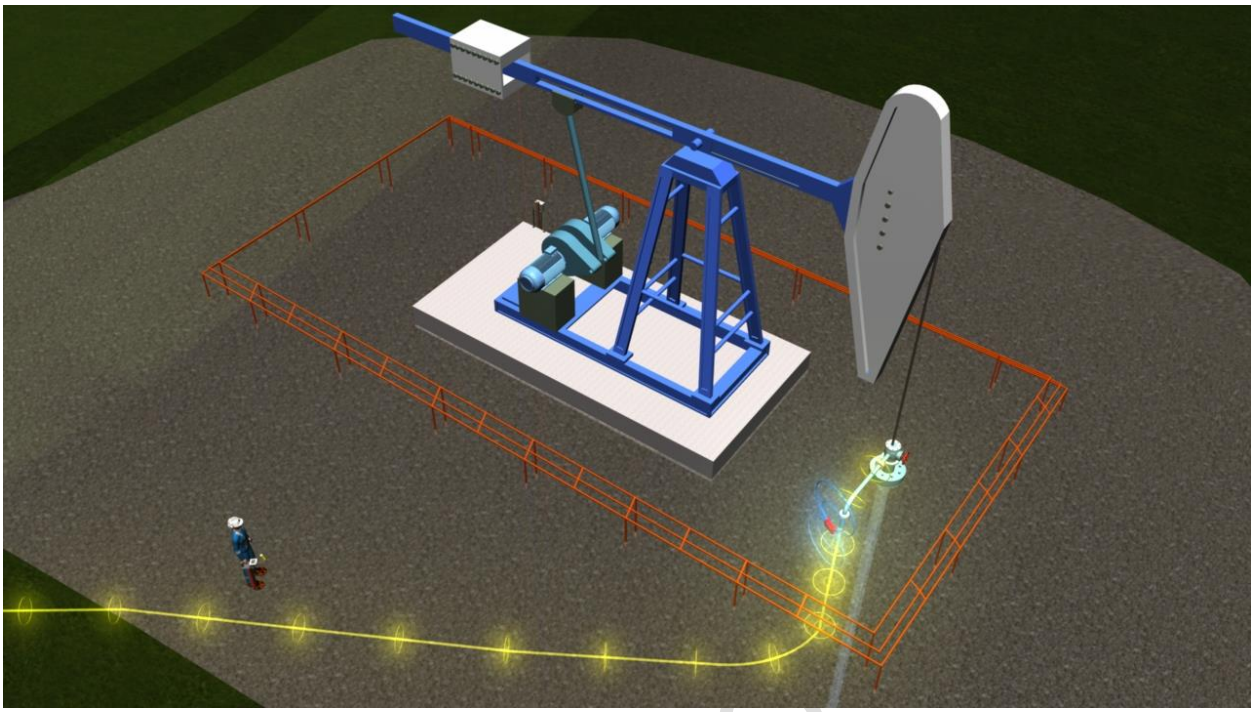

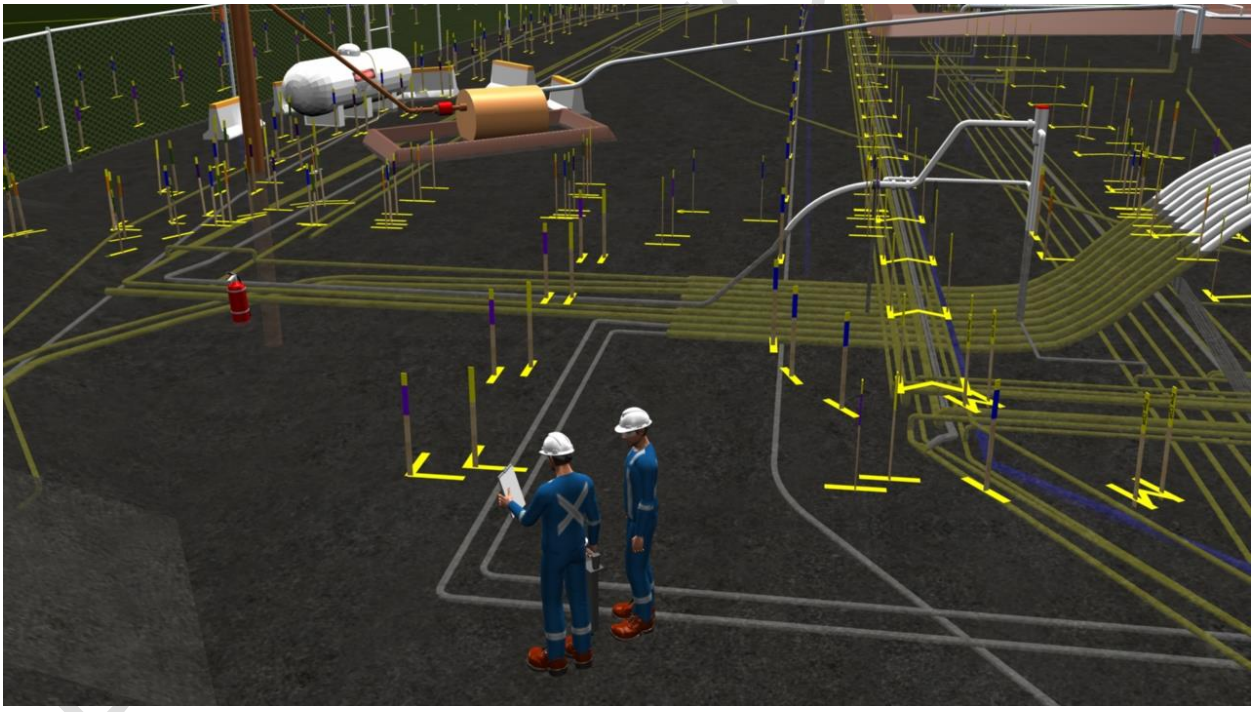

CAPULC

UNDERGROUND FACILITY LOCATOR COMPETENCY PROFILE

UNDERGROUND FACILITY LOCATOR COMPETENCY PROFILE

The Underground Facility Locator (UFL) Competency Profile (CP) was developed for the Canadian Association of Pipeline and Utility Locating Contractors (CAPULC). CAPULC will create a Competency Profile Committee (CPC) to review the Competency Profile and to send the CP out for public review and comment. CAPULC members may request to join the CPC by emailing competencies@capulc.ca.

Version 1.0 – 2015

DISCLAIMER

The information provided in this Competency Profile is intended for general application only and is not intended for use as a complete reference. Terms used in this Competency Profile may vary between facility owners/operators and jurisdictions. It is not a definitive guide to government regulations nor is it a guide to the practices and procedures wholly applicable to every locate circumstance. The appropriate regulations, company-specific work practices and manufacturers' equipment instructions must be consulted and applied with due diligence. The Canadian Association of Pipeline and Utility Locating Contractors (CAPULC) and Locate Management assume no responsibility whatsoever, for any injury, loss or damage arising from its use.

ACKNOWLEDGEMENTS

The competencies were developed by Locate Management for Underground Facility Locators (UFLs) with the assistance from the Canadian Association of Pipeline and Utility Locating Contractors (CAPULC) members, industry, facility owner/operators. Their collective input and dedication to the development of the UFL Competency Profile are greatly appreciated by CAPULC.

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ADDITIONS AND MODIFICATIONS

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Petroleum Producers Locator Skills

1.0	General Locating Knowledge	Describe the history of the petroleum industry	Describe the history of petroleum pipelines	Describe the uses of petroleum pipelines	Describe the products that are transported by petroleum pipelines	Describe gas products that are transported by petroleum pipelines
		Describe liquid products that are transported by petroleum pipelines	Describe high pressure petroleum pipelines	Describe low pressure petroleum pipelines	Define hazardous materials	Describe electrical cables for petroleum production
		Describe telemetry (control) cables for petroleum production	Describe the properties of natural gas	Describe the properties of crude oil	Describe the properties of sour (H_2S) gas products	Describe the properties of sour (H_2S) liquid products
		Describe the properties and purpose of fuel gas	Describe the properties and purpose of condensate	Describe the properties and purpose of produced water	Describe the properties of sour (H2S) water	Describe the properties and purpose of fresh water
		Describe the properties and purpose of source water	Describe the properties and purpose of buyback gas	Describe the properties and purpose of injection steam	Describe the properties and purpose of odorizers for natural gas	Describe sales (processed) gas
		Describe sales (processed) oil	Describe delivery points	Know the petroleum pipelines owners and operators in area of responsibility	Explain a right of way	Explain a public right of way
		Describe easements	Describe environmental monitoring of petroleum producers' sites	Describe pipeline flow maintenance	Describe pipeline integrity protection maintenance	Describe anti-flocculants and dehydration chemicals for pipeline maintenance
		Describe pipeline pigging	Describe cathodic protection (CP)	Describe pipeline status (pending, operating, discontinued, abandoned)	Describe the practice of repurposing pipelines	Describe construction practices for petroleum pipelines
		Describe trenchless construction practices (HDD, boring)	Describe gas compressor sites and their purpose	Describe gas plant sites and their purpose	Describe gas sweetening sites and their purpose	Describe gas storage sites and their purpose
		Describe gas truckout sales/meter sites and their purpose	Describe gas sales/meter sites and their purpose	Describe oil satellite sites and their purpose	Describe oil battery sites and their purpose	Describe oil truck receipt/meter sites and their purpose
		Describe oil storage sites and their purpose	Describe oil pipeline sales shipping sites and their purpose	Describe oil truckout sales shipping sites and their purpose	Describe water injection sites and their purpose	Describe steam generation sites and their purpose
		Describe steam injection sites and their purpose	Describe infrastructure within a petroleum processing facility	Describe common pipeline functions and their associated pressures	Describe the composition of different types of pipelines	Know the NEB Act and regulations relating to pipelines
		Define PHMSA	Know the provincial regulations regarding safe pipeline excavation	Describe purpose of right-of-way maintenance	Explain NEB regulations for right-of-way maintenance	Explain Code of Federal Regulations (CFR) for right-of-way maintenance
		Explain CSA standards for right-of-way maintenance	Explain NEB regulations for right-of-way monitoring	Explain Alberta pipeline regulation for right-of-way monitoring	Explain Code of Federal Regulations (CFR) for right-of-way monitoring	Explain CSA standards for right-of-way monitoring
		Know leak detection survey requirements for right-of-way monitoring	Know depth of cover requirements for right-of-way monitoring	Explain gas leak detection survey report records for right-of-way monitoring	Describe purpose of right-of-way signs and markers	Explain Code of Federal Regulations (CFR) for right-of-way signs and markers

