



Control Number: 50595



Item Number: 58

Addendum StartPage: 0



Public Utility Commission of Texas

**Employee Training Report  
Required by 16 Texas Admin. Code § 25.97(d)**

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PUBLIC UTILITY COMMISSION  
FILING CLERK

**PROJECT NO.** 50595

**AFFECTED ENTITY:** South Plains Electric Cooperative, Inc.

**General Information**

Pursuant to 16 Texas Admin. Code § 25.97(d)(2), not later than the 30th day after the date an affected entity finalizes a material change to a document or training program, the affected entity must submit an updated report. The first report must be submitted not later than May 1, 2020.

**Instructions**

Answer all questions, fill-in all blanks, and have the report notarized in the Affidavit.

**Affidavit**

A representative of the affected entity must swear to and affirm the truthfulness, correctness, and completeness of the information provided by attaching a signed and notarized copy of the Affidavit provided with this form.

**Filing Instructions**

Submit four copies (an original and three copies) of the completed form and signed and notarized Affidavit to:

Central Records Filing Clerk  
Public Utility Commission of Texas  
1701 N. Congress Avenue  
P.O. Box 13326  
Austin, Texas 78711-3326  
Telephone: (512) 936-7180

Affected Entity: South Plains Electric Cooperative, Inc. PROJECT NO. 50595

1. Provide a summary description of hazard recognition training documents you provide your employees related to overhead transmission and distribution facilities.

Please see attachments that include:

- 1) Hazard Recognition Report form
- 2) Vertical clearances from TEC
- 3) Calendar of annual safety meetings including Hazard Recognition from 2013 to 2020.
- 4) Training summary from TEC that was conducted February ~~22, 23~~ 19, 20 to all outside personnel.

Affected Entity: South Plains Electric Cooperative, Inc. PROJECT NO. 50595

2. Provide a summary description of training programs you provide your employees related to the National Electrical Safety Code for construction of electric transmission and distribution lines.

Please see attachments and question #1.

Affected Entity: South Plains Electric Cooperative Inc. PROJECT NO. 50595

### AFFIDAVIT

I swear or affirm that I have personal knowledge of the facts stated in this report or am relying on people with personal knowledge, that I am competent to testify to them, and that I have the authority to submit this report on behalf of the affected entity. I further swear or affirm that all statements made in this report are true, correct, and complete.

[Signature]  
Signature

DALE ARCELL  
Printed Name

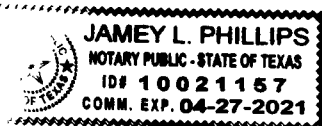
GENERAL MANAGER  
Job Title

SOUTH PLAINS ELECTRIC COOP.  
Name of Affected Entity

Sworn and subscribed before me this 22 day of April, 2020  
Month Year

[Signature]  
Notary Public in and For the State of Texas

My commission expires on 4-27-21





South Plains Electric  
Cooperative, Inc.

## Hazard Recognition Report

Priority: \_\_\_\_\_ ASAP \_\_\_\_\_ Schedule \_\_\_\_\_

DATE: \_\_\_\_\_

TIME: \_\_\_\_\_

TO: Safety Coordinator

FROM: \_\_\_\_\_ TITLE: \_\_\_\_\_

- |  |  |
|--|--|
| <input type="checkbox"/> Low clearance             | <input type="checkbox"/> Tree in power line                              |
| <input type="checkbox"/> Phase floater             | <input type="checkbox"/> Construction in progress under power line       |
| <input type="checkbox"/> Neutral floater           | <input type="checkbox"/> Equipment working under / near power line       |
| <input type="checkbox"/> Broken pole               | <input type="checkbox"/> Dirt, etc., piled under power line              |
| <input type="checkbox"/> Pole leaning badly        | <input type="checkbox"/> Irrigation pipe stacked under / near power line |
| <input type="checkbox"/> Broken lightning arrester | <input type="checkbox"/> TV / radio antenna under / near power line      |
| <input type="checkbox"/> Failed lightning arrester | <input type="checkbox"/> Swimming pool under / near power line           |
| <input type="checkbox"/> Broken insulator          | <input type="checkbox"/> Playground equipment under / near power line    |
| <input type="checkbox"/> Broken guy                | <input type="checkbox"/> Transformer / recloser leaking                  |
| <input type="checkbox"/> Loose guy                 | <input type="checkbox"/> Foreign attachment on pole                      |
| <input type="checkbox"/> Broken cross arm          | <input type="checkbox"/> Arcing seen or heard                            |
| <input type="checkbox"/> Broken anchor             | <input type="checkbox"/> Ground wire cut or removed                      |
| <input type="checkbox"/> Broken brace              | <input type="checkbox"/> Broken meter glass                              |

