

# Safety handbook

2020 Edition

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# LIFE SAVING RULES

We live by the Life Saving Rules so that everyone goes home safe, every day.

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## 1.0 Introduction

The purpose of this Safety Handbook is to provide all personnel, including TC Energy personnel, contractors and subcontractors, under TC Energy control/direction, with the basic safety principles and health and safety requirements that apply at TC Energy managed facilities, work locations and project sites. This handbook is not for Prime/General Contractor use.

TC Energy is committed to maintaining safe, healthy and environmentally friendly conditions for all personnel and the general public. To achieve this TC Energy mandates specific work practices, policies, programs and procedures that meet or exceed all applicable regulatory requirements related to health and safety.

TC Energy is committed to the principle of “All Occupational Injuries and Illnesses are Preventable.” We believe that excellence in health and safety practices is an essential part of our business and that incident prevention is the responsibility of everyone working for TC Energy.

No job is so urgent that it cannot be done safely. Unsafe conditions and/or work practices are never acceptable and must be resolved before work can safely continue.

While this Safety Handbook contains rules and safe work practices for many common work situations, it should not be considered all encompassing. Contact your supervisor and/or a TC Energy Authorized Representative for advice and information if there is any uncertainty about a safe work practice or if a potentially unsafe working condition arises. When a situation arises where there are no relevant guidelines, all individuals remain responsible for ensuring the work is conducted with due regard to safety. Information concerning safe practices is also available in various TC Energy Operating Policies and Procedures.

## **TC Energy's Life Saving Rules**

TC Energy's Life Saving Rules guide the way we work and help us hold each other accountable to the highest possible safety standards, including all TC Energy policies and safety procedures. The Life Saving Rules were developed to highlight the high-risk activities that are part of the work we do every day and emphasize the importance of following the risk control measures we have in place to manage them. Adherence to the Life Saving Rules is not optional and is a condition of conducting business with TC Energy. Personnel knowingly violating a Life Saving Rule will be subject to disciplinary action up to and including termination of employment or removal from TC Energy worksites.

### **TC Energy's Life Saving Rules are as follows:**

1. We will drive safely and without distraction.
2. We will use the appropriate Personal Protective Equipment.
3. We will conduct a pre Job Safety Analysis (JSA).
4. We will work with a valid work permit when required.
5. We will obtain authorization before entering a confined space.
6. We will verify isolation before work begins.
7. We will protect ourselves against a fall when working at heights.
8. We will follow prescribed lift plans and techniques.
9. We will control excavations and ground disturbances.

## 2.0 TC Energy's safety behaviors

At TC Energy, we are committed to maintaining a safe and healthy workplace for all employees, contractors and visitors. We believe all incidents are preventable and we consistently work towards continuous improvement of our safety performance.

The following safety behaviors contribute towards achievement of this commitment:

- Take personal ownership of your safety and look out for others.
- Ensure you are properly trained before starting work.
- Understand your limitations.
- Know the health and safety information relevant to your work.
- Identify and minimize safety risks.
- Comply with all applicable laws, regulations and company safety policies and procedures.
- Exercise your right and responsibility to stop or refuse unsafe work or work conditions.
- Wear the Personal Protective Equipment appropriate for the work you are doing.
- Ensure you maintain your worksite, equipment and tools in a manner to prevent injuries and Incidents.
- Report all incidents and near hits.
- Discuss any issues or concerns regarding any aspect of safety with your supervisor or the TC Energy Authorized Representative.



## 3.0 Health, safety and environmental commitment

TC Energy is committed to being an industry leader in Health, Safety (Occupational and Process) and Environmental practices, to maintaining a safe and healthy workplace for our people, to sustaining the safety and integrity of our operating assets and to protecting the environment.

The following principles guide TC Energy in meeting our commitment:

- We believe all incidents are preventable and we promote health, safety and environmental excellence on and off the job;
- We conduct our business in a manner that meets or exceeds all applicable laws and regulations in order to minimize risk to our personnel, the public, and the environment;
- We ensure that all personnel understand and accept their respective roles and responsibilities in continuously improving our Health, Safety and Environmental performance, as well as holding one another accountable relative to such roles and responsibilities;
- We endeavor to only do business with companies and contractors that share our Health, Safety and Environment commitment and we regularly assess their performance;
- We use our influence with companies in which we have partial ownership, to meet our Health, Safety and Environment Commitment Statement;
- We respect the diverse cultures and communities in which we operate by fostering open communication and by working with the public, the scientific community, policy makers and various stakeholder groups to safeguard our workplaces and the integrity of our assets, protect the environment and ensure business sustainability;
- We expect personnel to report and communicate risks, potential hazards, incidents and near hits. We take all reports seriously and fully investigate to identify facts relative to the reporting of all incidents and issues; and
- All personnel making reports in good faith will be protected. Good faith reporting means an open, honest, fair and reasonable report without intentional malice or ulterior motive. Personnel who seek to exempt their own negligence or willful misconduct by making a false or malicious report will not be protected.

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**At TC Energy we believe all personnel are responsible and accountable for Health, Safety and Environment performance.**

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## 4.0 Roles, accountabilities and responsibilities

### 4.1 TC Energy

As far as reasonably practical, TC Energy is responsible for ensuring the health and safety of the workers engaged in the work of that employer.

Specifically, all employer and personnel at TC Energy managed facilities, work locations and project sites are responsible for:

- Ensuring that all personnel under their direct control comply with all of TC Energy's health and safety specifications and relevant TC Energy Operating Procedures (TOPs) and policy (TPPs) as outlined in this Safety Handbook, or as set out in any relevant contract, or as directed by the TC Energy Authorized Representative;
- Ensuring that all personnel under their direct control comply with the relevant TC Energy Alcohol and Drug Policy, and Harassment-Free Workplace Policy;
- Ensuring that all work activities are carried out in a manner that will not compromise the health and safety of any individual;
- Taking additional measures necessary to prevent property damage, injury and illness to worksite personnel and the general public;
- Communicating to their personnel, as well as others present at worksites, applicable safety information that will allow operations to be performed in a safe, healthy and environmentally responsible manner;
- Consulting with the TC Energy Authorized Representative as required when in doubt about any matter pertaining to health and safety;
- Inspecting and maintaining their equipment in a safe operating condition as specified by regulations and the manufacturer;
- Ensuring that job safety analysis and proper work authorizations are performed as required, and that hazardous conditions or unsafe acts are identified, assessed and eliminated or controlled;
- Ensuring that all contractors are prequalified to TC Energy HSE expectations prior to the start of any work activities;
- Ensuring that all personnel under their direct control successfully complete TC Energy's Employee/Visitor/Contractor Health, Safety and Environment orientation and carry their current orientation card; and,
- Ensuring that management and supervisory personnel are competent and have appropriate health and safety leadership training.

## 4.2 Individual personnel

All personnel are responsible for:

- Taking reasonable care to protect their health and safety, the health and safety of other workers and/or anyone exposed to construction activities;
- Complying with and performing work activities according to established safety standards, programs, procedures and practices;
- Reporting all unsafe practices or hazardous conditions (including any defects in any equipment or protective device), near hits and incidents to their supervisor or to the TC Energy Authorized Representative;
- Using and maintaining designated safety and Personal Protective Equipment as required;
- Carrying a current TC Energy Health, Safety and Environment Field Orientation card (valid for 2 years for contractors and 3 years for employees from date issued);
- Carrying trade tickets certifying appropriate qualification to perform the assigned work;
- Asking their supervisor or the TC Energy Authorized Representative for clarification and direction when unsure about a specific job or work task; and,
- Ensuring Operator Qualification (OQ) certification on OQ tasks (U.S. Only).

All personnel have the:

- Right, responsibility and obligation to refuse and report work they consider imminently dangerous to the environment, property, personnel or the general public;
- Right to know what the workplace health and safety hazards are, appropriate precautions to take, and procedures to follow in the event of an incident;
- Right to participate in the worksite health and safety program; and,
- Right to protection from retaliation for exercising their rights.

## 4.3 Visitors

All visitors to TC Energy managed facilities, work locations, or project sites are required to report to the designated TC Energy office/Representative for site orientation. Visitors are not allowed in work areas without authorization from a TC Energy Authorized Representative and must be accompanied by an escort. Work areas include compressor, meter and pump stations, hydro facilities, gas storage facilities, shops, yards, warehouses and operational worksites, etc.

When visiting a TC Energy managed facility, work location or project site, visitors shall:

- Follow the instructions of the TC Energy Authorized Representative or escort;
- Wear Personal Protective Equipment when required; and,
- Remain with the escort and not walk into a worksite unescorted.

## 5.0 Personal conduct

All personnel shall comply with the following personal conduct rules:

- Comply with TC Energy's Alcohol and Drug Policies which prohibit the use, possession, sale, manufacture or distribution of alcohol or drugs while on TC Energy business or on TC Energy sites, including any work vehicle or equipment. Personnel must report and remain fit for work throughout the work period;
- Report fit to work;
- Comply with TC Energy's Weapons Free Workplace Policy which prohibits the possession, use, and transportation of any dangerous or potentially dangerous weapons when conducting TC Energy business. This prohibition also applies to all personal vehicles being used in the course of business for TC Energy, and, except where permitted by applicable U.S. state law, all privately-owned motor vehicles parked on TC Energy property. In those U.S. states that authorize firearms to remain in personal vehicles parked on TC Energy property, the vehicle must be locked; the stored firearms must be hidden from plain view and be kept within a locked case or container within the vehicle. Personnel licensed to carry firearms or weapons are NOT exempt from this policy;
- Behave in a controlled manner. Harassment, horseplay and practical jokes can cause serious injuries and unwarranted work disruptions;
- Where there is a danger of contact with moving parts of machinery, or in any work process where similar work hazards exist including fabrication shops and field work personnel:
  - Will not wear loose fitting clothing;
  - Will completely confine or cut short head and facial hair; and,
  - Will not wear dangling neckwear, jewelry, or other similar items (Medic Alert may be worn on a chain under clothing);
- Comply with TC Energy's Smoking Policy which restricts smoking to designated smoking areas; and,
- Carry only safety matches or safety lighters within hazardous areas or areas with potentially hazardous atmospheres. Do not carry any matches, lighters or other potential sources of ignition (cellular phones, pagers & smart phones) into a hazardous atmosphere.

Weapons in the Workplace Exemptions include personnel who use certain tools to perform the duties of their Job, examples include:

- Personnel may possess and use knives to perform the duties of their job.
- Field personnel who, in the course of performing the duties of their job, are allowed to carry a weapon for safety or corporate security purposes.
- Police officers, members of the military or other government agents visiting TC Energy properties in the course of their duties.

## 6.0 Non-compliance and disciplinary measures

Personnel are expected to be thoroughly familiar with and follow all safety rules and regulations outlined in this Safety Handbook.

Disciplinary measures and penalties for non-conformance with TC Energy's safety requirements and/or State/Provincial/Federal Occupational Health & Safety Regulations for all personnel engaged in the work shall be strictly enforced.

Violation of the following (where applicable) may be cause for removal of personnel from the worksite:

- Approved Class E protective headwear with side impact protection must be worn at all times in the way they were intended to be worn;
- National Institute of Occupational Health and Safety (NIOSH) approved Respiratory Protective Equipment (RPE) must be worn when engineering and/or administrative controls alone are not sufficient or feasible to protect Personnel from airborne respiratory hazards;
- Approved Class 1 (green triangle) safety footwear with a minimum 6in/15cm high top measured from the top of the sole must be worn at all times;
- Approved eye protection with rigid side shields shall be worn at all times;
- Proper dress:
  - Shirt (minimum 4in/10 cm sleeve) and pants (no shorts) made of natural fibres (no synthetic materials such as nylon) shall be worn;
- Face shields must be worn when flying debris hazards exists, e.g. grinding or wire brushing welds, using chop or masonry saws or drilling, etc;
- The use of headphones is prohibited;
- Horseplay, running, and wrestling on the worksite is prohibited;
- Failure to use seatbelts when and where required; and,
- Operating equipment and/or machinery in a manner that may cause impact on the environment or historical resources.

