EKPC Safe Work
MANUAL

EKPC SAFETY IS R.I.G.H.T.

EAST KENTUCKY POWER COOPERATIVE, INC.
SAFETY MANUAL

GO TO TABLE OF CONTENTS

FOREWORD

Safety is East Kentucky Power's top priority. EKPC recognizes its responsibility to provide a safe working environment. This manual has been prepared for establishing and maintaining safe working conditions for all employees. As an agreement of employment, strict observance of the contents of this manual is required. Disregard for any adopted East Kentucky Power Cooperative policy may be grounds for disciplinary action up to and including termination of employment.

As referenced in the five safety principles shown on the next page, East Kentucky Power intends to create a safety culture for its employees. With this in mind, EKPC's safety philosophy is to base each and every work decision on safety. Before beginning each work task, employees shall satisfy themselves that task related hazards have been eliminated or neutralized. Together, we will adhere to these guidelines and foster a safe workplace.

In preparation of this manual, it is recognized that local, state, federal regulations and standards of conduct may cause some minor conflicts. In the event of such conflict, you are advised to adhere to the most restrictive regulations governing the situation in question. These safety rules are minimum performance requirements and are intended to be at least as stringent as the applicable state or federal regulations. They are under continuous review and will be revised when necessary.

It is not possible to write rules covering all possible situations. Where situations arise which are not specifically covered, your cooperation and diligence with your team and supervisor are required.

Whenever the male gender is used in this manual, it is understood to apply to either male or female.

Revisions and additions shall be made as needed. Communications will be made to employees as appropriate. Revision dates shall be stated.

If you would like to recommend additions or changes to this manual, please click here.

East Kentucky Power Cooperative

EKPC's Five Safety Principles

Safety is our number one priority.

- Safety is an essential part of everything we do.
- Staying safe and returning home safely is more important than any outage.
- When the demands of the job challenge our focus, safety shall remain our top priority.

EKPC will promote a safe, secure and healthy environment both at work and at home.

- Safety is a culture, not a program.
- Managers/supervisors will demonstrate leadership in all aspects of safety.
- Safety is the most important measure of a project's success.

EKPC will strive to create an environment empowering each individual to contribute toward an injury-free workplace.

- Employee engagement is essential. Managers/supervisors will promote active participation and communication.
- Training and coaching employees to work safely is essential.
- EKPC will reward, recognize and celebrate safety achievements.

All employees are responsible for preventing safety incidents.

- Working safely is a condition of employment.
- Employees are responsible to work safely and to help others work safely.
- Managing safety is the responsibility of every manager/supervisor at every level.

All safety incidents are preventable and all hazards are controllable.

- Planning is essential to working safely.
- When incidents occur, we will learn from them, communicate our findings and take steps to prevent similar incidents.
- Continuous improvement is essential to advancing safety at EKPC.

INTRODUCTION

All Employees:

In 2011, EKPC embarked on a journey that is fundamentally changing the way we view safety. We have moved away from evaluating our safety performance strictly by statistical measures that focus on incidents after they have happened. We now embrace a proactive, employee empowered approach to avoid incidents. As an organization, we are committed to the belief *that all incidents are preventable and all hazards are controllable.*

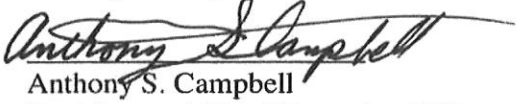
With your support, we are creating a culture of safety at EKPC. By focusing on leading indicators identified through safety observations, near miss incident reporting, and investigations, we have gained knowledge about our processes, policies, and equipment that have developed into safety improvement initiatives, one of which was the revision of this safety manual. The progress we have made is remarkable; but we cannot become complacent. Safety is a never ending priority for us at EKPC, and it requires constant vigilance and a focus on continuous improvement.

It is important that we follow our 5 Safety Principles. Our actions should always be reflective of what we believe:

1) Safety is our number one priority – ***nothing*** is worth putting you or a co-worker at risk.
2) EKPC will promote a safe, secure and healthy environment both at work and at home.
3) EKPC will strive to create an environment empowering each individual to contribute toward an injury-free workplace.
4) All employees are responsible for preventing safety incidents.
5) All safety incidents are preventable and all hazards are controllable.

At EKPC, Safety is everyone's responsibility. Using our Safety Principles as our guide, I know we will reach our destination, of a culture of safety where everyone goes home injury-free each day.

Thank you for your commitment to our safety journey and for all you do for EKPC.



Anthony S. Campbell
President and Chief Executive Officer

TABLE OF CONTENTS

FOREWORD…….. 1
TABLE OF CONTENTS 1
REFERENCE BOOKS 1
DEFINITIONS 2
POLICIES…… 15
SECTION A: GENERAL 1
A-1 Scope 1
A-2 Effectiveness 1
A-3 Emergency Conditions 1
A-4 Occupational Safety and Health Requirements 1
A-5 Supervisor/Foreman Responsibilities 2
A-6 Employee Responsibilities 2
A-7 Knowledge of Safety Rules and Application 3
A-8 Conditions Not Covered 3
A-9 Qualifications for Duty 3
A-10 Care In Performance Of Duties 3
A-11 Resources 3
A-12 Actions in Case of Incident/Injury 4
SECTION B: CARDINAL RULES 1
SECTION C: SAFEGUARDING THE PUBLIC 1
SECTION D: OFFICE SAFETY 1
D-1 Scope 1
D-2 Office Safety 1
D-3 Video Display Terminals 3
SECTION E: CELLULAR & ELECTRONIC DEVICES 4
SECTION F: VEHICLE OPERATIONS 1
F-1 Scope 1
F-2 General 1
F-3 Inspection of Equipment - (CDL) 2

F-4	Exhaust Gas	3
F-5	Operation	3
F-6	Parking	4
F-7	Backing	5
F-8	Stopping on Highway	5
F-9	Reporting Company Vehicle Incidents	5
F-10	Industrial Trucks - Fork Lifts	6
F-11	Cranes, Derricks, Hoisting Equipment	8
F-12	Aerial Lifts	9
F-13	Hand Signals	11
SECTION G:	FIRST AID & AED's	1
G-1	Scope	1
G-2	Definitions and Needs	1
G-3	Reasons for First Aid	1
G-4	General First Aid Instructions	1
G-5	Supplementary First Aid Instructions	2
G-6	First Aid Training	2
G-7	Automated External Defibrillator (AED)	2
G-8	Pole-Top Rescue	3
G-9	After Rescue	4
SECTION H:	PERSONAL PROTECTIVE EQUIPMENT	1
H-1	Scope	1
H-2	Head Protection	1
H-3	Eye and Face Protection	1
H-4	Individual Wearing Apparel	2
H-5	Hand Protection	3
H-6	Rubber Protective Equipment	3
H-7	Flexible Protective Equipment (Rubber Synthetics, etc.)	5
H-8	Fall Protection	7
H-9	Supplemental Breathing Equipment	8
H-10	Life Jackets, Life Lines and Similar Equipment	9

H-11	Hearing Protection and Noise	9
H-12	Guards	10
H-13	Barricades/Railings/Toeboards	10
H-14	Portable Grounds and Grounding: Refer to Power Delivery Section	11
H-15	Respirators	11
H-16	Use and Care of Rubber Gloves	12
SECTION I:	FIRE PROTECTION	1
I-1	Scope	1
I-2	Fire Prevention and Emergency Plans	1
I-3	Fire Extinguishers	1
I-4	Hydrants, Standpipes, and Hose Stations	2
I-5	Sprinkler Systems	3
SECTION J:	MATERIALS HANDLING	1
J-1	Scope	1
J-2	Materials Handling	1
J-3	Hauling Poles or Ladders	2
J-4	Temporary Pole Storage	2
J-5	Rigging Equipment	4
J-6	Hoisting Cables - Conductive Material	5
J-7	Rope (Synthetic Fiber - Manila)	5
SECTION K:	HAND AND POWER TOOLS	1
K-1	Scope	1
K-2	Hand Tools	1
K-3	Pneumatic Tools	2
K-4	Portable Electric Tools	3
K-5	Hydraulic Tools	4
K-6	Power Lawn Mowers, Edgers, Etc.	4
K-7	Powder Actuated Tools	5
K-8	Miscellaneous Tools and Equipment	6
SECTION L:	COMPRESSED GAS AND WELDING	1
L-1	Scope	1

L-2	Compressed Gases - General	1
L-3	Handling Cylinders	1
L-4	Storage of Cylinders	2
L-5	Welding and Cutting - General	3
L-6	Electric Welding	4
L-7	Gas Welding	5
SECTION M:	LADDERS AND SCAFFOLDS	1
M-1	Scope	1
M-2	Ladders	1
M-3	Single and Extension Ladders	2
M-4	Step Ladders	3
M-5	Scaffolds	4
SECTION N:	HEALTH AND ENVIRONMENTAL CONTROLS	1
N-1	Scope	1
N-2	Illumination/Lighting	1
N-3	Ventilation	1
N-4	Hazardous Materials	2
N-5	PCB's (Pyranol, Askarel, Inerteen, etc.)	3
N-6	Radioactive Material	3
N-7	Use of Herbicides and Other Chemicals	4
N-8	Asbestos	5
N-9	Lead	6
N-10	Air Contaminants	6
N-11	Indoor Air Quality (IAQ)	7
N-12	Work Place Smoking	7
SECTION O:	POWER PRODUCTION	1
O-1	Scope	1
O-2	Plant/Plant Facilities Security	1
O-3	Personnel Working on Plant Equipment	1
O-4	Contractor Personnel	1
O-5	Work Clearances	1

O-6	Equipment/Systems Clearances	2
O-7	Work Over Gratings	2
O-8	Coal Handling	2
O-9	Lancing Boilers	4
O-10	Removal of Ash and Slag	5
O-11	Work on De-Energized Conductors and/or Equipment	5
O-12	Work on Energized Conductors and/or Equipment	6
O-13	Proper Designations Required	6
O-14	Changing Generator & Exciter Collector Ring Brushes with Machine in Service.	6
O-15	Gas Generation – Smith Station	7
O-16	Landfill Gas	8
SECTION P:	TRAINING	1
P-1	Scope	1
P-2	Employee Training	1
P-3	Qualified Employee Training	1
P-4	Safety Compliance	2
P-5	Additional Training and Retraining	2
P-6	Job Hazard Analysis	2
P-7	Job Briefings	3
P-8	Safety Observations	3
P-9	Incident Investigations	4
SECTION Q:	EKPC WORK AREA PROTECTION	1
Q-1	Scope	1
Q-2	Areas	1
Q-3	Equipment	2
Q-4	Flagmen	2
SECTION R:	POWER DELIVERY	1
R-1	Scope	1
R-2	Working On or Near Exposed Energized Lines and Equipment	1
R-3	Flexible Protective Equipment: Refer to Personal Protective Equipment	4
R-4	Rubber Synthetics, etc.: Refer to Personal Protective Equipment	4

R-5 Use and Care of Rubber Gloves: Refer to Personal Protective Equipment 4
R-6 Climbing and Working on Poles 4
R-7 Working on Energized Lines or Equipment with Live Line Tools 5
R-8 Working on De-Energized Lines and Equipment 6
R-9 Dispatching and Clearances 6
R-10 Working on Transformers 8
R-11 Working on Capacitors or Gang Operated Switches with Interrupters 8
R-12 Stringing or Removing De-Energized Conductors 8
R-13 Stringing Adjacent to Energized Lines 9
R-14 Grounding General 10
R-15 Equipotential Grounding 12
R-16 Setting and Removing Poles 13
R-17 Derrick Trucks, Cranes, etc. 14
R-18 Fuses 14
R-19 Metering 14
SECTION S: TELECOMMUNICATIONS 1
S-1 Fiber Optics 1
S-2 HVIU 2
S-3 Portable Power Equipment 3
S-4 Powerline Carrier Tuner Maintenance 3
S-5 Working Near Microwave Facilities 3
S-6 Batteries 4
S-7 Tower Climbing 4
SECTION T: TREE TRIMMING 1
T-1 Scope 1
T-2 General 1
T-3 Working Near Energized Conductors 2
T-4 Tree Felling 4
T-5 Care and Use of Tools and Rope 4
T-6 Powered Trimming Equipment 5
T-7 Chippers 7

T-8 Right-of-Way Clearing and Maintenance 7
SECTION U: UNDERGROUND LINES AND EQUIPMENT 1
U-1 Scope 1
U-2 Opening and Guarding Holes 1
U-3 Entering Underground Structures 1
U-4 Work on Energized Cables 3
U-5 Work on De-energized Cables 5
U-6 Pulling Cables 6
U-7 Moving Energized Cables 6
U-8 Heating Materials 7
SECTION V: UNDERGROUND RESIDENTIAL DISTRIBUTION 1
V-1 Scope 1
V-2 Opening and Closing Circuits - URD 1
V-3 Grounding - URD 2
V-4 Rubber Glove Use - URD 2
V-5 Work on Energized Equipment - URD 3
V-6 Excavations - URD 3
SECTION W: HAZARDOUS ENERGY CONTROL – LOCK OUT TAG OUT 1
W-1 Scope 1
W-2 Control/Lockout-Tagout 1
SECTION X: POWER PRODUCTION AND DELIVERY 1
X-1 Scope 1
X-2 Batteries 1
X-3 Confined Spaces 2
X-4 Signs 3
X-5 Substation Security 3
X-6 Entering/Working in Substation 4
X-7 Work Clearances 4
X-8 Handling Tools and Materials 4
X-9 Substation Switching 4
X-10 Equipment Testing 5

X-11 Testing and Test Facilities 5
X-12 Arc Flash 7

REFERENCE BOOKS

The following information is available to all employees upon request:

1. **EKPC Cardinal Safety Rules**
2. **EKPC Asbestos Protection Program**
3. **EKPC Respiratory Protection Plan**
3. **EKPC Hearing Conservation Program**
4. **EKPC Hot Work Compliance Program**
5. **EKPC Bloodborne Pathogen Exposure Control Program**
6. **Riggers Reference Booklet**
   Riggers Reference Manual
7. **EKPC Central Lab Chemical Hygiene Plan**
8. **KOSHA and Federal OSHA Regulations**
9. **EKPC Confined Space Entry Program**
10. **Power Delivery Lockout/Tagout Procedure**
11. **Power Delivery 345kV Grounding Procedure**
12. **EKPC Employee Reference Guide**
13. **Hazard Communication Program (SDS)**
14. **Power Production Lock Out Tag Out Procedure**
15. **EKPC Crisis Management Plan**
16. **EKPC Contractor Safety Handbook**
17. **EKPC Job Hazard Analysis Form & JHA Tool Kit**

Go to TABLE OF CONTENTS

DEFINITIONS

The definitions below apply to terms that are typically found in the utility industry, and may not be found in this manual.

Aerial Device: Any piece of equipment utilizing a bucket or platform to place the worker(s) at an elevated worksite.

Alive or live: Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of the earth in the vicinity. The term "live" is sometimes used in place of the term "current-carrying", where the intent is clear, to avoid repetition of the longer term.

Amputation: An injury which results in a portion of the body, including bone tissue being removed.

Anchorage: A secure means of attachment for lifelines, lanyards, and straps.
ANSI: American National Standards Institute.

Approved: The term "approved," when used in connection with methods, tools or equipment, refers to the methods, or to equipment approved by the Company through committee, process or in a Safety Rule.

ASTM: American Standard Testing Measurement
Authorized Person: One who has the authority to perform specific duties under certain conditions or who is carrying out orders from responsible authority.

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.

Barrier: A physical obstruction which is intended to prevent contact with energized lines or equipment.

Barricade: A physical obstruction such as tapes, screens, or cones intended to warn and limit access to a hazardous area.

Benching (Benching System): A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

Body Belt (Lineman): A belt that secures around the waist and attaches to a safety strap for positioning only.

Body Harness: A harness that is secured about an employee in a manner that distributes the arresting forces over the thighs, shoulders, and pelvis with provisions for attaching a shock absorbent lanyard or lifeline.

Bond: The electrical interconnection of conductive parts designed to maintain a common electrical potential.

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 purposes 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 conductive protective covering applied to cables (may consist of multiple layers, one or more of which is conductive

Cap: To cover disconnected URD cable or transformer primary terminals with sleeves, caps, plugs, or similar devices so that the disconnected termination then can be electrically energized at normal voltage

Caution Order: Authorization to work on or near energized lines. They will be hung on the dispatch board and also on the device itself to identify circuit breakers whose reclosers have been shut off and automatic airbreak switches which have been uncoupled from operating mechanisms.

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

Clear Hot Stick Distance: The minimum distance for the use of live-line tools held by linemen when performing live-line work.

Clearance: (for work) Authorization to perform specified work or permission to enter a restricted area.

Clearance: (between objects) The clear distance between two objects measured surface to surface.

Combustible Liquids: Any liquid having a flash point at or higher than 100°F.

Competent Person: One who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Communication Lines: The conductors and their supporting or containing structures that are used for public or private signal or communication service.

NOTE: Telephone, telegraph, railroad signal, data, clock, fire, police-alarm, community television antenna, and other similar systems are included.

Conductive: Having the power or quality of transmitting energy.

Conductor: A material, usually in the form of a wire, cable, or busbar suitable for carrying an electric current.

Confined Space: An enclosed space that is large enough and so configured that an employee can bodily enter and perform assigned work; has limited or restricted means for entry or exit (some examples are tanks, vessels, silos, storage bins, hoppers, vaults, pits, and dike areas); is not designed for continuous employee occupancy.

Confined (Permit Required): A confined space that has one or more of the following characteristics:

(1) Contains or has a potential to contain a hazardous atmosphere;
(2) Contains a material that has the potential for engulfing an entrant;
(3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
(4) Contains any other recognized serious safety or health hazard.

Covered Conductor: A conductor 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.

De-energized (Dead): Disconnected from any electrical source of supply and properly tagged, tested and grounded.

Disciplinary Action: Administrative action taken by the employer against the employee. May vary from verbal reprimand to dismissal.

Dispatcher (Power Dispatcher-System Operator): Person designated by the employer as having authority over switching and clearances of high voltage lines and station equipment.

Disconnected: Means disconnected from any electrical source of supply.

Effectively Grounded: Intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the buildup of voltages which may result in undue hazard to connected equipment or to persons.

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 electrical energy.

Electric Supply Lines: Conductors used to transmit electrical energy and their necessary supporting or containing structures. Signal lines of more than 400 volts are always supply lines within this section, and those with less than 400 volts are considered as supply lines if so run and operated throughout.

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

Emergency: An emergency occurs when an unusual condition exists that endangers life and/or property.

Employee: In the broad sense, any person employed by or representing the Company.

Employer: The entity having jurisdiction and control over the operation of the Utility.

Enclosed: Surrounded by a case, cage, or fence, which will protect the contained equipment and prevent accidental contact of a person with live parts.

Enclosed Space: A working space such as a manhole, vault, tunnel, or shaft that has a limited means of egress or entry, that is designed for periodic employee entry under normal operating conditions, and has the potential to contain a hazardous atmosphere.

Energized (also alive or live): Electrically connected to a source of potential difference or electrically charged so as to have a potential different from that of the earth or different from that of adjacent conductors or equipment.

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.

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 a part of or in connection with an electrical installation.

Equipotential Zone: The difference between the line and any point within the zone, if the line became energized while the person was in contact with it, there would be little or no current flow through the person's body.

Excavations: The word "excavations" shall be used to indicate any opening made in the ground, street or sidewalk in connection with Company work, such as holes, trenches, ditches or tunnels.

Exposed: (a) Exposed circuits or lines means in such a position that in case of failure of supports or insulation, contact with another circuit or line may result. (b) Exposed equipment means an object or device that can be inadvertently touched or approached nearer than a safe distance by any person. It is applied to objects not suitably guarded or situated.

Fall Arrest System: A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

Fall Protection Program: A program intended to protect workers from injury due to falls when working at elevations above four (4) feet.

Fall Prevention System: A system intended to prevent a worker from falling from one elevation to another. Such systems include positioning devices, guardrail, barriers, and restraint systems.

Fault Current: A current that flows from one conductor to ground or to another conductor owing to an abnormal connection (including an arc) between the two.

Fell: The process of severing a tree from the stump so that it drops to the ground. The "Feller" is the person who fells the tree.

Flammable Liquid: Any liquid having a flash point less than or below 100°F.

Flares: The word "flares" shall be used to indicate flares, torches, fuses, red lanterns, reflectors or any other equipment that is adaptable for the purpose intended.

Free Fall: The act of falling before the personal fall protection system begins to arrest the fall. (No more than six (6) feet.)

Governmental: Any type of political agency having control over a certain activity. Included are federal, state, county, township, city, etc.

Ground (noun): The term means a conductive connection whether intentional or accidental, by which an electric circuit or equipment is connected to reference ground.

Ground (reference): The term means that conductive body, usually earth, to which an electric potential is referenced.

Ground (verb): Connecting or establishing a connection, either intentionally or accidentally, or an electric circuit or equipment to reference ground. Connect to earth or some conducting body that serves in place of earth.

Grounding Electrode (Ground Electrode): A conductor embedded in the earth, used for maintaining ground potential on conductors connected to it, and for dissipating into the earth current conducted to it.

Grounded System: A system of conductors in which at least one conductor or point is intentionally grounded, either solidly or through a current-limiting device (not a current-interrupting device).

Guarded: Protected by personnel, covered, fenced, or enclosed by means of suitable casing, 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. (Note: Wires which are insulated, but not otherwise protected, are not considered as guarded.)

Hazardous Atmosphere: An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (escape unaided from an enclosed space), injury or acute illness from one or more of the following causes: 1) Flammable gas, vapor or mist in excess of 10% of its lower flammable limit (LFL), 2) Airborne combustible dust at a concentration that meets or exceeds its LFL, 3) Oxygen concentration below 19.5% or above 23.5%, 4) Atmospheric concentration of any substance for which a dose or a permissible exposure limit (PEL) is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this part and which could result in employee exposure in excess of its dose or PEL, 5) Any other atmospheric condition that is immediately dangerous to life or health (IDLH).

Hazard Communication Program: Utility-developed program to ensure that information concerning hazardous chemicals (material) is transmitted to employees through the use of warnings, procedures, material safety data sheets, and employee training.

Hazardous Material (Substances): Any substance that is a physical hazard or a health hazard. A substance is a physical hazard when there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, and organic peroxide, an oxidizer, spontaneous combustion, unstable (reactive), or water reactive. The substance is a health hazard when it is determined to be a carcinogen, a toxic or highly toxic agent, a reproductive toxic, irritant, corrosive, sensitizer, liver toxin, kidney toxic, nerve toxin, an agent that acts on the blood system, or an agent that damages the lungs, skin, eyes, or mucous membranes.

Highly Hazardous Chemical: A substance possessing toxic, reactive, flammable, or explosive properties that are listed in OSHA standard 29 CFR 1910.119.

High-Power Test: Tests in which fault currents, load currents and line-dropping currents are used to test equipment, either at the equipment's rated voltage or at lower voltages.

High-Voltage Test: Tests in which voltages of approximately 1000 volts are used as a practical minimum and in which the voltage source has sufficient energy to cause injury.

High Wind: A wind of such velocity that an employee would be exposed to being blown from elevated locations, an employee or material handling equipment could lose control of material being handled, or an employee could be exposed to other hazards not controlled by the standard involved. Winds exceeding 40 miles per hour or winds exceeding 30 miles per hour if material handling is involved are considered to be high winds unless precautions are taken to protect employees from the hazardous effects of the wind.

Hold Cards: Also called "Hold Tags". A card or tag-type device, usually having a predominant color of red which warns against or which cautions against the operation of a particular switch, device, circuit, tool, machine, etc. The use of such tags must be respected; equipment or items so tagged must not be activated or used without full and proper authority from a responsible person. An example EKPC Power Delivery Hold Card can be found by clicking on the above link. an EKPC Production Hold Card can be found by clicking on the link.

Hotline Tools and Ropes: Those tools and ropes which are especially designed for work on energized high voltage lines and equipment. Insulated aerial equipment especially designed for work on energized high voltage lines and equipment shall be considered "hot line".

Hot Work Permit: A permit to do work that may result in temperatures or sparks capable of supporting ignition of flammable or combustible materials.

Immediately Dangerous to Life or Health (IDLH): Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

Incident: Any unplanned, undesired event that results in a near miss, injury, illness, death, and/or property damage.

Incipient Fire Brigade: A fire which is in the initial or beginning stage and which can be controlled or extinguished by portable fire extinguishers, Class II standpipe, or small hose systems without the need for protective clothing or breathing apparatus.

Insulated: Separated from other conducting surfaces by a dielectric substance or air space, permanently offering a high resistance to the passage of current and to disruptive discharge through the substance or space.

Isolated: An object that is not readily accessible to persons unless special means of access are used.

Job Briefing: A briefing of the work to be accomplished and the safety measures to be incorporated. It is normally conducted by the person in charge and shall be understood by all personnel involved. In addition, OSHA outlines five key elements to be covered in the briefing: hazards associated with the job, work procedures involved, special precautions, energy source controls, and personal protective equipment (PPE) requirements. The EKPC Job Briefing Form can be found here.

Jobsite: The location where the worker(s) is/are in position to perform the assigned work or task.

Lanyard (Strap): A flexible line used to secure a body harness to a lifeline or directly to a point of anchorage.

Lifeline: A line provided for direct or indirect attachment to a worker's body harness, lanyard, or deceleration device. Such lifelines may be horizontal or vertical in application.

Line-Clearance Tree Trimmer: An employee who, through related training or on-the-job experience or both, is familiar with the special techniques and hazards involved in line clearance.

Line-Clearance Tree Trimming: The pruning, trimming, repairing, maintaining, removing or clearing of trees, or the cutting of brush that is within 10 feet (305 cm) of electric supply lines and equipment.

Lockout-Tagout: A system to ensure that, before any employee performs any servicing or maintenance on a machine, equipment, or line where the unexpected energizing, start up, or release of stored energy could occur and cause injury, the machine or equipment is isolated from the energy source and rendered inoperative.

Manhole: A subsurface enclosure which personnel may enter and which is used for the purpose of installing, operating, and maintaining equipment and/or cable.

Manhole Opening: An opening through which persons may enter into a confined or restricted space.

Material Safety Data Sheet (SDS): A document provided by manufacturers and importers of chemicals to convey information to the users of their products. The information includes data on physical characteristics, fire and explosion hazards, reactivity, and health hazards; special precautions; and fire and spill procedures. As part of the new Globally Harmonized system for Material Safety Data Sheets, these data sheets will now be called Safety Data Sheets. Some of EKPC's information on these safety data sheets may still refer to them as material safety data sheets.

Minimum Approach Distance: The closest distance an employee is permitted to approach an energized or a grounded object.

NFPA: National Fire Protection Agency

Near Miss: Any incident where injury, illness, death and/or property damage could have occurred but did not.

Non-Conductive: A substance that conducts electricity only in a very small degree.

Occupational Safety and Health Act (OSHA) of 1970: Requires employers to provide to employees a workplace free from recognized hazards and to comply with safety and health standards established by the Act. The Act also charges each employee with a legal duty to comply with the Act's safety and health standards. The federal Act pertains to most employers but specifically excludes federal, state, and local government employees. However, numerous states have developed safety and health standards that require compliance by all government entities.

Pad mount: Transformer or equipment in a surface mounted enclosure and normally worked from ground level.

PCB (Polychlorinated Biphenyls): A non-conductive and non-combustible liquid used in some transformers and capacitors. It has several trade names- Pyranol, Askarel and Inerteen, etc.

Permissible Exposure Limits (PEL): Time weighted average limit (TWA) based on eight (8) hours that a person can be exposed to an air borne concentration of a contaminant without the use of a respirator.

Personal Protective Equipment: (Cooperative approved) protective equipment worn by employees for their protection that meets or exceeds OSHA standards.

Physically Render Inoperative: The use of locks, blind flanges, or other similar devices or procedures to prevent the operation of switches, breakers, valves, and operating controls.

Positioning Device: A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface such as a wall or pole and to work with both hands free.

Primary compartment: A compartment containing voltages above 600 volts.

Primary voltage: Any electrical circuit which normally operates at more than 600 volts.

Protective System: A method of protecting employees from cave-ins, from material that could fall or roll from the excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping, and benching systems, shield systems, and other systems that provide the necessary protection.

Public: Any individual that is not an employee or representative of the Company.

Qualified person: A person who is familiar with the construction or operation of the lines and/or equipment that concern their position and who is fully aware of the hazards involved. A person who has successfully demonstrated his/her ability and is recognized by management as qualified to perform the duties to which he/she has been assigned.

Reaching or Falling Distance: The farthest any portion of the body or electrically conductive extension can be extended plus the distances outlined in Table 1.7.

Reduced visibility: Times when normal visibility is reduced because of adverse weather conditions such as fog, heavy rainfall, snow, dawn, or dusk.

Registered Professional Engineer: A person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.

Respiratory Equipment: Devices designed to protect personnel from breathing potentially harmful air contaminants or from being overcome by the lack of sufficient oxygen to sustain life. Such devices include air purifying respirators, air line respirators, and self contained breathing apparatus.

Riser Pole: The connection point of the overhead and Underground Residential Distribution (URD) system is the "riser pole." On this pole, one normally finds lightning arresters, fused load break cutouts and outdoor-type stress cones, or potheads terminating the cable feeding the underground systems.

Road: The paved or unpaved surface of a roadway upon which vehicles are intended to travel. When the road is paved, the entire surface is thus included.

Roadway: Includes the road and the areas immediately adjacent thereto, such as the shoulder of the road, parking strip, etc. This area normally extends approximately 15 feet from the road.

Rope Grab: A device that attaches to a lifeline as an anchoring point to provide a means for arresting a fall.

Safeguards: Approved devices used in connection with or made part of equipment to protect against unsafe conditions or practices, e.g., barricades, barriers, guards, road signs, cones or cover-up material.

Safety Can: An approved closed container of not more than 5-gallon capacity having a flash-arresting screen, spring-closing lid, and spout cover and designed so that it will safely relieve internal pressure when subjected to a fire.

Safety Data Sheets: See **Material Safety Data Sheet (SDS)** above.

Safety Moment: EKPC requires that all meetings begin with a safety moment. Safety moments should tell a safety story related to risks at work, home, or in the community. They could also reference company safety rules.

Safety Observation: A six step process where a person(s) focuses on an employee(s) performing work for the purpose of identifying both safe and unsafe behaviors. The process includes a positive discussion of safe behaviors observed, unsafe behaviors observed and how they may be eliminated, and any other safety concerns that the observed employee(s) would like to discuss.

Safety Rule: A positive rule requiring compliance by all employees concerned. Deviation from safety rules is not permitted and is subject to disciplinary action.

Secondary Compartment: A compartment containing voltages below 600 volts.

Secondary Voltage: Any electrical circuit that normally operates at less than 600 volts.

Shall: When the word "shall" appears in the wording of a rule, the rule is to be obeyed as written. **(A mandatory requirement.)**

Shield (Shield System):A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shield structures can be permanent or portable and moved along as work progresses.

Shoring (Shoring System) A structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

Should: When the word "should" appears in the wording of a rule, the rule is to be obeyed as written when it is reasonable or practical to do so. **(An advisory requirement.)**

Sloping (Sloping System): A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

Snap-Hook: A self-closing, double-locking snap-hook device with a keeper, latch, or other similar arrangement that will remain closed until manually opened.

Stable Rock: Natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.

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

Supervisor: The person responsible for overseeing, guiding, motivating, and directing the activities of a specific workgroup on a daily basis. This frontline management position has overall authority and accountability for tasks being performed.

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

Transferring: The act of moving from one distinct object to another.

Transformers: A device employing the principle of mutual induction to convert variations of current in a primary circuit into variations of voltage and current in a secondary circuit.

Transitioning: The act of moving from one location to another on equipment or a structure while going around or over an object.

Underground Residential Distribution (URD): A general term which covers the necessary facilities to furnish underground service-generally to residential and commercial customers-usually through direct burial cable.

Unsafe Act: The act of ignoring safe work practices and safety rules.

Unsafe Conditions: A physical condition of a piece of equipment or an asset, or a situation that poses a risk of potential harm to an individual or property.

Visible Break: A definite physical opening of a circuit in such a manner that it constitutes an acceptable safety measure to permit personnel to work on the circuit with assurance that the circuit is de-energized. Usually this is coupled with grounding requirements depending on the nature of the circuit. Special physical requirements for acceptable visible breaks vary considerably.

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.

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.

Voltage: The potential difference between any two conductors or between a conductor and ground. The voltage specified in this manual shall mean the maximum effective voltage to which the personnel or protective equipment may be subjected. Low voltage includes voltages up to 600 volts. High voltage shall mean voltages in excess of 600 volts.