☐ Other \_\_\_\_\_

Location of Condition Needing Attention: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

## 2017 NESC Vertical Clearances

### Railways

Neutral            23.5 ft  
 TPX                24 ft  
 Dist. Primary    26.5 ft

### Highways – TX Administrative Code

Communications and Cable TV   18 ft  
 Electrical Lines                    22 ft

### Trucks Over 8 ft.

Neutral and Span Guys   15.5 ft  
 TPX                         16 ft  
 Dist. Primary              18.5 ft

### Fields, Orchards, Forest, Etc.

Neutral and Span Guy   15.5 ft  
 TPX                         16 ft  
 Dist. Primary              18.5 ft

### Pedestrians Only

Neutral and Span Guy   9.5 ft  
 TPX                         12 ft  
 Dist. Primary              14.5 ft

### Water – No Sailboat

Neutral and Span Guy   14 ft  
 TPX                         14.5 ft  
 Dist. Primary              17 ft

Waterways Suitable for Sailing		Rigging or Launching Areas
		Less Than 20 Acres
Neutral and Span Guy	17.5 ft	22.5 ft
TPX	18 ft	23 ft
Dist. Primary	20.5 ft	25.5 ft

## 2017 NESC Vertical Clearances

		20 to 200 Acres	
Neutral and Span Guy	25.5 ft		30.5 ft
TPX	26 ft		31 ft
Dist. Primary	28.5 ft		33.5 ft
		200 to 2,000 Acres	
Neutral and Span Guy	31.5 ft		36.5 ft
TPX	32 ft		37 ft
Dist. Primary	34.5 ft		39.5 ft
		Over 2,000 Acres	
Neutral and Span Guy	37.5 ft		42.5 ft
TPX	38 ft		43 ft
Dist. Primary	40.5 ft		45.5 ft



## Safety Training Schedule - 2020

Month/Loc	Subject	Trainer	Date
<b>January</b>	Bloodborne Pathogens/EAP	Ben Greene	January 7 & 8, 2020
	Stress Management	Alan Korinek	
	Golden Spread EC (for Lubbock meeting)	<b>**all employee mandatory</b>	<b>7:30 &amp; 3:00 Lubb</b>
<b>February</b>	Delta Transformer Banks	Phil Henricks-TEC	February 25 & 26, 2020
	Golden Spread EC (for Lubbock meeting)		
<b>March</b>	Disaster Management	Erica McDowell-Emergency	March 17 & 18, 2020
	Golden Spread EC (for Lubbock meeting)	Mgt Dist Manager	
<b>April</b>	Hazard Recognition/Fire Exting.	Phil Henricks-TEC	April 21 & 22, 2020
	Golden Spread EC (for Lubbock meeting)	<b>**all employee mandatory</b>	<b>7:30 &amp; 3:00 Lubb</b>
<b>May</b>	H2S Training	R2M Engineering	May 19 & 20, 2020
	Golden Spread EC (for Lubbock meeting)	Sean Finkbone	
<b>June</b>	L&G Meter Update	Brandon Loth	June 16 & 17, 2020
	Golden Spread EC (for Lubbock meeting)		
<b>July</b>	Meter Installation Safety	Phil Henricks-TEC	July 21 & 22, 2020
	Golden Spread EC (for Lubbock meeting)		
<b>August</b>	Troubleshooting UG Issues	UG Department	August 18 & 19, 2020
	Golden Spread EC (for Lubbock meeting)		
<b>September</b>	Defensive/Distracted Driving	Larry Homen	September 15 & 16, 2020
		Texas Mutual	
	Golden Spread EC (for Lubbock meeting)	<b>**all employee mandatory</b>	<b>7:30 &amp; 3:00 Lubb</b>
<b>October</b>	Customer Voltage Complaints	Phil Henricks-TEC	October 20 & 21, 2020
	Golden Spread EC (for Lubbock meeting)		
<b>November</b>	All Employee Meetings		November 4 & 5 & 6, 2020
	Golden Spread EC		
<b>December</b>	Regulators & Capacitors	Substation Dept	December 15 & 16, 2020
	Golden Spread EC (for Lubbock meeting)	Jake Terrell	



