

SERVICE SKILL C 01

DISCONNECTING SERVICES

ASSESSMENT CRITERIA

1. Identify / describe electrical service entrances by voltage and amperage.

The types of service entrances we are working with at this time are 30 amps to 200 amp single phase. The voltage applied is 120 volt 2 wire and 120/240 volt 3 wire single phase. **Service providers are only permitted to disconnect services that are mounted on a building. Service providers are not permitted to disconnect services at the weather head when mounted on utility poles.**

2. Identify types of service wires, including:
 - a. **Open Wire** - single conductor for each phase, separate attachment device at the pole and at the house end of service.
 - b. **Triplex** - bundled conductors wrapped around each other. Comprised of a neutral carrier [usually a steel core ACSR] and used for support and attachment. One or more covered conductors used to carry the hot or energized voltage to a load.
3. Describe fault current.

An undesired flow of current to ground. [An undesired situation caused by short circuits or mechanical breakdown.] May be low or high level depending on the situation. **MUST BE AVOIDED AT ALL TIMES. SERVICE CONDUCTORS DO NOT HAVE FUSING ON THE LOW SIDE OF TRANSFORMERS.**

4. Describe service wire sizes from section SS of the distribution standards manual.

Service wire sizes selected for use are based on length of service and amperage of the service entrance. Point of connection to supply is a factor, transformer pole of secondary bus connection. Service generally to a 100 amp service is supplied by # 2 triplex. Service from 125 A to 200 A service is supplied by # 1/0 triplex.

5. Describe / identify the tools needed to disconnect services including:
- Meter Removal Tool*** - safety related device used to remove meter.
 - Safety Glasses*** - required use while working on NSPI plant, eye protection in the event of electrical flash or contact with wires [electrical flash safety glasses may be needed for protection from electrical flash casing damage].
 - Pie Plate*** - slang name for a round cover placed over the meter base as a temporary cover to prevent unauthorized entree. Usually sealed when installed.
 - Flame Resistant Clothing*** - used as personnel protective equipment to help prevent clothing from catching on fire in the event of a fault causing flames or flash. Required equipment while working on energized meters or service entrance.
 - Ladder*** [insulated] - non-conducting ladder required when working on or near energized wires or devices.
 - Fall Arrest System*** - required to provide equipment which will prevent a person from falling. Fall protection required where a person is exposed to the hazard of falling from a work area that is 3 meters or more above the nearest safe surface or water.

6. Describe work area set-up and security / tools required.

Ensure public safety, notify others at the site of work aloft and stand clear.

Ensure proper tools are acquired and on hand for job.

Ensure all required PPEs are in use.

Ensure use of insulated ladder.

Check security of wires. i.e. condition, safety pole end, dead-end attachment, security of ends, identify neutral and hot conductors.

Ensure all tools required are on hand to perform work. i.e. - pliers, knife, continuity tester, insulated ladder, fall arrest if required.

7. Explain the importance of opening the customer's main switch, before removing meters or cutting services.

All electrical loads must be disconnected at the customer's main switch when meters or service is to be separated from the source of power. This action should reduce the current carried so as to lower the arc when separating wires or removing the meter. Current flow without this mechanical open will produce an arc. Arc size is dependent on load. Without disconnection current wants to continue and back feed is possible. ***MAIN SWITCH MUST BE OPENED.***

8. Demonstrate / describe disconnection and removal of service from electrical entrance listing the tools required.

Explained in 5.2 of work instructions.

Materials required - all PPE's, insulated ladder, fall arrest if required, gloves, safety glasses, arc flash full body clothing (example coveralls, jacket and long pants etc), pliers, tape.

RELATED SKILL D-37

CHECK / REMOVE METERS

1. Describe and Identify S and A base meters.

A Base -This style of meter involves open wiring to a terminal block on the bottom of the meter. Can be 2 wire self-contained or 3 wire self-contained [the entire load current passes through the meter]. Further use has been discontinued.

