# NATIONAL TRANSPORTATION SAFETY BOARD

**Washington, D.C.**

## Attachment V
**REFERENCE 18**

18. IR 275: CCG Glossary (2008). Pages: All

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**07-26-10**
**Marshall, MI**
**DCA10-MP-007**

| Primary | Description | Secondary | Abbrev. |
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| P | **P**ipeline Procedure | **A**ssessment<br>**M**itigation<br>**R**epair<br>**D**irect Assessment<br>**H**ydrotest<br>**I**n-line Inspection<br>**A**ccident Forms | PA<br>PM<br>PR<br>PD<br>PH<br>PI<br>PA |
| F | **F**acility Procedure | **T**anks<br>**V**essels<br>**P**iping | FT<br>FV<br>FP |
| S | **S**pecification | **P**ainting<br>**C**oating<br>**L**ining | SP<br>SC<br>SL |
| C | **C**orrosion | **P**rocedure<br>**F**orm | CP<br>CF |

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| abandoned | a pipeline or segment of a pipeline is abandoned when it is removed from service and is completely written off plant records as a company asset. |
| above grade | on or above the surface of the ground. |
| Alternating Current Voltage Gradient | A method of measuring the change in leakage current in the soil along and around a pipeline to locate coating holidays and characterize corrosion activity. (ACVG) |
| Amphoteric Metal | A metal that is susceptible to corrosion in both acid and alkaline environments. |
| anode | The electrode of an electrochemical cell at which oxidation occurs. Electrons flow away from the anode in the external circuit. Corrosion |

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| | Usually occurs and metal ions enter solution at the anode. |
| Applicator | A person responsible for the application of paint, coating, or lining. |
| arc burn | a defect on the surface of the pipe wall caused by uncontrolled weld strikes against the pipe surface. |
| as-built | a drawing that has been marked to indicate the actual facilities installed during construction and/or changes made to reflect field conditions. |
| below grade | beneath or below the surface of the ground. |
| benching | a method of protecting workers from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels. |
| berm | a long spoil pile of excavated material normally situated near the edge of the excavation or trench used to contain or direct surface flow. |
| blowdown | the process of removing pressure from pipelines for maintenance and repair activities |
| bucking | a technique for cutting logs into predetermined lengths. |
| branch connection | a connection or type of attachment that is fitted through the wall of the primary member or is fitted a stub-on connection |
| buckle | localized distortion of the pipe wall that results from the ground being subjected to constant bending forces, such as ground settling. Buckles are characterized by creasing of the pipe wall, appearing in many cases corrugated on the inside of the bend, and a deflection in the pipe axis at the point of buckling. Buckles are typically found at pipe entrances or exits from casings. |
| bulking factor | a change in bulk density as a result of excavation or compaction when compared to the bulk density of undisturbed material. |
| Casing-to-soil | The voltage potential of the casing in the in the soil as related to a Potential reference electrode. (C/S) |

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| Cathode | The electrode of an electrochemical cell at which reduction is the principal reaction. Electrons flow toward the cathode in the external circuit. |
| cathodic Protection | A technique to reduce the corrosion of a metal surface by making that surface the cathode of an electrochemical cell. (CP) |
| cave-in | the separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation either by falling or sliding, in sufficient quantity so that it could entrap, bury or otherwise injure and immobilize a person. |
| cell-to-cell Survey | A survey that requires a multimeters and walking the pipeline with two reference electrodes uniformly spaced (10ft) in contact with earth over the pipeline, to measurements and recorded the pipe-to-soil potentials. As the anodic condition in the center of the line is passed (traveling left to right), the indicated polarity switches from positive to negative (indicates probable current discharge). |
| change-of-service | an operating pipeline or segment of a pipeline undergoes a change of service when there is a change in the petroleum product being shipped that result in significantly different operating conditions and possibly changes to the physical plant. |
| check valve | a valve that permits fluid to flow freely in one direction and contains a mechanism to automatically prevent flow in the other direction |
| chipping | a technique for converting logs into wood chips. |
| close Interval Surveys | An over the line computerized potential measurement along the length of buried pipelines used to assess the performance of a CP System, the condition of the Coating on a Cathodically Protected pipelines and to test for Stray Current interference. Typically at 2ft – 2.5ft intervals (CISurvey) |
| cluster | a group of interacting corrosion pits |
| coating | Any material applied to the external surfaces of steel, where the primary service is intended to be underground. |

