

## **Petroleum Installer Technician On-the-Job Training Guide**

*Petroleum Installer Technicians construct, install and service petroleum storage facilities and decommissions, remediates and removes such facilities.*

**Training Requirements:** 5400 hours (3 years) including: three levels of home study technical training.

Journeyman to apprentice ratio for this trade is: 1:2

The information contained in this pamphlet serves as a guide for employers and apprentices. Apprenticeship training is mutually beneficial to both employer and apprentice. The employer's investment in training apprentices results in skilled and certified workers. The pamphlet summarizes the tasks to be covered by the apprentice during the on-the-job portion of apprenticeship training.

It is the employer's or journeyman's training responsibility to supervise an apprentice's practical skills development until a satisfactory level of proficiency has been reached.

### **EMPLOYER TRAINING RESPONSIBILITY**

- expose the apprentice to all appropriate tools and materials
- provide guided, hands-on practice in project preparation and above ground tank installations
- provide guided, hands-on practice installing underground tanks and oil/water separators
- provide guided, hands-on practice installing piping systems
- provide guided, hands-on practice with facilities decommissioning
- ensure that the apprentice can evaluate the end-product.

Employers should make every effort to expose their apprentices to work experience in as many areas of the trade as possible.

Below, in-school instruction is listed first; suggestions to help employers assist the apprentice to prepare for in-school training are listed next.

The content of the training components is subject to change without notice.

# Level One

## Project Preparation

### Equipment, Materials, and Manpower Requirements

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *WHMIS training*
- *training in safety management for excellence*
- *an understanding of company work standards*
- *fire safety training*

### Work Site Preparation

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *an understanding of OH&S legislation*
- *an understanding of due diligence legislation*
- *opportunities to perform basic trade mathematics calculations*

## Above Ground Tank Installation

### Liner Material and Tank Installation

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *knowledge of good construction practices*
- *knowledge of the requirements for establishing work area perimeter and requirements for installing barricades*
- *an understanding of handling and installation techniques to protect liner from damage*
- *training in rigging and hoisting techniques and signalling*
- *knowledge of cables and slings and their use*
- *instruction on the use of levels and tank levelling procedures*
- *instruction on the correct use of ladders*
- *experience installing tank valves, vent and fixtures*
- *opportunities to read and understand written directions*
- *instruction on the use of power/pneumatic tools and lifting jacks*

### Concrete Pads, Foundations, and Piles

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *instruction on concrete form installation, preparation, and removal*
- *opportunity to assist in concrete pouring and finishing*
- *knowledge about protecting concrete from frost and extreme heat*
- *opportunity to install and place rebar*
- *instruction on the use of carpentry and concrete tools*
- *experience cutting and coring concrete*
- *experience installing anchors in concrete*

### Access, Inspection, and Related Equipment

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *knowledge of OH&S legislation for working at height*
- *opportunity to install load rack fixtures*
- *experience installing pumps and drip pans*

## **Safety and Directional Signage**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *knowledge of paint requirements*
- *work with paint stencils, installing directional signage and tank markings*

## **Underground Tank Installation**

### **Tank Location**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *knowledge of various excavation procedures in a variety of soil conditions*
- *knowledge of backfilling requirements for various type tank installations*
- *an understanding of shoring and sloping requirements*

### **Underground Tank Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *instruction reading and using work plans*
- *instruction on proper tank placement*
- *an understanding of backfill requirements*
- *experience operating backfill equipment*

## **Oil and Water Separator and Collection System Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *grouting*
- *installing PVC piping*
- *installing tank fixtures and catch basin*

## **Island and Vent Rack Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *an understanding of vent rack construction practices*
- *experience pouring island concrete*
- *experience pouring foundation for rack*
- *experience installing threaded and welded vent rack*

## **Backfill and Tank Slab Placement**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to install rebar, pour and finish concrete slabs*
- *knowledge of methods and techniques to control cracking in concrete slabs*
- *knowledge of construction practices for the installation of manholes*

## **Pump and Dispenser Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *knowledge of lubricants and their use*
- *opportunity to assist with the installation of pumps and dispensers*
- *knowledge of fastening systems*
- *knowledge of sump installation*
- *knowledge of co-axial transfer systems*

## **Painting and Identifying System**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *knowledge of surface preparation for applying paint*
- *knowledge of branding panels*
- *instruction on product identification tags*

## **Piping Installation**

### **Pipe Trench Preparation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *experience determining trench excavation requirements (depth, width, slope)*
- *knowledge of pipe bedding practices*

### **Catch Basin Piping Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *knowledge of pipe lay out practices*
- *opportunity to join all appropriate pipe*
- *opportunity to install catch basin piping*