Violation of the following may be cause for permanent removal of personnel from the worksite:

- Under the influence of drugs or alcohol;
- Harassment, horseplay and/or disregard for health, safety and environment procedures; and,
- Insubordination.

Violation of the following (where applicable) may be cause to stop the use of or remove equipment from the worksite:

- Proper guards or shrouds shall be in place;
- Backup alarms on tracked equipment to be working at all times;
- Machinery must be equipped with canopies that provide clear operator vision;
- Welding units shall be equipped with fire extinguishers;
- Tools or equipment shall not be defective; and,
- Tools or equipment that may pose a threat to the environment.

The following may be cause for construction shutdown:

- Any unsafe condition or practice, as determined by TC Energy's Authorized Representative, until such condition is remedied and/or controlled.
- Construction activities in non-compliance with applicable regulatory requirements.
- A serious incident that needs the attention of everyone at the site, in order to prevent a repeat incident.

A typical escalation process may be used by TC Energy to administer disciplinary action against the Contractor and their employees unless the infraction warrants immediate termination:

1. Written Warning - through a non-compliance/non-conformance report;
2. Suspension; and,
3. Discharge/Termination.

## 7.0 Health, safety and environment field orientations and training

Health, Safety and Environmental Field Orientation training modules and Safety training assist in providing the skills necessary to complete work activities in a competent, efficient and safe manner.

### 7.1 Health, Safety and Environment Field Orientation Training Modules

All Field Employees, Internal Contractors (contingent workers), as well as Office personnel who will be accessing a TC Energy Field location and worksites are required to complete TC Energy's current Health, Safety and Environment Field Orientation training module. This orientation will help individuals prepare for a visit or to work at a TC Energy worksite.

External Contractors will complete the Health, Safety and Environment Field Orientation – External Contractor training module online at: <https://tc.icomproductions.ca>.

These Health, Safety and Environment Orientation modules are not intended to replace the Site Specific Orientation that will be provided at each TC Energy facility, worksite or project location.

TC Energy personnel and External Contractors are required to show proof (either a certificate of completion or wallet card) that they have completed the appropriate Health, Safety and Environment Orientation when they arrive at a TC Energy worksite.

### 7.2 Site Specific Orientation

Before beginning at a new job or worksite, all personnel must attend a TC Energy approved Site Specific Employee/Visitor/Contractor Orientation, which covers:

- Known safety hazards to which personnel may be exposed to;
- Appropriate precautionary control measures for such hazards;
- Site specific safety requirements (Safety Management Plan and/or Project/Site Specific Safety Plan) that may exceed regulatory requirements;
- Emergency Response; and,
- Site security and control.

### 7.3 Safety training

TC Energy shall ensure that their personnel are adequately qualified and trained to perform their work. Personnel shall meet all regulatory training requirements, all industry standard safety training requirements and all TC Energy safety training requirements. Copies of individual training records shall be provided to TC Energy upon request.

The following table illustrates, but is not limited to, the types of training that may be required to perform specific types of work:

- ATV/UTV/Snowmobile
- Health and Leadership Safety Training
- Collision Avoidance/Defensive Driving
- Excavation and Trenching
- Confined Space Entry and Rescue
- Welding and Cutting
- Crane Operations
- Scaffolding
- Electrical Safety/Arc Flash
- Personal Protective Equipment
- Signaling
- Forklift Operations
- Rigging Safety
- Ground Disturbance
- Pipe and Cable Locating
- Fall Protection
- Ergonomics
- Radiation Safety
- Respiratory Protection
- Lock-out and Tag-out Systems
- Standard First Aid and CPR
- Fire Fighting and Suppression
- Portable Gas Detection (Make and Model)
- Silica Dust
- Substance Abuse Systems
- Work Permitting and Authorization
- HAZCOM/WHMIS (GHS)
- Working at Heights
- Emergency Action Plans
- Reporting (hazards, spills, incidents and near hits)
- HAZWOPER
- Hazard Identification, Assessment and Control
- Operator Qualification (OQ)
- Hand and Power Tools
- Bloodborne Pathogens
- Portable Fire Extinguishers
- Process Safety Management
- Lead
- Asbestos
- Mercury
- Benzene/Hydrocarbons
- Naturally Occurring Radioactive Material (NORM)
- PCBs
- HAZMAT/TDG
- Construction Safety Training
- Diving (PADI, NAUI)
- Hearing Conservation
- Incident Investigation
- H2S Alive or equivalent



## 8.0 Safety communications, work permitting and job safety analysis

To ensure awareness of safety issues, hazards, objectives and initiatives, TC Energy uses several formalized processes for hazard identification and communication such as:

- Safety Meetings, Pre-Job, Tailgate/Toolbox meetings;
- Job Safety Analysis/Hazard Assessments; and,
- Self Job Task Analysis.

### 8.1 Safety Meetings

Safety meetings promote safety awareness by identifying and reviewing unsafe/safe conditions, unsafe/safe practices, incidents and near hits. They offer a forum to voice concerns and recommend corrective action measures, review and discuss safety procedures and standards, and review and discuss safety requirements or any information that pertains to health and safety. Attendance records and minutes of all safety meetings shall be taken and kept.

#### 8.1.1 Pre-Job Meetings

Pre-Job meetings are held prior to beginning all work tasks at the beginning of each project, prior to performing any job that may be unfamiliar to personnel performing the work, and whenever there is a change in work scope. All contractors, subcontractors and TC Energy personnel participating in the work shall attend. The TC Energy Authorized Representative shall also be invited to attend.

#### 8.1.2 Safety Meetings

Once work is underway, TC Energy shall hold safety meetings at least once per month, but weekly is preferred with all workers and applicable TC Energy Authorized Representative(s) on the site.

Agendas shall be prepared in advance for the meetings.

#### 8.1.3 Toolbox / Tailgate Meetings

TC Energy shall conduct daily toolbox safety meeting prior to the beginning of each shift to discuss safety items from the previous day, to pre-plan for safety for the commencement of the present shift, to discuss housekeeping, and to check for defective tools and equipment. Minutes shall be taken and kept.

## 8.2 Work permitting and job safety analysis

Work authorization is required when work is performed on TC Energy facilities. No work shall be done without the written approval of a TC Energy Authorized Representative under an issued General Work Permit and subsequent permit(s). The General Work Permit and subsequent permit(s) will set out detailed instructions and specify the validity period of the General Work Permit. General Work Permit's may be valid for the prescribed time.

Where there is any change to an agreed upon work schedule/scope or before re-commencing work after an absence in excess of 24 hours, the TC Energy Authorized Representative must be contacted for re-authorization.

All authorized work activities shall have a Job Safety Analysis (JSA) conducted for that work. (e.g. confined space entry, excavation, critical lifts, hot work, elevated work, electrical work, mechanical cuts, pipeline crossings, work over pressurized pipeline, exposure to toxic or hazardous chemicals/materials/substances, lockout/tagout, and working near hazardous above ground facilities, etc.).

A JSA is a job site or work activity analysis of the hazards workers may be exposed to while conducting the specific tasks associated with their work.

In addition, a JSA will be developed when the following conditions apply:

- **Severity potential** – Some jobs may not have a history of incidents but may have the potential for causing severe harm to people, property, production loss and environment (i.e. Hot Work, use of heavy mobile equipment, electrical work involving high voltages, etc.).
- **New jobs or tasks (unfamiliar to employees and work crews)** – Changes in equipment or in processes obviously have no history of incidents, but the incident potential may not be fully appreciated. A JSA of every new job should be made as soon as the job is created.
- **Large work force (not engaged in office based activities)** – When project activities require a large work force and/or significant resources (i.e. contractors) the potential for high-risk situations increases warranting additional job site analysis. Work involving a crew of 5 or more is considered a large work force.
- **Frequency and severity of incidents** – If the job has a history of incidents or near hits with the potential or actual severity of major or critical; or if the job has a significant number of incidents or near hits associated (e.g. lesser degree of severity).
  - The greater the importance for developing a JSA.
  - If you have previous experience with an incident you believe is associated with this job. Take this learning into consideration as you develop the JSA for your current work activities.

- **Change management is required** – At anytime when the personnel responsible for conducting the work are required to “manage change”, the value of completing a JSA increases. Change management can include:
  - **Unplanned change in the Scope of Work**
  - **Significant changes in the worksite environment** – that was not anticipated and that change directly influence how work can proceed (changes scope, change in personnel, weather, equipment, procedure, etc.).
  - **Unplanned change in work crew personnel** – particularly when experience, competency, and site orientation is affected.
- **Permitted Work** – A JSA is necessary for work authorization required situations in which the hazards and controls are not completely addressed on the General Work Permit or other documents.

### 8.3 Self-job task analysis (check list)

- I know my responsibilities under the applicable Health and Safety Acts, Regulations and Codes;
- I have attended the tailgate or toolbox safety meeting this morning;
- I know if I require a work permit before starting work. I have reviewed and signed onto the work permit that I am working under and understand its contents;
- I have discussed the work to be done with my supervisor or TC Energy Authorized Representative;
- I am wearing the appropriate clothing and I have the necessary Personal Protective Equipment to do the work safely. I have checked this clothing and equipment to ensure it will protect me if I need it;
- I have the necessary tools and associated equipment to do the job. I have checked these tools and equipment to ensure that they are safe to use. I have identified the risks associated with their use and the activity I am about to perform;
- I have checked to see what other people and equipment are working around me and have communicated with them;
- I have checked my work area to identify any unsafe conditions. I will correct any unsafe conditions. Those that I personally cannot correct, I will ensure my supervisor is notified because I will not work under unsafe conditions;
- I have specifically checked for tripping/slipping hazards in my work area;
- I know what to do in the event of an emergency;
- I know what to do if I sustain an injury;
- I know I must keep my work area clean and dispose of debris as required throughout the day. I know that I must separate metal waste from general garbage. The material I am handling is neatly stacked and out of the way;
- I know that extension cords and hoses that I may be using are in good, safe condition. I will ensure that they are not strung or laid in walkways; and,
- I have read the Safety Data Sheet (SDS) for the product/chemical I will be using and I have the appropriate Personal Protective Equipment as set out in the SDS. I also know what labels must be affixed on the container and how to dispose of any leftover product safely. I know how to report chemical spills.

## 9.0 Emergency preparedness and response

### 9.1 Emergency management system standards

Emergency response plans and the utilization of the Incident Command System are in place to protect the health, safety and welfare of people, or to limit damage to property, company operations and the environment. Emergency preparedness plans and procedures recognize the needs of TC Energy, its employees, and the community-at-large as well as regulatory and legislative requirements.

The emergency preparedness program includes:

- The identification of potential emergencies arising from human activity or natural peril that is based on a formalized risk determination process (i.e. Hazardous Assessments, tabletop reviews, emergency event analysis, etc.).
- Assignment of responsibilities (i.e. coordination, emergency call-out, perimeter/visitor control, media contact, and contractors).
- The identification of the locations of isolation points for sources of energy (i.e. hydrocarbons, chemicals, electrical).
- Identification of locations of emergency response equipment.
- Coordination and integration of the emergency response plan with Corporate/Houston plans and the Emergency Plans of local industries and with municipal and other government agencies (i.e. mutual aid) as appropriate.
- Identification of requirements for outside assistance/emergency response (i.e. local fire departments, emergency response contractors, police departments, industrial co-operatives, area mapping, hospitals).
- Communication with employees and the public during the emergency (i.e. facility evacuation procedures, cleanup and disposal, media response).
- The reporting of circumstances to appropriate employees (e.g. Incident Command Post, Corporate/Houston, etc.), residents, and government agencies.
- Requirements for follow-up investigations, communication, and reporting.
- Process for establishing Emergency Operations Center's stress management intervention, if required.
- Requirements for liaison with government or other agencies.
- Requirements for providing assistance to persons dislocated by the emergency.
- All phases of an emergency, including discovery and alert, evacuation of personnel, containment and post-emergency analysis (debriefing).
- Maps of fixed facilities that show the location of medical and first-aid facilities and equipment, fire control equipment, evacuation routes, rendezvous and gathering points, location and contents of hazardous materials and products stored on-site, and the location of the emergency operations center.
- An information system to record emergency data.
- The communication of plans in an appropriate manner.