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Petroleum Producers Locator Skills

		Explain CSA standards for right-of-way signs and markers	Explain company specific standards for right-of-way signs and markers	Know warning signs requirements for right-of-way signs and markers	Know mainline color code requirements for right-of-way signs and markers	Know waterway requirements for right-of-way signs and markers
		Describe purpose of facility signs and markers	Explain company specific standards for facility signs and markers	Know entrances/public access requirements for facility signs and markers	Know mainline color codes requirements for facility signs and markers	Know safety sign and marker requirements for facility signs and markers
		Know security sign and marker requirements for facility signs and markers	Describe requirements for vehicular crossings of transmission pipelines			
2.0	General Locating Skills	Demonstrate the ability to identify the uses of petroleum pipelines	Demonstrate the ability to identify the products that are transported by petroleum pipelines	Demonstrate the ability to identify gas products that are transported by petroleum pipelines	Demonstrate the ability to identify liquid products that are transported by petroleum pipelines	Demonstrate the ability to identify high pressure petroleum pipelines
		Demonstrate the ability to identify low pressure petroleum pipelines	Demonstrate the ability to identify hazardous materials	Demonstrate the ability to identify electrical cables for petroleum production	Demonstrate the ability to identify telemetry (control) cables for petroleum production	Demonstrate the ability to identify the properties of natural gas
		Demonstrate the ability to identify the properties of crude oil	Demonstrate the ability to identify the properties of sour (H_2S) gas products	Demonstrate the ability to identify the properties of sour (H_2S) liquid products	Demonstrate the ability to identify the properties and purpose of fuel gas	Demonstrate the ability to identify the properties and purpose of condensate
		Demonstrate the ability to identify the properties and purpose of produced water	Demonstrate the ability to identify the properties of sour (H_2S) water	Demonstrate the ability to identify the properties and purpose of fresh water	Demonstrate the ability to identify the properties and purpose of source water	Demonstrate the ability to identify the properties and purpose of buyback gas
		Demonstrate the ability to identify the properties and purpose of injection steam	Demonstrate the ability to detect and identify natural gas odorizers	Demonstrate the ability to identify the properties of sales (processed) gas	Demonstrate the ability to identify the properties of sales (processed) oil	Demonstrate the ability to identify delivery points
		Demonstrate the ability to identify the petroleum pipelines owners and operators in area of responsibility	Demonstrate the ability to identify a surveyed right of way	Demonstrate the ability to identify a surveyed public right of way	Demonstrate the ability to identify easements	Demonstrate the ability to identify environmental monitoring procedures and structures
		Demonstrate the ability to identify pipeline flow maintenance measures and structures	Demonstrate the ability to identify pipeline integrity measures and structures	Demonstrate the ability to identify pipeline maintenance measures and structures	Demonstrate the ability to identify pipeline pigging design and structures	Demonstrate the ability to identify cathodic protection design and structures
		Demonstrate the ability to recognize the status of pipelines (pending, operating, discontinued, abandoned)	Demonstrate the ability to recognize repurposed pipelines	Demonstrate the ability to identify construction practices for petroleum pipelines	Demonstrate the ability to identify trenchless construction practices (HDD, boring)	Demonstrate the ability to identify gas compressor sites
		Demonstrate the ability to identify gas plant sites	Demonstrate the ability to identify gas sweetening sites	Demonstrate the ability to identify gas storage sites	Demonstrate the ability to identify gas truckout sales/meter sites	Demonstrate the ability to identify gas pipeline sales/meter sites
		Demonstrate the ability to identify oil satellite sites	Demonstrate the ability to identify oil battery sites	Demonstrate the ability to identify oil truck receipt/meter sites	Demonstrate the ability to identify oil storage sites	Demonstrate the ability to identify oil pipeline receipt/meter sites

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Petroleum Producers Locator Skills

		Demonstrate the ability to identify oil truckout receipt/meter sites	Demonstrate the ability to identify water injection sites	Demonstrate the ability to identify steam generation sites	Demonstrate the ability to identify steam injection sites	Demonstrate the ability to identify the infrastructure within a petroleum processing facility
		Demonstrate the ability to identify common pipeline functions and associated pressures	Demonstrate the ability to identify the composition of different types of pipes	Demonstrate the ability to identify the NEB Act and regulations relating to pipelines	Demonstrate the ability to identify PHMSA	Demonstrate the ability to identify the provincial regulations regarding safe pipeline excavation
		Demonstrate the ability to identify requirements for vehicular crossings of petroleum pipelines	Describe purpose of right-of-way maintenance	Explain NEB regulations for right-of-way maintenance	Explain Code of Federal Regulations (CFR) for right-of-way maintenance	Explain CSA standards for right-of-way maintenance
		Explain NEB regulations for right-of-way monitoring	Explain Alberta pipeline regulation for right-of-way monitoring	Explain Code of Federal Regulations (CFR) for right-of-way monitoring	Explain CSA standards for right-of-way monitoring	Know leak detection survey requirements for right-of-way monitoring
		Know depth of cover requirements for right-of-way monitoring	Explain gas leak detection survey report records for right-of-way monitoring	Describe purpose of right-of-way signs and markers	Explain Code of Federal Regulations (CFR) for right-of-way signs and markers	Explain CSA standards for right-of-way signs and markers
		Explain company specific standards for right-of-way signs and markers	Know warning signs requirements for right-of-way signs and markers	Know mainline color code requirements for right-of-way signs and markers	Know waterway requirements for right-of-way signs and markers	Describe purpose of facility signs and markers
		Explain company specific standards for facility signs and markers	Know entrances/public access requirements for facility signs and markers	Know mainline color codes requirements for facility signs and markers	Know safety sign and marker requirements for facility signs and markers	Know security sign and marker requirements for facility signs and markers
3.0	Information Source Knowledge	Explain map sources	Explain where to obtain various types of records	Explain training in reading and utilizing information source records	Explain petroleum pipeline (PP) owner / operator records	Explain where PP owner/operator records can be obtained
		Explain the importance of utilizing PP owner/operator records	Explain how to interpret information contained in a PP owner/operator record (e.g., legends, abbreviations, and symbols)	Explain how to interpret schematic representation (approximate relative alignment)	Explain how to interpret spatially accurate representation	Explain how to determine recorded distances between pipes and boundaries and property lines
		Know abbreviations associated with petroleum pipeline facilities	Explain the formats that PP owner/operator records are found (e.g., hardcopy, digital)	Explain third party database	Explain survey plans	Explain as-builts drawings
		Explain engineer plot plans	Explain provincial regulatory boards / agencies / commission plans	Explain land titles records	Explain municipal / county maps	Explain irrigation district maps
		Explain transmission pipeline owner / operator records	Explain other facility owner / operator records	Explain locator company drawings	Explain GIS maps	Explain aerial / satellite photographs
		Explain site photographs	Explain Google Maps/Google Earth	Explain internet-accessed mapping and photographs	Explain topographical maps	Explain use of one call system information

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Petroleum Producers Locator Skills