# Safety Training Schedule - 2019

Month/Loc	Subject	Trainer	Date
<b>January</b>	Hazard Recognition/Fire Exting. (Fire extinguisher inspections.)	Phil Henricks-TEC	January 8 & 9, 2019
	Golden Spread EC (for Lubbock meeting)	**all employee mandatory	8:00 & 3:00 Lubb
<b>February</b>	Rigging and securement	Construction Dept - Lubbk	February 19 & 20, 2019
	Golden Spread EC (for Lubbock meeting)		
<b>March</b>	SPCC Training	BCC	March 19 & 20, 2019
	Golden Spread EC (for Lubbock meeting)		
<b>April</b>	Bloodborne Pathogens/EAP	Allan Brown	April 16 & 17, 2019
	Golden Spread EC (for Lubbock meeting)	**all employee mandatory	8:00 & 3:00 Lubb
<b>May</b>	TXDOT & Program Audit	R2M Engineering	May 14 & 15, 2019
	Golden Spread EC (for Lubbock meeting)	Load securement/trailing - Sean Finkbone	
<b>June</b>	LOTO	Allan Brown & Aldo Almanza	June 18 & 19, 2019
	Golden Spread EC (for Lubbock meeting)		
<b>July</b>	Work Zone Safety	Phil Henricks-TEC	July 23 & 24, 2019
	Golden Spread EC (for Lubbock meeting)		
<b>August</b>	GHS & H2S (GHS for all employees.)	R2M Engineering Sean Finkbone	August 20 & 21, 2019
	Golden Spread EC (for Lubbock meeting)	**all employee mandatory	8:00 & 3:00 Lubb
<b>September</b>	SEL relay polling, data inquiry	Lubbock engineering	September 24 & 25, 2019
	Golden Spread EC (for Lubbock meeting)		
<b>October</b>	Defensive/distracted driving	Texas Mutual Larry Homen	October 15 & 16, 2019
	Golden Spread EC (for Lubbock meeting)	**all employee mandatory	8:00 & 3:00 Lubb
<b>November</b>	All Employee Meetings		November 6 & 7, 2019
	Golden Spread EC		
<b>December</b>	Fault current & coordination	Lubbock engineering	December 17 & 18, 2019
	Golden Spread EC (for Lubbock meeting)		



# Safety Training Schedule - 2018

Month/Loc	Subject	Trainer	Date
<b>January</b>	Hazard Recognition	Phil Henricks-TEC	January 16 & 17, 2018
	Golden Spread EC (for Lubbock meeting)	<b>**all employee mandatory</b>	<b>8:00 &amp; 2:30 Lubb</b>
<b>February</b>	Voltage Regulator Training	Delbert Varnell & Jake	February 13 & 14, 2018
	Golden Spread EC (for Lubbock meeting)	Terrell	
<b>March</b>	Coordination & Power Calculations	Brandon Loth	March 20 & 21, 2018
	Golden Spread EC (for Lubbock meeting)		
<b>April</b>	Bloodborne Pathogens/EAP	Allan Brown	April 23 & 24, 2018
	<b>** NOTE - SPR/Childress on Mon. 4/23 - Lubbock on Tue. 4/24</b>	<b>Spur/Childress &amp; Lubb</b>	
	Golden Spread EC (for Lubbock meeting)	<b>**all employee mandatory</b>	<b>8:00 &amp; 4:00 Lubb</b>
<b>May</b>	TXDOT & Program Audit	R2M Engineering	May 22 & 23, 2018
	Golden Spread EC (for Lubbock meeting)		
<b>June</b>	LOTO/Two way Radio Operations	Allan Brown & Jim Woodard	June 19 & 20, 2018
	Golden Spread EC (for Lubbock meeting)		
<b>July</b>	Work Zone Safety & Protection	Phil Henricks-TEC	July 10 & 11, 2018
	Golden Spread EC (for Lubbock meeting)		
<b>August</b>	H2S & GHS	R2M Engineering	August 21 & 22, 2018
	Golden Spread EC (for Lubbock meeting)	<b>**all employee mandatory</b>	<b>8:00 &amp; 4:00 Lubb</b>
<b>September</b>	Back-feed Order Preparation-Simple/Complex	Aldo Almanza & Danny Crabtree	September 18 & 19, 2018
	Golden Spread EC (for Lubbock meeting)		
<b>October</b>	SPCC	V-Tech	October 16 & 17, 2018
	Golden Spread EC (for Lubbock meeting)	Polly Vann	
<b>November</b>	All Employee Meetings		November 7 & 8 , 2018
	Golden Spread EC		
<b>December</b>	Types of Meters & Applications	David Acuff & Blake Dalton	December 18 & 19, 2018
	Golden Spread EC (for Lubbock meeting)		