- Training requirements to ensure employees are trained and outside resource personnel are aware of their emergency preparedness roles and responsibilities. Emergency exercises must be conducted annually to test local Emergency Plans and train employees on the implementation of the plan.
- Review of tests, drills, and actual emergency situations to correct deficiencies in the emergency response plan and communicate any changes to appropriate employees, local industries, and municipal and government agencies.
- A system to evaluate emergency preparedness and response (plan review and updating, training).

Anyone who comes across an emergency involving TC Energy should:

- Not put themselves at risk.
- Assess the situation. If Emergency Services (fire, police, ambulance departments) are required and not already at the site, contact them immediately.
- Call TC Energy’s emergency phone number and provide the particulars of the event.

**The telephone numbers listed below show the best methods to contact each asset’s Emergency Line,**

Asset	Telephone Number
Canada Pipelines	
<ul style="list-style-type: none"> <li>• Costal Gas Link</li> <li>• Foothills System</li> <li>• Grand Rapids Pipeline</li> <li>• Keystone (CA Oil) Pipeline System</li> <li>• MacKay East Pipeline</li> <li>• Northern Courier Pipeline</li> <li>• Nova Gas Transmission Ltd. System (NGTL)</li> <li>• TransCanada Pipelines Ltd. (TCPL)</li> <li>• Trans Québec and Maritimes Pipeline (TQM)</li> <li>• White Spruce Pipeline</li> </ul>	1-888-982-7222
Canada Power & Storage	
<ul style="list-style-type: none"> <li>• Gas Storage (Edson, Crossfield)</li> <li>• Co-Generation (Host Facilities)</li> <li>• Becancour Generating Station</li> </ul>	1-866-920-9996
US Liquids Pipelines	
<ul style="list-style-type: none"> <li>• TC Oil Pipeline Operations Inc</li> <li>• Keystone (US Oil) Pipeline System</li> <li>• Gulf Coast Pipeline (Keystone Extension)</li> </ul>	1-866-920-0007

Asset	Telephone Number
US Gas West Pipelines	
<ul style="list-style-type: none"> <li>• American Natural Resources Corporation</li> <li>• ANR Storage</li> <li>• Bison Pipeline</li> <li>• Blue Lake Gas Storage</li> <li>• Eaton Rapids Gas Storage Facilities</li> <li>• Gas Transmission Northwest</li> <li>• Great Lakes Gas Transmission Company</li> <li>• Iroquois Gas Transmission System</li> <li>• North Baja Pipeline LLC</li> <li>• Northern Border Pipeline Company</li> <li>• Tuscarora Gas Transmission Company</li> </ul>	1-800-447-8066
US Gas East Pipelines	
<ul style="list-style-type: none"> <li>• Columbia Gulf Transmission, LLC</li> </ul>	1-866-485-3427
<ul style="list-style-type: none"> <li>• Columbia Gas Transmission, LLC (2616)</li> <li>• Crossroads Pipeline Company, LLC (993)</li> <li>• Hardy Gas Storage Company</li> <li>• Millennium Pipeline</li> </ul>	1-800-835-7191
<ul style="list-style-type: none"> <li>• Portland Natural Gas Transmission System (PNGTS)</li> </ul>	1-800-830-9865
Mexico	
<ul style="list-style-type: none"> <li>• All Gas Pipelines (EOM – TGNH – IEM – IMG; Guadalajara; Mazatlan; Sur de Texas – Tuxpan; Tamazunchale; Topolobampo; Tuxpan – Tula; Villa de Reyes)</li> </ul>	From MEX: 01-800-111-3333 From CAN/USA: +011-52-55-5093-4541

- Administer First Aid if safe and if you are trained and qualified to do so;
- If it is a facility emergency, pipe rupture or fire, establish a safe zone (minimum 2,500 ft/750 m from the emergency site);
- Work with and assist the Emergency Services groups; and,
- Refer to TC Energy’s First Responder Kit for further information (the kit can be found in all TC Energy’s vehicles).

Alternatively, if you are working under the Active Control of a TC Energy Authorized Representative and come across an emergency involving TC Energy:

- There is one or more clearly marked emergency gathering areas at each TC Energy facility. The TC Energy Authorized Representative will show you which area you are to go to if an emergency occurs;
- Since the emergency alarms used at TC Energy facilities may vary from one region to another, they will be explained to you by the TC Energy Authorized Representative;
- If an emergency alarm does sound, shut off all spark-producing equipment, put on your hearing protection, and proceed to your designated gathering area. If it’s necessary to

evacuate the site, a TC Energy Authorized Representative will coordinate your movement to a safe location;

- Do not return to the site until the TC Energy Authorized Representative indicates it is safe to do so, or until the all-clear signal is heard; and,
- The all-clear signal, exit gates and other items specific to the worksite will be explained by the TC Energy Authorized Representative during the Site Specific Orientation.

## 9.2 Contractor's emergency preparedness and response plans

If the contractor is required to provide an emergency response plan it must be specific to each project, the Contractor shall prepare a written, comprehensive, emergency plan for the location or site prior to commencement of the work. The plan will be developed based on the anticipated types of emergencies that may occur while conducting the work. The key personnel and equipment needed to carry out the plans are to be identified. These individuals are to have a thorough knowledge of the plans and their responsibilities.

**This plan will be designated such that integration with TC Energy's emergency response plans is seamless.**

The emergency plan shall be posted in the workplace and the plan shall outline in detail:

- Key personnel and their responsibilities;
- Means of tracking all Worksite personnel for communication purposes;
- Equipment and emergency supplies (first aid provisions, fire extinguishers etc. in accordance with regulatory requirements);
- Equipment inspection procedures;
- Fire prevention procedures (extinguisher inspections schedules, storage requirements for flammable and combustible substances, hazard identification etc.);
- Safe shutdown and start up procedures;
- Notification and reporting procedures;
- Evacuation plan – including muster points, third party emergency response information, etc.;
- 24 hour emergency communication link;
- Return to work procedures;
- Emergency Checklists;
- Plans for training, drills and exercises and for ensuring emergency information is readily available to all worksite personnel (emergency numbers posted by all telephones, etc.); and,
- Where the Contractor is performing duties on a TC Energy Operational Facility, the Contractor will ensure their emergency response plan includes notification to the TC Energy Authorized site representative.

Each worksite and vehicle shall be equipped with suitable emergency supplies that meet applicable regulations. Emergency supplies include at a minimum:

- First Aid provisions;
- Fire extinguishers and blankets;
- Telephone, two-way radio or cellular phone; and,
- Copies of emergency procedures and lists of emergency contacts.

All emergency equipment shall be tested regularly, replaced or recharged as required. All emergencies shall be reported and investigated.

### 9.3 Working alone

TC Energy has the responsibility to review situations and tasks where a worker may be Working Alone. Perform, document identify and assess exposure to Working Alone situations as a part of the JSA or hazard assessment process.

“Working Alone” refers to situations where a worker is working in isolation at a worksite or traveling alone on TC Energy business; in circumstances where assistance is not readily available in the event of an injury, illness or emergency.

Where Working Alone has been identified, TC Energy must:

**1. Implement Control Measures**

Take practical steps to eliminate the Working Alone hazard. If it is not practicable to do so, procedures must be implemented to reduce or control the hazards.

**2. Initiate Communication System**

Have a communication system for workers to contact other people who can respond to the employees’ need. The system must be appropriate to the hazards involved.

**3. Ensure employees are trained and educated**

Ensure their workers are trained and educated so they can perform their jobs safely. Workers must be made aware of the hazards of Working Alone and the preventative steps that can be taken to reduce or eliminate potential risks.

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**In Canada and the U.S., call Toll Free 1-877-877-0444 and  
in Canada near U.S. border 1-403-250-0345 or Refer to  
TC Energy’s Working Alone Program ID#003743627**

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In Mexico, employees and in-house contractors must follow the personal safety and security verification “Check in / Check out” through the Security Control Centre (SCC) which is a 24/7 security resource aimed at supporting TC Energy employees and in-house contractors traveling to and within Mexico.

#### SCC Contact Numbers

##### General Security Assistance

(Including Check in/Check out Procedure)

- From a Mexican landline or Cellphone..... 55 5125 1186
- From a Canadian Cellphone within Mexico..... 00 52 55 5125 1186
- From a U.S Cellphone within Mexico..... 011 521 55 5125 1186

##### Security Related Emergencies

- From a Mexican landline or Cellphone..... 800 999 0304
- From a Canadian Cellphone within Mexico..... 800 999 0304
- From a U.S Cellphone within Mexico..... 800 999 0304



## 9.4 Security Incidents

Refer to TC Energy's Security Threats Procedure ID# 005783557

### Hostile Intruder

Most common is an active shooter. There are three actions to assist in these situations (Evacuate, Barricade, Take Action to Survive). In addition, any combination of these actions can be utilized.

Evacuate – If there is an escape path, attempt to evacuate.

- Evacuate whether others agree or not
- Leave belongings behind
- Help others escape if possible
- Prevent others from entering area
- Call 9-1-1 when safe

Barricade – If an evacuation is not possible, find a place to hide.

- Do your best to stay calm
- Lock and/ or blockade the door
- Silence cell phone
- Hide behind large (thick) objects

Take Action to Survive – As a last resort, and only if your life is in danger.

- Attempt to incapacitate the hostile intruder
- Act with physical aggression
- Improvise weapons
- Commit to your actions

### Bomb Threats

All suspicious packages and bomb threats are to be considered serious incidents until proven otherwise and shall be reported to local law enforcement immediately.

Regardless of how received, all bomb threats shall be taken seriously! The most common method of receiving a bomb threat is by telephone. Less common methods include messages written on walls, mirrors, letters or messages sent using e-mail. It is critical that as much information as possible is received and documented from the caller and that all physical evidence is preserved and secured from contamination.

See Security Threats Procedure (Item ID 005783557)

### Protest / Opposition Activity

Protesters typically want to elicit a response, gain broader media exposure, advance their agenda and try to damage the reputation of the company they're protesting. Employees or contractors should assume they will be video, or audio, recorded and anything you do or say in these situations will become public via social media and other online channels.

If there is protest activity at your location, follow these steps to reduce potential conflict, ensure safety, and minimize protestors' ability to capture video

Protests outside your office/facility:

- Don't draw attention to yourself as a TC Energy employee or contractor; take caution in wearing TC Energy apparel.
- When in public, don't display your access badge.
- Inform Corporate Security or the property manager, if willing to assist, or onsite contract security, if applicable.
- Do not engage physically and if confronted, stand down and relocate to a safe location.
- If protestors are outside your location and blocking access, attempt to gain access calmly and document the event. If denied entry, relocate to an area of safety.
- Never attempt to push a camera away, hide your face from the camera, or get into an argument with reporters or protestors. Just walk away and do not engage.
- If physically threatened, evacuate and re-convene at a predetermined location.
- If you are injured contact 911 immediately. Engage local law enforcement, complete an incident report and follow their instruction once onsite.

## 10.0 Incident reporting, investigation and follow-up

All workers are responsible for reporting any incident including near hits, Safe Acts and Observations that occur inside or outside of work (Safety 24/7).

Incidents are defined as a single or series of unplanned events that result in actual or potential (Near Hit) undesirable consequences with direct impacts to health, safety, environment, asset (damage by contact), and/or security and a secondary impact on business reputation, community, and/or operations. Also known as loss control management.

Safety 24/7 (Safety At Home and At Play) are defined as an Incident (including Near Hit), Safe Act, or Unsafe Act that occurs outside of work and does not involve company, property or resources.

Safe Acts are defined as a record of a person performing an action to control or remove a hazard or risk; it may be self-reported or reported by a witness of the safe act. A safe act involves control of a physical hazard and/or demonstration of safety behavior.

Unsafe Acts are defined as a person performing an action creating a potential or actual health, safety, environmental or security unsafe condition (e.g. hazard or risk); it may be self-reported or reported by a witness of the Unsafe Act.