### **Tank Fittings**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *fill pipe assembly*
- *suction valve assembly*
- *tank vent assembly*
- *accessory fittings*
- *pressure pumping system*

### **Piping to Pump/Dispenser Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *assist in the layout and installation of a ducted pipe transfer system*
- *install rigid and flexible piping systems*
- *understand the use of various types of connectors*
- *install pipe from tank to shear point*

### **Vent Rack Piping Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *measure and cut piping to specifications given on blueprints*
- *select and use solvent welding compounds*
- *install vent rack piping*

### **Above Ground Piping Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *adjust and operate threading machine*
- *thread steel and plastic pipe*
- *prepare pipe joint for welding*
- *connect flange and vitaulic type pipe systems*

## **Decommissioning**

### **Underground Valve, Pump, and Inventory Removal**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *instruction on static bonding procedures*
- *opportunity to operate product transfer equipment to remove inventories*
- *instruction on use of ohm meter*
- *instruction how to calculate tank inventory*
- *knowledge of spill response and containment procedures*
- *opportunity to remove product pumps, piping and island pump/dispenser*

### **Tank Excavation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *instruction on utilities/service markings*
- *instruction on tank excavation procedures including removal of overburden, asphalt and concrete and backfill from alongside tanks*
- *opportunity to use jackhammer*
- *experience disconnecting and removing piping from ground, vents, and islands*

### **Underground Excavation Testing**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *soil sampling and testing requirements*

### **Above Ground Tanks**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *hot work procedures and permits*
- *confined entry procedures*
- *pump/controls disconnect/removal procedures*

### **Above Ground Tank, Valve, Piping, and Inventory Removal**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *establish inventory levels*
- *operate product transfer equipment to remove inventories*
- *drain and disconnect piping and valves*
- *remove manholes*
- *remove access/inspection equipment*

### **Above Ground Tank Removal**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *knowledge of rigging and signalling procedures*

### **Tank Disposal**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *knowledge of air quality testing requirements*
- *knowledge of tank purge methods and procedures*
- *experience operating nibbler*
- *experience using oxy-fuel cutting equipment*

## **Level Two**

### **Project Preparation**

#### **Equipment, Materials, and Manpower Requirements**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to review and interpret applicable codes for petroleum installations*
- *experience assisting in planning and preparing materials, equipment, and manpower requirements*

#### **Work Site Preparation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to assist in locating the perimeter of the work area*
- *experience assisting in planning and establishing access routes, calculate (and erect) fencing requirements or barricades, and post appropriate signage*
- *information about contacting utility companies to locate existing services on the work site and to supply required services*

### **Above Ground Tank Installation**

#### **Grade Preparation for Dike Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to assist in staking out dike location*
- *opportunities to calculate quantities of materials for various site construction projects*
- *opportunities to use builders level*
- *knowledge of requirements and procedures for removing overburden*
- *experience compacting subgrade and installing granular coarse*
- *experience constructing pre-cast concrete dikes*
- *experience operating small equipment i.e. Bobcat*
- *information on the construction of earthen dikes*
- *experience constructing dike slope and impermeable layer*
- *experience rigging and placing pre-fabricated tanks into position*

#### **Liner Material Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *experience establishing and excavating the sump*
- *knowledge of various liner installations and sealants*
- *experience installing dike liners*
- *opportunities to place sand cover and base material on top of liner*
- *opportunities to prepare tank base*

#### **Tank Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *experience installing tank valves, vents, and fixtures according to manufacture's instructions and in accordance with applicable codes*
- *opportunity to troubleshoot fuel supply and monitoring system malfunction*

#### **Concrete Pad, Foundation, and Pile Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunity to build and set forms, install rebar, and install anchor bolts*
- *instruction on reading blueprints, details, schedules, and specifications*
- *opportunity to calculate quantities of concrete required for various projects*
- *experience pouring and finishing concrete*

## **Install Access, Inspection, and Related Equipment**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *install catwalks and walkovers*
- *install loading arms and load rack features*
- *install pumps and drip pans*
- *prepare equipment for electrical rough-in*

## **Install Safety and Directional Signage**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *instruction on calculating capacities of cylinders*
- *opportunity to install tank content and capacity signage*
- *opportunity to install piping identifiers, safety and directional signage, and indicate product flow*

## **Underground Tank Installation**

### **Tank Location**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *information about safe excavation practices*
- *opportunities to assist in staking and excavation procedures*

### **Underground Tank Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *install liners and geo-cloth*
- *install deadman anchors*
- *rig and unload tanks from transport equipment*
- *assist in tank testing prior to installation*
- *assist in the rigging, hoisting, and placement of the tank*
- *place piezometers and VES systems*
- *install tank fixtures*
- *backfill excavation for various tank type installations to the top of the tank*