Explain importance of interviewing facility / field personnel	Describe the importance of obtaining information from landowners regarding facilities on their property	Explain the purpose and use of PP owner/operator index records	Explain how to identify petroleum producers' pipeline owner/operators on PP owner/operator records	Explain how to identify the petroleum producers' pipeline model on PP owner/operator records
Explain how to identify petroleum producers' systems on PP owner/operator records	Explain how to identify buried pipeline infrastructure found on PP owner/operator records	Explain how to identify petroleum producers' pipeline system components found on PP owner/operator records	Explain how to identify various petroleum producers' pipe configurations on PP owner/operator records	Explain how to identify above ground structures (e.g., sites, valves, pig senders/receivers) found on PP owner/operator records
Explain how to identify different functions and associated pressures of petroleum producers' pipes on PP owner/operator records	Explain how to identify the composition and sizes of lines found on PP owner/operator records	Explain how to identify the status of lines found on PP owner/operator records	Explain how to identify the approximate alignment of lines found on PP owner/operator records	Explain how to identify access points on PP owner/operator records
Explain how to identify crossings (foreign, road, etc.) found on PP owner/operator records	Explain how to identify transition points or fittings found on PP owner/operator records	Explain how to identify a change in pipe composition found on PP owner/operator records	Explain how to identify a change in pipe size found on PP owner/operator records	Explain how to identify a change in pipe pressure found on PP owner/operator records
Explain how to identify property owner, property line, and property descriptions found on PP owner/operator records	Explain how to identify construction practices for petroleum producers' facilities on PP owner/operator records	Explain how to identify trenchless pipe installation on PP owner/operator records	Explain how to identify possible bell hole sites on PP owner/operator records	Explain how to identify casings on PP owner/operator records
Explain how to identify casing vents on PP owner/operator records	Explain how to identify production leases on PP owner/operator records	Explain how to identify wellsites on PP owner/operator records	Explain how to identify gas compressor sites on PP owner/operator records	Explain how to identify gas plant sites on PP owner/operator records
Explain how to identify gas sweetening sites on PP owner/operator records	Explain how to identify gas storage sites on PP owner/operator records	Explain how to identify gas truckout sales/meter sites on PP owner/operator records	Explain how to identify gas pipeline sales/meter sites on PP owner/operator records	Explain how to identify associated transmission gas pipeline infrastructure found on PP records
Explain how to identify oil satellite sites on PP owner/operator records	Explain how to identify oil battery sites on PP owner/operator records	Explain how to identify oil truck receipt/meter sites on PP owner/operator records	Explain how to identify oil pipeline receipt/meter sites on PP owner/operator records	Explain how to identify oil storage sites on PP owner/operator records
Explain how to identify oil truckout sales/meter sites on PP owner/operator records	Explain how to identify oil pipeline sales/meter sites on PP owner/operator records	Explain how to identify associated transmission liquids pipeline infrastructure found on PP records	Explain how to identify flanges, valves, and fittings on PP owner/operator records	Explain how to identify isolation valves on PP owner/operator records
Explain how to identify open/closed valves on PP owner/operator records	Explain how to identify bypass pipes and valves on PP owner/operator records	Explain how to identify emergency shut down valves on PP owner/operator records	Explain how to identify emergency blow down valves on PP owner/operator records	Explain how to identify cathodic protection (CP) on PP owner/operator records

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Petroleum Producers Locator Skills						
		Explain how to identify cathodic rectifiers on PP owner/operator records	Explain how to identify cathodic ground (anode) beds on PP owner/operator records	Explain how to identify cathodic test points on PP owner/operator records	Explain how to identify cathodic isolation on PP owner/operator records	Explain how to identify a right of way on PP owner/operator records
		Explain how to identify a public right of way on PP owner/operator records	Explain how to identify easements on PP owner/operator records	Explain how to identify discontinued pipelines on PP owner/operator records	Explain how to identify abandoned pipelines on PP owner/operator records	Explain how to identify future pipe on PP owner/operator records
		Explain how to identify dead-end pipe on PP owner/operator records	Explain how to identify ancillary facilities (communication, electrical, CP) on PP owner/operator records	Describe a stake-out report / facility location request	Describe a ground disturbance package	Describe a job completion checklist
		Describe a crossing report				
4.0	Information Source Skills	Demonstrate ability to identify sources of mapping records	Demonstrate ability to access various types of records	Demonstrate ability to read and utilize information source records	Demonstrate ability to utilize PP owner / operator records	Demonstrate the ability to obtain PP records
		Demonstrate the ability to interpret and utilize information on PP records (e.g., legends, abbreviations, and symbols)	Demonstrate the ability to interpret schematic representation (approximate relative alignment)	Demonstrate the ability to interpret spatially accurate representation	Demonstrate the ability to determine recorded distances between pipes and boundaries and property lines	Demonstrate the ability to identify abbreviations associated with petroleum pipeline facilities
		Demonstrate the ability to utilize various formats of PP records (e.g., hardcopy, digital)	Demonstrate ability to access and utilize third party database records	Demonstrate ability to access and utilize survey plans	Demonstrate ability to access and utilize as-builts drawings	Demonstrate ability to access and utilize engineer plot plans
		Demonstrate ability to access and utilize provincial regulatory boards / agencies / commission plans	Demonstrate ability to access and utilize land titles records	Demonstrate ability to access and utilize municipal / county maps	Demonstrate ability to access and utilize irrigation district maps	Demonstrate the ability to access and utilize petroleum producers' owner / operator records
		Demonstrate the ability to access and utilize other facility owner / operator records	Demonstrate ability to access and utilize locator company drawings	Demonstrate ability to access and utilize GIS maps	Demonstrate ability to access and utilize aerial / satellite photographs	Demonstrate ability to utilize site photographs
		Demonstrate ability to utilize Google Maps/Google Earth	Demonstrate ability to access and utilize internet-accessed mapping and photographs	Demonstrate ability to access and utilize topographical maps	Demonstrate ability to access and utilize one-call system information	Demonstrate ability to conduct interviews with facility / field personnel
		Demonstrate ability to obtain information from landowners regarding facilities on their property	Demonstrate the ability to utilize petroleum pipeline index records	Demonstrate the ability to identify owner/operators of petroleum pipelines on PP records	Demonstrate the ability to identify the petroleum pipelines system model on PP records	Demonstrate the ability to identify petroleum systems on PP records
		Demonstrate the ability to identify buried petroleum infrastructure found on PP records	Demonstrate the ability to identify petroleum system components on PP records	Demonstrate the ability to identify various petroleum pipe configurations found on PP records	Demonstrate ability to identify above ground structures (e.g., wells, pigging hardware, risers/valves) on PP records	Demonstrate the ability to identify the functions and associated pressures of pipes found on PP records

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Petroleum Producers Locator Skills

Demonstrate the ability to identify the composition and size of lines found on PP records	Demonstrate the ability to identify the status of lines found on PP records	Demonstrate the ability to identify the approximate alignment of lines found on PP records	Demonstrate the ability to identify access points found on PP records	Demonstrate the ability to identify crossings (foreign, road, etc.) found on PP records
Demonstrate the ability to identify transition points or fittings found on PP records	Demonstrate the ability to identify a change in composition of lines found on PP records	Demonstrate the ability to identify a change in pipe size found on PP records	Demonstrate the ability to identify a change in pipe pressure found on PP records	Demonstrate the ability to identify property owner, property line, and property descriptions found on PP records
Demonstrate the ability to identify recorded construction practices used to install PP facilities	Demonstrate the ability to identify trenchless pipe installation on PP records	Demonstrate the ability to identify bell hole construction on PP records	Demonstrate the ability to identify and utilize casings found on PP records	Demonstrate the ability to identify and utilize casing vents found on PP records
Demonstrate the ability to identify production leases on PP records	Demonstrate the ability to identify wellsites on PP records	Demonstrate the ability to identify gas compressor sites on PP records	Demonstrate the ability to identify gas plant sites on PP records	Demonstrate the ability to identify gas sweetening sites on PP records
Demonstrate the ability to identify gas storage sites on PP records	Demonstrate the ability to identify gas truckout sales/meter sites on PP records	Demonstrate the ability to identify gas pipeline sales/meter sites on PP records	Demonstrate the ability to identify associated transmission gas pipeline infrastructure found on PP records	Demonstrate the ability to identify w on PP records
Demonstrate the ability to identify oil satellite sites on PP records	Demonstrate the ability to identify oil battery sites on PP records	Demonstrate the ability to identify oil truck receipt/meter sites on PP records	Demonstrate the ability to identify oil pipeline receipt/meter sites on PP records	Demonstrate the ability to identify oil storage sites on PP records
Demonstrate the ability to identify oil truckout sales/meter sites on PP records	Demonstrate the ability to identify oil pipeline sales/meter sites on PP records	Demonstrate the ability to identify associated transmission liquids pipeline infrastructure on PP records	Demonstrate the ability to identify flanges, valves, and fittings on PP records	Demonstrate the ability to identify isolation valves on PP records
Demonstrate the ability to identify emergency blowdown valves on PP records	Demonstrate the ability to identify cathodic protection on PP records	Demonstrate the ability to identify cathodic rectifiers on PP records	Demonstrate the ability to identify cathodic ground (anode) beds on PP records	Demonstrate the ability to identify cathodic test points on PP records
Demonstrate the ability to identify cathodic isolation on PP records	Demonstrate the ability to identify a right of way on PP records	Demonstrate the ability to identify a public right of way on PP records	Demonstrate the ability to identify easements on PP records	Demonstrate the ability to identify discontinued pipelines on PP records
Demonstrate the ability to identify abandoned pipelines on PP records	Demonstrate the ability to identify future pipe on PP records	Demonstrate the ability to identify dead-end pipe on PP records	Demonstrate the ability to identify ancillary facilities (communication, electrical, CP) on PP records	Demonstrate the ability to utilize and complete a stake-out report / facility location request
Demonstrate the ability to utilize and complete a ground disturbance package	Demonstrate the ability to utilize and complete a job completion checklist	Demonstrate the ability to utilize and complete a crossing report	Demonstrate the ability to interpret schematic representation (approximate relative alignment)	Demonstrate the ability to interpret spatially accurate representation
Demonstrate the ability to determine recorded distances between pipes and boundaries and property lines				

