMISSION

INCIDENT INVESTIGATION REPORT



Utility: Louisville Gas and Electric (LG&E)

Contract Company: Fishel

Reported By: Ken Sheridan

Title: Safety Director

Address: 220 West Main Street, Louisville, Kentucky 40202

Contact Information: Phone: (502) 627-3061

Email: ken.sheridan@lge-ku.com

Date Incident Occurred: July 20, 2011

Approximate Time: 1:00 PM EST

Date Utility Notified: July 20, 2011

Approximate Time: 1:30 PM EST

Date PSC Notified: July 20, 2011

Approximate Time: 2:48 PM EST

Date PSC Investigated: July 20, 2011

Approximate Time: 4:40 PM EST

PSC Investigator: Jeff Moore

Incident Location: 15500 Bridal Gate Drive, Louisville, Kentucky **County:** Jefferson

Fatality: No

Injury: Yes 1 Person. Possible entry wound to the right hand, burns to the left hand, and exit wound to the left foot.

Name(s): Matthew Christy

Employer: Fishel

Witness: Jimmy Williams

Address: 7612 Frasier Town Road
Pee Wee Valley, KY

Employer: Fishel

Seven-Day Report Received: July 27, 2011

Additional Information Requested and Received:

September 13th, 2011: Supplemental Documentation

October 12th, 2011: Addendum Report

October 18th, October 28th, and November 16th, 2011: Emails requesting documentation and clarification pertaining to the requested information listed.

Information From: Keith McBride **Department:** Safety **Company:** LG&E/KU.

Jim Dimas Legal LG&E/KU

Kelly Gibson Legal LG&E/KU

Rich Mauldin Area Manager Fishel

Incident Description:

On July 20th, 2011 Public Service Commission (PSC) staff was notified by LG&E's safety department that a Fishel employee was injured while making repairs to a (12 Kv) underground primary conductor. According to LG&E's safety department, Mr. Christy and Mr. Williams (crew), who work for Fishel (LG&E contractor), were repairing a section of underground residential distribution (URD) located at 15500 Bridal Gate Drive. An arc occurred while the crew was making repairs in a pull box at this location thus injuring Mr. Christy. Mr. Christy was transported to University Hospital and admitted overnight for observation. PSC investigator conducted a site investigation on July 20th, 2011 at 15500 Bridal Gate Drive, Jeffersontown, Kentucky. Information from the site investigation is listed in the findings section of this report.

Findings: During the PSC incident site investigation on July 20th, 2011 at 15500 Bridal Gate Drive, Louisville, Kentucky; photographs were taken at and around the incident site location. Photographs taken by PSC investigator note burns and damage to the underground primary conductor, feed through, and elbow terminators at the incident

site/pull box. Photographs were taken of the corresponding transformers and pull box near the incident site which is shown in the URD system diagram. Also photographs of the voltage detection device (A. B. Chance) the crew stated they used to determine if the conductor was de-energized. **See Attachment D; PSC Photographs on pages 246 - 272 and Attachment A; Utility Photographs on pages 15 - 29.**

According to LG&E and Fishel personnel at the incident investigation site, the crew was preparing to replace the damaged conductor at 15500 Bridle Gate Drive. The crew verified the conductor was still isolated and stood off on a parking bushing at transformer 85782. The crew had been at the site on June 30th, 2011 to locate the fault on the conductor. The damaged conductor was located at transformer (85782) which provides service to a home at 15500 Bridle Gate Drive. **See Attachment A; Utility Photographs on page 21.**

According to LG&E and Fishel personnel at the incident site, the crew checked the transformer 85782 located at 15500 Bridal Gate Drive to confirm the conductor being replaced was still stood off on the parking bushing as they had left when locating the fault on June 30th, 2011. According to Fishel's report and Mr. Williams, the crew used the voltage detector at the elbow terminator (elbow) in transformer 85782, and it showed no voltage. The crew then walked back to the pull box located at the incident site. Mr. Williams instructed Mr. Christy to open the pull box, remove the conductors from the pull box, and test the conductors. Mr. Christy tested the conductors twice according to Fishel's report. According to LG&E's report, Mr. Williams stated Mr. Christy put his 20,000 volt gloves and sleeves on to test the conductor to be replaced. **See Attachment A; Utility Photographs on pages 15 and 16.** Mr. Williams said he walked back to the truck and did not see the incident, but did hear the arc. He turned to notice Mr. Christy fall to the ground. Mr. Williams dialed 911 at that time. According to LG&E's investigation report, Mr. Christy received injuries to both hands and his left foot. Mr. Christy was released the next day on July 21st, 2011. Mr. Christy was interviewed by Keith McBride on July 22nd, 2011 at the Team Fishel office.

According to LG&E personnel at the incident site, Mr. Christy checked the conductor at the pull box at which he was working with the A. B. Chance voltage detection device. The device indicated the conductor was not energized. During the site investigation LG&E personnel visually inspected the voltage detection device used by the Fishel employee and noticed that the indicating display was inconsistent. It was also noted that a test date could not be found on the A. B. Chance voltage detection device. **See Attachment A; Utility Photographs on pages 22 - 25 and Attachment D; PSC Photographs on pages 246 - 248 of the A. B. Chance Testing Device.** On September 8th, 2011 PSC investigator requested documentation showing the required testing on the A. B. Chance voltage detector used the day of the incident. LG&E's response; as far as yearly testing, only when the tester is either damaged, found to not be working or the ability of the tester has come into question should the tester be sent out for testing. There are no requirements for yearly testing. **See Attachment E; LG&E's email response on page 275.**

On September 9th, 2011 PSC investigator requested that the voltage detection device be tested to determine if it could have been giving a false reading. The test results are listed in the supplemental report dated September 7th, 2011. **See Attachment B; Utility Supplemental Report on page 65.**

LG&E and Fishel staff stated Mr. Christy had removed his gloves and sleeves to make repairs on the conductor. According to LG&E's seven-day report, Mr. Christy pulled the elbow off the feed through and touched it to the eye bolt (which was grounded) on the feed through causing an arc.

After reviewing the information provided in the seven-day report dated July 26th, 2011, and the utility supplemental report dated September 7th, 2011, it was still not clear how the circuit was fed at the incident site. The PSC investigator requested a follow-up meeting with LG&E's safety department and Fishel personnel to discuss how the circuit was fed and to clarify why this circuit was still energized at the incident site. The meeting took place on October 6th, 2011 at LG&E's East Service Center. LG&E's safety personnel had a diagram of the incident site drawn on the

board showing how the circuit was fed before and after the incident. According to the diagram, the damaged conductor ran through the pull box located between transformers 85513 and 85782. **See Attachment C; Utility Addendum Report on pages 242 and 243.** According to the diagram, the pull box between transformers 85513 and 85782 should have been the location to make repairs on the damaged conductor.

On November 10th, 2011 it was noted that the Canterbrook Farms schematic had been revised on July 27th, 2011. **See Attachment C; Schematic dated July 27th, 2011 on page 237.** PSC investigator sent an email request to clarify why this schematic was updated on July 27th, 2011, and to provide a copy of the print before the changes made on July 27th, 2011 showing the circuit feeding from transformer 84746 to the pull box located in front of 15500 Bridal Gate Drive. **See Attachment E; Schematic dated February 12th, 1999 on page 281 and Attachment G; Overhead Image of Canterbrook Farms Subdivision on page 285.**

It is still unclear why the Fishel crew went to the pull box located at the entrance of 15500 Bridal Gate Drive and not the pull box located between transformers 85513 and 85782. It appears that the identifying numbers at the incident location could have been incorrect, and that the diagram on how the URD circuit fed at this location was possibly misleading. Refer to the utility photographs taken at the incident site. **See Attachment A; Utility Photographs on pages 15 - 21.** One of the elbow terminators received extensive damage, and it is difficult to determine the tag number. One number on the tag is legible, but is the number on the burnt tag a 6 or 9. An email was sent to LG&E's safety department asking if they could identify the damaged tag. LG&E identified the tag as 84746, and stated it was associated with a transformer located on Pasafino Court. **See Attachment E; Email Correspondence on pages 278 - 280 and Canterbrook Farms Schematic dated 2/12/99 on page 281.** The schematic dated 2/12/99 shows the URD circuit going to the pull box located at the entrance of 15500 Bridal Gate Drive and not to transformer 85782 as shown in the schematic dated July 27th, 2011, and as documented in Attachment C, Utility Addendum Report. It is apparent that mapping/documentation could have been misleading, confusing and/or inaccurate and could have been a contributing factor to this incident.

The important aspect of this incident is the Fishel crew failed to follow proper grounding procedures after using the A. B. Chance voltage detection device to determine if the conductor was de-energized. When conductors or equipment are to be de-energized, then the final step to insure conductors or equipment are de-energized is to follow proper grounding procedures. The crew did not follow proper grounding procedures at the work site. LG&E's grounding procedures can be viewed in **Attachment A; Utility Seven-Day Report on pages 31 - 60.** The NESC has grounding requirements also and, if applicable, shall be followed. Following these grounding procedures could have prevented the injuries to Mr. Christy.

Investigators Comments:

During the follow-up visit with LG&E and Fishel personnel on October 6th, 2011 the terminology describing Mr. Williams as an apprentice III was discussed, and Mr. Williams was recognized as Mr. Christy's supervisor. PSC investigator expressed concerns about an apprentice supervising an apprentice. **See Attachment B; Utility Supplemental Report on page 72 (VIII SUPERVISION OF APPRENTICES).** LG&E and Fishel personnel explained Mr. Williams was qualified to work on the URD system because of his past work experience and training, but did not have adequate experience with overhead construction. Therefore, his title is listed as an Apprentice III with Fishel. LG&E staff suggested that Fishel review the company's terminology/definition of a supervisor/person in charge. PSC investigator agreed with LG&E's suggestion.

Probable Violation(s): Cited from National Electric Code C2-2007 edition.

KRS 278.042

Service adequacy and safety standards for electric utilities--National Electrical Safety Code

(1) For the purposes of this section, "NESC" means the National Electrical Safety Code as published by the Institute of Electrical and Electronics Engineers, Inc.

(2) Except as otherwise provided by law, the Commission shall, in enforcing service adequacy and safety standards for electric utilities, ensure that each electric utility constructs and maintains its plant and facilities in accordance with accepted engineering practices as set forth in the Commission's administrative regulations and orders and in the most recent edition of the NESC. Effective: June 24, 2003 History: Created 2003 Ky. Acts ch. 84, sec. 1, effective June 24, 2003.

1. 420. Personal General Precautions:

C. Safeguarding oneself and others:

4. Employees who work on or in the vicinity of energized lines shall consider all of the effects of their actions, taking into account their own safety as well as the safety of other employees on the job site, or on some other part of the affected electric system, the property of others, and the public in general.

5. No employee shall approach or bring any conductive object, without a suitable insulating handle, closer to any exposed energized part than allowed by Rule 431 (communication) or Rule 441 (supply), as applicable.

2. 420. Personal General Precautions:

H. Tools and Protective Equipment:

Employees shall use the personal protective equipment, the protective devices, and the special tools provided for their work. Before starting work, these devices and tools shall be carefully inspected to make sure that they are in good condition.

3. 421. General Operating Routines:

A. Duties of a First-Level Supervisor or Person in Charge:

This individual shall:

1. Adopt such precautions as are within the individual's authority to prevent accidents.

2. See that the safety rules and operating procedures are observed by the employees under the direction of this individual.

5. Prohibit the use of tools or devices unsuited to the work at hand or that have not been tested or inspected as required.

4. 441. Energized Conductors or Parts:

Employees shall not approach, or knowingly permit others to approach, any exposed ungrounded part normally energized except as permitted by this rule.

A. Minimum Approach Distance to Live Parts

1. General:

Employees shall not approach or bring any conductive object within the minimum approach distance listed in Table 441-1 or Table 441-4 to exposed parts unless one of the following is met:

- a. The line or part is de-energized and grounded per Rule 444D.
- b. The employee is insulated from the energized line or part. Electrical protective equipment insulated for the voltage involved, such as tools, gloves, rubber gloves, or rubber gloves with sleeves, shall be considered effective insulation for the employee from the energized part being worked on.
- c. The energized line or part is insulated from the employee and from any other line or part at a different voltage.
- d. The employee is performing barehand live-line work according to Rule 446.

5. 443. Work on Energized Lines and Equipment:

A. General Requirements

3. All employees working on or in the vicinity of lines or equipment exposed to voltages higher than those guarded against by the safety protective equipment provided shall assure themselves that the equipment or lines on which they are working are free from dangerous leakage or induction, or have been effectively grounded.

6. 444. De-energizing Equipment or Lines to Protect Employees:

D. Employee's Protective Grounds:

When all the switches and disconnectors designated have been operated, rendered inoperable where practical, and tagged in accordance with Rule 444C, and the employee has been given permission to work by the designated person, the employee in charge should immediately proceed to make the employees own protective grounds or verify that adequate grounds have been applied (see Rule 445) on the disconnected lines or equipment. During the testing for potential and/or application of grounds, distances not less than those shown in Table 441-1, Table 441-2, and Table 441-3, as applicable, shall be maintained. Grounds shall be placed at each side of the work location and as close as practical to the work location or a worksite ground shall be placed at the work location. If work is to be performed at more than one location on a line section, the line section shall be grounded and short-circuited at one location in the line section and the conductor to be worked on shall be grounded at each location. The distance in Table 441-1, Table 441-2, or Table 441-3, as applicable, shall be maintained from ungrounded conductors at the work location. Where the making of a ground is impractical, or the conditions resulting therefrom are more hazardous than working on the lines or equipment without grounding, the ground may be omitted by special permission of the designated person.

E. Proceeding with work

1. After the equipment or lines have been de-energized and grounded per Rule 444D, the employee in charge, and those under the direction of the employee in charge, may proceed with work on the de-energized parts.

Equipment may be re-energized for testing purposes only under the supervision of the employee in charge and subject to authorization by the designated person.

7. 445. Protective grounds

A. Installing grounds

2. Initial connections

Before grounding any previously energized part, the employee shall first securely connect one end of the grounding device to an effective ground. Grounding switches may be employed to connect the equipment or lines being grounded to the actual ground connections.

4. Completing Grounds

- a. If the part shows no voltage, the grounding may be completed.
- b. If voltage is present, the source shall be determined to ensure that presence of this voltage does not prohibit completion of the grounding.
- c. After the initial connections are made to ground, the grounding device shall next be brought into contact with the previously energized part using insulating handles or other suitable devices and securely clamped or otherwise secured thereto. Where bundled conductor lines are being grounded, grounding of each subconductor should be made. Only then may the employee come within the distances from the previously energized parts specified in Rule 441A or proceed to work upon the parts as upon a grounded part.

- Attachments:
- A. Utility Seven-Day Report
 - B. Utility Supplemental Report
 - C. Utility Addendum Report
 - D. PSC Photographs
 - E. Email Correspondence
 - F. NESC C2-2007 Table 441-1
 - G. Overhead Image of Incident Site

REPORT SUBMITTED BY:

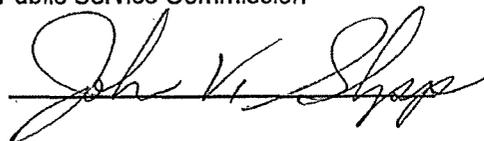
Jeffrey C. Moore
Electric Utility Investigator
Engineering Division
Kentucky Public Service Commission

Signature: 

Date: 12/6/2011

REPORT REVIEWED BY:

John Shupp
Engineering Division
Kentucky Public Service Commission

Signature: 

Date: 12/6/11

ATTACHMENT A
UTILITY SEVEN-DAY REPORT



PPL companies

July 26, 2011

Mr. John Shupp *5/3/11*
Manager Electrical Branch
Division of Engineering
Kentucky Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, KY 40602

RECEIVED

JUL 27 2011

PUBLIC SERVICE
COMMISSION

LG&E and KU Energy, LLC
Corporate Law
220 W. Main Street
Louisville, Kentucky 40202
www.lge-ku.com

Jim Dimas
Senior Corporate Attorney
T 502-627-3712
F 502-627-3367
jim.dimas@lge-ku.com

Re: Contractor Injury/Matthew Christy
Date of Incident: July 20, 2011
Report Number: 11-ED-E-21

Dear Mr. Shupp:

I am forwarding the enclosed Investigation Report prepared by Keith McBride regarding the injury of contractor employee Matthew Christy that occurred in Jefferson County, Kentucky on Wednesday, July 20, 2011. Louisville Gas & Electric Company is providing this report to the KPSC in accordance with the applicable seven-day reporting requirement. Please return a file stamped copy of the report in the envelope provided.

Should you need additional information concerning this incident, please contact me at (502) 627-3712 so I can direct your request to the appropriate person.

Sincerely,


Jim Dimas

JD/kg

Enclosures:

- 1) Area print
- 2) Utility photographs
- 3) Team Fishel job briefing form
- 4) LG&E grounding procedures
- 5) Team Fishel incident report

INVESTIGATION REPORT

Electrical Contact on Primary

Type of Report

11-ED-E-021

Report Number

Keith McBride

Investigator

July 20, 2011

Date of Incident

Reference: **Fishel Employee injured and admitted to hospital**

Location: **15500 Bridle Gate Drive
Louisville, Jefferson County, Kentucky 40299**

Case Summary

On July 20, 2011 at approximately 1:15 P.M. Jimmy Williams, Apprentice III for Team Fishel and Matthew Christy, Apprentice I, for Team Fishel, were on a job site at 15500 Bridle Gate Drive, Louisville, Kentucky. The job consisted of identifying and replacing a section of URD cable that was found to be damaged.

During this job, Matthew Christy received a shock and burn. Mr. Christy was admitted to the hospital for overnight observation.

Ken Sheridan, Manager of Distribution Operational and Public Safety, notified the Kentucky Public Service Commission of the incident and subsequent overnight hospital stay.

Investigation

On April 17, 2011, LG&E Distribution Control Center (DCC) received an outage ticket along Bridle Gate Drive. DCC dispatched a Trouble Technician to the area. The Trouble Technician found that there was a bad section of URD cable. The Trouble Technician was able to restore service by switching.

On July 20, 2011 at approximately 1:15 P.M. Jimmy Williams, Apprentice III for Team Fishel and Matthew Christy, Apprentice I for Team Fishel, were on a job site at 15500 Bridle Gate Drive, Louisville, Kentucky. The job consisted of replacing the section of bad URD cable that had been previously identified. According to Mr. Williams, through interviews at the scene and the next day, he and Mr. Christy had been at this location approximately two weeks prior to test and locate the bad section of URD cable. Mr. Williams stated that during their testing, they found the

damaged spot on the URD cable just inside of the transformer feeding 15500 Bridle Gate Drive.

Mr. Williams stated that each elbow of the bad section of cable had been stood off on parking bushings inside of the pad-mount transformers.

Mr. Williams stated that once on the job site on July 20, 2011 to replace the bad section of URD cable, he and Mr. Christy had a job briefing and went to work. Mr. Williams checked the transformer feeding 15500 Bridle Gate Drive to confirm the elbow on the bad cable was still in a parked location. Mr. Williams removed the test cap on the back of the elbow and tested for voltage. Mr. Williams stated that the tester showed no voltage at the elbow.

Mr. Williams walked back to an open pull box at the end of the driveway and sat the tester down. Mr. Williams stated that Mr. Christy had opened the pull box and pulled out two elbows. The elbows were attached to a feed through bushing.

Mr. Williams and Mr. Christy were going to identify the cable in the pull box to see if it was the same as the bad cable in the transformer. Mr. Williams stated that Mr. Christy put on his 20,000 volt gloves and sleeves and was to test the elbows for voltage. At this time, Mr. Williams had gone to the truck and was working with the pulling tape.

Mr. Williams stated that at the time of the incident he had his back to Mr. Christy and did not actually see the incident but he did hear the arc and when he turned to look he saw Mr. Christy fall to the ground. Mr. Williams dialed 911.

Mr. Williams saw burns to both of Mr. Christy's hands and stated that Mr. Christy was complaining that his left foot was injured.

Louisville Metro EMS arrived on scene and transported Mr. Christy to University Hospital where he was later admitted for overnight observation. According to Mr. Christy's family, Mr. Christy had a possible entry wound to the right hand and a possible exit wound to the left foot. Mr. Christy also had burns to the left hand. Mr. Christy was released the next day on July 21, 2011.

Mr. Christy was interviewed by Keith McBride on July 22, 2011 at the Team Fishel office.

Mr. Christy stated that when he and Mr. Williams arrived on the job site a job briefing was held before he and Mr. Williams got out of the truck. Mr. Williams was going to the transformer feeding 15500 Bridle Gate Drive to verify that the elbow had been stood off and Mr. Christy was going to the pull box to remove the

lid. Once Mr. Christy removed the lid from the pull box Mr. Christy stated that Mr. Williams was already on his way back to the pull box. Mr. Christy stated that Mr. Williams asked if he was going to test the elbows and Mr. Williams said "yes".

Mr. Christy stated that he placed the two elbows on the feed through bushing on the edge of the pull box and tested the voltage tester which appeared to be working. Mr. Christy stated that he removed the test point caps on the elbows and tested both elbows several times. No voltage was indicated on the tester. Mr. Christy stated that he then removed his 20,000 volt gloves and sleeves. Mr. Christy stated that Mr. Williams asked what the tag number was on one elbow. Mr. Christy stated that after reading the number Mr. Williams did not reply. Mr. Christy stated that he pulled a little on the cable to see if it could be pulled out. Mr. Christy stated that the cable appeared to be loose and he thought that the cable could be replaced easily.

Mr. Christy stated that Mr. Williams then went to the truck to get the pulling tape. Mr. Williams was working with the pulling tape approximately 4 – 5 feet from the pull box with his back to Mr. Christy. Mr. Christy stated because he had read the elbow tag number to Mr. Williams and he did not reply, Mr. Christy assumed it was the correct cable and pulled the elbow/cable off of the feed through bushing that he assumed was to be replaced.

The cable in the pull box had still not been identified at this time.

Mr. Christy grabbed the right bushing/cable with his right hand and placed his left foot on the left cable and pulled them apart. After pulling the elbow off, Mr. Christy touched the elbow to the eye bolt on the feed through bushing to discharge any static that may have been on the cable.

Mr. Christy received injuries to both hands and his left foot. Mr. Christy was released from the hospital the following morning and he is expected to make a full recovery.

It was later discovered that the Chance voltage tester was not working correctly. The test button on the tester worked intermittently.

** There has been no utility construction on the URD system for the six months prior to this incident.

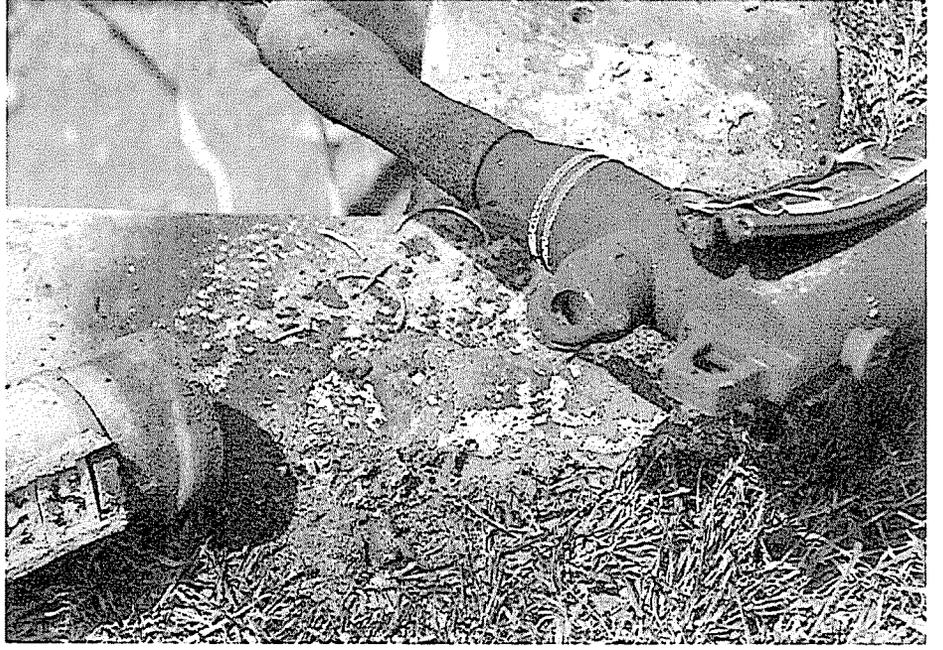
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495 Henry Street

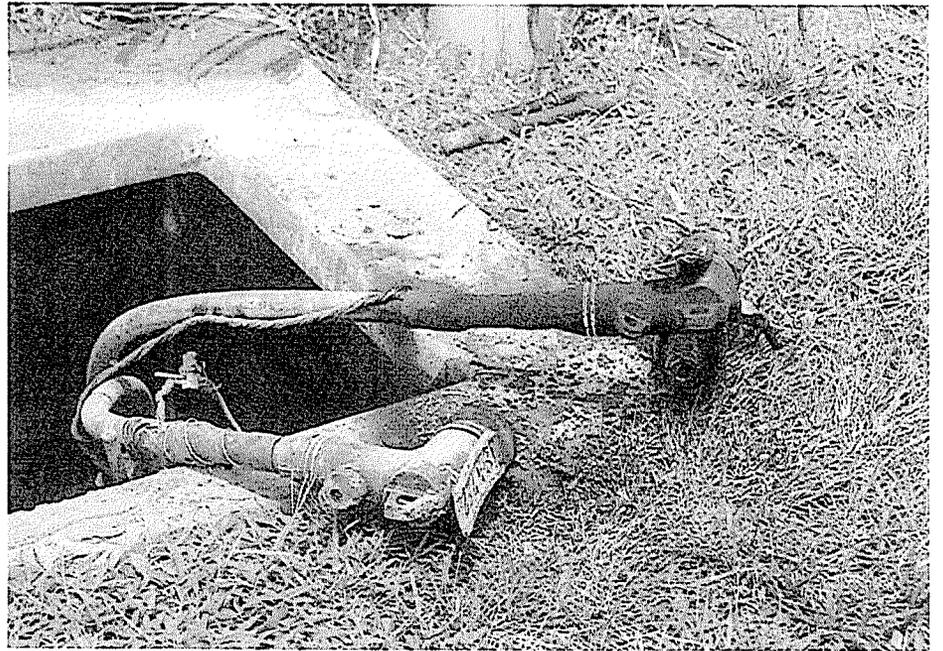
New Haven, Kentucky 40051
502-507-2783
Hire date – April 20, 2010
Classification date – September, 2010
DOB – 11/4/1985

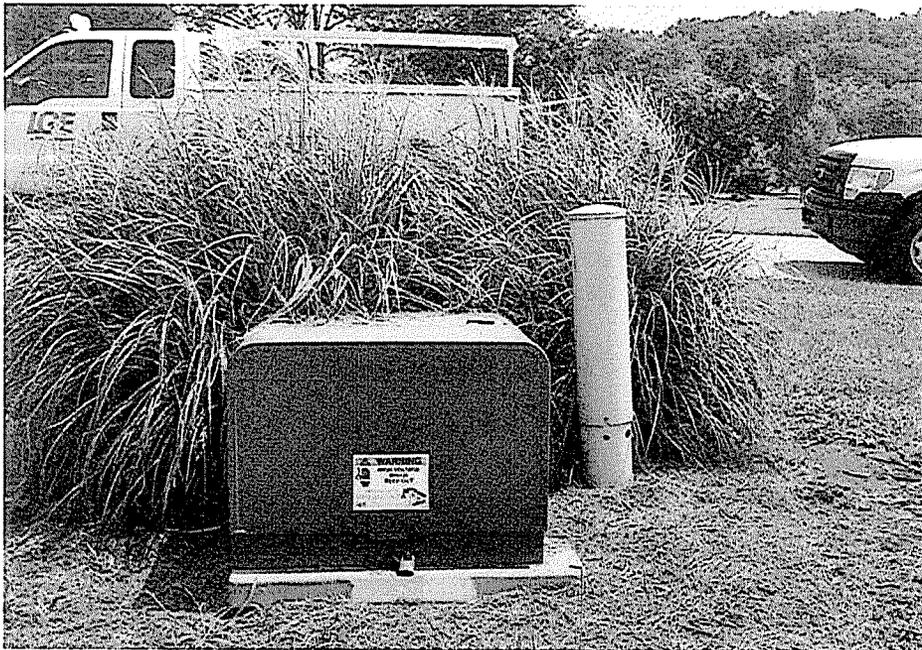
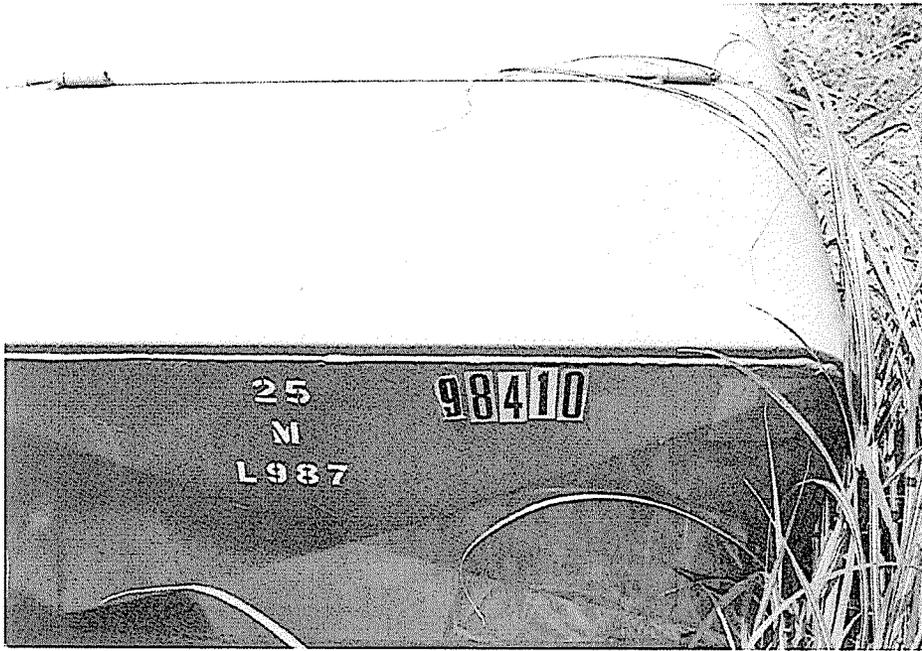
Jimmy Williams, Fishel employee – Apprentice III – Co-worker (not a witness)
7612 Frazier Town Road
Peewee Valley, Kentucky 40056
502-548-7050
Hire date – 10/18/2004
Classification date –
DOB – 7/19/1955