Safe Observations are defined as a planned or unplanned observation of a work function by an observer that records safe or at risk behaviours and identifies any barriers to safe work practices.

Report incidents and near hits to your immediate supervisor and/or TC Energy Authorized Representative; who will then determine the appropriate follow-up. Personnel must perform the initial report in the Environment, Health, Safety Management System

for incidents involving actual and potential direct impacts to asset, health, safety, environment and/or security providing details within 24 hours after the incident or after discovery of the incident.

TC Energy may deem it necessary to participate and collaborate in incident investigations. TC Energy may require that work be suspended pending the investigation.

All major and critical incidents and high potential for debilitating injury (HIPO) events must be investigated and include a detailed investigation report and root cause analysis. Investigations are highly recommended for all serious incidents and for all incidents with the potential of serious or greater.

An investigation must be initiated within 48 hours of the incident occurrence, a draft investigation report is to be completed within 15 days and the final investigation report and cause mapping within 90 days.

The report shall contain at a minimum the following information:

- Title, date, time and place of the incident;
- Investigation Team;
- Incident Description which would include:
  - Name(s) of worker(s) and extent of injuries;
  - Name of hospital and/or doctor where injured employee was treated and a classification of the incident;
  - A description of the policies, programs, procedures, practices and/or regulations that was contravened, if applicable;
  - Circumstances surrounding the accident; and,
  - Any other pertinent observations;
- Conclusion for Cause(s); and,
- Recommendation for Action(s).

## 11.0 General safety rules and regulations

### 11.1 Housekeeping

All personnel are responsible for ensuring that:

- The work area is kept in a neat and orderly manner at all times; and,
- Pets are prohibited at TC Energy managed facilities, pipelines and worksites.

### 11.2 Smoking

Smoking is prohibited in all owned and controlled company sites, including company vehicles, with the exception of outdoor-designated areas (including electronic cigarettes).

#### Designated Smoking Areas at TC Energy Sites

Management, in consultation with the health and safety representative at each location can designate a safe outdoor smoking area that is:

- Clearly identified to workers and the public as a smoking area by signs or other effective means;
- Equipped with ashtrays or appropriate receptacles;
- Away from hazardous locations (i.e. fire and/or explosive atmospheres);
- In compliance with legislation where applicable.

### 11.3 Access and egress at TC Energy facilities

Employees, Contractors and Visitors will:

- Use designated entrances and routes to proceed directly to the job site/area of work;
- Avoid passing through operating locations; and,
- Sign in and out.

### 11.4 Confinement to work area

All activities shall be confined to the facilities, approved access routes and designated workspace. Vehicle and equipment parking shall be arranged and is subject to TC Energy approval.

### 11.5 Medical treatment

TC Energy are expected to have the following medical backups in place:

- Qualified First Aid attendants;
- Medical treatment facilities with a sole function regarding medical treatment per applicable regulations; and,
- Where deemed necessary mechanically sound and properly stocked medical conveyance vehicle, solely used for transporting injured to a medical facility.

### 11.6 Use of TC Energy facilities & equipment

The use of TC Energy facilities and equipment is not permitted without the express written consent of the TC Energy Authorized Representative.

## 11.7 Miscellaneous equipment

- Maintain all tools and work equipment in good working order;
- Ensure anti-whip cables are applied on pneumatic air hose connections;
- Ensure that all internal combustion engines have exhaust vented to prevent accumulation of deadly gases;
- Ensure ground fault protection is provided for all power tools used outdoors or in wet conditions; and,
- All manufactures safeguards are installed and not modified.

## 11.8 Ladders and scaffolds

### Ladders

- Assess area for hazards (e.g. overhead power lines) in which ladders are to be raised.
- Inspect ladders before use.
- Remove from service any ladders with broken rungs, split side rails, or worn and/or broken safety feet (non-slip devices).
- Do not paint wooden ladders.
- Place the base of an inclined portable ladder at a distance equivalent to 25% of the length of the ladder (4:1 slope).
- Secure the ladder at the top to prevent movement.
  - The ladder must extend at a minimum, 3 ft/1 m above the level of the upper landing to which it provides access.
  - Ladder must be secured at the top to prevent movement.
  - In the event someone must climb a ladder prior to it being secured, a second person must hold the ladder steady while the first person is on it.
  - Ladders are to be placed on a solid and level surface and equip ladders with non-slip devices and/or block the feet for the surface on which they are going to be used.
  - When practicable, secure the feet of the ladder to stakes or to vertical wall being ascended.
- Only one person is on a ladder at a time.
- Face the ladder while using it and maintain a 3 - point contact.
- Do not carry material in either hand while climbing a ladder. Hoist materials separately or carry in a tool pouch attached to a belt or in a backpack.
- When working from a ladder at a height of 8 ft/2.4 m in Canada or 6 ft/1.8 m in the U.S./ Mexico or greater and cannot use one hand to hold onto the ladder while working from the ladder, fall protection must be used.
- Footwear must be free of mud before accessing the ladder and is equipped with a heel to prevent slipping over a rung.
- Reposition the ladder when reaching more than one arm length in any direction is required.
- Extend portable extension ladders in compliance with manufacturer's specifications to ensure adequate overlap.
- Locks must be in place to securely hold the ladder in the extended position.
- Do not work from the top two rungs of a ladder.
- Position a guard and post signs to direct people away from the area when employees working on ladders may be endangered by ground traffic.
- Use only fiberglass ladders when performing electrical work.

Carrying ladders:

- Ladders longer than 12 ft/3.5 m must be carried by two workers;
- Carry short ladders with the front end raised to avoid striking someone; and,
- Ladders must never be carried in the vertical position around electrical equipment (i.e. Sub stations & switch yards).

Step-ladders:

- Do not use step-ladders more than 20 ft/6 m long
- The minimum width between side rails at the top, inside to inside, must be not less than 11-1/2 in/30cm from top to bottom. The side rails must spread at least 1 in/2.5 cm for each foot of length of the step-ladder.
- Choose industrial-type platform step-ladders whenever possible.
- Never stand or work from the top two steps of a standard step-ladder unless it is equipped with a railed platform.
- All step-ladders are fully opened and the braces are locked in place.
- Never use a step-ladder as a straight ladder.

Scaffolds:

- Prior to using verify that the inspection tag is in present.
- Scaffolds shall be erected, inspected and dismantled by competent personnel.
- Obtain training on the use, maintenance, inspection or building of scaffolds.
- Assess the work area for hazards (e.g. overhead power lines) in which the scaffold is to be erected.
- Inspect scaffolds and scaffold planks to ensure they are maintained in good condition.
- Ensure scaffolds are erected, dismantled or removed by competent persons.
- Inspect daily, before use, and following any modifications.
- Place upright supports on firm foundations or sills.
- Lock into position, all pins and braces.
- Ensure the work platform meets regulatory requirements; is fully decked and planks are secured to prevent movement in any direction.
- Barricade all openings / hatchways to prevent falling and/or unauthorized access.
- Ensure guard rails (top and mid) and toe boards are properly placed and installed.
- Engage the wheel locking devices or use blocking when employees are on scaffold.
- If scaffolding exceeds the height by three times the smallest dimension / base, ensure it is supported by outriggers and / or secured by tying to a permanent fixture
- Ensure safe access and egress is attached to scaffolding work platform.
- Scaffolding must be of sufficient strength and rigidity to support four times the weight of workers and material to which it will be subjected.
- Do not remain on the scaffold while it is being moved due to the potential for falling.
- Do not work on scaffolds during storms or high winds.

## 11.9 Overhead power lines

### Refer to TC Energy's Overhead Power Lines Procedure ID# 003672640

Before any work commences ensure all hazards with respect to moving personnel, equipment, or materials, under or near overhead power lines, are identified and controlled and to ensure a safe work area is identified to prevent contact with overhead power lines, power poles, or a guy wires.

- Workers may not work or operate equipment within 25 ft/7.5 m of an overhead power line, unless they are cleared to do so by a competent Electric Utility Representative, who will define the minimum safe clearance distance to be adhered to.
- Designate signaller(s) for any work that takes place within 25 ft/7.5 m (in any direction) of overhead power lines. The signaller shall ensure that anyone approaching the power lines is aware of its presence, and may be necessary at offloading sites, material storage and transit routes as well as the worksite. The signaller's role should be dedicated to the task of managing clearances around power lines when warranted by work activity.
- The 25 ft/7.5 m clearance distance may be insufficient for high voltage power lines greater than 500 kV. Consult Electric Utility Representative.
- Work around power lines should only be done during daylight hours or with adequate artificial lighting. Poor visibility conditions (e.g. rain, snow, fog) may dictate modifications to work. If earth or other materials are being piled under the power lines, the designated representative will ensure that the minimum safe clearance is not infringed upon.
- Dump trucks and track hoes must not travel with a raised box / knuckled booms in the proximity of overhead power lines.

## 12.0 Personal Protective Equipment

Refer to TC Energy's Personal Protective Equipment Standard ID#003721958

Personal Protective Equipment is one of the controls used to minimize work related hazards that cannot be controlled by engineering techniques or administrative practices.

Personnel are required to use/wear Personal Protective Equipment as stipulated by regulatory requirements and TC Energy requirements to minimize or eliminate exposure to known or potential health and safety hazards.





## 12.1 Eye protection

- All personnel wear industrial safety eyewear or prescription industrial safety eyewear appropriate for the hazard;
- All safety eyewear meets applicable standards for lenses, frames and temples, and is fitted with either rigid clip-on, wrap-around or permanently attached/affixed side shields;
- If prescription eyewear is non-approved safety eyewear the worker will be required to wear approved 'over the glasses' safety glasses. This is not a recommended practice and will only be tolerated for 20 days;
- The use of face-shields, in addition to safety glasses or goggles/mono-goggles, during grinding operations, sand blasting and/or where corrosive chemical splashes may occur;
- When goggles are used they shall be contoured to the face and fit properly;
- When goggles are worn so that the strap rests against the back of the head and not over the back of the hard hat;
- All requirements for eyewear as per product SDS, CSA and ANSI Standards are followed; and,
- Pancake type welding shields are prohibited.

When one type of protective eyewear is creating a hazard, an alternative means of protection shall be approved and used.

Exceptions include in the lunchrooms, office areas, training areas and washrooms. When there are work activities or conditions present in the above exempted areas that pose a hazard to the eyes, compliance is mandatory.

Personnel driving enclosed (windows closed) vehicles or operating enclosed heavy equipment may remove their safety glasses or side shields.

## 12.2 Hearing protection

### Refer to TC Energy's Hearing Conservation Program ID# 005405301

Personnel who are exposed to noise levels in excess of 85 dBA, in posted high noise level areas and in proximity to potential blowdowns shall wear at a minimum, Class A hearing protection (including plugs and muffs) that meet the requirements of applicable legislation and have a minimum noise reduction rating of 27 (NRR 27).

## 12.3 Head protection

### Selection:

- All hard hats must, at a minimum, meet the requirements of the applicable standards and be suitable for electrical and side impact hazards.

### Use:

- Side impact hard hats shall be worn by all personnel on all TC Energy field worksites and managed facilities.
  - Exceptions include: lunchrooms, control rooms, office areas and motor vehicles.
- Blue colored side impact hard hats may be made available to visitors.

- All hard hats must be worn per Manufacturer Specifications.
  - They can only be worn reversed if the manufacturer specifies the hard hat is approved to be worn in such manner and if the hard hat harness has been adjusted according to manufacturer's specifications (e.g. Fibre Metal, North).
- When working at elevated levels greater than 6 ft/1.8 m or exposed to high winds, chin straps or other effective means of retention must be used to prevent dislodgment.
- Climbing helmets may be used when accessing communication towers, suitable helmets and side impact hard hats with chin straps may be used while operating in open waters.

## 12.4 Foot protection

Approved safety footwear meeting applicable standards for, (high cut, min. 6 in/15 cm measured from top of sole, above ankle) electric shock resistant soles, aggressive soled, shall be worn by all workers in and around all construction areas, right of way work and TC Energy managed facilities. This footwear is easily recognized by the presence of a green triangular patch and a white patch (with an Omega symbol) on the boot. The footwear must be properly laced and the steel toe covered.