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Petroleum Producers Locator Skills						
5.0	Petroleum Pipeline Locating Documentation & Communication Knowledge	Describe owner/operator notification procedures	Describe procedures to contact petroleum pipeline owner/operators	Explain the locate request communication process	Describe hazard assessment, controls, and ERP records	Describe locate sketch requirements
		Describe a stake-out report / facility location request	Describe a job completion checklist	Describe a ground disturbance package	Describe a crossing report	Describe a backfill report
6.0	Petroleum Pipeline Locating Documentation and Communication Skills	Demonstrate the ability to follow client notification procedures	Demonstrate the ability to contact petroleum pipeline owner/operators	Demonstrate the ability to follow the locate request communication process	Demonstrate the ability to document and communicate hazard assessment, controls, and ERP records	Demonstrate the ability to create a locate sketch fulfilling the documentation requirements
		Demonstrate the ability to utilize and complete a stake-out report / facility location request	Demonstrate the ability to utilize and complete a ground disturbance package	Demonstrate the ability to utilize and complete a job completion checklist	Demonstrate the ability to utilize and complete a crossing report	Demonstrate the ability to document and communicate a backfill report
7.0	Petroleum Pipeline Locator Safety Knowledge	Describe corporate safety responsibilities	Describe employee safety responsibilities	Explain the facility owner / operator occupational health, safety, and environment (OHS&E) policy	Explain the importance of hazardous gas detection training	Explain the importance of H2S training
		Explain the importance of fire safety training	Explain the importance of electrical safety training	Explain the importance of confined space safety training	Explain the importance of emergency response training	Explain the importance of a client-specific safety orientation
		Explain the importance of owner-specific safety orientation	Explain the importance of site-specific safety orientation	Describe the importance and use of PPE (personal protective equipment)	Explain importance and operation of a four-way gas monitor	Describe the JSA (job safety analysis) process
		Describe the purpose and content of tailgate safety meetings	Describe on-street locating safety procedures	Describe managing and channelling traffic	Describe caisson safety procedures	Describe gas and pressure release hazards
		Describe continuous gas monitoring	Describe ventilation	Describe safety watch	Describe SCBA (self-contained breathing apparatus)	Describe working alone procedures
		Describe maintaining a safe distance from overhead electrical lines	Describe safe digging ground disturbance and damage prevention	Describe the steps of proper safe digging	Describe the JCC (job completion checklist) process	Describe the safety / environmental incident investigation process
8.0	Petroleum Pipeline Locator Safety Skills	Demonstrate the ability to determine, appropriate, and follow applicable corporate safety responsibilities	Demonstrate the ability to determine and fulfill appropriate employee safety responsibilities	Demonstrate the ability to determine and follow applicable facility owner / operator occupational health, safety, and environment (OHS&E) policy	Complete and demonstrate ability to apply hazardous gas detection training	Complete and demonstrate ability to apply H2S training
		Complete and demonstrate ability to apply fire safety training	Complete and demonstrate ability to apply electrical safety training	Complete and demonstrate ability to apply confined space safety training	Demonstrate the ability to determine and follow required emergency response processes	Demonstrate the ability to follow client-specific safety orientation requirements

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Petroleum Producers Locator Skills

		Demonstrate the ability to follow owner-specific safety orientation requirements	Demonstrate the ability to follow site-specific safety orientation requirements	Demonstrate the ability to determine and utilize required PPE (personal protective equipment)	Demonstrate the ability to operate a four-way gas monitor	Demonstrate the ability to follow the JSA (job safety analysis) process
		Demonstrate the ability to conduct/attend and follow requirements of tailgate safety meetings	Demonstrate the ability to follow on-street locating safety procedures	Demonstrate the ability to manage and channel traffic	Demonstrate the ability to follow caisson safety procedures	Demonstrate the ability to protect against gas and pressure release hazards
		Demonstrate the ability to follow continuous gas monitoring procedures	Demonstrate the ability to follow ventilation procedures	Demonstrate the ability to follow safety watch procedures	Demonstrate the ability to utilize SCBA (self-contained breathing apparatus)	Demonstrate the ability to follow working alone procedures
		Demonstrate the ability to maintain safe distance from overhead electrical lines	Demonstrate the ability to follow safe digging ground disturbance and damage prevention procedures	Demonstrate the ability to follow the steps of proper safe digging	Demonstrate the ability to utilize, document, and communicate the JCC (job completion checklist)	Demonstrate the ability to participate in the safety / environmental incident investigation process
9.0	Visual Inspection Knowledge	Explain the primary reason for performing a visual inspection	Describe the importance of using petroleum pipeline (PP) records during the visual inspection	Describe how to utilize abbreviations and symbols as found on PP records during the visual inspection	Describe visual signs that might indicate the presence of buried facilities	Describe how to recognize areas of previous ground disturbance
		Describe how to recognize leases	Describe how to recognize natural gas wells	Describe how to recognize oil wells	Describe how to recognize source wells	Describe how to recognize injection wells
		Describe how to recognize artesian (flowing) wells	Describe how to recognize product lifting mechanisms	Describe how to recognize product lifting mechanism energy supply	Describe how to recognize shallow wells	Describe how to recognize deep wells
		Describe how to recognize discontinued (standing) wells	Describe how to recognize abandoned zone wells	Describe how to recognize abandoned wells	Describe how to recognize gas producing site processing infrastructure	Describe how to recognize oil producing site processing infrastructure
		Describe how to recognize pressure-vessels	Describe how to recognize liquid storage tanks	Describe how to recognize risers	Describe how to recognize flanges, valves, and fittings	Describe how to recognize pipeline insulation
		Describe how to recognize pipeline heating	Describe how to recognize the composition of different types of petroleum pipes	Describe how to recognize conductive pipes	Describe how to recognize non-conductive pipes	Know pipe size conversions
		Describe how to recognize the petroleum pipelines system model	Describe the flow-line pipeline system model	Describe how to recognize the series collection pipeline system model	Describe how to recognize the tree-and-branch collection pipeline system model	Describe how to recognize the group/test collection pipeline system model
		Describe how to recognize common pipeline functions and associated pressures	Describe how to recognize sales lines	Describe how to recognize casings	Describe how to recognize casing vents	Describe how to recognize blowdown risers
		Describe how to recognize caissons	Describe how to recognize direction of product flow	Describe how to recognize isolation valves	Describe how to recognize where isolation valves are found	Describe how to recognize open or closed valves

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Petroleum Producers Locator Skills

Describe how to recognize bypass pipes and valves	Describe how to recognize where bypass pipes and valves are found	Describe how to recognize emergency shut down (ESD) valves	Describe how to recognize where emergency shut down (ESD) valves are found	Describe how to recognize emergency blow down valves
Describe how to recognize where emergency blow down valves are found	Describe how to recognize pig senders/launchers	Describe how to recognize pig receivers	Describe how to recognize future pipeline	Describe how to recognize discontinued pipeline
Describe how to recognize abandoned pipeline	Describe how to recognize dead-end pipe	Describe how to recognize lined pipeline	Describe how to recognize pipeline liner vents	Describe how to recognize a cathodic rectifier
Describe how to recognize cathodic ground (anode) beds	Describe how to recognize local (sacrificial) anodes	Describe how to recognize cathodic test points	Describe how to recognize a cathodic isolating kit	Describe how to recognize associated infrastructure of gas processing sites
Describe how to recognize associated infrastructure of oil processing sites	Describe how to recognize trench or excavation scars	Describe how to recognize potential hazards	Describe warning signs used for petroleum pipeline facilities	Describe information found on warning signs
Describe where warning signs are typically located	Describe benefits of warning signs	Describe safety labels and signs used for buried petroleum pipeline facilities	Describe information found on safety labels signs	Describe where safety labels and signs are typically located
Describe benefits of safety labels and signs	Describe identification labels and tags used for buried petroleum pipeline facilities	Describe information found on identification labels and tags	Describe where identification labels and tags are typically located	Describe benefits of identification labels and tags
Describe how to identify signal application points as found on PP records	Describe how to identify the petroleum pipelines system model on PP records	Describe how to recognize petroleum pipeline systems as found on PP records	Describe how to identify petroleum pipeline system components as found on PP records	Describe how to identify various petroleum pipeline pipe configurations as found on PP records
Describe how to identify above ground structures (e.g., wells, pigging hardware, risers/valves) as found on PP records	Describe how to identify buried pipeline infrastructure as found on PP records	Describe how to identify different functions and associated pressures of petroleum pipelines as found on PP records	Know the composition and sizes of petroleum pipelines as found on PP records	Know the status of petroleum pipelines as found on PP records
Describe how to identify the approximate alignment of lines as found on PP records	Describe how to identify access points as found on PP records	Describe how to identify crossings (foreign, road, etc.) as found on PP records	Describe how to identify transition points or fittings as found on PP records	Describe how to identify a change in pipe composition as found on PP records
Describe how to identify a change in pipe size as found on PP records	Describe how to identify a change in pipe pressure as found on PP records	Describe how to identify property owner, property line, and property descriptions as found on PP records	Describe how to recognize recorded distances between pipes and boundaries and property lines as found on PP records	Describe how to identify recorded construction practices used to install petroleum pipeline facilities
Describe how to identify trenchless pipe installation as found on PP records	Describe how to identify bell hole construction as found on PP records	Describe how to identify casings as found on PP records	Describe how to identify casing vents as found on PP records	Explain how to recognize production leases and infrastructure as found on PP records
Explain how to recognize wellsites and infrastructure as found on PP records	Explain how to recognize gas compressor sites and infrastructure as found on PP records	Explain how to recognize gas plant sites and infrastructure as found on PP records	Explain how to recognize gas sweetening sites and infrastructure as found on PP records	Explain how to recognize gas storage sites and infrastructure as found on PP records

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Petroleum Producers Locator Skills