## Safety Training Schedule - 2016

Month/Loc	Subject	Trainer	Date
<b>January</b>	Fire Extinguishers	Phil Henricks-TEC	January 19-20, 2016
	Golden Spread EC (for Lubbock meeting)	**all employee mandatory	8:00 & 2:30
<b>February</b>	Backfeed hazards/cap banks	Joe S/Clay H	February 15 & 17, 2016
	Golden Spread EC (for Lubbock meeting)		
<b>March</b>	Bloodborne Pathogens/GHS	R2M Engineering	March 15-16, 2016
	**North Auditorium (for Lubbock meeting)	**all employee mandatory	8:00 & 2:30
<b>April</b>	Emergency Radio Procedures	Tim Warren	April 19-20, 2016
	UG Troubleshooting	UG Department	
	Golden Spread EC (for Lubbock meeting)		
<b>May</b>	TXDot & program audit	Dan Andrews	May 17-18, 2016
	Golden Spread EC (for Lubbock meeting)		
<b>June</b>	Transformer connections	Service Department	June 21-22, 2016
	Voltage checks, meter bases		
	Golden Spread EC (for Lubbock meeting)		
<b>July</b>	Care of PPE	Maintenance Department	July 12-13, 2016
	Insulation/isolation		
	Golden Spread EC (for Lubbock meeting)		
<b>August</b>	H2S Refresher Training	R2M Engineering	August 16-17, 2016
	Golden Spread EC (for Lubbock meeting)		
<b>September</b>	Back safety, lifting, slips, trips	Phil Henricks-TEC	September 20-21, 2016
	Golden Spread EC (for Lubbock meeting)	**all employee mandatory	8:00 & 2:30
<b>October</b>	LOTO & station devices	Substation Department	October 18-19, 2016
	Golden Spread EC (for Lubbock meeting)		
<b>November</b>	Rigging & securement	Construction Department	November 15-16, 2016
	Golden Spread EC (for Lubbock meeting)		
<b>December</b>	All Employee Meetings		December 1-2, 2016
	Golden Spread EC		

## Safety Training Schedule - 2015

Month/Loc	Subject	Trainer	Date
<b>January</b> Golden Spread EC (for Lubbock meeting)	Work zone safety & protection	Phil Henricks-TEC	January 20-21, 2015
<b>February</b> **North Auditorium (for Lubbock meeting)	CMV inspection procedures	Chris Delaplaine - Zurich	February 24-25, 2015
<b>March</b> **North Auditorium (for Lubbock meeting)	Bloodborne Pathogens/GHS	R2M Engineering	March 17-18, 2015
<b>April</b> Golden Spread EC (for Lubbock meeting)	Meter Installation Safety	Phil Henricks-TEC	April 21-22, 2015
<b>May</b> Golden Spread EC (for Lubbock meeting)	TXDot & program audit	R2M Engineering	May 19-20, 2015
<b>June</b> Golden Spread EC (for Lubbock meeting)	Delta Transformer Banks	Phil Henricks-TEC	June 9-10, 2015
<b>July</b> Golden Spread EC (for Lubbock meeting)	Customer Voltage Complaints	Phil Henricks-TEC	July 21-22, 2015
<b>August</b> Golden Spread EC (for Lubbock meeting)	H2S Refresher Training	R2M Engineering	August 25-26, 2015
<b>September</b> Golden Spread EC (for Lubbock meeting)	LOTO	Aldo Almanza & Clay Hallett	September 22-23, 2015
<b>October</b> Golden Spread EC (for Lubbock meeting)	Equipment Grounding	Phil Henricks-TEC	October 20-21, 2015
<b>November</b> **North Auditorium (for Lubbock meeting)	Basic UG Safety Precautions	Phil Henricks-TEC	November 17-18, 2015
<b>December</b> Golden Spread EC	All Employee Meetings		December 10-11, 2015