Voltage of an Effectively Grounded Circuit: The voltage between any conductor and ground, unless otherwise indicated.

Warning signs: For the purpose of these rules, a warning sign is any sign or similar means of employee or public notification alerting an employee to an actual or possible hazard. Included are "Danger" signs, "Caution" signs, traffic protection signs, instructional signs and information signs.

Zero Mechanical State: Following the application of lockout/tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe.

Go to TABLE OF CONTENTS

POLICIES

The following EKPC Board & Administrative Policies are applicable to this manual:

Administrative Policy A004	Transportation – Assigned Vehicles
Administrative Policy A005	Transportation – Pool Vehicles
Administrative Policy A006	Transportation – Use of Personal Vehicle
Administrative Policy A013	Personal Conduct
Administrative Policy A015	Drug Free Workplace
Administrative Policy A017	Purchase of Prescription Safety Glasses
Administrative Policy A018	Transmission Right-Of-Way Encroachments
Administrative Policy A021	Workplace Smoking
Administrative Policy A032	Cell Phone & electronic Device Usage Policy
Board Policy 512	Safety

Go to TABLE OF CONTENTS

SECTION A: GENERAL

A-1 Scope

The guidance set forth in this Safety Manual is applicable to all East Kentucky Power Cooperative (EKPC) employees. The purpose of this manual is to assist in the elimination or prevention of incidents. No phase of operations is of greater importance than incident prevention. The degree of safety and the results accomplished are directly proportional to the effort expended to control the conditions, practices, and human actions that are responsible for incidents. This section presents rules and guidelines of a general nature that are intended to cover similar conditions encountered by all employees.

A-2 Effectiveness

This manual shall be effective as of the dates of issuance; Compliance by every employee is mandatory, and is considered a requirement for employment. Existing governmental codes, statutes, rules, and orders shall be considered a part of this manual, and if any conflict exists between the two, the most stringent requirements shall prevail.

A-3 Emergency Conditions

Emergencies can take many forms and may occur at any time; emergencies may arise that have not been foreseen by employees, or these emergencies may not be covered by any guidelines in this manual. In case of an emergency involving a hazard to life, an employee in charge of any work may modify or suspend such a portion of this manual as may be considered temporarily necessary, in order to permit proper handling of that specific emergency. EKPC has empowered its employees to determine a course of action based on his or her own best judgment and careful thought in such an emergency. Each of us has a moral obligation to do everything possible to preserve human life, to maintain continuity of operations, and to protect EKPC property.

A-4 Occupational Safety and Health Requirements

a) EKPC shall ensure that its employees comply with all aspects of Occupational Safety and Health Act rules (or as modified by the State) and may be subject to severe penalties for violation of these requirements by any employee. As stated in the Occupational Safety and Health Act, "Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to their own actions and conduct." The General Industry 1910 and Construction 1926 Standards are applicable and one shall be adhered to.

b) As an agreement of employment, strict observance of the contents of this manual is required. Disregard for any adopted East Kentucky Power Cooperative policy may be grounds for disciplinary action up to and including termination of employment. Refer to Administrative Policy A013, Policies Section.

A-5 Supervisor/Foreman Responsibilities

a) Supervisors/Foremen shall be responsible not only for their own safety, but also for the safe work performance of other employees under their leadership. The supervisor/foreman will be held strictly responsible for the enforcement of safe work practices and compliance with safety rules and regulations. He/she shall not require nor allow an employee to perform work with faulty equipment. He/she shall also ensure that competent persons are in charge of each work group, and also be satisfied that work groups are of sufficient size and properly qualified to perform the assigned tasks efficiently and safely. Supervisors/foremen are responsible for the proper use and maintenance of all protective devices. The prevention of incidents is a primary part of every supervisor/foreman's responsibilities. Under no circumstances shall safety be sacrificed for speed. Before assigning work to an employee, the supervisor/foreman shall be sure that the employee knows and understands the hazards associated with the work and the proper procedures to perform the work safely. This shall be known as a "Job Briefing" (as discussed later in this manual) and documented.

b) All employees are empowered to report any unsafe condition or hazard to his or her supervisor/foreman. Supervisor/foreman and all levels of Management shall accept, in a cooperative manner, all reports of hazards.

A-6 Employee Responsibilities

a) Employees share with the employer the responsibility for safety. Each employee is responsible for his or her own safety, the safety of fellow employees, and the general public. If an employee has a visitor, that employee is responsible for the safety of that visitor. Employees shall become familiar with and use all protective devices, which are provided for his or her protection. Before beginning a job, employees shall satisfy themselves that they can perform the task without injury. If they are in doubt as to their ability to perform the work, they shall call this to the attention of the supervisor/foreman. Also, before starting a job, employees shall thoroughly understand the work to be done, their role in that work, and all safety rules that apply. Any tools and equipment that will be used in the task will be inspected for defects or safety concerns before being put into use. Ignorance of the practices set forth in this manual is not excusable.

b) Employees shall report any unsafe equipment, unsafe tools, and hazardous conditions that may cause injury or property damage or interfere with services to his or her supervisor/foreman. This shall be reported, regardless of the department in which the condition exists, and if necessary, the employee shall guard the area.

c) Any employee who receives a report of any hazardous emergency condition shall document the following: the employee making the report, , the exact location, and the nature of the trouble. The employee shall immediately refer this information to the person having responsibility for such matters.

d) Employees shall not engage in practical jokes or "horseplay."

e) EKPC requires that all meetings begin with a safety moment. Employees are encouraged to share a safety moment during all meetings.

A-7 Knowledge of Safety Rules and Application

a) Every employee shall carefully study (not merely read) and become thoroughly familiar with the safety rules and content of this manual as they apply to their work activities. An updated version of this manual can be found on EKPC Safety Central. Compliance with these safety rules is mandatory and is considered a requirement for employment.

b) These rules represent minimum requirements and are only intended to cover average conditions. Employees shall use good judgment (common sense) in dealing with conditions not covered in these rules. Additionally, employees shall follow all utility policies, common sense and procedures.

A-8 Conditions Not Covered

Although each employee is primarily responsible for his or her own safety, in all instances where conditions are not covered by this manual or the job is not completely understood, the employee shall obtain specific instructions from the supervisor/foreman before proceeding with the work.

A-9 Qualifications for Duty

Any supervisor/foreman having reason to believe that an employee under his/her supervision is either mentally or physically unfit for the work assigned, shall prohibit such employee from performing the work assigned. HR should be notified of such instances.

A-10 Care In Performance Of Duties

Each employee shall, in the performance of his/her duties, act in such a manner as to maximize safety to himself/herself, his/her fellow employees and the public.

A-11 Resources

The contents of this manual were developed from various sources, which included the Occupational Safety and Health Act of 1970. To assist the user of this manual or to obtain additional information concerning a specific section, the applicable Occupational Safety and Health Act (OSHA) standard reference number has been included in the respective section. Sections without reference numbers fall under the act's: "General

Duty Clause," which states that employees shall be provided a workplace free of recognized hazards.

A-12 Actions in Case of Incident/Injury

a) Occupational illnesses or injuries, no **matter how slight**, shall be reported to the individual employee's supervisor/foreman. A supervisor/foreman's incident report shall be completed and routed to the Manager of Safety, Security & Facilities promptly. This requirement is designed to protect both employees and EKPC. Failure to promptly report an occupational injury or illness could jeopardize an employee's benefits under Kentucky Worker's Compensation Law. The supervisor/foreman will ensure that appropriate Manager and Vice President are provided details of the incident as soon as possible. The appropriate Safety and Environmental Health Specialist will assist the supervisor/foreman in conducting an incident investigation in an effort to determine the root cause of the event. The Safety and Environmental Health Specialist will make themselves available as a resource to assist the supervisor in conducting the investigation. The Benefits and Employment Generalist will enter all incident reported data into the I Sight Safety and Health module for reporting purposes.

b) The responsibility for prompt, complete accurate reporting, and investigation of the incident rests with the supervisor/foreman. Incidents which result in personal injury or property damage may result in damage claims. It is imperative that EKPC possess a complete description of the circumstances surrounding an incident.

c) All incidents shall be reported to the Manager of Safety, Security & Facilities as soon as possible so that it can be determined if further reports with the appropriate regulatory agencies need to be filed.

d) Near misses as well as actual injuries shall be reported, as near misses are potential for future incidents.

e) Vehicle related incidents are discussed in detail in the Reporting Company Vehicle Incidents section of this manual.

Go to TABLE OF CONTENTS

SECTION B: CARDINAL RULES

a) EKPC implemented Cardinal Safety Rules in 2015. Each of these Cardinal Rules were already key EKPC safety requirements, and are not new requirements. EKPC is placing an emphasis on these nine Cardinal Rules because each of them is crucial for employee safety.

EKPC's Cardinal Safety Rules are designed to complement our existing safety policies and ensure safety procedures are followed at all locations. These rules place the highest priority on individual safety and hold each employee accountable for their actions. A violation of a Cardinal Rule could result in a serious incident, injury or death. Violation of these rules may, upon completion of an investigation, result in disciplinary action up to and including termination.

EKPC's Cardinal Safety Rules are:

1. Never order or direct another employee to violate any safety rule.
2. Never work while under the influence of drugs or alcohol.
3. Never smoke in hazardous areas.
4. Comply with confined space requirements.
5. Comply with fall protection requirements.
6. Never violate suspended load requirements.
7. Comply with lockout/tagout requirements.
8. Comply with requirements for working on energized lines and equipment.
9. Operate company equipment within its limits, with authorization and installed safety features.

A link to the rules can be found here.

Go to TABLE OF CONTENTS

SECTION C: SAFEGUARDING THE PUBLIC

a) Please refer to the WORK AREA PROTECTION section of this manual.

Go to TABLE OF CONTENTS

SECTION D: OFFICE SAFETY

D-1 Scope

The guidelines set forth in the Office Safety Section of this Safety Manual are applicable to EKPC employees and are intended to reinforce using good housekeeping and common sense practices at work to prevent injuries and incidents in an office setting. A messy workplace is not only annoying and inefficient, it creates a number of potential safety hazards. There are hazards hidden in even the safest-looking workplace, so all employees must practice good housekeeping to keep the workplace efficient, safe and pleasant.

D-2 Office Safety

a) Employees shall report all injuries, regardless of severity, to the person in charge.

b) Employees should be familiar with the location of first aid kits and AED's for their area/location. AED locations can be found on the EKPC AED Location Information.

c) Employees shall walk cautiously up and down stairs; the handrail shall be used.

d) Caution shall be exercised when walking around blind corners.

e) Drawers of desks and file cabinets shall be kept closed when not in use.

f) Only one drawer of a file cabinet shall be pulled out at a time in order to avoid overbalancing, unless the cabinet is securely fastened to the wall or to other cabinets.

g) Do not sit on the edge of a chair. Do not tilt back when sitting in a straight chair.

h) Boxes, chairs, etc., shall not be used in place of ladders.

i) The floor shall be kept free of tripping hazards such as telephone cords, electric extension cords, paper cartons, and loose carpet or tile.

j) Employees mopping or waxing floors shall place warning signs to alert co-workers of the potential for slippery floors. All liquid spills shall be immediately cleaned up.

k) Material shall be stored on shelves in a manner to prevent falling; heavy objects shall be placed on lower shelves.

l) Work areas, hallways and aisles shall be kept clear of all obstructions.

m) All emergency exits and emergency equipment such as fire extinguishers and fire hose racks shall be kept clear of all obstructions. Employees should be familiar with the location of fire extinguishers in their areas.

n) Employees shall not use ventilation fans unless they are guarded.

o) Solvents and other volatile or toxic substances shall be used only with adequate personal protection or in well-ventilated areas. Please refer to the Hazardous Material section of this manual.

p) Employees shall not attempt to clean, oil, or adjust any machine that is running. If the machine is not equipped with a starting switch that can be locked in the "off" position, it shall be disconnected from its power source.

q) Unsafe electrical cords, faulty electrical or other equipment, or any other hazardous condition shall be reported to appropriate personnel.

r) Safety shall be considered in what employees wear on the job. Loose-fitting clothing, dangling bracelets, rings, and ties may cause serious injury to employees operating or working around power-driven machines and shall not be worn.

s) Broken glass and other sharp objects shall not be placed in waste paper containers.

t) Burning materials shall not be placed in waste paper containers.

u) Common or sharp-pointed pins shall not be used for fastening paper together. Staples, paper clips, or other approved fasteners shall be used.

v) Report unsafe conditions or safety hazards to the appropriate personnel immediately.

w) Follow workplace safety guidelines and job procedures.

x) Locate the nearest exit to your work area; walk the route you would take in a fire or other emergency.

y) Be familiar with your company's disaster and evacuation plans.

z) Don't lift or carry a load that is too heavy for you; ask someone for help.

aa) Use proper lifting techniques, use the legs instead of straining the back.

bb) Know and follow your limitations if you're ill or on medications with side effects that could cause drowsiness, delay your reaction time or diminish your driving and machine-operating ability.

cc) Keep your work area clean.

dd) Report loose or torn carpet to your supervisor/foreman immediately.

ee) Employees shall walk on crosswalks or walk paths during work hours, and avoid cutting between cars or crosswalks except in marked areas.

ff) Employees shall report any slippery conditions on sidewalks to the appropriate personnel.

gg) Employees should be aware of the nearest location of first aid kits and AED devices. AED locations can be found on the EKPC AED Location Information.

D-3 Video Display Terminals

a) Employees using video display terminals for extended periods of time shall consider the following:
   1) Keep back straight with feet resting firmly on the ground.
   2) Use a back-support cushion for lower back.
   3) Position video display terminal so the operator's eyes are level with the top of the screen.
   4) Position the video display terminal directly in front of the user and adjusted to avoid glare.
   5) Adjust the height of the chair or keyboard so that shoulder-elbow-arm angle is at 90 degrees.
   6) Keep user's hands and fingers in the same plane as the forearm.

b) Video-display-terminal users shall adjust position frequently to avoid muscle stiffness.

Go to TABLE OF CONTENTS

SECTION E: CELLULAR & ELECTRONIC DEVICES

EKPC administrative policy A032 applies to cellphones and distracted driving. The policy includes the following:

1. No use of a cell phone or electronic device unless coupled with a "Bluetooth" hands free device.
2. No texting with a cell phone or any electronic device, unless on verbal command.
3. No use of music devices with headphones or ear buds.

Even if an employee is following this policy, making or receiving calls while driving is still discouraged. It is always best to make cellphone calls from your vehicle only when you are parked safely off the roadway.

Go to TABLE OF CONTENTS

SECTION F: VEHICLE OPERATIONS

F-1 Scope

The ability to operate a motorized vehicle safely depends, to an important degree, on the attitude of the driver. Attitude as used here refers to the basic desire of the employee to drive safely to protect his/her own life, the lives of others as well as cooperative and public property. A positive attitude toward vehicle operations can have far reaching results. Like an act of courtesy, it is contagious.

The Cooperative expects its employees to always operate its vehicles in strict compliance with the laws of the state and local ordinances. No task is so important that an employee need operate a vehicle outside of legal parameters or in an unsafe manner.

The guidelines in this section shall apply to employees when operating Cooperative-owned vehicles, privately owned or commercial, under rental contract to the Cooperative, or when an employee is being compensated for the use of a personal vehicle on a mileage or salary basis by the Cooperative.

F-2 General

a) Only those employees specifically authorized and who possess a valid operators/CDL license or permit for the equipment being used shall operate company-owned motor vehicles or personally owned vehicles on company business. Loss of license or restrictions placed on license shall be reported to the employee's Manager when appropriate. CDL license holders need to report loss of license or restrictions immediately to the Power Delivery Safety and Environmental Health Specialist.

b) Drivers shall know and obey all state and local motor vehicle laws applicable to the operation of their vehicle.

c) Vehicles shall be operated within the legal speed limit and at lower speeds where conditions warrant.

d) A driver shall not permit unauthorized persons to drive, operate or ride in or on a company vehicle.

e) Seat belts shall be used when the vehicle is so equipped.

f) Employees shall not permit anyone to ride on the running boards, fenders or any part of the vehicle except on the seats or inside the body walls. Passengers shall not stand in moving vehicles.

g) Employees shall not ride on trailers.

h) Employees shall not jump on or off vehicles in motion.

i) Any station wagon/van type vehicle or car used for hauling equipment or material shall be equipped with a protective screen or device between the driver compartment area and cargo area. Refer to 49 CFR 300-399.

j) Any loose materials (trash, bottles, etc.) in the driver's compartment area should be secured or removed.

k) Drivers shall perform a visual inspection of the vehicle prior to operation of the vehicle.

l) Drivers should make every possible effort to avoid using a cellular phone or similar device while operating a motor vehicle. It is preferred that, when feasible, a driver pull their vehicle to a safe area when they must make or take a call on a cellular phone or similar device.

F-3 Inspection of Equipment - (CDL)

a) All drivers shall complete a pre-trip vehicle inspection to assure that the following parts, equipment, accessories are in safe operating condition and free of apparent damage that could cause failure while in use.

1. Service Brakes
2. Trailer Brakes
3. Hand Brakes
4. Emergency Parking Brakes (micro brakes if so equipped)
5. Tires
6. Horn
7. Steering
8. Seat Belts
9. Coupling Devices
10. Lights
11. Reflectors
12. Windshield Wipers & Washers
13. Defrosters
14. Operating Controls
15. Safety Devices
16. Turn Signals

b) The driver shall complete a post trip vehicle inspection report and shall report any defects that may have developed during the day to the heavy equipment operator or vehicle maintenance. Items that render the vehicle unsafe shall be repaired prior to continued vehicle operation.

c) The driver shall insure that windows and windshield gives sufficient visibility for safe operation of the vehicle.

d) All trailers in use shall be checked by the driver at the beginning of each shift to assure that the following parts, equipment, and accessories are in safe operating condition and free of apparent damage that could cause failure while in use.

1. Trailer Hitch
2. Jack Stand
3. Safety Chains (shall be crossed under the tongue and attached)
8. Tires
9. Bed Condition
10. Ramps

4. Cable Plug
5. Brake Lights & Turn Signals
6. Extensible Lights
7. Brakes
11. Welds
12. Air Hoses & Fittings
13. Registration
14. Emergency Brake System

e) The driver should complete a post trip trailer inspection report and shall report any defects that may have developed during the day to the supervisor/foreman in charge. Items that render the trailer unsafe shall be repaired prior to continued operation.\

f) Any vehicle that is involved in an incident that involves property damage or injury shall be visually inspected by the highest ranking team member on-site to determine suitability for future use in lifting materials or employees. If that individual determines that no parts of the vehicle involved in lifting (including, but not limited to include booms, cables, supports, outriggers, hydraulics, controls, etc.) was involved in the incident, the individual may authorize continued use of the vehicle. If it is determined that any of these parts was involved, in any way, in the incident, the vehicle will be removed from service for lifting and reported to the safety coordinator who will work with the site supervisor to make the determination of what type of testing must be done prior to returning the vehicle to service.

g) Any vehicle that has made contact with an energized piece of equipment or line shall be thoroughly inspected for damage by an authorized mechanic before being driven.

F-4 Exhaust Gas

a) The driver shall not operate the motor in any garage except when driving in or out, and then the motor shall be operated as little as practical. The motor shall not be warmed up inside a garage nor shall the driver test motor operation in a garage.

b) While performing maintenance exhaust fumes shall be vented to the outside.

F-5 Operation

a) The operator of a motor vehicle shall clearly signal his/her intention of turning, passing or stopping.

b) Upon a signal from a vehicle approaching from the rear, the driver of a company vehicle shall yield the right of way.

c) Drivers shall be prepared to stop and the right of way shall be yielded in all instances where necessary to avoid an incident.

d) The driver of a vehicle shall be courteous toward other operators and pedestrians. He/she shall operate his/her vehicle in a safe manner and shall yield the right of way to

pedestrians and other vehicles when failure to do so might endanger any person or another vehicle.

e) The driver shall stay a sufficient distance behind when following another vehicle so that he/she can safely stop the vehicle in the clear distance ahead.

f) Drivers shall exercise added caution when driving through residential and school zones.

g) When entering or leaving any building, enclosure, alley, or street where vision is obstructed, a complete stop shall be made and the driver shall proceed with caution.

h) Trucks that are designed to be moved with the derricks or booms erected above traveling heights shall not be moved except under the immediate direction of a designated employee, who shall give his/her undivided attention to the movement.

i) Before a vehicle equipped with a radio antenna is driven under or adjacent to energized equipment, especially in substation areas, the radio antenna shall be lowered and clearances will be maintained between the vehicle and energized equipment.

j) All ignition systems shall be turned off and no smoking is permitted while refueling.

k) When proceeding down a grade, the clutch shall not be disengaged. Trucks, particularly if heavily loaded, shall be in a lower gear on steep grades.

l) Trucks should not be operated with tailgates hanging or dangling, unless nature of load requires.

m) Load limits of booms, derricks and other hoisting equipment shall not be exceeded.

n) Refer to F-13 Hand Signals.

F-6 Parking

a) When vehicles must be parked on the roadway, they shall be parked on the right hand side facing in the direction of traffic flow, whenever possible.

b) When parking on a roadway, vehicles shall park off the traveled road surface, whenever possible. When vehicles must park closer than 10 feet to the traveled road surface, appropriate warning devices shall be used.

c) Trucks or trailers stopped on any public roadway shall be protected by proper warning lights, reflectors or red flags in accordance with state or local requirements.

d) Vehicles shall not be parked on bridges or over culverts except when necessary for work.

h) When it is necessary to park on an incline, the driver shall make sure the vehicle is left in a safe position. The engine shall be turned off, the vehicle placed in the lowest gear, or "park" position, and the parking brake set. The front wheels shall be cut into the curb or if a curb is not present, the rear wheels shall be chocked.

i) Refer to the Manual on Uniform Traffic Control Devices available at http://mutcd.fhwa.dot.gov/.

F-7 Backing

a) Whenever possible, the vehicle shall be positioned to avoid the necessity of backing later.

b) Extreme caution shall be exercised when backing a vehicle, to avoid injury to persons and to prevent property damage. If another employee is present, he/she shall be stationed at the rear of the vehicle to assist the driver in backing the vehicle safely.

c) When backing a vehicle which has an obstructed view to the rear:
   1) A reverse signal (back-up alarm) audible above the surrounding noise level shall be used, or an observer shall signal that it is safe to back.
   2) Back slowly.
   3) Watch both sides but do not depend entirely on mirrors.
   4) In any difficult backing situation, enlist the help of another person on the ground as a guide, when such help is available.

d) Refer to F-13 Hand Signals.

F-8 Stopping on Highway

a) Stopping on the highway shall be avoided.

b) When it is absolutely necessary to stop on the highway, extreme caution shall be used. Warning signals and lights shall be used.
   1) Rotating beacon shall be used, if vehicle is so equipped.
   2) Tail lights/emergency flashers shall be used.
   3) Reflectors shall be placed to give adequate advance warning.
   4) If work is in progress, traffic control devices (together with flagmen, where necessary) shall be used.

c) Refer to the Manual on Uniform Traffic Control Devices, available at http://mutcd.fhwa.dot.gov/

F-9 Reporting Company Vehicle Incidents

a) The driver shall report accurately and immediately every incident involving a vehicle in their possession according to Cooperative policy. Additional reports shall be made to the police or state authority as required.

b) The driver shall not discuss or argue the causes or results of an incident with other parties but shall secure all pertinent facts and information. Questions asked by proper authority shall be answered, but under no circumstances shall fault or negligence be admitted or any statement signed for anyone except proper representatives of the Cooperative.

c) Should the other driver demand immediate action, referral shall be made to the employee's supervisor/foreman.

d) The driver, when involved in an incident, shall stop and give his/her name and address, and the employer's name and address. The driver shall also secure the name and address of others involved in the incident and of witnesses to the incident (this is very important). The driver shall also note position of vehicle after the collision in reference to edge of road, sidewalk line, center of intersection, etc.

e) If any person is injured as the result of a vehicle incident, employees shall see that necessary emergency aid is provided.

f) EKPC employees should be aware of and adhere to EKPC Administrative Policies and Procedures Nos. A004, A005 and A006 with regard to using EKPC vehicles and reporting or any motor vehicle incident and incident. This includes the proper completion and processing of EKPC's Automobile Incident or Loss Notice form and related instructions as included in each vehicle document file folder.

F-10 Industrial Trucks - Fork Lifts

a) Industrial trucks shall be operated only by trained, authorized and licensed persons.

b) Inspections shall be performed daily and documented when vehicle is used.

c) Brakes and controls shall be tested prior to use. Equipment with faulty brakes or mechanical or electrical defects shall not be operated. Needed repairs shall be reported immediately.

d) Equipment shall always be operated at a safe speed for existing conditions.

e) Before moving the equipment, the operator shall make sure that no person or objects are in the path of the vehicle. Clearances in all directions shall always be checked, particularly overhead clearances.

f) Industrial trucks shall not be fueled with the engine running.

g) When picking up a load, forks shall be set squarely and as far as possible under the load. Loads should not be raised or lowered while traveling. Loaded or empty, forks should be carried as low as possible, but high enough to clear uneven surfaces.

h) Loads shall not be suspended or swung over other persons. No one should be allowed to stand or walk under elevated forks.

i) The operator shall always face in the direction of travel.

j) On inclines, all types of loaded lift trucks shall be driven with the load on the upgrade side of the driver whether ascending or descending.

k) Sudden stops which might spill the load shall be avoided.

l) All loads shall be securely fastened or safely positioned to prevent tipping or falling.

m) Lift bars on fork lift trucks which are movable or replaceable shall be firmly held in place by a proper securing pin. Jury-rigged devices, such as using a threaded bolt, shall not be permitted.

n) Only attachments provided by or approved by the manufacturer may be used. Such attachments shall be properly secured. Improvised methods shall not be used.

o) No one shall be allowed to ride the truck, fork lift or other equipment other than the operator, except when seats are provided for this purpose.

p) When an industrial truck is left unattended (operator is 25 feet away or the vehicle is not in his/her view), the load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off and brakes set. Wheels shall be chocked when the truck is parked on an incline.

q) Equipment with internal combustion engines shall not be operated in enclosed areas for prolonged periods of time so as not to exceed the allowable levels of carbon monoxide.

r) When loading or unloading trucks or railroad cars, approved dock boards which are properly secured shall be used. The wheels of the truck or railroad car shall be blocked.

s) For additional information concerning industrial trucks, refer to OSHA standard 29 CFR 1910.178.

t) Refer to F-13 Hand Signals.

F-11 Cranes, Derricks, Hoisting Equipment

a) Only authorized persons shall be permitted in the cab or on the equipment. Only those designated persons who are trained and qualified shall operate the hoisting equipment.

b) No person shall be permitted to ride the hook, sling or load of any hoisting equipment.

c) Load limits as specified by the manufacturer shall not be exceeded under any circumstances.

d) Operating and maintenance procedures as specified by the manufacturer shall be followed.

e) The following are the minimum checks which shall be made daily prior to use:
   1) All control mechanisms for maladjustment interfering with proper operation.
   2) All safety devices for malfunction.
   3) Deterioration or leakage in air or hydraulic systems.
   4) Hooks, slings and load attachment devices.
   5) Fire extinguisher available (2 10lb ABC or larger).

f) For the first lift of each day, the load shall be test-lifted and the brakes checked (load lifted several inches and then tested).

g) With every load, the slings and bindings shall be checked and shall be readjusted as necessary to ensure safety and stability.

h) All slings and other fittings shall be of sufficient strength, proper type and safe for their intended use.

i) Signals to the equipment operator shall be given by one person designated to perform this task. The operator shall, however, obey a "Stop" signal given by anyone.

j) When mobile hoists, cranes or similar lifting devices are used near energized lines or equipment, the lifting device shall be:
   1) Properly grounded, or
   2) Insulated, or
   3) Isolated, or
   4) Considered as energized.

k) No employee shall be under a suspended load or inside the angle of a winch line. No employee shall stand or work near a cable, chain or rope under tension unless the nature of his/her work requires it.

l) Winch lines, ropes, or wire cables shall not be guided by hand when standing within reach of the drum or sheave.

m) Operators shall not leave their position at the controls of cranes, hoists, derricks, or other lifting devices while the load is suspended.

n) Operators of cranes, derricks, hoists, and other hoisting equipment shall exercise extreme caution when in close proximity to energized lines or equipment.
   1) When performing power transmission or distribution construction refer to electrical section for applicable clearance requirements.
   2) When work does not involve power transmission or distribution construction and maintenance, minimum clearance distances shall be:

Over to 50 kV	10 feet
Over 50 kV	10 feet plus 0.4 inches for each 1 kV over 50 kV

o) Trucks on which derricks or booms are erected above traveling height shall not be moved except under the immediate direction of a designated employee, who shall give his/her undivided attention to the movement.

p) Before a lift is attempted, the lifting mechanism shall be level, firmly supported with the hoist line centered over the center of gravity of the load to be lifted.

q) Refer to F-13 Hand Signals.

F-12 Aerial Lifts

a) Scope

The aerial basket is a piece of equipment which, when properly used, can eliminate or minimize many hazards that we have to cope with in our daily work. Like any other equipment, however, it also has inherent hazards. These hazards must be recognized and safe practices followed in order to accomplish our main goal, *the prevention of incidents during the use of aerial basket equipment.*

b) Aerial Lifts
   1) Only authorized persons who are properly trained and qualified shall use or operate this equipment.
   2) The operating and maintenance instruction manuals issued by the manufacturer shall be followed.
   3) Load limits of the boom and basket shall not be exceeded. Shock loading (sudden stops or starts) of the equipment shall be avoided.

4) Aerial lifts shall not be "field modified" unless such modification is certified by the manufacturer. The insulated portion shall not be altered in any manner that might reduce its insulating value.
5) Prior to use, the equipment shall be given a warm up period. The hydraulic system and the lift controls shall be checked and tested daily before use to determine such features are in safe working condition. Malfunctions or unsafe operational conditions shall be reported. **Equipment which is not in proper operational condition shall not be used.**
6) Articulating boom and extensible boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls. Lower lever controls shall not be operated unless permission has been obtained from the employee in the lift, except in case of emergency.
7) The truck shall not be moved unless the boom is lowered, the basket cradled and secured, and the outriggers retracted.
8) Employees shall not ride in the bucket while the truck is traveling. (Exception: Men may ride in the basket for short moves at the work location if the basket is returned to the cradled position for each move and the employees face the direction of travel.
9) When employees are in the bucket of an aerial lift, the emergency brake of the vehicle shall be set. Wheel chocks or outriggers shall be used to provide added protection. When the vehicle is on an incline, wheel chocks shall be used regardless of whether or not outriggers are used. The truck should sit approximately level when viewed from the rear.
10) When outriggers are used, they shall be set on pads or a solid surface. Outriggers shall not be extended or retracted outside of clear view of the operator unless all employees are outside the range of possible equipment motion.
11) Employees shall not belt off to an adjacent pole or structure. When working from an aerial lift, a harness shall be worn and a shock absorbing lanyard attached to the boom.
12) Safety rules governing the use of hot-line tools, rubber goods, personal protective equipment and general safe practices shall also apply to work done from aerial baskets.
13) When a boom must be maneuvered over a street or highway, necessary precautions shall be taken to avoid incidents with traffic and pedestrians.
14) The operator shall always face in the direction in which the basket is moving and he/she shall see that the path of the boom or basket is clear when it is being moved.
15) Employees shall not stand or sit on top or edge of the basket or on ladders placed in the basket. Employees' feet shall be on the floor of the basket at all times.
16) Climbers shall not be worn by employees while in the basket.
17) When two men are in the basket or baskets, one of them shall be designated to operate the controls. One employee shall give all signals, which shall be thoroughly understood by all persons concerned.

