SECTION 2.0

ELECTRICAL SAFETY

TOOLS AND CHECKLISTS

Document Change History

| Edition Number | Reason and Description of Change | AffectedPages | Effective Date |
| --- | --- | --- | --- |
| 1.0 | New | All | 15th December 2014 |

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# APPENDIX A - RISK ASSESSMENT ENERGIZED EQUIPMENT – ELECTRICAL SAFETY

Note: Risk Assessments are to be conducted at each site when the potential of contacting energized equipment exist and prior to each electrical intervention. Assessments must be repeated when additional hazards not previously addressed are caused by changing conditions. Completed forms must be maintained and provided to Customer Representatives upon request.

DATE: \_\_\_\_\_\_\_\_\_\_\_ PROJECT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ADDRESS: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ PROVINCE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

TYPE OF OPERATION:

\_\_\_\_ New Site/New Construction \_\_\_\_Existing Site/ Under Renovation

\_\_\_\_\_ O&M/ Supported by Managed Services

SITE:

\_\_\_ Central Office \_\_\_ Wireless Site/Cell Hut \_\_\_\_ Outdoor Plant

\_\_\_ Other (Specify): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

WORKSITE CONDITIONS / OPERATIONAL DETAILS

TYPE OF EQUIPMENT/ENERGY SOURCE:

\_\_\_\_\_Bus Bar

\_\_\_\_\_Rectifier

\_\_\_\_\_ Back-Up Batteries

\_\_\_\_\_Back-Up Generator/Energy Source

\_\_\_\_\_ Defective/Damaged Electrical Equipment and Extension Cords

\_\_\_\_\_ Other (Specify) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

TYPE OF ENERGY

\_\_\_ AC Power - \_\_\_\_\_Voltage

\_\_\_ DC Power - \_\_\_\_\_ Voltage

ENERGYCONTROL MEASURES:

\_\_\_\_\_\_ Qualified/Competent Person to Perform the Task

WARNING: Local rules and regulations must be followed for required qualifications.

\_\_\_\_\_\_\_ Safe Disconnecting Procedures Identified

\_\_\_\_\_\_\_ Equipment Shut Down / Approved by Customer

Yes\_\_\_ WARNING: Lockout/ Tagout procedures must be implemented.

No \_\_\_\_ DANGER: All the following steps must be in place if unable to shut down equipment/energy source:

\_\_\_\_\_\_ Procedures for work on live equipment must be documented and approved by customer and reviewed by a competent person

\_\_\_\_\_\_ Insulated tools must be used

\_\_\_\_\_\_ Necessary Personal Protective Equipment must be available and used:

* + Electrical gloves
	+ Non-conductive hard hats
	+ Non-conductive safety shoes
	+ Non-conductive safety glasses (required for all tasks)

\_\_\_\_\_\_Other necessary equipment must be available and used as necessary.

* + Voltmeter
	+ Protective Sheeting
	+ Floor Rubber Mat
	+ Ladders with non-conductive tops
	+ Ground Fault Circuit Interrupters

\_\_\_\_\_\_Necessary Work practices:

* + Ensure ground is in place prior to start
	+ No jewelry
	+ Proper clothing (i.e., long sleeve, long pants)
	+ Control access to work area
	+ No drinking or smoking in work area
	+ Another qualified employee must be at the site
	+ Personnel at the site must be First Aid/CPR certified
	+ Observe Safe Approach Distances
	+ Ensure all other electrical tools and extension cords are in good working conditions or placed “Out of Service” when defective

Potential Hazards

 \_\_\_ Electrocution

 \_\_\_ Electrical Shock

 \_\_\_ Burns (Electrical, Arc or Thermal Contact)

\_\_\_ Falling from ladders/platforms due to electrical shock

\_\_\_ Service Interruption

 \_\_ Fire

 \_\_ Explosion

Weather Condition

 \_\_\_ Snow\*

 \_\_\_ Extreme Temperatures\*

\_\_\_ Rain\*

 \_\_\_ Fog\*

 \_\_\_ Strong Winds\*

 \_\_\_ Lightning\*

 \_\_\_ Flooding\*

\*Outdoor Plant operations will be suspended due to weather conditions: \_\_\_\_Yes \_\_\_\_ No

 Hazardous Animals (e.g., bees, snakes, spiders, etc.)

Yes \_\_\_\_ No \_\_\_\_

 Adequate Illumination

Yes \_\_\_\_ No \_\_\_\_

RF Radiation : All work will take place outside of the “hazard zone”/”standoff distance” from active antennas

Yes \_\_\_\_ No \_\_\_\_

If the answer is No, which controls will be implemented?