## Safety Training Schedule - 2014

Month/Loc	Subject	Trainer	Date
<b>January</b> Golden Spread EC (for Lubbock meeting)	Work zone safety & protection	Phil Henricks-TEC	January 21-22, 2014
<b>February</b> North Office	1910.269 update	Glenn Smith	February 11-12, 2014
<b>March</b> Golden Spread EC (for Lubbock meeting)	Near misses & accidents	Phil Henricks-TEC	March 11-12, 2014
<b>April</b> Golden Spread EC (for Lubbock meeting)	SPCC/Hydration Program	R2M Engineering Dr. Addington	April 22-23, 2014
<b>May</b> Golden Spread EC (for Lubbock meeting)	Occupational noise exposure	Phil Henricks-TEC	May 20-21, 2014
<b>June</b> Golden Spread EC (for Lubbock meeting)	TxDot & program audit	R2M Engineering	June 17-18, 2014
<b>July</b> Golden Spread EC (for Lubbock meeting)	LOTO annual review	Allan	July 22-23, 2014
<b>August</b> Golden Spread EC (for Lubbock meeting)	H2S Refresher Training	R2M Engineering	August 19-20, 2014
<b>September</b> North Office	PPE/Hazard Recognition	Phil Henricks-TEC	September 10-11, 2014
<b>October</b> Golden Spread EC (for Lubbock meeting)	Job hazard analysis	Phil Henricks-TEC	October 21-22, 2014
<b>November</b> Golden Spread EC (for Lubbock meeting)	Near misses & accidents	Phil Henricks-TEC	November 18-19, 2014
<b>December</b>	All Employee Meetings		December , 2014

## Safety Training Schedule - 2013

Month	Subject	Trainer	Date
January	All Employee Meetings		January 22-24, 2013
February	SEL 351S & 351R relays, SEL 734 meter, UVR-1 regulator control Zach, Delbert		February 12-13, 2013
March	Confined Space & Excavation	Glenn Smith	March 19-20, 2013
April	SPCC training	V-Tech - Polly Vann	April 16-17, 2013
May	1910.269 update	Glenn Smith	May 14-15, 2013
June	TxDot & program audit	Bill Nichols	June 18-19, 2013
July	GL/hazard recognition LOTO annual review	Bruce Wright - Synebar Allan	July 16-17, 2013
August	H2S Refresher Training	Assurance Fire, Safety	August 13-14, 2013
September	Accidents & Near Misses	TEC/Phil Henricks	September 24-25, 2013
October	ALTEC training -- aerial lift and digger/derrick <b>*Every 5 years*</b>		October 8-11, 2013 October 15-18, 2013
November	Fork lift annual training <b>*Every 3 years*</b>	TEC/Phil Henricks	November 12-13, 2013
December	Annual refresher training Bloodborne Pathogen/Hazard Comm Policy updates	Allan	December 10-11, 2013

## INTRODUCTION

In accordance with the William Thomas Heath Power Line Safety Act, HB 4150, and PUCT Substantive Rule 25.97, \_\_\_\_\_ Electric Cooperative is providing a summary description of training programs provided to employees related to overhead transmission and distribution lines. Among other things, this training includes hazard recognition, adherence to NESC guidelines for construction, operation and maintenance of transmission and distribution lines. Training also includes NESC Rule 232, clearance requirements over any of the 178 lakes listed in the Act. Included herein are summaries of the current training modules \_\_\_\_\_ Electric Cooperative provides to employees.

## TRAINING SUMMARIES

### Summary of TEC Hotline School I-IV (four-day course)

Line Construction I—Rubber Gloving from Bucket this course is designed for employees at the apprentice level who have performed some rubber gloving from an aerial device on energized conductors. these students should have safely performed limited live line work from an aerial device with full supervision. through this course, students gain extensive hands-on training and experience during training exercises with experienced craftsmen, who provide one-on-one training. after completing this course, students should be able to perform basic rubber-gloving techniques safely.