## 12.5 Fall protection

### Refer to TC Energy's Working At Heights At Heights ID# 014059000

Ensure manufacture's specifications for care, use and maintenance of fall protection are followed.

- Whenever working from an elevated platform of 4-8 ft/2.4 m in Canada or 4-6 ft/1.8m in the U.S. or Mexico where a fall may occur and workers are not protected by guardrails use a JSA to document your fall protection controls.
- Fall protection is required at 8 ft/2.4 m in Canada and 6 ft/1.8m in the U.S. or Mexico except where there is permanent facilities such as walkways, skids and ramps.

## 12.6 Respiratory protection

### Refer to TC Energy's Respiratory Protective Equipment Program ID# 003773677

Only wear approved and properly sized respirators that have been fit tested for you.

#### Selection:

- Complete a medical evaluation / questionnaire and submit to Occupational Health personnel for approval to wear a respirator;
- Participate in fit testing to ensure:
  - A comfortable mask with a satisfactory fit is available for use; and,
  - An effective seal is provided; the **wearer must be clean shaven where the face-piece seals to the face** for the respirator to provide an effective seal.
- All RPE must be selected in accordance with NIOSH criteria and/or the ANSI/CSA Standards.
- For employees needing prescription safety eye while wearing a respirator. A prescription lens kit shall be made available to them that accepts prescription lenses.

Facial hair, glasses or other objects are prohibited between the sealing periphery of the face piece and the face, and from interfering with the respirator valve function.

## 12.7 Work wear

### 12.7.1 General clothing requirements

Loose fitting work wear (hood and strings on hoods), jewelry, and loose long hair must not be worn near machinery or equipment where it may become entangled.

Parka hoods are acceptable on TC Energy worksites. A parka hood shall be worn above the hard hat and the hood may not interfere with the wearer's visibility. Parka hood strings/cords must be secured or removed to avoid being caught in rotating/moving equipment when performing tasks associated with rotating/moving equipment.

Clothing requirements for general wear at field sites must be as follows:

- 100% tight weave Cotton, Wool, Aramid or silk. Clothing made from synthetic blends (e.g. nylon, polyester) is not acceptable for use at TC Energy managed facilities and/or worksites.
- Wear shirts with long or short sleeves (4in/10 cm) and long leg trousers at all times when at field worksites. Muscle shirts, singlets or tank tops are not allowed to be worn at TC Energy worksites.
- Select special clothing as work activities require (e.g. working in potentially flammable atmospheres):
  - Rain gear shall be flame resistant materials;
  - 100% tight weave Cotton or leather clothing when welding/cutting;
  - Disposable coveralls worn over normal work wear or coveralls;
  - Reflective clothing when directing and/or working in close proximity of mobile equipment including traffic areas, and;
  - Welding leathers when exposed to hot metals; and, particulate, leathers are to be the outermost garment with flame resistant clothing directly beneath in hot work environments.

### 12.7.2 Flame resistant clothing

#### Refer to TC Energy's Personal Protective Standard ID#003721958

Outer-most garments from those made with Flame Resistant Fabrics (reflective stripping, NFPA 2112 and 8 cal minimum) are to be worn to ensure protection from fire and explosion hazards. Personnel shall wear Flame Resistant fabrics in addition to the general clothing requirements in all situations where the potential for fire and explosion may exist due to the possibility of gas escaping to atmosphere.

## 12.8 Hand protection & electrical gloves

### 12.8.1 General hand protection

TC Energy will ensure appropriate gloves are available and worn for the different types hazards and jobs being performed. Wear appropriate hand protection as required based on the hazards of work activities. Ensure that the proper hand protection has been selected prior to being exposed to:

- Chemicals
- Corrosives
- Abrasives
- Sharp edges
- Electricity
- Welding

### 12.8.2 Electrical gloves

#### Refer to TC Energy's Electrical Work Procedures ID# 003858659

TC Energy will ensure specially insulated gloves meeting the requirements of NFPA, ANSI or CSA Standards are selected for work where there is a risk of accidental contact with an energized conductor or a risk of exposure to arc flash.

- Visually inspect the entire surface of the gloves prior to each use for:
  - Holes, tears, punctures or cuts;
  - Ozone cutting or checking;
  - Imbedded foreign objects;
  - Texture changes
- Air test gloves before each day and at other times if there is a cause to suspect damage;
- Inspect inner surfaces of protector gloves at the same time as the rubber gloves;
- Do not use protector gloves that have become contaminated with injurious materials to the extent that damage may occur to the insulating glove;
- Follow manufacture's specifications for care, maintenance, storage and use of electrical gloves.

### 12.9 Reflective clothing

Wear reflective clothing (high visibility vests, gauntlets, stripped clothing, etc.) when directing and/or working in close proximity of mobile equipment including traffic areas. Refer to Federal and/or state/provincial requirements.

## 12.10 Portable gas detection

### **Refer to TC Energy's Portable Gas Detection of Atmosphere Procedure ID# 003835957**

Determine where and when to use Portable Gas Detection based on completing a Job Safety Analysis. Personnel may be exposed to airborne contaminants under the following circumstances:

- Prior to and while performing hot work or using non-classified electrical equipment in a potentially flammable atmosphere;
- Where there is a potential for combustible or toxic gas leaks, or oxygen deficiency;
- Where there is a potential for the accumulation of flammable vapours;
- Prior to entering, and while inside, any building that contains a continuous gas source greater than 50 psi/344 kPa that is not equipped with functioning permanent/remote monitoring gas detection equipment; and,
- During confined space entry.

Only use Battery Powered Monitoring Equipment that is intrinsically safe and meets the specifications for the contaminant to be monitored.

Personnel required to use portable gas detection equipment must receive training on the make and model prior to use.

## 13.0 Special conditions or activities

### 13.1 High pressure and high voltage hazards

TC Energy is responsible for:

- Being aware of and communicating to its employees that TC Energy managed facilities contain high pressure piping systems and high voltage electrical systems;
- Being aware of and communicating to their employees that any incident that results in damage to TC Energy pipelines, compressor, meter and pump stations or any other pressurized/electrical facilities can cause serious injury and/or death;
- Ensuring that all their employees are informed of high pressure/high voltage hazards and respect the integrity of these facilities; and,
- Identifying and flagging all facilities.

### 13.2 Cathodic protection

When impressed current ground beds are within 0.5 mi/1 km of a construction worksite, the rectifiers powering the ground beds are to be shut off/locked-out by a TC Energy Authorized Representative. Rectifier and ground bed locations shall be obtained from TC Energy Authorized Representative.

**Some ground beds are parallel to the pipeline and are several miles/kilometers in length.**

### 13.3 Natural gas flammability and asphyxiation

Natural gas is a colorless, odorless, tasteless gas. Its flammable limits are between 5.0% and 15% by volume in air. Its specific gravity of 0.65 allows it to disperse readily into the atmosphere. In spite of this, it is highly flammable and smoking is forbidden on all TC Energy worksites except in designated areas. Open flames or other ignition sources are forbidden in hazardous areas except by authorization (permit) and under TC Energy's direct supervision.

Natural gas is not toxic it is an asphyxiant. Natural gas displaces oxygen in an enclosure, creating an oxygen deficient atmosphere in which loss of consciousness will occur for all occupants. Do not enter any enclosure in which natural gas is leaking.

The following are signs that may indicate a possible gas leak:

- What you may see - an area of dead vegetation, a buildup of frost on the ground and/or sometimes bubbles appear in free-standing water.
- What you may hear - a loud whistling sound.
- What you may smell - because we carry sweet, odorless natural gas, you will not smell anything.

**Ask your TC Energy Authorized Representative for the MSDS and/or SDS should you want to see more specific information regarding natural gas properties.**

### 13.4 Natural gas handling and liquid pipeline isolation

TC Energy has operational control and will, at all times, be responsible for handling and controlling gas/low vapour pressure liquid hydrocarbon and/or petroleum product pipeline systems. During various phases of construction and commissioning assistance may be provided by the contractors only when requested by a TC Energy Authorized Representative and only when under the direct supervision of the TC Energy Authorized Representative, or TC Energy designate.

The un-authorized persons must never attempt to cut, weld or connect any piping or appurtenance that has been, or may become, pressurized with gas/low vapour pressure liquids until it has first been checked and declared safe by a TC Energy Authorized Representative and a proper work authorization/permitting has been issued.

### 13.5 Hazardous materials

**Refer to TC Energy's Waste and Hazardous Materials Management Manual ID#005486462, Benzene Monitoring Procedure ID# 006181613 and/or Hydrocarbon Exposure Control Procedure ID#005528684**

TC Energy shall:

- Ensure that all hazardous materials are transported, stored, handled and used as recommended by the supplier or manufacturer; in accordance with current standards, regulations and acts;
- Ensure personnel are trained in the proper safe practices, procedures and equipment that are required for transporting, storing, handling and using Hazardous Materials;
- Ensure personnel comply with all requirements of standards;
- Ensure that all SDS are available at the worksite for all controlled products and that the controlled products are labeled in accordance with all applicable standards;
- Obtain proper approval prior to disposal of any Hazardous Materials;
- Ensure that all hazardous materials are disposed of in compliance with all applicable laws and with TC Energy requirements as applicable; and,
- Provide documents to confirm proper disposal at approved facilities.

### 13.6 Propane handling

Propane is widely used during construction and worksite activities. Propane is highly flammable and is heavier than air, it will settle in low areas or in excavations, creating a fire or explosion hazard.

All workers shall abide by the following rules:

- All workers using and working with propane shall be properly trained;
- Propane cylinders are not permitted in excavations or inside enclosed work areas;
- Propane cylinders must be stored outdoors in a secured upright position;
- All hoses and fittings must be inspected for damage and leaks prior to use;
- Only approved hoses and fittings to connect cylinders to devices and equipment will be used; and,
- Safety relief valves will be positioned so that any escaping propane is directed away from ignition sources.

## 13.7 Excavation practices and requirements

### Refer to TC Energy's Excavation Procedure ID# 003672343

#### 13.7.1 Planning excavation

- Specify accountabilities and responsibilities for all personnel involved in the excavation (TC Energy Authorized Representative, Excavation Coordinator/Inspector, Supervisor, Equipment Operator, Signaler, etc.);
- Ensure personnel performing, monitoring and supervising excavations are competent for the role assigned;
- All on-site personnel must have appropriate Personal Protective Equipment;
- All relevant information pertaining to the excavation must be reviewed and understood by all individuals performing any tasks related to excavation;
- Consult with TC Energy Authorized Representative during the development of the excavation work plan to verify:
  - All landowners and other parties affected have been contacted;
  - That facility owners have been notified as required by applicable regulatory jurisdiction;
  - Any required crossing agreements, work authorizations have been obtained (TC Energy Field Operations work authorization may be required when excavations are performed on TC Energy managed facilities, right of ways)
- Document and confirm that available and applicable records for all underground facilities within 100 ft/30m from the proposed excavation have been obtained and reviewed;
- Obtain all regulatory permits/approvals prior to excavation; and,
- Perform site assessments to identify hazards that will need to be addressed in order to conduct safe excavations (evidence of underground facilities, leaking facilities, overhead power lines, soil conditions, etc.).

#### 13.7.2 Facility identification

- Complete One Call system notifications;
- Confirm that owner(s) of all buried facilities within the work area have accurately located and marked on the surface of the ground the horizontal position and alignment of their buried facilities;
- Obtain a Stake-Out Report from buried facility owners;
- Survey the entire Search Area using electronic pipe and cable locator (locate and mark);
- Complete a Stake-Out Report including a sketch or drawing mark-ups showing the safe work area and all located facilities;
- Perform a survey sweep of the entire Search Area to identify potential unknown buried facilities;
- Use the most appropriate locating methods based on-site conditions, configuration, etc. for locating and marking known buried facilities to accurately identify the horizontal position and alignment;
- Confirm that above ground locate marks are consistent with the location of all underground facilities shown on applicable drawings;
- Hold discussions with the individual(s) who performed the locate activities to validate the results and identify any challenges or concerns;



- Stop excavation work and obtain a new locate if the locate marks are indistinguishable, disturbed or destroyed and no longer represent the horizontal position and alignment of buried facilities;
- Conduct Slit Trenching when excavating within all TC Energy managed operating facilities (compressor, meter, pump & power stations, valve sites or similar facilities);
- Prior to mechanical excavation, Hand Excavate the facility being excavated at sufficient intervals (minimum two for straight pipe, more where there are bends or deviations) to confirm pipeline location and alignment;
- Locate and Hand Excavate all existing buried facilities that are within 15 ft/5 m of the edge of the proposed excavation at sufficient intervals to confirm pipeline location and alignment;
- Develop a site specific procedure where hand excavation is not possible or practical; and,
- Clearly mark and adequately protect all above ground facilities within 30ft/10 m of the excavation.