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| COF | consequence of failure |
| (the) company | any company within the Pipeline Division of Enbridge Inc. |
| company representative | a company employee or appointed representative of the company responsible for the inspection of the work |
| competent worker | a person who, because of training and experience, is capable of identifying hazardous or dangerous conditions and has the authority to take prompt corrective measures to eliminate them. |
| contractor | a company hired to complete specific work and paid directly by the company. |
| contractor personnel | employees of a contractor or subcontractor working under the direct supervision of the prime contractor |
| contract workers | individuals hired for extended periods of time working under the direct supervision of company employees |
| corrosion | a local reduction in the thickness of the pipe wall due to a reaction with the environment. Corrosion occurs as isolated pits at holidays in the coating, or as general metal loss over a large area, or as a combination of these types |
| coupon | A metal strip inserted into a system to monitor corrosion rate and Inhibitor effectiveness. |
| cribwall | a reinforcing wall in loose soils. |
| cross ditch | a shallow ditch on the upslope side of a diversion berm. |
| data Logger | An instrument used for conversion of electrical impulses from process instrument into digital data to be recorded, stored, and periodically tabulated. |
| deactivated | a pipeline or segment of a pipeline is deactivated when it is temporarily taken out of operation by evacuating its contents and physically disconnecting it from other active sections. |
| dent | a depression in the surface of the pipe wall caused by external loading. Smooth (plain) dents do not contain gouges. Smooth dents are distortions of the pipe wall without a reduction in wall thickness. Dents with gouges are caused by contact with sharp, hard objects. |

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| dent depth | the distance measured from the deepest part of the dent to the nearest point on a circle forming the original pipe circumference. |
| depolarization | The removal of factors resisting the current in an electrochemical cell. |
| diode | A bipolar semi-conducting device having a low resistance in one direction and a high resistance in the other. |
| direct current voltage gradient | A method of measuring the change in electrical voltage gradient in the soil along and around a pipeline to locate coating holidays and characterize corrosion activity. (DCVG) |
| disbondment | The loss of adhesion between a coating and the substrate. |
| egress | to exit from. A reasonable and practical means of escape from an enclosed or partially enclosed space. |
| emergency flow restricting device or EFRD | a check valve or remote control valve |
| excavation | any man-made cut, cavity, trench or depression in an earth surface, formed by removing the earth. |
| External Corrosion Direct Assessment | ECDA |
| factory bend | a piping bend made in a factory (as opposed to a field bend). |
| field employee | Operations employee who works in the field; may include employees who work in regional/district offices. |
| filter cloth | a type of permanent fabric which allows water to pass but which traps sediment. |
| galvanic Anode | A metal that provides sacrificial protection to another metal that is more noble when electrically coupled in an electrolyte. This type of anode is the electron source in one type of cathodic protection. |
| gouge | mechanically induced damage caused by contact with a sharp, hard object that causes reduction in the thickness of the pipe wall. |

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| grubbing | a technique for removing roots and low shrubs. |
| guideline | see *should*. |
| hazardous atmosphere | an atmosphere that exposes an individual to a risk of injury, illness, disablement or death, specifically:<br>• an atmosphere oxygen concentration below 19.5% or above 23%<br>• a combustible gas or vapor concentration in excess of 10% of its lower explosive limit (LEL) (3% for petroleum vapors based on breathing hazard)<br>• an atmospheric concentration of any substance above the permissible exposure limits<br>• any atmosphere which is recognized as immediately dangerous to life and health (IDLH) |
| heavy equipment | any large industrial earth-moving equipment. |
| high consequence area | (as defined by 49 CFR 195.450) (1) A commercially navigable waterway, which means a waterway where a substantial likelihood of commercial navigation exists (2) A high population area, which means an urbanized area, as defined and delineated by the Census Bureau, that contains 50,000 or more people and has a population density of at least 1,000 people per square mile (3) An other populated area, which means a place, as defined and delineated by the Census Bureau, that contains a concentrated population, such as an incorporated or unincorporated city, town, village, or other designated residential or commercial area; (4) An unusually sensitive area, as defined in 49 CFR 195.6 |
| high vapor pressure | a hydrocarbon or hydrocarbon mixture transported by pipeline in a liquid or semi-liquid state, with a vapor pressure in excess of 340 kPa (50 psi) absolute at 38°C (100°C) |
| HCA segment | high consequence area |
| holiday | A discontinuity in the protective coating or lining that is exhibited when exposed to a village. |
| hot tapping | the technique of attaching connections to equipment in service by welding and drilling. Because air is excluded from inside the equipment, where hydrocarbons are present, the chance of fire or explosion while hot tapping is less than with methods where the equipment is opened. |