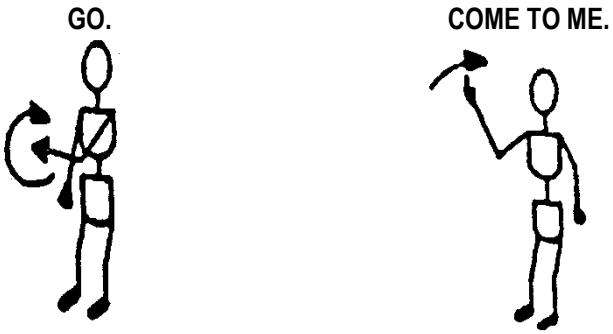
18) When two employees are working from the basket, extreme care shall be taken to avoid one man contacting poles, cross arms or other grounded or live equipment while the second employee is working on equipment at a different potential.
19) In no case shall more than one energized conductor, phase, or neutral be worked at one time.
20) The aerial lift, together with the men in the basket and all tools and equipment, shall maintain proper clearances from unprotected energized conductors. Refer to Table 1.7.
21) When using pneumatic or hydraulic tools in a bucket, the operator shall be sure that hoses or lines do not become entangled in the operational controls.
22) Unless the vehicle is equipped with lower boom and pedestal insulation rated for the voltage being worked, aerial basket vehicles working adjacent to energized primary shall be properly grounded or barricaded and treated as energized.
23) Aerial devices used for painting shall be suitably protected for spillage and splash contamination. Insulated portions of booms shall be cleaned immediately at the conclusion of daily work.
24) For additional information concerning aerial lifts, refer to OSHA standard 29 CFR 1910.67 and 29 CFR 1910.269.

c) Refer to F-13 Hand Signals.

F-13 Hand Signals

a) General
The information contained herein is not a part of the Safety Manual but is included for your convenience. It is intended as a ready reference for frequently used information and includes crane and hoist hand signals.

MANEUVERING VEHICLES

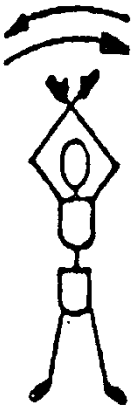


GO AWAY FROM ME.

GO THE WAY I AM POINTING.

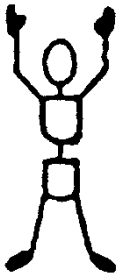
STRAIGHTEN UP-KEEP COMING.

ALL-DONE - O.K.

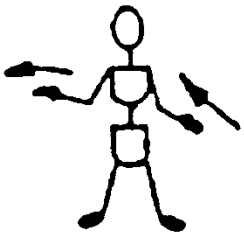


Always remember any signal not understood means stop.

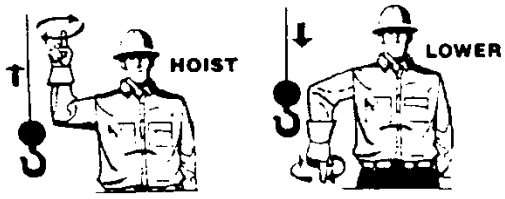
STOP.

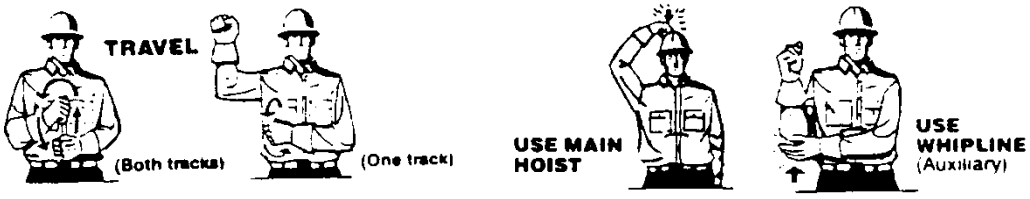


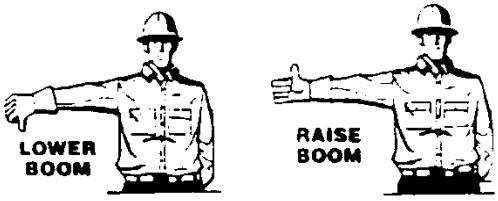
CRAWLER VEHICLES-MOVE CRAWLERS IN DIRECTION OF HAND MOVEMENT.

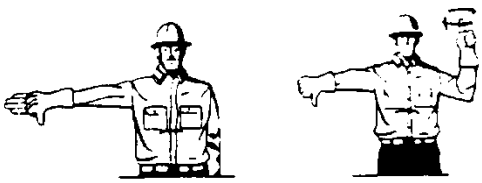


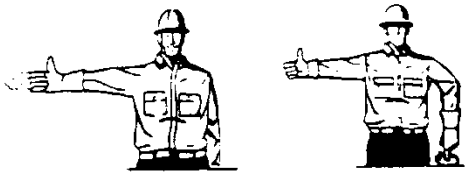
Always remember any signal not understood means stop.

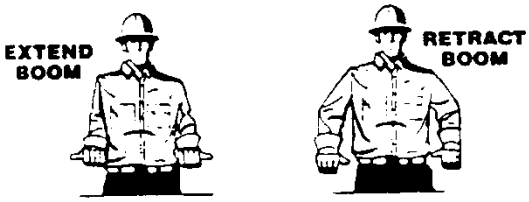







LOWER THE BOOM AND RAISE THE LOAD


RAISE THE BOOM AND LOWER THE LOAD



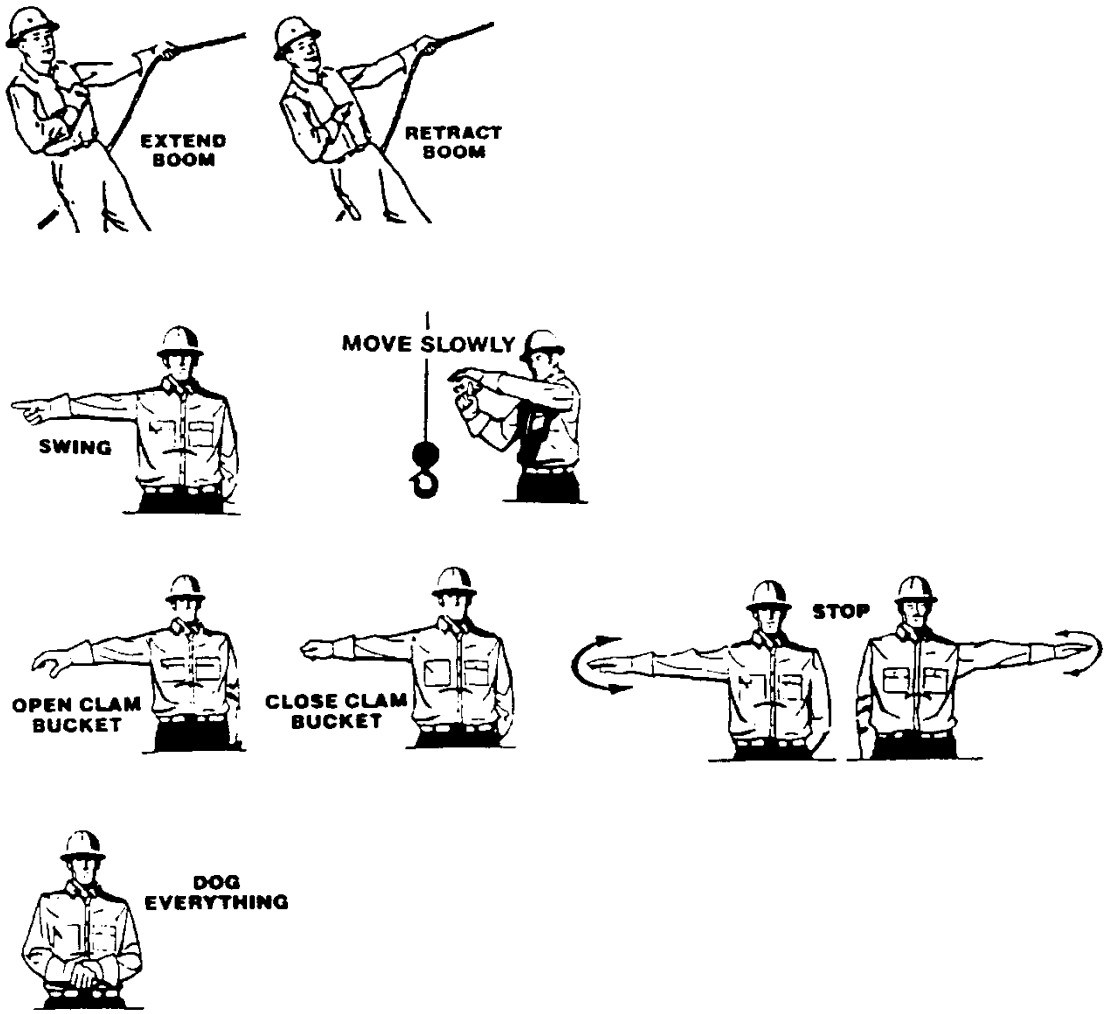


Figure 3.2 Crane and Hoist Hand Signals

Go to TABLE OF CONTENTS

SECTION G: FIRST AID & AED's

G-1 Scope

Procedures and instructions outlined in this section are intended to provide a general knowledge of safe, effective methods of applying first aid for injuries that may occur in the workplace. More complete and detailed instructions are given in the American Safety and Health First Aid and CPR manuals. Refer to OSHA standards 29 CFR 1910.151 and 29 CFR 1910.269 and 29 CFR 1926.50.

G-2 Definitions and Needs

First aid is the immediate, temporary care given to the victim of an incident or sudden illness at the scene of the incident. First aid is intended to be temporary in nature, providing care for the individual until qualified medical attention arrives or the victim is taken to a medical facility.

G-3 Reasons for First Aid

a) First Aid proficiency can mean -
   1) Preservation of life.
   2) Limiting of a victim's disability.
   3) Protection against a long hospitalization.

b) First Aid training can be of value for -
   1) Providing emergency care for injuries and sudden illness.
   2) Caring for victims of natural disasters or catastrophes.
   3) Avoiding actions which may further injure a victim.

G-4 General First Aid Instructions

a) An injury or sudden illness may require prompt action of bystanders to protect the injured party until medical assistance is available. Permission must be obtained from the victim, unless the victim is unconscious then permission is implied. In any instance of rendering First Aid or assistance, ensure that precautions are taken to prevent contamination from body fluids. Always observe universal precautions, wear protective gloves and clothing. Neutralize fluids with bleach and water solution. Refer to 29 CFR 1910.1030.

b) The following instructions should be followed to protect the injured or ill party:
   1) Assess the scene and victim, and **don't** move the victim unless immediate danger is present.
   2) Direct the nearest person to call for medical attention.
   3) Examine the victim's airway, breathing, circulation and check for serious bleeding, if present, control it by means of direct pressure.

4) Examine the victim for fractures, dislocations, stoppage of breathing, shock, burns or evidence of poisoning and provide the evidence to the medical attendants when they arrive.
5) Keep the injured person warm to the extent necessary to maintain normal body temperature.
6) Do not attempt to give water or other liquids to an unconscious or semi-conscious person.
7) Make the injured person as comfortable as possible and minimize any discussion of the severity of injuries.

G-5 Supplementary First Aid Instructions

a) Once the initial measures have been performed to stabilize the victim's condition, the following actions should be accomplished:

1) Unless it is necessary for safety reasons, the victim should not be moved or allowed to get up and walk about.
2) After initial emergency first aid procedures are accomplished:
   (a) Determine exactly what happened. Question the victim and any witnesses who may have observed the events which led to the injury or illness.
   (b) Many persons now wear emergency medical identification tags or bracelets which indicate physical problems. Look for such identification devices for clues to the victim's condition.
   (c) Examine the victim carefully to determine the location and extent of injuries.
   (d) Once the injured individuals are cared for, protective measures should be taken to prevent further injury/damage. For example, move vehicles off the road, if possible, or place flare/warning devices in the road to warn other drivers of the incident.

G-6 First Aid Training

EKPC provides training sessions to prepare employees to use the American Safety and Health Institute First Aid Course and Cardiopulmonary Resuscitation (CPR) procedures.

G-7 Automated External Defibrillator (AED)

An AED is a device that analyzes the heart's electrical rhythm and, if necessary, prompts the user to deliver a shock to a person experiencing sudden cardiac arrest. Defibrillation is a process of delivering an electrical shock that stimulates a heart's electrical activity long enough to allow the heart to spontaneously develop an effective rhythm on its own.

The information given in this section is not intended as instruction for the administration of an AED. There are many different AEDs on the market, and while they are similar, specific instructions for use of each model should be taught on a case-by-case basis.

Employees should be trained in AED operation to become more familiar with these devices.
Locations of AED's at EKPC can be found on the EKPC AED Location Information.
Employees should call the front desk, the closest Safety and Environmental Health Specialist, or dispatch for assistance in contacting 911.

G-8 Pole-Top Rescue

Electric contacts may occur at elevated locations. When such a contact does happen, immediate rescue is necessary. Rescue operations will vary, depending upon the prevailing situation. The information in this section is intended to serve only as a guide. Pre-planning and training for a possible emergency is important.

a) Size up the situation. The rescue effort will be far more effective if a few seconds are devoted to full identification of the situation.

b) Radio/Call for help. Prepare the equipment you will need.

c) Protect yourself. Apply necessary protective equipment. Use necessary personal protective devices. Then move the victim from the hazards.

d) Position yourself for rescue.

e) Proceed with rescue or resuscitation as dictated by the conditions.
   1) If victim is conscious:
      (a) Reassure the injured.
      (b) Be watchful for shock.
      (c) Help injured descend the pole.
      (d) Administer first aid.
   2) If victim is unconscious and breathing:
      (a) Watch breathing closely.
      (b) Lower victim to ground.
      (c) Summon medical assistance.
      (d) Give first aid.
   3) If victim is unconscious and not breathing lower the victim to the ground as soon as possible and initiate CPR.

NOTE: If it becomes apparent that the victim cannot be lowered to the ground in a short period of time, it may become necessary to apply pole-top resuscitation.

f) Pole top resuscitation:
   Mouth-to-Mouth artificial respiration should normally be used.

g) Lowering victim from the pole:

1) For field expediency, the following method is presented:
   (a) Place hand line on cross arm, preferably 2 or 3 feet from pole.
   (b) Make one wrap of line. Do not cross load line over fall line.
   (c) Pass hand line under armpits.
   (d) Tie three half-hitches or a rescue bowline.
   (e) Cinch line tightly around victim.
   (f) Remove slack in line.
   (g) Cut victim's safety.
   (h) Lower victim.
2) Depending upon the situation, alternate hitching or lowering methods might be more desirable.

G-9 After Rescue

All victims of electric contact shall be transported to a doctor or a hospital for examination and disposition.

Go to TABLE OF CONTENTS

SECTION H: PERSONAL PROTECTIVE EQUIPMENT

H-1 Scope

EKPC provides the approved Personal Protection Equipment for the protection of the employees. It is the employee's responsibility to use this equipment and the supervisor's/foreman's responsibility to see that **this equipment is used in accordance with the manufacturer's recommendations and all OSHA Regulations.** Refer to 1910 Subpart I, 1910.269 (G) and 1926.959.

H-2 Head Protection

a) EKPC Approved safety head gear shall be worn in the appropriate manner by all employees in areas where falling objects, electrical contact, or other hazards may cause a head injury and when required by EKPC area policy. Safety head gear shall be OSHA and ANSI approved. Please refer to area guidelines for head protection.

b) Safety hats shall not be altered or defaced in any manner.

c) Approved head shields or hoods shall be worn when welding with acetylene heliarc or electric arc.

d) For additional information concerning head protection requirements, refer to OSHA standard 29 CFR 1910.135, and ANSI Z89.1-2014.

H-3 Eye and Face Protection

a) Appropriate and approved eye and face protection shall be worn when an employee is engaged in the following work activities:
   1) Drilling or chipping stone, brick, concrete, paint, pipe coatings or metal.
   2) Grinding, buffing or wire brushing with power tools.
   3) Flame welding, cutting or burning. (Approved colored lenses shall be used).
   4) Hand drilling or sawing of overhead objects.
   5) Use of powered tools such as drills, saws, sanders, etc.
   6) Dust or flying particles
      (a) (compressed air used for cleaning purposes must be less than 30 p.s.i. and then effective chip guarding and personal protection must be used).
      (b) Compressed air is not to be used to remove dust from your person or clothing.
   7) Pouring hot lead, hot compounds or the use of other hot or injurious substances.
   8) Handling acids, caustics, chlorines, ammonia or other similar liquids or gases except when approved complete head coverings are worn. (Chemical goggles and face shields are necessary).
   9) Brush chippers.
   10) Thermite (cadweld) type welders.

11) Flying particles caused by other workmen, if employee is within the range of such particles. (A suitable screen around the work may be used instead).
12) When changing light bulbs and ballasts.
13) Any time there is a possibility of electrical flash appropriate eye wear shall be worn.
14) While using powder-actuated tools.
15) Any other danger of injury to the eyes, or at the direction of a supervisor/foreman.
16) All power plant, warehouse, maintenance, and construction employees who are conducting physical work in the plant areas, warehouses, substations, and associated areas such as construction or line work.
17) EKPC employees visiting those areas of the plants, substations, etc where work is being performed.
18) For additional information concerning eye protection requirements, refer to OSHA 1910.133. Administrative Policy A017 must be followed to obtain prescription safety glasses.

H-4 Individual Wearing Apparel

a) Clothing: (**Cooperative approved and purchased.)**
   1) When work is performed within reaching or falling distance of exposed energized parts of equipment, the employer shall ensure that each employee removes or renders nonconductive all exposed conductive articles, such as keys or watch chains, rings, or wrist watches or bands, unless such articles do not increase the hazards associated with contact with the energized parts. Finger rings shall not be worn while performing any task where the ring might be caught under or snagged by a projecting item.
   2) The employer shall train each employee who is exposed to the hazards of flames or electric arcs in the hazards involved.
   3) The employer shall ensure that each employee who is exposed to the hazards of flames or electric arcs does not wear clothing that when exposed to flames or electric arcs, could increase the extent of injury that would be sustained by the employee. (arc rated clothing, shields, etc shall be worn in accordance with EKPC guidelines)
   4) Clothing made from the following types of fabrics, either alone or in blends, is prohibited by this paragraph, unless the employer can demonstrate that the fabric has been treated to withstand the conditions that may be encountered or that clothing is worn in such a manner as to eliminate the hazard involved: acetate, nylon, polyester, and rayon. Clothing must be 100% cotton or natural fiber. Depending on the work being performed, Arc rated and/or EKPC logoed clothing may be required for Power Delivery, Power Plant employees and HQ employees visiting Transmission or Generation sites.
   5) For additional information, refer to OSHA 1910.269.

b) Footwear - All employees must wear appropriate footwear for the work being done. When working in areas where there is a danger of foot injuries due to falling or rolling objects, piercing the sole and where such employee's feet are exposed to electrical

hazards, protective footwear shall be worn. Employees working outside of an office environment where work is being performed will wear, at a minimum, safety toed leather or safety toed rubber, over the ankle footwear. Refer to OSHA 29 CFR 1910.136 (2) and ASTM F2412-11.

c) Additional protective clothing is required when racking out breakers. (arc rated clothing, face shields, etc shall be worn in accordance with EKPC guidelines)

H-5 Hand Protection

a) Employers shall select and require employees to use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions, punctures; chemical burns; thermal burns; and harmful temperature extremes.

b) All power plant, warehouse, maintenance, and construction employees who are conducting physical work in the plant areas, warehouses, substations, and associated areas such as construction or line work shall wear or have hand protection in their possession. This should be, at a minimum, leather gloves.

H-6 Rubber Protective Equipment

a) The use of rubber gloves shall be in accordance with the following table:

Table 1.0
Maximum-Use Voltage for Rubber Gloves

Class of Glove	Maximum AC Use Voltage, V
0	1,000
1	7,500
2	17,000
3	26,500
4	36,000

*This table can be found in OSHA CFR 1910.137 Table I-4.

b) Voltage shall be considered to be phase-to-phase voltage unless all conductors except the one being worked are insulated (with protective devices) or isolated so that physical contact cannot be made with any energized part. In that case, phase-to-ground voltage will determine maximum use voltage.

c) When the use of rubber gloves is required, they shall be put on before the employee comes within falling or reaching distance (in any event not less than five (5) feet) of unprotected energized circuits or apparatus or those which may become energized and they shall not be removed until the employee is entirely out of falling or reaching distance of such circuits or apparatus.

d) Rubber gloves with the leather protectors shall be worn when:
   1) Working on or within falling or reaching distance of conductors, electrical equipment, or metal surface (cross arms, cross arm braces or transformer cases) which are not effectively grounded and which may be or may become energized.
   2) Required by supervision.
   3) Operating manually controlled air-break switches.
   4) Pulling in wires or handling other conducting materials near circuits, apparatus or equipment that is, or may become energized.
   5) Working on or near telephone or other circuits that are subject to induced voltages from energized high voltage circuits, unless such circuits to be worked are adequately grounded.

Note: "Reaching distance" includes the employee's reach as extended by handling conductive material and/or work equipment.

e) When working with rubber protective equipment on energized circuits or apparatus where the voltage between any two conductors is more than 7,200 volts, the following minimum conditions shall be met in addition to all other rules governing the use of protective equipment:
   1) Rubber gloves and rubber sleeves shall be used.
   2) Employee shall not make physical contact with protective devices installed on energized primary conductors with other than his/her rubber gloves or rubber sleeves.
   3) Employee shall be isolated from all grounds (wooden poles shall be considered as grounds in this case) by using approved supplementary insulation such as aerial baskets, a lineman's platform, or other approved insulated devices.
   4) When two or more employees are working on the same structure, they shall only work on or contact the same conductor at one time.

f) Rubber gloves shall never be worn inside out. They shall be exchanged at any time they become damaged or the employee to whom they are assigned becomes suspicious of their condition. Leather protectors shall always be worn over insulating gloves.

g) Leather protectors shall not be worn except over rubber gloves. Their use shall conform to the following table:

Table 1.1 Minimum Distances Between Protector Gauntlet and Cuff of Rubber Glove	
Class of Rubber Glove	Minimum Distance (inches)
0	1/2
1	1
2	2
3	3
4	4

*This is Table 4 of ASTMF 496-14.

h) Rubber gloves shall be inspected for corona cracks or other damage, and shall be given air test at least once each day while in use, preferably at the beginning of the work period, and at any other time when their condition is in doubt. They shall be checked before each use.

i) Gloves, when not in use, shall be kept in canvas bags or other approved containers and stored where they will not become damaged from sharp objects or exposed to direct sunlight. They shall never be folded while stored nor shall other objects be placed upon them.

j) Rubber gloves shall be stored in the glove bag with the cuffs down to permit drainage and better ventilation and to reduce the possibility of damage.

k) Rubber gloves shall be produced by a seamless process and will be marked with the appropriate class and type. The marking shall be nonconductive.

l) Rubber gloves shall be electrically tested according to Table1.2.

m) Refer to 29 CRF 1910.137 for additional rubber-glove requirements.

Note: Supervision or company rules may require the use of rubber sleeves in addition to rubber gloves.

H-7 Flexible Protective Equipment (Rubber Synthetics, etc.)

a) Employees shall not touch or work on any exposed energized lines or apparatus except when wearing approved protective equipment approved for the voltage to be contacted.

b) When work is to be done on or near energized lines, all energized and grounded conductors or guy wires within reach of any part of the body while working shall be covered with rubber protective equipment, except that part of the conductor which the employee is to work.

c) When working on energized lines or apparatus, work should be done from below, if possible.

d) In applying flexible protective equipment, an employee shall always protect the nearest and lowest wires first, protecting himself/herself as he/she progresses. In removing rubber protective equipment, the reverse order shall be maintained.

e) Flexible blankets shall not be used on the ground without protecting them from physical damage and moisture by means of a tarpaulin, canvas, or protective mat.

f) Protective equipment shall be put on before entering the working area within which energized lines or apparatus may be reached and shall not be removed until the employee is completely out of reach of this area.

g) When not in use, rubber protective equipment shall be protected from mechanical and chemical damage, and shall always be stored in the containers provided and nothing else placed therein.

h) To avoid corona and ozone damage, rubber protective equipment shall not be allowed to remain in place on energized lines or apparatus overnight or for more than one eight-hour period, unless approved by the supervisor/foreman in charge.

i) Line hose, hoods, blankets, line guards, etc., shall be visually inspected before each job.

j) Flexible protective devices shall be stored in special compartments on trucks and elsewhere where they will not be subjected to damage from tools or other equipment.

k) Bare communications conductors shall be treated as energized lines and shall be protected accordingly.

l) Electrical protective equipment shall be given periodic testing.

m) Insulation equipment shall be inspected for damage before use each day and immediately following any incident that can reasonable be suspected of having caused damaged.

n) For additional information concerning flexible protective equipment, refer to the Use and Care of Rubber Gloves,section of this manual, 29 CFR 1910.137 and 29 CFR 1910.269.

Table 1.2 EKPC Rubber Insulating Equipment Test Intervals	
Type of Equipment	**When to Test**
Rubber Insulating Line Hose	**Before first issue and every six months thereafter***
Rubber Insulating Covers	**Upon indication that insulating value is suspect**
Rubber Insulating Blanket	**Before first issue and every six months thereafter***
Rubber Insulating Gloves	**Before first issue and every three months thereafter***
Rubber Insulating Sleeves	**Before first issue and every six months thereafter***
***If the insulating equipment has been electrically tested but not issued for service, it may not be placed into service unless it has been electrically tested within the previous six months.**	

H-8 Fall Protection

a) When an employee is exposed to a fall in excess of four (4) feet and protective measures such as catch platforms, guardrails, and safety nets are not practical, the employee shall be protected by the use of fall-arrest equipment device such as body harnesses, lanyards, lifelines, rope grabs, or positioning devices such as body belts(for linemen only). When choosing fall-arrest equipment or positioning devices, consideration should be given to type of work to be performed and limiting the shock load on the body of the wearer in the event of a free fall.

b) Employees shall rig fall-arrest equipment so that they cannot free fall more than six (6) feet or contact any lower object. A tie-off device shall be capable of supporting a shock load and located above the employee's harness attachment point.

c) Employees shall not make the following lanyard snap-hook connections to help eliminate the possibility of accidental disengagement (roll-out):
   1) Snap-hooks without locks.

2) Two (or more) snap-hooks connected to one D-ring.
3) Two snap-hooks connected to each other.
4) A snap-hook connected back on its integral lanyard.
5) Improper dimensions of the D-ring, rebar, or other connection to the snap-hook dimension.

d) Snap hooks may not be connected to loops made in webbing-type lanyards.

e) When vertical lifelines are used, each employee shall be protected by a separate lifeline. The lifeline shall be properly weighted at the bottom and terminated to preclude a device such as a rope grab from falling off the line.

f) Horizontal lifelines should be limited to two persons at one time between supports.

g) Prior to each use, the employee shall visually inspect all fall-arrest equipment and positioning devices for cuts, cracks, tears, or abrasions, undue stretching, overall deterioration, mildew, operational defects, heat damage, or acid or other corrosion. Equipment showing any defect shall be withdrawn from service.

h) All fall-arrest equipment and positioning devices subjected to impacts caused by a free fall or by testing shall be removed from service.

i) Employees should store all fall-arrest equipment and positioning devices in a cool dry place, which is not subjected to direct sunlight.

j) Employees shall not use fall-arrest equipment or positioning devices until they have been properly trained in their use. All employees shall wear fall arrest equipment while on poles.

k) For additional information on fall-arrest equipment and positioning device requirements, refer to OSHA standards 29 CFR 1926.104 and 29 CFR 1910.269.

H-9 Supplemental Breathing Equipment

a) Approved breathing apparatus shall be used when:
1) Entering or working in any confined space or in any environment where an adequate supply of fresh air cannot be assured.
2) Sandblasting.
3) Exposed to any environmental condition that would be unhealthy.

b) Supplemental breathing equipment shall not be used unless employee has been trained in its use, and it has been determined that the employee is physically able to perform the work and use the equipment.

c) For additional information concerning supplemental breathing equipment, refer to the EKPC's Respiratory Protection Plan , OSHA standards 29 CFR 1910.94, 29 CFR 1910.134 and 1926.103.

H-10 Life Jackets, Life Lines and Similar Equipment

Employees working over or near water where the danger of drowning exists, shall be required to wear a U.S. Coast Guard-approved life jacket or buoyant work vest and /or be protected by a body harness and lanyard or by a safety net. Personal flotation devices shall be maintained in a safe condition and inspected for defects frequently enough to ensure that conditions that would render it unusable — such as dry rot, mildew, water saturation, etc. — do not exist. Defective equipment shall not be used.

H-11 Hearing Protection and Noise

a) Ear protection shall be worn when there is a possibility of hearing damage, which can occur during continuous exposure to noise or impulse exposure to loud impact noise. When exposed to noise of 80 dBA (decibels) for more than 8 hours, 90 dBA for more than 4 hours, 95 dBA for more than 2 hours, or 100 dBA for more than 1 hour, proper ear protection must be worn. (If normal conversation can be understood about 2 feet away, the noise level is probably less than 80 dBA.) Protection must be worn when exposed to impact noise more than 140 dBA, e.g., noise similar to rifle or shotgun.

b) Specific areas where the noise level is greater than 80 dBA shall be identified. Employees shall wear proper hearing protection devices when entering posted areas.

c) Proper ear protection may consist of any of the following: ear muffs, ear plugs, molded ear protectors, or wax-type ear plugs. Plain cotton is not acceptable. Ear protective devices shall be worn properly to provide the required protection and kept clean to reduce the possibility of ear infection.

d) Annual exams are provided as a part of EKPC's Hearing Conservation Program. Information on this program can be obtained from your Safety and Environmental Health Specialist.

e) For additional information concerning noise, refer to OSHA standard 29 CFR 1910.95 and 1926.101.

Table 1.3 EKPC Specific Permissible Noise Exposures	
Duration per day, hours:	**Sound Level dBA slow response**
8	**80**
6	**87**
4	**90**
3	**92**
2	**95**
1½	**97**
1	**100**
½	**105**
¼	**110**

Note: Exposure to excessive noise can cause a gradual decline in hearing ability. Advancements are being made in the reduction of noise, but during the interim period, the employee shall wear proper ear protection when exposed to excessive noise.

H-12 Guards

a) No guards shall be removed from any machine or piece of equipment except to perform required maintenance.

b) Guards removed to perform maintenance operations shall be replaced immediately, and the machine shall not be operated while the guards are removed (except for maintenance certification).

c) For additional information concerning guarding requirements, refer to OSHA standards CFR 1910.243 and 29 CFR 1910 Subpart O.

H-13 Barricades/Railings/Toeboards

a) Rope off the working area at locations where hazardous work is being performed or dangerous conditions exist. This is especially important in substations, switching structures or in power plants where there is a possibility of confusion from arrangement of similar pieces of equipment. Yellow and black tape or rope with tags or signs should be used for this purpose.

b) Handrails, toe boards, or other suitable protection shall be installed around work areas where dropping of tools or materials from one level to another may result in the injury of an employee. For additional information concerning Barricades/Railings/Toe boards requirements, refer to OSHA standard 29 CFR 1910.23 and 1926.202.

H-14 Portable Grounds and Grounding: Refer to Power Delivery Section

H-15 Respirators

a) Scope
When various types of respirators are available, care must be taken in proper selection. The respirator must provide adequate protection against the anticipated hazard. Whenever there is doubt, the more protective device must be used. Respirator use requires training specific to the type of respirator used.

b) Types of respirators include the following:
   1) Air purifying respirators:
      a) Particulate removing--single-use and reusable.
      b) Gas and vapor removing--single-use and reusable.
   2) Atmosphere supplying respirators:
      a) Powered-air purifying respirator.
      b) Pressure demand.
      c) Supplied air.
      d) Self-contained breathing apparatus.

c) Only employees who have been properly trained and have been determined physically able to perform the work and wear the respirator shall be assigned a task that requires the use of a respirator.

d) When respirators are required for a particular work activity, they shall be used.

e) When oxygen concentrations are below 19.5% by volume, only self-contained breathing apparatus or approved supplied air respirators shall be used. Persons using air line respirators or similar respirator devices in an enclosed area shall be equipped with a safety harness and life line or other equivalent means of rescue. At least two people with suitable self-contained breathing apparatus shall be at the nearest fresh-air base for emergency rescue. Refer to 1910.146 OSHA Permit Required Confined Space Standard.

f) Respirator equipment shall not be worn when physical conditions prevent a proper face seal. Such conditions may be a beard, side burns, temple pieces on glasses or a skull cap that projects under the face piece. For additional information, refer to EKPC Respiratory Protection Plan.

g) Contact lenses shall not be worn when using a respirator.

h) Respirators shall be cleaned after use and stored in sanitary containers. Records of a respirator maintenance program shall be kept.

i) For additional respirator requirements, refer to OSHA standard 1910.134, 1926.103, ANSI standard Z88.2 "Practices for Respirator Protection", , and the Kentucky Occupational Safety and Health Standards for General Industry - 29 CFR Part 1910 and 1926, and EKPC Respiratory Protection Plan.