### **Oil and Water Separator and Collection System Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *information about oil/water separation system operation and servicing requirements*
- *experience installing various types of oil and water and collection systems*
- *opportunities to establish drainage system inverts*
- *opportunities to install and test tank fixtures*

### **Island Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *assist in island layout and install island forms*
- *install dispenser sumps*
- *install light and canopy piles*
- *pour and finish island concrete*

### **Vent Rack Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *assist in vent rack lay out and install vent rack forms*
- *lay out and install vent rack and vent rack features*

## **Tank Slab Placement**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *complete the backfill over the tank*
- *place slab forms*
- *install manholes*
- *install rebar, pour concrete, and finish tank slab*

## **Pump and Dispenser Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *install shear point within sump*
- *install pump/dispenser*
- *install submersible pumps*
- *apply product identification tags and markings*

## **System Testing**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *instruction testing underground installations*
- *information on company test procedures*
- *instruction on the use of test equipment*
- *opportunities to assist with hydrostatic, pneumatic, and electronic test procedures*

## **Piping Installation**

### **Pipe Trench Preparation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *assist in layout and excavation of pipe trenches*
- *opportunities to bed trenches for piping*

### **Catch Basin Piping Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to layout and join piping*

### **Tank Fittings**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *install pressure pumping systems*
- *grade piping*

### **Piping to Pump/Dispenser Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *knowledge of trench shoring procedures*
- *opportunity to install various piping systems from tank to shear point*
- *experience installing cathodic protection*

### **Vent Rack Piping Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *layout and install piping from tank to vent rack*



## **Above Ground Piping Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *cut, thread, and assemble threaded piping systems*
- *cut, groove, and assemble Victaulic piping systems*
- *cut and prepare pipe for welding*
- *install, support, and grade piping*
- *install ground straps*

## **Testing Piping Systems**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *prepare various piping systems for testing*
- *test new piping installations*
- *test existing piping installations*

## **Decommissioning**

### **Underground Valve, Pump, and Inventory Removal**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to isolate and drain piping systems and establish and remove tank inventories*
- *knowledge of electrical disconnect procedures*
- *opportunities to remove check valves, pumps/dispensers and shear valves and tank fixtures*
- *assist in gas-freeing tanks and calculating quantities of dry ice or carbon dioxide required*

### **Tank Removal**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to remove tank aprons (asphalt, concrete) and overburden*
- *knowledge of procedures for disposing of asphalt, concrete and contaminated soil*
- *opportunities to disconnect piping from vents, islands and remove piping from the ground*
- *knowledge of tank excavation procedures in various ground conditions*
- *opportunities to assist in rigging and hoisting tanks from the excavation*

### **Underground Excavation Testing**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *check excavation for oxygen levels and explosive limits*

### **Above Ground Tank, Valve, Piping, and Inventory Removal**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *drain, purge, disconnect, and remove piping, valves and tank fixtures*
- *determine inventory quantities and remove tank inventory*
- *assist in gas-freeing tanks*
- *clean and remove sludge from inside the tank*

### **Above Ground Tank Removal**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to assist in rigging and hoisting tanks*
- *opportunities to destroy fuel tanks as required*
- *knowledge of permits for transporting oversize loads*
- *knowledge of tank disposal procedures*
- *opportunities to assist in dike removal (earthen and concrete) and site cleanup operations*

## **Level Three**

### **Project Preparation**

#### **Equipment, Materials, and Manpower Requirements**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *review applicable codes and complete applications to prepare and plan petroleum installations*
- *assist in the co-ordination of delivery dates and establishing job schedules*
- *conduct tailgate safety meetings and apply safety program and work standards to employees and subcontractors*

#### **Work Site Preparation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *locate perimeter of work area*
- *predict traffic flow establish access routes*
- *assist in start-up meetings and review site rules*
- *coordinate scheduling and contact utilities to locate and/or provide services*

### **Above Ground Tank Installation**

#### **Dike Installation and Grade Preparation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *calculate dike sizes*
- *install prefabricated dike*
- *construct earthen dike*

#### **Liner Material and Tank Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to locate and install sump from the elevation drawing*
- *instruction on plastic welding and liner certification*
- *opportunities to install liners*
- *opportunities to determine tank location*

#### **Tank Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *determine crane capacities and estimate load weight*
- *direct lift until tank is positioned*
- *level and secure tank*
- *install all valves, vents, and fixtures*
- *raise and re-level tanks*
- *perform tank tests*