### **13.7.3 Equipment operator/signaler responsibilities**

- Signalers shall provide accurate direction and assistance to the Equipment Operator for protection of site safety and the underground facility as required whenever mechanical excavation is taking place including backfilling;
- Establish and maintain reliable communication between the Equipment Operator and the Signaler;
- The Equipment Operator and Signaler must establish and verify recognizable hand signals that will be used during the excavation;
- Emergency stop signals shall be established and communicated. Immediately stop all excavation activity when an “emergency stop” signal is issued (by any person on-site);

- Immediately stop all excavation activity when the Equipment Operator is unable to see the Signaler, the Signaler leaves the excavation, a worker including the Signaler is in the immediate “danger zone” or if additional clarification is required and/or directions are unclear;
- The Equipment Operator and Signaler shall control/monitor the hazard zone 20 ft/6 m radius from equipment for potential risks, and,
- Signaler(s) must be available for guidance in congested locations, particularly during backing maneuvers or when visibility is obstructed.

#### **13.7.4 Excavation**

A pre-excavation/ground disturbance meeting is to be held with the TC Energy Authorized Representative, Excavation Inspector/Coordinator, Equipment Operator, and Signaler prior to each excavation to discuss the scope and circumstances of the excavation. Proper work authorization (Excavation Checklist) shall be obtained for each excavation or as required by a TC Energy Authorized Representative prior to the commencement of any excavation activity. The TC Energy Authorized Representative will give detailed instructions to specify the validity period of the permit(s).

- Ensure excavations are conducted in accordance with the applicable TC Energy’s Excavation Procedure ID#003672343.

#### **13.8 High voltage hazard and mitigation of induced voltage effects**

Piping parallel to, crossing, or within 1500 ft/500 m of electric power transmission lines is subject to electrostatic and electromagnetic induced voltages which can be extremely hazardous. Such facilities shall be monitored and hazardous conditions mitigated.

Pipe-to-ground voltages shall be monitored where AC power lines have line-to-ground voltages greater than 35 kV and:

- a) The pipeline is located on a power line right of way;
- b) The pipeline right of way parallels a power line right of way and the adjacent boundaries are at or within 330 ft/100 m of each other; and/or,
- c) A pipeline extension in accordance with a) or b), located within 330 ft/100 m of an entrance or exit from a power line right of way.

TC Energy will monitor the pipe to ground voltage and if it exceeds 15 volts, shall render the pipe safe for human contact by grounding and/or attaching equal potential grids approved by TC Energy before performing work on that portion of the pipeline.

TC Energy’s grounding personnel shall measure pipe to ground voltages on all pipe sections:

- Each day prior to commencement of construction activity and immediately following termination of construction activity;
- Prior to any activity involving pipe contact work; and,
- As directed by TC Energy.

TC Energy Authorized Representative will:

- Obtain daily weather information from the local weather office and have daily contact with the Power Authority regarding any scheduled power line changes; and,
- Ensure that automatic re-closer devices are deactivated during pipeline construction activities.

**Any metallic foreign structure that is exposed during excavation presents a potential hazard.** Grounding must be performed when pipe to foreign structure voltage exceeds 15 volts. Permission must be obtained from the Owner of the structure to ground or bond. If the Owner refuses permission to do so, the structure must be isolated from the pipeline under construction by wrapping neoprene sheets around the exposed foreign structure. This work will be performed by personnel under direction of TC Energy personnel.

All piping shall be bonded regardless of pipeline voltages. Pipe grounding clamps shall be connected to each side of the tie-in before the bonding cable is connected to the clamps.

Regardless of pipeline voltages, all piping at cut-outs shall be bonded across the cut prior to cutting. All rubber tired vehicles operating on a power line right of way shall be grounded to mitigate capacitive coupling with the power line. Grounding shall be accomplished by attaching a chain to the vehicle frame of a length to maintain contact with the ground.

Vehicles shall not be re-fuelled on or near an electric power line right of way unless the two vehicles are electrically bonded prior to commencement of the re-fuelling operation.

Note: Refusal to comply with grounding procedures may result in dismissal from the site.

### **13.9 Weather conditions**

Since temporary and permanent grounding is not intended to safely mitigate voltages arising from lightning or a power line fault, it may be necessary to halt all pipeline contact work during inclement weather conditions.

Generally work will be stopped if one or more of the following conditions prevail:

- Imminent danger;
- During local electrical storms denoted by visible lightning or the sound of thunder;
- During high winds, wet snow or freezing rain; and,
- During scheduled switching on the electrical power transmission system.

### **13.10 Hot taps, stopples & lock-o-ring plugs**

All hot tap work on loaded facilities shall be under the direct supervision of a TC Energy Authorized Representative. No hot tap work shall commence until a work permit and subsequent documentation has been issued by the TC Energy Authorized Representative. The TC Energy Authorized Representative must be in attendance during all hot tap work that is directly impacting loaded facilities.

Only TC Energy personnel, or those specifically designated by TC Energy shall:

- Operate the tapping machine;
- Perform valve opening and closing; and,
- Perform purging operations.

A supply of maintained and operable fire extinguishers for each crew that is engaged in work such as welding, hot cuts, stopple installation or removal, hot tapping and lock-o-ring plug installation or removal must be available. Personnel intended to operate fire extinguishers shall be adequately trained in fire emergencies and/or fire extinguisher use.

### **13.11 Construction survey**

Survey crews are to be allotted whatever time is necessary to conduct their survey duties in an uninterrupted, safe and secure work environment, unimpeded by the presence of working pipeline construction equipment in their immediate work area. TC Energy Authorized Representative shall determine what is considered to be sufficient unimpeded time.

Construction backfilling equipment shall not approach within 330 ft/100 m of the survey crew working on the pipe.

### 13.12 Marking of facilities

Refer to TC Energy’s One Call Locating and Marking Procedure ID#003671859 and ID#1012902942

TC Energy adheres to the American Public Works Association color codes for marking buried facilities. The attached stake color convention will be used during all construction and facility locating activities.

## TC Energy Flagging Standard

### Buried Facilities

Electricity, Power Lines, Cables, Lighting Cables
Oil, Gas, Steam, Petroleum, or Gaseous Materials
Communication, Alarms, Telephone, Signal Lines and Cable TV
Potable Water
Irrigation and Slurry Lines
Sewers and Drain Lines

### R.O.W. Staking

R.O.W. Boundary
Common Boundary or Safety Zone Adjacent to Existing Hotline
Proposed Excavation and/or Construction Information
Winter Alternative



Where underground TC Energy facilities are to be excavated the TC Energy Authorized Representative performing the staking shall complete a Stakeout Report with the Excavator's Representative to explain the procedure for locating and staking TC Energy's facilities. Both parties shall read and acknowledge their understanding of the conditions in the "Stakeout Report" by signing the report.

The Excavator will:

- Be responsible for the preservation of lathe/stakes/pin flags and advise TC Energy when pipeline marker(s) are to be re-established and consult with the TC Energy Authorized Representative as required to confirm the accuracy of the markings; and,
- Ensure that all pipeline markers are collected after the work is completed.

### **13.13 Winter construction**

Special considerations must be made during winter construction. It is important to be aware of the following:

- Exposure, hypothermia, frostbite, heavy clothing and adverse driving conditions, etc.;
- Have contingency plans in place to protect worker health and safety in weather conditions where the wind-chill factor is equivalent to -40° Fahrenheit, -40° Celsius or colder. The details of the plan are to be discussed with the TC Energy Authorized Representative; and,
- Regularly assess the condition of the right of way, access roads, excavations and work areas to ensure the surface provides safe footing for employees and adequate traction the movement of vehicles.

### **13.14 Compressed air tools**

#### **Refer to TC Energy's Handling and Storage of Compressed gas Cylinders and Compressed Air Procedure ID#003849807**

All workers shall ensure:

- Only compressed air reduced to less than 30 psi is used for cleaning work, work areas or clothing;
- Compressed air is never directed towards personnel or yourself;
- Never use compressed air to clean dusty areas where Asbestos is present in a friable or deteriorated condition;
- Appropriate Personal Protective Equipment is worn by any worker who is within 50 ft/15 m of a working air tool that exceeds the safe noise level (80 dBA);
- When connecting air hoses, a positive lock system such as safety clips on universal type fittings or anti-whip lines are used. Hoses and fittings are to be inspected;
- Ensure the air supply at the compressor is shut off and the hose bled before disconnecting;
- Ensure the hose is held securely and aimed in a safe direction away from all workers and public when blowing out debris;
- All air compressors are parked and secured at a safe distance from the excavation pit to prevent inadvertent rolling or falling into the pit;
- All guards, covers, controls or other safety devices are in place;
- The immediate work area is kept clear of all unauthorized personnel; and,
- An air tool is used in accordance with manufacturer's specifications.

### 13.15 Fuel powered equipment

#### Refer to TC Energy's Heavy Mobile Equipment Procedure ID#003865275

All workers shall ensure:

- When refueling small gas engines (such as those on jumping jacks, generators and water pumps, etc.) the temperature of the equipment is cool enough to avoid combustion in the event of spillage;
- Engines are operated in well ventilated areas. If required to operate engines in trenches, sufficient ventilation or exhaust hoses must be used; and,
- Project environmental guidelines must be followed if you must refuel around any watercourse or wetland area (330 ft/100 m).

### 13.16 Confined space entry

#### Refer to TC Energy's Confined Space Entry Procedure ID#003835955

TC Energy is responsible to:

- Ensure that the proposed procedure provides for the health and safety of the employees;
- Obtain proper work permit and authorization from TC Energy Authorized Representative;
- Treat all confined spaces as Permit Required Confined Spaces until proven otherwise through testing and review with the on-site TC Energy Authorized Representative;
- Ensure testing of atmosphere prior to entry; and,
- Follow all applicable regulations and Procedures for entry to be reviewed in consultation with the Safety & Health Representative.

All TC Energy designated confined spaces have been identified with a "No Entry" pictograph decal.

All pipes are considered to be a Permit Required Confined Space whether identified by a pictograph or not and hazardous confined space entry procedures shall be employed.

### 13.17 Lockout and tagout

#### Refer to TC Energy's Lockout and Tagout Procedure ID#003834759

The proper authorization must be obtained from the TC Energy Authorized Representative for all work activities requiring lockout and tagout. In Addition, a Job Safety Analysis (JSA) shall be conducted that identifies, evaluates and outlines the safety controls for each hazard associated with the unexpected energization, start-up and/or release of stored energy.

Prior to or during the course of the Pre-Job/Tailgate meeting and/or JSA creation, the contractor must inform the TC Energy Authorized Representative of their lockout and tagout procedures:

- Authorized contractor employees;
- Personal lockout and tagout devices;
- Group lockout and tagout;
- Shift or personnel changes;
- Testing or positioning of machines; and,
- Removal of locks and tags.