H-16 Use and Care of Rubber Gloves

Note: Supervision or company rules may require the use of rubber sleeves in addition to rubber gloves.

a) The use of rubber gloves shall be in accordance with the Table 1.0.

b) Voltage shall be considered to be phase-to-phase voltage unless all conductors except the one being worked are insulated (with protective devices) or isolated so that physical contact cannot be made with any energized part. In that case, phase-to-ground voltage will determine maximum use voltage.

c) When the use of rubber gloves is required, they shall be put on before the employee comes within falling or reaching distance (in any event not less then five (5) feet) of unprotected energized circuits or apparatus or those which may become energized and they shall not be removed until the employee is entirely out of falling or reaching distance of such circuits or apparatus.

d) Rubber gloves with the leather protectors shall be worn when:
   1) Working on or within falling or reaching distance of conductors, electrical equipment, or metal surface (cross arms, cross arm braces or transformer cases) which are not effectively grounded and which may be or may become energized.
   2) Required by supervision.
   3) Operating manually controlled air-break switches.
   4) Opening and closing manually operated oil circuit breakers.
   5) Pulling in wired or handling other conducting materials near circuits, apparatus or equipment which is, or may become energized.
   6) Working on or near telephone or other circuits which are subject to induced voltages from energized high voltage circuits, unless such circuits to be worked are adequately grounded.
   7) Removing lead sheath and sleeves from cables and joints and opening or cutting cables (until they have been proven to be de-energized at the work location by positive test).

Note: "Reaching distance" includes the employee's reach as extended by handling conductive material and/or work equipment.

e) When working with rubber protective equipment on energized circuits or apparatus where the voltage between any two conductors is over 7,500 volts, the following minimum conditions shall be met in addition to all other rules governing the use of protective equipment:
   1) Rubber gloves and rubber sleeves shall be used.
   2) Employees shall not make physical contact with protective devices installed on energized primary conductors with other than his/her rubber gloves or rubber sleeves.
   3) Employees shall be isolated from all grounds (wooden poles shall be considered as grounds in this case) by using approved supplementary insulation such as aerial baskets, a lineman's platform, or other approved insulated devices.
   4) When two or more employees are working on the same structure, they shall only work on or contact the same conductor at one time.

f) Rubber gloves shall never be worn inside out or without leather protectors. They shall be exchanged at any time they become damaged or the employee to whom they are assigned becomes suspicious of them.

g) Leather protectors or over gloves shall not be worn except when in use over rubber gloves. Their use shall conform to Table 1.1.

h) Rubber gloves shall be inspected for corona cracks or other damage and shall be given air test at least once each day while in use, preferable at the beginning of the work period and at any other time when their condition is in doubt. They shall be checked before each use.

i) Gloves when not in use shall be kept in canvas bags or other approved containers and stored where they will not become damaged from sharp objects or exposed to direct sunlight. They shall never be folded while stored nor shall other objects be placed upon them.

j) Rubber gloves shall be stored in the glove bag with the cuffs down to permit drainage, better ventilation and reduce the possibility of damage.

k) Refer to 29 CFR 1910.137 for additional rubber glove requirements.

Go to TABLE OF CONTENTS

SECTION I: FIRE PROTECTION

I-1 Scope

The guidance set forth in the fire protection section of this safety manual is applicable to all East Kentucky Power Cooperative (EKPC) employees. This section sets forth guidelines established by OSHA, EKPC, NFPA, or insurance carrier.

I-2 Fire Prevention and Emergency Plans

a) Employees shall become familiar with and follow all Utility emergency procedures and plans.

b) Employees shall familiarize themselves with the emergency exits, alarm signals, and escape procedures when working inside a building or structure.

c) In buildings or structures, all fire exits and escape routes shall be visibly marked and shall be kept free of obstructions. Fire exits or doors shall not be locked, chained, or barricaded at any time.

d) Employees shall be familiar with both the location and the operation of all fire protection equipment in the vicinity of their work area.

e) Fire protection equipment shall be properly located at all times. Except for actual use, employees shall not move or remove such equipment without proper authority.

f) Only properly trained employees equipped with the necessary protective equipment shall attempt to extinguish or contain a fire.

g) Fire brigade members shall follow the Utility's established policies and procedures.

h) For additional information concerning fire protection and emergency plans, refer to OSHA Standards 29 CFR 1910.38 and 29 CFR 1910.156.

I-3 Fire Extinguishers

a) All employees shall know the classes of fire, their burning characteristics, and the proper extinguishing agent to be used:
   (1) Class "A" fires involve ordinary combustibles, such as wood, paper, some plastics, and textiles. Extinguishing agents include water, multipurpose dry chemical, high-expansion foams.
   (2) Class "B" fires involve flammable liquid and gas fires, such as oil, gasoline, paint, and grease. Extinguishing agents include carbon dioxide, dry chemical, low-expansion foam.
   (3) Class "C" fires involve energized electrical equipment. Extinguishing agents include carbon dioxide, dry chemical.

(4) Class "D" fires involve combustible metals, such as magnesium, potassium, zinc, and titanium. Extinguishing agents include dry powder.

b) Employees shall not enter confined spaces after using carbon dioxide extinguishers until the area has been thoroughly ventilated.

c) Fire extinguishers must not be blocked or hidden behind material or machines.

d) All fire extinguishers shall be conspicuously marked and shall be located close to the fire hazard, but not so close that they would be damaged or cut off by the fire.

e) Extinguishers that contain carbon tetrachloride or chlorobromomethane shall not be used.

f) Inverted type extinguishers such as self-generating soda acid or self-generating foam or gas cartridge water shall not be used.

g) All employees shall be trained on the operation of the fire extinguishers in their work area annually. The following general guidelines shall be considered when using a portable fire extinguisher:
   (1) Look to see what is burning and be sure to use the correct extinguisher.
   (2) Approach the fire from upwind if possible. Try to get approximately 6 to 8 feet close to the fire (depending on the size and type of the fire).
   (3) Hold the extinguisher upright and aim it at the base of the fire.
   (4) Be efficient. Most fire extinguishers are emptied in a few seconds.

h) Fire extinguishers shall be inspected visually at least once a month and thoroughly inspected at least annually.

i) For additional information concerning the requirements for fire extinguishers, refer to OSHA Standard 29 CFR 1910.157.

I-4 Hydrants, Standpipes, and Hose Stations

a) Vegetation, snow, and stored equipment shall be kept away from hydrants, hydrant houses, and valve and hose stations.

b) Control valves shall be tested frequently and shall be maintained in the proper position.

c) Connections should be checked with the local fire department to be sure that they are of a size and thread that will fit their equipment.

d) Only lined hose shall be used for hose stations.

e) Fire hose station hose and nozzles shall not be used for any other purpose.

f) When water flows through a fire hose and nozzle, the reverse action of the nozzle, called "nozzle reaction," can be considerable, tiring a person in a short period of time. A minimum of two persons should be available to eliminate this effect.

g) All movements involving an operating hose line shall be accomplished with slow deliberate movements.

h) The hose line should be kept in line with the direction of the nozzle stream flow. A sharp bend directly behind the nozzle will cause severe pressure to turn the nozzle and create excessive work and potential danger to the user.

i) After use, all hose shall be thoroughly dried and properly racked in the hose station.

j) For additional information concerning standpipes, and hose stations, refer to OSHA Standard 29 CFR 1910.158.

I-5 Sprinkler Systems

a) Sprinkler system valve stations shall be kept free of all obstructions.

b) Valves for sprinkler systems shall be maintained in the proper position.

c) A minimum clearance of 36 inches shall be kept between the top of material storage and a sprinkler head deflector.

d) For additional information concerning sprinkler systems, refer to OSHA Standard 29 CFR 1910.159.

Go to TABLE OF CONTENTS

SECTION J: MATERIALS HANDLING

J-1 Scope

The guidance set forth in the materials handling section of this safety manual is applicable to all East Kentucky Power Cooperative employees. This section sets forth guidelines established by EKPC, OSHA, and DOT.

J-2 Materials Handling

a) An employee shall obtain assistance in lifting heavy objects or power equipment shall be used.

b) When two or more persons carry a heavy object that is to be lowered or dropped, there shall be a prearranged signal for releasing the load.

c) When two or more persons are carrying an object, each employee, if possible, should face the direction in which the object is being carried. (The right way to lift is easiest and safest. Crouch or squat with the feet close to the object to be lifted; secure good footing; take a firm grip; bend the knees; keep the back vertical; and lift by bending at the knees and using the leg and thigh muscles. Employees shall not attempt to lift beyond their capacity. Caution shall be taken when lifting or pulling in an awkward position.)

d) Employees shall avoid twisting or excessive bending when lifting or sitting down loads.

e) When moving a load horizontally, employees should push the load rather than pull it.

f) When performing a task that requires repetitive lifting, the load should be positioned to limit bending and twisting. The use of lift tables, pallets, and mechanical devices should be considered.

g) When using such tools as screw drivers and wrenches employees should avoid using their wrists in a bent (flexed), extended, or twisted position for long periods of time. Employees should maintain their wrists in a neutral (straight) position.

h) When gripping, grasping, or lifting an object such as a pipe or board, the whole hand and all the fingers should be used. Gripping, grasping, and lifting with just the thumb and the index finger should be avoided.

i) In areas not restricted to qualified employees only, materials and equipment may not be stored closer to energized lines or exposed energized parts of equipment than the following distances plus the maximum sag and side swing of all conductors:
   1) For lines and equipment energized at 50kv or less, the distance is 10 feet.

2) For lines and equipment energized at more than 50kv, the distance is 10 feet plus 4 inches for every 10kv over 50kv.

j) In areas restricted to qualified employees, material may not be stored within the working space of energized lines or equipment.

k) Material stored near energized lines or equipment must meet the spacing requirements of 29 CFR 1910.269 and 29 CFR 1910.176.

J-3 Hauling Poles or Ladders

a) Poles, ladders, pipe, etc. shall be loaded parallel with the truck length. Such material shall not extend beyond the normal sides of the vehicle.

b) Materials shall be securely fastened to prevent a hazard due to shifting.

c) Material which extends more than four (4) feet beyond the front or back of the truck or trailer shall have warning devices attached in accordance with D.O.T. regulations.

d) When hauling poles escort vehicles displaying suitable warning signs shall be used.

e) Poles, loaded on a truck or trailer, shall be securely fastened with a minimum of one tie down for each 10 feet of length in accordance with D.O.T. regulations.

f) Employees shall not ride pole dollies or trailers.

J-4 Temporary Pole Storage

a) If it becomes necessary to store poles at the location where they are to be set, they shall be so placed that they will not interfere with traffic.

b) If poles, left on or near streets, highways or walkways overnight create a hazard, they shall be safeguarded by red lights or well-lighted warning signs.

c) Poles shall be so placed or chocked that they will not roll.

d) Employees shall not remain on a pole pile while poles are being hoisted. Employees should avoid working in areas between poles to avoid being pinned by shifting poles.

e) When a load of poles is within working distance of the ground, load binders shall be so installed that they can and will be operated by employees while standing on the ground.

e) The wheels of the transporting vehicle shall be chocked or securely braked prior to loading or unloading.
f) Poles shall be stored in as safe a manner as possible. Stacking should be avoided where possible. Securing chocks or straps should be used to prevent rolling.

POLES - AVERAGE WEIGHTS (When furnished to A.S.A. Specifications)

It should be understood that poles, even within the same class, vary in diameter and hence weight. Also, the moisture content of a pole changes under various condition. Therefore, the weights given in these tables should be taken as average values only, but they should prove sufficiently reliable. (See tables on the following pages.) **Table 1.4**

AVERAGE WEIGHTS TREATED SOUTHERN YELLOW PINE POLES

6.5	H-3	H-2	H-1	1	2	3	4	5	6	7	9	10
Cls.	--	--	--	616	534	462	402	347	303	264	187	165
20	--	--	--	886	765	666	578	500	435	374	275	231
25	--	--	--	1183	1029	891	770	671	583	500	369	--
30	--	2047	1804	1518	1320	1144	990	858	743	644	--	--
35	2784	2465	2269	1887	1634	1419	1227	1067	924	798	--	--
40	3347	2923	2616	2277	1975	1711	1485	1287	1117	968	--	--
45	3921	3434	3057	2700	2343	2030	1760	1524	1320	--	--	--
50	4443	3990	3509	3146	2728	2365	2052	1777	1540	--	--	--
55	5098	4489	3985	3625	3141	2723	2360	2046	1771	--	--	--
60	5719	5052	4495	4120	3570	3091	2690	2327	--	--	--	--
65	6345	5655	5005	4642	4026	3487	3025	2624	--	--	--	--
70	7035	6281	5574	5187	4499	3900	3377	--	--	--	--	--
75	7760	6896	6177	5753	4989	4323	3751	--	--	--	--	--
80	8526	7534	6711	6347	5500	4769	--	--	--	--	--	--
85	9268	8207	7262	6958	6028	5225	--	--	--	--	--	--
90	10040	8903	7836	7590	6578	5704	--	--	--	--	--	--
95	10852	9640	8561	8245	7156	6193	--	--	--	--	--	--
100	11687	10330	9181	8932	7766	6711	--	--	--	--	--	--
105												

Table 1.5
Douglas Fir Penta Treated
Poles--Average Weights

Class												
Lgth. (ft)	H6	H5	H4	H3	H2	H1	1	2	3	4	5	6
30							1065	890	765	635	520	410
35							1210	1065	920	805	695	605
40							1545	1310	1165	1025	895	770
45				3034	2635	2280	1930	1560	1410	1225	1075	930
50	4397	3998	3825	3490	3000	2573	2225	1870	1625	1420	1245	
55	4270	4872	4354	3998	3514	2995	2480	2130	1845	1600		
60	6130	5577	5021	4584	4109	3605	2845	2480	2155	1845		
65	6888	7274	5659	5136	4608	4075	3330	2810	2380			
70	7728	7056	6374	5795	5136	4574	3860	3145	2635			
75	8568	7905	7046	6322	5650	5006	4320	3515	3015			
80	9398	8659	7785	6955	6230	5530	4985	4045	3575			
85	10325	9465	8520	7622	6840	6082	5480	4385	3640			
90	11395	10498	9394	8486	7478	6658	6035	4945	4080			
95	12345	11362	10214	9115	8136	7272	6600	5985				
Pounds												

J-5 Rigging Equipment

General:

a) Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to ensure it remains safe. All defective equipment shall be removed from service.

b) All rigging equipment must have legible identification markings to indicate the recommended safe work load. Rigging equipment shall not be used without an affixed, legible label.

c) Rigging equipment shall not be loaded beyond its rated capacity.

d) All rigging equipment shall be sufficient strength, proper type, and safe for its intended use.

e) Rigging equipment when not in use shall be removed from the immediate work area so as not to present a hazard to employees.

Slings & Attachements:

a) Before each use, all slings, fastenings, and attachments shall be inspected for damage or defects by a competent person. Damaged or defective equipment shall be immediately removed from service.

b) Makeshift lifting devices formed from bolts, rods, or reinforcing steel shall not be used.

c) Slings shall not be shortened with knots, bolts, or other makeshift devices.

d) Slings used in a basket hitch shall have the load balanced to prevent slippage.

e) Slings shall be securely attached to the load by the use of hooks with retaining devices or the use of shackles or other positive latching devices.

f) Slings shall be padded or protected from the sharp edges of their loads.

g) A sling shall not be pulled from under a load when the load is resting on the sling.

h) Slings shall be long enough to provide the maximum practical angle between the sling leg and the horizontal plane of the load.

i) Shackle pins shall never be replaced with bolts or other non-approved devices.

j) Only hooks with approved retaining devices shall be used. Hooks shall never be rigged so that they are point loaded at the tip of the hook. The load shall be securely seated in the saddle of the hook.

k) When eye bolts are used, care shall be taken to ensure the bolt is not side loaded.

l) Winch lines, ropes, or wire cables shall not be guided by hand when under the load.

m) Wire rope loops shall be made by proper splicing or mechanical clamping of the tail section. Wire rope clips shall not be used to form eyes in wire rope bridles or slings.

n) For additional information concerning rigging equipment, Refer to OSHA standard 29 CFR 1910.184, 29 CFR 1926.251, Rigger Reference Booklet, and Rigger Reference Manual. The Lineworker's Rigging Handbook by Alexander's Publication is also a good reference, and is available upon request from the Safety & Occupational Health Department.

J-6 Hoisting Cables - Conductive Material

a) Wire rope or other conductive material shall not be used to raise transformers, poles, or any other material near high-voltage lines, except when the wire rope and any conductive materials being raised are adequately protected by insulating covering and such energized wires are properly covered.

b) Use of wire rope as a hoist line shall be discontinued when it becomes worn, deteriorated or damaged to a degree that is unsafe.

c) Metallic slings or wire rope (chain or cable) shall not be used near energized equipment.

d) Chain slings shall not be used for lifting purposes.

e) Positive control of wire rope shall be maintained at all times.

f) Synthetic hoisting and pulling lines and ropes shall not be considered as non-conductive.

J-7 Rope (Synthetic Fiber - Manila)

a) A rope shall not be overloaded or dragged over rough or sharp objects.

b) Short bends over sharp-edged surfaces should be avoided.

c) Kinks shall be removed before any strain is put on a rope.

d) When not in use, rope shall be dried and stored properly and kept free from mechanical damage and excessive heat and dryness.

e) Rope shall be examined prior to use for cuts, worn spot, burns and rot. The rope shall be untwisted at various places and inspected for poor fiber and dry rot.

f) The outward appearance of rope shall not be accepted as proof of quality or strength.

g) The safe loads shall not be exceeded.

h) Hand lines shall be minimum of ½ inch diameter and have a strength equivalent to ½ inch manila.

i) Chemical Injury
Great care should be taken to prevent a rope from coming in contact with acid, as any exposure to acid will shorten its service. Keep a rope out of the reach of animals. Most of the synthetic fiber ropes will withstand corrosive chemicals better than natural fiber ropes, however, it is important all ropes, whether natural or synthetic fiber be kept out of contact with acids or other substance of a corrosive nature.

j) Mildew and Dry Rot
The most important factor affecting rope life is the care given to it to prevent mildew and rotting. A hard fiber rope will withstand long periods of use under wet, dirty or rot producing conditions, providing it is cleaned and dried at frequent intervals and provided it is stored so that air may circulate around it. The ideal cleaning is to wash the rope in water or hose it down, then hangs loose folds or coils over pegs so the air may circulate freely around the rope. Care to prevent mildewing and rotting cannot be over estimated since much of the deterioration of ropes considered as normal aging is simply the accumulated action of mildew over a period where insufficient care has been given to a rope. Slings and safety lines should receive special attention in this regard.

Manila rope, used for general purposes, if dried out after being wet, and then properly stored should need no added lubricant. If, however, a rope becomes stiff and hard, a thin coat of lubricating oil or warm petrolatum applied with a paint brush will make the rope pliable again.

The synthetic ropes are not generally affected by mildew or dry rot. They can withstand long periods of wetting without any noticeable loss of strength or change in appearance to the rope.

k) Natural and Synthetic Fiber Rope and Slings
All splices and rope slings shall be made in accordance with fiber rope manufacturers' recommendations. In manila rope, eye splices shall contain at

least three (3) full tucks, and short splices shall contain at least six (6) full tucks (three on each side of the centerline of the splice). In laid synthetic fiber rope, eye splices shall contain at least four (4) full tucks, and short splices shall contain at least eight (8) full tucks (four on each side of the centerline of the splice).

Strand and tails shall not be trimmed short (flush with the surface of the rope) immediately adjacent to the full tucks. This precaution applies to both eye and short splices and all types of fiber rope. For fiber ropes under one inch in diameter, the tails shall project at least six rope diameters beyond the last full tuck. For fiber rope one inch diameter and larger, the tails shall project at least six inches beyond the last full tuck. In applications where the projecting tails may be objectionable, the tails shall be tapered and spliced into the body of the rope using at least two additional tucks (which will require a tail length of approximately six rope diameters beyond the last full tuck).

For all eye splices, the eye shall be sufficiently large to provide an included angle of not greater than 60 degrees at the splice when the eye is placed over the load or support. Knots shall not be used in place of splices.

Synthetic rope lines used as live line tools, or in conjunction with the live line tools, must be dry and stored in areas protected from moisture. In addition, these lines must be clean and free of any contamination.

Chemical fibers used in some synthetic rope lines have rather low melting points compared to natural hemp fibers. These lines may retain their strength through considerable fiber melting and part without warning. For this reason, synthetic ropes used on capstan, or in other friction conditions that will produce heat, should be carefully inspected before, during, and after use.

l) Splicing Synthetic Ropes

In splicing nylon or polypropylene, the same general direction for splicing manila can be followed but a few extra precautions should be taken due to the large number of filaments in each yarn and the smooth surface of the strands. The working ends of each strand should be well taped in several places so that the strand will maintain its original form. In splicing always add two (2) extra tucks.

Go to TABLE OF CONTENTS

SECTION K: HAND AND POWER TOOLS

K-1 Scope

The safety policies and procedures in this section dealing with hand and power tools including the **wearing of appropriate personal protective equipment** are designed to establish safe work practices and eliminate possible hazards associated with their use. Please refer to the PERSONAL PROTECTIVE EQUIPMENT section for guidelines on PPE.

K-2 Hand Tools

a) All tools, regardless of ownership, shall be of an approved type and maintained in good condition. (Tools are subject to inspection at any time. A supervisor/foreman has the authority and responsibility to condemn unserviceable tools, regardless of ownership.)

b) Defective tools shall be tagged to prevent their use, or they shall be removed from the jobsite.

c) Employees shall always use the proper tool for the job performed.

d) Hammers with metal handles, screwdrivers or knives with metal continuing through the handle, and metallic measuring tapes shall not be used on or near energized electrical circuits or equipment.

e) Tools shall not be thrown from place to place or from person to person; tools that must be raised or lowered from one elevation to another shall be placed in tool buckets or firmly attached to hand lines.

f) Tools shall never be placed unsecured on elevated places.

g) As impact tools such as chisels, punches, drift pins, etc. become mushroomed or cracked, they shall be dressed, repaired, or replaced before further use.

h) Chisels, drills, punches, ground rods, and pipes shall be held with suitable holders or tongs (not with the hands).

i) Shims shall not be used to make a wrench fit.

j) Wrenches with sprung or damaged jaws shall not be used.

k) Tools shall be used only for the purposes for which they have been approved.

l) Tools with sharp edges shall be stored and handled so that they will not cause injury or damage. They shall not be carried in pockets.

m) Wooden handles that are loose, cracked or splintered shall be replaced. The handle shall not be taped or lashed with wire.

n) All drill bits and cutting tools such as saws, wood chisels, drawknives, or axes, shall be kept in suitable guards or in special compartments.

o) Tools shall not be left lying around where they may cause a person to trip or stumble.

p) When working on or above open grating, a canvas or other suitable covering shall be used to cover the grating to prevent tools or parts from dropping to a lower level where others are present, or the danger area shall be barricaded or guarded.

q) The insulation on hand tools shall not be depended upon to protect users from shock.

r) All files, rasps and other hand tools having sharp tangs shall not be used without approved handles.

s) For additional information concerning hand tools, refer to OSHA standard 29 CFR 1910.242.

K-3 Pneumatic Tools

a) Compressed air and compressed-air tools shall be used with caution.

b) Pneumatic tools shall never be pointed at another person.

c) Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.

d) Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

e) Compressed air shall not be used for cleaning purposes except when reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

f) Compressed air shall not be used to blow dust or dirt from clothing or person.

g) The manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fittings shall not be exceeded.

h) The use of hoses for hoisting or lowering tools shall not be permitted.

i) All hoses exceeding ½ inch inside diameter shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure or disengagement of a connection.

j) Before making adjustments or changing air tools, unless equipped with quick-change connectors, the air shall be shut off at the air supply valve ahead of the hose. The hose shall be bled at the tool before breaking the connection.

k) Eye protection, foot protection, and other protective devices shall be worn when their use could reduce the possibility of injury.

l) Pneumatic tools shall be operated only by competent persons who have been trained in their use.

m) A pneumatic tool used where it may contact exposed live electrical parts shall have a nonconductive hose and an accumulator to collect moisture.

n) Employees shall not use any part of their bodies to locate or attempt to stop an air leak.

o) For additional information concerning pneumatic tools, refer to OSHA standards 29 CFR 1910, Subpart P; 29 CFR 1910.269 and 1926.301 & 302.

K-4 Portable Electric Tools

a) The noncurrent carrying metal parts of portable electric tools such as drills, saws and grinders shall be effectively grounded when connected to a power source unless:
   1) The tool is an approved double-insulated type.
   2) The tool is connected to the power supply by means of an isolating transformer or other isolated power supply, such as a 24-V dc system.

b) All powered tools shall be examined before use to ensure general serviceability and the presence of all applicable safety devices. The electric cord and electric components shall be given an especially thorough examination.

c) Powered tools shall be used only within their capability and shall be operated in accordance with the instructions of the manufacturer.

d) All tools shall be kept in good repair and shall be disconnected from the power source while repairs are being made.

e) Electrical tools shall not be used where there is a hazard of flammable vapors, gases, or dusts.

f) Tools connected to a central power supply, including portable and vehicle-mounted generators (not isolated) and are not double-insulated shall be protected by a Ground Fault Interrupter (GFI) or by an "assured grounding system."

g) Any cord- and plug-connected equipment supplied by other than premises wiring shall comply with one of the following:
   1) Equipped with a cord containing an equipment grounding conductor connected to the tool frame.
   2) Double insulated.
   3) Connected to power supply through an isolating transformer with an ungrounded secondary.

h) For additional information concerning portable electric tools, refer to OSHA standards 29 CFR 1910, Subpart P; and 29 CFR 1910.269.

K-5 Hydraulic Tools

a) Manufacturers' safe operating pressures for hydraulic tools, hoses, valves, pipes, filters, and fittings shall not be exceeded.

b) Pressure shall be released before connections are broken unless quick-acting, self-closing connectors are used.

c) Employees shall not use any part of their bodies to locate and attempt to stop a hydraulic leak.

d) The fluid used in hydraulic-powered tools shall be fire resistant and shall retain its operating characteristics at the most extreme temperatures to which it will be exposed.

e) All hydraulic lines longer than 35 feet should have check valves or provide for loss of insulating value due to partial vacuum when used where they may come into contact with exposed live parts.

f) For additional information concerning hydraulic tools, refer to OSHA standard 29 CFR 1910.269.

K-6 Power Lawn Mowers, Edgers, Etc.

a) Employees shall ensure that all applicable guards are in place prior to using power lawn mowers.

b) All power lawn mowers shall be equipped with adequate guards, which shall remain in place while mower is in use.

c) Prior to making adjustments, inspections or repairs, the employee shall turn off the mower and permit it to come to a complete stop.

d) When operating a power mower, the employee shall perform the following:
   1) Remove any rocks, pieces of wire, or other foreign objects from the area to be mowed.
   2. Avoid placing the body in front of the discharge opening.
   3. Mow across the face of the slope or incline.

e) For additional information concerning power lawn mowers, edgers, etc., refer to OSHA standard 29 CFR 1910.243.

K-7 Powder Actuated Tools

a) Only those employees who are trained and qualified in their operation shall use powder-actuated tools.

b) Explosive charges shall be carried and transported in approved containers.

c) Tools shall be maintained in good condition and serviced regularly by qualified persons. The material upon which these tools are to be used shall be examined before work is started for the purpose of determining its suitability and eliminating the possibility of hazard to the operator and others.

d) Prior to use, the operator shall ensure that the protective shield is properly attached to the tool.

e) Prior to use, the operator shall inspect the tool to determine it is clean, if moving parts operate freely, and if the barrel is free from obstructions.

f) A defective tool shall be tagged and immediately removed from service.

g) Powder-actuated tools shall not be used in an explosive or flammable atmosphere.

h) Tools shall not be loaded until just prior to the intended firing.

i) Only cartridges with an explosive charge adequate for the job and with proper penetration shall be used.

j) Tools and cartridges shall never be left unattended.

k) Tools shall never be pointed at any person.

l) In case of a misfire, the operator shall hold the tool in place for 30 seconds. He/she shall then try to operate the tool a second time and then wait another 30 seconds. Misfired cartridges shall be disposed of properly. (Place in metal container and return to supervisor/foreman.)

m) Only powder charges, studs, or fasteners specified by the manufacturer for the specific tool shall be used.

n) For additional information concerning powder-actuated tools, refer to OSHA standard 29 CFR 1910.243.

K-8 Miscellaneous Tools and Equipment

a) Use shop machinery and tools only after having received instructions in their safe and proper use.
   1) Keep hands and feet clear of pinch points and shearing surfaces.
   2) The following is a partial list of such hazards:
      (a) Power actuated cutting tools-both stationary and portable.
      (b) Belts and pulleys.
      (c) Winch cables.
      (d) Drums and sheaves.
      (e) Hydraulic tail gates.
      (f) Movable parts of hydraulic derricks on line trucks and aerial baskets.

b) Extension cords must be equipped with lamp sockets designed such that no metal or current carrying parts are exposed. They are to be maintained in first-class operating condition and provided with lamp guards. Where employees are working in damp areas with boiler drums, condensers, evaporators, and other solidly grounded areas, lighting must be used in conjunction with low voltage and with a GFI (ground fault interrupter). Lighting must always be disconnected before relamping.

c) Employees responsible for the use of steel and rope slings shall be instructed in the correct use of them. Where it becomes necessary to attach such slings on an angle, the maximum weight which can be safely handled decreases rapidly due to increased stresses in the sling. When in doubt, the responsible employee should refer to the manufacturer's tables for size of cable to meet the condition of the angle and weight.

d) Hand lines (minimum ½ inch) shall be maintained at all times so they can be safely used to lower a man if needed.

e) Chuck wrenches shall be removed from operating lathe and drill press chucks. All other tools shall be placed on a suitable bench rather than the lathe carriage or drill press itself.

f) Never exceed the rated capacity of an arbor press, nor use hardened steel for a mandrel. Keep work lined up and resting securely on the bed. Always adjust the bed to the proper level instead of using several take-up blocks. Make certain that all bed lock pins are in their proper place. Do not overload. Never stand in front of a pedestal grinder when starting. Grinding wheels shall be ring tested before mounting on power spindle. For non-portable grinders: (Bench and Floor Stands)
   1.) Guards are mandatory.
   2.) Gloves, Face shield AND Safety Glasses are mandatory.
   3.) Use proper grinding wheels.
   4.) Inspect the disks for defects.
   5.) Work rests shall be kept adjusted closely to the wheel with a maximum opening of one-eighth inch to prevent the work from being jammed between the wheel and the rest, which may cause wheel breakage. The work rest shall be securely clamped after each adjustment. The adjustment shall not be made with the wheel in motion.
   6.) Always use hearing protection when grinding and when in the vicinity of the grinding operations.
   7.) Grinding dusts can be harmful. Use natural or mechanical ventilation to remove dusts from your work area. Use respirators if ventilation cannot be maintained.

   For portable grinders (Handheld):
   1.) Guards are mandatory.
   2.) Gloves, Face shield AND Safety Glasses are mandatory.
   3.) RPM of disk must exceed RPM of the grinder.
   4.) Inspect the disks for defects. Avoid dropping grinders on the disk, if this happens re inspect the disk, do not allow disks to get wet.
   5.) Always use hearing protection when grinding and when in the vicinity of the grinding operations.
   6.) Grinding dusts can be harmful. Use natural or mechanical ventilation to remove dusts from your work area. Use respirators if ventilation cannot be maintained

g) Grinding wheels shall have maximum operating speed (RPM) equal to or greater than the grinder motor.

h) Avoid the use of wiping rags, waste, etc., around motors, pumps, and fans that are in operation. Rotating shafts and couplings may cause incidents and serious injury by catching these rags.

i) Responsibility for the maintenance of a high safety standard of tools and equipment rests with each employee. Tools shall be kept in a safe condition at all times.

j) Electric drills, grinders, or sanders shall not be handed to another workman until the equipment has stopped rotating.

k) Use tool bags and hand lines for handling material and tools both up and down structures. Under no condition shall tools or material be thrown.

l) All belt, chain and gear driving machinery shall be guarded. Guards shall not be removed except when necessary to perform maintenance and then the guards must be replaced before the equipment or machinery is returned to service.

m) Neither material nor tools of any sort shall be carried on the shoulder when work is being performed around energized equipment.

n) Long articles (for example, lumber and pipe) shall be carried in a horizontal accidentally contacting energized conductors or equipment.

o) Portable ladders used in the vicinity of energized equipment shall be made of non-conductive material.