Explain how to recognize gas truckout sales/meter sites and infrastructure as found on PP records	Explain how to recognize gas pipeline sales/meter sites and infrastructure as found on PP records	Explain how to recognize associated transmission gas pipeline sites and infrastructure as found on PP records	Explain how to recognize oil satellite sites and infrastructure as found on PP records	Explain how to recognize oil battery sites and infrastructure as found on PP records
Explain how to recognize oil truck receipt/meter sites and infrastructure as found on PP records	Explain how to recognize oil pipeline receipt/meter sites and infrastructure as found on PP records	Explain how to recognize oil storage sites and infrastructure as found on PP records	Explain how to recognize oil truckout sales/meter sites and infrastructure as found on PP records	Explain how to recognize oil pipeline sales/meter sites and infrastructure as found on PP records
Explain how to recognize associated transmission oil pipeline sites and infrastructure as found on PP records	Describe how to identify flanges, valves, fittings as found on PP records	Describe how to identify and utilize isolation valves as found on PP records	Describe how to identify and utilize open/closed valves as found on PP records	Describe how to identify and utilize bypass pipes and valves as found on PP records
Describe how to identify and utilize emergency shutdown valves as found on PP records	Describe how to identify and utilize emergency blowdown valves as found on PP records	Describe how to identify CP (cathodic protection) as found on PP records	Describe how to identify a cathodic rectifier as found on PP records	Describe how to identify cathodic (anode) ground beds as found on PP records
Describe how to identify cathodic isolation points as found on PP records	Describe how to identify cathodic protection test leads and stations as found on PP records	Describe how to identify a local CP sacrificial anode as found on PP records	Describe how to identify a right of way as found on PP records	Describe how to identify buried facilities in public right of way as found on PP records
Describe how to identify easements as found on PP records	Explain how to recognize discontinued infrastructure as found on PP records	Explain how to recognize abandoned infrastructure as found on PP records	Explain how to recognize future pipe as found on PP records	Explain how to recognize dead-end pipe as found on PP records
Describe how to identify petroleum pipeline ancillary facilities as found on PP records	Explain how to recognize conductive facilities as found on PP records	Explain how to recognize non-conductive facilities as found on electric power records	Explain how to recognize tracer wire applications	Describe how to identify tracer wires
Describe how to identify infrastructure and features as found on various kinds of records	Describe how to identify infrastructure and features as found on other utility owner / operator records	Describe how to apply the interpretation of schematic representation during the visual inspection	Describe how to apply the interpret spatially accurate representation during the visual inspection	Describe how to identify infrastructure and features as found on survey plans
Describe how to identify infrastructure and features as found on third party database records	Describe how to identify infrastructure and features as found on as-builts drawings	Describe how to identify infrastructure and features as found on provincial regulatory boards / agencies / commission plans	Describe how to identify infrastructure and features as found on land titles records	Describe how to identify infrastructure and features as found on topographical maps
Describe how to utilize landowner information during the visual inspection	Describe the importance of obtaining landowner assistance and information during the visual inspection	Describe how to identify infrastructure and features as found on GIS maps	Describe how to identify infrastructure and features as found on aerial / satellite photographs	Describe how to identify infrastructure and features as found on site photographs

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Petroleum Producers Locator Skills

		Describe how to identify infrastructure and features as found on internet-accessed mapping and photographs	Describe how to perform visual inspections with facility / field personnel	Describe how to identify infrastructure and features as found on one call system information	Describe how to identify infrastructure and features as found on municipal / county maps	Describe how to identify infrastructure and features as found on irrigation district maps
		Describe how to identify infrastructure and features as found on engineer plot plans	Describe how to identify infrastructure and features as found on locator company drawings	Describe how to identify infrastructure and features found on previous stake-out reports	Describe how to identify infrastructure and features recorded in a ground disturbance package	Describe how to identify infrastructure as required by a current facility location request
		Describe the importance of documenting the visual inspection in a job completion checklist	Describe how to identify infrastructure and features found on previous crossing report	Describe how to recognize obstacles to locating accuracy	Describe how to recognize changes in facilities	Describe how to recognize extreme environments
		Describe how to recognize disruptive noises	Describe how to recognize inaccurate records	Describe how to recognize sources of unwanted coupling	Describe how to anticipate a possible location of a sharp drop in signal	Describe how to anticipate a possible location of a complete loss of signal
		Describe how to anticipate a possible problem with tracer wire	Describe how to anticipate a possible location of changes in depth	Describe how to anticipate the possible location of pipe tees and Y-laterals	Describe how to anticipate possible areas of common-bonded facilities	Describe how to anticipate possible short facilities
		Describe how to anticipate possible non-grounded facilities	Describe how to anticipate possible areas of facilities that are closer than normal	Describe how to anticipate possible areas where facilities are congested	Describe facility access obstacles and how to overcome them	Describe the importance of utilizing records during the visual inspection
		Explain how to anticipate and determine unrecorded facilities	Describe the process of documenting and forwarding updated records to the facility owner/operator	Explain how to anticipate and determine abandoned or discontinued facilities	Explain how to anticipate and determine company mergers and name changes	Explain how to anticipate and determine unregistered facilities
		Explain how to anticipate and determine privately-owned facilities	Explain how to anticipate and determine ancillary facilities			
10.0	Visual Inspection Skills	Demonstrate ability to identify potential hazards	Demonstrate ability to identify warning signs	Demonstrate ability to identify safety labels and signs	Demonstrate ability to identify plant features	Demonstrate ability to match records with site facilities
		Demonstrate ability to recognize types, materials and sizes of buried petroleum pipeline facilities	Demonstrate ability to recognize visual signs that indicate the presence of buried facilities	Demonstrate ability to identify identification labels and tags	Demonstrate ability to recognize trench or excavation scars	Demonstrate ability to recognize areas of previous ground disturbance in the work area
		Demonstrate ability to recognize buried petroleum pipelines when exposed	Demonstrate ability to recognize above ground petroleum pipelines	Demonstrate ability to recognize above ground signs of underground facilities	Demonstrate ability to recognize leases	Demonstrate ability to recognize natural gas wells
		Demonstrate ability to recognize oils wells	Demonstrate ability to recognize source wells	Demonstrate ability to recognize injection wells	Demonstrate ability to recognize artesian (flowing) wells	Demonstrate ability to recognize product lifting mechanisms
		Demonstrate ability to recognize product lifting mechanism energy supply	Demonstrate ability to recognize shallow wells	Demonstrate ability to recognize deep wells	Demonstrate ability to recognize discontinued (standing) wells	Demonstrate ability to recognize abandoned zone wells

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Petroleum Producers Locator Skills

Demonstrate ability to recognize abandoned wells	Demonstrate ability to recognize gas producing site processing infrastructure	Demonstrate ability to recognize abandoned wells	Demonstrate ability to recognize oil producing site processing infrastructure	Demonstrate ability to recognize pressure-vessels
Demonstrate ability to recognize liquid storage tanks	Demonstrate ability to recognize risers	Demonstrate ability to recognize flanges, valves, and fittings	Demonstrate ability to recognize pipeline insulation	Demonstrate ability to recognize pipeline heating
Demonstrate ability to recognize the composition of different types of petroleum pipelines	Demonstrate ability to recognize conductive pipes	Demonstrate ability to recognize non-conductive pipes	Demonstrate ability to perform pipe size conversions	Demonstrate ability to recognize the petroleum pipelines system model
Demonstrate ability the flow-line pipeline system model	Demonstrate ability to recognize the series collection pipeline system model	Demonstrate ability to recognize the tree-and-branch collection pipeline system model	Demonstrate ability to recognize the group/test collection pipeline system model	Demonstrate ability to recognize common pipeline functions and associated pressures
Demonstrate ability to recognize sales lines	Demonstrate ability to recognize casings	Demonstrate ability to recognize casing vents	Demonstrate ability to recognize blowdown risers	Demonstrate ability to recognize caissons
Demonstrate ability to recognize direction of product flow	Demonstrate ability to recognize isolation valves	Demonstrate ability to recognize where isolation valves are found	Demonstrate ability to recognize open or closed valves	Demonstrate ability to recognize bypass pipes and valves
Demonstrate ability to recognize where bypass pipes and valves are found	Demonstrate ability to recognize emergency shut down (ESD) valves	Demonstrate ability to recognize where emergency shut down (ESD) valves are found	Demonstrate ability to recognize emergency blow down valves	Demonstrate ability to recognize where emergency blow down valves are found
Demonstrate ability to recognize pig senders/launchers	Demonstrate ability to recognize pig receivers	Demonstrate ability to recognize future pipeline	Demonstrate ability to recognize discontinued pipeline	Demonstrate ability to recognize abandoned pipeline
Demonstrate ability to recognize dead-end pipe	Demonstrate ability to recognize lined pipeline	Demonstrate ability to recognize pipeline liner vents	Demonstrate ability to recognize a cathodic rectifier	Demonstrate ability to recognize cathodic ground (anode) beds
Demonstrate ability to recognize local (sacrificial) anodes	Demonstrate ability to recognize cathodic test points	Demonstrate ability to recognize a cathodic isolating kit	Demonstrate ability to recognize associated infrastructure of gas processing sites	Demonstrate ability to recognize associated infrastructure of oil processing sites
Demonstrate ability to recognize trench or excavation scars	Demonstrate ability to recognize potential hazards	Demonstrate ability to identify warning signs used for petroleum pipeline facilities	Demonstrate ability to identify information found on warning signs	Demonstrate ability to identify where warning signs are typically located
Demonstrate ability to identify safety labels and signs used for buried petroleum pipeline facilities	Demonstrate ability to identify information found on safety labels signs	Demonstrate ability to identify where safety labels and signs are typically located	Demonstrate ability to recognize identification labels and tags used for buried petroleum pipeline facilities	Demonstrate ability to identify information found on identification labels and tags
Demonstrate ability to identify where identification labels and tags are typically located	Demonstrate ability to identify signal application points as found on PP records	Demonstrate ability to identify the petroleum pipelines system model on PP records	Demonstrate ability to recognize petroleum pipeline systems as found on PP records	Demonstrate ability to identify petroleum pipeline system components as found on PP records
Demonstrate ability to identify various petroleum pipeline pipe configurations as found on PP records	Demonstrate ability to identify above ground structures (e.g., wells, pigging hardware, risers/valves) as found on PP records	Demonstrate ability to identify buried pipeline infrastructure as found on PP records	Demonstrate ability to identify different functions and associated pressures of petroleum pipelines as found on PP records	Demonstrate ability to identify the composition and sizes of petroleum pipelines as found on PP records