 \_\_\_ Monitor of RF Radiation

 \_\_\_ Antenna will be turned off

 \_\_\_ Antenna is a “Receive Only” antenna (will not transmit)

 \_\_\_ Other

Laser /Optic Fiber Communications System (OFCS) Safety

 Connectors of Fiber Optics cables are:

\_\_\_\_exposed

\_\_\_\_energized

DANGER: The following work practices must be followed when the potential for exposure to a laser beam exist.

A laser hazard exists when an OFCS access panel is opened and invisible laser emissions are viewed with an optical instrument from an optical connector, optical port, fiber break, or un-terminated optical fiber. DO NOT VIEW INVISIBLE LASER EMISSIONS WITH OPTICAL INSTRUMENTS (e.g., microscope objectives, fiberscope and magnifying glasses).

\_\_\_ verify that all sources of laser emissions are turned off. Implement

Lockout/Tagout procedures.

\_\_\_ do not view the un-terminated OFCS directly with optical instruments

\_\_\_only use approved equipment/methods to test and view un-terminated fiber optic

\_\_\_only competent/trained individuals to work on an unenclosed OFCS

\_\_\_don’t touch un-terminated fiber optics

\_\_ exclude unauthorized personnel from the immediate area of an unenclosed optical fiber optic source

\_\_\_ personnel working on equipment must be familiar with equipment specifications and conditions that will create a potential for injury (e.g., unavailability of Automatic Power Reduction, fiber disconnected or broken, specific distance at which a fiber end or open connector is considered to be too closed to the body)

Dangerous Neighborhood

Yes \_\_\_\_ No \_\_\_\_

 If dangerous, which precautions will be necessary?

 \_\_\_ Notify applicable authorities of our presence, location and nature of work.

\_\_\_ Maintain the gate closed to avoid access by unauthorized individuals to the site.

 \_\_\_ Other (specify) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

List of Minimum Equipment/Supplies

 \_\_\_ Insulated Tools

\_\_\_ Other Needed Equipment

\_\_\_\_Voltmeter

\_\_\_\_Protective Sheeting

\_\_\_\_Floor Rubber Mat

\_\_\_\_Ladders with non-conductive tops

\_\_\_\_Ground Fault Circuit Interrupters

\_\_\_ First Aid Supplies

\_\_\_ Personal Protective Equipment

\_\_\_ 2-way radio / Cellular Phone

\_\_\_ Personal Identification

\_\_\_ Proof of necessary/applicable licenses or certificates

Have the identified hazards been properly controlled?: \_\_\_\_ Yes \_\_\_\_\_ No

Important: If the answer is “Yes”, the operation may proceed.

# APPENDIX B -SAFETY INSPECTION –ELECTRICAL WORK

Note: Safety inspections are to be conducted daily to evaluate implementation of safe work practices. Completed forms must be maintained and provided to Customer Representatives upon request.

DATE: PROJECT:

ADDRESS: PROVINCE:

**GENERAL**

\_\_\_\_ EMERGENCY PLAN COMPLETED

\_\_\_\_ SAFETY MEETING CONDUCTED AND DOCUMENTED

\_\_\_\_ NECESSARY FIRST AID SUPPLIES WERE AVAILABLE AND COMPLETE

\_\_\_\_NECESSARY NOTIFICATIONS TO ACCESS EQUIPMENT AND SITE COMPLETED (IN ACCORDANCE WITH CUSTOMER’S AND TOWER OWNER’s PROTOCOL)

**ELECTRICAL WORK**

\_\_\_\_ QUALIFIED EMPLOYEES AT THE SITE HAVE PROOF OF APPLICABLE LICENSES/PERMITS

\_\_\_\_ RISK ASSESSMENT COMPLETED

\_\_\_\_NECESSARY PERSONAL PROTECTIVE EQUIPMENT (e.g., Non-metallic Safety Glasses, electrical insulated gloves, electrical rated hardhat):

\_\_\_ AVAILABLE \_\_\_ INSPECTED BY USER BEFORE USE \_\_\_ USED

\_\_\_\_ OTHER NEEDED EQUIPMENT AVAILABLE AT THE SITE:

\_\_\_GROUND FAULT CIRCUIT INTERRUPTER (GFCI) \_\_\_\_LOCKOUT/TAGOUT KIT \_\_\_\_INSULATED TOOLS

\_\_\_MULTIMETER \_\_\_\_INSULATED RUBBER FLOOR MAT \_\_\_\_INSULATEDS PROTECTIVE SHEETING

\_\_\_CANVAS (NOT AN INSULATOR, ONLY USED FOR PADDING)

\_\_\_\_ ALL PORTABLE ELECTRICAL EQUIPMENT AND EXTENSION CORDS IN GOOD CONDITION

\_\_\_\_ ALL JEWELRY AND OTHER METALLIC/CONDUCTIVE ITEMS REMOVED FROM IMMEDIATE WORK AREA (e.g., ladder with metal tops, metal tape measures)