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| hydrocarbon-impacted | material that is normally hydrocarbon free but that has some hydrocarbon content. |
| hydromulch | the technique of covering seed used in hydroseeding, typically cellulose fiber. |
| hydrogen Embrittlement | A loss of ductility of a metal resulting from absorption of hydrogen. |
| hydrogen foil | stainless steel foil attached to the external pipe wall that captures atomic hydrogen, which has migrated through the pipe wall into a vacuum in the space beneath the foil. As the atomic hydrogen combines to form molecular hydrogen on the outside wall, the vacuum deteriorates. Periodic reading of the vacuum value tracks the deterioration rate, which reflects the severity of corrosion occurring inside the pipeline. Beta foil is used to blueprint system operations and conditions to internal corrosion susceptibility. |
| hydroseeding | the technique of seeding using a water slurry of seed, fertilizer and hydromulch. |
| impressed Current | An electric current supplied by a device employing a power source that is external to the electrode system. (An example is direct current for cathodic protection.) |
| inhibitor | A chemical additive that can be used to decrease the corrosivity of a transported or stored product. |
| in line inspection | the inspection of a pipeline from the interior of the pipe using a device or vehicle, also known as an intelligent or smart pig, to detect corrosion, cracks, or other types of anomalies |
| interference | The effect upon cathodic protection levels pf a structure due to the interaction between its cathodic protection systems and the cathodic protection system of other structures. |
| interference Bond | A metallic connection designed to control electrical current interchange between metallic systems. |
| interrupter | An electronic device used to activate and deactivate the cathodic |

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| | protection system at a specified frequency. |
| IR Drop | The voltage across a resistance in accordance with Ohm's Law. |
| lining | A material applied to the internal surfaces of tanks or pipe to prevent internal corrosion. |
| LOF | likelihood of failure |
| low vapor pressure | a hydrocarbon or hydrocarbon mixture transported by pipeline in a liquid or semi-liquid state, with a vapor pressure less than or equal to 340 kPa (50 psi) absolute at 38°C (100°C) |
| maximum operating pressure (MOP) | the maximum pressure at which the pipeline may be operated under steady-state conditions |
| mechanical excavation | any excavation activity performed by powered mechanical equipment. |
| mud plug | a means to isolate a section of piping by placing mud inside the pipe to isolate explosive gas mixtures from hot work areas. |
| must | indicates a standard or procedure is mandatory; no variance is permitted without authorization from the vice-president, Operations. |
| natural gas liquids | a high vapor pressure, liquid hydrocarbon mixture that usually includes propane, iosbutane, normal butane, and condensate. |
| nondestructive inspection | the inspection of piping to reveal imperfections using radiographic, ultrasonic, magnetic particle techniques, or other methods that do not require disturbing, stressing or breaking of the materials. |
| nonmerchantable | refers to logs that are too small for timber harvesting. |
| nozzle reinforcement | an added reinforcement surrounding a nozzle which is designed to prevent distortion of the mainline piping or tank shell. |
| Operations employee | a generic term used to refer to all Operations employees. |
| Operations management | regional/district managers, team leaders and their designates. |
| organic matter | refers to decomposing leaves and branches on the surface of soils. |

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| out-of-service | a pipeline or segment of a pipeline is out-of-service when it remains full of hydrocarbon, remains connected and is periodically put back into service (e.g., unused loops are put into service for pig runs). |
| ovality | the difference between maximum and minimum pipe diameters |
| pipeline segment | for the purposes of this program, a pipeline segment is considered to be a segment of pipe between two isolation devices such as valves, a pump station and valve, etc. A segment can contain multiple isolation devices. |
| pipe-to-soil potential | (P/S ) *See structure-to-electrolyte* |
| polarization | The change from the open-circuit potential as a result of current across the electrode/electrolyte interface. |
| polarized Potential | The potential across the structure/electrolyte interface that is the sum of the corrosion potential and the cathodic polarization. |
| protective system | a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems and other systems that provide the necessary protection. |
| ramp | an inclined walking or working surface that is used to gain access to one point from another, and is constructed from earth or structural materials such as steel or wood. |
| reactivated | a deactivated pipeline or segment is reactivated when it is put back into service. Reactivation involves reconnecting, refilling and may involve a hydrostatic test if the pipeline or segment is deactivated for longer than 12 months. |
| rectifier | A device used to convert AC current to DC current. In an impressed cathodic protection system, it supplies current to the structure in the soil. |
| reference electrode | An electrode whose open-circuit is constant under similar conditions of measurement the relative potentials of other electrodes. |