S Base - this is an outside application that plugs into a standard meter base attached to the wall of houses. Self-contained caring from 15 amps to 200 amps. The S base meter has blades on the back side which plug into the meter base jaws to complete the circuit. The meter base remains fixed to the structure with permanent service wiring connected to lugs inside the meter socket base. This is the standard used for all new and upgraded services.

2. Describe / demonstrate use of personal protective equipment required for application of meters.

Personal protective equipment required for work with meters is:

Hard hat, gloves, safety glasses, arc flash full body clothing (example coveralls, jacket and long pants, etc.), approved safety boots.

3. Describe / demonstrate the tools required to remove meters.

- Refer to work instructions SP-WI-001
- Remove S-base - 5.3
- Remove A-base - 5.4

4. Identify the safety hazards associated with removing meters and explain how to manage them.

S-base -inspect for improper fit and signs of rust.

Improper fit at base use caution when removing meter, apply meter removal tool.

Signs of rust that appear to have affected the meter base may allow the lugs to break free when removing the meter. If risk assessment shows need to stop the removal process then it shall be insured the main switch is open and the service shall be cut clear at the weather head.

Open main switch to reduce load, lessens load breaking at meter base.

When removing meter watch for broken lugs, if this appears stop process and have service wires cut clear at the weather head.

Never leave an open base unattended, cover with pie plate.

Services not being connected shall have the meter placed in a secure dry location until it is reinstalled. Preferred meter box.

A-base - removal - open main switch, this does not ensure that meter is disconnected check voltage before removing meter.

Maintain control of wires when removed from bottom of base, close proximity of hot side of switch, use caution.

Usually installed inside on customers walls - use caution not to damage interior of customers home.

5. Describe the criteria for handling and storage of meters in the field, as it relates to meter quality assurance program.

Following conformance to requirements.

Meeting measurement Canada requirements.

Following work instructions.

Handling meters to avoid damage, deterioration or loss.

Store meters in meter storage box.

Stored in a clean dry location, stored to prevent theft or abuse.

If storage on site is not secure then meter may be stored in a vehicle, use proper storage box, meter carton or custom designed compartments. Vehicle locked if unattended.

6. Review work instructions for S and A base meters.

RELATED SKILL A-12

IDENTIFY SAFETY HAZARDS AND SECURE WORK AREAS

1. Describe the purpose of doing risk assessments.

A proactive approach to controlling the work site. To assess work to be done for identification of hazards and to ensure proper controls are in place to manage the risk.

2. Describe when a risk assessment plan should be completed. On all tasks. Why?
 - To determine the possibility of undesired events, loss or harm.
 - To provide a system in which to make a decision as to whether the risk's are acceptably small and can be ignored or whether action must be taken to reduce the risk.
3. Describe what to look for and consider when conducting a risk assessment and a resource that you can use as a checklist.

Resource is the risk assessment for service providers - SP-WI- 001 Pages 5 & 6.
Safety basics for hazard control

- Identify the Hazards and Assess to Determine the Risk
 - Eliminate the Hazard Where Practical
 - Control the Hazards When They Cannot Be Eliminated
4. Describe the three main steps in assessing the risk of a job.
Combined with # 3 above factor in the:
 1. **Severity** - losses from injury or damage as a result of wrong performance of the task.
 2. **Probability** - what is the likelihood of an accident?
 3. **Frequency** - how much exposure is there to energy of substance?
 5. Describe methods that can be used to control /eliminate hazards that are identified
 - Controlling hazards - determine how to eliminate or manage these hazards.

- Have you checked equipment to be used? Condition and limitations.
 - Reviewed work methods, work instructions and methods.
 - Your ability to perform the work
 - Personal worries
 - Are you trained in the use of the equipment?
 - Considered how weather may affect the job
 - Presence of the public and other trades people or other work forces
 - Ensure all workers are informed of risks and understand work to be done
6. Describe managing the work area in relation to emergency contacts and methods of communications.