Go to TABLE OF CONTENTS

SECTION L: COMPRESSED GAS AND WELDING

L-1 Scope

Procedures and instructions outlined in this section are intended to provide a general knowledge of safe, effective methods of handling, storing, and using compressed gases and their containers. This section is covered by OSHA standards CFR 1910.101 - 105, .110 and .111. For additional information, refer to 29 CFR 1926.350 - .354

This section also deals with electric welding, gas welding, and cutting operations common to each process. These procedures are covered by OSHA standards 29 CFR 1910.251, .252, .253, .254, and .255. Refer to 29 CFR 1926.350 - .354

L-2 Compressed Gases - General

a) Cylinders shall not be allowed to come in contact with energized conductors or ground wires from electrical equipment.

b) Employees shall never tamper with the safety relief devices designed as part of the cylinders.

c) Employees shall never force connections that do not fit.

d) A damaged, defective or leaking cylinder shall not be used. Such cylinders shall be taken outdoors away from sources of ignition and the supervisor/foreman shall be notified.

e) Never use a flame to detect flammable gas leaks.

f) Gases shall not be mixed in a cylinder or transferred from one cylinder to another.

g) Compressed gas cylinders shall always be used and stored in an upright secured position.

L-3 Handling Cylinders

a) Care shall be exercised in handling all compressed gas cylinders. They must not be dropped, jarred or used as rollers to move objects.

b) Gas cylinders (full or empty) shall be secured in an upright position with valve protection caps in place except while regulators and hoses are attached.

c) Cylinders shall not be hoisted using a sling or electric magnet, nor shall they be lifted by the protection cap. When hoisting cylinders, a lifting cradle, boat or platform shall be employed.

d) A suitable truck, cart, chain or other holding devices shall be used to keep cylinders from being upset while in use.

e) Caps on cylinders should be on only hand tight.

f) Cylinders shall have their contents properly identified.

L-4 Storage of Cylinders

a) Gas cylinders shall be stored in areas away from heat, welding, cutting operations where sparks will not reach them.

b) Oxygen cylinders shall not be stored in the vicinity of highly combustible materials; for example, gasoline, oil, and grease.

c) Oxygen cylinders shall be separated in storage from fuel gas cylinders or combustible materials by a minimum distance of twenty (20) feet or isolated by a five (5) foot high fire wall.

d) Cylinders containing chlorine, propane, or hydrogen shall be stored in an isolated, well ventilated, fire-proof area.

e) Empty cylinders should be marked "Empty" or "MT", and segregated from full cylinders and promptly returned to the supplier with all valves closed and valve protection caps in place.

f) Charged and empty cylinders should be stored separately.

g) Cylinders stored on mobile vehicles shall be secured and guarded to prevent any damage or movement.

h) Cylinders may be stored in the open, but should be protected from ground beneath to prevent rusting.

i) Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards. If stored inside a building, cylinders shall be in a well-protected, well-ventilated, dry location.

j) Marking. The hydrogen storage location shall be permanently placarded as follows: “Hydrogen - Flammable Gas - No Smoking - No Open Flames,” or equivalent.

k) A sign with "Danger - No Smoking, Matches, or Open Lights" or similar wording shall be conspicuously posted in work areas or at entrances to areas where fuel gas is used or stored.

L-5 Welding and Cutting - General

a) Welding or cutting normally creates sparks or involves an open flame, when these conditions are present a Hot Work Permit will be filled out and posted at the job site. If the precautions called for on the Hot Work Permit are more stringent than the standards listed in this manual, the more stringent standard will apply. Welding, cutting and other uses of compressed gases shall be performed only by properly instructed and qualified persons.

b) When welding or cutting operations are performed in elevated positions, precautions shall be taken to prevent sparks or hot metal from falling onto people or combustible material below.

c) Cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag or flames will not reach them, or fire resistant shields shall be used.

d) Portable fire extinguishing equipment shall be immediately available at all locations where welding and cutting operations are performed.

e) Neither liquid fuel cigarette lighters nor matches shall be carried by welders or their helpers when engaged in welding cutting operations.

f) Welding or cutting of any pipelines, tanks or "empty" containers shall not be performed until positive proof is obtained that it is free from any explosive mixture of gases. Before welding or cutting closed containers, they shall be vented to the atmosphere.

g) Adequate ventilation or approved respiratory equipment shall be used while welding in confined spaces or while brazing, cutting or welding zinc, brass, bronze, galvanized, lead-coated material, cadmium, fluorides, mercury, chlorinated hydrocarbons, stainless steel, beryllium.

h) In dusty or gaseous spaces where there is danger of causing an explosion, welding or cutting equipment shall not be used until the space is adequately ventilated and tested to ascertain it is a safe atmosphere. Certain conditions will also require the wetting down of the area.

i) Where combustible materials are present, the floor shall be swept clean before welding. Combustible floors shall be wet down or protected by fire-resistant shields. On floors that have been wet down, personnel operating arc-welding or cutting equipment shall be protected from shock hazards. If wet floors, put up CAUTION - WET FLOOR signs.

j) A fire watch shall be maintained while welding or cutting is performed in locations where combustible materials present a fire hazard. A fire check of the area shall also be performed 60 minutes after the work is completed.

k) To protect eyes, face, and body during welding and cutting, the operator shall wear an approved helmet or goggles, proper protective gloves, and clothing. Helpers or attendants shall wear proper eye protection. Other employees shall not observe welding or cutting operations unless they use approved eye protection.

l) Proper eye protection shall be worn to guard against flying particles when the helmet or goggles are raised.

m) Welders shall place welding cable, hoses, and other equipment so that they are clear of passageways, ladders, and stairways.

n) Cables and hoses should be protected from cutting or welding.

o) Ear protection is recommended for welding and cutting overhead in physically confined spaces and hearing protection is required in operation involving air arc and plasma torch applications.

p) All employees welding or cutting in confined spaces shall conform to the requirements of the OSHA Confined Space standard 29 CFR 1910.146.

q) Torches and hoses (fuel and oxygen) shall be checked at the beginning of each shift.

r) Fuel gas hoses and oxygen hoses shall be easily distinguishable from each other.

s) Oxygen and fuel hoses shall not be interchangeable.

t) Please refer to EKPC Hot Work Compliance Program for more information.

L-6 Electric Welding

a) The frame or case of all electrical welding machines shall be electrically grounded. Grounding connections shall be adequate, both mechanically and electrically.

b) Operating limitations and instructions supplied by the manufacturer or affixed to the machine shall be followed.

c) Welding screens shall be used to protect other persons who could be exposed to the arc of the welding operations. Welders shall not strike an arc with an electrode when there are persons nearby who might observe the arc without giving them a warning.

d) The avoidance of electrical shock is largely within the control of the welder. Even mild shock can produce muscle contraction, leading to serious falls. The wearing of damp clothing due to perspiration and wet locations should be avoided.

e) Chains, wire ropes, crane, hoists, and elevators shall not be used to carry welding current.

f) There shall be no leaks of cooling water, shielding gas or engine fuel.

g) Proper switching equipment for shutting down the machine shall be provided.

h) Electrode holders when not in use shall be so placed that they cannot make electrical contact with persons, conduction objects, fuel or compressed gas tanks.

L-7 Gas Welding

a) Suitable eye protection, gloves, and clothing shall be worn during welding or cutting operations.

b) Blow out cylinder valves before attaching regulators.

c) Pressure on the regulator adjusting screw should be released before opening the cylinder valve. Cylinder valves should always be opened slowly to prevent damage to the regulator.

d) Stand to the side while opening the cylinder valves or while adjusting regulators.

e) Oxygen:
   1) Oil, grease, or similar materials shall not be allowed to come in contact with any valve, fitting, regulator, or gauge.
   2) Oxygen shall never be used as a substitute for compressed air.
   3) When an oxygen cylinder is in use, the valve should be opened fully to prevent leakage around the valve stem.

f) Acetylene:
   1) Acetylene cylinders shall be properly secured and always used, transported, or stored in a vertical position.
   2) Cylinders shall be protected from sparks, flames, and contact with energized electrical equipment.
   3) An acetylene cylinder valve shall not be opened more than one and one-half (1½) turns and preferably no more than three-fourths (¾) of a turn.
   4) Employees shall not use acetylene in a free state of pressures higher than 15 psi.

g) Only approved gas welding or cutting equipment shall be used.

h) Approved back flow check valves shall be used on oxy-acetylene welding and cutting rigs, in both acetylene and oxygen lines.

i) Oxygen/acetylene hose shall not be repaired with tape. When a leak is discovered, the cylinders should be turned off and removed from services until properly repaired.

j) Matches or cigarette lighters shall not be used to light a torch, neither should a torch be ignited on hot work. A friction lighter or other approved devices shall be used.

k) Oxygen or fuel cylinders shall not be taken into confined spaces.

l) When welding equipment is not in use, the cylinder valves shall be closed and the pressure in the hoses released.

Go to TABLE OF CONTENTS

SECTION M: LADDERS AND SCAFFOLDS

M-1 Scope

Procedures and instructions in this section are intended to provide a general knowledge of the use of ladders and scaffolding equipment. This section is applicable to all East Kentucky Power Cooperative (EKPC) employees.

M-2 Ladders

a) All ladders shall be inspected . The use of ladders with broken, missing, loose rungs, weakened, broken, or missing steps, broken side rails or braces, or other defects are prohibited. Such defective ladders shall be tagged with a "CAUTION - DO NOT USE." and removed from service. This tag shall not be removed unless repairs are made and the repairs are inspected and approved by an authorized person.

b) Wooden ladders shall not be painted so as to obscure a defect in the wood; only a clear non-conductive finish shall be used. Other types of paint are not permitted with the exception of a small area for identification purposes. Wooden ladders should not be stored in areas subject to high temperature.

c) A ladder or similar approved device should be used to enter or leave an opening, trench or hole over four feet deep.

d) Ladders shall be capable of supporting at least four times the maximum intended load without failure.

e) Ladders shall not be placed in passageways, doorways, or any location where they may be displaced by activities being conducted on other work, unless barricaded or guarded.

f) Keep belt buckle within the side rails (do not overreach).

g) Portable metal ladders and other portable conductive ladders may not be used in the vicinity of energized electrical circuits or exposed energized lines or equipment, except in very specialized situations. (Exception: Such ladders may be used in specialized work, such as high voltage substations, where non-conductive ladders might present a greater hazard. These ladders shall be properly marked.)

h) Only ladders that meet OSHA requirements shall be used by employees.

i) Do not use a spliced ladder or use boxes, crates, chairs, etc. in place of a ladder. Do not place a ladder on an unstable object or place an object on top of a ladder to gain height, use the correct ladder for the job.

j) Footwear must be free of grease, oil, or other slippery substances when mounting a ladder.

k) When ascending or descending ladders, employees shall have both hands free, and shall face the ladder. Carry tools in a proper bag or pouch (or raise and lower them with a firmly attached hand line).

l) Only one employee shall work from a ladder at one time (except for hook-type or double-step ladders.) If two employees are required, a second ladder shall be used.

m) Ladders shall not be used as a scaffold platforms, unless specifically designed for that purpose.

n) When using a ladder to attain an elevated position, the ladder side rails shall extend at least 36 inches above the landing area.

o) The use of step ladders above 20 feet is prohibited and the use of extension ladders above 24 feet is strongly discouraged.

p) Ladders shall be returned to their respective stations immediately after use.

q) For more information concerning portable ladders, refer to the OSHA Ladder Safety Bulletin, OSHA standards 29 CFR 1910.21, 1910.25, 1910.26 and 1926.1053.

M-3 Single and Extension Ladders

a) All straight extension ladders shall be equipped with nonskid safety feet or other means to prevent slipping.

b) Place the ladder against a stable rest capable of supporting the applied load. DO NOT place the ladder against an unstable object.

c) Place the base of the ladder so that the distance from the base to the object against which the ladder is leaning is one-fourth (¼) of the working length of the ladder.

d) Do not stand on either of the top two rungs of the ladder.

e) Do not use the top section of the extension ladder as a bottom section.

f) Ensure that the upper section of the extension ladder rests on the bottom section.

g) Ensure that the minimum overlap on a two-section extension ladder is as follows:

Table 1.6 Length of Ladder (feet)	Overlap (feet)
Up to and including 36 feet	**3 feet**
Over 36 up to and including 48 feet	**4 feet**
Over 48 up to and including 60	**5 feet**

h) Ensure that the extension ladder locks are securely engaged.

k) The ladder must be secured by either tying or hooking the top to a stable object, blocking the base, or ensuring that a second person holds the ladder under the following conditions:

1) If the base of the ladder must be placed so that the distance from the base to the object against which the ladder is leaning is less than one-fourth (¼) of the working length of the ladder.
2) If the base of the ladder must be so placed so that the distance from the base of the ladder to the object or surface against which the top of the ladder is placed exceed more than one-third (1/3) the working length of the ladder.
3) If the top of the ladder cannot be placed squarely against a flat, solid surface.
4) If the nature of the work requires potential over-reaching or sufficient pushing/pulling to cause the ladder to move.
5) If unable to eliminate slippery substances. (oil, grease, ice, etc.)
6) If working from a ladder at a point 10 feet or more above the working surface.
7) If the distance from the base of the ladder to the edge of an elevated working surface is less than one and one-half (1½) times the length of the ladder (working on an elevated working surface: catwalk, landing, roof).

j) Employees must wear a safety harness with an attached secured lanyard/lifeline before working from a ladder four (4) feet or more above the working surface that requires reaching beyond accepted "safe" limits. (Belt buckle goes beyond the side rail or reaching in the direction away from the ladder.) This four (4) feet distance is to be measured from the base of the ladder to the worker's feet. Employees must also wear a safety harness whenever both hands must be used for the job or a possibility of the employee falling from an elevated position exists.

k) When dismounting from a ladder at an elevated position (such as a roof), the employee shall ensure that the ladder side rails extend at least three (3) feet above the dismount position, or that grab bars are present.

M-4 Step Ladders

a) Do not use a step ladder as straight ladder.

b) Support all four legs on an even, substantial base, with the ladder fully spread and spreading bars locked open.

c) The top two steps shall not be used, except for platform ladders.

d) While an employee is working on a portable step ladder at a point ten (10) feet or more above the ground or floor, the ladder shall be tied, blocked, secured, or held in place to prevent its being displaced. (See above conditions regarding straight/extension ladders.)

e) Do not use the bracing on the back legs of the step ladder, as a ladder.

M-5 Scaffolds

a) Scaffolds shall be used only if erected by individuals trained in scaffold erecting and dismantling, inspected by a Competent person trained in scaffold design and tagged according to company scaffold tagging procedures.

b) The intent of scaffold tagging is to assure that personnel perform their work from a scaffold that is complete and constructed in accordance with Safety and Health rules and OSHA regulations. If there is a conflict between EKPC Safety and Health rules and Governmental regulations, the most restrictive rules shall apply

c) Scaffolds not displaying a signed tag shall not be used.

d) Scaffold tags shall conform to the following color codes and wording;

A- Green Tag; This scaffold was built to meet OSHA scaffold regulations. "IT IS SAFE TO USE".

B- Yellow Tag; This scaffold does not meet OSHA scaffold regulations " BODY HARNESS SHALL BE WORN".

C-Red Tag; This scaffold is not complete "DO NOT USE"

e) No employee, or any material or equipment, shall be supported or permitted to be supported on any portion of a tree, pole structure, scaffold, ladder, walkway, or other elevated structure, crane, or derrick, etc., without it first being determined that such support is adequately strong and properly secured in place. All scaffolds shall rest on a sound footing and shall stand level.

f) Employees shall check all scaffolding before use to ensure it is of sufficient strength and rigidity to safely support the weight of persons and material to which it will be subjected.

g) Scaffolds four (4) to ten (10) feet in height, and less than 45 inches in either horizontal direction shall have standard guard rails installed on all open sides and ends of the platform.

h) Employees shall not use a scaffold over ten (10) feet in height unless a standard guardrail, with midrail and toe board, on all open sides and end of platform, is present to provide adequate employee protection. Standard guard rails shall be 2 x 4 inches, or the equivalent, approximately 42 inches high, with a midrail. Supports shall be at intervals not to exceed eight (8) feet. Toe boards shall be a minimum of four (4) inches in height.

i) All scaffold planking or platforms shall be overlapped a minimum of 12 inches or secured from movement.

j) Scaffold planks shall extend over their end supports not less than six (6) inches, or more than 12 inches; planking shall cover the full width of the frame.

k) Scaffolds shall not be moved without first removing all loose tools, materials, and equipment resting on the scaffold deck.

l) All scaffolds shall be sufficiently secured and braced.

m) The footing or anchorage points for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks shall not be used to support scaffolds or planks.

n) Slippery conditions on scaffolds shall be eliminated as soon as possible after they occur.

o) Scaffolds shall not be altered or moved horizontally while being used or occupied except when specifically designed for such use. Movable scaffolds shall have the casters or wheels locked to prevent movement. The working platform height of a rolling scaffold must not exceed four times the smallest base dimension, unless guyed or otherwise stabilized.

p) The width of all scaffolds, ramps, and platforms shall be sufficient to prevent congestion of persons, materials, or equipment, and in no case shall they be less than 18 inches wide.

q) Synthetic or natural fiber rope shall not be used as guardrails.

r) Overhead protection shall be provided for employees on a scaffold exposed to overhead hazards.

s) Employees working on suspended scaffolds shall be protected by an independent lifeline, body harness, and a lanyard.

t) Safe access shall be provided for all scaffolds. Structural members shall not be used as a means of access.

u) Any scaffold, including accessories such as braces, brackets, trusses, screw legs, ladders, etc., damaged or weakened from any cause shall be immediately repaired or replaced.

v) For additional information concerning safe supports and scaffolds, refer to OSHA standards 29 CFR 1910.28 and 29 CFR 1910.29.

Go to TABLE OF CONTENTS

SECTION N: HEALTH AND ENVIRONMENTAL CONTROLS

N-1 Scope

This section deals with specific health and environmental issues and controls that are of concern to the employee. Many of the work processes and locations in the EKPC system present some hazards of varying degree. Because most of these hazards do not pose immediate or acute danger, they are frequently not given the attention they require.

For employees to be fully protected from these hazards, they must become knowledgeable as practical of the potential environmental health hazards.

N-2 Illumination/Lighting

a) If natural illumination is insufficient or unavailable, artificial lighting shall be used. Permanent lighting fixtures are designed into the facilities by an architectural-engineering firm and will normally exceed all standards and requirements. Whenever an employee perceives lighting to be inadequate, the employee is empowered to evaluate the situation, and take the necessary action.

b) In areas where it is necessary to use temporary lighting, employees should ensure adequate lighting is available. If the lighting available makes viewing the work or areas of operation difficult, additional lighting shall be obtained. Temporary lighting (excepting battery powered) shall be protected with approved guards.

c) All temporary lighting shall be kept in good working condition. All wiring shall be inspected before use and discarded if damaged.

N-3 Ventilation

a) Whenever hazardous substance such as dusts, fumes, mists, vapors, or gases exist, or are produced or released in the course of operations, employees shall avoid the contaminated areas. Employees shall remain clear of contamination which has been dispersed by natural or forced ventilation, unless they are equipped in the appropriate personal protective equipment.

b) When forced ventilation is used to disperse the contaminants, the following procedures will be adhered to:
   1) Exhaust fans (temporary or permanent) will be set up so that dusts and fumes are not drawn through occupied work areas if practical.
   2) Exhaust systems employed to disperse contaminants will be used for extended periods to ensure contaminants are removed, before entry into the area by employees.
   3) Materials that have been exhausted shall not be directed into another area in which concentrations can reach harmful levels. Dust and refuse discharged

from an exhaust system shall be disposed of in such a manner that it will not result in harmful exposure to employees.

N-4 Hazardous Materials

OSHA revised its Hazard Communication Standard (HCS) to align with the United Nations' Globally Harmonized System of Classification and Labeling of Chemicals (GHS). The revised standard requires the use of new labeling elements and a standardized format for Safety Data Sheets (SDSs), formerly known as, Material Safety Data Sheets (MSDSs). OSHA is phasing in the specific requirements over several years (December 1, 2013 to June 1, 2016). This manual has been updated to reflect the change from MSDS to SDS. Some EKPC information may still have the MSDS label.

a) To reduce the risks of working with hazardous materials, manufacturers of hazardous materials are required to convey hazard information to the users of their products. This information is contained in Safety Data Sheets (SDS) and in container labeling. At EKPC, SDS information is stored in at least four locations. Each plant's Safety and Environmental Health Specialist has a file for their particular location, and a complete set is stored in the Energy Control Center at the Headquarters facility. Employees shall refer to the Hazard Communication Program or specific requirements for working with hazardous materials.

b) Employees can access Safety Data Sheets at each of their locations and on the Hazard Communication Program.

c) The SDS is the main vehicle for communicating hazards, safe handling requirements, and emergency procedures for each of the hazardous materials. Employees shall be familiar with the SDS for hazardous materials known to be in their work area.

d) SDS information shall be available to contractors working at EKPC facilities. Also, contractors shall make SDS information available to EKPC when they bring chemicals or hazardous materials to EKPC facilities.

e) Employees shall not use materials in unlabeled containers. Employees shall report unlabeled containers and containers with damaged labels to their supervisor/foreman.

f) Employees shall not transfer a hazardous substance from a labeled container into an unlabeled container unless it shall be in exclusive control of the employee.

g) Employees shall never mix hazardous substances unless it is explicitly required for use.

h) Employees shall take special precautions when working on or around unlabeled pipes.

i) Employees shall report all hazardous material spills to their Supervisor/ Foreman. They shall not engage in clean up or control unless they have been properly trained and are wearing the proper personal protective equipment.

Additional information concerning the requirements, refer to handling hazardous materials contained in OSHA standards 29 CFR 1910, Subpart Z, and 29 CFR 1910.120.

N-5 PCB's (Pyranol, Askarel, Inerteen, etc.)

a) Only properly trained employees shall handle material containing PCB's.

b) Employees shall wear appropriate personal protective equipment when cleaning up spills containing PCB's.

c) Before entering a confined space (such as a transformer vault) after the failure of equipment containing PCB's, refer to the EKPC Confined Space Entry Program.

d) All materials such as rags, solvents, dirt, etc., contaminated by PCB's shall be disposed of according to EKPC policies and the EPA's 40 CFR 761 PCBs Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions.

e) See the EKPC PCB Clean-up Manual Guidelines for additional information.

N-6 Radioactive Material

EKPC management has made a commitment to ensure that all employees and members of the public exposures shall be kept ALARA (As Low as Reasonably Achievable). Methods to assist with maintaining exposures are Time, Distance, Shielding and Engineering Controls.

a) Radioactive Material Licenses issued by Cabinet for Health Services-Radiation Health Branch.
b) Notice to Employees: Standards for Protection against Radiation shall be posted in accordance with existing regulations. Existing regulations can be found in NRC CFR 10 Part 20.
c) Emergency procedures shall be posted in accordance with existing regulations.
d) Monitoring for radiation shall be conducted in compliance with existing regulations.

e) For additional information on Radioactive material and regulations, refer to Kentucky Administrative Regulations Title 902, Chapter 100 Radiology (902 KAR 100) and the National Regulatory Commission Standards for Protection Against Radiation NRC CFR 10 Part 20.

f) A list of EKPC locations containing radioactive material can be found in the Employee Safety Information System under EKPC Radioactive Material Source Locations.

g) A picture of the radioactive material caution sign is shown below.

N-7 Use of Herbicides and Other Chemicals

a) Before using any herbicide or other chemical, employees shall read the label carefully and follow the directions and precautions listed.

b) Employees shall avoid skin contact or breathing mist of spray material whenever possible.

c) When working with toxic materials, proper respiratory protection must be used.

d) Spray equipment shall be cleansed daily when using oil solutions.

e) Spraying shall not be done when wind exceeds 5 mph, unless specifically authorized by a supervisor/foreman.

f) Approved methods shall be used to spray brush. High and low pressure methods and nozzle types must be approved by a Supervisor/Foreman.

g) Foliage and basal sprays shall not be used on wild cherry trees in areas where livestock may graze because of the poisonous acid that is generated.

h) Oil and other liquids, spilled on power spray equipment, shall be removed as soon as possible, to prevent falls from slippery surfaces.

i) Hose connections on hydraulic sprayers shall be checked before use to prevent blowing.

j) Employees shall not smoke on or around mist spray equipment when oil solutions are being mixed or used.

k) Herbicides and other chemicals shall never be left where they could create a menace to persons or property.

l) Empty containers should be triple rinsed and punctured to prevent any other use. They shall never be thrown into ponds, lakes, or streams.

m) Spray wastes shall be disposed of in a safe and proper manner.

n) When applicable, all employees who apply pesticides or herbicides shall be licensed or work under the direct supervision of a licensed operator.

N-8 Asbestos

All building insulating materials shall be treated as PACM (Presumed Asbestos Containing Material) unless it has been replaced and demarcated as Non-Asbestos Containing Material or the material has been sampled, tested, analyzed and marked as Non-Asbestos Containing Material. Refer to OSHA standard 1926.1101.

a) Only those employees who have been properly trained and equipped with the necessary personal protective equipment shall handle asbestos.

b) Insofar as practical, asbestos shall be handled, removed, cut, scored, or otherwise worked in a wet state.

c) Asbestos cement, mortar, coating, plaster, etc., shall not be removed from the shipping container, unless it is wetted, enclosed, or ventilated.

d) Negative-air enclosures or other engineering controls (e.g., glove bags) that reduce the concentration of airborne asbestos fibers shall always be used when working with asbestos.

e) Personal protective equipment: Proper protective equipment, including clothing, must be worn when working in an area where there is a significant amount of airborne asbestos fibers.
   1) Respirators: Approved HEPA respirators shall be worn when there is a possibility of airborne concentrations of asbestos fibers above the PEL (Permissible Exposure Limits). The type of respirator required shall be based on the airborne concentrations of asbestos fibers. Refer to EKPC's Respiratory Protection Plan for additional information.
   (2) Special Clothing: Employees who are exposed to airborne concentrations of asbestos fibers that exceed the (PEL) shall use special clothing such as coveralls, head coverings, gloves, and foot coverings. Clothing shall be changed only in the designated location and shall be kept separate from street clothes. Contaminated clothing shall be properly cared for or

disposed of and kept separate from other laundry or disposed materials; it shall be transported in sealed, impermeable bags or similar containers and properly labeled to identify the possible hazard.

f) Housekeeping:
   1) All external surfaces shall be maintained free of accumulations of asbestos fibers.
   2) Asbestos waste and materials contaminated with asbestos, which may produce airborne concentrations, shall be collected and disposed of in sealed impermeable bags at least 6 mils thick or similar containers. Bags or containers shall be evacuated of all air before sealing and all bags shall be double bagged and properly labeled.

g) For additional information concerning asbestos requirements, refer to OSHA standard 29 CFR 1910.1001 and the Environmental Protection Agency's Worker Protection Rule 40 CFR 763.

N-9 Lead

All paint is to be treated as lead containing paint unless documentation has been obtained stating that the paint is non-lead based or it has been sampled, tested, analyzed and deemed to be non-lead based.

a) Permissible exposure limits shall not be exceeded.

b) Monitoring for lead levels shall be conducted in compliance with existing regulations.

c) Engineering and work practice controls shall be used to minimize lead exposure.

d) Respiratory protective equipment and other personal protective equipment shall be used in accordance with existing regulations.

e) Refer to OSHA standards 29 CFR 1910.1025 and 29 CFR 1926 for more information on lead exposure.

N-10 Air Contaminants

There are several hazardous substances that occur in coal combustion by-products. These substances may concentrate on surfaces throughout the coal combustion system. Whenever there is contact with ash or maintenance is performed on the fire side of combustion equipment, there is the opportunity for exposure of employees to these substances.

a) Employees working in areas that have been identified as containing arsenic shall wear appropriate personal protective equipment.

b) Employees working in areas that may contain arsenic or other metals listed in Subpart Z of the KOSHA Standard for General Industry shall wear appropriate personal protective equipment until limits are established for that work area and work practices being followed.

c) Monitoring for air contaminants shall be conducted in compliance with existing regulations.

d) When feasible, engineering and work practice controls shall be used to limit the exposure of employees to air contaminants.

e) For additional information on air contaminants, refer to the EKPC Toxic Air Sampling Program and, KOSHA Standard for General Industry, Subpart Z.

N-11 Indoor Air Quality (IAQ)

Good air quality is an important component of a healthy work environment. Good indoor air quality includes adequate distribution of adequate ventilation air, control of airborne contaminants, and maintenance of acceptable temperature and relative humidity. Good air quality enhances occupant health, comfort, and workplace productivity.

a) Failure to respond promptly and effectively to IAQ problems can have consequences such as:
   1) increasing health problems such as cough, eye irritation, headache, allergic reactions, and in rare instances, death.
   2) reduced productivity due to discomfort or increased absenteeism.
   3) accelerating deterioration of furnishings and equipment.

b) Providing good air quality requires conscientious effort by both building staff and occupants.

c) Employees shall report to the Facilities Team and/or their Safety & Health Coordinator any physical condition or discomfort they suspect may be a result of indoor air quality.

N-12 Work Place Smoking

It is the policy of EKPC to establish a work environment which will allow all persons to work free of tobacco smoke and its potentially harmful effects and to promote and make available a smoking cessation program to employees and their spouses.

Administrative Policy A021 is intended to reduce health problems associated with smoking and secondhand smoke, improve indoor air quality, and provide potential, long-term medical and fire protection benefits, all of which promotes a safe, productive, and healthful work environment.

a) The smoking of tobacco products inside any enclosed EKPC facility or vehicle is prohibited. Smoking in lodging occupied in part by non-smokers and paid for by EKPC is also prohibited.

b) This prohibition applies to all employees, employees' guests, and members of the general public.

c) Non-compliance with Board Policy 512 and Administrative Policy A021 will subject employees to appropriate disciplinary action.

d) Smoking or open flames shall not be permitted in areas such as oil, hydrogen, or acetylene storage areas, or similar areas where dangerous gases might be present. Neither shall smoking be permitted in flammable liquid storage and use locations, or other areas where quantities of combustible materials are kept. Absence of "No Smoking" signs shall not excuse smoking in dangerous places.

e) State, County and/or City ordinances that include more stringent rules than the ones listed in this document shall take precedence over this manual.

Go to TABLE OF CONTENTS

SECTION O: POWER PRODUCTION

O-1 Scope

a) The safety policies and rules set forth in this section shall apply to all personnel engaged in the operation and maintenance of EKPC generating facilities and all other persons who may be required to enter the facilities for any reason.

b) The safety policies and rules set forth in this section are to call employees' attention to specific power plant hazards and establish practices designed to eliminate or avoid the hazards.

O-2 Plant/Plant Facilities Security

All gates to areas and to switch structures containing energized high voltage equipment shall be kept closed and locked except when a qualified employee enters the area or structure.

O-3 Personnel Working on Plant Equipment

a) Cooperative employees entering an attended plant, except regular plant employees, shall immediately report to the main office during the day or the shift supervisor/foreman in charge at night.

b) No person shall work on any plant apparatus without first obtaining the proper clearance from the appropriate supervisor/foreman.

c) When testing, switching, or performing any work which may affect plant operations, the shift supervisor/foreman shall be notified before the work is begun and when the work is completed.

O-4 Contractor Personnel

a) When contractor personnel or other persons are to perform work on or visit an unfamiliar portion of the facilities, a qualified employee (appointed by the shift supervisor/foreman or main office personnel) will obtain the necessary clearances and provide instructions describing the hazards associated with the subject equipment and the work locations.

b) Qualified employees will serve as escorts to any area where there is a danger to life, service, or property.

O-5 Work Clearances

Before work may be performed on any hydraulic, steam, mechanical, chemical, electrical apparatus, electric circuits, or liquid conduits, a clearance for access to the equipment

must be obtained, and the equipment rendered safe to work on in accordance with approved power plant operating practices.

O-6 Equipment/Systems Clearances

When obtaining clearance to work on or enter any equipment, all EKPC employees and Contractors shall comply with the HAZARDOUS ENERGY CONTROL – LOCK OUT TAG OUT section of this manual.

a) Approved lockout - tagout procedures shall be followed before work is begun on plant or other equipment on plant property.

b) It shall be the responsibility of the shift supervisor/foreman to ensure that equipment to be operated or worked on is properly designated by system name or number.

c) All employees shall use established names and numbers to identify plant equipment.

O-7 Work Over Gratings

a) When work is being performed over open floor gratings, a canvas or other protective covering shall be used to cover the grating area in order to prevent tools or material from falling to a lower level.

b) If grating or floor plates must be removed, the open area shall be barricaded and toe boards erected around the opening.

c) The lower level danger area shall be barricaded and flagged to restrict pedestrian traffic.