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Petroleum Producers Locator Skills

Demonstrate ability to recognize the status of petroleum pipelines as found on PP records	Demonstrate ability to identify the approximate alignment of lines as found on PP records	Demonstrate ability to identify access points as found on PP records	Demonstrate ability to identify crossings (foreign, road, etc.) as found on PP records	Demonstrate ability to identify transition points or fittings as found on PP records
Demonstrate ability to identify a change in pipe composition as found on PP records	Demonstrate ability to identify a change in pipe size as found on PP records	Demonstrate ability to identify a change in pipe pressure as found on PP records	Demonstrate ability to identify property owner, property line, and property descriptions as found on PP records	Demonstrate ability to recognize recorded distances between pipes and boundaries and property lines as found on PP records
Demonstrate ability to identify recorded construction practices used to install petroleum pipeline facilities	Demonstrate ability to identify trenchless pipe installation as found on PP records	Demonstrate ability to identify bell hole construction as found on PP records	Demonstrate ability to identify casings as found on PP records	Demonstrate ability to identify casing vents as found on PP records
Demonstrate ability to recognize production leases and infrastructure as found on PP records	Demonstrate ability to recognize wellsites and infrastructure as found on PP records	Demonstrate ability to recognize gas compressor sites and infrastructure as found on PP records	Demonstrate ability to recognize gas plant sites and infrastructure as found on PP records	Demonstrate ability to recognize gas sweetening sites and infrastructure as found on PP records
Demonstrate ability to recognize gas storage sites and infrastructure as found on PP records	Demonstrate ability to recognize gas truckout sales/meter sites and infrastructure as found on PP records	Demonstrate ability to recognize gas pipeline sales/meter sites and infrastructure as found on PP records	Demonstrate ability to recognize associated transmission gas pipeline sites and infrastructure as found on PP records	Demonstrate ability to recognize oil satellite sites and infrastructure as found on PP records
Demonstrate ability to recognize oil battery sites and infrastructure as found on PP records	Demonstrate ability to recognize oil truck receipt/meter sites and infrastructure as found on PP records	Demonstrate ability to recognize oil pipeline receipt/meter sites and infrastructure as found on PP records	Demonstrate ability to recognize oil storage sites and infrastructure as found on PP records	Demonstrate ability to recognize oil truckout sales/meter sites and infrastructure as found on PP records
Demonstrate ability to recognize oil pipeline sales/meter sites and infrastructure as found on PP records	Demonstrate ability to recognize associated transmission oil pipeline sites and infrastructure as found on PP records	Demonstrate ability to identify flanges, valves, fittings as found on PP records	Demonstrate ability to identify and utilize isolation valves as found on PP records	Demonstrate ability to identify and utilize open/closed valves as found on PP records
Demonstrate ability to identify and utilize bypass pipes and valves as found on PP records	Demonstrate ability to identify and utilize emergency shutdown valves as found on PP records	Demonstrate ability to identify and utilize emergency blowdown valves as found on PP records	Demonstrate ability to identify CP (cathodic protection) as found on PP records	Demonstrate ability to identify a cathodic rectifier as found on PP records
Demonstrate ability to identify cathodic (anode) ground beds as found on PP records	Demonstrate ability to identify cathodic isolation points as found on PP records	Demonstrate ability to identify cathodic protection test leads and stations as found on PP records	Demonstrate ability to identify a local CP sacrificial anode as found on PP records	Demonstrate ability to identify a right of way as found on PP records
Demonstrate ability to identify buried facilities in public right of way as found on PP records	Demonstrate ability to identify easements as found on PP records	Demonstrate ability to recognize discontinued infrastructure as found on PP records	Demonstrate ability to recognize abandoned infrastructure as found on PP records	Demonstrate ability to recognize future pipe as found on PP records
Demonstrate ability to recognize dead-end pipe as found on PP records	Demonstrate ability to identify petroleum pipeline ancillary facilities as found on PP records	Demonstrate ability to recognize conductive facilities as found on PP records	Demonstrate ability to recognize non-conductive facilities as found on electric power records	Demonstrate ability to recognize tracer wire applications

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Petroleum Producers Locator Skills

		Demonstrate ability to identify tracer wires	Demonstrate ability to identify infrastructure and features as found on various kinds of records	Demonstrate ability to identify infrastructure and features as found on other utility owner / operator records	Demonstrate ability to apply the interpretation of schematic representation during the visual inspection	Demonstrate ability to apply the interpret spatially accurate representation during the visual inspection
		Demonstrate ability to identify infrastructure and features as found on survey plans	Demonstrate ability to identify infrastructure and features as found on third party database records	Demonstrate ability to identify infrastructure and features as found on as-builts drawings	Demonstrate ability to identify infrastructure and features as found on provincial regulatory boards / agencies / commission plans	Demonstrate ability to identify infrastructure and features as found on land titles records
		Demonstrate ability to identify infrastructure and features as found on topographical maps	Demonstrate ability to utilize landowner information during the visual inspection	Demonstrate ability to obtain landowner assistance and information during the visual inspection	Demonstrate ability to identify infrastructure and features as found on GIS maps	Demonstrate ability to identify infrastructure and features as found on aerial / satellite photographs
		Demonstrate ability to identify infrastructure and features as found on site photographs	Demonstrate ability to identify infrastructure and features as found on internet-accessed mapping and photographs	Demonstrate ability to perform visual inspections with facility / field personnel	Demonstrate ability to identify infrastructure and features as found on one call system information	Demonstrate ability to identify infrastructure and features as found on municipal / county maps
		Demonstrate ability to identify infrastructure and features as found on irrigation district maps	Demonstrate ability to identify infrastructure and features as found on engineer plot plans	Demonstrate ability to identify infrastructure and features as found on locator company drawings	Demonstrate ability to identify infrastructure and features found on previous stake-out reports	Demonstrate ability to identify infrastructure and features recorded in a ground disturbance package
		Demonstrate ability to identify infrastructure as required by a current facility location request	Demonstrate ability to document the visual inspection in a job completion checklist	Demonstrate ability to identify infrastructure and features found on previous crossing report	Demonstrate ability to recognize obstacles to locating accuracy	Demonstrate ability to recognize changes in facilities
		Demonstrate ability to recognize extreme environments	Demonstrate ability to recognize disruptive noises	Demonstrate ability to recognize inaccurate records	Demonstrate ability to recognize sources of unwanted coupling	Demonstrate ability to anticipate a possible location of a sharp drop in signal
		Demonstrate ability to anticipate a possible location of a complete loss of signal	Demonstrate ability to anticipate a possible problem with tracer wire	Demonstrate ability to anticipate a possible location of changes in depth	Demonstrate ability to anticipate the possible location of pipe tees and Y-laterals	Demonstrate ability to anticipate possible areas of common-bonded facilities
		Demonstrate ability to anticipate possible short facilities	Demonstrate ability to anticipate possible non-grounded facilities	Demonstrate ability to anticipate possible areas of facilities that are closer than normal	Demonstrate ability to anticipate possible areas where facilities are congested	Demonstrate ability to access obstacles and how to overcome them
		Demonstrate ability to utilize records during the visual inspection	Demonstrate ability to anticipate and determine unrecorded facilities	Demonstrate ability to document and forward updated records to the facility owner/operator	Demonstrate ability to anticipate and determine abandoned or discontinued facilities	Demonstrate ability to anticipate and determine company mergers and name changes
		Demonstrate ability to anticipate and determine unregistered facilities	Demonstrate ability to anticipate and determine privately-owned facilities	Demonstrate ability to anticipate and determine ancillary facilities		
11.0	Locating Methods Knowledge	Describe the procedures for locating from start to finish	Describe the procedures for the Direct Hook-up Method	Describe the procedures for the Inductive Clamp Method	Describe the procedures for the Inductive Method	Describe the procedures for the Parallel Line Check Method

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Petroleum Producers Locator Skills