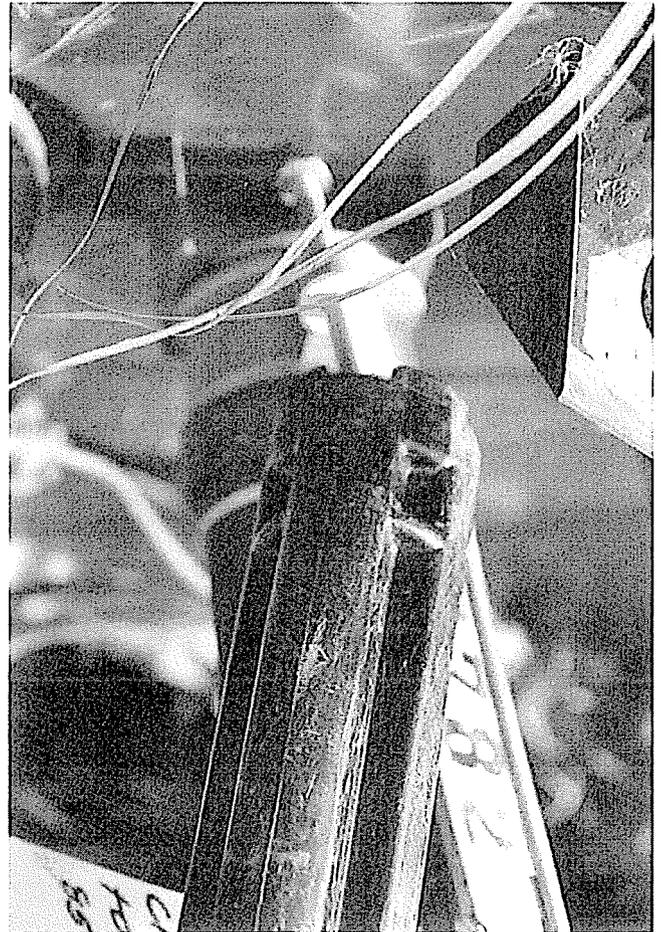
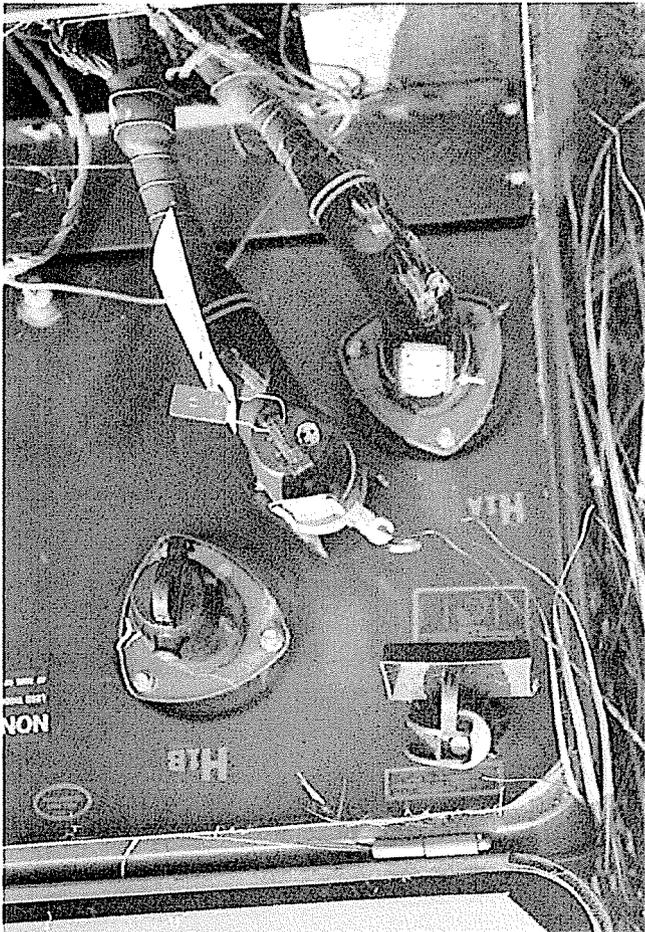
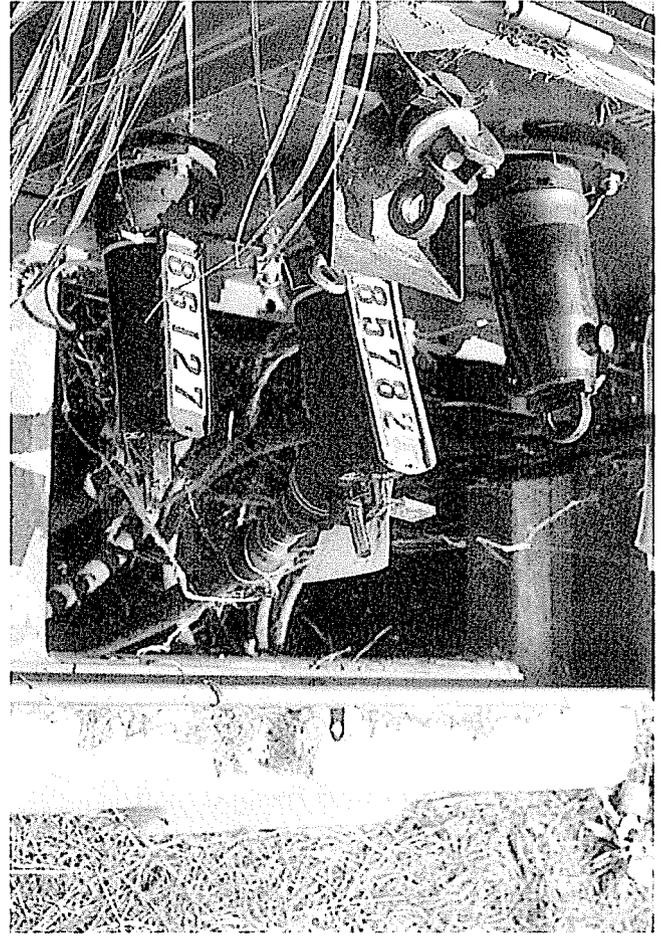
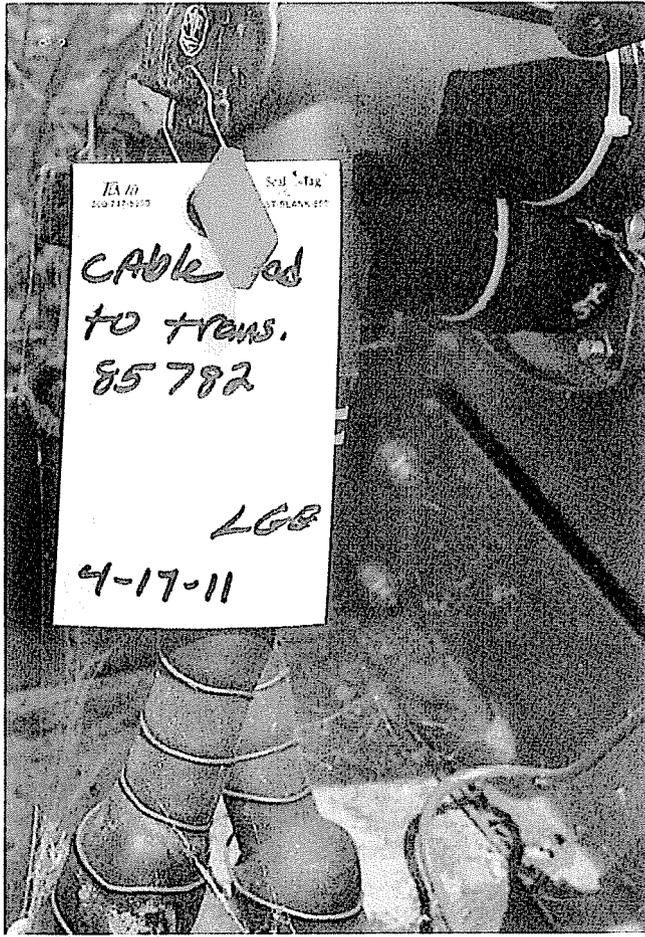
Team Fishel
4508 Bishop Lane
Louisville, Kentucky 40218
502-456-2900

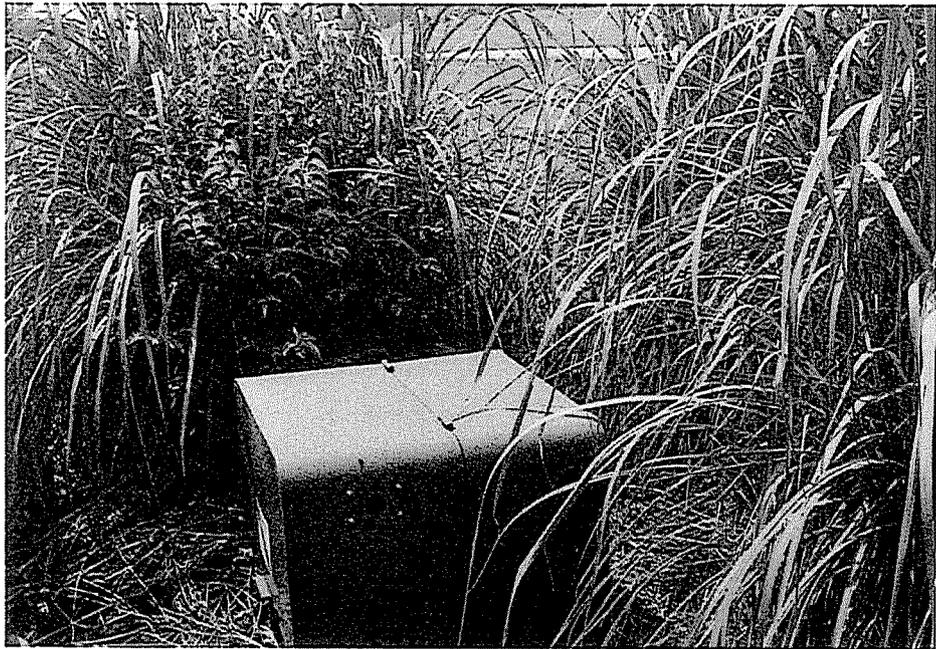
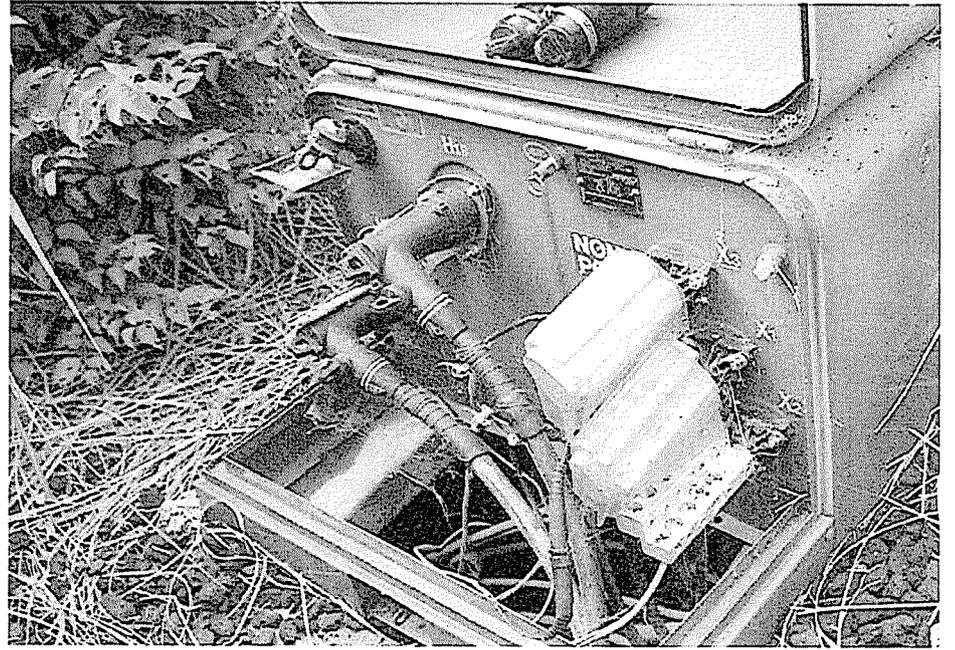
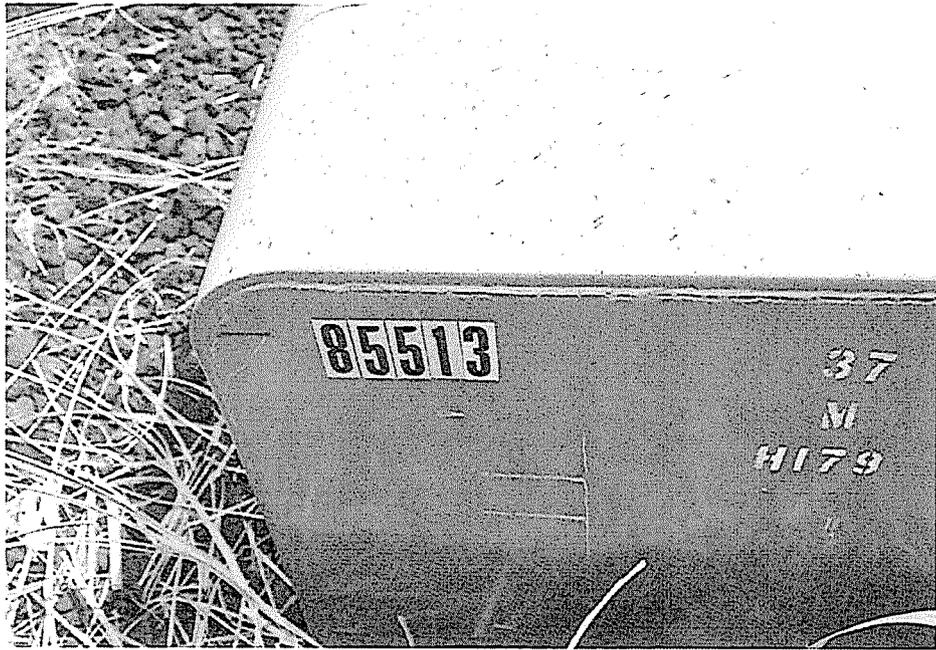
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DATE OF REPORT: JULY 26, 2011

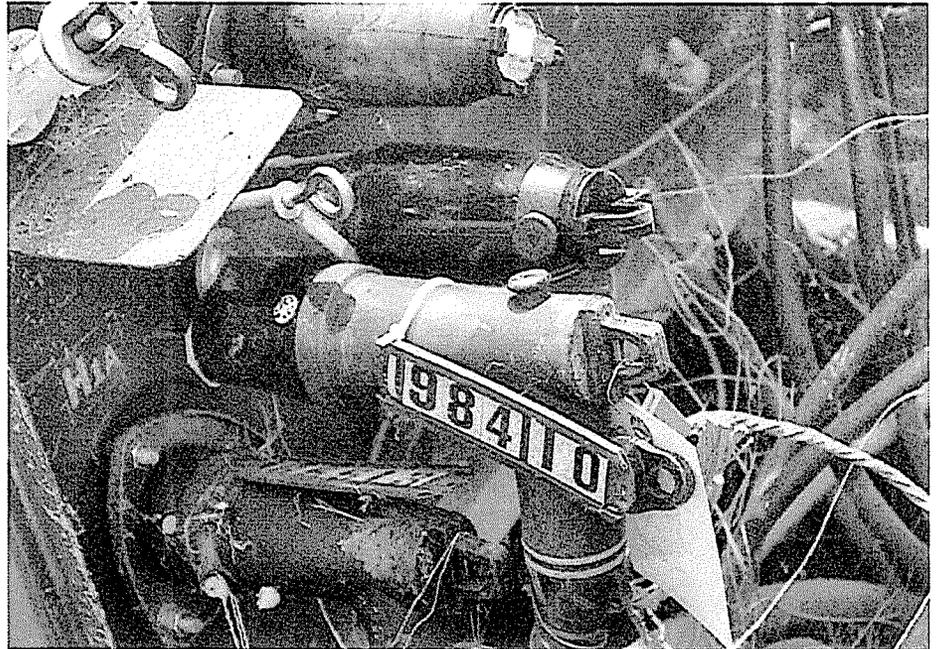
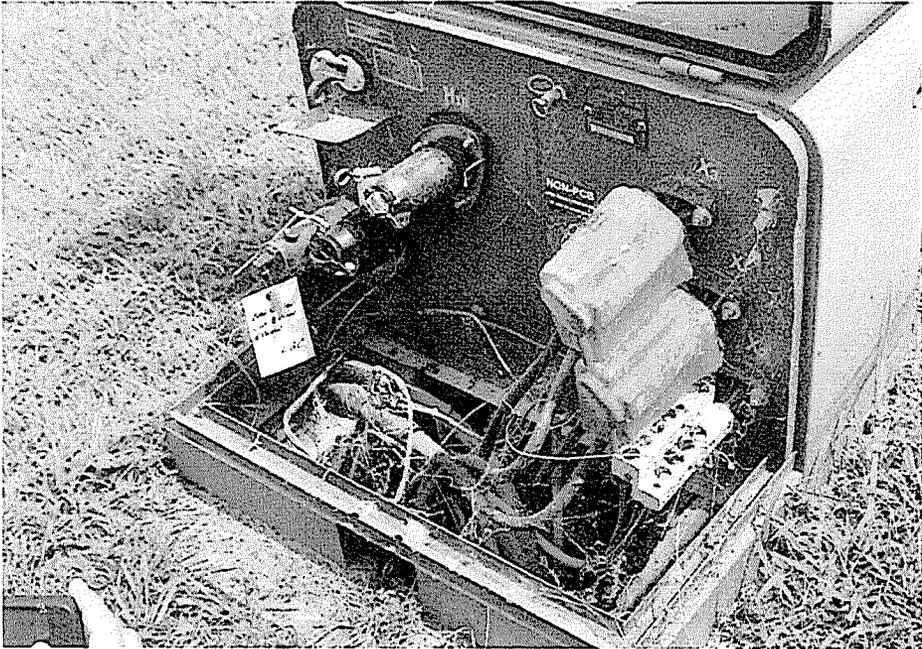
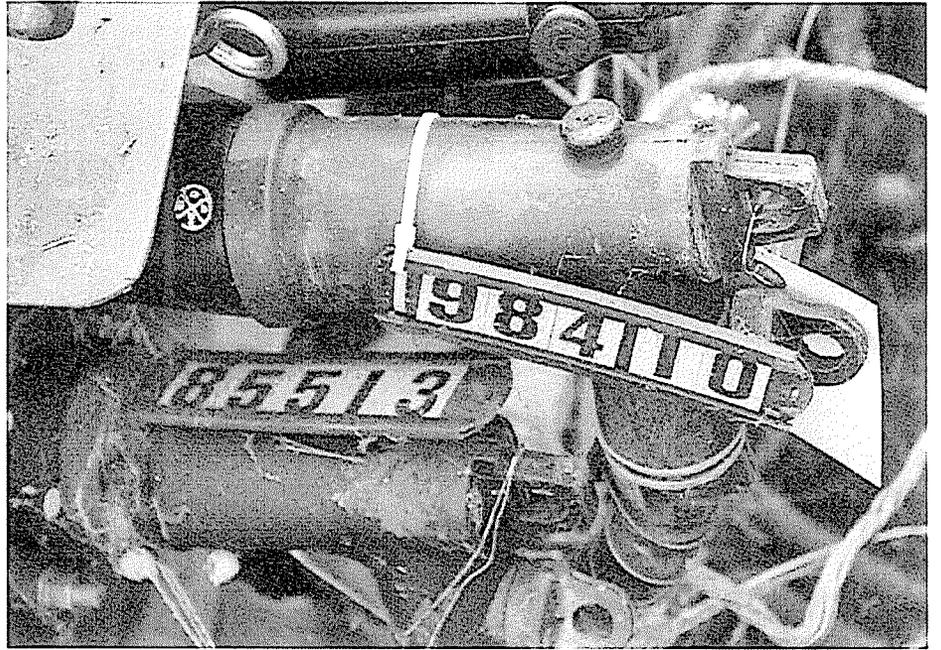
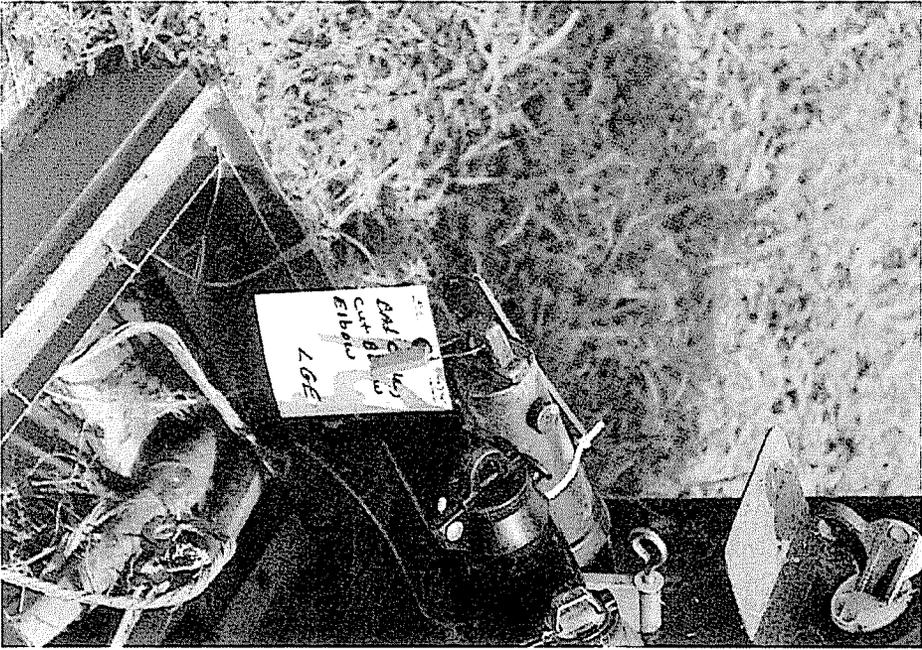


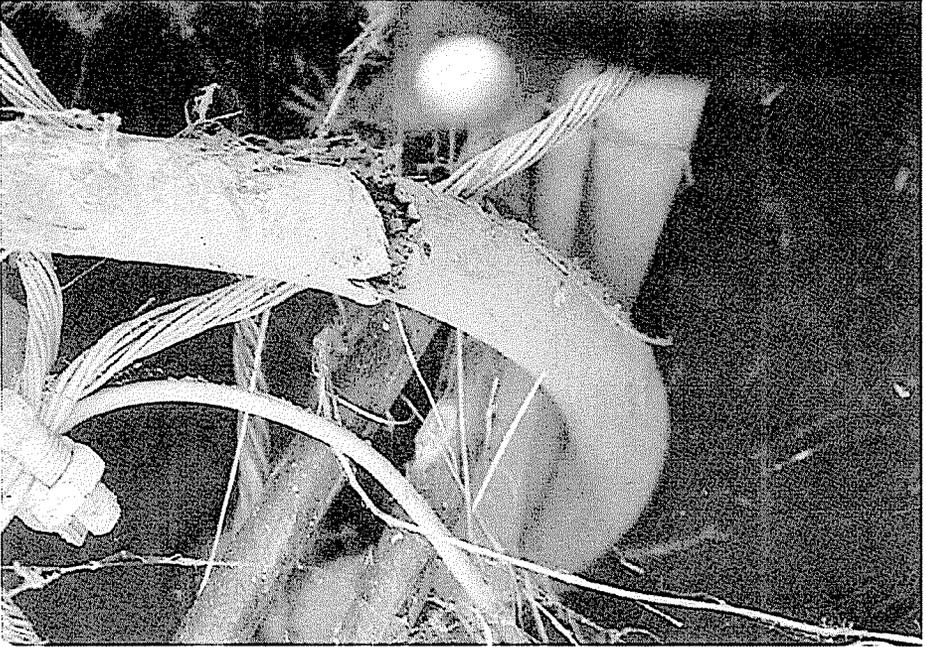


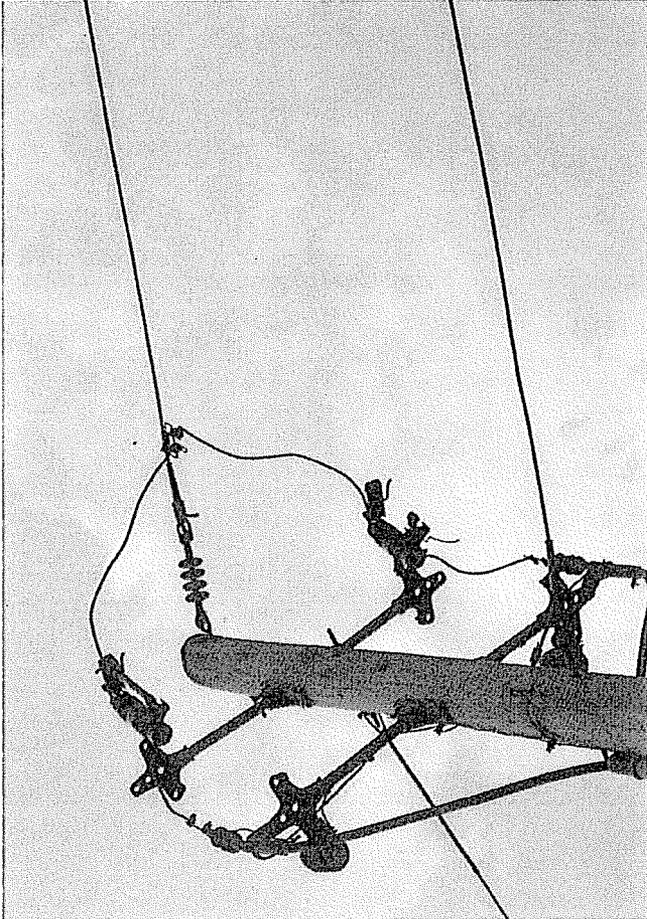
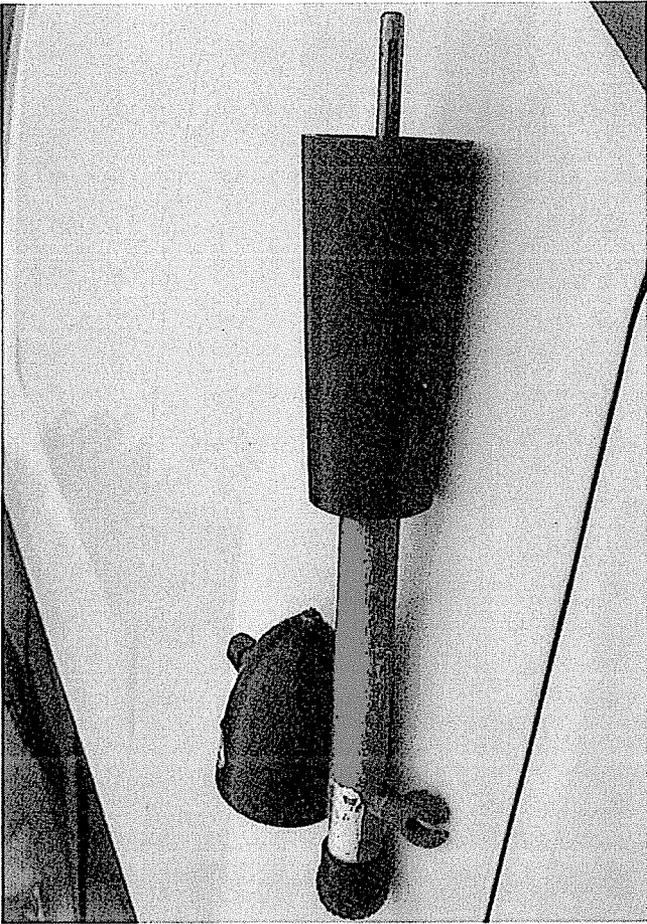


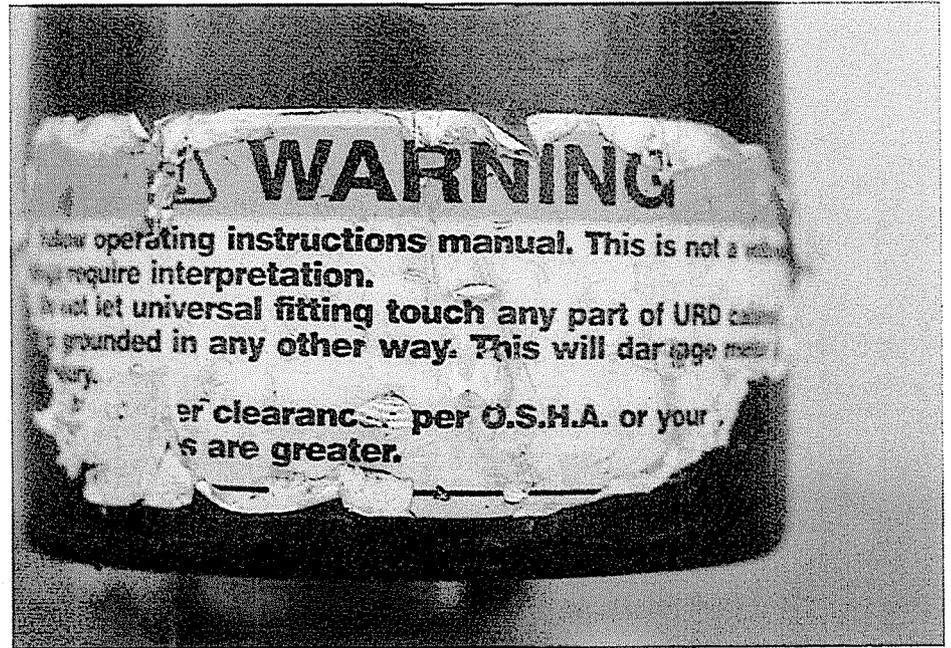
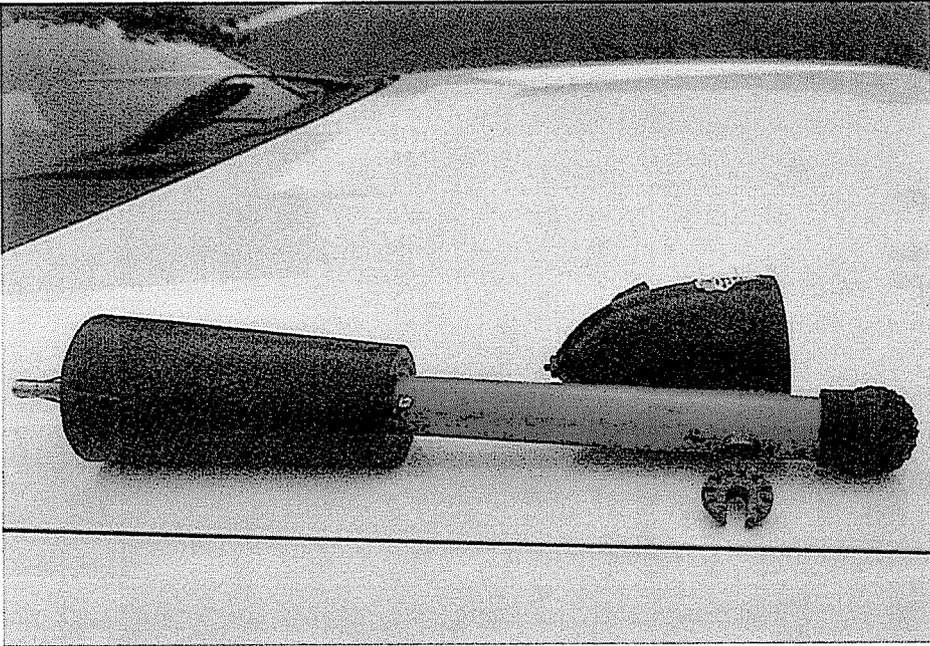


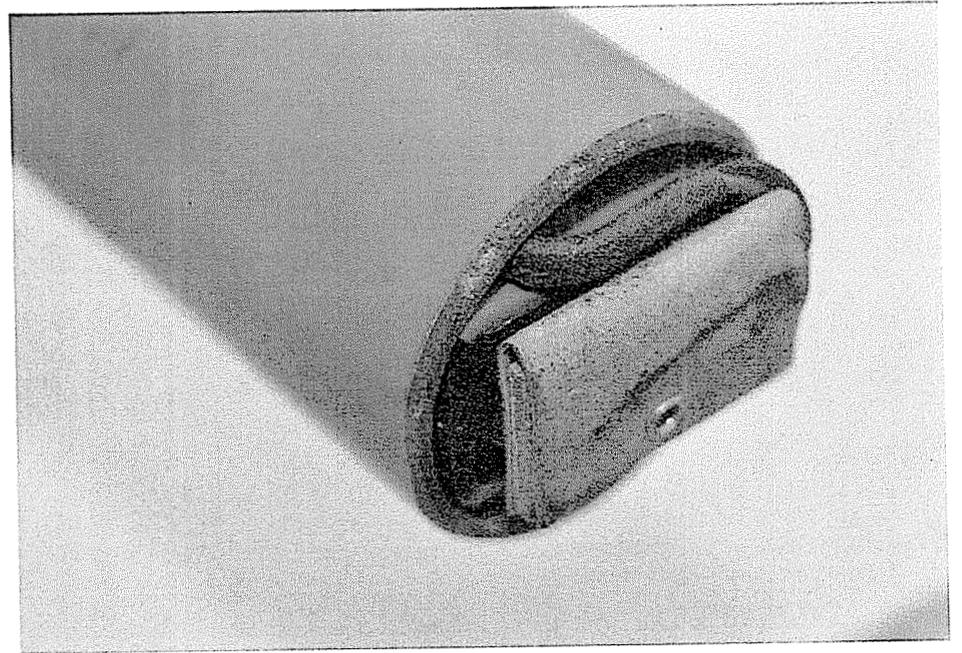
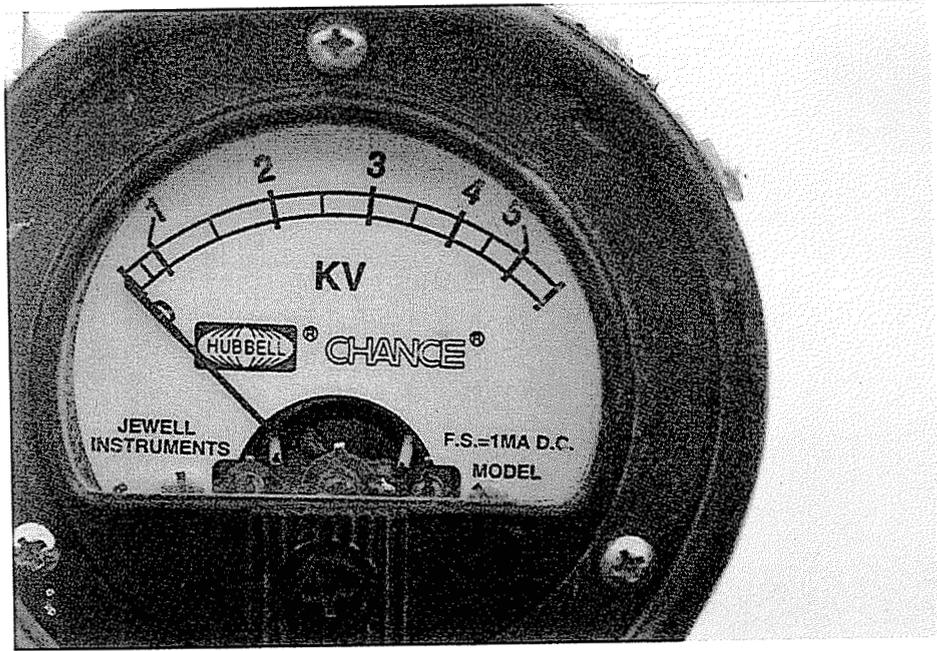
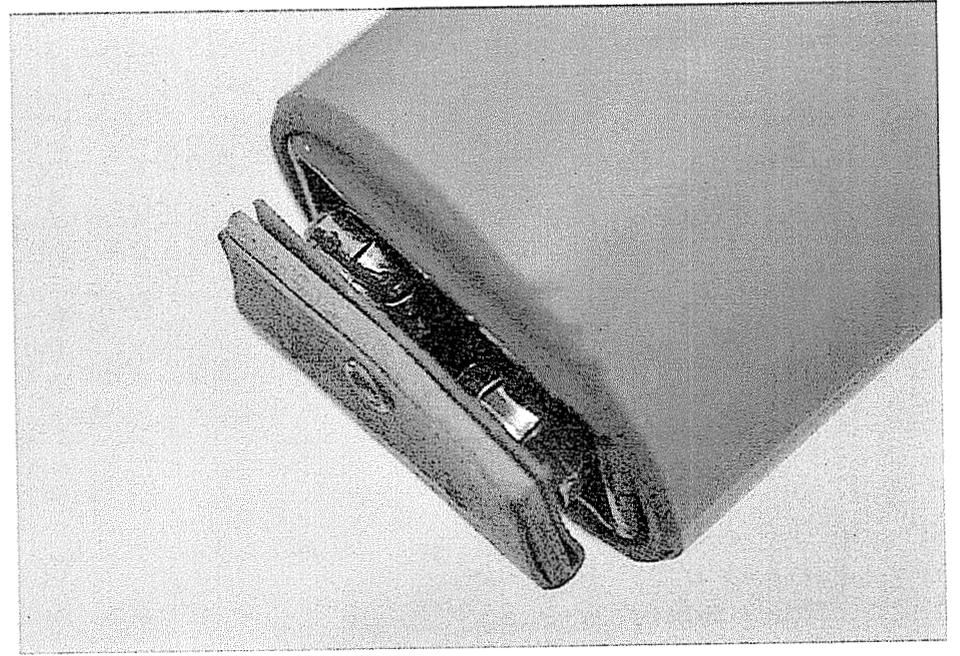
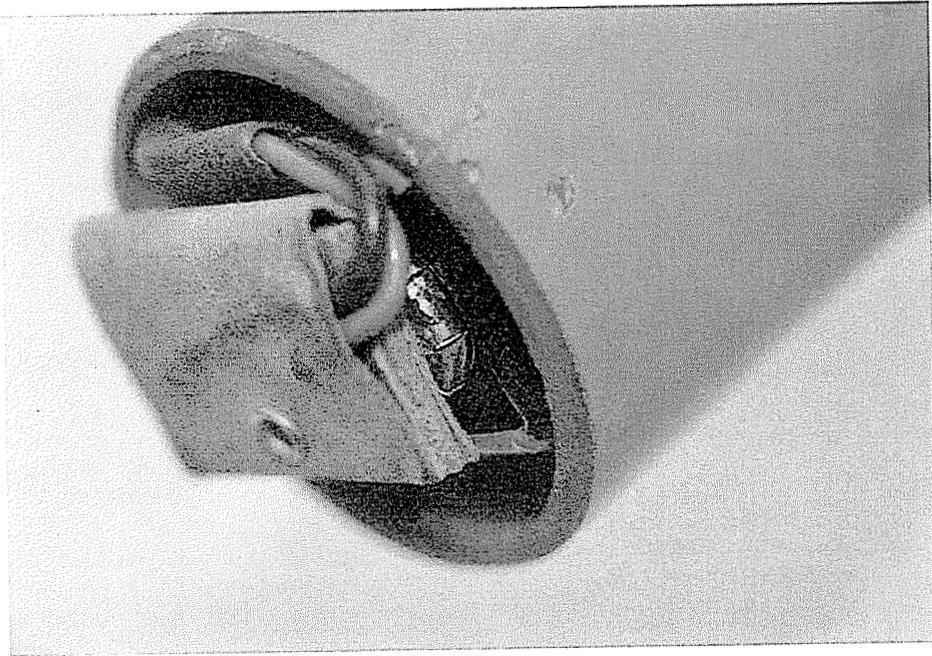