O-8 Coal Handling

Treat all equipment that handles combustible dusts, as well as any rooms or buildings where combustible dusts can be present and might be put into suspension, as having a dust explosion hazard. Efforts must be made to eliminate or keep dust in all of the coal handling areas to a minimum. When working in areas where dust may be present with equipment that may supply an ignition source, efforts to wash down or wet the material in question will be made if at all possible. A Hot Work Permit shall also be obtained and posted at the jobsite.

a) Railway Operations:
   1) Only authorized employees shall operate locomotives.
   2) Before moving a locomotive, the operator shall give a proper warning (car dumper excepted.) A warning shall always be sounded when approaching a walk or driveway, when passing cars on an adjacent track or when passing any structure obscuring the operator's vision.
   3) The operator shall not ride on the footboards of locomotives.

4) Switchmen or brakemen shall use adequate signaling devices when working in conjunction with locomotives or cars.
5) Employees shall use extreme caution when mounting locomotives or cars.
6) Work (except testing procedures) shall not be performed on locomotives while they are moving.
7) Locomotives shall not be operated at unsafe speeds. The train shall be kept under control at all times.
8) Whenever the locomotive engines are shut off the hand brake shall be set. The operator key (lever) shall not be left in an unattended locomotive.
9) Locomotive operators shall follow all signals carefully. If signals are not fully understood they shall not move the train until clarification has been made.
10) Employees engaged in switching or dumping cars shall not line up draw heads with their feet.
11) Draw heads or knuckles shall not be shifted while locomotives or cars are in motion.
12) Flying switches shall not be made.
13) Employees shall not jump from one car to another while either is in motion.
14) Cars shall not be spotted where they will foul another track.
15) Employees shall not go between cars while such equipment is in motion.
16) When spotting cars, the brakes and approved blockers shall be set if necessary to prevent movement.
17) Employees shall cross or walk on tracks at a safe distance from cars or locomotives.
18) Trains, engines, and cars shall be expected to move at any time, on any track, in either direction.
19) Approved car movers shall be used for moving cars by hand.
20) Employees shall not crawl under or work beneath cars or locomotives unless the wheels have been blocked in both directions and warning flags are placed at both ends.

b) Barges, Boats and Docks:
1) Employees shall stay clear of barge cables while barges are being moved.
2) When barges are moored at docks, the mooring lines shall be loose enough to allow sufficient movement of the barge to keep wash of passing boats from breaking lines, yet shall be tight enough to permit the passage of personnel from dock to barge.
3) Only authorized employees shall operate company boats.
4) Lifeboats and workboats shall not be used unless a pair of oars and a ring buoy with 90 feet of line attached to the boat are present.
5) Docks and walkways shall be maintained in a safe condition at all times. They shall be kept clear of all obstructions.
6) While working on boats, barges, rafts, or other floating equipment or on docks, employees shall wear approved life jackets.
7) Employees shall not enter a barge that is being unloaded.

c) Car Shakers and Dumpers
   1) Only tools approved by the company shall be used for releasing doors on hopper-type cars.
   2) Car shakers shall be shut off before employees climb onto the car, and the car shall not be moved until all personnel are out of the car.
   3) Employees engaged in the car shaker operations shall use suitable eye protection, hearing protection, and respirator equipment as prevailing conditions dictate.

d) Conveyors and Crushers
   1) Employees shall stay clear of conveyors; they may start at any time.
   2) Employees shall not ride conveyor belts or buckets.
   3) Employees shall not attempt to clear a blocked conveyor or crusher, or loosen any material therein (except from established positions outside the equipment) without first shutting off the power and tagging the control with a "Hold Card". An example picture of an EKPC Power Production Hold Card can be found here.
   4) Employees shall not clean around unguarded conveyor rollers while belt is in operation.
   5) Belt conveyors shall be equipped with emergency stop cords for their entire exposed lengths.
   6) Employees shall cross over or under conveyors only where permanent walkways with railings have been installed.
   7) Repairs shall not be made except when the electric system is shut off and tagged.
   8) Coal dust shall not be cleaned up in a manner that will create a hazardous, dusty atmosphere. Use of compressed air is prohibited.

e) Coal Storage
   1) Before entering a coal bunker, the associated mill feeder shall be physically rendered inoperative and tagged with a "Hold Card".
   2) Coal bunkers are permit required confined spaces and must conform to our written EKPC Confined Space Entry Program.
   3) When cleaning down coal in a bunker, employees shall not work from a position under the lodged coal and shall use non-sparking tools.
   4) When welding or use of open flame is required in or around coal handling areas, extreme caution shall be taken to prevent fire and explosion. Fire protection shall be available and ready for use.
   5) When operating coal handling equipment in the area of the reclaim hoppers, the equipment operator shall be notified of any change in hopper operation.
   6) No employee in the vicinity of a standpipe, lowering well, surge pile, or underground feeder shall walk closer than a distance equal to the depth of the coal above the elevation of that employee plus 20 feet, unless specifically instructed to do so, and then only after obtaining proper clearance and using the prescribed safety precautions.

O-9 Lancing Boilers

a) During the boiler lancing operations, the worker involved shall wear long-sleeved shirt buttoned at the collar, gloves, and a face shield.

b) Boiler doors may NOT be opened without first informing the boiler operator. Fire can flash out due to positive pressure within the boiler; consequently persons should stand to one side whenever a boiler door is opened.

c) Only authorized personnel shall be permitted to open a boiler door.

d) Doors shall be closed when workers leave the area for any period of time.

O-10 Removal of Ash and Slag

a) While working or pounding on hoppers in order to aid in the removal of ash or slag, employees shall wear the proper safety equipment/P.P.E. as necessary for the job.

b) Employees removing inspection plugs and/or doors of hoppers shall wear goggles.

c) Non-conductive probes shall be used when cleaning electrostatic precipitator hopper.

O-11 Work on De-Energized Conductors and/or Equipment

a) When clearances are required for access to conductors and equipment, the clearance shall be obtained by the person directly in charge of the work.

b) After the clearance has been issued, the person in charge of the work shall determine by tests that the conductors or equipment are de-energized.

c) Any conductor or piece of equipment on which a clearance has been obtained should be grounded.
   1) Grounds shall be applied with approved insulating devices, or barricading shall be used as needed. All employees shall remain well clear while grounds are being installed.
   2) Grounds shall be placed between the workman and any possible source of supply, provided that the grounds can be installed without increasing the working hazards.
   3) Grounds shall first be connected to ground before contact is made with the de-energized conductor to be grounded.

d) Employees shall not work on electrolytic type lightning arresters or capacitors until they have been effectively discharged to ground.

e) Any switch or control handle, the closing of which would energize that portion of conductor or equipment upon which a clearance is held, shall be tagged to prevent the control handle or switch from being inadvertently closed. Any switch or control handle so indicated shall not be closed under any circumstances until the clearance has been formally released.

f) Protection of Working Area
   1) When work is to be performed near energized high voltage equipment, an approved temporary barrier shall be placed between the space occupied by the worker and the nearest energized equipment.
   2) An approved barricade tape or other approved method shall be used to mark off and bar approach to energized hazardous areas adjacent to the work area.
   3) Signs reading "Danger Do Not Pass This Barrier" or phrases with equivalent meaning should be posted facing away from the work area.

O-12 Work on Energized Conductors and/or Equipment

a) No employee shall touch or work on energized conductors or apparatus or equipment except when wearing approved rubber gloves or using approved hot line tools.

b) All energized conductors within reach shall be covered with approved insulating devices, or barricaded.

c) Work shall be performed from below the energized conductors, when practicable.

O-13 Proper Designations Required

Disconnect switches, switchboard controls, relays, knife switches, and all equipment in plants which are required to be operated or worked upon, must be plainly designated by name, number, or other suitable means to properly identify such equipment.

O-14 Changing Generator & Exciter Collector Ring Brushes with Machine in Service.

a) Only specially trained and competent workers with adequate supervision and assistance shall be assigned to this work.

b) The person in charge shall instruct employees of the hazards involved in doing such work.

c) Good lighting shall be provided as required. Portable lighting shall be placed so that is does not interfere in any way with the workmen.

d) New brushes shall be prepared in advance. Any attachments on the shunt shall be firmly in place. When shaping or sanding is required, it shall be done prior to the changing operations.

e) Care shall be taken when several brushes are changed that the current density is not affected to the extent that overheating will result.

f) Special tools required shall be properly insulated.

g) The person in charge of the work shall receive permission from the shift supervisor/foreman before proceeding with the changing of brushes.

h) Eye protection shall be worn by the person doing the work and by the person in charge.

I) Exciter or generator brushes shall not be changed until the exciter or generator field has been checked to determine that a ground condition does not exist. Where such equipment has ground detecting devices, such devices shall be disconnected before changing brushes.

j) The workman shall use extreme care in every move. When removing a brush, he/she shall control the shunt in the palm of his/her hand to prevent inadvertent contact. He/she shall handle the new brush in a similar, careful manner.

O-15 Gas Generation – Smith Station

a) The safety policies and rules set forth in this section shall apply to all personnel engaged in the operation and maintenance of EKPC generating facilities and all other persons who may be required to enter the facilities for any reason.

b) The safety policies and rules set forth in this section are to call employees' attention to specific power plant hazards and establish practices designed to eliminate or avoid the hazards.
   1) Carbon Dioxide (CO2) - Carbon Dioxide is a colorless, odorless and electrically nonconductive gas. CO2 extinguishes fire by reducing the concentration of oxygen in the air to the point where combustion stops, for this reason CO2 is considered an asphyxiate. CO2 has specific gravity of 1.65 (approximately 1.5 times heavier than air) and high concentrations can gather and exist in below grade areas. The current OSHA PEL (8 hr. TWA) is 5,000 PPM, concentrations of 10% (100,000 ppm) or more can cause unconsciousness or death. Lower concentrations may cause headaches, nausea, vomiting, rapid breathing, increased heart rate, dizziness and visual disturbances. Discharge of pressurized CO2 into the atmosphere results in release of extremely cold CO2 snow particles (dry ice). Skin contact with these particles can cause frostbite or cryogenic "burns."
      (a) Leaks and emergencies shall be handled only by qualified persons. Ventilate adjacent enclosed areas to prevent the formation of lethal concentrations of CO2. Personnel including rescue workers shall not enter areas in which the CO2 content exceeds 3% by measurement unless wearing a self-contained breathing apparatus or air-line respirator.
      (b) If a person has inhaled large amounts of CO2 and is exhibiting adverse effects, move the exposed individual to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the person warm and at rest. Summon medical attention at once. Fresh air and assisted breathing are appropriate for all cases of overexposure to gaseous carbon dioxide.
   2) Natural Gas (Methane) - natural gas is a naturally occurring, colorless, odorless

(unless commercially odorized) and highly flammable material. Natural gas is nontoxic but can act as a simple asphyxiant by displacing air. The specific gravity of Natural gas is .55 (air = 1), approximately half as light as air and will dissipate in well ventilated areas. The Lower Explosive Limit is 3.6% and the Upper Explosive Limit is 17%. The NFPA Hazard Rating for Natural gas is: Health = 1, Fire = 4 and Reactivity = 0. Signs of exposure include rapid fatigue, nausea and vomiting.

(a) Monitors shall be utilized for detecting leaks. Alternatively, leak detection solutions will indicate leakage through bubble formation.
(b) Eliminate all sources of ignition until leaks have been repaired.
(c) Shut off the source of gas and lower the pressure in the system prior to repairing a leak.
(d) Leak test system prior to returning system to service.
(e) Fire fighting procedures should include elimination of gas supply before attempting to extinguish.
(f) Only personnel specifically trained and wearing appropriate personal protective equipment shall be permitted to work at the fire scene.
(g) Inhalation of low concentrations can be remedied by promptly going to an uncontaminated area and inhaling fresh air or oxygen. If breathing has stopped, perform artificial respiration. Oxygen should be administered after breathing has been restored.

O-16 Landfill Gas

a) The safety policies and rules set forth in this section shall apply to all personnel engaged in the operation and maintenance of EKPC generating facilities and all other persons who may be required to enter the facilities for any reason.

b) The safety policies and rules set forth in this section are to call employees' attention to specific power plant hazards and establish practices designed to eliminate or avoid the hazards.

c) ***Landfill Methane Gas -*** Landfill gas is composed of a mixture of hundreds of different gases. By volume, landfill gas typically contains 45% to 60% methane and 40% to 60% carbon dioxide. Landfill gas also includes small amounts of nitrogen, oxygen, ammonia, sulfides, hydrogen, carbon monoxide, and non-methane organic compounds (NMOCs) such as trichloroethylene, benzene, and vinyl chloride.

Standard General Safety Procedures - Working with LFG requires awareness, alertness, knowledge of basic safety requirements and common sense. Basic safety rules for working on landfills are:

a.) No **smoking** or other sources of ignition shall be allowed within 25 feet of any source or potential source of methane including structures, vaults, manholes, or the blower-flare facility.
b.) Verify that all pressure is relieved before opening any pressurized device or vessel.

c.) Always strictly comply with electrical lock-out procedures when performing inspection, maintenance or repairs on electrically operated equipment.
d.) Persons entering confined spaces shall use confined space entry procedures and comply with all state and Federal requirements.
e.) Before performing any welding or other "hot work," all sources of ignition shall be removed, sealed, or eliminated

Safety on the Landfill **-** Do not eat, drink or smoke on the landfill. Observe good hygiene practices. Take care of any cuts or abrasions promptly and use antiseptic. **No Smoking-** Smoking when working on the LFG well field should be prohibited. Avoid any possible source of ignition when working on the well field. Eating or smoking on the landfill should be avoided to reduce bacterial exposure.

Electrical Safety -The following rules must be adhered to:

1. Always de-energize electrical equipment before working on it.
2. Remove all watches and rings etc. when working on electrical controls and equipment.
3. Use properly grounded portable tools.
4. Where available use a portable ground fault current interrupter (GFCI) device during use of portable electrica1 tools and outdoor construction activities.
5. Always follow electrical lockout/ tag-out.

Go to TABLE OF CONTENTS

SECTION P: TRAINING

P-1 Scope

The guidelines set forth in the Training Section of this Safety Manual are applicable to all EKPC employees and are intended to emphasize that all employees shall be trained in safety-related work practices, safe procedures, and other safety requirements, including those mandated by federal or state laws. Training is designed to provide information, to ensure understanding, and to apply and practice what is understood so that employees will be motivated to follow principles that protect their safety and health. There is a commitment to safety by management of the Cooperative and safe job performance is a Cooperative expectation for all employees. Employees work safely when they:

1) Know what they are supposed to do
2) Know how to do it
3) Know that safety is important and affects them personally
4) Know and care about safety
5) Know that the Cooperative cares about safety
6) Know that working safely shall become their habit
7) Know that shortcuts are not worth the risk

P-2 Employee Training

a) Employees shall be trained in and familiar with the safety-related work practices, safe procedures, and other safety requirements in this section that pertain to their respective job assignments.

b) Employees shall also be trained in and familiar with any other safety practices, including applicable emergency procedures that are not specifically addressed in this section but are related to their work and necessary for their safety.

c) Employee training is not confined to this section and can be found throughout this safety manual in more specific sections.

d) EKPC participates in formalized training applicable to Power Delivery and Power Production personnel.

P-3 Qualified Employee Training

a) Qualified employees shall be trained and competent in the skills and techniques necessary to distinguish exposed live parts from other parts of electrical equipment.

b) Qualified employees shall be trained and competent in the skills and techniques necessary to determine the nominal voltage of exposed live parts.

c) Qualified employees shall be trained and competent in the skills and techniques necessary to determine the minimum approach distances corresponding to the voltages to which they are exposed. Refer to Table 1.7.

d) Qualified employees shall be trained and competent in the proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electrical equipment.

e) Training may be done in the classroom or on-the-job.

f) Training shall establish employee proficiency in the work practices required.

P-4 Safety Compliance

Regular supervision and inspections, will determine that each employee is complying with the safety-related work practices required.

P-5 Additional Training and Retraining

An employee shall receive additional training (or retraining) under any of the following conditions:

1) If supervision and inspections indicate that the employee is not complying with safety-related work practices.
2) If new technology, new procedures or changes in procedures cause new safety-related work practices to be introduced.
3) If the employee must use safety-related work practices that they do not normally use (used less than once a year).

P-6 Job Hazard Analysis

a) A Job Hazard Analysis (JHA) is an important incident prevention tool that works by finding hazards and eliminating or minimizing them before they have a chance to cause incidents.
b) EKPC employees should use JHA's for:
   - Job clarification and hazard awareness,
   - Guide for employee training
   - A refresher for jobs performed infrequently
   - Incident investigation tool, and
   - Informing employees of specific job hazards and protective measures.
c) A Job Hazard Analysis has three parts:
   - Sequence of job steps
   - Potential hazards
   -Hazard controls
d) Completed Job Hazard Analysis documentation should be stored in EKPC's Document Central Safety area.
e) EKPC's Job Hazard Analysis form can be found here.

f) Instructions for creating a Job Hazard Analysis can be found here (Job Hazard Analysis Tool Kit).

P-7 Job Briefings

a) The employee in charge shall conduct and document a job briefing with the employees involved before the start of each job. The EKPC Job Briefing Form should be used. The job briefing will at least cover the following subjects: hazards associated with the job, work procedures involved, special precautions, energy source controls, and personal protective equipment requirements.

b) If the work or operations to be performed during the work day are repetitive and similar, at least one job briefing shall be conducted before the start of the first job of each day or shift. Additional job briefings shall be held if significant changes, which might affect the safety of the employees, occur during the course of the work.

c) A brief discussion is satisfactory if the work involved is routine and if the employee, by virtue of training and experience, can reasonably be expected to recognize and avoid the hazards involved in the job. A more extensive discussion shall be conducted if the work is complicated or extremely hazardous, or the employee cannot be expected to recognize and avoid the hazards involved in the job.

d) An employee working alone is also required to conduct a job briefing. The employee needs to assess and plan each job before he or she begins work, and identify any potential hazards.

e) Refer to EKPC Job Briefing Form.

P-8 Safety Observations

a) Every member of EKPC management from the CEO to our foremen in the plants and field are required to do safety observations.

b) Generally office personnel are doing 1 or 2 observations per month and field/plant personnel are doing 2-4. Refer to the "Safety Observation Schedule" for exact information.

c) Safety Observations should generally follow the following steps:
   1.) Observe. Decide. Approach.
   2.) Comment on safe behaviors.
   3.) Discuss unsafe behaviors.
   4.) Gain commitment.
   5.) Solicit other safety issues.

6.) Thank the employee.

d) Refer to the "FAQ's for Safety Observations" for more information.

P-9 Incident Investigations

a) Every member of EKPC management from the CEO to our foremen in the plants and field are required to attend Incident Investigation Training.

b) Incidents can be reported here..

Go to TABLE OF CONTENTS

SECTION Q: EKPC WORK AREA PROTECTION

Q-1 Scope

Section Q applies to work being performed by EKPC.

a) Work area protection is the adequate safeguarding or protecting of pedestrians, motorists, utility workmen and equipment by the use of adequate barriers, warning signs, lights, hand held signs, traffic cones, high-level standards, barricade rope, flagmen, etc., on approaches to work areas, excavations, open manholes, parked equipment, etc.

b) Work area protection is accomplished by the use of good informative and protective devices, keeping in mind that a safe installation may require the use of these devices in relation to the location of the workmen and the equipment involved. The use of these devices must be coupled with proper planning, design, installation, inspection, maintenance and the use of good common sense to minimize the possibility of any incidents. It is of the utmost importance that the work area be properly identified and that warning devices say what they mean, to convey that message to the traveling public well in advance of arrival at the work area.

c) The public must be warned in advance, then regulated and guided safely through or around the work area. Proper work area protection shall be planned to ensure the safety and protection of the public, the workmen and the equipment. Employees are not to permit the public to assist in the performance of their work except in those emergencies when life is endangered.

d) All staff shall wear protective vests while working in a work zone.

e) See "D.O.T. Manual on Uniform Traffic Control Devices".

Q-2 Areas

a) When working on customer's premises or public property, reasonable effort shall be made to avoid creating hazards to persons or causing unnecessary property damage. Signs, barricades, tools, equipment and excess materials shall be removed from the site when the job is completed and good housekeeping shall be maintained while work is being performed.

b) Whenever the openings or obstructions in the street, sidewalk, walkways, or anywhere on private property are being worked on or left unattended during the day, danger signals such as warning signs and flags shall be effectively displayed. Under the same conditions at night, warning lights shall be prominently displayed and excavation shall be enclosed with suitable barriers.

c) When working along streets or highways, employees shall exercise care to keep hand lines, cables, other equipment or material from blowing or falling into the line or traffic.

Q-3 Equipment

a) Only those signs, standards, barricades, and cones which conform to state or local codes shall be used.

b) All state and local traffic codes shall be followed when providing work area protection.

c) During night operations or in periods of reduced visibility, special precautions shall be taken. Adequate warning equipment, which may include flashing lights, flares or area illumination, shall be used.

d) Warning devices and equipment shall be removed as soon as the hazard is eliminated.

e) Warning devices and equipment not in use shall be stored in a proper manner or shall be removed from the work area.

Q-4 Flagmen

a) Flagmen or other appropriate traffic controls shall be used whenever there is any doubt that effective protection can be provided by signs, signals and barricades.

b) Flagmen shall wear a class 3 vest or garment. Any warning garments worn at night shall be of a reflectorized material.

c) Flagmen using hand signaling equipment shall ensure signals provide sufficient warning to protect themselves and the work site.
   1) Sign Paddles shall be at least 18" wide with 6" high letters (Red/White on Stop Side and Orange/Black on Slow Side.)
   2) Sign paddles (Stop and Slow) shall be on six (6) foot staff.
   3) In periods of darkness or reduced visibility, well lighted flagging stations and equipment are mandatory.

d) Flagmen shall place themselves in a protected position to reduce possibility of injury from traffic.

e) Flagmen shall guide vehicular traffic in such a manner as to minimize the possibility of incidents or injury.

f) When flagmen are used at both ends of a job site, reliable communications or prearranged signals shall be used to ensure proper traffic flow.

g) Flagmen shall face traffic when giving signals.

h) Flagmen shall give positive, direct signals which leave no doubt as to their meaning.

i) Refer to the Manual on Uniform Traffic Control Devices, available at http://mutcd.fhwa.dot.gov/.

Go to TABLE OF CONTENTS

SECTION R: POWER DELIVERY

R-1 Scope

a) The safety policies and rules set forth in this section shall apply to all personnel engaged in the operation and maintenance of EKPC Power Delivery processes.

b) The safety policies and rules set forth in this section are to call employees' attention to specific power delivery hazards and establish practices designed to eliminate or avoid the hazards.

c) Anyone entering an EKPC substation must have Substation Entry Training.

R-2 Working On or Near Exposed Energized Lines and Equipment

a) Only qualified employees may work on or with exposed energized lines or parts of equipment. Only qualified employees may work in areas containing unguarded, uninsulated energized lines or parts of equipment operating at 50 volts or more. When employees are performing work on or associated with exposed lines or equipment energized at 50 volts or more, persons trained in first aid and cardio-pulmonary resuscitation (CPR) shall be available as follows:
   1) For field work involving two or more employees at a work location, at least two trained persons shall be available. Only one trained person needs to be available if all new employees are trained in first aid and CPR within three months of their hiring dates.
   2) For fixed work locations such as generating stations, the number of trained persons available shall be sufficient to ensure that each employee exposed to electric shock can be reached in four (4) minutes by a trained person. Where the existing number of employees is not sufficient to meet this requirement (at a remote substation, for example), all employees at the work location shall be trained.

b) At least two employees will be present while the following types of work are being performed:
(except as noted in (c) below)
   1) Installation, repair or removal of de-energized lines if an employee is exposed to contact with other parts energized at more than 600 volts.
   2) Installation, repair or removal of lines energized at more than 600 volts.
   3) Installation, repair or removal of equipment such as transformers, capacitors and regulators, if an employee is exposed to contact with parts energized at more than 600 volts.
   4) Work involving the use of mechanical equipment, other than insulated aerial lifts, near parts energized at more than 600 volts.
   5) Any other work that exposes an employee to electrical hazards greater than or equal to those listed above.

c) At least two (2) employees do not need to be present in the following operations:
   1) Routine switching of circuits (if it can be done safely).
   2) Work performed with live-line tools if the employee is positioned so that they are not within reach of or otherwise exposed to energized parts.
   3) Emergency repairs necessary to safeguard the general public.

d) Only qualified employees may work on or with exposed energized lines or parts of equipment. Only qualified employees may work in areas containing unguarded, uninsulated energized lines or parts of equipment operating at 50 volts or more. When two or more employees are working on the same line section, they shall only work on or contact the same conductor at one time. Note: An employee undergoing on-the-job-training who has demonstrated the ability to perform duties safely at his/her 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.

e) No employee may approach or take any conductive object without an insulating handle closer to exposed energized parts than the clearances set forth in Table 1.7 or in 29 CFR 1910.269 Table R-6 and R-7 unless the employee is insulated from the energized part or the energized part is insulated from the employee and any other conductive object at a different potential or the employee is insulated from any other conductive objects, as during live-line bare-hand work. Refer to 29 CFR 1910.137.

TABLE 1.7
AC Live-Line Work Minimum Approach Distance

	Distance	
Nominal Voltage in	**Phase-to-Ground Exposure**	**Phase-to-Phase Exposure**
Kilovolts Phase-to Phase	**(Ft.)**	**(Ft.)**
	Avoid Contact	**Avoid Contact**
0.301 to 0.750	**1'-1"**	**1'-1"**
0.751 to 5.0	**2'-1"**	**2'-1"**
5.1 to 15.0	**2'-2"**	**2'-3"**
15.1 to 36.0	**2'-7"**	**3'**
36.1 to 46.0	**2'-10"**	**3'-3"**
46.1 to 72.5	**3'-4"**	**4'**
121.1 to 145.0	**4'-4"**	**5'-5"**
145.1 to169.0	**4'-10"**	**6'-5"**
242.1 to 362.0	**11'-3"**	**18'-2"**

Note 1: These distances take into consideration the highest switching surge an employee will be exposed on to any system with air as the insulating medium and the maximum voltages shown

Note 2: The clear live-line tool distance shall equal or exceed the values for the indicated voltage ranges.

R-3 Flexible Protective Equipment: Refer to Personal Protective Equipment
PERSONAL PROTECTIVE EQUIPMENT

R-4 Rubber Synthetics, etc.: Refer to Personal Protective Equipment
PERSONAL PROTECTIVE EQUIPMENT

R-5 Use and Care of Rubber Gloves: Refer to Personal Protective Equipment
PERSONAL PROTECTIVE EQUIPMENT

R-6 Climbing and Working on Poles

a) All poles and structures shall be carefully inspected before climbing to assure that they are in a safe condition for the work to be performed and that they are capable of sustaining the additional or unbalanced stresses to which they will be subjected.

b) Where poles or structures may be unsafe for climbing, they shall not be climbed until made safe by guying, bracing, or by other adequate means.

c) Wires shall not be attached to or removed from a pole or structure until it is certain the pole or structure will withstand the altered strain.

d) Poles, except new poles, shall be thoroughly tested before they are climbed. If a pole is not strong enough to sustain a lineman's weight by reason of its condition or its placement (such as in soft ground), it shall be guyed or otherwise secured throughout the time any work is being performed on it. If the pole to be climbed is being replaced and the new pole is set adjacent to it, the old pole may be lashed to the new one in lieu of guying.

e) When poles are encountered which are unsafe to climb (ice, badly chewed, wide cracks, shell rot, etc.), an alternate means of climbing shall be used (use belt around pole while climbing) or the use of an aerial basket shall be considered.

f) Workmen shall not wear their climbers while driving or riding in vehicles or when doing work on the ground, on ladders (except hook ladders) or on platforms in which the wearing of the climbers creates a hazard.

g) Gaffs on climbers shall be kept within safe length limits (1 1/4 inches min.), properly shaped, and sharp.

h) Employees shall not work on an elevated pole or structure without first securing themselves with a safety strap.

i) Only approved belts and straps shall be used.

j) Metal hooks, chains, etc., for holding tools or tape shall not be attached to body belt. Leather or other nonconducting material shall be used for this purpose.

k) The safety strap shall not be put around a pole above the uppermost pole attachment position, except where pole top or attachment is above eye level. It shall not be used on pole steps, cross arm braces, insulators, insulator pins, conductors, rotten or otherwise weak cross arms or on attachments that are being moved. When it is necessary to attach to a cross arm, the safety strap shall never be placed beyond the outside cross arm attachment. It shall be so placed that it will not be cut by line equipment or twisted or fouled by material that may give way under strain.

l) Employees shall not trust their weight to guy wires, pins, braces, conductors, or other such equipment that might prove unstable.

m) When two or more employees are to work on the same pole at the same time, each shall reach the working position before the next leaves the ground. They shall descend the pole one at a time.

n) When climbers are not in use, gaffs shall be covered with guards.

R-7 Working on Energized Lines or Equipment with Live Line Tools

a) Rubber gloves need not be worn when using live line tools except when making or breaking a circuit (such as in switching), when proper clearance cannot be maintained from under built circuits, and during inclement weather.

b) Planned work with live-line tools shall not be started during unfavorable weather.

c) Before work with live-line maintenance tools is begun, the dispatcher or person having jurisdiction shall be notified. If during live-line tool work, an interruption to service occurs, the dispatcher or other person having jurisdiction shall be notified immediately.

d) Only tools approved by the company shall be used in live-line maintenance work.

e) A careful check shall be made to see that the condition of the structure and lines at the point of the work is such that the job may be performed safely. In addition, the adjacent spans and structures shall be carefully checked for defects in conductors, tie wires, insulators and other equipment.

f) When moving heavy conductors, blocks shall be used on the live-line tool so that they may be moved slowly and carefully.

g) While live-line work is in progress, no other work of any nature shall be performed on the same pole or structure.

h) All live-line tools, when not in use, shall be kept in canvas bags, waterproof boxes, or hot line trailers provided for that purpose, and such containers stored in a dry and, if possible, a warm place.

i) Live-line tools shall never be laid directly on the ground or against sharp objects such as barb wire fences. Special tool holders or tarpaulins shall be used for this purpose.

j) All live-line tools shall be visually inspected before use each day. Tools to be used shall be wiped clean, and if any hazardous defects are indicated, such tools shall be removed from service.

k) Live-line tools used for primary employee protection shall be removed from service annually for examination, testing, cleaning, and repair.

l) The automatic reclosing feature of circuit interrupting devices shall be made inoperative and a caution order issued before work begins.

R-8 Working on De-Energized Lines and Equipment

a) General. All conductors and equipment shall be treated as energized until tested to be de-energized and grounded.

b) New construction. New lines or equipment may be considered de-energized and worked as such where:
   1) The lines or equipment are grounded, or
   2) The hazard of induced voltages is not present, and adequate clearances or other means are implemented to prevent contact with energized lines or equipment and the new lines or equipment.

c) Communication conductors. Bare wire communication conductors on power poles or structures shall be treated as energized lines unless protected by insulating materials.

R-9 Dispatching and Clearances

a) All oral communications about dispatching and clearances shall be recorded by the person receiving them and read back to the person giving them.

b) Under no circumstances shall clearances be granted or released on a predetermined time basis.

c) When two or more crews are working on the same line or apparatus and are not under the supervision of one general foreman or other supervisor/foreman, each

crew foreman shall request and release his/her own clearance independently in accordance with these rules.

d) A Hold Card or tag shall be attached to each switch that is providing clearance on a cleared line or apparatus. An example picture of a Power Delivery Hold Card can be found here.

e) The handles of switches providing clearances for working on lines or apparatus shall be locked or blocked open or closed in addition to being Hold Carded or tagged.

f) Under no circumstances shall Hold Cards (Example Power Delivery Hold Card) or tags be removed or the line or apparatus put in service until so ordered by the person for which the Hold Card (Example Power Delivery Hold Card) or tag was placed.

g) Before ordering Hold Cards (Example Power Delivery Hold Card) or tags removed and lines or equipment returned to service, the load dispatcher shall require that the same person who received the clearance shall release the clearance.

Exception: If the person who received the clearance shall leave the work before it is completed, he/she shall so inform the dispatcher, giving him the name of the person who will take his/her place. In such cases, the dispatcher shall communicate with both people, releasing the one who is leaving and accepting the other as authorized to report for him. Clear entries of all such authorized changes shall be made on dispatcher's records, Hold Cards (Example Power Delivery Hold Card) or tags.

h) After de-energizing the line or apparatus and attaching Hold Cards (Example Power Delivery Hold Card) or tags to each switch providing clearance on the line or apparatus, the employee shall report back to the person making the request that the line or apparatus is out of service.

i) A line or apparatus shall not be put back in service, nor the Hold Cards (Example Power Delivery Hold Card) or tags removed until the person to whom clearance was given releases his/her clearance.