Describe the procedures for the Inductive Sweeping Method	Describe the procedures for the Inducting Multi-Angle Sweeping Method	Describe the procedures for the 360° Sweeping Method	Describe the procedures for the ALL (Advanced Line Locating) Method	Describe the procedures for the CPS (Cathodic Protection System) Locating Mode
Describe the procedures for the Live Cable (Power) Mode	Describe the procedures for the Radio Mode	Describe the procedures for locating sondes	Describe the procedures for locating transmitter coils	Describe the procedures for locating conductive rodding tools
Describe the procedures for locating electronic markers	Describe the procedures for locating remotely-applied EM signals	Describe the procedures for the Measurement Method	Describe the procedures for the Point A to Point B Method	Describe the procedures for the Visual Evidence Method
Describe the procedures for the Survey Method	List the tools required to perform a generic direct hook-up signal application procedure	Describe safe procedures for grounding	Describe the general criteria for selecting an effective direct hook-up access point	Describe safe procedures for applying a signal using a direct hook-up
Describe the general criteria for selecting an effective direct hook-up grounding point	Describe the conditions that provide an optimal direct hook-up ground point	Describe the conditions that provide a poor direct hook-up ground point	Describe the procedures to improve a direct hook-up ground point	Describe a ground rod and ground plate
Describe an extended or multi-point ground	Describe safe procedures for applying a direct hook-up to a conductive pipe	Describe safe procedures for applying a direct hook-up to a riser	Describe safe procedures for applying a direct hook-up to a flange	Describe safe procedures for applying a direct hook-up to a valve
Describe safe procedures for applying a direct hook-up to a tracer wire	Describe safe procedures for applying a direct hook-up to a metal casing pipe	Describe safe procedures for applying a direct hook-up to a (safe) electrical cable	Describe safe procedures for applying a direct hook-up to a (safe) cathodic cable	Describe safe procedures for applying a direct hook-up to a (safe) control cable
Describe the tools required to perform the direct hook-up method at caissons	List the tools required to perform a generic inductive clamping signal application procedure	Describe the general criteria for selecting an effective inductive clamping access point	Describe safe procedures for applying a signal using an inductive clamp	Describe the safe procedures for applying a signal to a metal pipe with an inductive clamp
Describe the safe procedures for applying a signal to a tracer wire with an inductive clamp	Describe the safe procedures for applying a signal to a metal casing pipe with an inductive clamp	Describe the safe procedures for applying a signal to a metal conduit with an inductive clamp	Describe the safe procedures for applying a signal to a cathodic cable with an inductive clamp	Describe the safe procedures for applying a signal to an electrical cable with an inductive clamp
Describe the safe procedures for applying a signal to a communication cable with an inductive clamp	Describe the safe procedures for applying a signal to a control cable with an inductive clamp	Describe the criteria for selecting an effective general inductive signal application point	Describe the criteria for selecting an effective inductive signal application point for metal pipe	Describe the criteria for selecting an effective inductive signal application point for tracer wire
Describe the criteria for selecting an effective inductive signal application point for casing pipe	Describe the criteria for selecting an effective inductive signal application point for metal conduit	Describe the criteria for selecting an effective inductive signal application point for cathodic cable	Describe the criteria for selecting an effective inductive signal application point for electrical cable	Describe the criteria for selecting an effective inductive signal application point for communication cable
Describe the criteria for selecting an effective inductive signal application point for control cable	Describe the criteria for selecting an effective inductive signal application point for transmission pipe	Describe the procedures for tracing an EM signal	Describe procedures for verifying a previously located facility	Explain how to properly identify a target facility

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Petroleum Producers Locator Skills

		Explain how to verify locates of transmission pipeline facilities within easements and ROWs.	Describe the procedures for locating buried objects with a magnetic locator	Describe the procedures for locating a metal access cover with a magnetic locator	Describe the procedures for locating metal infrastructure with a magnetic locator	Describe the procedures for locating a buried tank with a magnetic locator
		Describe the procedures for locating a pipe transition with a magnetic locator	Describe the procedures for locating a buried well casing with a magnetic locator	Describe the importance of measuring and recording distances between facilities and structures	Describe the importance of recording GPS information for work area and locates	Describe the importance of photographing work area and locates
12.0	Locating Methods Skills	Demonstrate the procedures for locating from start to finish	Demonstrate the procedures for the Direct Hook-up Method	Demonstrate the procedures for the Inductive Clamp Method	Demonstrate the procedures for the Inductive Method	Demonstrate the procedures for the Parallel Line Check Method
		Demonstrate the procedures for the Inductive Sweeping Method	Demonstrate the procedures for the Inducting Multi-Angle Sweeping Method	Demonstrate the procedures for the 360° Sweeping Method	Demonstrate the procedures for the ALL (Advanced Line Locating) Method	Demonstrate the procedures for the CPS (Cathodic Protection System) Locating Mode
		Demonstrate the procedures for the Live Cable (Power) Locating Mode	Demonstrate the procedures for the Radio Locating Mode	Demonstrate the procedures for locating sondes	Demonstrate the procedures for locating transmitter coils	Demonstrate the procedures for locating conductive rodding tools
		Demonstrate the procedures for locating electronic markers	Demonstrate the procedures for locating a remotely-applied EM signal	Demonstrate the procedures for the Measurement Method	Demonstrate the procedures for the Point A to Point B Method	Demonstrate the procedures for the Visual Evidence Method
		Demonstrate the procedures for the Survey Method	Demonstrate the ability to select the tools required to perform a generic direct hook-up signal application procedure	Demonstrate safe procedures for grounding	Demonstrate the ability to select an effective direct hook-up access point	Demonstrate safe procedures for applying a signal using a direct hook-up
		Demonstrate the ability to select an effective direct hook-up grounding point	Demonstrate the ability to select an optimal direct hook-up ground point	Demonstrate the ability to improve a direct hook-up ground point	Demonstrate the use of a ground rod and ground plate	Demonstrate the use of an extended or multi-point ground
		Demonstrate safe procedures for applying a direct hook-up to a conductive pipe	Demonstrate safe procedures for applying a direct hook-up to a riser	Demonstrate safe procedures for applying a direct hook-up to a flange	Demonstrate safe procedures for applying a direct hook-up to a valve	Demonstrate safe procedures for applying a direct hook-up to a tracer wire
		Demonstrate safe procedures for applying a direct hook-up to a metal casing pipe	Demonstrate safe procedures for applying a direct hook-up to a (safe) electrical cable	Demonstrate safe procedures for applying a direct hook-up to a (safe) cathodic cable	Demonstrate safe procedures for applying a direct hook-up to a (safe) control cable	Demonstrate the ability to select the tools required to perform the direct hook-up method at caissons
		Demonstrate the ability to perform the direct method at caissons	Demonstrate the ability to select the tools required to perform a generic inductive clamping signal application procedure	Demonstrate the ability to select an effective inductive clamping access point	Demonstrate safe procedures for applying a signal using an inductive clamp	Demonstrate the safe procedures for applying a signal to a metal pipe with an inductive clamp
		Demonstrate the safe procedures for applying a signal to a tracer wire with an inductive clamp	Demonstrate the safe procedures for applying a signal to a metal casing pipe with an inductive clamp	Demonstrate the safe procedures for applying a signal to a metal conduit with an inductive clamp	Demonstrate the safe procedures for applying a signal to a cathodic cable with an inductive clamp	Demonstrate the safe procedures for applying a signal to an electrical cable with an inductive clamp

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Petroleum Producers Locator Skills						
		Demonstrate the safe procedures for applying a signal to a communication cable with an inductive clamp	Demonstrate the safe procedures for applying a signal to a control cable with an inductive clamp	Demonstrate the ability to select an effective general inductive signal application point	Demonstrate the ability to select an effective inductive signal application point for metal pipe	Demonstrate the ability to select an effective inductive signal application point for tracer wire
		Demonstrate the ability to select an effective inductive signal application point for casing pipe	Demonstrate the ability to select an effective inductive signal application point for metal conduit	Demonstrate the ability to select an effective inductive signal application point for cathodic cable	Demonstrate the ability to select an effective inductive signal application point for electrical cable	Describe the criteria for selecting an effective inductive signal application point for communication cable
		Demonstrate the ability to select an effective inductive signal application point for control cable	Demonstrate the ability to select an effective inductive signal application point for transmission pipe	Demonstrate the ability to select an effective inductive signal application point for transmission pipe	Demonstrate the procedures for tracing an EM signal	Demonstrate procedures for verifying a previously located facility
		Demonstrate how to properly identify a target facility	Demonstrate how to verify locates of transmission pipeline facilities within easements and ROWs.	Demonstrate the procedures for locating buried objects with a magnetic locator	Demonstrate the procedures for locating a metal access cover with a magnetic locator	Demonstrate the procedures for locating metal infrastructure with a magnetic locator
		Demonstrate the procedures for locating a buried tank with a magnetic locator	Demonstrate the procedures for locating a pipe transition with a magnetic locator	Demonstrate the procedures for locating a buried well casing with a magnetic locator	Demonstrate the ability to measure and record distances between facilities and structures	Demonstrate the ability to record GPS information for work area and locates
		Demonstrate the ability to photograph work area and locates	Demonstrate the ability to locate a metal hand-hole cover with a magnetic locator	Demonstrate ability to properly identify a target facility	Demonstrate the appropriate method for connection at an access point	Demonstrate the proper procedure for direct hook-up of tracer wire
		Demonstrate the direct hook-up method for steel/aluminum pipelines	Demonstrate the direct hook-up method for hand-holes / manholes			
13.0	Locator Marking Knowledge	Explain marking transmission pipelines using the APWA Uniform Color Code	Explain marking transmission pipelines ancillary infrastructure using the APWA Uniform Color Code	Explain the CGA guidelines for marking practices	Describe marking transmission pipelines using CGA common abbreviations	Describe marking transmission pipelines infrastructure using CGA common abbreviations
		Describe situations where other marking systems may be used	Explain operator's identifier marking	Explain facility detail marking	Describe different marking materials	Describe criteria for selecting marking materials
		Explain ground and environment conditions that affect locate marks	Explain painted offset marking	Explain staked offset marking	Explain changes in direction marking	Explain lateral (tees & Y-lats) connection marking
		Explain facilities installed in a caisson marking	Explain structure markings (e.g., caisson)	Explain loss of signal / termination / dead ends marking	Explain no conflict marking	Explain importance of marking abandoned facilities
		Explain proper marking in navigable waterways	Explain single facility marking	Explain multiple facility marking	Explain conduit marking	Explain corridor marking
		Explain markings for long distances	Explain buried well casing marking			