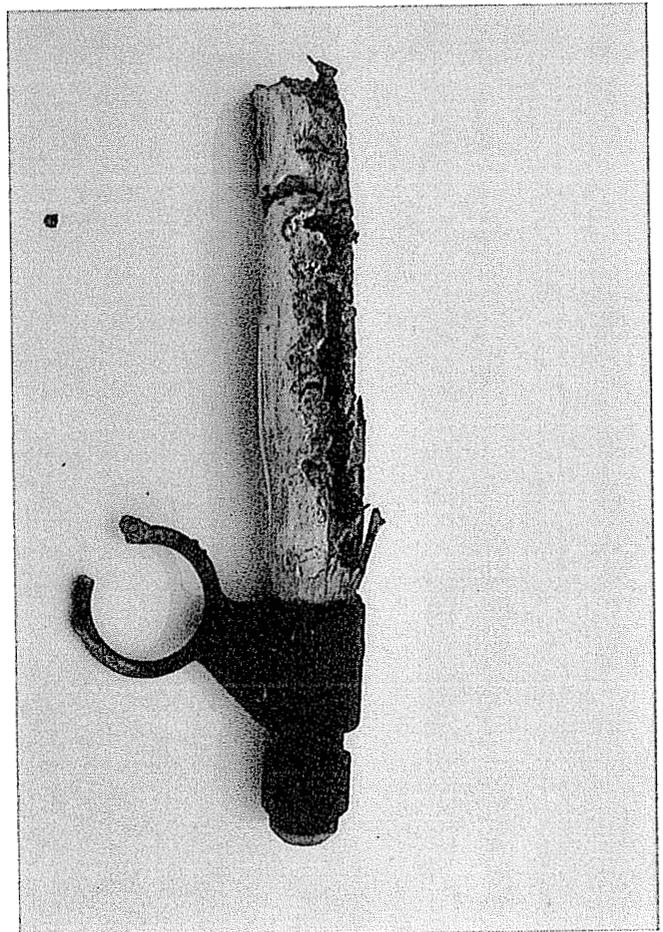
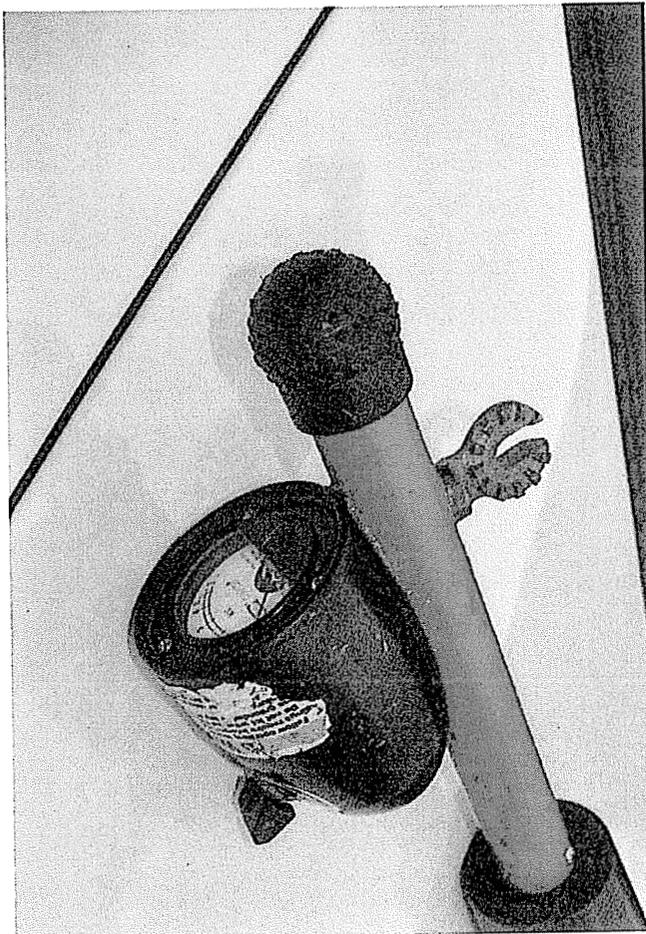
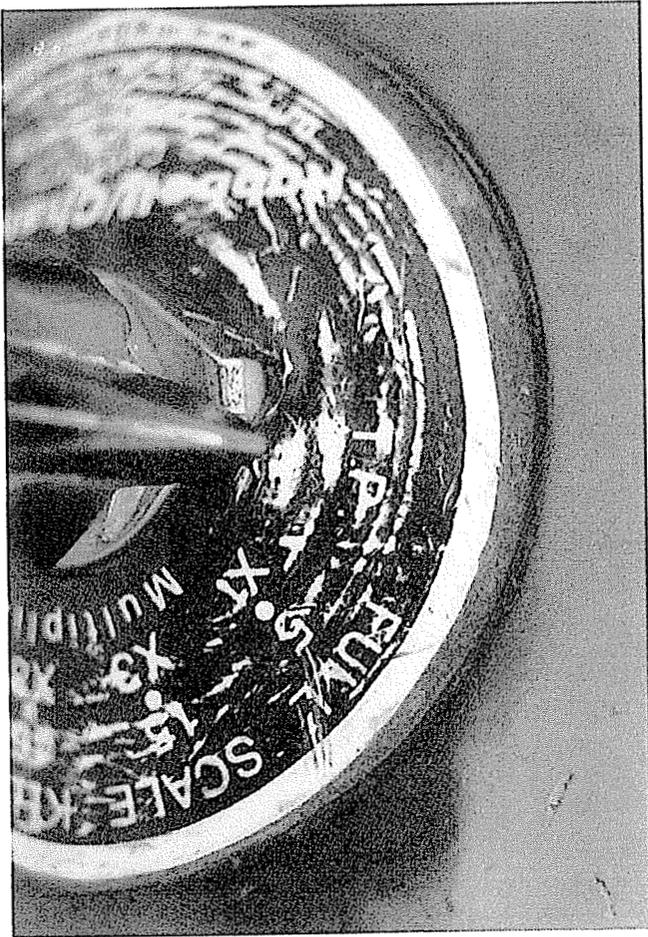


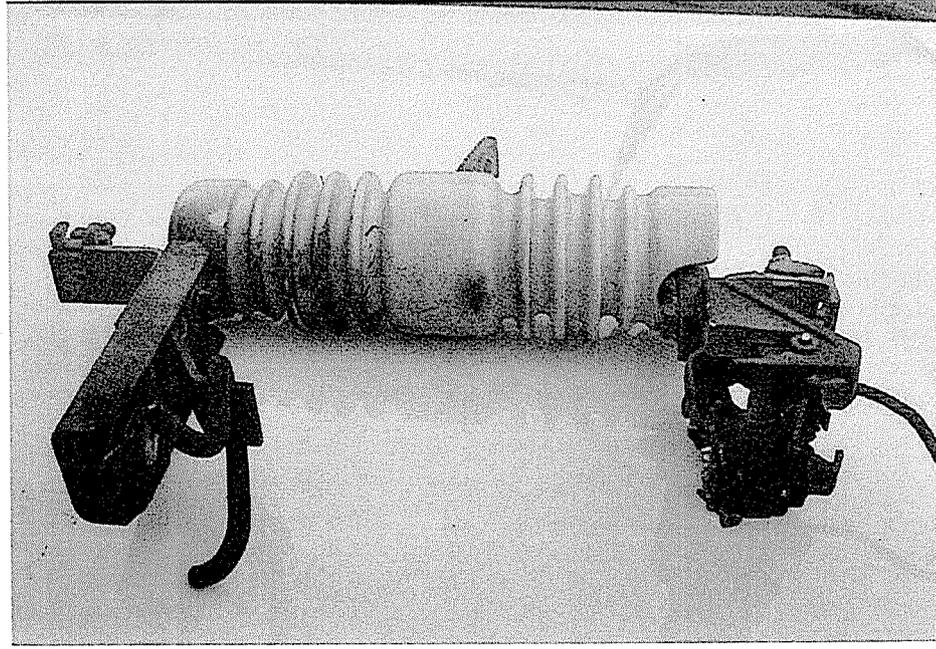
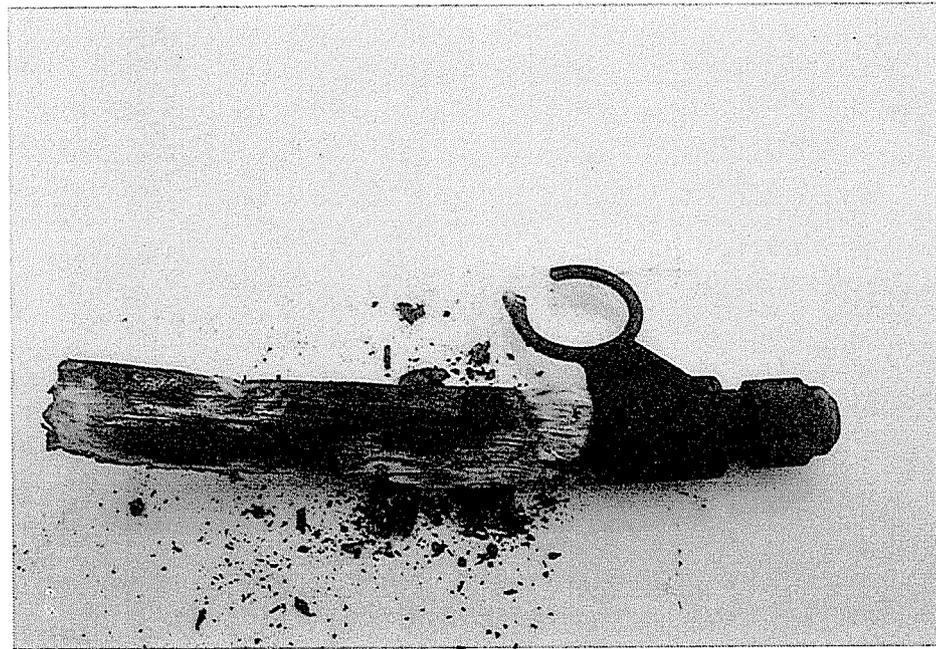
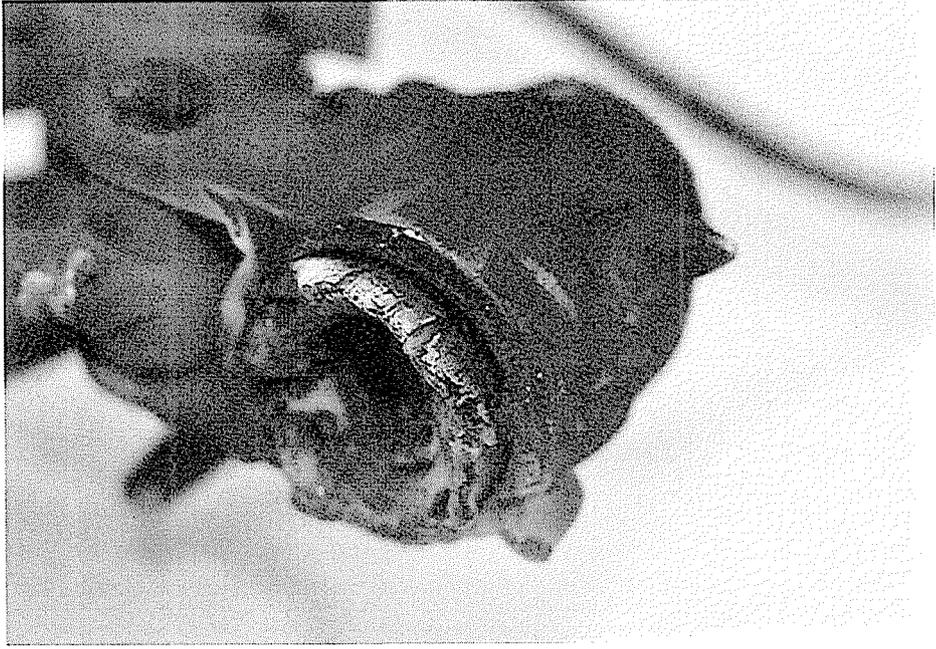
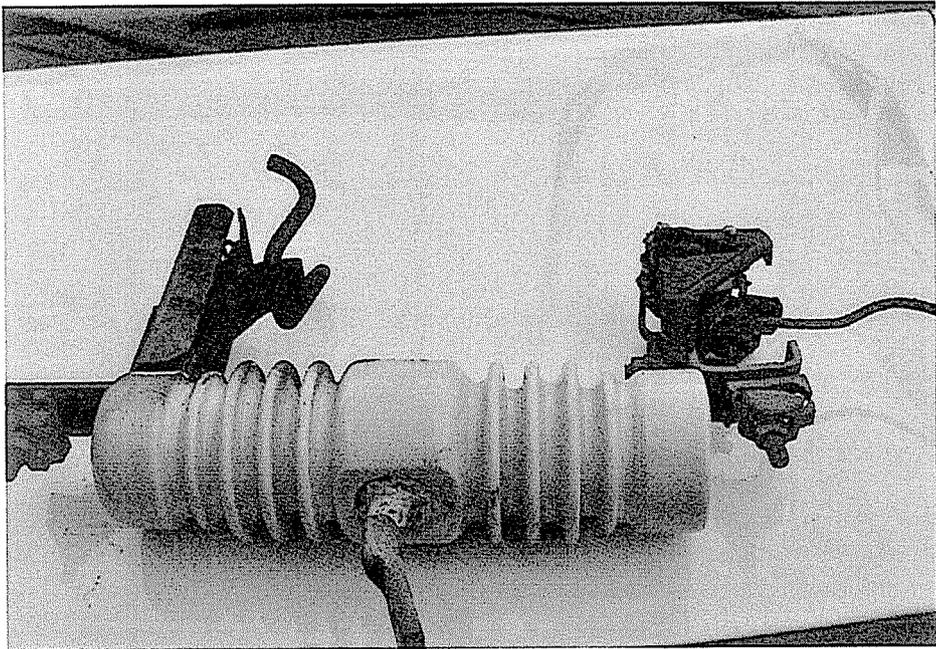


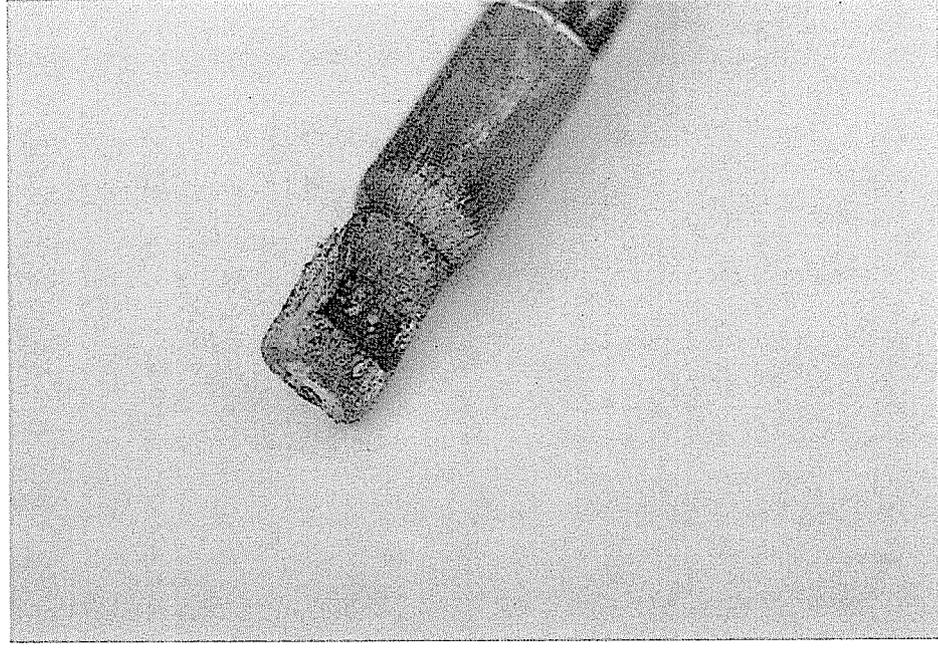
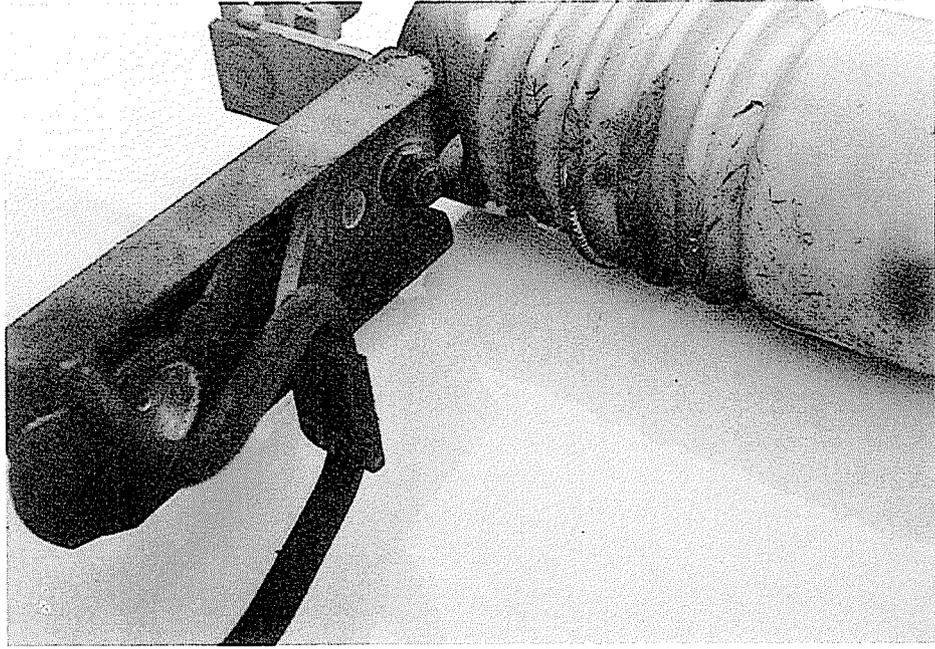
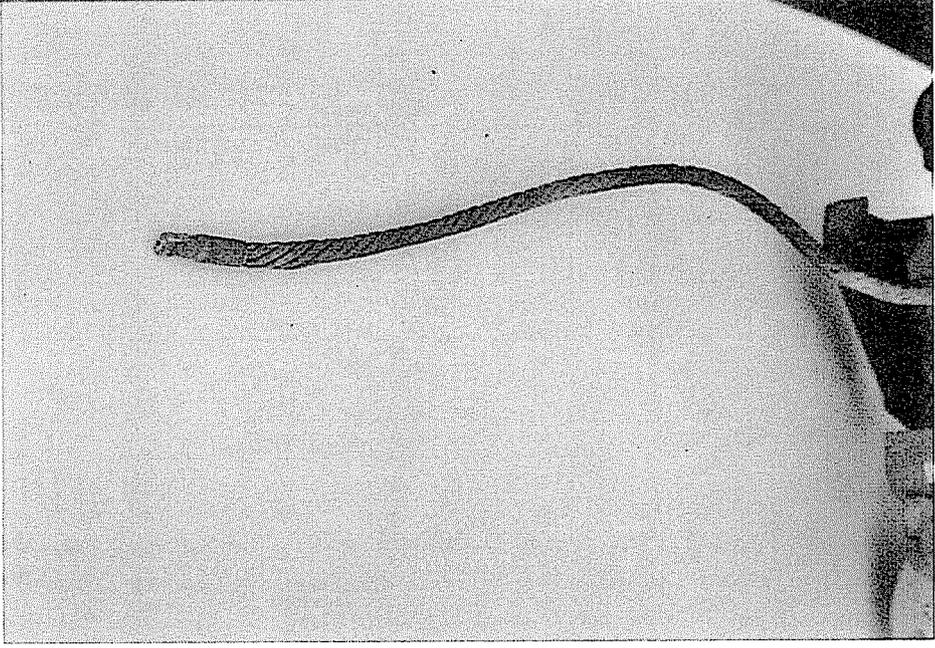


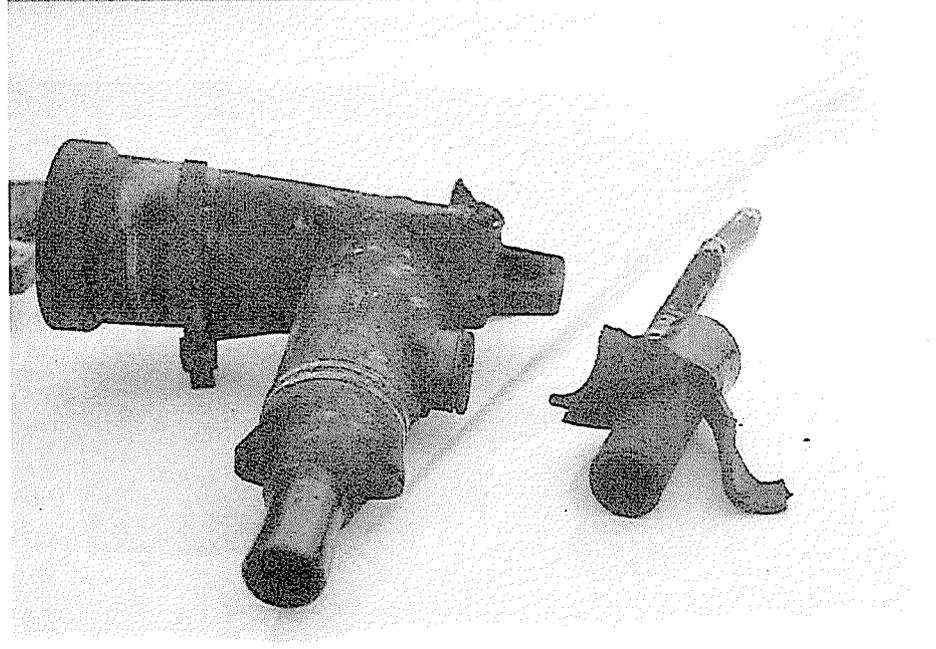
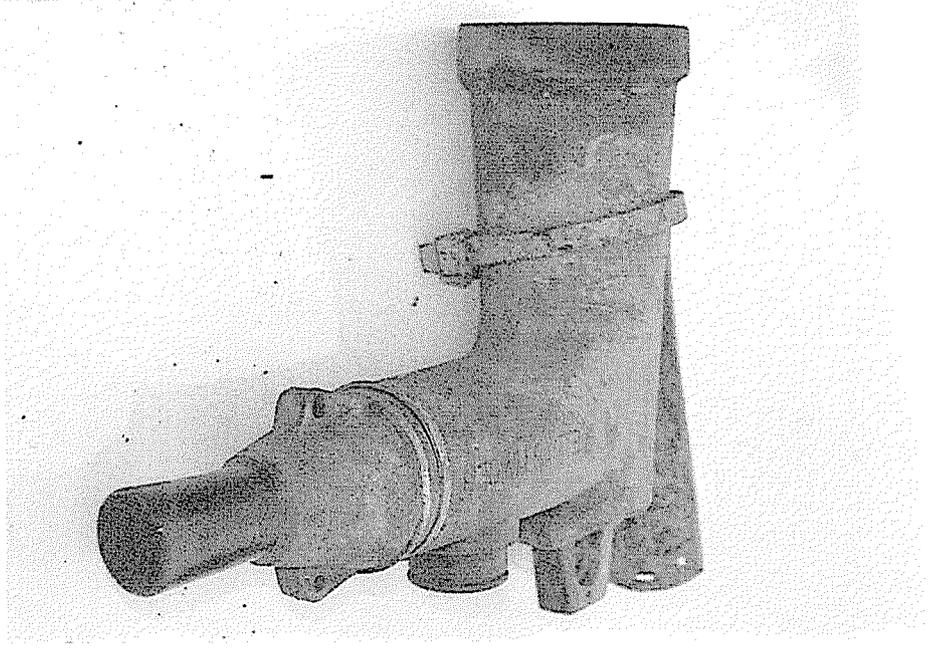
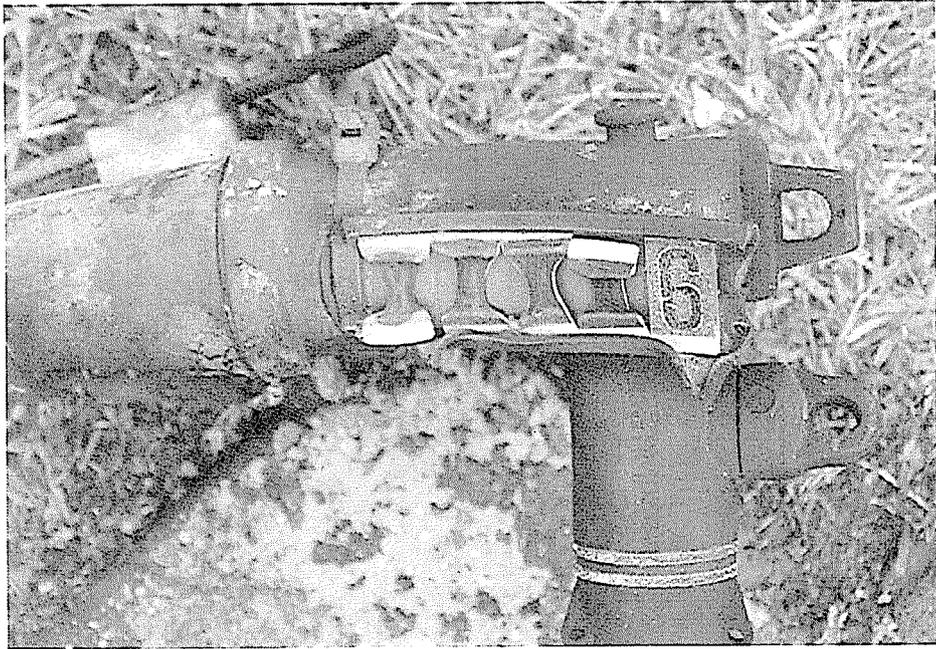


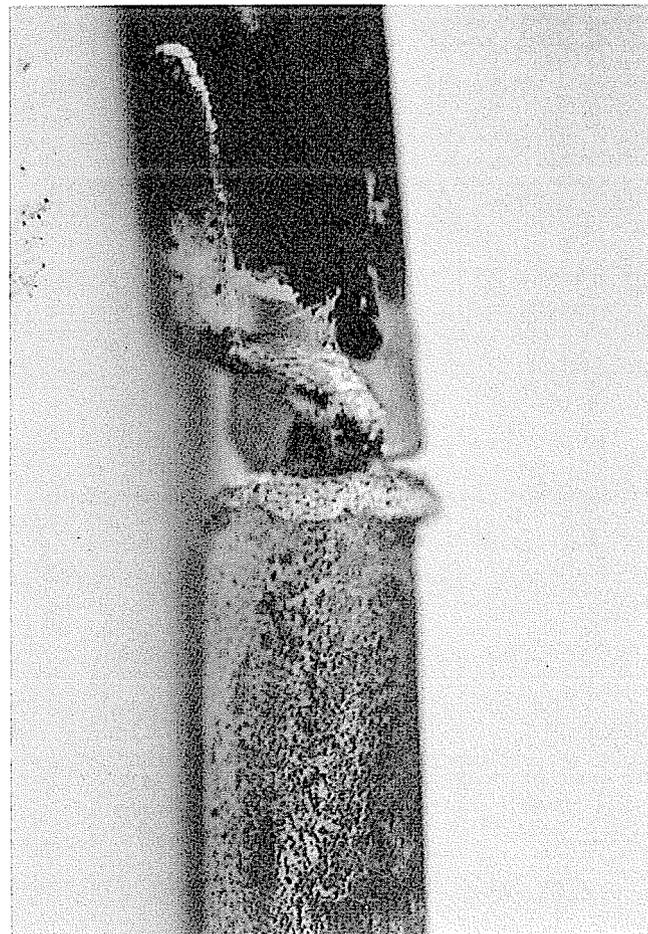
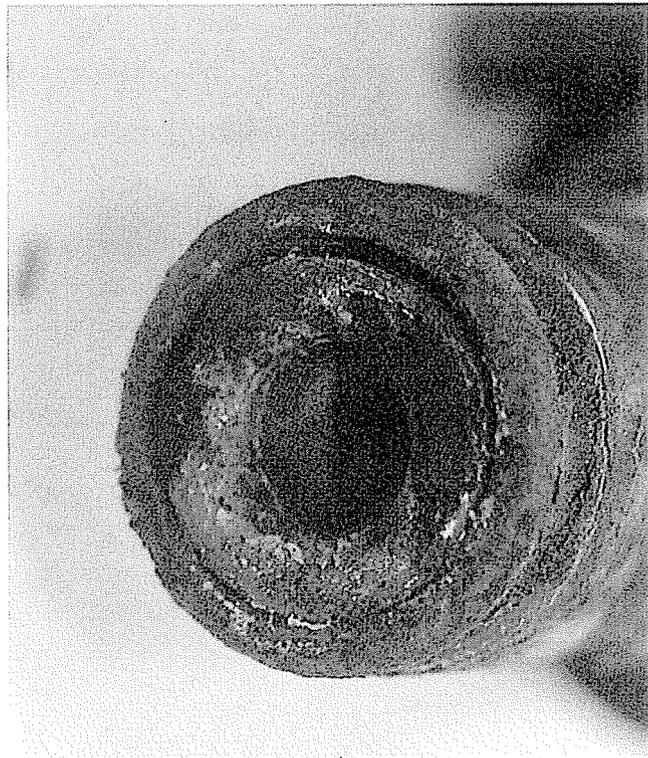
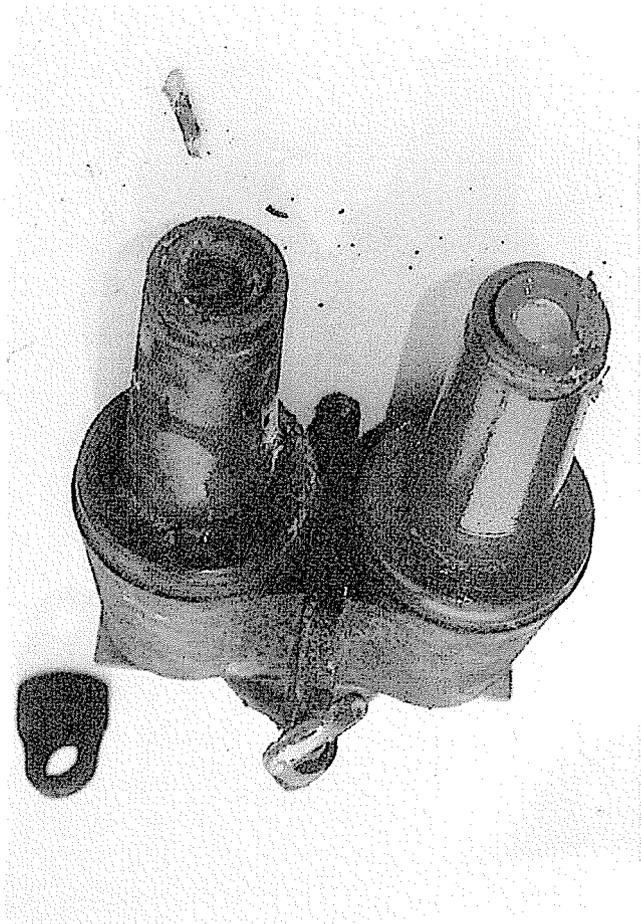














DAILY FIELD REPORT
TEAM FISHEL DIV 11

OPERATIONAL
EXCELLENCE

"Repairs"

Customer: Louisville Gas & Electric

Date: 7-20-11

Team Fishel Job #: 11080145

Work Order #: 2542574

Team Fishel Project Name: 15520 Bridge Gate

Exact Location: 15520 Bridge Gate Dr

Supervisor Name: Tim Thomas

Rentals Called Off: Yes No N/A

Supervisor Signature:

Job Complete: Yes (No)

Job #

TOPICS COVERED

(Signatures and initials required for additional briefing(s))

Teammate Signature

Hazards Associated with Job: (List recognized hazards discussed during Briefing)

Check around job site

Jenny Williams
Matt Christy

Special Precautions: (List special precautions discussed during Briefing)

Watch for base cable in sand

P.P.E. Required: (List PPE required for safe completion of job and discussed during Briefing)

FR, gloves, shoes, safety glasses, hard hat

Work Procedures Involved: (Provide a brief description of the work procedures discussed during Briefing)

Push primary bus transformer

Energy Source Controls: (List energy source controls discussed during briefing, i.e. LOTO, Cautions, Fuse locations, etc.)