Exception: If the person who received the clearance must leave the work before it is completed, he/she shall so inform the person having jurisdiction, giving him the name of the person who is to take his/her place. In such cases, the person having jurisdiction shall communicate with both men, releasing the man who is leaving and accepting the other as authorized to report for him.

j) When the work is completed, the grounds removed and all men are clear, the employee who received the clearance, or his/her properly authorized substitute,

shall report to the person having jurisdiction that the line or apparatus is ready for service.

k) For more specific information, refer to Power Delivery Lockout - Tagout Procedure.

R-10 Working on Transformers

a) The primary leads of a distribution transformer shall be considered energized at full voltage until both the primary and secondary leads have been disconnected, or it has been definitely determined that the secondary circuit to which it is attached is grounded.
b) The cases of all transformers connected to a source of supply shall be considered as being energized at the full primary voltage unless they are adequately grounded.

c) Employees shall not stand on, or otherwise contact transformer cases, while working on or near energized circuits.

d) Employees shall refer to site specific specifications procedure for grounding substation transformers.

R-11 Working on Capacitors or Gang Operated Switches with Interrupters

a) Interrupters on gang operational switches are to be treated like capacitors.

b) Line capacitors shall be considered at full voltage until they have been removed from the line, and the terminals short-circuited and discharged to ground by an approved method.

The terminals shall not be short-circuited until the capacitors have been de-energized for at least five minutes.

c) Employee shall use a hot stick while shorting and grounding terminals.

d) Employees shall not come in contact with an ungrounded capacitor case until the capacitor has been disconnected from the circuit and the terminals shorted.

e) The terminals of used capacitors in storage shall be shorted.

R-12 Stringing or Removing De-Energized Conductors

a) Prior to stringing operations, a briefing shall be held to set forth the plan of operation and specifying the type of equipment to be used, grounding devices and procedures to be followed, crossover methods to be employed, and the clearance authorization required.

b) Where there is a possibility of the conductor accidentally contacting an energized circuit or receiving a dangerous induced voltage buildup, to further protect the employee from the hazard of the conductor, the conductor being installed or removed shall be grounded and provisions made to insulate or isolate the employee.

c) If the existing line is de-energized, proper clearance authorization shall be secured and the line grounded on both sides of the crossover or, the line being strung or removed shall be considered and worked as energized.

d) When crossing over energized conductors in excess of 600 volts, rope nets or guard structures shall be installed unless provision is made to isolate or insulate the workman or the energized conductor. Where practical the automatic reclosing feature of the circuit interrupting device shall be made inoperative. In addition, a running ground shall be used on the line being strung on either side of the crossover. (When applicable use rubber protective equipment.)

e) Conductors being strung in or removed shall be kept under positive control by the use of adequate tension reels, guard structures, taglines, or other means to prevent accidental contact with energized circuits.

f) A transmission clipping crew shall have a minimum of two structures clipped in between the crew and the conductor being sagged. When working on bare conductors, clipping and tying crews shall work between grounds at all times. The grounds shall remain intact until the conductors are clipped in, except on dead end structures.

g) Adequate grounds shall be placed on all dead end structures and shall remain intact until jumpers are installed completing the circuit, or removed as the last phase of aerial cleanup.

R-13 Stringing Adjacent to Energized Lines

a) Prior to stringing parallel to an existing energized transmission line, a competent determination shall be made to ascertain whether dangerous induced voltage buildups will occur, particularly during switching and ground fault conditions. When there is a possibility that such dangerous induced voltage may exist, the provisions of subparagraphs (b) through (j) shall be followed.

b) When stringing adjacent to energized lines, the tension stringing method or other methods which preclude unintentional contact between the lines being pulled and any employee shall be used.

c) All pulling and tensioning equipment shall be effectively grounded.

d) A ground shall be installed between the tensioning reel setup and the first structure in order to ground each bare conductor, sub conductor, and overhead ground conductor during stringing operations.

e) During stringing operations, each bare conductor, sub conductor, and overhead ground conductor shall be grounded at the first tower adjacent to both the tensioning and pulling setup and in increments so that no point is more than two (2) miles from a ground.

f) The ground shall be left in place until conductor installation is completed.

g) Such grounds shall be removed as the last phase of aerial cleanup.

h) Except for traveling grounds, the grounds shall be placed and removed with a hot stick.

i) Conductors, sub conductors, and overhead ground conductors shall be grounded at all dead end or catch-off points.

j) A ground shall be located at each side and within 10 feet of working areas where conductors, sub conductors, or overhead ground conductors are being spliced at ground level. The two ends to be spliced shall be bonded to each other.

k) All conductors, sub conductors, and overhead ground conductors shall be bonded to the tower at any isolated tower where it may be necessary to complete work on the transmission line.

l) Work on dead end towers shall require grounding on all de-energized lines.

m) Grounds may be removed as soon as the work is completed: Provided that the line is not left open circuited at the isolated tower at which work is being completed.

n) When performing work from the structures, clipping crews and all others working on conductors, sub conductors, or overhead ground conductors shall be protected by individual grounds installed at every work location.

o) Refer to OSHA standard 1926.955.

R-14 Grounding General

a) All previously energized conductors shall be considered energized until tested and properly grounded.

b) New construction: New lines or equipment may be considered de-energized and worked as such where:
   1) The lines or equipment are grounded, or

2) The hazard of induced voltage is not present, and adequate clearances or other means are implemented to prevent contact with energized lines or equipment and the new lines or equipment.

c) Communication conductors: Bare-wire communication conductors on power poles or structures shall be treated as energized lines unless protected by insulating materials.

d) Voltage testing: De-energized conductors and equipment which are to be grounded shall first be tested for the presence of voltage.

e) Attaching and removing grounds:
   1) When attaching grounds, the ground end shall be attached first, and the other end shall be attached and removed by means of insulated tools.
   2) When removing grounds, the grounding device shall first be removed from the line or equipment using insulating tools

f) Grounds shall be placed between work location and all sources of energy and as close as practical to the work location or grounds shall be placed at the work location. If work is to be performed at more than one location in a line section, the line section must be grounded and short -circuited at one location in the line section and the conductor to be worked on shall be grounded at each work location. The minimum distance shown in Table 1.7 be shall maintained from ungrounded conductors at the work location. If making a ground is impractical, or the conditions resulting would be more hazardous than working on the lines or equipment without grounding, the grounds may be omitted and the line or equipment worked as energized using approved live-line methods. Temporary protective grounds shall be placed at equipotential zones and arranged in such a manner to prevent exposure to hazardous differences in electrical potential.

g) Testing without grounds: Grounds may be temporarily removed only when necessary for test purposes and extreme caution shall be exercised during the test procedures.

h) Grounding electrode: When grounding electrodes are utilized, such electrodes shall have a resistance to ground low enough to remove the danger of harm to personnel or permit prompt operation of protective devices.

i) Grounding to tower: Grounding to tower shall be made with a tower clamp capable of conducting the anticipated fault current.

j) Ground lead: A ground lead, to be attached to either a tower ground or driven ground, shall be capable of conducting the anticipated fault current and shall have a minimum conductance of No. 2 AWG copper.

k) Lifting equipment shall be bonded to an effective ground, or it shall be considered energized and barricaded when utilized near energized equipment or lines.

l) Grounds may be temporarily removed during tests. During the test procedure, each employee will use insulating equipment and shall be isolated from any hazards involved.

m) Before any grounding is installed, lines, and equipment shall be tested and found to be absent of nominal voltage, unless a previously installed ground is present.

n) When a ground is to be attached to a line or to equipment, the ground-end connection shall be attached first, and then the other end shall be attached by means of a live-line tool.

o) When a ground is to be removed, the grounding device shall be removed from the line or equipment using a live-line tool before the ground-end connection is removed.

p) When work is performed on cable at a location remote from the cable terminal, the cable may not be grounded at the cable terminal if there is a possibility of hazardous transfer of potential should a fault occur.

q) For additional information concerning grounds, refer to OSHA standard 1910.269, American Society for Testing (ASTM), Materials Standard Specifications, and National Electric Code for Testing for temporary grounding systems to be used on de-energized electric power lines and equipment, ASTMF855.

EHV lines and equipment present a special set of conditions and concerns. When working on 345kV equipment please refer to EKPC's 345kV Protective Grounding Procedures.

This document can be provided by your supervisor/foreman, the Power Delivery Safety and Environmental Health Specialist or the Corporate Safety department.

R-15 Equipotential Grounding

a) A chain binder, with provisions for attaching a personal protective ground, shall be tightened around the pole at a position below where the lineman will place his/her feet.

b) A personal protective ground shall be attached to the chain binder.

c) Personal protective grounds shall be extended from the chain binder to each phase conductor or from the chain binder to a single phase and from that phase to the other phases.

d) When work is completed, the personal protective grounds shall be removed in reverse order of installation.

e) When a circuit is to be opened (e.g., opening jumpers at a junction pole or cutting slack), a temporary personal protective ground shall be installed across the open point.

f) When it is not practical to use equipotential grounding at the pole where work is to be performed, such as when wires are down, grounds shall be installed on both sides of the work location but not further than adjacent structures.

g) Refer to OSHA standard 1910.269(n).

R-16 Setting and Removing Poles

a) If any holes are left unfilled at the end of the work period, they shall be protected with substantial coverings.

b) All persons not engaged in pole-setting operations shall keep out of the work area.

c) No one shall be on a gin pole when it is being used to raise another pole.

d) While setting or removing poles between or near conductors energized above 600 volts observe the following:
   1) If safe clearance cannot be maintained, the conductors shall be de-energized or covered with protective devices and spread, or pole guards shall be used to minimize accidental contact.
   2) Workers handling the butt of the pole shall use insulated pole tongs and/or rope slings.
   3) Until a pole is positively secured from moving against an energized conductor, no one shall step on or off the truck or touch any part of the truck.

e) When pikes are used to hold poles in place while holes are being backfilled, the pikes shall be firmly grounded in all directions and shall not be removed until the backfill is sufficient to hold the pole. When a pole is being "canted" or "hooked," the pikes shall be held.

f) Employees shall not stand or pass under a suspended load. Employees shall not stand adjacent to, over, or under a loaded winch line.

g) Employees engaged in handling or working on poles shall wear suitable gloves and should wear a shirt or jacket with the sleeves rolled down.

h) Only those employees who are trained and qualified shall operate the hoisting equipment.

i) The hoist equipment load limits as specified by the manufacturer shall not be exceeded under any circumstance.

j) Hoisting equipment shall have a load-capacity chart and boom-angle indicator in view of the operator.

k) When removing set poles, extreme caution shall be exercised to assure the hoisting equipment is not overloaded due to the weight of the pole and its adhesion to the ground. Pole jacks and/or bulldozers shall be used to pull set poles.

l) Hoisting equipment operators shall accept signals only from the employee specifically designated. The operator shall obey the stop signal given by anyone.

m) When poles are set, moved or removed near exposed energized overhead conductors, the pole shall not contact the conductors.

R-17 Derrick Trucks, Cranes, etc.

With exception of equipment certified for work on the proper voltage, mechanical equipment shall not be operated closer to any energized line or equipment than the clearances set forth in Table 1.7 unless:

1) An insulated barrier is installed between the energized part and the mechanical equipment, and/or
2) The mechanical equipment is grounded, or
3) The mechanical equipment is insulated, or
4) The mechanical equipment is considered as energized.

If a vehicle has made contact with an energized piece of equipment or line, it shall be thoroughly inspected for damage by an authorized mechanic before being driven.

R-18 Fuses

When fuses must be installed or removed with one or both terminals energized at more than 300 volts, or with exposed parts energized at more than 50 volts, tools or gloves rated for the voltage shall be used. When installing expulsion-type fuses, employees shall wear safety glasses or safety goggles and shall stand clear of the exhaust path of the fuse barrel.

R-19 Metering

a) Rubber gloves and eye protection shall be worn when installing or removing meters from energized meter sockets and meter sockets equipped with bypass capabilities. Leather gloves shall be worn if socket is de-energized.

b) Meter sockets shall be inspected before the meter is installed and/or the service is energized. Checks shall be made to ensure there is no socket damage, loose connections, or foreign objects present that could cause a short circuit or flashover.

c) Voltage readings between the source, load, and ground shall be made to prevent cross-phasing, feedback, or phase-to-ground fault through the meter or meter socket.

d) Single-phase and three-phase meters installed in meter bases with bypass capabilities shall be disconnected or connected using one of the following methods: by using the facility main switch or disconnect, by using the portable service disconnect device, or by disconnecting the service or de-energizing the transformed station.

e) Before removing a meter, a visual inspection shall be made to determine if the meter or meter socket is damaged. If damage is indicated, the meter shall be de-energized before removal.

f) When setting socket-type meters, the load side terminal shall be entered first followed by the source side. The removal of the meter shall take place in the reverse order. Care shall be taken to prevent the meter ring from coming into contact with the socket terminals.

g) Meters shall not be disconnected by rotating the meter in the meter socket.

h) During testing, the energized socket or test equipment shall not be left unguarded. If a socket is to be left energized, a meter or approved socket cover shall be in place before leaving the work area.

i) Installation, removal, and maintenance of transformer-rated meters shall only be performed by properly trained employees.

j) Under no circumstances shall the secondary terminals of a current transformer be opened. The transformer shall be shunted before the secondary metering circuit is opened.

k) A check shall be made to ensure that all instrument transformer cases and associated enclosures are properly grounded.

l) When approaching or working on customer property, employees shall watch for tripping hazards; defective stairs; and the presence of dogs, cats, or other potentially dangerous animals.

m) Before entering customer property, employees shall announce their presence and state their business if practical. Employees shall also notify the customer when leaving the property if practical.

n) If possible, employees shall turn off customer main switch prior to installing and removing socket-type meters.

o) Employees shall push socket-type meters into their socket. Employees shall never hit the meter with their hand or any other device.

Go to TABLE OF CONTENTS

SECTION S: TELECOMMUNICATIONS

S-1 Fiber Optics

a) Employees shall be properly trained on the specific hazards of handling fiber optic cable and equipment.

b) Employees shall not disconnect any fiber-optic cable or splice and stare into the optical connectors terminating the cables because of the potential for eye damage.

c) Under no circumstances should an employee who has not satisfactorily completed an approved training course perform light-wave/fiber-optic operations.

d) Because viewing light-wave emissions directly with an optical instrument, such as an eye loupe, greatly increases the risk of eye damage, an appropriate label identifying this hazard must appear in plain view on the front main frame or fiber-optic termination/interconnection equipment.

e) During service, maintenance, or restoration work, a light-wave transmission system can no longer be considered enclosed. Under such conditions, employees shall observe the following:

1. Only authorized, trained employees are permitted to perform service, maintenance, and restoration work. Employees shall avoid exposing the eye to emissions from un-terminated, energized fiber-optic connectors at close distances. The connectors associated with light wave regenerators are normally recessed, thereby limiting the exposure distance. Under normal conditions, the regenerators can be removed or replaced without fear of eye injury. However, employees performing the removal or replacement work shall not stare or look directly into the vacant regenerator slot with optical instruments or magnifying lenses.

2. Only authorized, trained employees are permitted to use light-wave test equipment during installation/service work, since this equipment contains semiconductor lasers.

3. Unauthorized employees shall be excluded from the immediate area of light-wave test equipment during installation/service work. The area shall be properly barricaded and posted.

f) If a fiber-optic cable breaks or is removed from its normal position, employees should observe the following precautions:

1. Do not examine or stare into broken, severed, or disconnected fiber optic cables.

2. Report any cable problems to your supervisor, who can arrange for authorized, trained installation/service personnel to repair or replace the cables.

g) Employees who install, operate, maintain, or repair fiber-optic systems have, in addition to normal safety precautions, the following responsibilities:

1. Observe all utility rules, procedures, and practices established for the safe operation of these systems.

2. Notify a supervisor immediately of conditions or practices that may cause potential injury to persons or property.

3. Report immediately to a supervisor any known or suspected accidental exposure to laser radiation.

4. Use appropriate safety glasses and gloves when working with fiber optic systems.

h) Cleaved glass fibers are very sharp and can easily pierce the skin. Do not let cut pieces of fiber stick to your clothing or drop into the work area. Use tweezers to pick up cut pieces of the glass fibers and place them on a loop of tape, specifically for that purpose.

i) Employees shall wear safety glasses when handling fibers.

j) When using tools, such as hook blades, to strip cable, employees shall guard against the blade slipping and cutting their hands and arms.

S-2 HVIU

a) Electrical rubber gloves, rated for the specific voltage to be encountered, shall be worn when working on all wire lines or equipment above 50 VDC, unless the employee is adequately insulated from the ground and other conductors, or positively knows the line to be shorted and grounded. (This does not apply to communication equipment on the station side of telephone insulating transformers or other protection equipment on the communication terminal rack.) Rubber mats should also be used.

S-3 Portable Power Equipment

a) All portable power equipment used in telecommunications work shall be grounded.

b) Nominal 120V (or less) portable generators used for providing power at work locations do not require grounding if the output circuit is completely isolated from the frame of the unit.

c) Grounding shall be omitted when using soldering irons, soldering guns or wire-wrap tools on telecommunication circuits.

d) Portable lights, tools and appliances, when operated from commercial power, shall have their metal parts grounded unless these tools or appliances are double-insulated or are used with a GFCI. Double-insulated tools or appliances must be indicated on the manufacturer's label. When an extension cord is added, the cord shall be protected by a GFCI at the source/receptacle.

e) When fueling portable, gasoline-driven generators, one shall:
   a. Allow the engine to cool before refueling.
   b. Wipe off any spilled oil or fuel on the equipment before use.

f) Flammable liquids shall be properly stored in approved and clearly marked containers.

S-4 Powerline Carrier Tuner Maintenance

a) Prior to opening the tuner cabinet, examine the associated trap and coupling capacitor for physical damage. Ensure the cabinet is grounded.

b) When opening the tuner cabinet, listen for arcing sounds that may indicate a problem.

c) Visually inspect the interior of the cabinet for damage.

d) Close the ground switch during maintenance, or leave open for measurements or adjustments.

e) Return ground switch to the open position to restore PLC to service.
Note: If, at any time, an unsafe condition exists, stop work and report the trouble to your supervisor. See PERSONAL PROTECTIVE EQUIPMENT for appropriate PPE.

S-5 Working Near Microwave Facilities

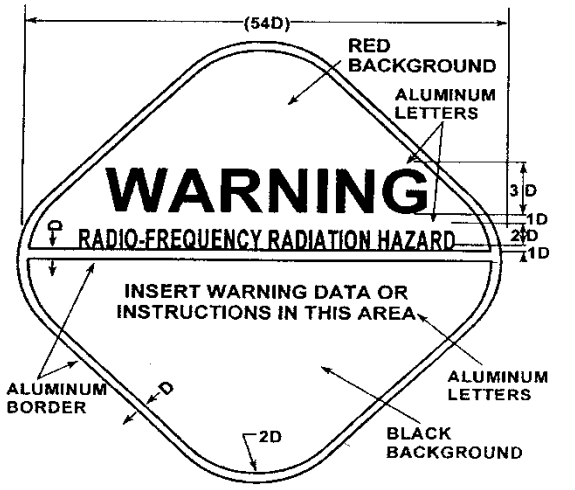
a) No employee shall look into an open waveguide or antenna that is connected to an energized RF (radio frequency) source.

b) Warning labels on RF systems must be read and complied with. An example of the radio-frequency radiation hazard warning sign is shown in Figure 6.3. If radiation exceeds the radiation protection guide further warnings are required.

c) For more information on working with communication facilities, refer to 29 CFR 1910.97, 29 CFR 1910.268, and 29 CFR 1910.269(s).

Figure 6.3

Radio Frequency Radiation Warning Symbol



1. Place handling and mounting instructions on reverse side.
2. D = Scaling unit.
3. Lettering Ratio of letter height to thickness of letter lines.
   Upper triangle = 3 to 1 Large
   6 to 1 Medium
   Lower triangle = 4 to 1 Small
   6 to 1 Medium
4. Symbol is square, triangles are right-angle isosceles.

S-6 Batteries

Refer to the section on Batteries.

S-7 Tower Climbing

a) EKPC employees should wear appropriate PPE, including hard hats, while working in the area or observing contractors who are climbing towers or doing tower work.

b) Unauthorized employees should be excluded from the area during work that requires tower climbing.

c) Special precautions should be made in consideration of falling objects from the tower while work on the tower is being done.

Go to TABLE OF CONTENTS

SECTION T: TREE TRIMMING

T-1 Scope

a) The safety policies and rules set forth in this section shall apply to all personnel engaged in the operation and maintenance of EKPC rights-of-way.

b) The safety policies and rules set forth in this section are to call employees' attention to specific rights-of-way hazards and establish practices designed to eliminate or avoid the hazards.

T-2 General

a) When tree trimming, tree felling, brush loading or brush disposal operations are under way on street, highway or any other area accessible to the public, Utility/men, etc. working signs, cones, or flares, barricades and other warning devices (or combinations thereof) shall be used to protect vehicular and pedestrian traffic.

b) Climbers with pole gaffs shall not be used in trees.

c) Dead or rotted limbs, regardless of size, shall not be used by employees for support.

d) No work shall be done in a tree until employee is securely tied in or belted to the tree.

e) The climbing rope shall be crotched in such a manner as to prevent its "working out" on a lateral limb. Climbing line should always be crotched around the trunk of a tree and not on the limb.

f) When working in a multiple trunk tree, the climbing rope shall preferably be crotched around a main trunk other than the one on which the employee is working.

g) Employee shall crotch his/her climbing rope in two places if a single crotch does not adequately protect him from falling into energized lines or falling back into trunk of tree.

h) The climbing rope shall not be used as a pull rope or as a hand line to lower limbs or branches.

i) The ground end of a climbing rope shall not be allowed to dangle over roadways and shall be kept free from obstructions, passing vehicles, etc.

j) The taut-line hitch shall not be released until the climber is on the ground. A common safety practice in the tree industry is to tie a half hitch in the end of the rope to prevent it from slipping through your taut-line hitch.

k) Branches or other material shall not be dropped unless the immediate area has been cleared so that there is no possibility of injury to persons or damage to property. If such a possibility exists, a rope shall be used to lower branches or other materials.

l) When lowering heavy tree members, employees shall not tie fall lines around hands or bodies.

m) Employees shall not attempt to clear limbs or brush from under that side of tree where the climber is working.

n) Employees shall obtain assistance or use power equipment if available, when lifting logs or other heavy loads.

o) When loading brush on a truck, employees shall not stand on or straddle the loaded brush.

p) Brush shall be hauled away promptly or otherwise disposed of to avoid presenting "an attractive nuisance" to children and to prevent injury to persons or damage to passing vehicles.

q) When hauling brush, care shall be taken that it does not extend over the sides of the truck.

r) When it is necessary to work in the vicinity of poison ivy, poison oak or poison sumac, employees shall keep sleeves rolled down and wear gloves.

T-3 Working Near Energized Conductors

a) Before any employee climbs, enters, or works around any tree, a close inspection shall be made to determine whether an electric conductor passes within 10 feet of the tree.

b) Wires in proximity to tree trimming shall be considered as energized, unless proven to be dead and are grounded.

c) All employees involved with tree trimming, other than line-clearance tree trimmers, shall maintain the following minimum clearances from energized conductors and equipment (numbers expressed are phase to ground):
   1) For lines and equipment energized at 50kV or less, the minimum clearance distance is 10 feet.

2) For lines and equipment energized at more than 50 kV, the minimum clearance is 10 feet plus 4 inches for every 10 kV over 50 kV.

d) Only line-clearance tree trimmers shall perform tree trimming if an electrical hazard exists or if parts of the trees are within 10 feet of exposed energized overhead conductors or equipment.

e) A second line-clearance tree trimmer shall be within normal voice communication and have climbing gear within 50 feet of the work area if any the following conditions exist:
   1) If a line-clearance tree trimmer is to approach closer than 10 feet to any conductor or electrical apparatus energized at more than 750 volts.
   2) If branches or limbs being removed are closer to lines energized at more than 750 volts or are within the distances listed in Table 1.7.

f) Line-clearance tree trimmers shall maintain clearances from energized conductors as shown in Table 1.7.

g) Line-clearance tree trimmers shall use insulating equipment and rubber gloves when removing branches that are contacting exposed energized conductors or equipment or that are within the distance (or have the potential to become within the distances) specified in Table 1.7. Limbs being removed from contact with wires are to be handled with the same precautions as the wires themselves. Care shall be taken to prevent limbs being removed from coming in contact with tree trimmer's body.

h) Ladders, platforms, aerial lifts, tools, and equipment shall not be brought closer to an energized conductor or apparatus than the distances listed in Table 1.7.

i) Tree-trimming and tree-felling work shall terminate and employees shall be moved to a place of safety during electrical storms and periods of high winds or other unusual weather conditions that are dangerous to employees.

j) Employees shall not remove tree limbs or branches from above energized conductors while other employees are working in trees below the conductors in the same span.

k) Broken or fallen wires shall not be handled except by persons experienced in such work.

l) When working near wires the employee shall have his/her climbing rope so secured that in the event he/she slips or a limb breaks, he/she will swing free and clear of the wires.

m) Tree limbs shall not be dropped on conductors.

u) Ropes shall not be thrown over conductors or cross arms for the purpose of using the conductor or cross arm as a support or hitch.

v) For additional information concerning working near energized conductors, refer to OSHA standard 29 CFR 1910.269

T-4 Tree Felling

a) The employee (feller) felling the tree shall plan a clear retreat path before a cut is started.

b) The feller shall appraise the situation for dead limbs, the lean of the tree to be cut, wind conditions, and other hazards and exercise proper precautions before the cut is started.

c) When felling a tree, an undercut shall be made about 1/3 the diameter of the tree to guide the tree in the direction to fall and reduce the possibility of splitting. A back or felling cut shall be made parallel to the inner edge of the undercut and approximately 2 inches higher than the undercut.

d) The feller shall shut off his/her saw before he/she starts his/her retreat.

e) On terrain where trees are likely to slide or roll, fellers shall fell trees from the uphill side.

f) No one shall be allowed to work in a tree located near a tree that is being felled except the feller. The recommended distance between workers is twice the height of the trees being felled.

g) All persons not engaged in the felling operation shall be kept clear of guide ropes and other rigging.

h) Clear warning shall be given to all employees in area when trees are to be felled or heavy tree members are to be dropped.

i) Once the felling of a tree has been started, it shall be completed before leaving the job.

j) For additional information concerning tree felling, refer to OSHA standard 29 CFR 1910.266.

T-5 Care and Use of Tools and Rope

a) Ropes shall be inspected daily and before each climb. Damaged sections shall be cut out and destroyed or the rope replaced.

b) Ropes shall be kept away from fire, acids, oil, chemicals and all sources of excessive heat.

c) Dragging ropes over rough surfaces and sharp objects, such as rocks, shall be avoided. Ropes shall be stored separately from sharp-edged cutting tools.

d) The cutting edge of tools shall be suitably sheathed or guarded except while in actual use. Cutting tools shall be kept sharp and properly shaped.

e) When not in actual use, the trimmer's saw shall be returned to the scabbard.

f) Axes shall not be used in trees or carried on the shoulder.

g) Tools shall not be thrown into or dropped from a tree; they shall be raised or lowered by a suitable rope line.

h) A pruner shall not be laid on a limb, in a crotch or hooked on a wire or rope. It shall be hooked over a limb strong enough to hold its weight.

i) Ladders shall be removed from the base of the tree when not in use.

j) Climbing ropes shall have a minimum diameter of 0.5 inches (1.2 cm) with a minimum breaking strength of 2300 pounds (10.2 kN). Synthetic rope shall have an elasticity of not more than seven percent.

k) Ropes shall be coiled and piled, or suspended so that air can circulate through the coils.

l) Rope ends shall be secured to prevent unraveling.

m) Climbing rope may not be spliced.

T-6 Powered Trimming Equipment

a) Appropriate personal protective equipment shall be worn.

b) Chain-saw operators shall inspect the saw before each use to assure that all handles and guards are in place and tight, that all controls function properly, and that the muffler is operational.

c) Chain-saw operators shall follow manufacturer's instructions on operation and maintenance.

d) Power saws weighing more than 15 pounds that are used in trees shall be supported by a separate line, unless the work is performed from an aerial lift or no supporting limbs are available.

e) When starting a chain saw, it shall be placed on or against a solid support and the area cleared of all co-workers.

f) The operator shall grip the chain saw with both hands during the entire cutting operation.

g) Saw bumper shall be against tree or limb before starting a cut.

h) Chain-saw operators shall, when necessary, clear the immediate area around their work to make certain that brush will not interfere with either the chain saw or operator.

i) All chain saws shall be equipped with "dead man" controls (control cannot lock in "on" position).

j) The chain-saw engine or motor shall be stopped for the following:
   1) When working on any part of the chain or cutting bar.
   2) While the saw is being moved from one location to another, including being carried up into the tree.
   3) While unit is unattended.

k) Gasoline-driven chain-saw engine shall be stopped when being refueled. If gas is spilled on chain saw during refueling, it shall be wiped off before engine is started. Chain saws shall not be started within 10 feet of a fueling area.

l) A gasoline-driven chain saw shall not be used above shoulder level or at a distance that would require the operator to relinquish a safe grip on a saw.

m) Employees shall not approach within 10 ft of the chain-saw operator while the saw is in operation.

n) Employee shall never hand a pneumatic or hydraulic pruner or saw to another employee unless it is disconnected.

n) Powered tools shall not be left unattended if connected to power source.

o) Powered tools shall not be adjusted or repaired while connected to power source.

p) Stump cutters shall be equipped with enclosures or guards to protect employees. Each employee in the immediate area of stump grinding operations shall wear appropriate personal protective equipment. Refer to the Personal Protective Equipment section.

q) Chaps must be worn at all times while running a saw on the ground.

r) For additional information concerning power trimming equipment, refer to OSHA standard 29 CFR 1910.266.

T-7 Chippers

a) Access panels for maintenance and adjustment of the chipper blades and associated drive train shall be in place and secure during operation.

b) Chippers shall never be parked directly under tree being trimmed.

c) Employees shall not permit spectators to stand near machine while feeding brush into chipper.

d) Full cover goggles or face shield shall be worn by employee when feeding brush into chipper.

e) Employee shall never place hands or other part of body into brush hopper while chipper is in operation.

f) Tools or other metallic objects shall not be used to push brush into chipper. Sweepings, which may contain foreign objects such as stones and nails, shall be loaded on truck and not fed into the chipper.

g) The ignition key shall be removed when chipper is left unattended.

h) For other personal protection requirements, refer to Personal Protective Equipment and any other manufacturers' specification.

i) Only wrist-length (no gauntlet) gloves shall be used by employees feeding a chipper.

j) Trailer chippers detached from trucks shall have their wheels chocked.

k) Brush chippers shall be equipped with a locking device in the ignition system.

l) When chipping brush on the roadside, always feed the chipper from curbside and never the traffic side.

m) For additional information on chippers, refer to OSHA standard 29 CFR 1910.269.

T-8 Right-of-Way Clearing and Maintenance

a) When two or more men are cutting brush, they shall be separated by at least 10 feet.

b) Under no circumstances shall anyone except the operator ride on a bulldozer, or any other heavy equipment used in land clearing.

c) Bulldozer operators shall wear seat belts.

d) Employees shall not anchor equipment to railroad tracks, fences or structures belonging to others.

e) When emerging from right-of-way, prior to road travel, employees shall test brakes.

Go to TABLE OF CONTENTS

SECTION U: UNDERGROUND LINES AND EQUIPMENT

U-1 Scope

a) The safety policies and rules set forth in this section shall apply to all personnel engaged in the operation and maintenance of EKPC underground lines and equipment.

b) The safety policies and rules set forth in this section are to call employees' attention to specific underground lines and equipment hazards and establish practices designed to eliminate or avoid the hazards.

U-2 Opening and Guarding Holes

a) Whenever a cover is to be removed from a manhole or a vault or any other obstruction to traffic exists, the following precautions shall be taken.
   1) All obstructions to traffic shall be guarded by adequate signs, barricades, lights, flares, etc. Traffic shall be warned in sufficient time that an obstruction exists through the use of signs, high level standards, flashing lights, traffic cones, flagmen, etc., as may be needed.
   2) Where permissible and practicable, the truck shall also be placed to guard the work area against oncoming traffic
   3) A blow torch or other open flame shall never be used to melt ice around a manhole or vault cover.
   4) Manhole, vault and service-box covers shall always be removed and replaced by means of approved hooks or hoists.