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14.0	Locator Marking Skills	Demonstrate proper ground marking using the APWA Uniform Color Code	Demonstrate marking telecommunication ancillary infrastructure using the APWA Uniform Color Code	Demonstrate marking telecommunication infrastructure using CGA marking practices	Demonstrate marking telecommunications infrastructure using CGA common abbreviations	Demonstrate situations where other marking systems may be used
		Demonstrate marking telecommunication infrastructure using operator's identifier marking	Demonstrate facility detail marking	Demonstrate proper selection of marking materials	Demonstrate painted offset marking	Demonstrate staked offset marking
		Demonstrate changes in direction marking	Demonstrate lateral connection (tees & Y-lats) marking	Demonstrate facilities installed in a caisson marking	Demonstrate structure markings (e.g., caisson)	Demonstrate loss of signal / termination / dead ends marking
		Demonstrate no conflict marking	Demonstrate single facility marking	Demonstrate multiple facility marking	Demonstrate conduit marking	Demonstrate corridor marking
		Demonstrate proper facility distance marking	Demonstrate proper stake / lath marking	Demonstrate proper pin flag marking	Demonstrate proper whisker marking	Demonstrate proper marking in navigable waterways
		Demonstrate the ability to mark facilities under adverse ground and environment conditions	Demonstrate the ability to mark facilities with site specific markings	Demonstrate buried well casing marking		
15.0	Problem Solving Knowledge	Describe the effects of obstacles and problems on EM signals and locate accuracy	Explain the importance of anticipating problem locate conditions	Explain the importance of determining problem locate conditions	Explain the importance of following industry best practices to overcome problem locates	Explain the importance of following company procedures to overcome problem locates
		Explain the importance of OJT (on-the-job training) to overcome problem locates	Explain the importance of methodical troubleshooting procedures to overcome problem locates	Explain the importance of understanding transmission pipeline system configuration	Explain the effects of transmission pipeline system configuration on the EM signal and locate accuracy	Explain the effects of common-trench installations on locate accuracy
		Explain why various facilities and compositions require their own locating techniques	Explain the effects of transmission pipeline type transitions on the EM signal	Explain the effects of expansion loops on locate accuracy	Explain the capabilities of locate equipment to overcome problems	Explain procedures used to locate in adverse site conditions
		Explain procedures to locate in high-traffic areas	Explain the effects of work site conditions on locate accuracy	Describe how inaccurate records can affect locate accuracy	Describe how unwanted coupling affects locate signals	Explain the effects of broken tracer wire on the EM signal
		Explain the effects of pipe ends on the EM signal	Explain the effects of facility depth on locate accuracy	Explain the effects of surface structures on the EM signal and locate accuracy	Explain the effects of buried tees and Y-laterals on the EM signal	Explain the effects of unknown laterals (buried tees and Y-laterals) on locate accuracy
		Explain the effects of common-bonding on the EM signal	Describe the effects of short facilities on the EM signal	Describe the effects of non-grounded facilities on the EM signal	Describe the effects of closer-than-normal facilities on the EM signal	Describe the effects of congested facilities on the EM signal
		Explain how ancillary facilities complicates identification and locate accuracy	Explain the effects of high-voltage interference on the EM signal	Explain the effects of cathodic protection on locate accuracy	Explain how unregistered facilities complicates identification and locate accuracy	Explain how privately-owned facilities complicates identification and locate accuracy

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Petroleum Producers Locator Skills

		Explain how company mergers and name changes complicates facility identification	Explain how abandoned or discontinued facilities complicates identification and locate accuracy	Describe the effects on facility identification by limited or restricted access to facilities	Explain procedures to avoid air coupling	Describe the importance of utilizing records to verify locates
		Describe the importance of record verification	Describe the process of documenting and forwarding updated records to the facility owner/operator	Describe the importance of verifying a locate is within the proper right of way	Explain importance of third party contract locators	
16.0	Problem Solving Skills	Demonstrate the ability to overcome the effects of obstacles and problems on EM signals and locate accuracy	Demonstrate the ability to anticipate problem locate conditions	Demonstrate the ability to determine problem locate conditions	Demonstrate the ability to follow industry best practices to overcome problem locates	Demonstrate the ability to follow company procedures to overcome problem locates
		Demonstrate the ability to utilize past OJT (on-the-job training) to overcome problem locates	Demonstrate the ability to utilize methodical troubleshooting procedures to overcome problem locates	Demonstrate the ability to apply understanding of transmission pipeline system configuration while troubleshooting locates	Demonstrate understanding and overcome the effects on EM signals in various system configurations	Demonstrate understanding and overcome the effects of common-trench installations on locate accuracy
		Demonstrate the ability to identify and overcome the effects of signal distortion on locate accuracy	Demonstrate the ability to identify and overcome the effects of facility characteristics on the EM signal	Demonstrate the ability to identify and overcome the effects of facility deflections on the EM signal	Demonstrate the ability to identify and overcome the effects expansion loop construction on locate accuracy	Demonstrate the ability to identify and utilize the capabilities of locate equipment to overcome problems
		Demonstrate the ability to identify and overcome the effects of weather and the environment on locate accuracy	Demonstrate the ability to identify and overcome the effects of work site conditions on locate accuracy	Demonstrate the ability to identify and overcome the effects of inaccurate records on locate accuracy	Demonstrate the ability to identify and overcome the effects of multiple facilities on the EM signal	Demonstrate the ability to identify and overcome the effects of common-bonding on the EM signal
		Demonstrate the ability to identify and overcome the effects of broken tracer wire on the EM signal	Demonstrate the ability to identify and overcome the effects of pipe ends on the EM signal	Demonstrate the ability to identify and overcome the effects of corroded pipe on the EM signal	Demonstrate the ability to identify and overcome the effects of pipe size transitions on the EM signal	Demonstrate the ability to identify and overcome the effects of pipe material transitions on the EM signal
		Demonstrate the ability to identify and overcome the effects of facility depth on the EM signal	Demonstrate the ability to identify and overcome the effects of surface structures on the EM signal	Demonstrate the ability to identify and overcome the effects of pipe tees or Y-laterals on the EM signal	Demonstrate the ability to locate and identify unknown laterals	Demonstrate the ability to identify and overcome the effects of short facilities on the EM signal
		Demonstrate the ability to identify and overcome the effects of non-grounded facilities on the EM signal	Demonstrate the ability to identify and overcome the effects of closer-than-normal facilities on the EM signal	Demonstrate the ability to identify and overcome the effects of congested facilities on the EM signal	Demonstrate the ability to identify and overcome the effects of ancillary facilities on locate accuracy	Demonstrate the ability to identify and overcome the effects of high-voltage interference on the EM signal
		Demonstrate the ability to identify and overcome the effects of cathodic protection on locate accuracy	Demonstrate the ability to identify and overcome the effects of cathodic isolators on the EM signal	Demonstrate the ability to anticipate, determine, and overcome complications from unregistered facilities	Demonstrate the ability to anticipate, determine, and overcome complications from private facilities	Demonstrate the ability to research ownership information and follow company mergers and name changes

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Petroleum Producers Locator Skills						
		Demonstrate the ability to anticipate, locate, and identify abandoned or discontinued facilities	Demonstrate the ability to obtain access to facilities or to overcome limited or restricted access	Demonstrate the ability to avoid and overcome the effects of air-coupling on locate accuracy	Demonstrate the ability to utilize records to verify locates and to verify the accuracy of the records	Demonstrate the ability to document and forward updated records to the facility owner/operator
		Demonstrate the ability to utilize survey boundaries to verify locates	Demonstrate the ability to determine the need for a third-party contract locate	Demonstrate the ability to conduct third-party contract locates		
17.0	Locator Drawing Knowledge	Explain hand sketch locator drawings	Explain computer generated locator drawings	Explain drawing procedures	Explain drawing process	Explain client specific drawing requirements
		Explain company specific drawing requirements	Explain the multiple uses of a locate drawing	Explain symbology for transmission pipelines	Explain mapping terminology for locator drawings	Explain the key elements that must be labeled on a drawing
		Explain the importance of measurements from transmission pipeline facilities to other known facilities	Explain the importance of measurements from transmission pipeline facilities to surface structure	Explain the importance of incorporating information from other facility records in locator drawings	Explain the importance of incorporating GIS and/or GPS information in locator drawings	Explain the importance of incorporating survey information in locator drawings
		Explain the importance of accurate locate drawings	Explain the importance of documenting facility record errors on locate drawings	Explain the differences of spatially accurate locate drawings	Explain the differences of schematic representation locate drawings	
18.0	Locator Drawing Skills	Demonstrate the ability to create hand sketch locator drawings	Demonstrate the ability to create computer generated locator drawings	Demonstrate the ability to identify and utilize drawing procedures	Demonstrate the ability to identify and utilize drawing process	Demonstrate the ability to identify and utilize client specific drawing requirements
		Demonstrate the ability to identify and utilize company specific drawing requirements	Demonstrate the ability to identify and utilize multiple uses of a locate drawing	Demonstrate the ability to identify and utilize symbology for transmission pipelines	Demonstrate the ability to identify and utilize mapping terminology for locator drawings	Demonstrate the ability to identify and label the key elements on a drawing
		Demonstrate the ability to identify and record measurements from transmission pipeline facilities to other known facilities	Demonstrate the ability to identify and record measurements from transmission pipeline facilities to surface structure	Demonstrate the ability to incorporate information from other facility records in locator drawings	Demonstrate the ability to incorporate GIS and/or GPS information in locator drawings	Demonstrate the ability to incorporate survey information in locator drawings
		Demonstrate the ability to identify, utilize, and create accurate locate drawings	Demonstrate the ability to document facility record errors on locate drawings	Demonstrate the ability to identify, utilize, and create spatially accurate locate drawings	Demonstrate the ability to identify, utilize, and create schematic representation locate drawings	

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