Emergency contacts - need to know NSPI and 911

- } NSP call centre
- } emergency response #'s

Methods of communication can be land line, cell phone or your company radio.

There needs to be a method of communication when performing work on overhead wires.

7. Review the risk assessment to be used by service providers.
8. Describe tailboard discussions that would result from risk assessments.

By identifying hazards and risks, prior to work commencing, a job safety plan can be prepared. Following the job safety plan can prevent injury, damage and ensures the job goes smoothly. The steps in an assessment are normally:

1. Identify the hazards in the environment the work will be carried out; this includes physical environment such as space available, access, process lines, sources of energy, traffic, terrain, etc.

2. Identify the hazards involved in each of the tasks being performed as part of the job. This assessment must cover the overall job. Each major sub task must also be assessed.
3. Analyze the risk involved with each identified hazard based on severity of a potential incident and the likelihood of one happening. Note that the hazards that may cause severe injury or damage must be considered HIGH RISK even if they are unlikely to occur.

GENERAL SAFETY SERVICE PROVIDERS

1. Service providers shall be thoroughly familiar with and observe the safety rules and work instructions applied to their duties. Ignorance of the safety rules / work instructions shall not be accepted as an excuse for violations.
2. Service providers shall report to NSP any unsafe conditions.
3. Service providers shall report any incidents that may occur in the field to NSP.
4. Tools and equipment shall be maintained in proper working order.
5. Required personnel protective equipment shall be worn at all times when performing work on meters and overhead services.
6. All debris created at the work site shall be picked up and disposed of in the proper manner.
7. Inspections by an NSP representative or designate will be conducted to ensure compliance with the program.
8. Before commencing a job, the risk assessment for service providers shall be completed on the Risk Assessment form.
9. Only accredited individuals shall perform work on services and meters.
10. Safety rules shall be enforced by NSP representatives. Service Providers violating the rules shall be subject to remedial action.
11. It is every service provider's responsibility to ensure their personal safety and that of their fellow workers.
12. Service providers shall report any customer or environmental concerns discovered during the course of their work to a NSP representative or designate.

SAFETY ON LADDERS

1. Wooden ladders shall not be painted so as to obscure a defect, only a clear non-conductive finish shall be used.
2. A ladder shall not be placed in front of a door opening towards the ladder unless the door is open, locked or guarded.
3. When ascending or descending a ladder, a person shall face the ladder and grip the hand rails on both sides. No attempt shall be made to carry tools or equipment by hand while climbing.
4. Only one person shall be on a ladder at one time.
5. Portable straight ladders shall not be climbed where the person's feet are above the third step from the top.
6. When dismounting from a ladder at an elevated position, such as a roof, a person shall ensure the ladder extends at least 1 M [39 in.] above the dismount position.
7. Only portable straight ladders and stepladders equipped with safety feet shall be used. Where safety feet do not overcome the hazard of slipping, the ladder shall be securely held in place by tying or having another person steady the base of the ladder.
8. The base of the ladder shall not be placed less than 1/4 its length from the wall or supporting surface and not further away than 1/3 the length.
9. Ladders shall not be placed against glass surfaces.
10. Ladders shall not be used as scaffolds or runways.
11. Only approved ladders shall be used. Ladders must meet the specifications of the N.S. Occupational Health and Safety Act. Boxes, crates, chairs, etc., shall not be used as substitutes for a ladder.
12. The top step of a step ladder shall not be used, except for platform ladders.
13. Stepladder legs shall be fully spread and locking mechanisms engaged when the ladder is in use.

14. The tray on a stepladder shall not be used as a step.
15. When a person works from a stepladder over 3 M [10 ft.] high, the ladder shall be held by another person.
16. Ladders shall not be placed on boxes, tables or vehicles to gain height, nor shall they be placed on or against moving objects.
17. Fiberglass ladders are the only type to be used around energized equipment.