Read for in transformer

UTILITY LOCATING PROCEDURE

Locate No.:

The purpose of this practice is to ensure that all utilities are marked and properly exposed before starting any excavation operation. The Foreman or designated Teammate shall complete the daily utility locate inspection prior the start of each work shift.

- Did you excavate today? YES NO
- Locations have been completed and are valid for work today.
- All utility/facility marks on the ground are visible.
- A visual check for pedestals, riser, new trench lines, etc. was completed.
- All Teammates have been informed of any potential hazards.
- Service feeds from buildings and homes have been identified, i.e. sewer clean-outs.
- HDD locate equipment calibrated prior to start of work / as work dictated. N/A
- All exposed utilities are properly supported and have been protected. NA
- All utilities to be crossed have been potholed and the location and depth have been verified as required by Team Fishel's Utility Locating Procedures. N/A
- All paralleling utilities within 3 feet of our path have been potholed and the location and depth have been verified every ___ feet. N/A

Service
Gas
Elec.
Water
Sewer
Tels.
Fiber
Other

Provide a Brief Descrip.

List any work activity requiring the crossing of an existing utility:

What is the "no dig zone" requirement? 18" 24" 30"

Customer Work Request # 2542574

Customer Project # 15520

Customer Task # 61

Foreman's Signature: J. Williams

Date: 7-20-11

Verbal Estimate	PO Number	Estimated Rental Time/Cost
NA	NA	NA

Weather Conditions/Production delays:

Goals: No complete job

Job Accidents: Team Mate Injury

Justification for exceeding/not exceeding expectations:

Matt Christy

Payroll

Print Teammate Name	Teammate #	Hours	Lunch	Start Time/End Time	TEAMMATE SIGNATURE
JIMMY WILLIAMS	155	5		1:00 6:30	Jenny Williams
MATT CHRISTY	154	4		1:00 5:30	Matt Christy

By signing, Teammate accepts his accuracy of time including all required and applicable break & rest periods.

Equipment

Equipment Description	Equipment #	Hours on Site	Mileage/Hours	Truck Driver Signature
FUSION VAN	21220	5	226/77	Jenny Williams
SOD CUTTER	85829	5		
BUTLER TRAILER	00920	5		
MINI EXC	53587	5	161	

Temporary Protective Grounding Manual

SECTION A

DEFINITIONS

ENERGY DELIVERY

A. DEFINITIONS

Accident:

An event which is unexpected, or the cause of which was unforeseen; a contingency, casualty, or mishap.

Affected employee:

An employee whose job requires him or her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him or her to work in an area in which such servicing or maintenance is being performed.

Alive or Live (energized):

Electrically connected to a source of potential difference, electrically charged so as to have a potential difference from that of the earth.

Approved:

Approval by the management of the company or its duly authorized representative.

Attendant:

An employee assigned to remain immediately outside the entrance to an enclosed or other space to render assistance as needed to employees inside the space.

Authorized employee:

An employee who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

Automatic circuit recloser:

A self-controlled device for interrupting and reclosing an alternating current circuit with a predetermined sequence of opening and reclosing followed by resetting, hold-closed, or lockout operation.

Backfeed:

External sources, such as customer owned generators, can backfeed secondary current through the distribution transformer, energizing the primary conductor at the primary voltage. Backfeed can exist even in short spans where all three (3) phases of the primary are visibly open on both sides of the work location. Multiple transformers feeding the same secondary can produce the same effect. Delta-connected transformers not protected against a single-phasing condition can also backfeed primary current to a phase presumed to be “dead”.

Barricade:

A physical obstruction, such as wood barriers, screens, cones, ropes and tapes, intended to warn of hazards and limit access to an area.

Barrier:

A physical obstruction which is intended to prevent contact with energized lines or equipment or to prevent unauthorized access to a work area.

Bonding Jumper:

A reliable conductor intended to insure the required electrical conductivity between parts required to be electrically connected.

Bracket grounding:

Generally includes two conductor ground sets, one on either side of the work area.

Bus:

A conductor or a group of conductors that serve as a common connection for two or more circuits.

Bushing:

An insulating structure, including a through conductor or providing a passageway for such a conductor, with provision for mounting on a barrier, conducting or otherwise, for the purpose of insulating the conductor from the barrier and conducting current from one side of the barrier to the other.

Cable:

A conductor with insulation, or a stranded conductor with or without insulation and other coverings (single-conductor cable) , or a combination of conductors insulated from one another (multiple-conductor cable)

Cable Sheath:

A non-conductive protective covering applied to cables.

Card System:

A system or method of carding circuits, valves, systems, or equipment for the purpose of alerting persons that these items are being worked on or are out of service and shall not be operated.

Caution:

Indicates a warning against possible hazards or unsafe practices.

Circuit:

A conductor or system of conductors through which an electric current is intended to flow.

Clearance (between objects):

The clear distance between two objects measured surface to surface.

Clearance (for work):

Authorization to perform specified work or permission to enter a restricted area.

Company:

Refers to Energy Delivery.

Conductor:

A material, usually in the form of a wire, cable, or bus bar, used for carrying an electric current.

Covered conductor:

A conductor covered with a dielectric having no rated insulating strength or having a rated insulating strength less than the voltage of the circuit in which the conductor is used.

Current-carrying part:

A conducting part intended to be connected in an electric circuit to a source of voltage. Non-current-carrying parts are those not intended to be so connected.

Danger:

Indicated the existence of an immediate danger.

Dead (de-energized):

Free from any electrical connection to a source of potential difference and from electrical charges; not having a potential different from that of the earth.

Designated employee (designated person):

An employee (or person) who is designated by the employer to perform specific duties under the terms of this section and who is knowledgeable in the construction and operation of the equipment and the hazards involved.

A-4

Dispatcher's (or Operator's) Clearance:

Notification from the dispatcher (or operator) to the person in charge of performing work that all clearing procedures have been accomplished and that work may proceed on lines or equipment that are under the dispatcher's (or operator's) control.

Electric line truck:

A truck used to transport personnel, tools, and material for electric supply line work.

Electric supply equipment:

Equipment that produces, modifies, regulates, controls, or safeguards a supply of electric energy.

Electric utility:

An organization responsible for the installation, operation, or maintenance of an electric supply system.

Electromagnetic-coupled voltage:

The energized line acts as the primary winding of a transformer, and the de-energized line acts as the secondary winding. In this way, crossing or parallel lines can induce a voltage on one another.

Electrostatic-coupled voltage:

A voltage is developed due to capacitive-coupling of the isolated (underground) line and an energized circuit. While designed to discharge within a few minutes after being de-energized, shunt capacitors in the line can produce the same effect.

Energy isolating device:

A physical device that prevents the transmission or release of energy, including but not limited to, the following: a manually operated electric circuit breaker, a disconnect switch, a manually operated switch, a slide gate, a slip blind, a line valve, blocks, and any similar device with a visible indication of the position of the device. (Push buttons, selector switches, and other control-circuit-type devices are not energy isolating devices.)

Energy source:

Any electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal, or other energy source that could cause injury to personnel.

Equipment (electric):

A general term including material, fittings, devices, appliances, fixtures, apparatus, and the like used as part of or in connection with an electrical installation.

Exposed:

Not isolated or guarded.

Foreman or Supervisor:

The person in charge of work or a working crew, regardless of his/her nominal title or classification.

Ground:

A conducting connection, whether intentional or accidental, between an electric circuit or equipment and the earth, or to some conducting body that serves in place of the earth.

Grounding:

The process or method providing an electrical connection between equipment or an electrical circuit and earth, or to some conductive medium which serves in place of the earth.

Guarded:

Protected by personnel, covered, fence, or enclosed by means of suitable casings, barrier rails, screens, mats, platforms, or other suitable devices in accordance with standard barricading techniques designed to prevent dangerous approach or contact by persons or objects.

Hold card:

Issued only by the direction of the Load Dispatcher or his delegated authority. The hold card is the formal registered card in the Electrical Operating Card System. It's purpose is to protect life and property. This card is red. HOLD is printed across the top in black letters. Printed legend and lines are provided for filling in required information. A device having a hold card attached shall never be closed.

Insulated:

Separated from other conducting surfaces by a dielectric (including air space) offering a high resistance to the passage of current. *Note: When any object is said to be insulated, it is understood to be insulated for the conditions to which it is normally subjected. Otherwise, it is, within the purpose of this section, uninsulated.*

Insulation (cable):

That which is relied upon to insulate the conductor from other conductors or conducting parts or from ground.

Isolated:

Not readily accessible to persons unless special means of access are used.

Lanyard:

A line or strap capable of supporting one adult person. One end of the lanyard is fastened to a safety belt or harness, and the other end is secured to a substantial object or a lifeline.

Lifeline:

A line, capable of supporting at least one adult person, to which a lanyard or safety belt (or harness) is attached.

Live-Line Tool (Hot Stick):

An insulating member in the form of a stick or pole having means on one or both ends for performing work while permitting the workman who holds the tool to remain insulated and at a safe distance from energized electrical equipment.

Manhole:

A sub-surface enclosure which personnel may enter and which is used for the purpose installing, operating, and/or maintaining equipment, conduits, and/or cable.

Minimum approach distance:

The closest distance an employee is permitted to approach energized or grounded object.

Operator:

The system operator, substation operator, control room operator, shift supervisor, or other person in charge of a line, equipment, apparatus, etc., regardless of the person's nominal title or classification. A person designated to operate a system or parts thereon.

PPE:

Personal Protective Equipment.

Qualified Employee (qualified person):

One knowledgeable in the construction and operation of the electric power generation, transmission, and distribution equipment involved, along with the associated hazards. *Note 1: An employee must have the training required in order to be considered a qualified employee. Note 2: An employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those duties.*

Shall:

Mandatory.

Should:

Recommended or advisory.

Single Point Grounding:

Generally includes one conductor ground set in conjunction with a person protective jumper.

Step bolt:

A bolt or rung attached at intervals along a structural member and used for foot placement during climbing or standing.

Switch:

A device for opening and closing or for changing the connection of a circuit. In this section, a switch is understood to be manually operable, unless otherwise stated.

System operator:

A qualified person designated to operate the system or its parts.

Vault:

An enclosure above or below ground which personnel may enter and is used for the purpose of installing, operating, and/or maintaining equipment and/or cable.

Vented vault:

A vault that has provision for air changes using exhaust flue stacks and low level air intakes operating on differentials of pressure and temperature providing for airflow which precludes a hazardous atmosphere from developing.

Voltage, Nominal:

The value assigned to a system or circuit of a given voltage class for the purpose of convenient designation. The actual operating voltage may be higher or lower than the nominal rating.

Working Clearance (Electrical):

The minimum distance that employees shall approach anything that is at a different voltage from themselves.

SECTION B

PURPOSE OF TEMPORARY PROTECTIVE GROUNDING

ENERGY DELIVERY

B PURPOSE OF TEMPORARY PROTECTIVE GROUNDING

1. *Introduction*

Traditionally, most linemen and first-line supervisors believed that working between personal protective grounds on a de-energized line provided absolute safety. They believed that if the line was accidentally energized, all of the current would flow into the earth through the grounds, and none of the current would flow into the work area. This belief is false. The objective of personal protective grounds must be to limit current flowing through the lineman's body to a safe value. Personal protective grounds must also limit any voltage rise on the de-energized line which may occur due to inductive and capacitive coupling with nearby energized lines. A critical factor in applying personal protective grounds for protection of linemen is to absolutely control the maximum voltage stress across the work area. This control is best accomplished by installing personal protective grounds at the work site and in parallel with the workman. The current flow rate in a conductor is approximately 186,000 miles per second. Circuit protective devices simply cannot operate in the time it takes for current to flow from grounding cables placed one span, or even one mile ahead of a pole or structure being worked on to the work site.

It is important to understand that proper grounding accomplishes two distinct objectives. The first objective is to verify that a circuit which is *assumed* to be de-energized is *actually* de-energized. This is accomplished during the initial voltage testing and is verified by installing conductor grounds on the circuit. The second objective is to manage current flow in the work area, should the circuit inadvertently be re-energized. This is accomplished by the conductor grounds providing an adequate current path to ground for fault currents, which allows the circuit interrupting device(s), fuses, reclosers, or breakers to operate and de-energize the circuit.

2. *Effects of Current Through the Human Body*

- a. The amount of electrical current that the human body can withstand depends on the magnitude and frequency of the current, and the duration of exposure (see examples listed below).
- b. For an adult male, 60 Hz AC:
 - I. at 0.0011 Amps . . . the worker feels a "tingle" . . . this is the

- “Perception Threshold”
- II. at 0.0090 Amps . . . A painful shock results
 - III. at 0.0160 Amps . . . Muscle contraction prevents the worker from releasing an energized conductor or the “Let-Go Threshold”

B-2

- IV. at 0.164 Amps . . . The rhythmic pumping action of the heart will cease, resulting in certain death if the condition is not quickly corrected. This is the “Fibrillation Threshold”.
 - c. For an adult male (60 Hz AC), 0.5% probability of fibrillation occurs when exposed to 0.164 Amps for 30 cycles (approx. 0.5 seconds). Thus, for longer durations of exposure, the amount of current (Amps) that the human body may withstand is much lower. This emphasized the importance of fast fault clearing.
 - d. The accepted minimum value of resistance for a worker’s body is 500 Ohms. Although dry skin may have a resistance of 5,000 to 50,000 Ohms, water or perspiration will reduce this considerably. In addition, voltages over 250 volts readily penetrate the skin’s resistance.
 - e. It is also important to realize that a wood pole is not an insulator at high voltages, a wet pole can have a resistance as low as 2,000 Ohms per linear foot. Since the neutral is often on an insulated spool, it is not necessarily electrically bonded to the pole. Additional measures may be needed, such as grounding clusters, to create an equipotential zone on the pole.

3. *Possible Sources of Potential*

It is important to recognize all possible sources of voltage which present a hazard to the employee during conditions when the line is *presumed* to be de-energized. A line may become energized by any of the following:

- a. *Electrostatic-coupled voltage:* A voltage is developed due to capacitive-coupling of the isolated (ungrounded) line and an energized circuit. While designed to discharge within a few minutes after being de-energized, shunt capacitors on the line can produce the same effect.
- b. *Electromagnetic-coupled voltages:* The energized line acts as the primary winding of a transformer, and the de-energized line acts as the secondary winding. In this way, crossing or parallel line can induce a voltage on one another.
- c. *Backfeed:* External sources, such as customer-owned generators, can backfeed secondary current through the distribution transformer, energizing the primary conductor at the primary voltage. Backfeed can exist even in short spans where all three phases of the primary are visibly open on both sides of the work location. Multiple transformers feeding the same secondary can produce the same effect. In addition, delta-connected transformers not protected against a single-phasing condition can also backfeed primary current to a phase presumed to be “dead”.
- d. *DC voltage:* A DC voltage can be trapped on the line due to switching transients. Although the discharge current is very low, X may be startling to an unsuspecting worker on the pole, perhaps resulting in a fall or recoil of an arm into an energized phase.

- e. *Human error:* Accidental switching and inaccurate circuit maps cause fatalities every year in the electric utility industry. Although proper switching procedures are designed to prevent such errors, grounding is a prudent secondary line of defense.
- f. *External forces:* Forces beyond the control of the line crew, such as a car-pole accident, can cause an accidental contact with energized utility lines (foreign or OE) which cross over or under the lines being worked upon. Equipment or structure failure, such as a broken crossarm, can result in a similar incident.
- g. *Lightning:* Although remote, the possibility for lightning exists, particularly while doing line work immediately after a storm.

Thus, even though a line is disconnected from the system and tested for voltage, it is nearly impossible to ensure that it will not develop hazardous potentials at a later time during the course of maintenance. Consequently, possible sources of electrical supply must be identified and the line must be grounded to be considered "dead."

- 4. *Potential Hazards for Worker on the Ground*
 - a. *Step Potential:* Step potential may be hazardous if a worker is near a ground rod during a fault. The potential gradient around a ground rod is non-linear under fault conditions, and depends upon a variety of factors, including the soil resistivity. However, as a rule of thumb, the potential approximately halves itself every 2.5 to 3 feet near the point of entry. That is, if the voltage at the ground rod is 7200 volts, then the voltage 2.5 to 3 feet away should be about 3600 volts. Under faulting conditions, a hazardous current may flow from a workers foot, through the workers body, and exit through the opposite foot.
 - b. *Touch Potential:* Touch potential may be hazardous if a worker is in contact with equipment or a vehicle during a fault, as the worker's body may become a path for fault current. Under fault conditions, a hazardous current may flow from a worker's hand, through the worker's body, and exit through one or both feet.
 - c. *Transfer Potential:* Transfer potential occurs when vehicles or equipment are at different potentials. The may be present if, one line truck is bonded to one ground rod (which is bonded to the de-energized line) and a second truck is bonded to another ground rod. If an employee contacts both vehicles simultaneously, directly or indirectly with a conductive object, an electrical shock may result due to differences in ground resistances.

Additional measures must be taken to protect the ground worker from step, touch, and transfer potentials. These measures include grounding, bonding, insulation, and isolation.

SECTION C

GROUNDING EQUIPMENT

ENERGY DELIVERY

C GROUNDING EQUIPMENT

1. *Grounding Sets:* Grounding sets must be capable of carrying the maximum available fault current for the length of time that is necessary for protective devices (relays and circuit breakers or fuses) to clear the fault. All elements of the grounding set must be able to withstand both the thermal and mechanical stresses during this time period..
2. *Grounding Equipment Distribution Lines:* All grounding equipment shall be copper stranded 2/0 cable in LG&E and #2 in KU. Connections on clamps shall be the threaded ferrule type with a clear heat shrink tube to allow visual inspection of cable strands and terminations.
3. *Grounding Equipment for U.R.D.:* We recommend each truck carry two (2) transformer grounding sets, Hastings cat. no. 6716 or A.B. Chance cat. no. C600-0729. Each truck should also carry a cutout grounding clamp A.B. Chance cat. no. C600-0862 for use on lateral poles 7/14 cutouts.
4. *Grounding Equipment for 3-Phase Network:* We recommend six (6) grounding sets for live front equipment Hastings cat. no. 6718 or A.B. Chance C600-0758. And six (6) grounding sets for dead front equipment Hastings cat. no. 6717 or A.B. Chance cat. no. T600-0730, and two (2) sets for single point grounding Hastings cat. no. 6872.
6. *Grounding Equipment for Overhead:* We recommend that all overhead trucks carry one set of grounds for single point grounding Hastings cat. no. 6872. All service restoration trucks should be equipped with the A.B. Chance Multi-Range Voltage Detector. Also some equipment should be set aside for emergency work when contractors are called in for service restoration.

A.B. Chance Company has recommended against using shotgun sticks to pull underground elbows. If elbow pullers aren't used, we recommend shotgun sticks be tested or checked for wear on the roll pins and hooks. This should be done semi-annually..

TEMPORARY PROTECTIVE GROUNDING PROCEDURES

ENERGY DELIVERY

D. OVERHEAD TEMPORARY PROTECTIVE GROUNDING

1. *All electrical equipment and conductors are energized until proved to be de-energized.* Proper administrative clearances shall be obtained and electrical test shall be made before any work (including the installation of temporary protective grounds) is started. As an additional safeguard, the isolating switches, or other visible line breaks, shall be locked or blocked open and carded before work is started. **THE USE OF RUBBER GLOVES AND SLEEVES IS MANDATORY WHEN USING A VOLTAGE TESTER.**
2. *Protective grounding may be accomplished utilizing one of two methods depending on the physical requirements of the work location.* These methods are:
 - a. *Single Point (Equipotential) Grounding* generally includes one conductor ground set in conjunction with a grounding cluster
 - b. *Bracket Grounding* generally includes two conductor ground sets, one on either side of the work area.
3. *Tailgate:* BEFORE protective grounds are applied, OR ANY WORK BEGINS, the person or persons “in charge” shall advise ALL employees and the general public of all hazards associated with the job. Other information conveyed as part of the job briefing shall include but not be limited to the following:
 - a. quantity and location of protective grounds,
 - b. electrical clearances provided,
 - c. proximity of energized lines or equipment,
 - d. any special considerations regarding the safe completion of the work,
 - e. hazards associated with the job,
 - f. work procedures involved,
 - g. special precautions,
 - h. energy source controls,
 - i. and personal protective equipment (PPE) requirements.

Note: The above practices shall also apply to those employees working “alone”.

4. *5-Foot Rule:* Employees shall not approach or take any conductive object closer to unguarded or exposed energized parts, than shown below unless; the employee(s) are insulated from the energized parts, or the energized parts are insulated from the employees. Approved, rubber gloves and sleeves shall be considered adequate insulation of the employee from the energized part.

Overhead Lines And Equipment: 600V through 13.8 kV BEFORE coming within five feet of primary, you shall put your gloves and sleeves on. Once all energized

parts are covered, you may remove gloves and sleeves. Use protective equipment needed to do your job. Work-rule 11 covers the five-foot rule violation.

5. *De-Energize The Line:* Obtain clearance on the line to be grounded in compliance with company procedures.
5. *Select Conductor Ground Location:* Determine the line location and the points on all conductors where the ground sets are to be applied. The preferred line location for the ground sets will always be the structure being worked, the conductor grounding points are chosen to keep the grounding jumper leads as clear of the employee working the structure as possible and to minimize conflict with the work to be done. When it is determined that placing the grounds on the structure to be worked will present extreme conflict with the work to be performed, the grounds may be placed on an adjacent structure. When working several structures in series, the grounds may be placed at the first structure and work may then be performed on subsequent structures (each structure to be worked must utilize a personal grounding jumper equipotential). In this situation the line section being worked must not contain any switches or open points.
6. *Select Ground Source:* Select a ground source for the conductor grounds. The following are the only acceptable ground sources and are listed in order of preference:
 - a. a substation grid,
 - b. primary neutral conductor,
 - c. embedded base steel tower or steel pole,
 - d. where none of the above is available, a newly installed ground rod driven to a minimum of 7' 6" having a minimum diameter of 5/8" with the grounding clamp attached directly to the ground rod. Where rock will not allow a vertical rod, it must be driven to full length, as close to vertical as possible. Where possible the ground rod would be driven a minimum of 25 feet from the structure or work area.

Note: If multiple ground sources are available, they may be paralleled for increased effectiveness. Paralleling may also be desirable when one source is mechanically suspect. Steel towers and poles which are anchored on concrete foundations are not considered grounded and must be grounded using a newly installed ground rod as the ground source for the conductor grounds.

8. *Verify Line Is De-energized:* TEST EACH CONDUCTOR TO BE GROUNDED with the following recommended tester: A.B. Chance Multi-Range Voltage Detector (Catalog Number C403-1029 with scales 16 kV through 161 kV).

To use the detector follow this sequence:

- a. Test the detector using its test button (Refer to test device instructions for test

- procedures and proper range selection);
- b. Test the detector to a known energized circuit when possible;
 - c. Test the conductor to be work on;
 - d. Retest the detector;
 - e. Retest the conductor to be worked on;
 - f. If no voltage is indicated on conductor/equipment to be worked on, then proceed directly to step [9.].

Note: A hot-stick of sufficient length for the voltage involved is to be used, with the range switch set to the correct position for that voltage. Each conductor phase is contacted individually on three-phase circuits. All interpretations of meter readings should take into account the circuit configuration, length, proximity to other lines. If there is any doubt regarding the interpretation of detector reading under any circumstances, the circuit should be assumed as energized and all safety precautions should be taken accordingly.

IF VOLTAGE IS INDICATED BY THE DETECTOR:

- g. Retrace line clearances;
- h. Determine what voltage is present;
- i. **CONTACT YOUR SUPERVISOR BEFORE PROCEEDING.**

Note: The need to use procedures [g.] through [i.] (directly above) should be rare and indicate unusual circumstances of induced voltages or improperly cleared lines.

9. *Apply Temporary Protective Grounds:* Ground ALL de-energized conductors as described below, remembering the sequence of events is as important as making proper connections. The grounding conductors should not touch any worker while the grounds are being connected to the line conductors. The circuit is not considered de-energized until ALL grounds have been applied.
 - a. When the primary neutral is the conductor ground source (See Drawing #1).
 - I. Install pole grounding cluster below the working level of the lineman's lowest pole contact.
 - II. **Prepare the primary neutral by brushing with a wire bush until bare metal is reached.**
 - III. Connect a ground lead to the primary neutral, then to the pole grounding cluster.
 - IV. Connect another ground lead to the cluster, and then to the lowest or closest phase conductor, after cleaning as stated in [II.].
 - V. Connect another lead to the grounded phase and then to the next lowest or closest phase. Always cleaning before making ANY connection.
 - VI. Repeat step [V.] until all phases are grounded.
 - b. When there is no primary neutral (See Drawing #2 & 3).
 - I. Install a pole grounding cluster below the working level of the lineman's lowest pole contact (cluster is not required on steel structure).

- II. Connect a ground lead to the newly driven ground rod, then to the pole grounding cluster (directly to steel structure below the working level of the lineman).
- III. Connect another lead to the cluster (or steel structure), and then to the lowest or closest phase conductor.
- IV. Connect another lead to the grounded phase and then to the next lowest or closest phase conductor.
- V. Repeat [IV.] until all phases are grounded.

Note: Always prepare ALL surfaces by brushing with a wire brush until bare metal is reached. In cases where one or more static wires exist, a last connection from the closest grounded phase to each static shall be made. In all jumper connections (#2/0 copper for transmission and distribution) use as short a lead as possible; always turn them away from work areas because if subjected to fault current they have the potential to move violently.

10. *Removing Grounds:* Grounds shall not be removed until the word is passed (CONSIDER IT HOT) and all persons concerned indicate, in a definite manner, that they understand the grounds are going to be removed and that they understand the equipment or lines are seen to be hot. The live-end connections shall always be removed first, followed by the ground-end connections. The employee removing the live-end connections shall use the same type equipment and follow the same precautions which cover making the connections.

Note: The above steps describe the single point grounding procedures for the preferred location of the conductor grounds, which is the structure being worked. When the conductor grounds are applied to the structure being worked, both components of the protective grounding system are accomplished: all conductors are grounded and the lineman is properly jumpered.

11. *Single Point Grounding (conductor grounds not on work structure):* When the conductor grounds are not at the structure being worked, the personal jumper must be established on EVERY structure where work is to be done. The following explain the procedures which must be followed to install personal jumpers when the conductor grounds are NOT on the structure being worked (see Drawing #4).
 - a. When installing a personal jumper on multiple circuit structures or other circuit configurations which could be potentially confusing, each conductor should be voltage tested as in # [8.] before the personal jumper is attached.
 - b. The personal jumper is connected to the structure at a point just below the working level of the lineman's lowest pole contact and then to the grounded phase to be worked (which was grounded in # [9.]). On a wooden structure this is accomplished by using a wooden pole grounding cluster. If the primary neutral is available, install a lead, first to the neutral, and then to the pole grounding cluster (or directly to a steel structure). Install a second lead (personal jumper), first to the cluster, and then to the grounded phase to be worked. If a primary neutral is not available, install a personal jumper first to

the cluster and then to the grounded phase to be worked. If additional phases on the structure are to be worked, the phase end of the personal jumper must be disconnected from the phase where work has been completed and moved to the next phase to be worked before barehanded contact with that phase is made.

- c. *Embedded Base Steel Tower and Poles* are considered grounded surfaces and do not require the structure grounding cluster. The personal jumper lead shall be attached to these structures at the point just below the working level of the lineman's feet. A nut welded to a steel pole (into which a threaded stud may be screwed) serves as the connection point for this situation. Lattice steel towers require the use of a tower grounding clamp in place of one of the conductor grounding clamps in the personal jumper assembly.

Note: Always prepare all surfaces by brushing with a wire brush until bare metal is reached.

- 12. *Bracket Grounding Procedures:* Follow the same steps as in the single point procedure outlined above [#11] but do not require the use of a personal protective jumper. A complete bracket ground configuration would involve establishing a complete set of conductor grounds on both sides of the work area following basically the same procedures as outlined under single point grounding up to step [9.]. Bracket grounds are generally to be placed as close to the work area as practical.

- 13. *The Bracket Grounding Procedure is accomplished as follows:*

Apply Conductor Grounds: Ground ALL de-energized conductors on both sides of the work location as described below remembering that the sequence of events is as important as making the proper connections. The grounding conductors should not touch any worker while the grounds are being connected to the line conductors. The facilities are not considered de-energized until all grounds have been applied.

- a. When the primary neutral is the conductor ground source: (see Drawing #5)
 - I. Connect a ground lead to the primary neutral, then to the lowest or closest phase conductor.
 - II. Connect another lead to the grounded phase and then to the next lowest or closest phase.
 - III. Repeat [II.] until all phases are grounded.
 - IV. Redo step [a.] for opposite bracket ground location.
- b. When there is no primary neutral: (See drawing #5)
 - I. Connect a ground lead to the ground source, then to the lowest or closest phase conductor.
 - II. Connect another lead to the grounded phase and then to the next lowest or closest phase.
 - III. Repeat [II.] until all phases are grounded.
 - IV. Redo step [b.] for opposite bracket ground location.

Note: In those cases where one or more static wires exist, a last connection from the closest grounded phase to each static shall be made. Many situations will be encountered where the standard assemblies will not be adequate. When this is the case, appropriate grounding material shall be assembled prior to beginning the job. Special grounding jumper lengths may be fabricated as required. Additional grounding jumper assemblies will be required for certain situations such as grounding double circuit lines or bundled conductor circuits (each conductor in the bundle must be grounded individually). Again, the job shall be thoroughly planned and the material selected before the job is begun. Any additional grounding jumpers required for unique situations shall be installed with the same philosophy as previously indicated, that is, begin the jumper at a previously grounded conductor or source and continue to the next conductor to be grounded.

When splicing broken conductors from ground level, grounds must be established on both sides of the downed conductors.

In all of the aforementioned grounding situations, proper clearance from the structure must be maintained by personnel working on the ground. Hazardous touch potentials may exist at the base of the structure should the line become energized.

DRAWINGS #1, #2, #3, #4, & #5

GO HERE

AC LIVE LINE WORK MINIMUM APPROACH DISTANCES CHART GOES HERE!

E-4

SECTION F

UNDERGROUND CONSTRUCTION MAINTENANCE

TEMPORARY PROTECTIVE
GROUNDING PROCEDURES

ENERGY DELIVERY

F. UNDERGROUND TEMPORARY PROTECTIVE GROUNDING PROCEDURES

1. *It shall always be assumed that electrical equipment and conductors are energized until proven to be de-energized.* Proper administrative clearance shall be obtained and electrical tests shall be made before any work (including the installation of temporary protective grounds) is started. As an additional safeguard, the isolating switches, or other visible line breaks, shall be locked or blocked open and carded before work is started.
2. *Hazards for Underground Workers:* Underground systems have inherently greater hazards than overhead systems. Due to the limited ability to visually verify circuit routes, there is a greater reliance on circuit maps. In addition, cable sheaths often develop induced potentials due to close capacitive coupling with energized phase conductors. In underground vaults, manholes, and in padmounted equipment, a significant flash hazard exists in the event of a fault at the work location. Because of this hazard, arc-suppression blankets shall be used. Also, since the worker is in direct contact with the earth, step and touch potential hazards nearly always exist at the work location under fault conditions.
3. *Tailgate:* BEFORE protective grounds are applied or the commencement of any work. The person or persons in charge shall advise ALL employees and the general public of all hazards associated with the job. Other information conveyed as part of the job briefing shall include but not limited to the following:
 - a. quantity and location of protective grounds,
 - b. electrical clearances provided,
 - c. proximity of energized lines or equipment,
 - d. and special considerations regarding the safe completion of the work,
 - e. hazards associated with the job,
 - f. work procedures involved,
 - g. special precautions,
 - h. energy source controls,
 - i. and personal protective equipment requirements.

Note: The above practice shall apply to those employees working alone.

4. *5-Foot Rule:* Employees shall not approach or take any conductive object closer to unguarded or exposed energized parts, than shown below: unless, the employee(s) are insulated from the energized parts, or the energized parts are insulated from the employees. Approved, rubber gloves and sleeves shall be considered adequate insulation of the employee from the energized part.