## 13.18 Heat stress

### Refer to TC Energy's Heat and Cold Stress Procedure ID#003871937

To protect yourself and other workers from the health effects resulting from exposure to heat, the following should be observed:

- Ensure fluids are provided on-site. Fluids should be water (cool, not cold), diluted fruit juice, tea, or lemon tea.
- Avoid drinks containing large amounts of caffeine (energy drinks).
- Take frequent drinks. The feeling of thirst alone may not be enough to ensure sufficient intake. A drink to provide replacement of electrolytes and sugar may be given about once per shift. Fluids should be taken at a rate no faster than 2 cups per hour to avoid abdominal cramps.
- Do not use salt tablets or saline (salt) drinks unless advised by a physician. The normal salt content of food plus the use of salt on food is usually sufficient to replace the salt lost through perspiration.
- Take rest breaks in a cooler area. Recommendations for these breaks are based on wet-bulb globe temperature (WBGT) readings. As this involves special equipment, contact your Safety and/or TC Energy Authorized Representative for assistance.
- Acclimatize to the heat whenever possible. This can be achieved by gradually increasing the length of exposure over a period of 4 to 7 days. Physically fit workers adapt to heat far more quickly than unfit ones. One week away from heat will require a worker to re-acclimatize.
- Prevent heat rash by resting in cool places at regular intervals and showering after each work shift.
- Implement appropriate controls, engineered, administrative and Personal Protective Equipment when heat stress has been identified as a hazard; and, Wear appropriate clothing, sunglasses and sunscreen (with no less than SPF 15) when working outdoors.

## 13.19 Safe operation/testing of electrical equipment

### Refer to TC Energy's Electrical Work Procedure ID#003858659

To protect yourself and other workers from the health effects resulting from exposure to electrical work/shock and arc flash, the following shall be observed:

- Prior to operating any electrical equipment or systems, personnel shall be qualified and have a clear understanding of the operation of the components and associated systems, and awareness of the associated hazards. Personnel must wear appropriate Personal Protective Equipment and utilize appropriate electrical safety equipment.
- Pre-job planning shall identify all control measures required to safely operate any electrical equipment. The pre-job planning is especially important if work is to be performed in a potentially hazardous area.
- Site specific electrical procedures will be developed as required for high voltage systems greater than 750 volts. These procedures and the associated risks and hazards shall be reviewed and understood prior to performing associated work.
- Treat all electric wires as live. DO NOT touch any loose or dangling wires, but immediately report them.



- Do not use portable electric tools if your hands are wet, or if you are standing on a wet surface. All electrical tools and equipment must be grounded. Utilize a flexible cable equipped with a grounding conductor and a 3 wire plug.
- If a fuse blows or an overload or breaker trips, it indicates an overload or possible short circuit. Do not try to reset it unless the cause of the trip has been identified and resolved. Immediately report such an occurrence unless you are qualified to investigate the cause and perform the corrective action.
- Sparking or smoking motors or other failed electrical equipment shall be locked out and reported immediately.
- Before using an extension cord, carefully examine the cord for worn insulation, or exposed strands of wire. Do not drag cords over sharp edges or run them across aisles and walkways where they can be damaged or cause someone to trip. When disconnecting an electrical cord, grasp and pull directly on the plug, not the cord. If an electrical cord is to be used in a hazardous area the cord should reach directly from the explosion proof receptacle to the monitored work area. If a short cheater cord is used, the cord connection must be taped to reduce the risk that the cords may pull apart and draw an arc.
- Whenever an electrical control panel, breaker box, or other such equipment is energized, the cover and/or panel doors must be closed or adequate signage and barriers must be utilized to prevent others from entering potentially dangerous area while it is not attended by a qualified person.
- If the electrical panel, extension cord or junction box is located in a hazardous area and is energized, continuous monitoring of the area for natural gas using a hand held tester must take place prior to, and during the work until the work is completed and the panel closed or the extension cord removed.
- When operating motor starters and switches (while wearing appropriate Personal Protective Equipment) where possible perform task from hinged side of starter or switch. The handles of switches and starters are generally on the right side and hinged on the left. While operating breaker or switch- position your body so that in the event an arc flash occurs, your body would be out of the direct line of the hazard.

## 14.0 Vehicle and heavy equipment operation

### 14.1 General

#### **Refer to TC Energy's Motor Vehicle Operations Standard ID#003721956 and Heavy Mobile Equipment Procedure ID#003865275**

TC Energy expects all personnel, Contractors and their workers to adopt the following practices. These may be in addition to a project designated Journey Management, site parking/traffic control plans.

In part the TC Energy Motor Vehicle Operation policy is as follows:

- TC Energy vehicles are required to have headlights on at all times when the vehicle is underway;
- Circle Checks are required prior to entering vehicle to operate;
- All TC Energy vehicles must avoid backing-out wherever possible; and,
- Pull-through parking is provided where possible, and where not possible, vehicles will be backed into parking spots upon arrival.

#### **Positive Air Shut-offs**

- When deemed necessary and as identified by a job hazard analysis, diesel powered equipment working on or near energized facilities or areas where hazardous atmospheres may develop, must be equipped with spark-arresting muffler, catalytic converter and positive air shut-offs (PASO). Equipment operators must confirm the functionality of the positive air shut-off prior to entering any area where a potentially hazardous atmosphere may occur and document the PASO functionality on the Daily Inspection Checklist. Inspection, testing and maintenance of the PASO equipment must be in accordance with the manufacturer's specifications. If the diesel powered equipment is not equipped with PASO, the hazard mitigation must be documented on the job hazard analysis prior to entering the area. This may include atmospheric gas monitoring of the area, hot work permit, or other mitigation plan.

## **14.2 Vehicle and equipment operation (situational awareness)**

- Only qualified and competent workers are able to operate vehicles and heavy equipment;
- All vehicle/equipment operators requiring certification must be certified and licensed for the jurisdiction they will be operating in. All certification must be current and proof of certification must be available for inspection by the TC Energy Authorized Representative or governing agencies and copies provided on request;
- The number of passengers in vehicles or heavy equipment is limited to the number of seats and seat belts available. All passengers must wear seat belts;
- It is forbidden to ride on any vehicle or piece of heavy equipment outside a properly equipped occupant compartments;
- Dangerous goods are transported and handled in full compliance with Transportation of Dangerous Goods Act and Regulations;
- A maximum speed limit of 15 mph/25 km an hour must be obeyed when travelling on TC Energy property;
- A maximum speed limit of 10 mph/15 km an hour must be obeyed within 330 ft/100m of all workers and heavy/light equipment;
- All traffic signs and posted speed limits on TC Energy property shall be obeyed; and,
- Don't jump/leap in and out of vehicles.

## Backing guidelines

### Situational awareness

#### Refer to TC Energy's Driver Situational Awareness ID#1001191727

Every time a driver exits their company vehicle (except for refueling) the driver will place their Situational Awareness device on or around the exterior of the vehicle in a position that prompts the driver to perform a 360° walk-around. Before getting back in the vehicle, the driver will retrieve the cone while performing their 360 walk-around and create a mental image of how they intend to exit the parking area and into the traffic flow. Situational Awareness devices must be placed while vehicles are parked overnight.

#### Guidelines / approach:

- The Driver Situational Awareness practice is applicable to all employees, contractors, and long term lease/rental vehicles (durations greater than 1 month). Short term lease/rental vehicles (durations less than 1 month) are excluded.
- Prior to backing, the driver will tap on their horn (not required if the vehicle is equipped with back-up beepers).
- Once the vehicle is parked the driver must place a Situational Awareness device at a position that prompts the driver to perform a 360 walk-around. This gives the driver the opportunity to survey/observe the area for possible hazards.
- Prior to re-entering the vehicle the driver shall retrieve the Situational Awareness devices while performing their 360 walk-around.
- Prior to driving away, create a mental image of how to safely exit the parking area and into traffic flow.
- If a trailer is attached to the vehicle, the Situational Awareness device shall be placed at the back passenger side of the trailer.
- Prior to backing a vehicle and/or trailer inside a TC Energy facility (away from the designated traffic path) the driver must place a Situational Awareness device at the spot in which they intend to back into. This requirement will not be required if a spotter is being used.
- Situational Awareness device shall be present overnight while the vehicle is parked.

Only vehicles or heavy equipment essential to work in progress are allowed in the immediate area. All other vehicles shall be safely parked in designated areas:

- There are minimum distance requirements when working in proximity to hazardous work area locations;
- Vehicles and heavy equipment will not pass over buried pipelines, trench way or station sidewalks except at designated points;
- All heavy equipment on TC Energy worksites must be equipped with a back-up and/or warning device to indicate motion or travel;
- No person shall mount or dismount a moving vehicle or piece of equipment;
- All vehicles carrying loads shall have the load properly secured and loads which project beyond the length of the vehicle shall be properly flagged or lighted; and,
- No person shall occupy the cab of a vehicle while it is being loaded or unloaded when there is a danger that the load may fall on the cab.

### 14.3 Off road vehicles

The following must be complied with:

- Operators of All Terrain Vehicles (ATVs)/Utility Terrain Vehicles (UTVs) must hold a valid operator's license before operating equipment;
- Seatbelts/life restraints must always be worn by all occupants when available and the vehicle is provided with a roll over protective structure;
- Three quarter (3/4) or full-face helmets meeting DOT/CSA standard or SNELL with visor or goggles, and bearing Department of Transportation certification, must be worn by all personnel operating or riding on an ATV or UTV when outside of a TC Energy fenced operating facility;
- Wearing the site specific Personal Protective Equipment as required once dismounting the ATV or UTV;
- All such vehicles must be legally registered where required by Federal and state/provincial regulations;
- ATVs and UTVs shall be identified by an orange reflective safety flag attached at the top of a 6 ft/1.8 m long whip antenna;
- All ATVs and UTVs must be secured to the vehicle during transportation; and,
- Vehicles transporting ATVs and UTVs must be equipped with ramps secured to the vehicle to prevent slipping off the ramp during loading and unloading.

### 14.4 Load handling

All workers shall ensure:

- Loads are never carried over the heads of personnel and personnel shall not work under a suspended load unless it is physically supported by means of shoring, skids, etc.;
- That personnel never stand under a suspended load;
- The controls are never left unattended while a load is suspended. Whenever the load on a lifting device is suspended off the ground for extended periods (i.e. during tie-ins) or while the lifting device is transporting a load suspended from the boom, the boom and cable brakes MUST be engaged to prevent unintentional lowering of the boom or load;
- Any sling or cable where the rigging limitations are not legible will be discarded;
- All slings, hooks, cables and tag lines shall be inspected prior to use and replaced if defective;
- No vehicle or piece of heavy equipment may be parked or positioned, even temporarily, beside any joint(s) of pipe when they are being lifted or will likely be lifted for any reason by any means; and,
- All equipment is shut down before any adjustments, repairs or cleaning is done.

## 14.5 Danger zone

The “DANGER ZONE” is defined as any location within 20 ft/6 m of a piece of heavy equipment and for equipment with booms, cables, counterbalances, etc. The “DANGER ZONE” is boom/counter balance length plus 20 ft/6 m.

Heavy equipment includes, but is not limited to the following:

- Winch trucks, Cherry pickers
- Draglines or Crane Trucks bulldozers
- Dump trucks
- Boring equipment
- Tractor units and trailers
- Hydraulic lifts
- Industrial tractors with front-loader
- Trenchers loader and/or backhoe
- Sidebooms
- Combinations
- Platforms
- Mobile cranes
- Tack rigs
- Pneumatic and air track drills
- Welding rigs
- Backhoes
- Bobcat
- Graders
- Bending machines
- Man Lifts
- Pile Driving Units

### Danger zone precautions

- No person shall enter the “DANGER ZONE” while equipment is in operation unless their presence is essential to the work in progress;
- The operator of heavy equipment shall immediately sound a warning horn upon unauthorized entry to the “DANGER ZONE” and discontinue work and not resume until the “DANGER ZONE” is clear;
- Before lifting any pipe the operator of any heavy equipment shall double check that no person has taken an unsafe position in the “DANGER ZONE”;
- When the “DANGER ZONE” extends into an adjacent travelled or occupied area, flagging shall be strung to indicate restriction of movement of the equipment into that area and a signalman shall direct the operator in the area and restrict traffic or activity there; and,
- No person or vehicle shall pass through the “DANGER ZONE” until eye contact has been established with the operator and authorization granted by the operator.