Line Construction II—this course is designed for employees in an advanced stage of apprenticeship training who have at least a year of experience safely performing rubber gloving from an aerial device with full supervision. students should also have experience performing live line work from an aerial device with full supervision, and should be able to perform live line work safely. Through this course, students gain extensive hands-on training and experience during training exercises with experienced craftsmen, who provide one-on-one training on three-phase construction. After completing this course, the students should be able to perform rubber-gloving techniques safely and plan hot work in a safe and proper work order.

Line Construction III—this course is designed for experienced line technicians in all phases of overhead construction and work performance who deal with multiple hazards associated with overhead line work. students gain extensive hands-on training and experience during the training exercises.

Line Construction IV—this course is designed for experienced line technicians in all phases of overhead construction and work performance, work procedures, and dealing with sCaDa, grounding and multi-task job performances. the students will get extensive hands-on training and experience during the training exercises.

### Summary of TEC Troubleshooting School (four-day course)

This course provides instruction on basic electricity, identifying and correcting line service complaints, identifying errors associated with customer equipment and services, identifying and using all personal protective equipment and cover-up when working on energized equipment, and identifying and understanding all systematic switching procedures to isolate faulted energized equipment and services on overhead and underground systems.

### Summary of TEC Safety Meeting HB4150 Training (two- to four-hour course)

The training will include an overview of HB 4150 with an explanation of requirements for the utilities operating in Texas. It will also include hazard recognition training as it applies to the requirements of compliance with the National Electric Safety Code (NESC). This will include clearance requirements for lands, roadways, and waterways. The employee training will define to whom, when and how the bill applies. As well as explanation of guidelines, requirements, and deadlines for filing reports. A portion of the course will include hazard recognition and an explanation of clearance guideline requirements preparing employees to proactively recognize and report hazards and clearance related issues on their utilities' system.

Course Outline:

1. HB 4150 Review





2. Hazard Recognition
3. NESC Clearance Guideline Requirements

Course Materials:

1. Power Point Presentation
2. Presentation Material Handouts
3. NESC Clearance Handouts
4. HB 4150 Law

Summary of Transmission Webinar for PURA §38.102 (one-hour course to accompany TEC Safety Meeting)

PURA §38.102 requires electric utilities including electric cooperatives and municipally owned utilities to provide training to employees related to the National Electric Safety Code (NESC) for construction of electric transmission and distribution lines. This webinar discusses the requirements for transmission facilities which are defined as facilities operating above 60 kV. The webinar will not include discussions regarding distribution lines. This training will focus on transmission clearances, strength issues, and access of overhead transmission lines.

Course Outline:

1. Maximum Operating Temperature and Sag Requirements for Transmission Conductors
2. Additional Ground Clearance Requirements for Transmission Lines
  - a. Maximum Operating Voltage
  - b. Elevation above Sea Level
  - c. Electrostatic Effects to Vehicles below the Line.
3. Additional Clearances from Building/Signs
  - a. Deflection of Insulators
  - b. Deflection of Structures
  - c. Clearance Based on Maximum Operating Voltage
  - d. Limited Electrostatic Effects to Buildings and Signs below the Line
4. Mid-span Conductor Clearances
5. Power Lines and Phone Lines Crossing below Transmission Lines
6. Grade of Construction for Voltages Over 22kV
  - a. Guying Strength Requirements
  - b. Under-build Strength Requirements
7. Identification of Climable Supporting Structures

Objectives:

1. Determine appropriate clearances for transmission lines.
2. Define maximum sag for determined clearances.
3. Identify strength requirements for transmission facilities

Summary of Hazardous Recognition Training for Transmission Facilities (one-hour course to accompany TEC Safety Meeting)

PURA §38.102 requires electric utilities including electric cooperatives and municipally owned utilities to provide hazard recognition training related to overhead transmission and distribution facilities. For the purposes of this training, transmission facilities include those electric facilities operating above 60 kV. One of the challenges to recognizing hazards inherent to transmission facilities is the significant changes in conductor sag for transmission lines. The goal for this training is to educate employees to observe, recognize and report hazardous situations.