Underground Work

- a. *600V though 13.8 kV* Underground cable has adequate insulation: you do not have to wear protective equipment, until you get within five feet of termination. At that point, before coming within five feet of termination, you shall put your gloves and sleeves on.
- b. *Underground Transformers*
- I. Dead-Front Transformer, Padmount. BEFORE opening lid or door, you shall put your gloves and sleeves on. After inspecting, and everything is properly covered you may remove gloves and sleeves. Use protective equipment needed to do your job.
 - II. Live-Front Transformers. BEFORE opening lid or door, you shall have your gloves and sleeves on. If voltage over 600V, gloves and sleeves are required. If you adequately cover equipment over 600V, gloves and sleeves may be removed. Use protective equipment needed to do your job. *The rule for using gloves and sleeves to open padmount transformers and subgrade transformers is above and beyond the five foot rule.*

5. *Identification*

- a. Identification of all cables is accomplished by checking the cable tag and the duct position as shown on conduit and cable maps.
- b. If the cable tag does not agree with the indicated duct position, trace the cable until identification is positive.
- c. Spiking method shall be used when working with the following:
 - I. all single phase circuits,
 - II. loop feed systems,
 - III. when transformers are added to existing systems,
 - IV. when two or more cables are in the same ditch.
- d. Cables operating at 300 volts or less are to be tested with a voltmeter or other approved test device.

Note: when three-phase underground feeders out of substations are required to be worked on due to routine work or cable failure the supervisor in charge shall contact the load dispatcher in order to get clearance and grounds shall be installed on the circuit at the station by the station operators. When notified by the supervisor to proceed with work, start by stripping the cable down to conductor and check with an approved voltage detector. When testing any multi-conductor lead primary cable, always test on at least two conductors, to eliminate the possibility of testing a neutral on a four (4) conductor cable. This process is to be done with the use of proper personal protective equipment including gloves and sleeves.

8. Any U.R.D. cable taken out of service in order to be worked on will have grounds installed at nearest open location on both sides of area to be worked on.
9. When testing any multi-conductor lead primary cable, always do a test on at least two conductors. Eliminating the possibility of testing a neutral on a four (4) conductor cable.

URD AND THREE PHASE UNDERGROUND GROUNDING PROCEDURES

1. The use of personal protective equipment (PPE) is required when opening pad-mounted transformers and switch-gears. This will consist of rubber gloves, sleeves, hard hat, safety glasses, and di-electric boots.
2. The use of this personal protective equipment is also required while testing cables and equipment for potential voltage, installation, and removal of grounds.
3. When it is required to work on cable, you must have the cable grounded on both sides of your work area at the nearest open point. Neutral continuity must be maintained when opening a cable or the neutral will be considered energized. *Electrocution is possible if continuity is not maintained, due to differences in potential.*
4. Grounding of cable or equipment, will only be done after it is verified that cable or equipment, is de-energized.

NOTE: Spiking the cable will be the last option to verify the cable is de-energized.

Grounding of cable in a transformer will be done with the use of a stand-off-feed-thru bushing, and grounding elbow. This application only applies to dead front transformers. Grounding a live front transformer requires a ground jumper from a live front grounding kit.

Grounding cable in a pad-mounted switch gear will require a live front grounding kit. Always remember to connect the jumper to the system neutral first, then, to the phase grounding stud.

Grounding pot heads will be done at the bottom of an open cut-out with a 2/0 ground jumper, by first connecting the ground jumper to the system neutral, then connecting the jumper to the cut-out grounding clamp. When the pothead lead is connected to an under arm disconnect, then connect the jumper to the pothead lead.

Checking for voltage potential:

When checking live front equipment wearing hardhat, safety glasses, gloves, sleeves, and di-electric boots, check the primary connections with a voltage detector. Always check the voltage detector first, making sure the voltage detector is working properly, preferably with a known energized part and test button. A phasing tester may also be used in this application by testing from ground to phase.

URD AND THREE PHASE UNDERGROUND GROUNDING PROCEDURES

On dead front transformers:

To check for voltage potential, install the elbow on the stand-off-feed-thru bushing. Install the insulating plug on the open side of bushing, then go to the other end of the cable at the location to be opened. Install the elbow on the stand-off-feed-thru bushing, with the phasing tester check from the neutral to the open bushing on the transformer. Verifying that your meter is working properly, maintain contact with the neutral, plug the phasing meter into the open side of the feed-thru bushing, then, check for voltage potential. If there is no voltage detected, plug the meter back into the open bushing on the transformer to verify that the meter is still working properly. This is the preferred method of determining a de-energized cable.

Manual Goes Here . . .

OPERATING INSTRUCTIONS FOR CHANCE D.C. HI-POT ADAPTER
Cat. No's. C403-1762 (16KV)
C403-1763 (35KV)



4508 Bishop Lane
Louisville, KY 40218
(502) 456-2900

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- GREG GRABOVAC**
VP and General Counsel
- KEN KATZ**
VP and CIO

To: Mr. Keith McBride
Louisville Gas and Electric
Fire and Safety Investigator
820 West Broadway 40232

From: Rich Mauldin
Re: Bridalgate Incident

On Wednesday July 20, 2011 an incident occurred at 15520 Bridalgate Drive, and an injury and unscheduled outage resulted from that incident. Below you will find the preliminary findings of our investigation.

On June 30, 2011 Jimmy Williams was assigned WR# 2842574 to repair a faulted URD cable between transformer 98410 and transformer 85782 on URD Circuit 3944 (Canterbrook Farms).

Jimmy Williams and Mathew Christy arrived at the site and found that the cable between transformer 85782 and 98410 had been isolated and carded by LG&E personnel. Jimmy and Mathew began testing to determine if the cable in question was isolated. Once it was determined the cable was isolated, the crew connected fault locating equipment to the cable and located the fault which was located inside of transformer 85782. The crew determined the cable had been damaged near the bottom edge of the transformer from when a vehicle had struck the transformer at an earlier date.

After an inspection of the area, the crew determined that a pull box located near the street at 15520 Bridalgate Drive, the same location as the transformer in question, may contain the damaged cable. A tag located on an elbow inside the pull box indicated the cable went to transformer 85782.

On July 5, 2011 this information was forwarded to Tyrone Grinstead of LG&E. On July 18, 2011, Tyrone requested that the crew attempt to

remove the damaged cable from transformer 85782 to the pull box located at 15520 Bridalgate Drive and replace it with new cable.

On July 20, 2011 Jimmy and Matt returned to the job site to complete the repairs. Jimmy and Matt had a job brief that covered them through the act of physically and visually verifying the cables and then working to pull the cable that was suspected to run from the transformer to the pull box. The crew tested the cable for voltage at transformer 85782 and verified the cable was still isolated as they had left it on their previous trip to the jobsite.

The A.B. Chance model Multi range voltage detector during our preliminary investigation has concluded that the tester was working just prior to and during the testing of the cables. This has been concluded by Jimmy Williams testing the unit at a known source at a transformer on location. As well as Matthew Christy testing it at least two occasions at the location of the incident. Further investigation into the reason for a reported false reading will be conducted

Jimmy instructed Mathew to open the pull box at the site, and then remove the cables from the pull box. Once the cables were removed, Jimmy then said to test the cable. During this time, Jimmy was gathering the materials and tools to take to the transformer and set up to perform the physical and visual cable confirmation.

At that point, Mathew had determined the cable was de-energized. Without direction from his supervisor, Mathew removed one elbow from the feed through stand-off without wearing the required PPE or confirming grounding of the cable. Mathew then proceeded to contact the elbow to the feed-through set screw faulting the cable that was running from transformer 85782 to transformer 85513 which was still energized, resulting in Mathew's injuries. This led to a fault on the circuit blowing the fuse located at Routt Rd and Bridalgate Drive.

ATTACHMENT B
UTILITY SUPPLEMENTAL REPORT



September 7, 2011

Mr. Jeffrey Moore
Division of Engineering
Kentucky Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, KY 40602

RECEIVED

SEP 13 2011

PUBLIC SERVICE
COMMISSION

LG&E and KU Energy, LLC
Corporate Law
220 W. Main Street
Louisville, Kentucky 40202
www.lge-ku.com

Kelly Gibson
Paralegal
T 502-627-3409
F 502-627-3367
Kelly.Gibson@lge-ku.com

Re: Contractor Injury/Matthew Christy
Date of Incident: July 20, 2011
Report Number: 11-ED-E-21

Dear Mr. Moore:

Per your request, I am enclosing the following supplemental documentation related to the above referenced incident:

- 1) Voltage detection device test records;
- 2) Job briefing form (this was also provided with the incident report);
- 3) Team Fishel Employee/Apprentice training material;
- 4) Passport documentation on Mr. Christy and Mr. Williams;
- 5) Contract between Fishel and LG&E;

Should you need additional information concerning this incident, please contact me at (502) 627-3409 so I can direct your request to the appropriate person.

Sincerely,


Kelly Gibson

/kcg

Enclosures



9903 E. 54th Tulsa OK,
 74146 (918)-
 627-1273
 FAX (918)-627-1294

Certificate of Calibration

Customer: TEAM FISHEL			
Date Tested		Unit # or other identifying mark(s)	
8/15/11	C403-0979		
Unit Setting	Target Unit Reading (during test at specified voltages)	Initial Voltage read on Unit	Reading After Adjustment and/or Repair
5	5kV	N/A	5KV
15	5kV	N/A	5KV
40	5kV	N/A	5KV

M.W. Bevins Company certifies that this unit has been tested & calibrated to the specifications of MWB-TP-007
 Test Procedure for C403-0979 Rev. Original.
 Equipment used to test unit is as follows-
 Fluke Model 83 +/- .5% Calibrated 7/14/10 next due 7/14/11
 Itaco Variac 1010
 Vestinghouse Voltage Transformer Type V66



 Calibrator Date



DAILY FIELD REPORT
TEAM FISHEL DIV 11



712209 11080145
2842574

"Repairs"

Client: Louisville Gas & Electric Date: 7-20-11
Team Fishel Job #: 11080145 Work Order #: 2542574
Team Fishel Project Name: 15520 Bridge Gate Exact Location: 15520 Bridge Gate Dr
Supervisor Name: Tim Thomas Rentals Called Off: Yes No N/A
Supervisor Signature: [Signature] Job Complete: Yes (No)

TOPICS COVERED: [Signatures and initials required for additional briefing(s)]
Hazards Associated with Job: (List recognized hazards discussed during Briefing)
Check around job site
Special Precautions: (List special precautions discussed during Briefing)
Watch for base cable jumper
P.P.E. Required: (List PPE required for safe completion of job and discussed during Briefing)
FR, gloves, shovels, safety glasses, hard hat
Work Procedures Involved: (Provide a brief description of the work procedures discussed during Briefing)
Path primary line transformer
Energy Source Controls: (List energy source controls discussed during briefing, i.e. LOTO, Cautions, Fuse locations, etc.)
Lead from lateral cable

Teammate Signature
Jenny Williams
Matt Christy

Locate No.:

The purpose of this practice is to ensure that all utilities are marked and properly exposed before starting any excavation operation. The Foreman or designated Teammate shall complete the daily utility locate inspection prior to the start of each work shift.

Did you excavate today? YES (NO)
List any work activity requiring the crossing of an existing utility:
What is the "no dig zone" requirement? 18" 24" 30"
Customer Work Request # 2542574 Customer Project # R005740 Customer Task # 001
Date 7-20-11

Service	Provide a Brief Descrip.
Gas	
Elec.	
Water	
Sewer	
Tele.	
Fiber	
Other	

Foreman's Signature: [Signature] Estimated Rental Time/Cost: [Blank]

NA	NA	NA
----	----	----

Weather Conditions/Production delays: Goals: 50 complete job

Job Accidents: Team Mate Injury
Matt Christy
Justification for exceeding/not exceeding expectations:

Print Teammate Name	Teammate #	Hours	Lunch	Start Time/End Time	TEAMMATE SIGNATURE
Jenny Williams	1	5		1:00 6:30	[Signature]
Matt Christy	2	4		1:00 5:30	[Signature]

Equipment Description	Equipment #	Hours on Site	Mileage/Hours	Truck Driver Signature
DISION VAN	21220	5	52671	Jenny Williams
LOD CUTTER	85829	5		
LU TRAILER	60920	5		
ALUM. BOX	53587	5	161	

Kentucky Department of Labor
APPRENTICESHIP AND TRAINING COUNCIL
CERTIFICATE OF REGISTRATION

The Fishel Company

Issued in recognition of the above apprenticeship program, which is registered in accordance with the standards of the KENTUCKY Department of LABOR in cooperation with the KENTUCKY APPRENTICESHIP and TRAINING COUNCIL and the FEDERAL COMMITTEE ON APPRENTICESHIP.



Christopher N. Smith
Issued By

February 9, 2005
Date

110480
Registration Number

THE FISHEL COMPANY
APPRENTICESHIP STANDARDS
FOR
LINE INSTALLER-REPAIRER

REGISTERED WITH THE KENTUCKY DEPARTMENT OF LABOR
DEPARTMENT OF WORKPLACE STANDARDS
IN COOPERATION WITH THE U.S. DEPARTMENT OF LABOR
BUREAU OF APPRENTICESHIP AND TRAINING
REGISTERED AS PART OF
THE NATIONAL APPRENTICESHIP PROGRAM
IN ACCORDANCE WITH THE BASIC STANDARDS OF APPRENTICESHIP
ESTABLISHED BY THE COMMISSIONER OF LABOR.

APPRENTICESHIP STANDARDS
FOR

THE FISHEL COMPANY

110480
(Program Registration Number)

(Name of Sponsor)

4508 Bishop Lane
(Street)

Louisville
(City)

Jefferson
(County)

Ky
(State)

40218
(Zip Code)

SIC NO. 1623

Number of Employees 140

Type of Program INJ

Program Term Measurement Hours
(Years, Months and Hours)

LINE INSTALLER-REPAIRER

Name of Trade

8000

Term of Apprenticeship

822.381-014

DOT Number

40

Number of Journey Persons Employed

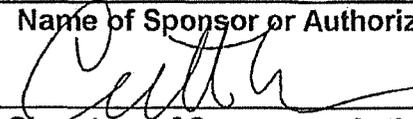
Additional Trades on Reverse Side

We hereby subscribe to the basic requirements for apprenticeship set by the Commissioner of Labor, the Kentucky Apprenticeship and Training Council as prescribed in 803 KAR 1:010, in cooperation with the U.S. Department of Labor, Bureau of Apprenticeship and Training.

Craig S. Mathes

1-800-347-4351

Name of Sponsor or Authorized Representative Area Code/Contact Phone Number



Human Resources Director

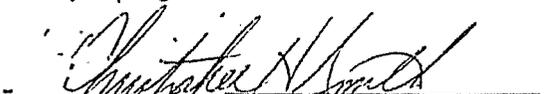
Signature of Sponsor or Authorized Representative

Title

DATE 1/18/2005

(MM/DD/YY)

Reviewed, approved and registered by the Supervisor of Apprenticeship and Training, Division of Employment Standards, Apprenticeship and Training, Kentucky Department Of Labor , Department of Workplace Standards in cooperation with the U.S. Department of Labor, Bureau of Apprenticeship and Training.


Supervisor of Apprenticeship and Training

2/9/05
Date Approved

I. STANDARDS

It is understood and agreed that effective this date the following will constitute the of apprenticeship at THE FISHEL COMPANY
(Company Name)

II. OBJECTIVE

The purpose of this program is to maintain high standards of workmanship through the development of skilled employees for the LINE INSTALLER-REPAIRER trade/trades. These standards shall be met by on-the-job training supplemented with related instruction. It shall be the policy of the sponsor that all apprentices shall be employed and trained in accordance with These standards.

III. DEFINITIONS

A. Sponsor:

Means any person, Committee, organization in whose name or title the program is to be registered irrespective of whether such in entity is an employer.

B. Employer:

Means any person or organization employing an apprentice whether or not such person or organization is a party to an Apprenticeship or on-the-job training agreement with the Apprentice.

C. Apprenticeship Agreement:

A written agreement voluntarily entered into by the apprentice or through his/her parent or guardian with the sponsor which must be registered with the registration agency. The said agreement contains the terms and conditions of employment and training of the apprentice to enable the apprentice to learn the trade, craft, or business of the sponsor.

D. Council:

Means the Kentucky Apprenticeship and Training Council appointed by the Governor of Kentucky.

E. Registration Agency:

The Kentucky Department of Labor , Division of Employment Standards, Apprenticeship and Training, Department of Workplace Standards, Supervisor of Apprenticeship And Training.

F. Bureau:

The Bureau of Apprenticeship and Training, Employment and Training Administration, U.S. Department of Labor.

G. Related Training:

An organized and systematic form of instruction designed to provide the theoretical and technical subjects related to his/her trade.

H. Supervisor:

Shall mean the Supervisor of Apprenticeship and Training, the Kentucky Department of Labor, Department of Workplace Standards.

I. Commissioner:

The Commissioner means the Commissioner of Department Of Labor, or Workplace Standards, or any authorized person to act in behalf, having Jurisdiction over laws or regulations governing wages and hours of employees working in this state.

IV. EQUAL EMPLOYMENT OPPORTUNITY PLEDGE

The recruitment, selection, employment and training of apprentices shall be without discrimination because of race, creed, color, religion, national origin, sex, age or handicap. The sponsor will take affirmative action to provide equal opportunity in apprenticeship and will operate the apprenticeship program as required under Title 29 Code or Federal Regulations Part 30 Revised and the Kentucky State EEO Plan.

V. QUALIFICATIONS FOR APPRENTICESHIP

Applicants for apprenticeship must be at least eighteen (18) years of age and be an employee of The Fishel Company.

VI. SELECTION PROCEDURES

- (a) The number of apprentices selected will be pre-determined prior to a selection period.
- (b) All applicants will be evaluated and ranked by the total score on the criteria specified in the Apprentice Applicant Review Form (Appendix C).
- (c) Apprentices will be selected in descending order of their score (the higher the score the better).
- (d) A minimum score of at least 70 points is required for selection.

VII. RATIO

The sponsor agrees to employ apprentices consistent with the proper journeyworker supervision, training and reasonable continuity of employment, but in a ratio of not more than one apprentice for the first journeyworker and one apprentice for each additional three journeyworkers; i.e. ratios of 1-1, 2-4, 3-7, 4-10, etc.

VIII. SUPERVISION OF APPRENTICES

Apprentices will be under the supervision of the sponsor who is responsible for making the apprenticeship assignments; however, to insure adequate training, the sponsor shall designate a person to supervise the apprentice and be responsible for his on-the-job training. The apprentice must be under the direct supervision of a journeyworker at all times.

IX. HOURS OF WORK

The scheduled workday and workweek for apprentices are subject to the sponsor's operating conditions and to the training requirements of the apprentice.

Conditions for overtime work:

1. It is not the intent that apprentices will displace journeyworkers for overtime work.
2. The sponsor may assign overtime to apprentices. Overtime shall not conflict with the Apprentice's attendance of his/her regularly scheduled related training classes.

X. WAGE RATE/SCHEDULE

The wage rates paid to the apprentice shall be paid in periods and expressed as a percentage of the established journeyworkers wage but must meet the minimum wage rate described by law. This period may be expressed in hours, months, or year as indicated in the following wage schedule:

Periods	% Rates	Periods	% Rates
1st <u>1000</u>	<u>60</u> %	6th <u>1000</u>	<u>85</u> %
2nd <u>1000</u>	<u>65</u> %	7th <u>1000</u>	<u>90</u> %
3rd <u>1000</u>	<u>70</u> %	8th <u>1000</u>	<u>95</u> %
4th <u>1000</u>	<u>75</u> %	9th _____	_____ %
5th <u>1000</u>	<u>80</u> %	10th _____	_____ %

Journeyworkers work week 40 Hours:

Wage Rate : \$20.00 per hour.
20.63

XI. PROGRAM REGISTRATION/MODIFICATION/DEREGISTRATION

The sponsor may modify these standards for operational needs of the company or to incorporate changes in technology; however, the sponsor shall promptly notify the registration agency in writing of any changes, modifications or amendments.

This program may be deregistered upon the voluntary action of the sponsor by the sponsor's written request for cancellation to the registration agency or upon a finding of good and sufficient reason by the registration agency according to the Kentucky Regulations Title 803 Chapter 1:010 Registration of Apprenticeship Programs.

XII TERM OF APPRENTICESHIP

The term of apprenticeship shall not be less than 8000 hours of reasonably continuous employment sufficient to complete the number of on-the-job training hours and related classroom instruction as required by these standards.

XIII. APPRENTICESHIP AGREEMENT

Each apprentice employed and trained under these standards of apprenticeship shall be signatory to an apprenticeship agreement between the apprentice and sponsor. The apprenticeship agreement shall be incorporated as part of these apprenticeship standards and the said apprenticeship agreement shall be registered with the registration agency.

The sponsor of these apprenticeship standards shall notify the registration agency, in writing, of all apprentice registrations, modifications, amendments, cancellations, suspensions, terminations, and completions of the apprenticeship agreement and causes thereof and dates of any action taken.

The sponsor shall give the apprentice adequate notice in writing of any adverse action affecting the apprentice (i.e. disciplinary action, layoff, etc.)

A. The following shall receive copies of the apprenticeship agreement:

1. The apprentice
2. The Sponsor
3. The Registration Agency
4. The U.S. Department of Labor, Bureau of Apprenticeship and Training

B. Credit for previous experience:

Credit for previous experience may be allowed at the discretion of the sponsor; such credit shall be stated on the apprenticeship agreement at the time of registration or may be granted at any time during apprentice probationary period upon written request of the sponsor. Credit for previous experience shall be limited to fifty percent (50%) of the term of apprenticeship unless said previous experience was acquired as a registered apprentice in a program registered with the Bureau of Apprenticeship and Training, U.S. Department of Labor or a state Registration agency. Credit for previous experience shall be awarded to apprentices equally. Apprentices who receive credit for previous experience shall be paid upon entrance to the program the wage rate to which such credit advances them.

XIV. PROBATIONARY PERIOD

The first 667 hours (not to exceed 667) of the apprenticeship shall be probationary period, during which time either party may cancel the apprenticeship agreement by notifying the other. After the probationary period, the apprenticeship agreement may be cancelled or suspended for cause. The probationary period shall be counted toward the completion of the apprenticeship.

XV. RELATED CLASSROOM INSTRUCTION/ON-THE-JOB TRAINING/PERFORMANCE

For journeyworker certification requirements, each apprentice shall be required to complete instructional classes as established by the sponsor for not less than 144 hours for each year of the term of his/her apprenticeship. When satisfactory related training is not available through the Department of Education, other trade or correspondence courses of acceptable quality may be used if approved by the registration agency. A copy of the related training schedule, the name of the training instruction, and/or correspondence course outline and of the training institution, and/or correspondence course outline and the method in which the courses will be taught shall be attached to these standards.

For certification requirements, the apprentices shall be required to follow instructions and perform task assigned by the sponsor for on-the-job training. On-the-job training hours must be recorded on a daily basis by the sponsor. An on-the-job training form will be made available to the sponsor.

The apprentice's total record of performance shall be reviewed periodically by the sponsor. The sponsor will assure each apprentice that they will have qualified training personnel.

An apprentice may be removed from the program whenever a review of performance shows that he/she has failed to satisfactorily perform the related or on-the-job training requirements.

XVI. RECORD KEEPING

Appropriate records reflecting the apprentice's progress in on-the-job training, job performance, and related instruction shall be maintained for each apprentice. These records shall also include a periodic review of the apprentice's progress in each of the above mentioned areas. All records concerning apprentice selections, action, and performance shall be kept and maintained for a minimum of at least five (5) years.

XVII. CERTIFICATION OF COMPLETION

Upon satisfactory completion of the apprenticeship training under these standards, the sponsor shall request that the registration agency issue a Certificate of Completion of Apprenticeship.

XVIII. COMPLAINTS

The following individual shall be responsible authority under the program to receive, process and make disposition of complaints concerning the apprenticeship:-

NAME Craig Mathes PHONE | 1-800-347-4351
ADDRESS 1810 Arlingate Lane Columbus Ohio 43228

Any controversies or differences concerning the apprenticeship agreement which cannot be adjusted by the parties may be submitted to the Supervisor of Apprenticeship and Training, Kentucky Department of Labor, Division of Employment Standards for determination as provided for in KRS 343.070.

XIX. TOOLS AND EQUIPMENT

In some instances apprentices will be furnished a list of hand tools which they will be encouraged to procure.

XX. SAFETY

Pursuant to the provisions set forth in Chapter 338 of the Kentucky Revised Statutes, the sponsor shall be required to comply with all applicable occupational safety and health laws, rules, regulations and standards. The apprentice shall be instructed in safe working practices in accordance with the Occupational Safety and Health Act, Public Law 91.506 and Chapter 338 of the Kentucky Revised Statutes.

XXI. FEDERAL AND STATE LAW

Nothing in these standards shall be contrary to Federal or State laws and regulations.

XXII. CONSULTANTS

The term consultant shall mean a representative of the Kentucky Department Labor, *Division of Employment Standards, Supervisor of Apprenticeship and Training*, or a representative of the U.S. Department of Labor, Bureau of Apprenticeship and Training or a representative for any other person qualified to act as a consultant on problems of apprenticeship training.

APPRENTICESHIP PROGRAM STANDARDS & GUIDELINES



APPRENTICESHIP GUIDELINES

SECTION 1 - APPRENTICESHIP COMMITTEE

A. Selection of Committee Members

1. The Area Manager has the authority to appoint an Apprenticeship Committee Chairman. This committee shall consist of enough members to insure that the terms and conditions of these standards are met. The committee chairman will select these members.

B. Trade-Committees (Where there are multiple-trade programs)

1. Trade-committees shall be formed to establish and review all criteria pertaining to their appropriate trade.

SECTION 2 – GRANTING ADVANCED STANDING

- #### A. The Apprenticeship Committee will review all materials submitted and advise the apprentice of its decision.

B. Granting Advanced Standing

1. An apprentice may apply for advanced standing in the maximum allowable amount of two (2) levels for a four (4) year program and one (1) level for a three (3) year program, provided the apprentice has documented previous on-the-job experience commensurate with the desired level of accelerated standing.
2. All previous work experience must be documented to include total hours and pay, starting and ending dates, descriptions of duties and signature of Team Fishel representative verifying that the information is true.
3. The apprentice must complete the required forms necessary to be considered for advanced standing through credit. This information must contain justification and documentation of previous applicable training.
4. An apprentice may submit a written request to the Apprenticeship Committee for advanced standing. This request must be received at least one month prior to starting the program.
5. It is the sole responsibility of the apprentice to initiate any request for advanced standing.

SECTION 3 – PROGRAM POLICIES & PROCEDURES

A. Expectations of Conduct

1. General Expectations

- a. Team Fishel has a high standard for the conduct of its Teammates, including apprentices. Team Fishel will not tolerate these standards being jeopardized by the actions or behavior of any Teammate. A more detailed explanation of these standards can and should be reviewed in Section 5.0 of the Teammate Policy Manual.

2. Corrective Action

- a. Team Fishel, believes that all members of the team will work hard to maintain an excellent work and training record with high standards of conduct. Team Fishel is counting on all Teammates to use good judgment. That means coming to work on time every scheduled workday, attending all scheduled events, keeping Team Fishel's best interests a priority, and taking actions that will not harm the source of Team Fishel's livelihood.
- b. If an instructor, or representative of Team Fishel speaks with an apprentice about a problem, he or she should listen carefully the first time. Team Fishel will work with an apprentice to overcome problems, with the supervisor often using progressive corrective action. However, if Team Fishel determines a serious violation has occurred, the apprentice may be immediately dismissed from the apprenticeship program, and be terminated from employment without having received any prior warnings. The corrective action will be determined by how the Apprenticeship Committee, and/or Team Fishel view the seriousness of the incident(s) and the surrounding circumstances.

B. Related Instruction

1. General Attendance Requirements

- a. The Apprenticeship Instructor, or other representative designated by the Apprenticeship Committee, will maintain attendance records and issue a notice of warning to the apprentice after each absence.
- b. The apprentice must submit a written explanation for the absence to be recorded and reviewed by the Apprenticeship Committee.
- c. Apprentices having more than one unexcused absence must appear before the Apprenticeship Committee and provide explanation.
- d. The Apprenticeship Committee will review work-related emergency absences on a case-by-case basis.

- e. Apprentices leaving a scheduled related instruction session without authorization prior to dismissal will be charged one (1) absence. On a second occurrence, the apprentice will be required to appear before the Apprenticeship Committee for corrective action.
- f. Apprentices who are late three (3) times will be charged with one (1) absence. On the fourth occurrence of being late, the apprentice will be required to appear before the Apprenticeship Committee for corrective action.

2. Expectations of Conduct

- a. Unnecessary interruptions of any scheduled related instruction session will be dealt with immediately. Such acts are grounds for immediate termination from the apprenticeship program.

3. Related Instruction Examinations

- a. Written and performance examinations will be conducted at least every nine (9) weeks.
- b. Announced and unannounced evaluations may be conducted throughout duration of the apprenticeship program.
- c. A final examination will be given at the end of an instruction term.
- d. A minimum of seventy (70) percent must be achieved in all related instruction to advance to the next term of apprenticeship.

4. Make-up of Related Instruction Sessions

- a. When a related instruction session is missed and cannot be made up, make-up assignments will be determined and assigned at the discretion of the instructor. These assignments may include, but not be limited to, written assignments or additional instruction sessions as assigned and scheduled by the apprenticeship instructor. Any make-up assignments will pertain to the subject matter covered in the class that was missed and must be completed to regain credit for the instructional unit absence.
- b. Failure to complete any required assignment will result in the loss of required related instruction hours. Failure to satisfy the required 144 related instruction hours will result in unsatisfactory performance and appropriate disciplinary action, including but not limited to termination from the program, will be determined by the Apprenticeship Committee.

B. On-the-Job Training

1. General Attendance Requirements

- a. Failure to meet Team Fishel's Attendance Policies as outlined in section 4.0 of the Teammate Policy Manual will severely hinder your learning experience while participating in the apprenticeship program.

Furthermore, failure to meet these expectations will result in appropriate disciplinary action, up to and including termination from the apprenticeship program, and possibly the apprentice's employment.

2. Hourly Record

- a. The apprentice is required to maintain an hourly record of his or her own on-the-job training. All on-the-job training must correspond to the apprentice's Work Process Schedule (see trade specific Work Process Schedule). The Apprenticeship Committee will perform frequent audits of the apprentice's on-the-job training log. Recording false hours will result in immediate dismissal from the program.
- b. A monthly record of on-the-job training hours for the preceding month will be due on the first Monday of each month, or in the first classroom session of the month (when in session). The hourly record must be maintained and kept up-to-date in the logbook provided to the apprentice. It is the apprentice's responsibility to provide this record to the apprenticeship instructor, or individual designated by the Apprenticeship Committee. Failure to submit an on-the-job training log by the designated due date can result in the loss of those hours.

B. Wage Adjustments

1. Wage adjustments will be determined at the completion of every 1000 hours of on-the-job training. The apprentice must be demonstrating satisfactory progress in the areas of on-the-job training and related instruction to be eligible to receive a wage adjustment. All wage adjustments will be administered in accordance with the Apprenticeship Standards.
 - b. The schedule of wages is the minimum pay allowed for an apprentice.
 - c. Wage adjustments are not required when an apprentice is being paid at or above the wage increment according to the apprentice's status in the areas of on-the-job training hours and related instruction.

C. Lay Off

1. Should an apprentice be laid off from work for a temporary period, the apprentice is encouraged to complete the remainder of the any class related training sessions for that period. Make-up credit will not be provided in the event an apprentice elects not to continue to participate while laid off from work.

D. Evaluation

- a. Each apprentice will be evaluated at least twice annually using the Apprenticeship Progress report.



LINEMAN APPRENTICESHIP PROGRAM Course Content



Curriculum is the Power Delivery Program, a Product of Northwest Lineman College.
www.lineman.com

Book One – 150 Hours of Instruction 15 Hours Per Module

1. Introduction to Power Delivery
2. Safety 1
3. Climbing Wood Poles
4. Knots, Splices, and Ropes
5. Electrical Systems
6. First Aid
7. Applied Mathematics
8. Basic Electrical Theory
9. Transformer Basics
10. OSHA 1910.269 (selected subparts)

Book Three – 150 Hours of Instruction 15 Hours Per Module

21. Safety 3
22. Special Elements 1
23. Metering
24. System Power Flow
25. Advance Transformers
26. Maps & Standards
27. System Protection
28. NESC 1
29. NESC 2
30. OSHA 1910.269 (selected subparts)

Book Two – 150 Hours of Instruction 15 Hours Per Module

11. Safety 2
12. AC Fundamentals
13. Personal Protective Grounding
14. Live Line Equipment
15. Rigging
16. Underground Conductors
17. Overhead Conductors
18. Electrical Test Equipment
19. Substations
20. OSHA 1910.269 (selected subparts)

Book Four – 150 Hours of Instruction 15 Hours Per Module

31. Safety 4
32. Special Elements 2
33. Communications
34. Vegetation Management
35. System Operation
36. System Automation
37. Overhead Line Design
38. Underground Line Design
39. Trouble Investigation
40. Crew Leadership

Electrical Lineman Apprenticeship Program Work Process Schedule

<u>Job Description</u>	<u>Approx. Hours</u>
I. Poles	448
A. Setting and Removing	
B. Framing	
II. Fixtures	500
A. Assembling X-arms and equipment	
B. Making up and installing guys	
C. Installing anchors	
D. Installing X-arms and equipment	
E. Installing ground wires and rods	
F. Removal and salvage of materials	
III. Conductors	2300
A. Installing wire, splicing and tying	
B. Dead-ending	
C. Pulling and sagging	
D. Testing and phasing lines	
E. Removal and salvage of wire	
IV. Transformers	2300
A. Installing transformers, overhead and underground	
B. Connecting transformers	
C. Lightning arrestors and cut-outs	
D. Trouble shooting and testing	
V. Services	450
A. Installation and removal of services	
VI. Street Lighting	250
A. Installation and removal	
B. Troubleshooting	
VII. Underground Cable	1100
A. Installation and removal	
B. Installing terminations	
C. Trouble Shooting	
VIII. Miscellaneous	652
A. Trouble Shooting	
	Total: <u>8000 HRS.</u>

ON-THE-JOB TRAINING HOURS LOG



Name	Month	Year	Daily Hours Worked on Each Process																																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	
Poles																																			
Setting and removing																																			
Framing																																			
Fixtures																																			
Assembling X-arms and equipment																																			
Making up and installing guys																																			
Installing anchors																																			
Installing X-arms and equipment																																			
Installing ground wires and rods																																			
Removal and salvage of materials																																			
Conductors																																			
Installing wire, splicing and tying																																			
Dead-ending																																			
Pulling and sagging																																			
Testing and phasing lines																																			
Removal and salvage of wires																																			
Transformers																																			
Installing transformers, overhead and underground																																			
Connecting transformers																																			
Lightning arrestors and cut-outs																																			
Trouble shooting and testing																																			
Services																																			
Installation and removal of services																																			
Street lighting																																			
Installation and removal																																			
Trouble shooting																																			
Underground cable																																			
Installation and removal																																			
Installing terminations																																			
Trouble shooting																																			
Miscellaneous																																			

Directions:
Record the number of OJT hours for each day of the month according to each work process

Apprentice Signature Date

Supervisor Signature Date



RELEASE OF CLAIMS

I _____ hereby acknowledge that my acceptance to participate in a Team Fishel sponsored Apprenticeship Program is done so voluntarily and, being of lawful age and sound mind do hereby, to the fullest extent permitted by law, release and forever discharge The Fishel Company, their agents, assigns, successors, and employees (whether or not presently employed) from all liability, causes of action, claims (whether known or unknown), and demand for damages and costs, including attorney's fees, on account of, or in any way growing out of all known and unknown personal injuries and property damage resulting from my attendance at and participation in this program.