## 14.6 Signal person / swamper

A Signal Person/Swamper wearing the appropriate Personal Protective Equipment (e.g. high visibility vest, fire retardant clothing) is required when, but not limited to:

- A piece of equipment is operating within 20 ft/6 m of any above ground facility;
- The operator cannot clearly see the work or load;
- The equipment is moved and the Operator cannot see all parts of the machine and its path of travel;
- Hazards such as overhead power lines fall within the “DANGER ZONE”; and,
- Direct vehicles necessary to the operation when positioning near an excavation edge.

The Signal Person must be in direct communications at all times with the Operator. The Signal Person/Swamper shall discontinue work activities if an unauthorized person enters the "DANGER ZONE". Under normal operations, Operators shall take direction from only one appointed Signal Person/Swamper.

**AN OPERATOR MUST OBEY STOP SIGNALS AT ALL TIMES NO MATTER WHO GIVES IT!**

### **14.7 Refueling**

All workers shall:

- Not refuel with the engine running;
- Not refuel under power lines;
- Not refuel within 330 ft/100 m of watercourses; and,
- Refuel in a well ventilated area where smoking or other ignition sources are not allowed.

### **14.8 Unattended vehicles & equipment**

When parking any vehicle or heavy equipment, the worker shall:

- Set the brake;
- Lower attachments to the ground or cradle;
- Place all controls in the neutral or park position;
- Disengage the transmission and shut off the ignition before leaving any piece of equipment;
- Chock the equipment wheels or tracks to prevent runaway after dismounting (ensure parallel parking alignment to excavations); and,
- Render the ignition and operating controls on unattended equipment inoperable by any unauthorized person on TC Energy property, rights of way or easements.

The Operator may leave the equipment running in extreme cold weather and unattended provided:

- All controls are neutralized and locked;
- The equipment is braked or otherwise mechanically restrained;
- The wheels or tracks are chocked; and,
- An appointed attendant observes the unit at frequent and regular intervals to detect creep of the drive train or movement of attachments.

## 15.0 Transportation of hazardous materials requirements

### 15.1 General

#### **Refer to TC Energy’s Environmental Management of Industrial and Hazardous Wastes Standard ID#005486462 and the U.S. Commercial Motor Vehicles Program.**

The purpose of transportation of hazardous materials legislation and programs is to promote public safety while dangerous goods are being transported within Canada the U.S. and Mexico. In general, the regulations provide for:

- Safe packaging to minimize the chance of an accidental release;
- Hazard identification in the form of labels, placards and documentation;
- Emergency measures including emergency response planning, reporting of Accidental Release, and taking reasonable measures to ensure public safety; and,
- Appropriate training.

Anyone who may have care and control of a dangerous good must comply with them. This includes TC Energy Authorized Representatives and personnel working for TC Energy who prepare shipments for transport, receive shipments, carry dangerous goods, or otherwise handle dangerous goods.

The regulations address those substances included in one of the nine hazard classes which are regulated during the handling and shipping phases as a dangerous good: explosives; compressed gases; flammable liquids; flammable solids; spontaneously combustible materials, water reactive substances; oxidizers and organic peroxides; poisonous and infectious substances; radioactive materials; corrosives; and, miscellaneous dangerous goods.

All personnel who handle offer for transport or transport dangerous goods must be trained and certified.

If involved with a dangerous occurrence (spill, leak of dangerous goods), workers must take reasonable emergency measures to reduce any danger to health, life, property of the environment. At the very least, keep people at a safe distance, upwind from the spill. Never put yourself in jeopardy or danger from the spill or leak. Call for help.

### 15.2 Emergency response plan

If you are involved in an incident where there is a chemical spill/release, you are required to follow the “Emergency Response Plan.” Refer to Section 9.0 of this Safety Handbook.



## 16.0 Hazard communication / workplace hazardous materials information system / global harmonization system

### 16.1 General

Nationally recognized chemical handling programs have been established to promote worker safety when working with potentially hazardous chemicals and products. Described as “hazardous products,” these materials are known or suspected to have a potentially harmful effect on worker health or safety. Personnel may encounter one of three labeling systems used across the TC Energy system:

- Global Harmonization System (GHS) (adopted by WHMIS, HAZCOM and Mexico NOM);
- National Fire Protection Association (NFPA) Diamonds; and,
- Hazardous Materials Information System (HMIS®) Labeling.

The Global Harmonization System has been adopted by Canada, the United States and Mexico. This system must be adhered to over the other two systems.

### 16.2 Safety data sheets (SDS)

All hazardous chemicals and substances brought onto a TC Energy worksite by personnel must be accompanied by an SDS. The SDSs must be readily available for the Contractor’s employees as well as any TC Energy employees that are working within the same worksite.

### 16.3 TC Energy responsibilities

- Make manufacturer information readily available;
- Educate workers about WHMIS/HAZCOM/NOM. Do periodic training;
- Training workers how to safely handle all site specific hazardous materials, including non-WHMIS/HAZCOM/NOM materials; and,
- Maintain an up-to-date chemical inventory of all products used on-site and ensure the SDS is current (must meet GHS requirements).

## 16.4 Employee responsibilities

- Attend a WHMIS/HAZCOM/NOM training course;
- Use the training and information provided to ensure your own health and safety;
- Read and understand manufacturer and TC Energy product labels and utilize the information provided on SDS to ensure products are safely handled (Be sure to ask the TC Energy Authorized Representative where to find the SDS);
- Handle controlled materials in accordance with hazard alerts;
- Use the appropriate Personal Protective Equipment as specified on the SDS or workplace labels to prevent contact with hazardous products;
- Make and use workplace labels and replace illegible labels; and,
- Know what to do in case of an emergency.
- All personnel must comply with WHMIS/HAZCOM/NOM program requirements. This includes providing training for their workers.

## 16.5 Prohibited products list

**Refer to TC Energy's Prohibited Products List – Products / Chemicals Not Approved For TC Energy Site Use ID#00383560.**

For a list of compounds which are not approved for use at TC Energy worksites.

## 17.0 Fire safety

### 17.1 General

Personnel in charge of a work process shall ensure the hazards associated with the use of any flammable substances in the work processes are clearly evaluated. Following the evaluation, procedures as required shall be put into place to ensure the safety of workers and to prevent damage to materials and equipment. The following fire prevention practices shall be complied with by all contractors working for TC Energy.

### 17.2 Fire prevention practices

- Know where the fire extinguishers are and how to use them.
- Know your safe primary and alternate fire exit routes before you begin your work, and how you will contact the Fire Department once safe;
- Gasoline or other highly volatile materials are never to be used as a cleaning agent. Only low combustion cleaning solvents are to be used;
- Gasoline or other highly volatile materials are not to be used for starting fires;
- Tampering with fire fighting equipment is forbidden;
- Fire protection equipment is to be used for fire fighting purposes only after a fire extinguisher has been used, discharge remaining retardant and notify your Supervisor;
- The Supervisor is obligated to promptly replace it with the proper type;
- Do not place materials or obstructions of any kind within 15 ft/5 meters of fire fighting equipment;
- To prevent injury to workers or accidental combustion, fire retardant heavy wool or fiberglass blankets or tarpaulins must be used as needed at welding locations to catch sparks and slag. Special care must be taken during overhead welding operations to safeguard personnel working below and prevent falling sparks from starting a fire. A fire watch is required;
- Welding tarpaulins must be hung without folds or pockets to prevent trapping of sparks or slag;
- The area around welding operations must be kept free of hoses and flammable materials of all kinds;
- Fire extinguishers must always be in the immediate area of welding and cutting operations;
- Keep all heaters a minimum 3ft/1 meter away from flammable materials such as building materials, form work, fuel, etc.;
- During the winter season, when portable construction heaters are used:
  - Check for proper operations of valves, regulators, thermostats, pilot lights, etc. each day;
  - Ensure proper ventilation is available for worker safety and fire prevention;
  - Ensure fuel containers are stored safely when not in use;
  - Check propane equipment regularly. Propane is dangerous if not used properly with suitable equipment, tanks, hoses, etc. Check equipment regularly; and,
  - Propane tanks must not be inside temporary buildings with heaters.

- NO SMOKING signs are to be posted in areas where fuel is stored or in use, and in areas where the construction materials are highly flammable;
- Appropriate closed containers are to be used for gasoline, kerosene, acids and similar fluids. Containers are to be clearly marked to indicate the character of the contents;
- Ground temporary gasoline storage tanks used in construction;
- All workers must observe NO SMOKING rules. Smoking is permitted in designated areas only; and,
- Fire extinguishers must be mounted on all powered mobile equipment.

**KNOW YOUR FIRE EXTINGUISHERS (there are 4 basic types of fire)**



**Ordinary Combustibles**

- Wood Use water or Stored Pressure
- Paper Extinguisher or Multi-Purpose
- Cloth etc. Dry Chemical



**Flammable Liquids**

- Gasoline Use Carbon Dioxide (CO<sub>2</sub>) or
- Paints Dry Chemical Extinguisher
- Oils etc.



**Electrical Equipment**

- Motors Use Carbon Dioxide (CO<sub>2</sub>) or
- Switches Dry Chemical Extinguisher



**Combustible Metals**

- Magnesium TC Energy does not have any
- Titanium such equipment or materials

### 17.3 Fire fighting procedure

1. Keep calm.
2. Do not enter/re-enter an enclosed space where the fire is or has been burning.
3. Do not attempt to extinguish any fire without first informing others of the danger. Ensure the safety of people and immediately notify fire department/911.
4. If the fire is small (smaller than you) and it is safe to attempt to extinguish, take immediate action to put it out.
 

**Do not attempt to extinguish a fire if:**

  - A properly rated extinguisher is not available;
  - You are not trained to use it;
  - You are alone or have not notified a co-worker or 911;
  - The fire might block your exit route; or,
  - The fire is out of control (larger than you).
5. **Do not continue to try and put out a fire if one extinguisher has already been expelled.**
6. If the fire cannot be contained, sound or activate general alarm.
7. Clear and secure the immediate area.
8. On arrival of Fire Fighting personnel, supply information on fire source/location/extent, hazards in area; access directions. Site safety escort and safe-zone support to fire fighting efforts may be provided if requested and safe to do so.

**ANY FIRE, REGARDLESS OF SIZE, IS TO BE TREATED AS SERIOUS.**

To Operate a Fire Extinguisher:

1. Pull the pin;
2. Aim at the base of the fire;
3. Squeeze the handle; and,
4. Sweep the extinguisher across the base of the fire.

When the fire is out do not turn your back to the fire. Walk backwards away from the fire if safe to do so. Update fire department/911 of successful extinguishment.



## Feedback

This is the current version of the Safety Handbook. As a user of this document, your input and recommendations are valued. Please provide your comments and suggestions for improving future editions using the contact information provided below.

TC Energy  
 c/o Safety, Quality and Compliance  
 450 – 1 Street S.W.  
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Or for more information or to request changes contact us by email [safety@tcenergy.com](mailto:safety@tcenergy.com).

The information provided in this Safety Handbook shall not contravene federal, state/provincial Occupational Health and Safety regulations; nor take precedence over TC Energy Policy and/or Operational Controls.

### Acknowledgement

I acknowledge that I have received, will read, and understand the contents of the Safety Handbook, which serves as a reference for minimum rules and standards for all personnel.

-----  
 Print Name

-----  
 Signature of Recipient and Date

-----  
 Company

-----  
 Project/Worksite/Agreement/Contract (if applicable)

TC Energy  
**Safety Handbook 2020**



## Completion Certificate

This Certifies that \_\_\_\_\_  
 has read and understands the contents of the Safety Handbook.

\_\_\_\_\_                      \_\_\_\_\_  
 Date                                      Immediate Supervisor

Detach this portion of the page and return to your TC Energy Authorized Representative / immediate supervisor. File accordingly with other Safety documents and records (i.e. Site Specific Employee Visitor Contractor HSE Orientation Checklist), this portion of the handbook is classified as SA-05 and is to be kept on-site at the TC Energy work location for 1 year. After 1 year send to offsite records storage per the TC Energy Filing Structure. For more information on filing and the on-site/offsite retention requirements, refer to the TC Energy Facility Filing Structure Reference compliance list (EDMS No. 003794696).









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