#### **Concrete Pads, Foundations, and Piles**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to read blueprints to locate pads, foundations and piles*
- *instruction on reading survey grades and determining drainage patterns*
- *opportunities to locate and place all concrete pads to allow slope back to collection tanks or pump outs*
- *opportunities to ensure underground preparations (electrical, piping, catch basins, piles) are installed*
- *opportunities to supervise concrete pour and finishing*

## **Access, Inspection, and Related Equipment**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *install catwalk, walkovers, load rack features, and loading arms*

## **Installation and Testing of Monitoring Equipment**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *advanced instruction on testing procedures*
- *advanced instruction on installing electronic and mechanical controls*
- *opportunities to install high level alarm, gauging system, leak detections systems, and monitoring systems*
- *opportunities to test monitoring systems*

## **Underground Tank Installation**

### **Tank Location**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *stake the excavation perimeter*
- *check depth of the excavation*
- *plan and supervise excavation procedures*

### **Underground Tank Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *advanced instruction for certification techniques of liners*
- *opportunities to install liner*
- *opportunities to install deadman anchor*
- *opportunities to conduct tank tests prior to installation*
- *opportunities to direct lift to install tank in excavation*
- *instruction on taking tank deflections*
- *opportunities to place piezometers*
- *opportunities to backfill excavation to top of tanks*

## **Oil and Water Separator and Collection System Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *establishing drainage system inverts*
- *installing oil/water separator and install tank fixtures*
- *testing installations*

### **Island Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *laying out islands*
- *installing dispenser sumps*
- *installing light/canopy piles*
- *installing island forms*

### **Vent Rack Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *laying out vent rack location*

## **Backfill and Tank Slab Placement**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *establish finish elevation*
- *install manholes*

## **Pump and Dispenser Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *advanced instruction on pump/dispenser operation and testing procedures*
- *opportunities to install pump/dispenser*
- *opportunities to arrange for electrical connection*

## **System Testing**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *advanced instruction on testing the entire system installation*
- *opportunities to conduct and evaluate hydrostatic, pneumatic, and electronic tests*

## **Painting and Identifying System**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *advanced instruction on blueprint reading and code requirements*
- *opportunities to paint islands, light poles and other equipment*
- *opportunities to install signage, identify tank contents and tank sizes*
- *opportunities to identify pumps and dispensers, piping, and product flow*

## **Piping Installation**

### **Pipe Trench Preparation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to layout trench*

### **Catch Basin Piping Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to layout and join pipe*

### **Tank Fittings**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *layout and install tank features*

### **Piping to Pump/Dispenser Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *layout and install piping from tank to shear point*

### **Vent Rack Piping Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *layout and install vent rack piping*

### **Above Ground Piping Installation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *layout and install above ground piping*

## **Piping Systems Testing**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *advanced instruction on B31.3 code for welded piping*
- *opportunities to prepare systems for testing and conduct tests on various piping systems (double wall, primary and secondary)*

## **Decommissioning**

### **Underground Valve, Pump, and Inventory Removal**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *drain systems and remove valves, pumps, piping and tank fixtures*
- *establish and remove inventories*
- *gas-free tanks*

### **Tank Excavation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *ensure tanks are gas-free during excavation procedures*

### **Underground Excavation Testing**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to check excavation for oxygen levels and explosive limits*
- *opportunities to take soil samples*
- *advanced instruction on SERM requirements for underground excavation testing*
- *opportunities to produce drawings of site plans*

### **Above Ground Tank Preparation**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to gas-free tanks*

### **Above Ground Tank Removal**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *opportunities to use electronic monitors and inspect area below tank*

### **Tank Disposal**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *ensure tank is gas-free*
- *arrange tank inspection to determine remaining life*

## **Closure**

### **Closing Site**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *instruction completing closure reports*
- *instruction on completing as-built drawings*
- *instruction on contacting all sub-contractors for as-built information*
- *instruction on providing all warranty, operating, and maintenance manuals to owner*

## **Site Decommissioning**

*The employer can assist the apprentice to prepare for this section of technical training by:*

- *instruction on SERM requirements for closure reports and their submission*
- *instruction on making site drawings*

**Consider apprenticeship training as an investment in the future of your company and in the future of your workforce. Ultimately, skilled and certified workers increase your bottom line.**

**Get involved in the apprenticeship training system. Your commitment to training helps to maintain the integrity of the trade.**

**Do you have employees who have been working in the trade for a number of years but don't have trade certification? Contact your local apprenticeship office for details on how they might obtain the certification they need.**

## **Saskatchewan Apprenticeship & Trade Certification Commission**

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### **District Offices**

Estevan (306) 637-4930

La Ronge (306) 425-4385

Moose Jaw (306) 694-3735

North Battleford (306) 446-7409

Prince Albert (306) 953-2632

Saskatoon (306) 933-8476

Swift Current (306) 778-8945

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