I have carefully read this release, understand it, and voluntarily sign it.

Agreed to:

Participant

Print Your Name

Signature

Date

The Fishel Company

By:

Signature

Date

Title



Training Class Sign-in Sheet

Subject: LG&E Passport Training Length of Class: _____

Training Code: 13-00001 Date: 11/18/2010 Expires On: 12/1/11

Location: 4508 Bishop Lane Louisville, KY

Instructor: Johnny Ward/Doug Ketzenberg Title: Safety Coordinator

2750

Attendance List

First Name	Last Name	Teammate #	Signature
Richard	Carter	36065	<i>Richard Carter</i>
Matthew	Christy	38513	<i>Matt Christy</i>
Gary	Cissell	36895	<i>Gary Cissell</i>
Cody	Cooper	38585	<i>Cody Cooper</i>
Rick	Druin	35004	<i>Rick Druin</i>
Brian M	Druin	38403	<i>Brian Druin</i>
Rocky	Druin	35005	<i>Rocky Druin</i>
Christa	Druin	40039	
Todd	Elbert	38542	<i>Todd Elbert</i>
Justin	Eskridge	38104	<i>Justin Eskridge</i>
Joe	Fowler	37581	<i>Joe Fowler</i>
Harold	Fulkerson	13011	<i>Harold Fulkerson</i>
William	Fulkerson	37510	
Willis	Givens	1051	
David	Gray	38426	<i>David Gray</i>
Thomas S	Greenwell	38445	<i>Scott Greenwell</i>
Tommy	Grismer	38566	
Michael	Haak	38573	
Robert B	Hahn	38422	<i>Robert Hahn</i>
Michael	Haley	35007	<i>Michael Haley</i>
Steven	Hebert	37988	<i>Steve Hebert</i>

*workin
out of the*



Training Class Sign-in Sheet

Subject: LG&E Passport Training Length of Class: _____

Training Code: 13-00001 Date: 11/18/2010 Expires On: 12/1/11

Location: 4508 Bishop Lane Louisville, KY

Instructor: Johnny Ward/Doug Ketzenberg Title: Safety Coordinator

13250

Attendance List

First Name	Last Name	Teammate #	Signature
Tim	Thomas	37167	<i>[Signature]</i>
Kenneth N	Thompson	38511	<i>[Signature]</i>
Kenneth B	Thompson	37952	<i>[Signature]</i>
Scott	Underwood	38533	<i>[Signature]</i>
Denis	Unser	38314	<i>[Signature]</i>
William K	Updike	38488	<i>[Signature]</i>
Joe	Walker	38139	
Johnny R	Ward Jr	37841	<i>[Signature]</i>
Johnny	Ward Sr	37248	<i>[Signature]</i>
Jeremy	Waters	38429	<i>[Signature]</i>
Michael	Wathen	38048	<i>[Signature]</i>
John K	Whitenack	38402	<i>[Signature]</i>
Brent	Whitmore	36855	<i>[Signature]</i>
Steven T	Wicker	1101061	<i>[Signature]</i>
Wesley	Wilkins	38478	<i>[Signature]</i>
Christopher	Williams	38436	<i>[Signature]</i>
Jimmy	Williams	38228	<i>[Signature]</i>
Allen	Wilson	38489	<i>[Signature]</i>
Shawn M	Wilson	38424	<i>[Signature]</i>
Timothy	Winburn	38532	<i>[Signature]</i>

[Signature]

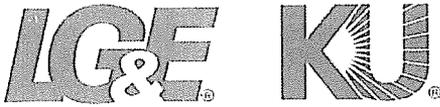
employee_id	contractor_id	contractor_name	first_name	last_name	dob	Active	passport_number	passport_date	expiration_date	Column1
28840	13549	FISHEL CO	GERALD	AKRIDGE	11/8/1968	Active	92635	12/1/2010	12/1/2011	
75598	13549	FISHEL CO	Kyle	Armstrong	9/26/1989	Active	92636	12/1/2010	12/1/2011	
1061	13549	FISHEL CO	Ronald	Baker	9/7/1963	Active	92637	12/1/2010	12/1/2011	
1063	13549	FISHEL CO	Charles	Bames	3/18/1965	Active	92638	12/1/2010	12/1/2011	
1062	13549	FISHEL CO	Daniel	Barnes	3/2/1960	Active	92639	12/1/2010	12/1/2011	
82803	13549	FISHEL CO	Jacob	Bergman	6/10/1975	Active	99879	6/14/2011	6/14/2012	
1067	13549	FISHEL CO	James	Bischoff	8/15/1966	Active	92641	12/1/2010	12/1/2011	
1069	13549	FISHEL CO	Alfred	Bosemer, Jr.	8/16/1956	Active	93287	12/15/2010	12/15/2011	
10906	13549	FISHEL CO	Gary	Bowman	9/26/1959	Active	92642	12/1/2010	12/1/2011	
36904	13549	FISHEL CO	MICHAEL	BROWN	9/24/1984	Active	92643	12/1/2010	12/1/2011	
54488	13549	FISHEL CO	TIM	BROWN	7/8/1975	Active	92644	12/1/2010	12/1/2011	
42768	13549	FISHEL CO	DALE	BRUCE	4/17/1950	Active	92645	12/1/2010	12/1/2011	
1074	13549	FISHEL CO	Paul	Bruce	7/13/1948	Active	92646	12/1/2010	12/1/2011	
77384	13549	FISHEL CO	George Steven	Bugg	9/20/2010	Active	89524	9/20/2010	9/20/2011	
1076	13549	FISHEL CO	Ronnie	Bulter	2/27/1959	Active	92648	12/1/2010	12/1/2011	
1075	13549	FISHEL CO	Karbin	Bunnell	5/1/1983	Active	92649	12/1/2010	12/1/2011	
83384	13549	FISHEL CO	Derek	Burke	3/12/1989	Active	100815	8/11/2011	8/11/2012	
50199	13549	FISHEL CO	TONY	BURTON	6/16/1983	Active	95935	2/16/2011	2/16/2012	
82806	13549	FISHEL CO	Trevor	Campbell	7/5/1970	Active	99881	6/6/2011	6/6/2012	
13956	13549	FISHEL CO	Chester	Carrier	3/13/1951	Active	92650	12/1/2010	12/1/2011	
13967	13549	FISHEL CO	Richard	Carter	4/14/1955	Active	92651	12/1/2010	12/1/2011	
1078	13549	FISHEL CO	Ronnie	Carter	11/27/1959	Active	92652	12/1/2010	12/1/2011	
65606	13549	FISHEL CO	MATTHEW	CHRISTY	11/4/1985	Active	92653	12/1/2010	12/1/2011	
11114	13549	FISHEL CO	Gary	Cissell	1/25/1951	Active	92654	12/1/2010	12/1/2011	
38730	13549	FISHEL CO	BRIAN	DRUIN	4/20/1988	Active	92655	12/1/2010	12/1/2011	
1088	13549	FISHEL CO	Rocky	Druin	5/15/1959	Active	92656	12/22/2010	12/22/2011	
75602	13549	FISHEL CO	Todd	Eibert	5/5/2010	Active	92657	12/1/2010	12/1/2011	
11112	13549	FISHEL CO	Justin	Eskridge	5/9/1981	Active	92658	12/1/2010	12/1/2011	
36901	13549	FISHEL CO	JOE	FOWLER	3/11/1967	Active	92659	12/1/2010	12/1/2011	
83382	13549	FISHEL CO	Dustin	Fulkerson	6/18/1991	Active	100817	8/11/2011	8/11/2012	
1091	13549	FISHEL CO	Harold	Fulkerson	11/17/1953	Active	92660	12/1/2010	12/1/2011	
83464	13549	FISHEL CO	Mike	Fulkerson	12/1/1969	Active	100943	8/15/2011	8/15/2012	
44445	13549	FISHEL CO	DAVID	GRAY	5/2/1964	Active	92661	12/1/2010	12/1/2011	
54477	13549	FISHEL CO	SCOTT	GREENWELL	7/18/1971	Active	92662	12/1/2010	12/1/2011	
77386	13549	FISHEL CO	Michael	Haak	5/4/1978	Active	89528	9/20/2010	9/20/2011	
42793	13549	FISHEL CO	ROBERT	HAHN	7/31/1988	Active	92663	12/1/2010	12/1/2011	
28954	13549	FISHEL CO	MICHAEL	HALEY	4/9/1949	Active	92664	12/1/2010	12/1/2011	
32711	13549	FISHEL CO	RONALD	HENDERSON	7/2/1953	Active	92666	12/1/2010	12/1/2011	
1105	13549	FISHEL CO	Carlos	Hernandez	1/31/1975	Active	95946	2/16/2011	2/16/2012	
77389	13549	FISHEL CO	Ethan	Huff	10/10/1989	Active	92669	12/1/2010	12/1/2011	
18846	13549	FISHEL CO	GUY	JARBOE	1/16/1979	Active	95948	2/16/2011	2/16/2012	
13965	13549	FISHEL CO	Jamel	Johnson	2/4/1966	Active	92672	12/1/2010	12/1/2011	
75856	13549	FISHEL CO	Cody	Joyner	8/3/1989	Active	92674	12/1/2010	12/1/2011	
1118	13549	FISHEL CO	Douglas	Ketzenberg	3/18/1945	Active	92677	12/1/2010	12/1/2011	
82805	13549	FISHEL CO	Mark	Koshewa	1/4/1985	Active	99883	5/23/2011	5/23/2012	
77385	13549	FISHEL CO	Ted	Langefeld	10/21/1973	Active	92679	12/1/2010	12/1/2011	
54505	13549	FISHEL CO	DANIEL	LAWRENCE	8/26/1988	Active	92705	12/1/2010	12/1/2011	
1121	13549	FISHEL CO	Richard	Leslie, Jr.	4/15/1957	Active	92680	12/1/2010	12/1/2011	
1124	13549	FISHEL CO	Robert	Logsdon	8/10/1977	Active	95952	12/1/2011	12/1/2012	
1125	13549	FISHEL CO	Jerry	Logsdon, Jr.	7/2/1974	Active	92708	12/1/2010	12/1/2011	
21369	13549	FISHEL CO	WILLIAM	LONG	5/20/1944	Active	92683	12/1/2010	12/1/2011	
55046	13549	FISHEL CO	RANDALL	LUCKETT	12/27/1967	Active	92701	12/1/2010	12/1/2011	
76974	13549	FISHEL CO	Michael	Mason	3/4/1986	Active	92710	12/1/2010	12/1/2011	
72405	13549	FISHEL CO	CINNAMON	MATHEWS	12/28/1976	Active	92685	12/1/2010	12/1/2011	
72788	13549	FISHEL CO	BRUCE	MCGUFFIN	2/17/1956	Active	92707	12/1/2010	12/1/2011	
53822	13549	FISHEL CO	JIM	MCGUIRE	4/19/1967	Active	92687	12/1/2010	12/1/2011	
83383	13549	FISHEL CO	Austin	McMahan	7/8/1992	Active	100819	8/11/2011	8/11/2012	
58586	13549	FISHEL CO	JAMES	MCMAHAN	4/12/1966	Active	92698	12/1/2010	12/1/2011	
78479	13549	FISHEL CO	Chris	Morris	6/18/1983	Active	91363	10/10/2010	10/10/2011	
1137	13549	FISHEL CO	Bobby	Nichols	6/18/1948	Active	92693	12/1/2010	12/1/2011	
61077	13549	FISHEL CO	JOHN	OBRIEN	1/25/1961	Active	92689	12/1/2010	12/1/2011	
53821	13549	FISHEL CO	RICHARD	OLSON	7/16/1960	Active	92691	12/1/2010	12/1/2011	
81494	13549	FISHEL CO	David	Payton	4/2/1980	Active	97762	3/28/2011	3/28/2012	

30233	13549	FISHEL CO	JARED	PHILLIPS	4/16/1987	Active	92703	12/1/2010	12/1/2011
79258	13549	FISHEL CO	Gerald	Poe	8/21/1961	Active	92706	12/1/2010	12/1/2011
1142	13549	FISHEL CO	Eugene	Polly	8/14/1953	Active	92704	12/1/2010	12/1/2011
14107	13549	FISHEL CO	William	Ross	4/14/1947	Active	92697	12/1/2010	12/1/2011
82807	13549	FISHEL CO	George	Russell	6/26/1949	Active	98894	6/14/2011	6/14/2012
77391	13549	FISHEL CO	Christian	Rutland	10/3/1984	Active	92695	12/1/2010	12/1/2011
78770	13549	FISHEL CO	Joseph	Scott	8/29/1979	Active	91843	11/2/2010	11/2/2011
78480	13549	FISHEL CO	Aaron	Smith	11/26/1988	Active	92690	12/1/2010	12/1/2011
78478	13549	FISHEL CO	Cody	Smith	7/9/1990	Active	91390	10/10/2010	10/10/2011
1155	13549	FISHEL CO	Thomas	Smith	8/14/1976	Active	95961	2/16/2011	2/16/2012
1156	13549	FISHEL CO	Gregory	Sprinkles	11/23/1964	Active	92688	12/1/2010	12/1/2011
1157	13549	FISHEL CO	Troy	Stengel	7/14/1971	Active	92684	12/1/2010	12/1/2011
56860	13549	FISHEL CO	MICHAEL	STEWART	8/4/1981	Active	92686	12/1/2010	12/1/2011
28849	13549	FISHEL CO	TERRY	TAYLOR	6/11/1980	Active	92681	12/1/2010	12/1/2011
1161	13549	FISHEL CO	Timothy	Thomas	1/17/1963	Active	93860	12/30/2010	12/30/2011
1163	13549	FISHEL CO	Kenneth	Thompson	10/19/1956	Active	92726	12/1/2010	12/1/2011
71849	13549	FISHEL CO	KENNETH	THOMPSON	6/24/1987	Active	92727	12/1/2010	12/1/2011
75600	13549	FISHEL CO	Scott	Underwood	9/5/1988	Active	92728	12/1/2010	12/1/2011
28870	13549	FISHEL CO	DENIS	UNSEA	1/17/1944	Active	92729	12/1/2010	12/1/2011
54519	13549	FISHEL CO	KURT	UPDIKE	11/25/1984	Active	92730	12/1/2010	12/1/2011
77392	13549	FISHEL CO	Joe	Walker	7/14/1949	Active	89542	9/20/2010	9/20/2011
824	13549	FISHEL CO	Johnny	Ward	6/12/1945	Active	92731	12/1/2010	12/1/2011
29376	13549	FISHEL CO	JOHNNY JR.	WARD	7/10/1969	Active	92734	12/1/2010	12/1/2011
53817	13549	FISHEL CO	JOHN	WHITENACK	6/1/1983	Active	92737	12/1/2010	12/1/2011
71847	13549	FISHEL CO	CHARLES	WHITMORE	9/6/1962	Active	92738	12/1/2010	12/1/2011
79274	13549	FISHEL CO	Steven Troy	Wicker	10/28/1977	Active	92739	12/1/2010	12/1/2011
54438	13549	FISHEL CO	WESLEY	WILKINS	10/14/1986	Active	92740	12/1/2010	12/1/2011
76976	13549	FISHEL CO	Chris	Williams	10/29/1986	Active	92741	12/1/2010	12/1/2011
32753	13549	FISHEL CO	JIMMY	WILLIAMS	7/19/1955	Active	92742	12/1/2010	12/1/2011
42788	13549	FISHEL CO	SHAWN	WILSON	9/3/1982	Active	92744	12/1/2010	12/1/2011

CONTRACT

between
Louisville Gas and Electric Co.
and
The Fishel Company

ATTACHMENT C
UTILITY ADDENDUM REPORT



PPL companies

RECEIVED

October 11, 2011

OCT 12 2011

Mr. Jeffrey Moore
Division of Engineering
Kentucky Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, KY 40602

PUBLIC SERVICE
COMMISSION

LG&E and KU Energy, LLC
Corporate Law
220 W. Main Street
Louisville, Kentucky 40202
www.lge-ku.com

Kelly Gibson
Paralegal
T 502-627-3409
F 502-627-3367
Kelly.Gibson@lge-ku.com

Re: Contractor Injury/Matthew Christy
Date of Incident: July 20, 2011
Report Number: 11-ED-E-21-AD

Dear Mr. Moore:

Enclosed please find LG&E's addendum report regarding the above referenced incident. Please return a file stamped copy of the report in the envelope provided.

Should you need additional information concerning this incident, please contact me at (502) 627-3409 so I can direct your request to the appropriate person.

Sincerely,

A handwritten signature in cursive script that reads 'Kelly Gibson'.

Kelly Gibson

/kcg

Enclosures:

- 1) Updated area print
- 2) Outage Management System (OMS) tickets
- 3) Diagrams depicting the system before and at the time of the incident
- 4) Team Fishel addendum to incident report

INVESTIGATION REPORT - Addendum

Electrical Contact on Primary

Type of Report

11-ED-E-021-Ad

Report Number

Keith McBride

Investigator

July 20, 2011

Date of Incident

Reference: **Fishel Employee injured and admitted to hospital**

Location: **15500 Bridle Gate Drive
Louisville, Jefferson County, Kentucky 40299**

Case Summary

On July 20, 2011 at approximately 1:15 P.M. Jimmy Williams, Apprentice III for Team Fishel and Matthew Christy, Apprentice I, for Team Fishel, were on a job site at 15500 Bridle Gate Drive, Louisville, Kentucky. The job consisted of identifying and replacing a section of URD cable that was found to be damaged.

During this job, Matthew Christy received a shock and burn. Mr. Christy was admitted to the hospital for overnight observation.

Ken Sheridan, Manager of Distribution Operational and Public Safety, notified the Kentucky Public Service Commission of the incident and subsequent overnight hospital stay.

At the request of the Kentucky Public Service Commission, this addendum report describes in more detail the actions of the LG&E Trouble Technician on the day of the reported outages in the subdivision.

LG&E Trouble Technicians actions

On April 17, 2011, LG&E Distribution Control Center (DCC) received notice of an outage on Bridle Gate Drive in Louisville indicating a customer struck a pad-mount transformer with a riding lawn mower. DCC dispatched a Trouble Technician to the area.

Once on scene the Trouble Tech found that the fuse was blown on the lateral pole, TLM-601287. The Trouble Tech went to the possible damaged transformer and

found that the pad mount transformer had been hit and knocked off of the pad and the cable feeding the transformer had been damaged / cut just off of the elbow inside of the transformer. The Trouble tech pulled this bad cable off of transformer 85782, placed an information card on the elbow and stood the cable off at transformer 98410, placing an information card there as well.

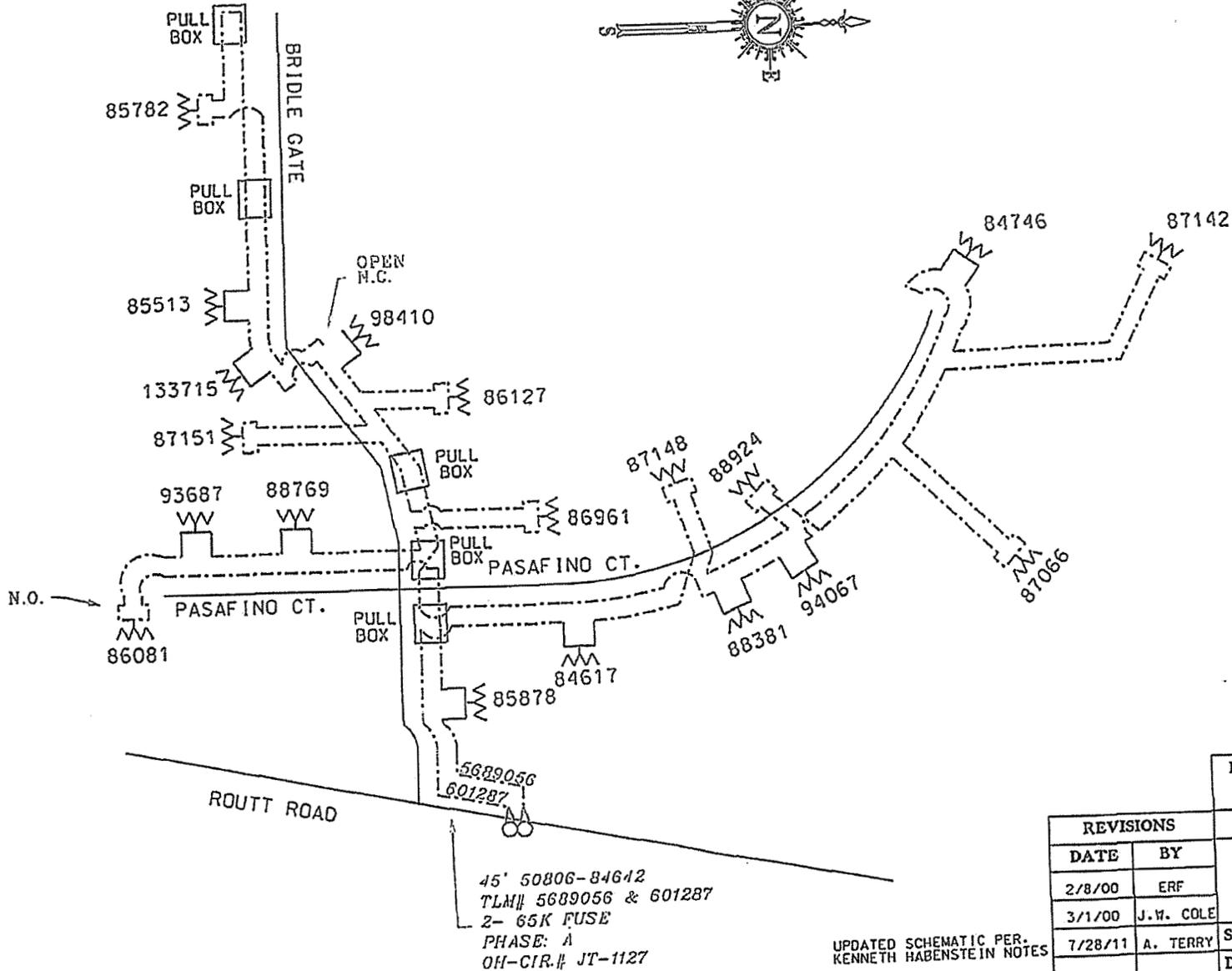
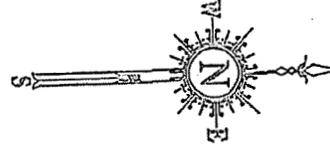
This isolated the cable from transformer 98410 that was feeding transformer 85782.

The Trouble Tech then received permission to close in TLM 601287 at the lateral pole. The normal open was found to be in transformer 86081. The Trouble Tech closed in the normal open at transformer 86081 and restoring the remaining outages and moving the normal open to transformer 98410.

The cable has since been replaced and the normal open remains at transformer 98410.

END OF REPORT

DATE OF REPORT: OCTOBER 11, 2011



PSC 237 of 285

REVISIONS		LOUISVILLE GAS AND ELECTRIC LOUISVILLE, KENTUCKY DEPARTMENT: Gas Dept. (Div.)	
DATE	BY	CANTERBROOK F	
2/8/00	ERF		
3/1/00	J.W. COLE		
7/28/11	A. TERRY	SCALE N.T.S. DATE 2/12/11	URD U
		DRAWN BY MARVIN DAILEY	
		APPROVED BY	

UPDATED SCHEMATIC PER.
KENNETH HABENSTEIN NOTES



<u>Premise ID</u>	<u>Transformer</u>	<u>Device Code</u>	<u>Inc #</u>	<u>Begin Time</u>	<u>Est Restored Time</u>	<u>Restored Time</u>	<u>Duration</u>	<u>Cust Out</u>	<u>DTS #</u>
		elbow_sw1:109364741 (OP#-85782)	1279398	4/17/2011 3:07:10 PM	4/17/2011 6:00:00 PM	4/17/2011 6:18:38 PM	191.47	1	
<u>Company</u>	<u>OpCenter</u>	<u>Local Area</u>	<u>Substation</u>	<u>Circuit</u>	<u>Outage Location</u>	<u>Job Code</u>	<u>Trouble Code</u>	<u>Excluded from SAIDI/SAIFI?</u>	
LGE	EOC	HURSTBOURNE	JEFFERSONTOWN	JT1120		-		N	

<u>System</u>	<u>Type</u>	<u>Action</u>	<u>Cause</u>	<u>Failure Device</u>	<u>Interrupt Device</u>	<u>Weather</u>	<u>Previous Event</u>	<u>Subsequent Event</u>
Underground	Primary	Switched / Bad cable	Other	Conductor	Line Fuse	Calm/Mild	1279374	

Customer Case Notes

Dispatcher Info Notes

15520 Bridle Gate. customer hit pad with lawnmower. Twisted and cut cable in pad. will need new splice and elbow on cable. TR # 85782.

15520 Bridle Gate. customer hit pad with lawnmower. Twisted and cut cable in pad. will need new splice and elbow on cable. TR # 85782. See INC# 1279374.

<u>Step Number</u>	<u>Time of Operation</u>	<u>Time Reported</u>	<u>Crew ID</u>	<u>Crew Contact</u>	<u>Mobile Number</u>	<u>Description of Event Action</u>
1	4/17/2011 5:34:53 PM	4/17/2011 5:34:53 PM				Event given Real Device Outage status
2	4/17/2011 5:35:11 PM	4/17/2011 5:35:11 PM	316	Jim Hancock	502-643-5577	Crew 316 assigned
3	4/17/2011 6:18:38 PM	4/17/2011 6:18:38 PM				Device elbow_sw1:109366072 changed to state A CLOSED
4	4/17/2011 6:18:38 PM	4/17/2011 6:18:38 PM				Event removed
5	4/17/2011 6:35:04 PM	4/17/2011 6:35:04 PM				Tag added to device elbow_sw1:109364741
6	4/17/2011 6:43:05 PM	4/17/2011 6:43:05 PM	316	Jim Hancock	502-643-5577	Crew 316 unassigned
7	4/17/2011 6:43:05 PM	4/17/2011 6:43:05 PM				Event removed
8	4/17/2011 6:43:05 PM	4/17/2011 6:43:05 PM				Event completed

<u>Partial Step</u>	<u>Restoration Time</u>	<u>Device</u>	<u>Nominal</u>	<u>State</u>	<u>Operator</u>	<u>Cust Restored</u>
0	4/17/2011 6:18:38 PM	elbow_sw1:109366072	OPEN	CLOSED	Donald_Brown	1
0	4/17/2011 6:18:38 PM	elbow_sw1:109366072	OPEN	CLOSED	Donald_Brown	1
0	4/17/2011 6:18:38 PM	elbow_sw1:109366072	OPEN	CLOSED	Donald_Brown	1
0	4/17/2011 6:18:38 PM	elbow_sw1:109366072	OPEN	CLOSED	Donald_Brown	1



Premise ID	Transformer	Device Code	Inc #	Begin Time	Est Restored Time	Restored Time	Duration	Cust Out	DTS #
		cutout109366132 (OP# - 601287)	1279374	4/17/2011 3:07:10 PM	4/17/2011 6:00:00 PM	4/17/2011 5:34:52 PM	147.70	10	
Company	OpCenter	Local Area	Substation	Circuit	Outage Location	Job Code	Trouble Code	Excluded from SAIDI/SAIFI?	
LGE	EOC	HURSTBOURNE	JEFFERSONTOWN	JT1120	15520 BRIDLE GATE DR LOT 25	LGE REPLACE	PM or PAD-OUT,OUT	N	
System	Type	Action	Cause	Failure Device	Interrupt Device	Weather	Previous Event	Subsequent Event	
Underground	Primary	Switched / Bad cable	Other	Conductor	Line Fuse	Calm/Mild		1279398	

Customer Case Notes

Dispatcher Info Notes

EOC:Bad cable @ TR 85782...Cable cut by lawn mower. Isolated. Pulled off cable between TR 85782 and TR 98410, closed N.O. TR 86881.

15520 Bridle Gate. customer hit pad with lawnmower. Twisted and cut cable in pad. will need new splice and elbow on cable. TR # 85782.Bad cable @TR85782. Pulled off tr85782 and TR98410, closed N.O. 86881.

Step Number	Time of Operation	Time Reported	Crew ID	Crew Contact	Mobile Number	Description of Event Action
1	4/17/2011 3:08:46 PM	4/17/2011 3:08:46 PM				Event given Probable Device Outage status
2	4/17/2011 3:09:13 PM	4/17/2011 3:09:13 PM				Outage merged upstream to device cutout109366132 (OP# - 601287)
3	4/17/2011 3:10:03 PM	4/17/2011 3:10:03 PM	316	Jim Hancock	502-643-5577	Crew 316 assigned
4	4/17/2011 5:10:49 PM	4/17/2011 5:10:49 PM				Device cutout109366132 changed to state OPEN (OP# - 601287)
5	4/17/2011 5:10:49 PM	4/17/2011 5:10:49 PM				Event given Real Device Outage status
6	4/17/2011 5:13:57 PM	4/17/2011 5:13:57 PM	316	Jim Hancock	502-643-5577	Crew 316 unassigned
7	4/17/2011 5:13:57 PM	4/17/2011 5:13:57 PM	316	Jim Hancock	502-643-5577	Crew 316 en-route
8	4/17/2011 5:13:57 PM	4/17/2011 5:13:57 PM	316	Jim Hancock	502-643-5577	Crew 316 arrived at device
9	4/17/2011 5:34:52 PM	4/17/2011 5:34:53 PM				Device cutout109366132 changed to state CLOSED (OP# - 601287)
10	4/17/2011 5:34:53 PM	4/17/2011 5:34:53 PM				Event removed
11	4/17/2011 6:39:51 PM	4/17/2011 6:39:51 PM				Event removed
12	4/17/2011 6:39:51 PM	4/17/2011 6:39:51 PM				Event completed
13	4/17/2011 6:39:52 PM	4/17/2011 6:39:52 PM	316	Jim Hancock	502-643-5577	Crew 316 released

Partial Step	Restoration Time	Device	Nominal	State	Operator	Cust Restored
1	4/17/2011 5:34:52 PM	cutout109366132	CLOSED	CLOSED	Donald_Brown	10
1	4/17/2011 5:34:52 PM	cutout109366132	CLOSED	CLOSED	Donald_Brown	10

**OMS
Event Details Report**

10/11/2011
2:36:22 PM

<u>Premise ID</u>	<u>Transformer</u>	<u>Device Code</u>	<u>Inc #</u>	<u>Begin Time</u>	<u>Est Restored Time</u>	<u>Restored Time</u>	<u>Duration</u>	<u>Cust Out</u>	<u>DTS #</u>
		cutout109366132 (OP# - 601287)	1279374	4/17/2011 3:07:10 PM	4/17/2011 6:00:00 PM	4/17/2011 5:34:52 PM	147.70	10	
<u>Company</u>	<u>OpCenter</u>	<u>Local Area</u>	<u>Substation</u>	<u>Circuit</u>	<u>Outage Location</u>	<u>Job Code</u>	<u>Trouble Code</u>	<u>Exclude from SAIDI/SAIFI</u>	
LGE	EOC	HURSTBOURNE	JEFFERSONTOWN	JT1120	15520 BRIDLE GATE DR LOT 25	LGE REPLACE EQUIP U.G.	PM or PAD-OUT,OUT	N	
<u>System</u>	<u>Type</u>	<u>Action</u>	<u>Cause</u>	<u>Failure Device</u>	<u>Interrupt Device</u>	<u>Weather</u>	<u>Previous Event</u>	<u>Subsequent Event</u>	
Underground	Primary	Switched / Bad cable	Other	Conductor	Line Fuse	Calm/Mild		1279398	

Customer Case Notes

EOC:Bad cable @ TR 85782...Cable cut by lawn mower. Isolated. Pulled off cable between TR 85782 and TR 98410, closed N.O. TR 86881.

Dispatcher Info Notes

15520 Bridle Gate. customer hit pad with lawnmower. Twisted and cut cable in pad. will need new splice and elbow on cable. TR # 85782.Bad cable @TR85782. Pulled off tr85782 and TR98410, closed N.O. 86881.