U-3 Entering Underground Structures

A confined space is large enough for an employee to enter and perform assigned work and has a limited or restricted means for entry or exit and is not designed for continuous employee occupancy. A permit-required confined space has one or more of the following characteristics:

(1) Contains or has a potential to contain a hazardous atmosphere(s).
(2) Contains a material that has the potential for engulfing an entrant.
(3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section.
(4) Contains any other recognized serious safety or health hazard.

Determine if the space to be entered is a permit-required confined space and enter accordingly.

a) Before an employee enters a street opening, such as a manhole or vault, it shall be promptly protected with a barrier, temporary cover, or other suitable guard.

b) When work is to be performed in a manhole or vault, observe the following:

(1) No entry shall be permitted unless forced ventilation is used, or the atmosphere is found to be safe by testing for oxygen deficiency and the presence of toxic, explosive gases or fumes.
(2) When unsafe conditions are detected by testing or other means, the work area shall be ventilated and otherwise made safe before entry.
(3) Provisions shall be made for an adequate continuous supply of clean air.

c) If in an emergency it becomes necessary for an employee to enter a manhole or vault with a hazardous atmosphere, the employee shall use an approved airline respirator or self-contained breathing apparatus and a body harness attached to a lifeline monitored by an attendant stationed at the manhole or vault opening. Refer to Section on Confined Spaces for additional confined or enclosed space requirements.

d) A ladder shall always be used in entering or leaving a manhole or vault. Climbing into or out of manholes or vaults by stepping on cables or hangers is forbidden.

e) While work is being performed in manholes (enclosed spaces), a qualified employee trained in first aid and CPR shall be available in the immediate vicinity to render emergency assistance if required. This requirement shall not preclude the employee in the immediate vicinity from occasionally entering a manhole to provide assistance other than emergency. This requirement does not preclude a qualified employee, working alone, from entering for brief periods of time a manhole where energized cables or equipment are in service for the purpose of inspection, housekeeping, taking readings, or similar work if such work can be performed safely.

f) Before any work is done on a cable, it shall be identified by an approved method. If there is any doubt as to the identification, work shall not be started until it is checked and identified by the proper authority.

g) Where cables in manholes appear defective by the presence of abnormalities that could lead to or be an indication of an impending fault (such as oil or compound leaking from cable or joints, broken cable sheaths or joint sleeves, hot localized surface temperatures of cables or joints, or swollen joints whose circumference exceeds 3.5 times the standard sleeve size diameter), no employee may work in the manhole while the defective cable is energized. However, if the defective cable or splice cannot be de-energized because of service load conditions, employees may enter the manhole provided they are protected from the possible effects of a failure by shields or other devices that are capable of containing the adverse effects of a fault in the joint.

h) For additional requirements concerning confined or enclosed spaces, refer to EKPC Confined Space Entry Program.

U-4 Work on Energized Cables

a) At least two employees will be present while the following types of work are being performed (except as noted in c below):
   (1) Installation, repair or removal of de-energized cables if an employee is exposed to contact with other parts energized at more than 600 volts.
   (2) Installation, repair or removal of cables energized at more than 600 volts.
   (3) Installation, repair or removal of equipment such as transformers, capacitors, regulators, switchgear, and sectionalizing cabinets, if an employee is exposed to contact with parts energized at more than 600 volts.
   (4) Work involving the use of mechanical equipment, other than insulated aerial lifts, near parts energized at more than 600 volts.
   (5) Any other work that exposes an employee to electrical hazards greater than or equal to those listed above.

b) Two employees do not need to be present in the following conditions:
   (1) Routine switching of circuits (if it can be done safely).
   (2) Work performed with live-line tools if the employee is positioned so that they are not within reach of or otherwise exposed to energized parts.
   (3) Emergency repairs necessary to safeguard the general public. Only qualified employees may work on or with exposed energized cables or parts of equipment.

   Only qualified employees may work in areas containing unguarded, uninsulated energized cables or parts of equipment operating at 50 volts or more. When two or more employees are working on the same cable section, they shall only work on or contact the same conductor at one time.

   Note: An employee undergoing on-the-job training who has demonstrated the 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.

c) No employee may approach or take any conductive object without an insulating handle closer to exposed energized parts than the clearances set forth in Table 1-7 unless the employee is insulated from the energized part or the energized part is insulated from the employee and any other conductive object at a different potential or the employee is insulated from any other conductive object, as during live-line work.

d) Only qualified employees and trainees working under their direct supervision may work on or with exposed energized cables or parts of equipment or access enclosures, or in areas containing unguarded, uninsulated energized cables or parts of equipment operating at 50 volts or more. When employees are performing work on or associated with exposed cables or equipment energized at

50 volts or more, persons trained in first aid and CPR shall be available as follows:

(1) For field work involving two or more employees at a work location, at least two trained persons shall be available. Only one trained person needs to be available if all new employees are trained in first aid and CPR within 3 months of their hire dates.

(2) For fixed work locations, the number of trained persons available shall be sufficient to ensure that each employee exposed to electric shock can be reached in 4 minutes by a trained person. Where the existing number of employees is not sufficient to meet this requirement (at a remote location, for example), all employees at the work location shall be trained.

e) Employees shall not work on equipment or cables in any position from which a shock or slip will tend to bring the employee's body toward exposed parts that are at a potential different from the employee's body.

f) When work is performed within reaching distance of exposed parts of energized equipment the employer shall ensure that each employee removes or renders nonconductive all exposed conductive articles, such as key or watch chains, rings, or watches or bands, unless such articles do not increase the hazards associated with contact with the energized parts. This applies to all items mentioned above except for medical alert bracelets which may be worn with transparent bands that hold the bracelets snugly to the skin. Metal rim prescriptive eyewear should not be worn near exposed energized parts.

g) All underground cables and apparatus energized at voltages greater than 600 volts shall be de-energized before work is done on the conductor or before the cables are cut into or spliced.

h) Before any work is performed on an energized cable, other cables and all grounded equipment with which contact can be made while working on the energized cable shall be covered with rubber blankets or approved insulating shields. (Cables with nonmetallic sheaths and those with an insulating jacket over the metallic sheath need not be covered.)

i) Because of the characteristics of a low voltage network system, when work is performed on cables or apparatus carrying less than 600 volts, employees shall take extra precautions in the use of necessary rubber protective equipment, in observing adequate clearances, and in using proper tools in order to prevent short circuits.

j) Employees shall wear rubber gloves with leather protectors and stand on insulated rubber mat, insulated stools, or rated dielectric overshoes while cutting into and removing sheathing or sleeves and while testing an energized cable.

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

l) When a supply cable to be worked on as de-energized that cannot be positively identified or determined to be de-energized shall be pierced, spiked, or severed at the work location with a tool designed for this purpose. Proper PPE shall be worn (refer to Personal Protective Equipment).

m) Before cutting into an energized supply cable, the operating voltage shall be determined and appropriate precautions taken for handling conductors at that voltage.

n) Repair to cables shall be in accordance with the cable manufacturer's specifications.

o) When removing a section of sheath or sleeve on an energized cable that contains lead, the lead on each side of the opening shall be covered with insulating tape for a distance of at least nine (9) inches. Any soldering or heating of lead jacketed materials should be conducted using proper engineering controls (i.e., ventilation), personal hygiene, PPE, and personal monitoring.

U-5 Work on De-energized Cables

a) When cables and apparatus are taken out of service to be worked on, the procedure outlined in the section Work on De-Energized Conductors and/or Equipment shall be followed.

b) Before making an opening in or removing a part of the sheath or sleeve of a cable, the line shall be grounded at the first possible grounding point on each side of the work location.

c) When a high voltage cable is to be cut, a short section of the shielding if any, completely around the cable shall be removed and tests made with two statiscopes or other approved testing devices to determine whether the cable is de-energized. If no indication of a live cable is obtained, the employee may proceed with the work.

d) When opening a joint or splice in a high tension cable, the sleeve of the joint shall be cut completely around near the wipes and then cut lengthwise and removed from the joint. No effort shall be made to remove the compound. The employee shall then test over each conductor with two statiscopes or other approved testing devices. If no indication of a live cable is obtained, he/she shall remove the

compound. If shielding tape is then encountered, it shall be removed and another test made over each conductor with two statiscopes or other approved testing devices. If no indication of a live cable is then obtained, he/she shall cut through the joint until the saw touches one of the conductors. Before sawing further, a statiscope test shall be made on the blade of the saw.

e) When cutting or opening joints on low tension cables, the same procedure as outlined above for high tension cables shall be followed, except in testing. To determine whether the conductor is energized, the insulation shall be cut away to the conductor and tests made with an approved tester. On multiple conductor cables, only one conductor shall be cut into at a time and tests shall be made on at least two conductors before proceeding with work.

U-6 Pulling Cables

a) Employees shall not handle pull-wires or pulling-lines within reaching distance of blocks, sheaves, winch drums and take-up reels.

b) Pull-wires, steel pulling-lines or metal rodding shall not be pushed through ducts where energized equipment is present unless another employee is stationed at the other end of the run.

c) Employees shall not remain in a manhole or vault during pulling operations involving heavy pulling strains unless they can take a position clear of the pulling-line.

U-7 Moving Energized Cables

a) Special care shall be taken when moving cables operating at voltages greater than 600 volts and only then when all other methods of movement (such as de-energizing) have been eliminated. A careful inspection of the cable to be moved shall take place before movement occurs. If cracks, voids, insulation damage or leaking oils are detected during the inspection, the cable shall not be moved in an energized state. All portions, of the cable that are subject to damage must be clearly visible. Appropriate electrical protective equipment and live line tools must be chosen and used during this operation.

b) All cables operating at voltages less than 600 volts may be moved at the discretion of the foreman. They shall not, however, be moved if such movement requires changing bends.

c) All energized cables shall be handled with rubber gloves except when applying fireproofing materials.

d) Energized cables that are moved shall be inspected for defects.

U-8 Heating Materials

a) Metals and insulating compounds shall be heated in such manner as to prevent hazard to the employees working in manholes or vaults and to vehicular or pedestrian traffic.

b) Gloves, sleeves, and safety glasses shall be worn while heating or working with hot insulating compound or metals.

c) Furnaces and tanks containing liquefied petroleum gas such as butane or propane shall not be placed in a manhole or vault.

d) Cold solder scraps or dipper shall never be placed in a hot solder pot until the chill and any moisture has been removed from the scraps or dipper.

e) Heating pots for solder, oil or compound shall be safely positioned so that the contents cannot enter the vault or manhole in the event of spillage.

f) Lighted furnaces or blow torches should not be left unattended.

g) Torches or furnaces must be kept at a safe distance from flammable materials.

Go to TABLE OF CONTENTS

SECTION V: UNDERGROUND RESIDENTIAL DISTRIBUTION

Underground Residential Distribution (URD) systems have a number of apparent advantages over overhead systems; however, they also have some disadvantages such as confined working spaces, closer clearances between energized parts, and greater exposure to all types of grounds. In most cases, if protective devices are not used, the employee will be in direct contact with the ground or grounded equipment. This contact completes half of an electric circuit; therefore, if these contacts are not avoided or protection against contact is not used, serious injury could result.

There is a safe way of doing every job; employees must know it before proceeding.

V-1 Scope

a) Before a URD transformer enclosure is opened, all unauthorized persons including private citizens shall be required to leave the work area and remain clear of all hazards involved in the work.

b) When underground equipment is being located, short sections of scrap cable could provide false indication of the actual position of permanent conductors; therefore, all scrap cable, regardless of length, is to be removed from the job site.

V-2 Opening and Closing Circuits - URD

a) Utility switching procedures, including Hold Carding and tagging practices, shall be followed when sectionalizing URD systems.

b) When URD circuit has opened, the route of the circuit shall be patrolled for obvious hazards before the circuit is reclosed.

c) An approved switching tool, rubber gloves, and rubber sleeves shall be used when switches (including secondary breakers and primary load-break elbows) in an energized circuit are opened or closed.

d) Any URD primary circuit shall be de-energized by opening one or more load-break devices. De-energizing shall be done with a load-break elbow connector, load-break fuse cutout at the riser pole, load-break tool or other approved load-break device.

e) Eye or face protection shall be worn when primary switching operations are performed.

V-3 Grounding - URD

Note: A capacitance charge can remain in a URD cable after it has been disconnected from the circuit and a static type arc can occur when grounds are applied to such cables.

a) All URD cables and equipment, including services, that have been energized or could become energized from any source, shall be considered as energized until the equipment is positively proven to be de-energized and has been grounded.

b) Before doing work on de-energized primary circuits or equipment (1) a visible open break shall be provided, (2) a voltage test shall be made, and (3) the equipment shall be grounded.

c) When work is to be done on equipment or cables of an underground system, precautions to prevent backfeed shall be taken including grounding of secondary conductors.

d) De-energized cables to be worked on shall be grounded at a point as close to the work as possible.

e) All underground cables and apparatus carrying current at voltages above 600 volts shall be de-energized and grounded before cables are cut into or spliced.

f) All conductors of a circuit shall be de-energized when work is to be performed on any of them.

V-4 Rubber Glove Use - URD

a) Rubber gloves and rubber sleeves shall be put on before any URD compartment or enclosure (including service pedestals) is opened and kept on until the compartment or enclosure is closed and locked or until all equipment is properly grounded, barricaded, and shielded.

b) Rubber gloves shall be worn when removing animals, vines, weeds, grass or vegetation of any kind that has grown into an energized URD installation whether the equipment is opened or closed.

c) Rubber gloves and sleeves shall be worn when energized primary cables are moved, handled or protected.

d) Rubber gloves shall be worn when work is performed on energized secondaries and services.

e) Rubber gloves and rubber sleeves shall be worn when working on or contacting a neutral.

f) Refer to PERSONAL PROTECTIVE EQUIPMENT for additional rubber-glove requirements.

V-5 Work on Energized Equipment - URD

a) When work is performed on cables or apparatus carrying less than 600 volts, employees shall take extra precautions in the use of necessary rubber protective equipment and personal protective equipment, in observing adequate clearances, and in using proper tools in order to prevent short circuits.

b) When energized pad-mounted transformers are unlocked and opened, they shall be directly attended by a worker. They shall be kept closed and locked at all other times.

c) A primary or secondary system neutral on any energized circuit shall not be opened under any circumstances.

d) Elbow connectors provide a great deal of flexibility in switching and system sectionalizing. However, only those connectors designed and approved for load break use shall be used to connect or disconnect an energized circuit.

e) Only tools with insulated handles shall be used for making energized secondary connections or when work is performed within energized service pedestals, pad-mount compartments, or submersible transformer enclosures.

f) Only one energized secondary or service conductor shall be worked on at any one time and protective devices shall be used to insulate or isolate it from all others.

g) Before any attempt is made to replace a damaged or blown cable limiter, the customer's service will be checked for faults by the use of either an ohmmeter or a voltmeter.

h) Approved EKPC clothing with full-length sleeves rolled down and buttoned, shall be worn when work is performed on any energized URD cable or apparatus.

V-6 Excavations - URD

a) Before opening an excavation, all interferences such as trees, sidewalks, and foundations shall be removed or supported as necessary to protect employees and the public.

b) The estimated location of utility and other underground installations that may be encountered during excavation work shall be determined before opening the excavation.

c) When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by safe and acceptable means, usually by hand digging with an insulated shovel and the use of suitable gloves.

d) If electric cables are damaged, the following steps shall be taken:
   1) If the damaged cable belongs to a utility company other than the one performing the work, this company shall be notified at once
   2) The area shall be barricaded and the public kept out until hazardous conditions can be eliminated.

e) If gas lines are damaged, the following steps shall be taken as soon as possible:
   1) The hole shall be left open to allow the gas to dissipate into the atmosphere. All possible sources of igniting the gas shall be removed or eliminated.
   2) Residents of the area shall be warned when necessary, and the public kept out of the area.
   3) The local fire department shall be notified immediately.
   4) The gas company shall be notified at once.
   5) The local police department shall be notified.

f) If communication cables are damaged, the communication company shall be notified at once.

g) While the excavation is open, underground installations shall be protected, supported, or removed to safeguard employees.

h) A stairway, ladder, ramp, or other safe means of egress shall be located in trench excavations that are four (4) feet or more in depth so as to require no more than 25 feet of lateral travel for employees.

i) Employees exposed to vehicular traffic shall wear approved garments.

j) No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials.

k) When mobile equipment is operated adjacent to an excavation and the operator does not have a clear and direct view of the edge of the excavation, a warning system such as barricades, a spotter, or stop logs shall be utilized. If possible, the grade should be away from the excavation.

l) Employees shall not work in excavations in which there is accumulated water or in excavations in which water is accumulating unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. The precautions necessary to protect employees adequately vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a body harness and life line.

m) If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation.

n) Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning shall be provided.

o) Employees shall be protected from excavated material or equipment that could fall or roll into excavations. Protection shall be provided by placing and keeping such materials or equipment at least two feet from the edge of excavations or by using retaining devices that are sufficient to prevent materials or equipment from falling or rolling into the excavation.

p) Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted before starting work and as needed throughout the shift. Inspections shall also be made after every rainstorm. Where the competent person finds evidence of a situation that could result in a possible cave-in, failure of protective systems, hazardous atmosphere, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

q) Walkways or bridges with standard guardrails shall be provided, where employees or equipment are required or permitted to cross over excavations.

r) When excavations are left open, warning devices, barricades, or guardrails shall be placed to adequately protect the public and employees.

s) At the end of each workday, as much of the excavation as practical shall be closed. No more trench shall be open at one time than is necessary.

t) Mechanical excavating equipment that is parked or operating on streets or highways shall be protected by proper warning devices.

u) When it is necessary to leave excavating equipment unattended, the blade, bucket, or scoop shall be lowered to the ground and the ignition system locked.

v) Each employee in an excavation shall be protected from cave-ins by an adequate protective system, either sloping or benching, or by a shoring or shield system, unless excavations are made entirely in stable rock or are less than five (5) feet in depth and examination of the ground by a competent person provides no indication of a potential cave-in.

w) When choosing a protective system, a competent person shall take into consideration soil type, vibration sources, previously disturbed soil, layered soil, presence of water, heavy equipment work adjacent to the excavation, limited work area, and other hazard-increasing conditions.

x) Shoring and shield systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the shoring or shield system.

y) Removal of shoring systems shall begin at and progress from the bottom of the excavation. Members shall be released slowly so as to note any indication of possible cave-ins of the side of the excavation or possible failure of the remaining members.

z) Shields shall be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of a sudden lateral load.

aa) Employees shall be protected from the hazards of cave-ins when entering or exiting the areas protected by shields.

bb) Employees shall not be allowed in shields when shields are being installed, removed, or moved vertically.

cc) Sloping or benching, shoring or shielding for excavations greater than 20-feet deep shall be designed by a registered professional engineer. Refer to Table 1.8 for soil type maximum slope requirements for excavations less than 20 feet.

dd) "Competent person" as used in this section is a person who meet all the requirements as set forth in the OSHA standard 29 CFR 1926, Subpart P, Excavations.

ee) For additional information on excavation requirements, refer to OSHA standard 29 CFR 1926, Subpart P, Excavations.

Table 1.8 Maximum Allowable Slopes for Excavations Less Than 20 Feet Deep	
Soil or Rock Type	**Maximum Allowable Slopes (H:V)****
Stable Rock	**Vertical (90°)**
Type A***	**3/4:1 (53°)**
Type B	**1:1 (45°)**
Type C	**1:1/2:1 (34°)**

Notes:

***Sloping or benching for excavations greater than 20-feet deep shall be designed by a registered professional engineer.**

****Numbers in parentheses are angles expressed in degrees from the horizontal. Angles have been rounded off.**

*****A short-term maximum allowable slope of 1/2H:1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 3/4H:1V (53°).**

Go to TABLE OF CONTENTS

SECTION W: HAZARDOUS ENERGY CONTROL – LOCK OUT TAG OUT

(Refer to EKPC's Power Production Lockout-Tagout Procedures and Power Delivery & System Operations Lockout-Tagout Procedure)

W-1 Scope

a) The safety policies and rules set forth in this section shall apply to all personnel engaged in the operation and maintenance of EKPC hazardous energy control/lockout-tagout.

b) The safety policies and rules set forth in this section are to call employees' attention to specific hazardous energy control/lockout-tagout hazards and establish practices designed to eliminate or avoid the hazards.

W-2 Control/Lockout-Tagout

(Refer to EKPC's Power Production Lockout- Tagout Procedures and Power Delivery & System Operations Lockout-Tagout Procedure)

a) EKPC's Lockout – Tagout Procedures can be found here:

EKPC's Power Production Lockout- Tagout Procedures

Power Delivery & System Operations Lockout-Tagout Procedure

b) For additional information concerning Hold cards and tag requirements, refer to OSHA standard 29 CFR 1910.269 and 29 CFR 1910.147.

Go to TABLE OF CONTENTS

SECTION X: POWER PRODUCTION AND DELIVERY

X-1 Scope

This section covers items that pertain to both Power Production and Power Delivery.

X-2 Batteries

a) Vented Batteries

1) A face shield or chemical goggles, acid resistant apron, and gloves shall be worn when working on or testing batteries. (Routine checking of installed motor vehicle batteries is permitted with standard eye protection.)
2) Warning signs inside and outside of a battery room or in the vicinity of a battery area, prohibiting smoking, sparks, or flame shall be provided.
3) Metal funnels and containers shall not be used to handle battery fluids.
4) Batteries shall not be lifted by the terminals.
5) An eye wash station shall be available when working with batteries.
6) The battery area shall be ventilated to prevent accumulation of hydrogen.
7) Location of storage batteries shall be located within a protective enclosure or area accessible only to qualified persons.
8) Lighting fixtures shall be protected from physical damage by guards. Receptacles and lighting switches should be located outside of battery areas.
9) Space shall be provided around batteries for safe inspection, maintenance, testing, and cell replacement.
10) Racks shall be firmly anchored and if made of metal shall be grounded.
11) Floors of battery area should be of an acid-resistive material.
12) For lighting or power batteries used as a source of power shall be of suitable rating and capacity to supply and maintain the total load for minimum of 1½ hour without voltage falling below 87½% normal value. An automatic charging means shall be provided. Refer to National Electric Code Book: Article 700-12
13) Refer to National Electrical Safety Code Section 14., National Electrical Code Handbook: Article 480, refer to 1910.178(g) and 1910.305(j)(7).

b) Jump Start Instructions

1) Attach the cables in the following order:
   (a) Clamp one jumper cable to positive (+) terminal of the dead battery.
   (b) Connect other end of the positive (+) cable to positive (+) terminal of good battery.
   (c) Connect one end of the second cable negative (-) to other terminal negative (-) of good battery.
   (d) Make final connection on engine block or metal ground of stalled engine (not the negative post) away from the battery, carburetor, fuel line, any tubing, or moving parts.
   (e) Stand back from both vehicles. Start vehicle with good battery, and then start the stalled vehicle.
   (f) Remove cables in reverse order of connections beginnings by first removing cable from engine block or metal ground.

X-3 Confined Spaces

a) Compliance with EKPC Confined Space Entry Program is required prior to entering a confined space.

b) Before employees are allowed to enter a confined space, all electrical and mechanical energy sources that could affect the employees working in the space shall be physically rendered inoperative, locked out, and/or tagged.

c) Only employees who have been properly trained on the hazards associated with confined space work shall be allowed to enter a confined space.

d) Employees who enter confined spaces or who serve as attendants shall be trained in the hazards of confined space entry, confined space entry procedures, and confined space rescue procedures.

e) Before any entrance cover to a confined space is removed, it shall be determined that there are no temperature or pressure difference, or other hazardous conditions that may injure the employees removing the cover.

f) When covers are removed from confined spaces, the opening shall be guarded by a railing, temporary cover, or other temporary barrier.

g) Before entering a confined space, all levels of the space shall be tested for lack of oxygen and then for the presence of flammable or toxic gases and vapors. Monitoring instruments must be properly calibrated.

h) If hazard-increasing work activity is to take place in a confined space (welding, painting, working with solvents, and coating), the air in the space shall be continuously tested for the presence of flammable or toxic gases and vapors or insufficient oxygen. Forced ventilation shall be used as required.

i) If flammable or toxic gases and vapors are detected or if and oxygen deficiency is found, the space shall be continuously tested and forced ventilation shall be used to maintain oxygen at a safe level and to prevent a hazardous concentration of flammable or toxic gasses and vapors.

j) While work is being performed in a confined space, a qualified employee trained in first aid and CPR shall be available in the immediate vicinity to render emergency assistance if required. This requirement shall not prevent the employee in the immediate vicinity from occasionally entering a manhole to provide assistance other than emergency. This requirement does not prevent a qualified employee, working alone, from entering for brief periods of time, to inspect, perform housekeeping, take readings, or similar work if such work can be performed safely.

k) Entry into a confined space with an unsafe atmosphere shall be avoided if at all possible. Employees required to enter under these circumstances shall be equipped with a fresh-air breathing apparatus, body harness, and lifeline monitored by a properly trained attendant. Necessary rescue personnel and equipment shall be available in the event of an emergency.

l) Safe access to the confined space shall be maintained at all times. If possible, all cords, hoses, leads, etc., shall be routed through an entrance other than the employee access into the confined space.

m) For additional information concerning confined space requirements, refer to OSHA 1910.269 and 1910.146.

X-4 Signs

a) Warning signs shall be placed at prominent points to alert persons of specific hazards that may lead to accidental injury or workers or the public, or both, or to property damage.

b) All signs shall be designed with rounded or blunt corners and be free from sharp edges, burrs, splinters, or other sharp projections.

c) Danger signs indicate immediate danger and that special precautions are necessary.

d) Danger signs shall consist of opaque glossy colors of red, black, and white.

e) Caution signs indicate a possible hazard against which proper precaution shall be taken.

f) Caution signs shall consist of opaque glossy colors with a background of yellow and the panel, black with yellow letters. Any letters used on the yellow background shall be black.

g) Safety instruction signs shall be used where there is a need for general instructions and suggestions relative to safety measures.

h) Safety instruction signs shall consist of opaque glossy colors with a background of white, and the panel, green with white letters. Any letters used against the white background shall be black.

i) For additional information, refer to OSHA 1910.145.

X-5 Substation Security

a) Substation gates shall be closed and locked when the station is unoccupied.

b) Substation gates shall be closed and locked when the gate is not visible to employees performing work in the substation. If an employee is working alone in a substation, it is acceptable for the gate to be closed, but not locked to allow medical assistance in the instance of an emergency.

c) Emergency contact phone numbers shall be posted on the gate.

d) Employees shall notify their supervisor/foreman of any apparent security violations.

X-6 Entering/Working in Substation

a) Personnel shall inform the Dispatch Center before entering and exiting the substation.

b) Personnel shall receive clearance to perform work, if required.

c) Prior to initiating work in the substation, all individuals must have Substation Entry Training. The individual in charge shall hold a job briefing using EKPC's Job Briefing Form and to at least cover the following subjects: Hazards associated with the job, work procedures involved, special precautions, energy source controls, and personal protective equipment required.

X-7 Work Clearances

a) Workers shall maintain as much distance as possible from one another when working on exposed energized parts.

b) Antennas of either mobile or portable radios shall be kept at a safe distance from exposed energized equipment or lines.

c) Refer to Table 1.7 for more information on clearances.

X-8 Handling Tools and Materials

a) It is imperative that handling of tools and materials be conducted with the utmost care in substations to prevent contact with energized buss or equipment.

b) No tools or materials of any description shall be carried on the shoulder.

c) Long materials shall be carried in a horizontal position, preferably by two people.

X-9 Substation Switching

a) If it is necessary to do any switching which affects substation power, the operator will first inform the individual in charge of the work crew and be certain that all workers are down from the structure prior to doing the switching.

b) After the switching operations are completed, the workers will recheck the status of the structure, lines and equipment before resuming work.

c) Please refer to **Power Delivery Lockout/Tagout Procedure** for more information.

d) Please refer to the Arc Flash section of this manual.

X-10 Equipment Testing

a) Employees not actively engaged in equipment testing shall stay clear of the test area and the equipment being tested.

b) When testing is being performed in a substation where there is energized equipment in service, temporary warning devices will be placed between the individuals conducting the tests and the energized equipment.

c) When employing test equipment which produces a current or voltage which is applied to the equipment, the surrounding area shall be roped off or demarcated by strobe lights and/or an audible warning device.

e) Please refer to the Arc Flash section of this manual.

X-11 Testing and Test Facilities

This section applies to testing involving interim measurements utilizing high voltage (1000 volts or more), high power or combinations of both, not to testing involving continuous measurements as in routine metering, relaying or normal line work.

a) Employees shall be trained in safe work practices upon their initial assignment to the test area.

b) Permanent test areas shall be guarded by walls, fences or barriers designed to keep employees out of the test areas.

c) In field testing, or a temporary site where permanent fences and gates are not provided, one of the following means shall be used to prevent unauthorized employees from entering:
   1) The test area shall be guarded by the use of distinctively colored safety tape that is supported waist high and to which safety signs are attached.
   2) The test area shall be guarded by a barrier or barricade that limits access to the area, or:
   3) The test area shall be guarded by one or more test observers stationed so that the entire area can be monitored

d) Barriers shall be removed when the protection they provide is no longer needed.

e) Guarding shall be provided within the test areas to control access to test equipment or to apparatus under test that may become energized as part of the testing.

f) All conductive parts accessible to the test operator during the time the equipment is operating at high voltage shall be maintained at ground potential except for portions of the equipment that are isolated from the test operator by guarding.

g) When ungrounded terminals of test equipment or apparatus under test may be present, they shall be treated as energized until determined by tests to be de-energized.

h) Visible grounds shall be applied, either automatically or manually with proper insulating tools, to the high voltage circuits after they are de-energized and before work is performed on the circuit or item or apparatus under test. Common ground connections shall be solidly connected to the test equipment and the apparatus under test.

i) In high-power testing, an isolating ground-return conductor system shall be provided so that no intentional passage of current, with its attendant voltage rise, can occur in the ground grid or in the earth. An isolated ground-return conductor need not be provided if the following conditions are met:
    1) If an isolated ground-return conductor cannot be provided due to the distance of the test site from the electric energy source.
    2) If employees are protected from any hazardous step and touch potentials that may develop during the test.

j) In tests in which grounding of test equipment by means of the equipment grounding conductor located in the equipment power cord cannot be used due to increased hazards to test personnel or the prevention of satisfactory measurements, a ground that affords equivalent safety shall be provided and the safety ground shall be clearly indicated in the test set-up.

k) When the test area is entered after equipment is de-energized, a ground shall be placed on the high-voltage terminal and any other exposed terminals.

l) High capacitance equipment or apparatus shall be discharged through a resistor rated for the available energy.

m) A direct ground shall be applied to the exposed terminals when the stored energy drops to a level at which it is safe to do so.

n) If a test trailer or test vehicle is used in field testing, its chassis shall be grounded. Protection against hazardous touch potentials with respect to the vehicle, instrument panels and other conductive parts accessible to employees shall be provided by bonding, insulation or isolation.

o) Control wiring, meter connections, test leads and cables may not be run from a test area unless they are contained in a grounded metallic sheath and terminated in a grounded metallic enclosure or unless other precautions are taken that demonstrate equivalent safety.

p) Meters and other instruments with accessible terminals or parts shall be isolated from test personnel. If this isolation is provided by locating test equipment in metal compartments with viewing windows, interlocks shall be provided to interrupt the power supply if the compartment cover is opened.

q) Safety practices governing employee work at temporary or field test areas shall provide for a routine check of the test areas for safety at the beginning of each series of tests.

r) The test operator in charge shall conduct these routine safety checks before each series of tests and shall verify at least the following conditions:
   1) Barriers and guards are in workable condition and are properly placed to isolate hazards.
   2) System test status signals, if used, are operable.
   3) Test power disconnects are clearly marked and readily available in an emergency.
   4) Ground connections are clearly identifiable.
   5) Personal protective equipment is provided and used as required.
   6) Signal, ground and power cables are properly separated.

s) Please refer to the Arc Flash section for more information.

X-12 Arc Flash

a) When working on equipment with the potential for an arc flash, please refer to EKPC's Category 2 Arc Flash Training Document and the label on that piece of equipment.

b) Develop a work procedure based on the arc flash label for that piece of equipment.

c) If an arc flash label does not exist, prepare a job hazard analysis prior to doing the work.

Go to TABLE OF CONTENTS

Rev. 4
7/13/2017
Revised the following items:

-Revised rigging section per direction of the EKPC Safety Team.
-Corrected the Hazard Communications Procedure link in the reference document to go to the new updated procedure in Doc Central.