WHEN ABLE TO SHUT DOWN:

\_\_\_\_ SHUT DOWN COORDINATED WITH THE CUSTOMER AND LOCKOUT/TAGOUT PROCEDURES IMPLEMENTED

\_\_\_\_ ALL EMPLOYEES WORKING ON EQUIPMENT THAT HAS BEEN SHUT DOWN HAVE APPLIED THEIR OWN LOCK AND TAG

\_\_\_\_ OTHER EMPLOYEES AT THE SITE NOTIFIED OF: \_\_\_\_ EQUIPMENT SHUT DOWN AND \_\_\_\_ PRIOR TO POWERING-UP EQUIPMENT

\_\_\_\_COVERS PLACED BACK ON EQUIPMENT PRIOR TO POWERING-UP (ENERGIZING EQUIPMENT)

\_\_\_\_ADDITIONAL PRECAUTIONS HAVE BEEN TAKEN WHEN UNABLE TO USE LOCKOUT DEVICES (e.g., removing an isolating circuit element, blocking control switch; opening extra disconnect, etc.)

WHEN UNABLE TO SHUT DOWN EQUIPMENT:

\_\_\_\_ SECOND QUALIFIED PERSON AT THE SITE

\_\_\_\_ BOTH QUALIFIED EMPLOYEES ARE TRAINED ON FIRST AID/CPR

\_\_\_\_ ELECTRICAL SAFETY PROCEDURES IMPLEMENTED

\_\_\_\_SAFE APPROACH DISTANCES OBSERVED

Items that were found in need of improvement must be properly addressed.

NAME AND SIGNATURE OF INSPECTOR: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# APPENDIX C - SITE EMERGENCY PLAN

**DATE: PROJECT: SITE NAME(s) OR ID(s):**

**ADDRESS: PROVINCE:**

**CLOSEST HOSPITAL / MEDICAL SERVICES:**

**CLOSEST FIRE DEPARTMENT:**

**CLOSEST POLICE DEPARTMENT:**

**NAMES OF EMPLOYEES PRESENT AT THE SITE:**

**STEPS TO TAKE IN CASE OF AN EMERGENCY:**

**Depending on the incident, steps # 2, #3 and #5 must be taken if necessary.**

**\_\_\_ #1 Assist the injured employee if able to do so safely.**

**Electrical Incidents**

If an employee has sustained severe electrical shock, burns, and/or electrocution:

* Never touch the victim until the electrical source is cut off.
* Turn off the electricity at the fuse or circuit breaker box.
* If unable to turn off the source, be careful and use a non-conductive object (e.g., wood stick) to separate the victim.
* Keep bystanders well away from any source of live current.
* Be aware that electrical burns carry a strong possibility of cardiac arrest. Call Emergency Medical Services.

**\_\_\_ #2 Contact the Fire Department or local equivalent (e.g., Civil Protection).**

**\_\_\_ #3 Provide First Aid/Cardio Pulmonary Resuscitation (CPR).**

**\_\_\_ #4 Ensure medical attention is provided in accordance with the incident.**

* **Contact the closest hospital, or**
* **Transport the victim to the closest hospital or clinic if recommended.**

**\_\_\_ #5 Contact the Police Department.**

**\_\_\_#6 Notify management as soon as possible to report the incident with details.**

**\_\_\_ #7 Collect equipment involved in the accident, and place out of service to ensure affected components are replaced after being evaluated by a competent person.**

**Important:**

* **Cellular phones must be maintained with adequate charge.**
* **Must know the location of the closest phone in advance when cellular phone service is not available in the area.**
* **Any surfaces contaminated with biohazards must be properly decontaminated by an individual trained in Bloodborne Pathogens.**

# APPENDIX D - SAFETY MEETING

**Note: Safety meetings are to be conducted daily before initiating project activities. Completed forms must be maintained and provided to Customer Representatives upon request.**

**DATE: PROJECT: ADDRESS: PROVINCE:**

**TOPICS DISCUSSED**

**\_\_\_ Emergency Plan**

**\_\_\_ Availability and Inspection of required equipment (e.g., Personal Protective Equipment, insulated tools)**

**\_\_\_ Results of Risk Assessment**

**\_\_\_ Access control to Work Area \_\_\_ Plan for today’s activities**

**ELECTRICAL**

**\_\_\_Identification of existing electrical hazards at the site**

**\_\_\_ Lockout/Tagout Procedures**

**\_\_\_ Approach Distances**

**We have participated in today’s safety meeting and agree with the topics discussed and the way necessary safety measures have been taken into consideration in the planning of today’s activities.**

**Employees**

**Name Signature**