<u>Step Number</u>	<u>Time of Operation</u>	<u>Time Reported</u>	<u>Crew ID</u>	<u>Crew Contact</u>	<u>Mobile Number</u>	<u>Description of Event Action</u>
1	4/17/2011 3:08:46 PM	4/17/2011 3:08:46 PM				Event given Probable Device Outage status
2	4/17/2011 3:09:13 PM	4/17/2011 3:09:13 PM				Outage merged upstream to device cutout109366132 (OP# - 601287)
3	4/17/2011 3:10:03 PM	4/17/2011 3:10:03 PM				Crew 316 assigned
4	4/17/2011 5:10:49 PM	4/17/2011 5:10:49 PM				Device cutout109366132 changed to state OPEN (OP# - 601287)
5	4/17/2011 5:10:49 PM	4/17/2011 5:10:49 PM				Event given Real Device Outage status
6	4/17/2011 5:13:57 PM	4/17/2011 5:13:57 PM				Crew 316 unassigned
7	4/17/2011 5:13:57 PM	4/17/2011 5:13:57 PM				Crew 316 en-route
8	4/17/2011 5:13:57 PM	4/17/2011 5:13:57 PM				Crew 316 arrived at device

OMS
Event Details Report

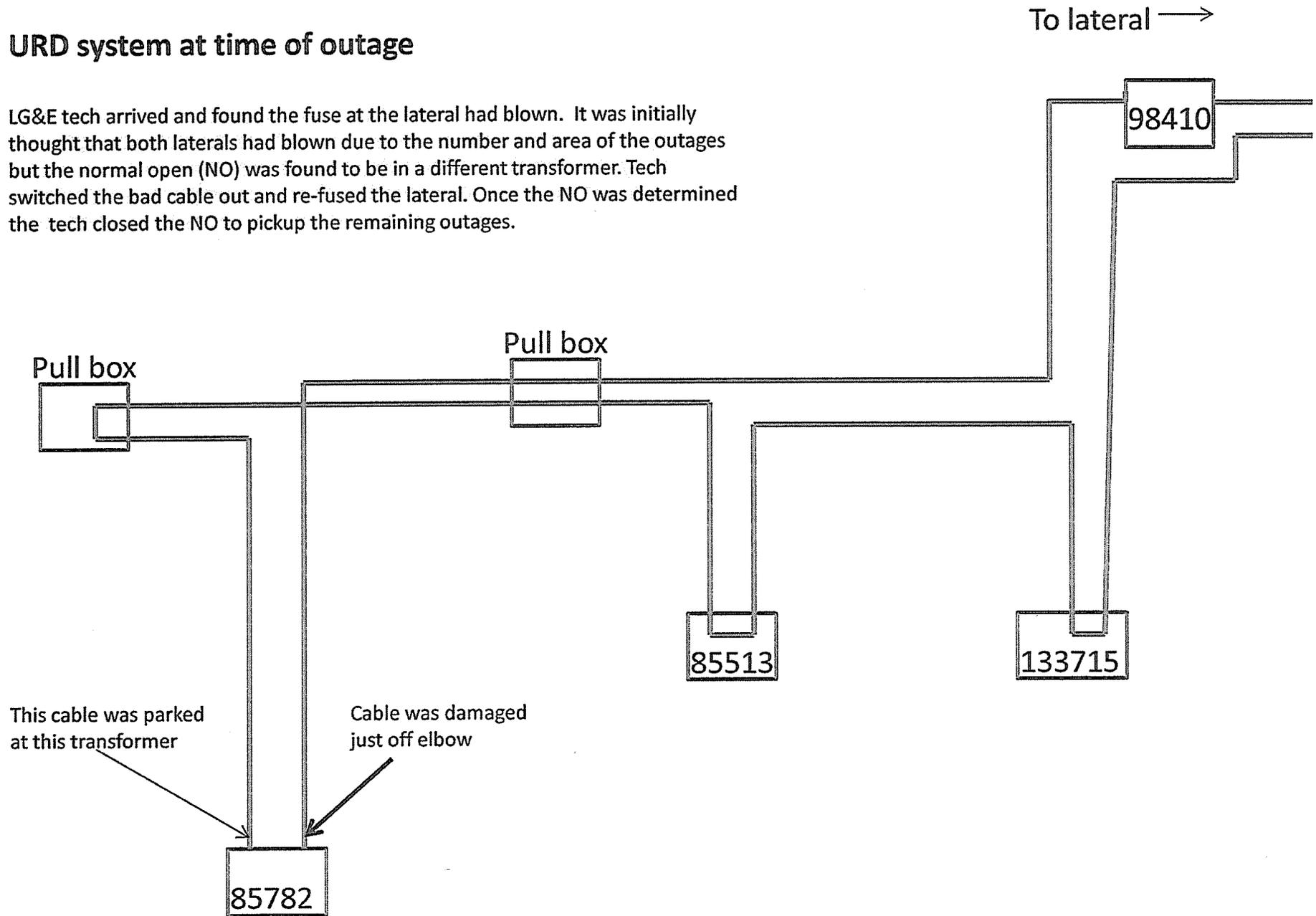
10/11/2011
2:36:22 PM

9	4/17/2011 5:34:52 PM	4/17/2011 5:34:53 PM	Device cutout109366132 changed to state CLOSED (OP# - 601287)
10	4/17/2011 5:34:53 PM	4/17/2011 5:34:53 PM	Event removed
11	4/17/2011 6:39:51 PM	4/17/2011 6:39:51 PM	Event removed
12	4/17/2011 6:39:51 PM	4/17/2011 6:39:51 PM	Event completed
13	4/17/2011 6:39:52 PM	4/17/2011 6:39:52 PM	Crew 316 released

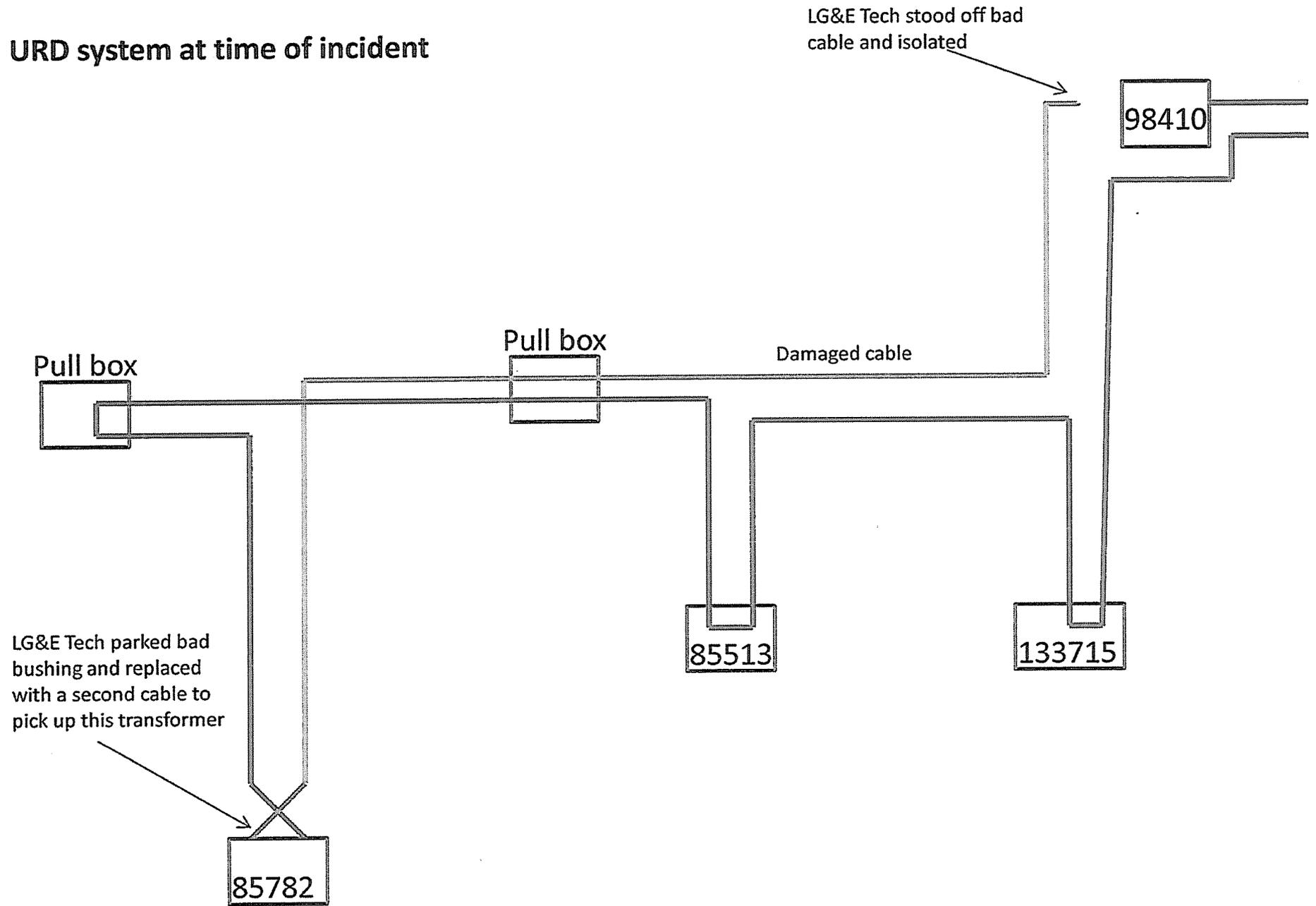
<u>Partial Step</u>	<u>Restoration Time</u>	<u>Device</u>	<u>Nominal</u>	<u>State</u>	<u>Operator</u>	<u>Cust Restored</u>
1	4/17/2011 5:34:52 PM	cutout109366132	CLOSED	CLOSED	Donald_Brown	10
1	4/17/2011 5:34:52 PM	cutout109366132	CLOSED	CLOSED	Donald_Brown	10
1	4/17/2011 5:34:52 PM	cutout109366132	CLOSED	CLOSED	Donald_Brown	10

URD system at time of outage

LG&E tech arrived and found the fuse at the lateral had blown. It was initially thought that both laterals had blown due to the number and area of the outages but the normal open (NO) was found to be in a different transformer. Tech switched the bad cable out and re-fused the lateral. Once the NO was determined the tech closed the NO to pickup the remaining outages.



URD system at time of incident





4508 Bishop Lane
Louisville, KY 40218
(502) 456-2900

10/10/2011

SERVICE EXCELLENCE

DIANE KEELER
Chairman

JOHN PHILLIPS
President and CEO

RANDY BLAIR
Executive VP and COO

SCOTT HOMBERGER
VP, Midwest Region

BILL PAULEY
VP, Western Region

SCOTT KEELER
VP, Central Region

PAUL RIEWE
VP and CFO

GREG GRABOVAC
VP and General Counsel

KEN KATZ
VP and CIO

To: Keith McBride
From: Rich Mauldin
Re: Bridlegate Report Addendum

Keith,

This addendum to the Bridlegate incident report dated 6/21/2011 addresses Mr. Jeff Moore's (PSC) concerns regarding Jimmy Williams' classification of Apprentice Three.

While Team Fishel utilizes classifications to determine a Teammate's skill level, Team Fishel may also utilize classifications to determine pay grades within the Teammate ranks.

In the case of Jimmy Williams, Team Fishel recognizes Jimmy as a Crew Leader at the Journeyman level due to his experience in Underground Residential Distribution applications. Jimmy's background includes seventeen years of experience with Louisville Gas & Electric in their URD Department with an additional seven years of experience with Team Fishel working on URD applications.

Due to Jimmy's lack of experience in Overhead applications required to make Journeyman status in pay grade, Team Fishel has determined that the Apprentice Three pay grade is commensurate with the skills Jimmy currently possesses.

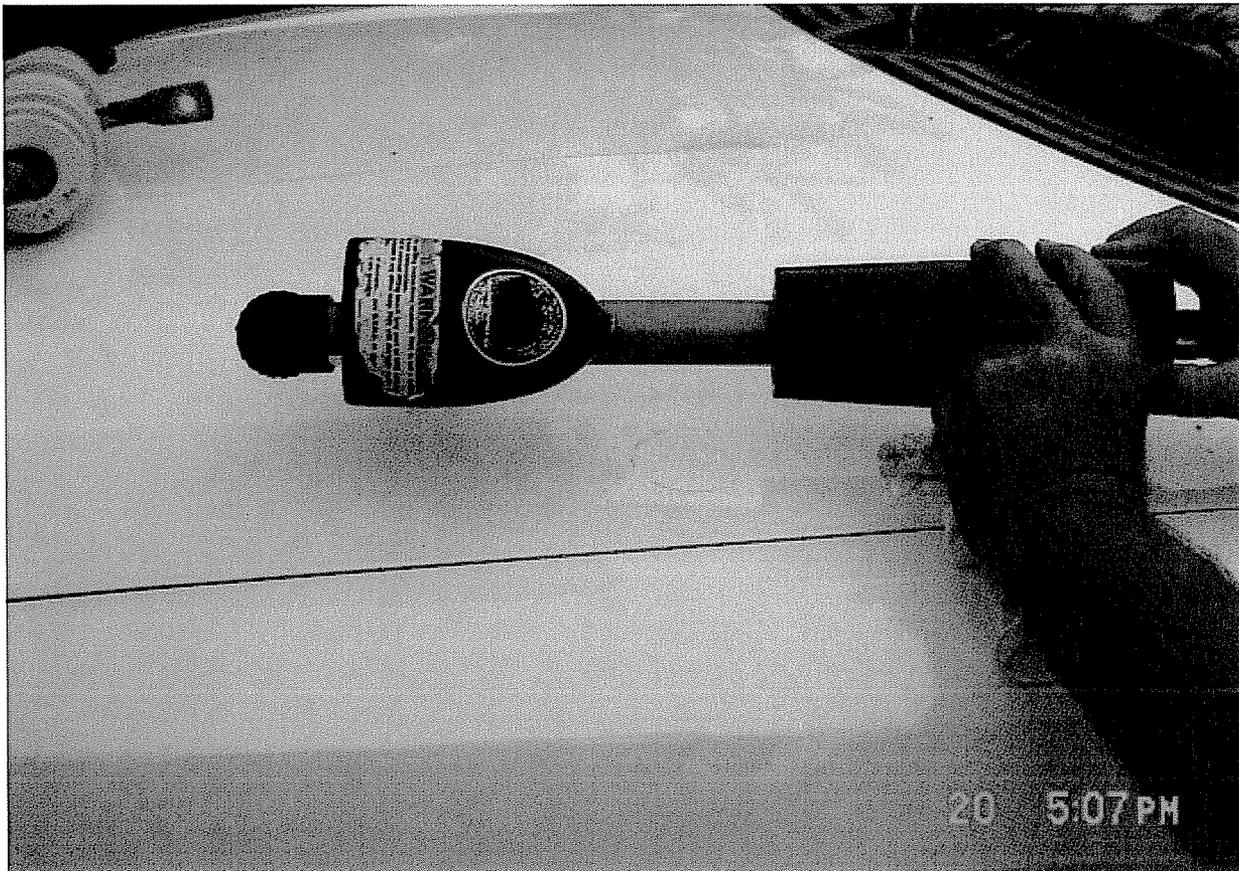
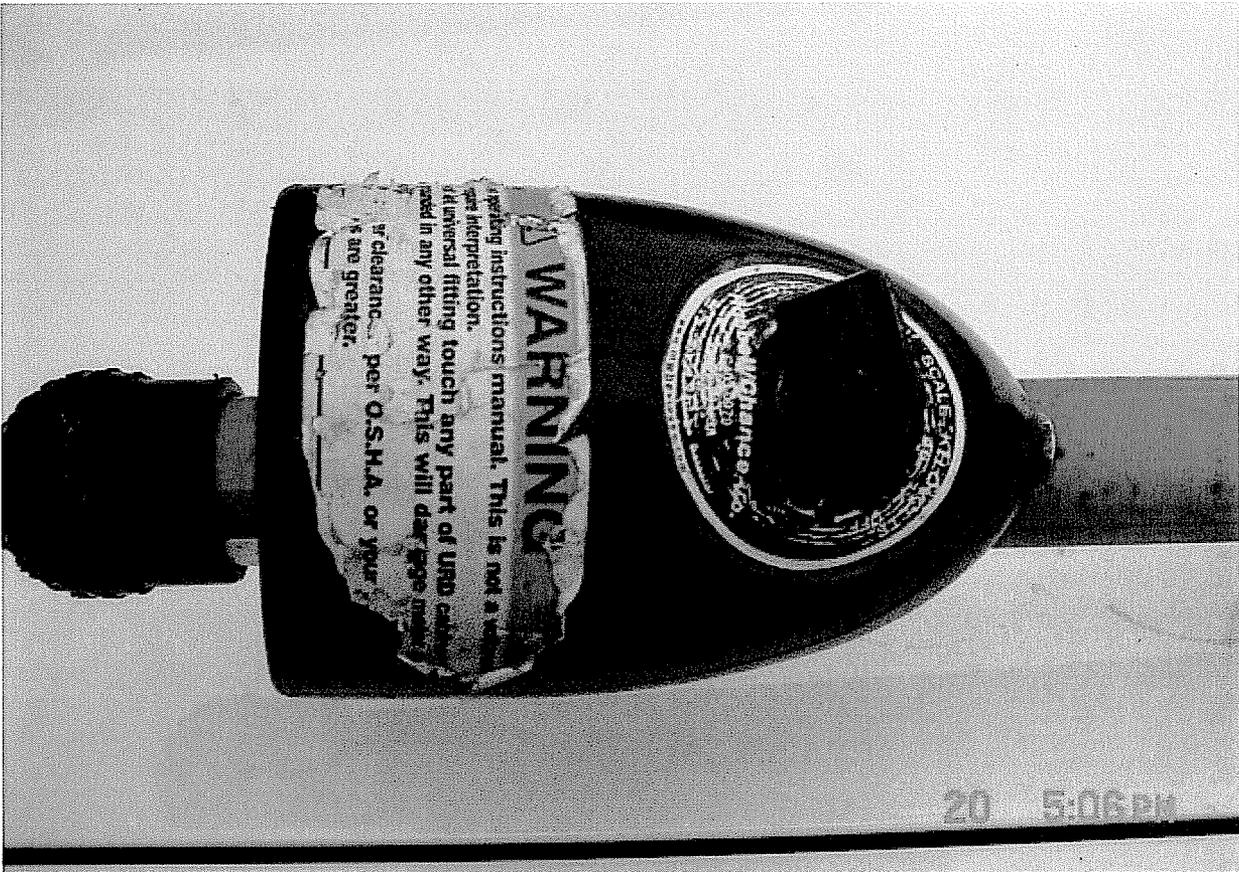
Sincerely,

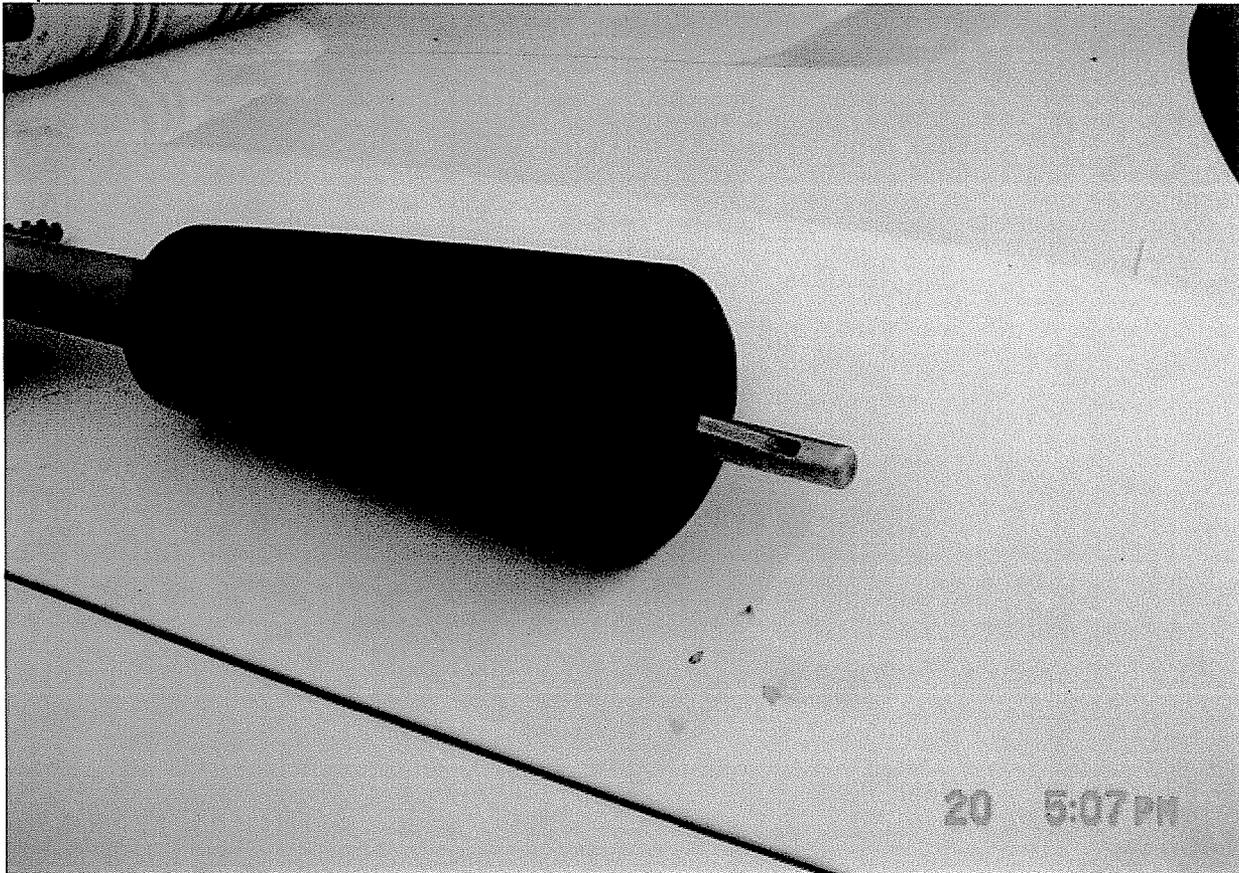
Rich Mauldin
Area Manager

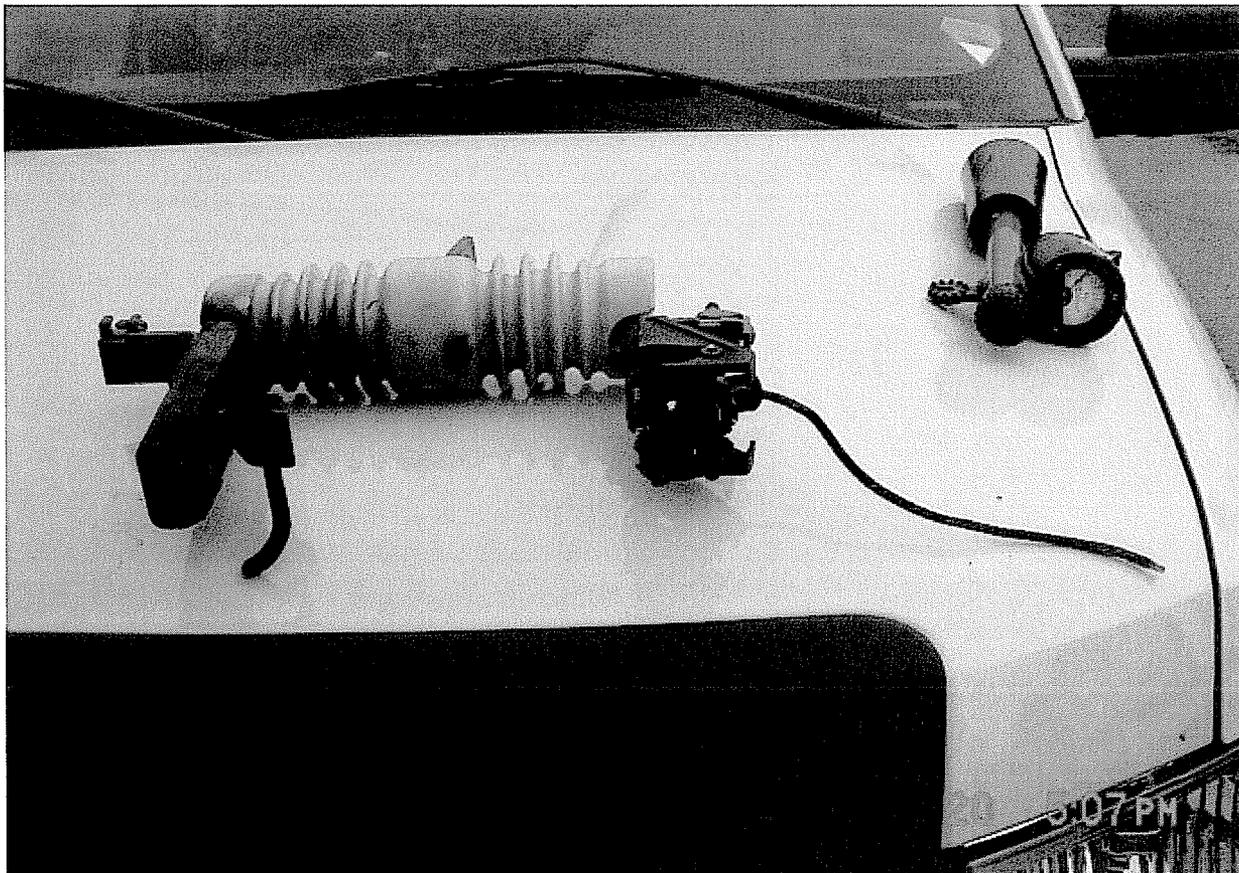
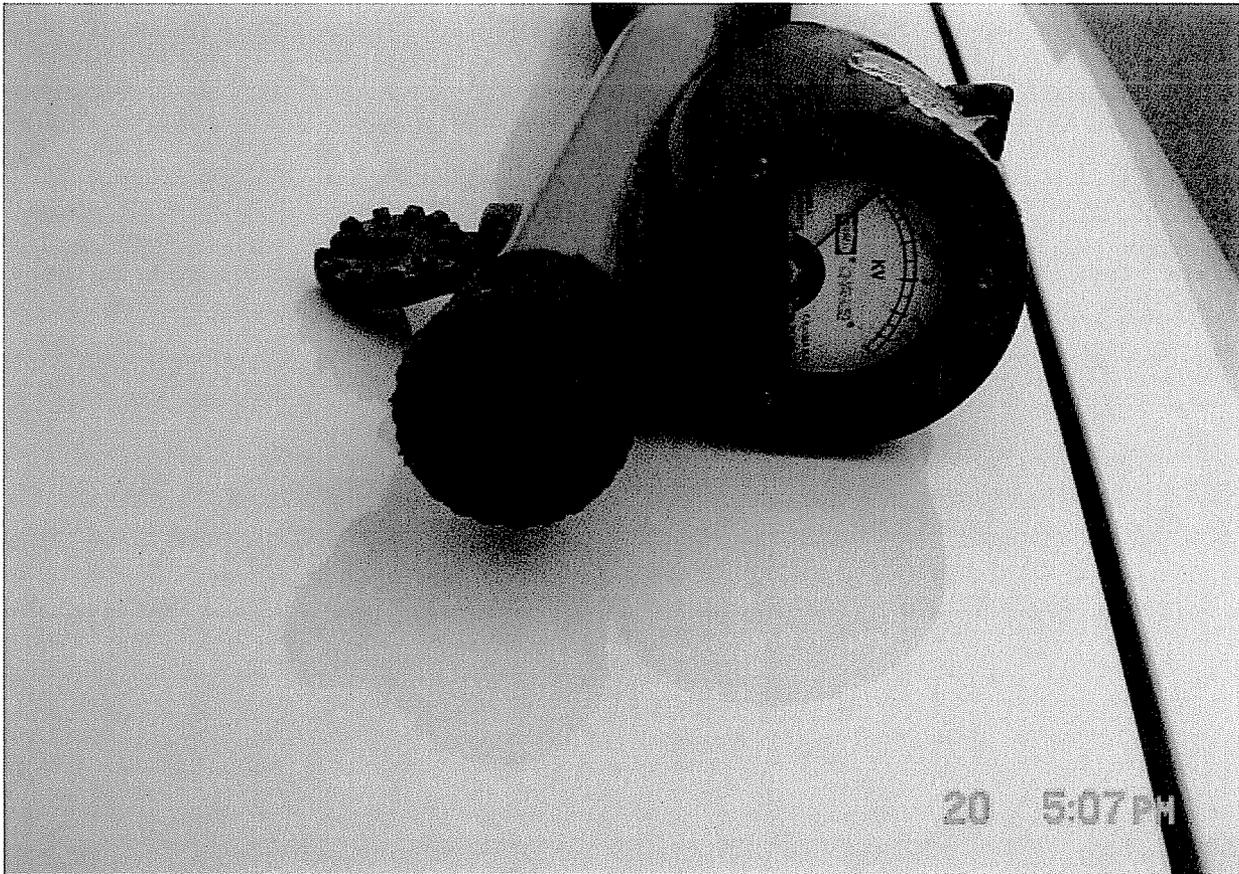
RM/dh