Course Outline:

1. Definition of a Hazard
2. Hazards to Report
  - a. Non-compliance with NESC

- b. Failed System Components
  - c. Failure of Warning Lights/Marker Balls
- 3. Summary of Clearances for Transmission Facilities
- 4. Recognition of Changes in Conductor Sag for Long Spans
- 5. Activities near the Line
  - a. Grading
  - b. Crane Operation OSHA 1926.1408(a)
  - c. Scaffold Clearances OSHA 1926.451(f)
  - d. Construction of Adjacent Buildings/Signs
- 6. Right-of-way Issues
  - a. Danger Trees
  - b. Dead Trees
  - c. Erosion of the Right-of-Way
- 7. Priorities of Reported Issues
- 8. Record Keeping Requirements

Objectives:

- 1. Define hazards associated with transmission lines.
- 2. Identify appropriate distance for cranes from power lines.
- 3. Identify required clearances for transmission line related to roads and buildings.
- 4. Define a danger tree.

Summary of Hazard Recognition (four-hour C•O•R•E course)

HB 4150 Section 38.102(a)(1) requires utilities to provide a summary of hazard recognition training documents for overhead transmission and distribution lines. Hazard recognition training focuses on equipping electric utility employees with the knowledge to recognize clearance hazards of overhead power lines.

Course Outline:

- 1. Importance of Hazard Recognition for Overhead Power Lines
- 2. Vertical and horizontal clearance requirements
- 3. Importance of an intact system grounding system
- 4. Isolation or/and grounding of anchor guys
- 5. Hazard Assessment Management
- 6. Defining Criteria for Hazard Assessment and Data Collection
- 7. Analyzing Data and Determining Appropriate Actions
- 8. Preparing and Executing an Action Plan
- 9. Report Documentation and Record Maintenance

Summary of NESC Clearance Requirements (four-hour C•O•R•E course)

This course will educate all utility personnel whose positions require a working knowledge of the NESC rules, which can include engineers, line workers and staking technicians.

Course outline:

- 1. Defining sag requirements—Rule 230 2
- 2. Ground clearances—Table 232-1 and 232-2
- 3. Clearances to building and signs—Table 234-1
- 4. Clearances to pools and grain bins—Rule 234E and 234F
- 5. Joint use clearances—Rule 235, 238, and 239

Summary of Designing Transmission and Distribution Lines Crossing Lake (one-day C•O•R•E course)

This training reviews clearances as defined by Rule 232 of the NESC and compliance with the U.S. Army Corps of Engineers easement requirements. This training class will review the applicable sections of the

NESC as it relates to designing long spans over lakes and the easement terms and specifications commonly found in easements with the Corps of Engineers. The training provides a demonstration of designing a lake crossing using software such as Pole Foreman and Sag 10.

Course Outline:

1. Requirements of the HB 4150
2. Lake Crossing Issues
3. NESC Requirements for Lake Crossings
  - a. Rule 232 Clearances
  - b. Rule 241 Required Grade of Construction of crossing lakes
  - c. Rule 250D Application of Extreme Ice
  - d. Rule 250C Extreme Wind
  - e. Rule 235Cb Design Considerations for Wire Slap and Sag to Lower Conductors
4. Corps of Engineers Easement Requirements
  - a. Vertical Clearance Requirements
  - b. Additional Clearance Requirements for Areas Designated for Rigging or Launching Sail Boats
5. Determining Lake Crossing Clearances
  - a. High Water
  - b. Sag and Tension for Long Crossings
  - c. Worst Case Sag
6. Additional Consideration
  - a. Transmission Adders
  - b. Marker Balls
7. Example problems

NESC Clearance Review of Existing Transmission Lines (one-day C•O•R•E course)

HB 4150 Section 38.102(2) requires utilities to submit a report on training related to the NESC for the “construction of transmission and distribution facilities.” This training will concentrate on NESC Section 232- Vertical Clearances. Further, the training will provide the skill sets necessary to inspect transmission lines without creating a model of the line using LiDAR. The target audience for the class will be operations personnel and staking technicians.

Course Outline:

1. Rule 232B Sag and Tension Definition
2. Rule 232 Vertical Clearance above Ground and Water Surfaces
3. Rule 233 Vertical Clearance from Other Utilities
4. Identification of Activity below the Utility Line
5. Example Problems Using Sag10
  - a. Effect of Long and Short Spans
  - b. Effect of Grade along the Line
6. Determining the Tension of an Existing Line
  - a. Sag Measurements
  - b. Calculation of Tension Based on Sag
7. Use of Software to Determine Ground Elevations
8. Example problems