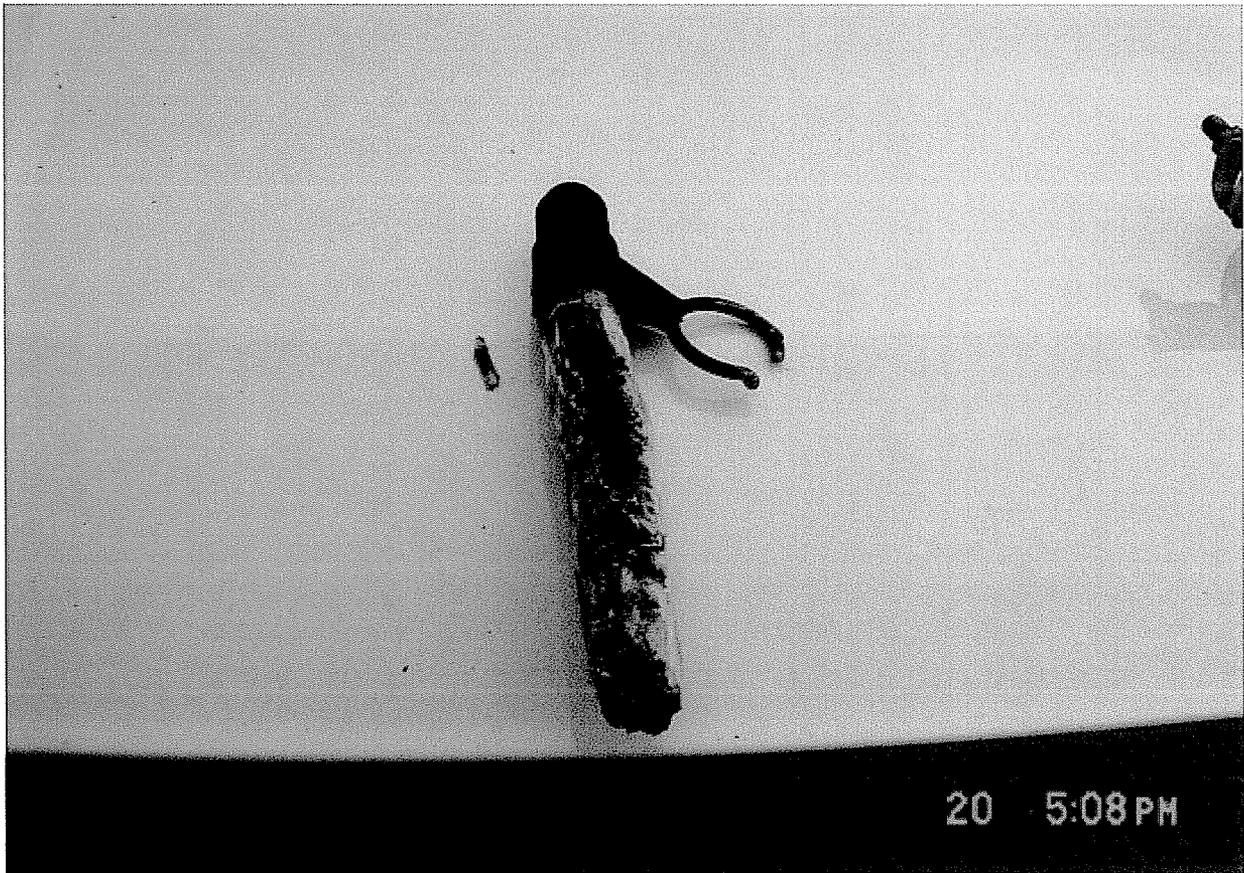
cc: Rick Druin
Craig Mathes

ATTACHMENT D
PSC PHOTOGRAPHS





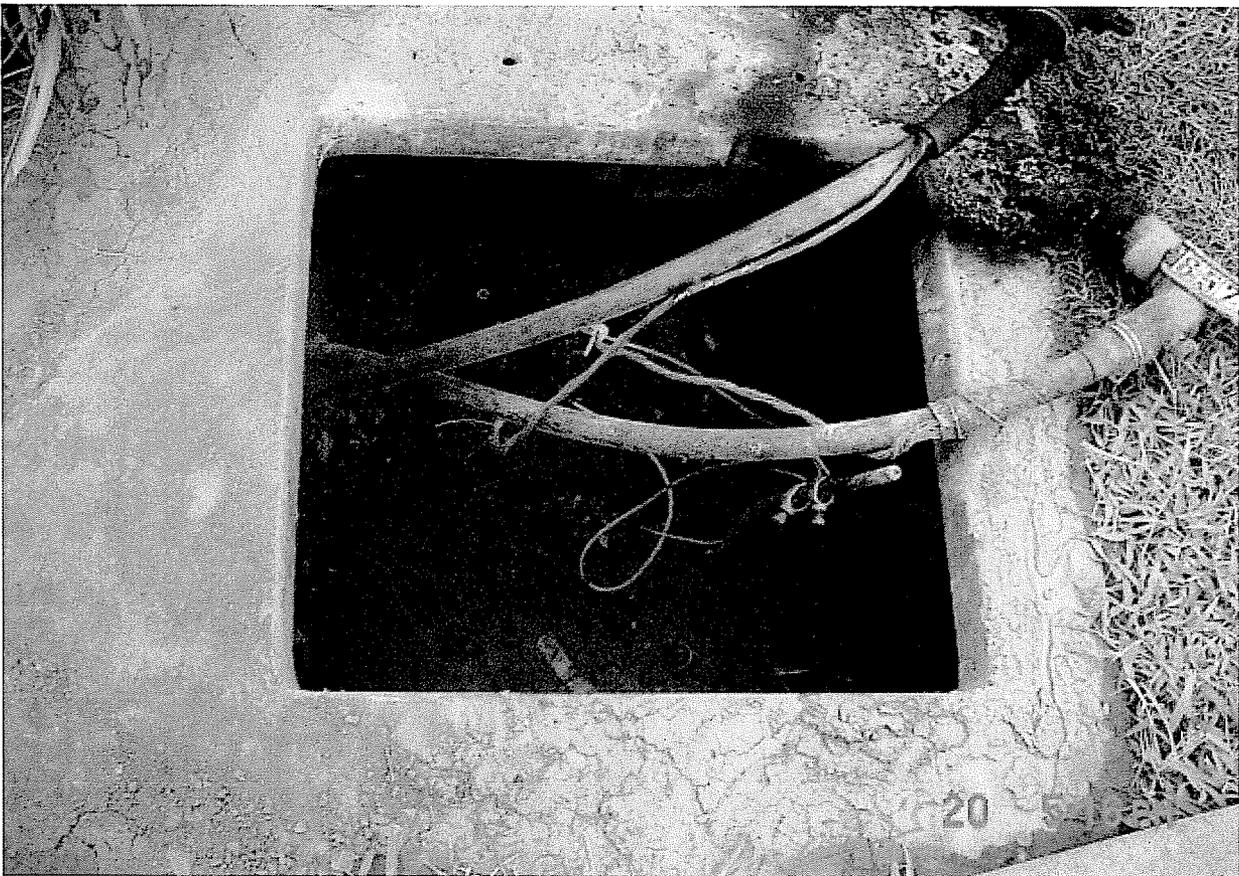


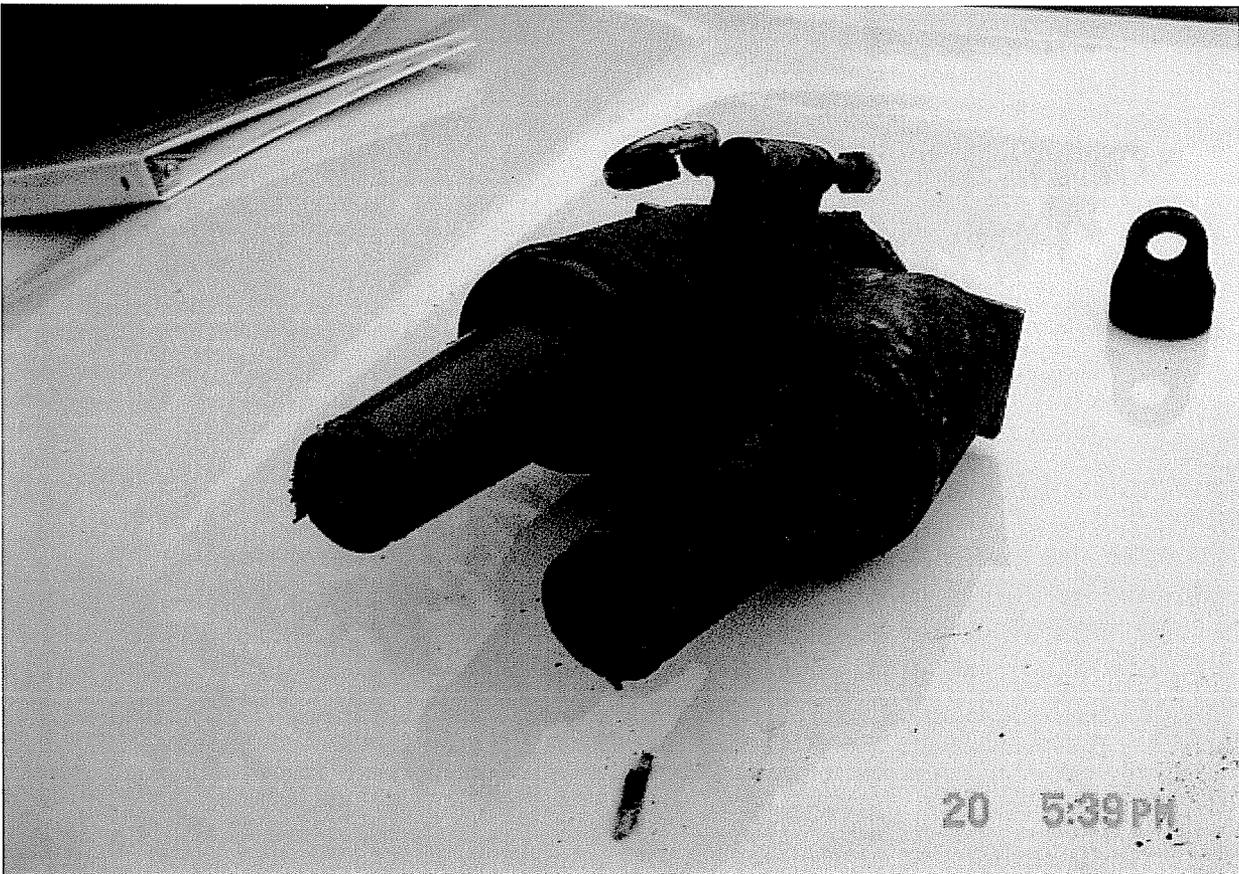


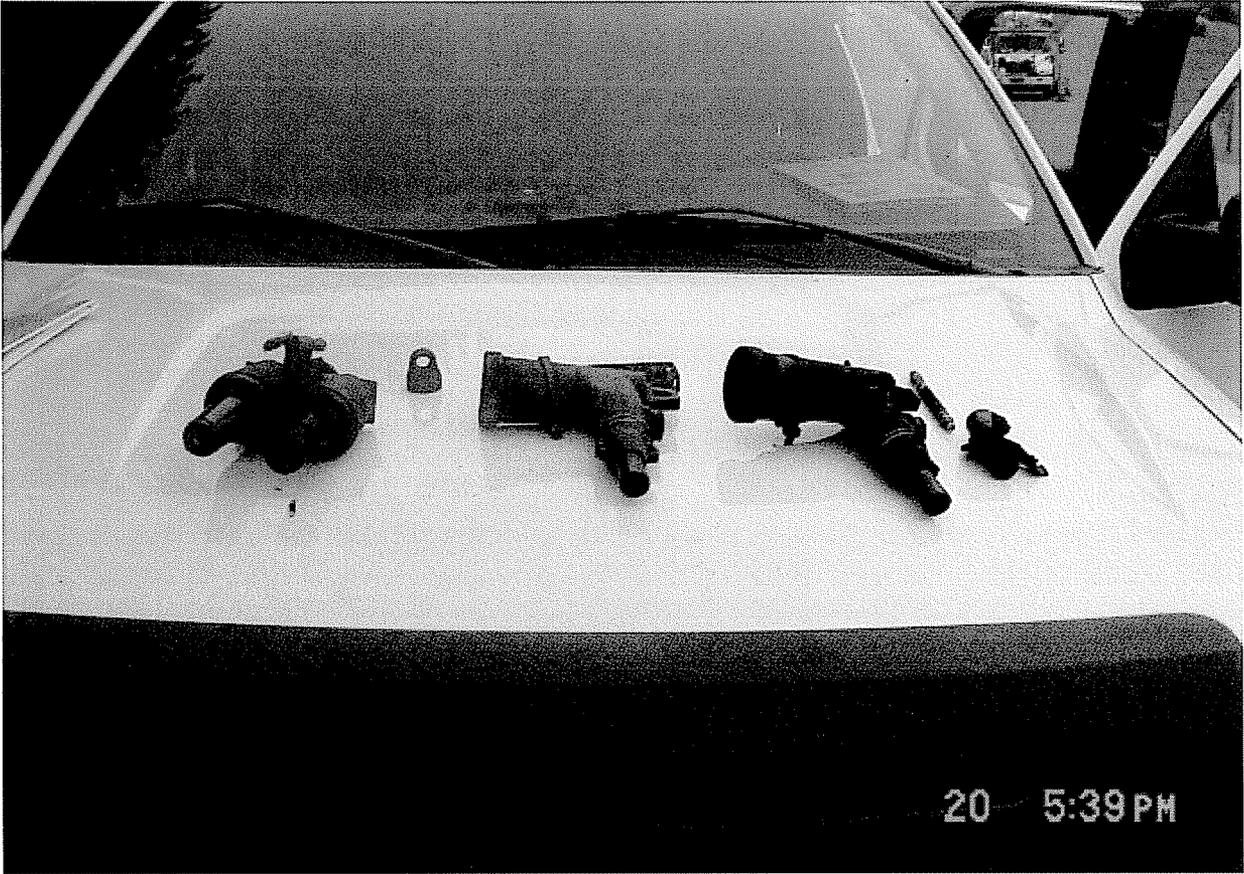


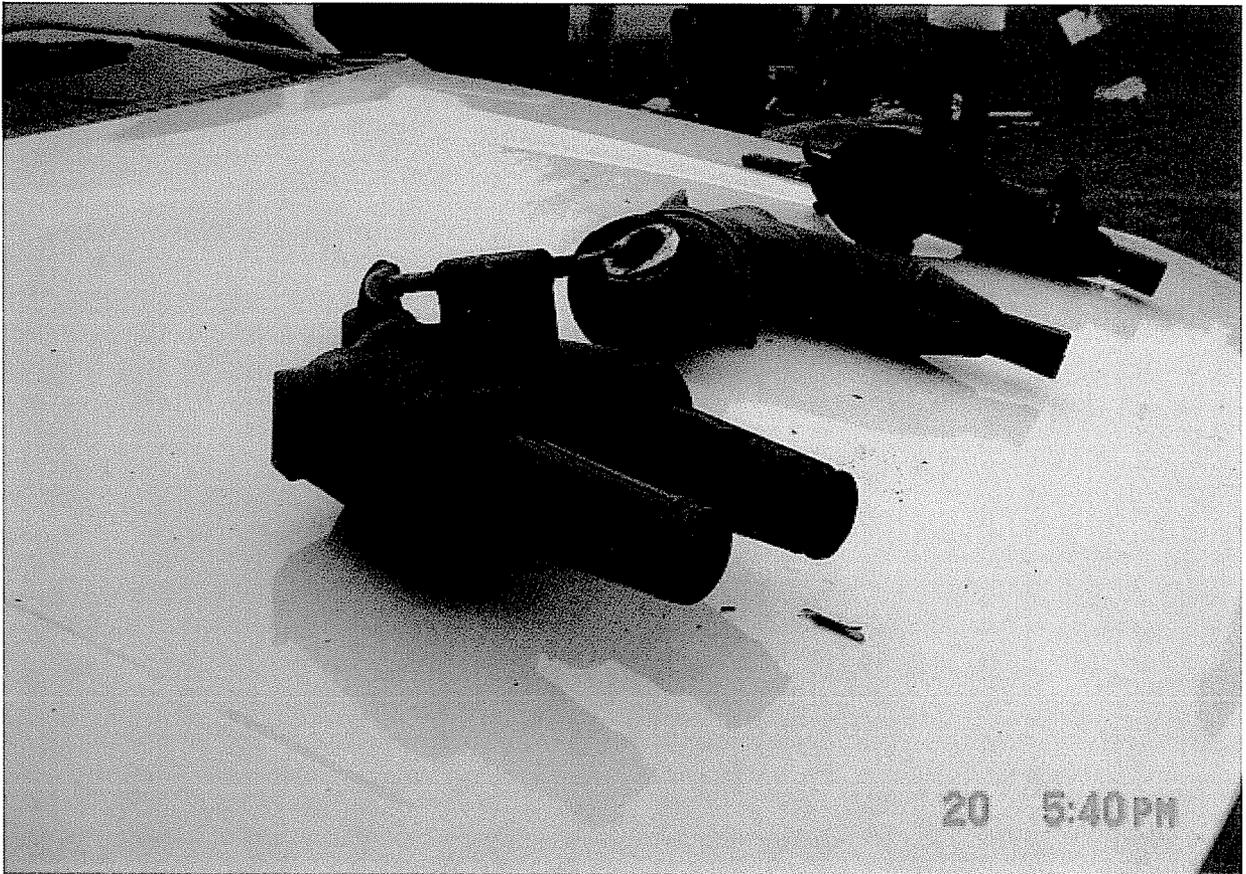


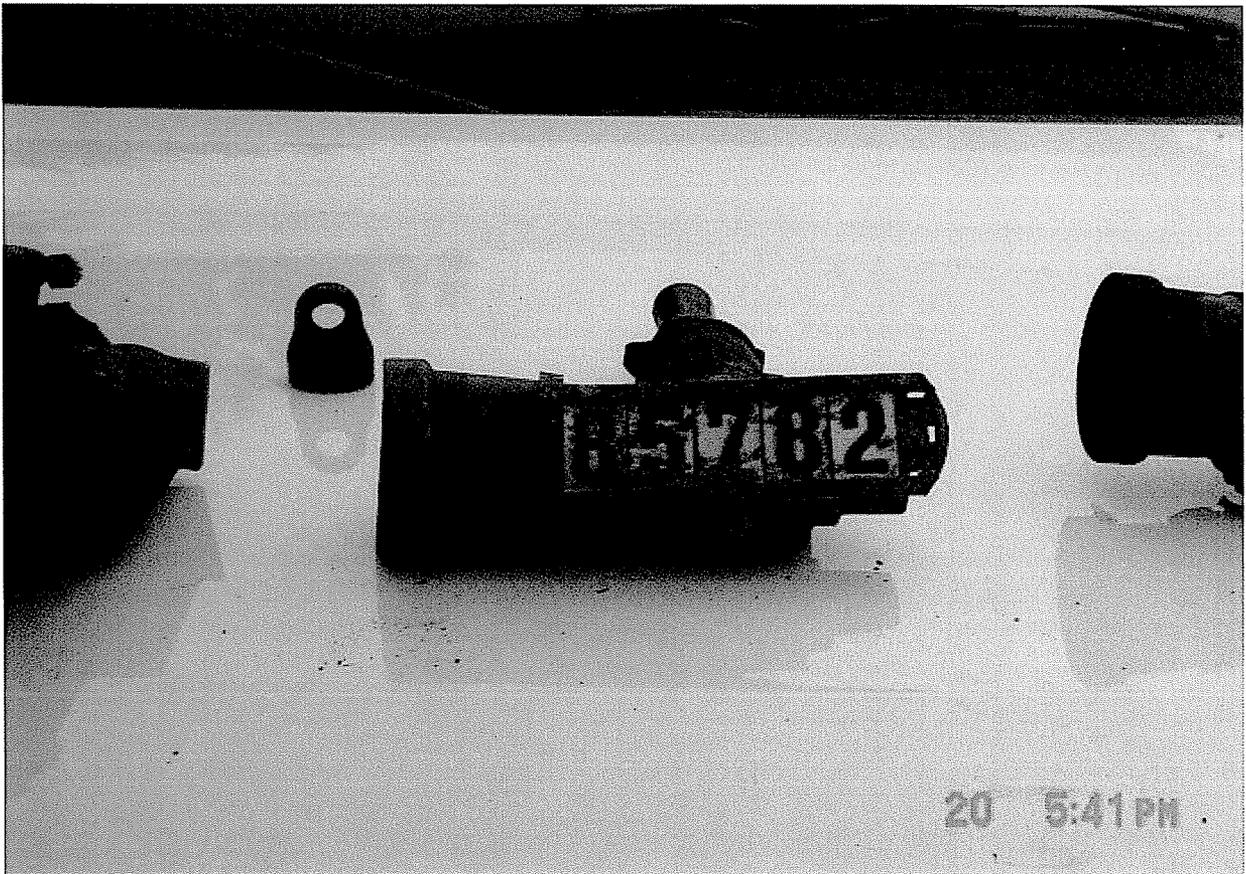








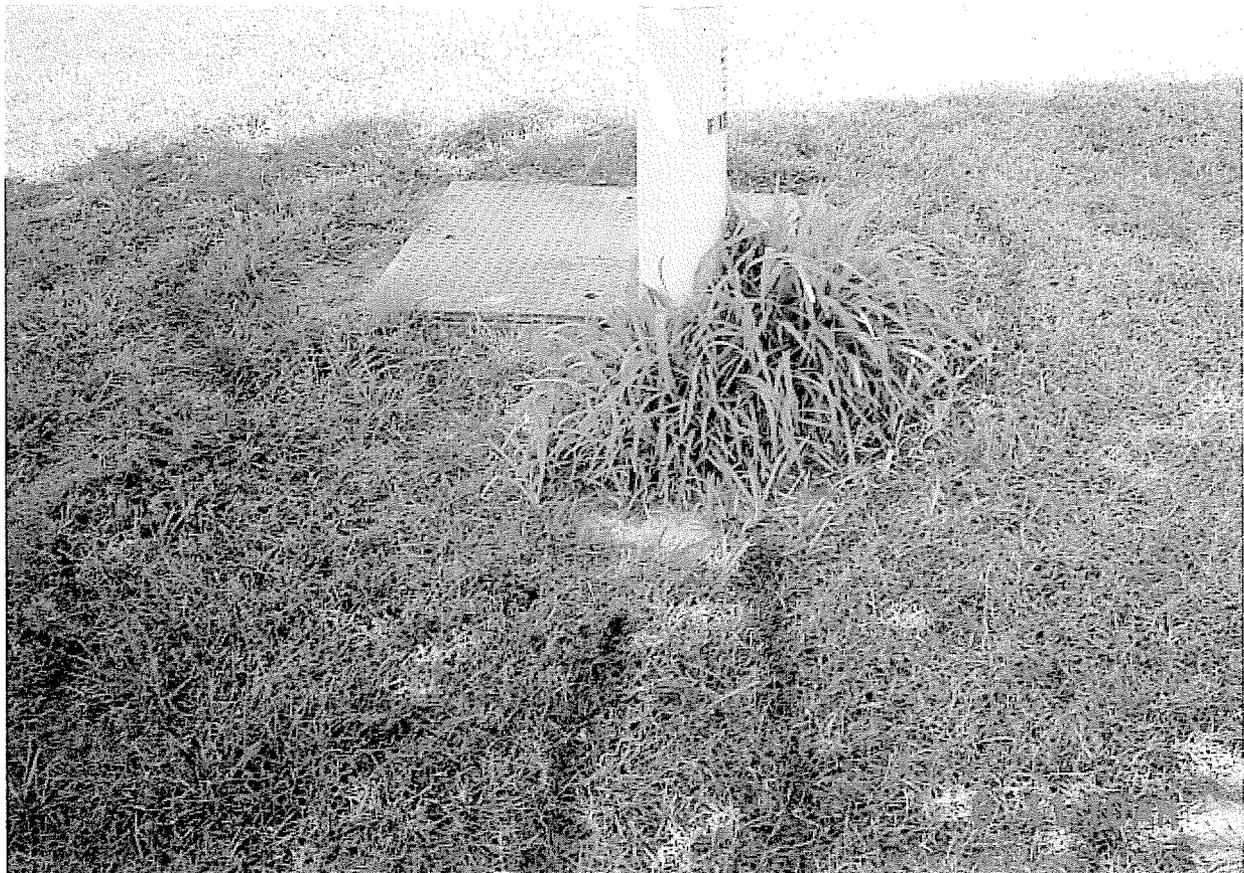


































ATTACHMENT E
EMAIL CORRESPONDENCE

Moore, Jeffrey C (PSC)

From: Moore, Jeffrey C (PSC)
Sent: Thursday, September 08, 2011 1:58 PM
To: Keith McBride (keith.mcbride@eon-us.com)
Cc: Jim Dimas (jim.dimas@eon-us.com); Ken Sheridan (ken.sheridan@eon-us.com)
Subject: Fishel/Christy

Keith,

I am following-up on the Fishel incident and had some additional information I need from the company. During the field investigation Keith you showed me the A B Chance voltage detector that was used prior to the incident. We could not find a recent test date on the device and when the device control switch was moved it appeared the indicator on the KV scale might not be working properly. I need the following documentation.

1. Could you check with Fishel and have them send a document showing the required scheduled testing on the A B Chance voltage detector used that day.
2. Documentation showing the last time it was tested?
3. Documentation of any testing performed on this device after this incident.

Thank You

Jeff Moore
Utility Regulatory & Safety Investigator
EEC/Public Service Commission
Office: 502-564-3940
Cell: 502-352-0767
jeffreyc.moore@ky.gov

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Moore, Jeffrey C (PSC)

From: McBride, Keith [Keith.McBride@lge-ku.com]
Sent: Friday, September 09, 2011 10:44 AM
To: Moore, Jeffrey C (PSC)
Cc: Sheridan, Kenneth; Guy, David; Wolfe, John; Dimas, Jim
Subject: FW: KPSC reply / !!!
Importance: High

Hey Jeff,

Below is the documentation from the M.W. Bevins Company on the Chance voltage tester used on the day of the Fishel urd incident.

The M.W. Bevins Co. found the tester to be functional with the exception of the intermittent test button. According to the M.W. Bevins Co. the test button would in no way affect the tester's ability to detect voltage.

As far as yearly testing, only when the tester is either damaged, found to not be working or the ability of the tester has come into question, should the tester be sent out for testing.

There are no requirements for yearly testing.



Certificate of Calibration

Customer: TEAM FISHEL		
Date Tested		Unit # or other id
8/15/11	C403-0979	
Unit Setting	Target Unit Reading (during test at specified voltages)	Initial Voltage read on Unit
5	5kV	N/A
15	5kV	N/A
40	5kV	N/A

M.W. Bevins Company certifies that this unit has been tested & calibrated to the specific Test Procedure for C403-0979 Rev. Original.

Equipment used to test unit is as follows-

Fluke Model 83 +/- .5% Calibrated 7/14/10 next due 7/14/11

Staco Variac 1010

Westinghouse Voltage Transformer Type V66

.....

M.W. BEVINS COMPA

August 31, 2011

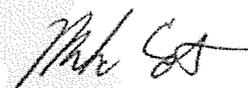
Team Fishel
Louisville, Kentucky

Re: C403-0979

Dear Mr. Mauldin:

We received your C403-0979 on August 3, 2011 and found it not fully functional with the exception of the intermittent test button. This push button may affect the units' ability to detect voltage. This push button is well as some worn labels. If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,



Mike Cotner
Vice President

Moore, Jeffrey C (PSC)

From: McBride, Keith [Keith.McBride@lge-ku.com]
Sent: Tuesday, October 18, 2011 1:22 PM
To: Moore, Jeffrey C (PSC)
Cc: Sheridan, Kenneth; Woods, Michael
Subject: RE: URD numbering on cables

Sorry it took so long..... dang, got busy there for a while...

I do not know why or understand why those numbers are on the elbow, looks like either a 9 or 6. Typically the numbers are associated with the transformer. It is possible that for future use that may have been what a new transformer number would have been. We do not number pull boxes though.

Thanks, Keith

From: Moore, Jeffrey C (PSC) [mailto:JeffreyC.Moore@ky.gov]
Sent: Friday, October 14, 2011 8:48 AM
To: McBride, Keith
Cc: kbthompson@teamfishel.com
Subject: URD numbering on cables

Keith and Kenny,

Keith I have a couple of question about the circuit numbering on the URD cables in the pull box (transformer pedestal) Mr. Christy was working at the time of the incident. The pictures taken that day at that pull box show an elbow terminator with the 85782, and the other terminator that was apparently damaged by the arc during the incident.

1. What is the single number in the picture showing the damaged terminator?
2. Also does LG&E use any indentifying marks/numbers on the outside of a pull box?

Kenny could you check with Mr. Williams and see if he and Mr. Christy had verified the numbers on the terminators in this pull box before the incident.

1. If so what was the numbers on each terminator in the pull box?

Thank You

Jeff Moore
Utility Regulatory & Safety Investigator
EEC/Public Service Commission
Office: 502-564-3940
Cell: 502-352-0767
jeffreyc.moore@ky.gov

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Moore, Jeffrey C (PSC)

From: Moore, Jeffrey C (PSC)
Sent: Wednesday, November 09, 2011 1:51 PM
To: McBride, Keith
Subject: RE: Elbow tagging numbers

Keith,

I have the updated area print that was revised on 7/28/2011. It was in the information requested (1. Updated area print) and sent on 10/11/2011.

1. Why was this print revised on 7/28/2011, and what was changed from the previous print?
2. Based on the information below do you have the original print showing how this was fed from the pull box located on Bridal Gate Drive to transformer 84746?
If so, please provide a copy with the information requested in this email.

Thank You

From: McBride, Keith [mailto:Keith.McBride@lge-ku.com]
Sent: Friday, October 28, 2011 6:24 AM
To: Moore, Jeffrey C (PSC)
Subject: Elbow tagging numbers
Importance: High

Jeff,

After more follow-up and a subsequent meeting with Safety and Technical Training and the URD Team Leader, we have determined what the number found on the elbow is and what that number was associated to.

The number on the elbow is 84746. This number, as we discussed earlier, is associated to a transformer. The transformer is located at the end of Pasafino Court. At the time of construction, the cable coming out of transformer-84746, traveled to the pull box located on Bridle Gate and looped. Later in the development of the subdivision, two other transformers were installed in between the transformer-84746 and the pull box located on Bridle Gate. Being that the cable was located in a pull box, it is assumed that the transformer installation crews did not go to the pull box and change the number on the elbow.

Thanks, Keith

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Moore, Jeffrey C (PSC)

From: Dimas, Jim [Jim.Dimas@lge-ku.com]
Sent: Wednesday, November 16, 2011 10:42 AM
To: Moore, Jeffrey C (PSC)
Cc: McBride, Keith; Sheridan, Kenneth; Lovekamp, Rick; Moss, Judy
Subject: Question Regarding Canterbrook Farms URD
Attachments: URDcir#3944.tif

Jeff,

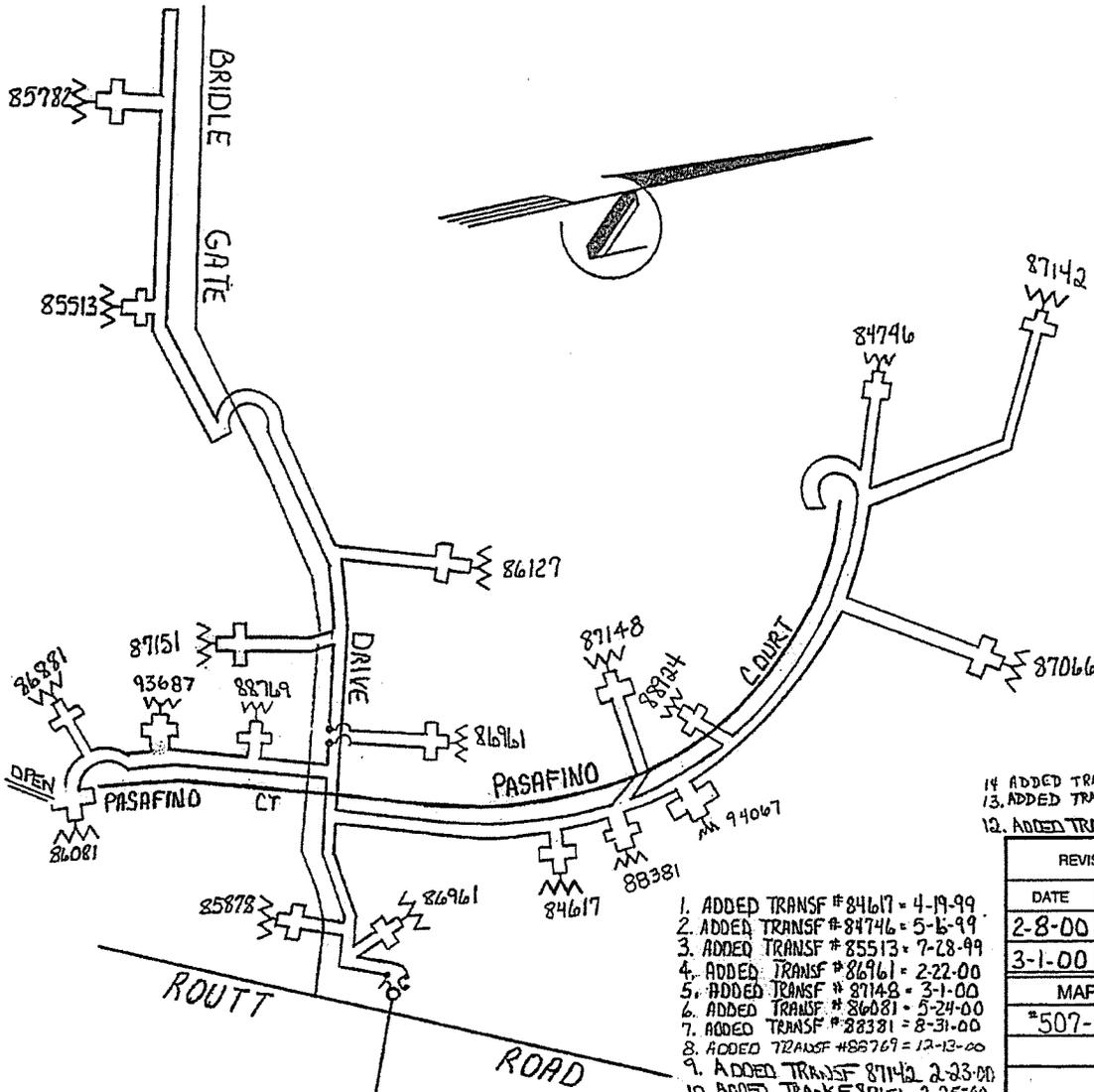
At Keith McBride's request I am providing information you requested from Keith in your e-mail of November 9, 2011. You asked "Why was this print revised on 7/28/2011, and what was changed from the previous print?" Answer: Because of the incident itself and because the initial view on site was that the cable involved had been tied to a different cable, LG&E wanted to verify the whole URD system in that neighborhood. The only change to the revised print was showing how the cable actually went to the transformer and two elbow numbers on the print were revised to show other installed transformers.

In addition, the print you requested is attached.

Jim Dimas
Senior Corporate Attorney
LG&E and KU Energy LLC
220 West Main Street
Louisville, Kentucky 40202
Phone: (502) 627-3712
Fax: (502) 627-3367

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- 14. ADDED TRANSF 94067 9-23-02
- 13. ADDED TRANSF 93687 1-9-02
- 12. ADDED TRANSF 88924 3-5-01

WORK ORDER NO. R981431A

- 1. ADDED TRANSF #84617 = 4-19-99
- 2. ADDED TRANSF #84746 = 5-6-99
- 3. ADDED TRANSF #85513 = 7-28-99
- 4. ADDED TRANSF #86961 = 2-22-00
- 5. ADDED TRANSF #87148 = 3-1-00
- 6. ADDED TRANSF #86081 = 5-24-00
- 7. ADDED TRANSF #88381 = 8-31-00
- 8. ADDED TRANSF #88769 = 12-13-00
- 9. ADDED TRANSF 87142 2-23-00
- 10. ADDED TRANSF 87151 2-25-00
- 11. ADDED TRANSF 85782 9-8-99

REVISIONS		LOUISVILLE GAS & ELECTRIC COMPANY LOUISVILLE, KENTUCKY	
DATE	BY	DEPARTMENT: ELECTRIC T&D DESIGN	
2-8-00	ERF	CANTERBROOK FARMS	
3-1-00	J.W. Cole		
MAP NO. *507-845			
SCALE NONE		DATE 2-12-99	Old U.R.D # 3944
DRAWN BY MARVIN DAILEY		New U.R.D # U3936	
APPROVED BY			

ATTACHMENT F

NESC C2-2007 TABLE 441-1

Table 441-1: AC Live Work Minimum Approach Distance⁴
 (See Rule 441 in its entirety.)

Voltage in kilovolts phase to phase ^{1,2}	Distance to employee			
	Phase-to-ground		Phase-to-phase	
	(m)	(ft-in)	(m)	(ft-in)
0 to 0.050 ¹	not specified		not specified	
0.051 to 0.300 ¹	avoid contact		avoid contact	
0.301 to 0.750 ¹	0.31	1-0	0.31	1-0
0.751 to 15	0.65	2-2	0.67	2-3
15.1 to 36.0	0.77	2-7	0.86	2-10
36.1 to 46.0	0.84	2-9	0.96	3-2
46.1 to 72.5	1.00 ³	3-3 ³	1.20	3-11

1. For single-phase systems, use the highest voltage available.
2. For single-phase lines off three phase systems, use the phase-to-phase voltage of the system.
- 3 The 46.1 to 72.5 kV phase-to-ground 3-3 distance contains a 1-3 electrical component and a 2-0 inadvertent movement component.
4. Distances listed are for standard atmospheric conditions. The data used to formulate this table was obtained from test data taken with standard atmospheric conditions. Standard atmospheric conditions are defined as temperatures above freezing, wind less than 15 mi per hr or 24 km per hr, unsaturated air, normal barometer, uncontaminated air, and clean and dry insulators. If standard atmospheric conditions do not exist, extra care must be taken.

ATTACHMENT G

OVERHEAD IMAGE OF INCIDENT SITE



Lonnie E Bellar
VP - State Regulation an
Louisville Gas and Electric Company
220 W. Main Street
P. O. Box 32010
Louisville, KY 40202

Lonnie E Bellar
VP - State Regulation an
Louisville Gas and Electric Company
220 W. Main Street
P. O. Box 32010
Louisville, KY 40202