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| registered professional engineer | a person who is registered as a professional engineer in the state/province where the work is to be performed. |
| remote control valve | any valve that is operated from a location remote from where the valve is installed. The RCV is usually operated by the SCADA system. The linkage between the pipeline control center and the RCV may be by fiber optics, microwave, telephone lines, or satellite |
| requirement | see *must.* |
| right-of-way | terms ROW, easement and servitude have the same meaning. |
| risk triggers | the specific attribute |
| riprap | a method of protecting sensitive slopes using large rocks or boulders. |
| ROF | risk of failure |
| rollback | the technique of spreading slash on the right-of-way after construction. |
| safeguard | a guard, shield, wire mesh, guardrail, gate, barrier, safety net, handrail or other similar equipment that is designed to protect the safety of workers, but does not include personal protective equipment. |
| SCADA | supervisory control and data acquisition system |
| sedimentation | the deposition of eroded topsoil or subsoil. |
| shield | *see trench box.* |
| shielding | Preventing or diverting the cathodic protection current from its intended path. |
| shoring | a temporary structure, such as a metal hydraulic, mechanical or timber shoring system, that supports the sides of an excavation and is designed and installed to prevent cave-ins. |
| should | indicates that discretion is permissible; supervisors may exercise judgment in applying the recommended standard or procedure, bearing in mind that any deviation must be carefully considered. |
| shorted casing | A metallic short is a metal casing that is in contact with the metal |

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| | carrier pipe. It is usually caused by improper installation or settling of the casing or pipeline. An electrolytic short is where the metal casing is not in metal contact with the carrier pipe. However, there is current flow between the casing and the carrier pipe due to an electrolyte in the casing. |
| Shunt | A calibrated resistor used for determining current flow in a circuit. |
| site | the entire area required for the performance of the work, including station property, right-of-way, temporary working space and all right-of-way storage areas as required by the company. |
| slash | branches and small wood stems. |
| sloping | a method of protecting workers from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. |
| smart pig | see in-line inspection |
| spoil pile | piled material excavated from an excavation, trench, tunnel or excavated shaft. |
| stable rock | natural solid mineral that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material against the side or sides of an excavation is secured against caving-in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer. |
| standard | an approved company practice that includes guidelines and/or requirements |
| Stopple | the trade name of a tee and plug configuration designed to contain line pressure during repairs. |
| straw crimping | a technique where straw is spread over an area and a straw crimper is then dragged over this area resulting in a manmade stubble field. |
| stray Current | The current that passes through paths other than the intended circuit. |
| structural ramp | a ramp built of steel or wood, usually used for vehicle access. |

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| | Ramps made of soil or rock are not considered structural ramps. |
| structure-to-electrolyte potential | The potential difference between the surface of a buried or metallic structure and the electrolyte that is measured with reference to an electrode in contact with the electrolyte. |
| substrate | topsoil and subsoil. |
| support system | a structure such as underpinning, bracing or shoring that supports an adjacent structure, underground installation, or the sides of an excavation. |
| surface locate | the act of identifying underground facilities by using a pipe and cable locator and then surface marking with appropriate stakes or markers. |
| tackifier | an agent (natural or manmade) applied to loose erodible soil that forms a crust when dried so that the surface is either permeable or impermeable to water. |
| telluric Current | The current in the earth as a result of geomagnetic fluctuations. |
| temporary repair | a sleeve that is fillet-welded to pipe whose carbon equivalent (CE) is greater than 0.5. |
| toe trench | an excavated trench at the base of riprap-armored slope, usually backfilled with large rock. |
| total risk | LOF x COF |
| trench | a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth of a trench is greater than the width, but the width of a trench (measured at the bottom of the excavation) is not greater than 4.6 m (15 ft). |
| trench box | a self-contained steel structure placed in an excavation that is designed to withstand the forces imposed on it by a cave-in and thereby protect workers within the structure. Trench boxes, or shields, can be permanent structures or can be portable and moved along as work progresses. |
| trench breaker | a technique used to stop underground flow along the pipeline trench. |

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| trench crown | the appearance given when a trench is backfilled above normal ground levels. |
| visual examination | inspection of materials or processes using the naked eye or in conjunction with various magnifying devices |
| voltage | An electromotive force or a difference in electrode potentials expressed in volts. |
| water washing | method of excavating earth by means of medium to high water pressure and vacuuming up the water/dirt slurry. |
| workers | company employees, contract workers and contractor personnel. |

Title 49 – Transportation; Department of Transportation (DOT); Part 192 Transportation of Natural Gas and other gas by Pipeline

Title 49 – Transportation; Department of Transportation (DOT); Part 195 Transportation of Hazardous Liquids by Pipeline

## Reference Materials

**49 CFR Parts** 192.453, .455, .457, .459, .461, .463, .465, .467, .469, .471, .473, .475, .477, .479, .481, .485, .491 and Appendix D

**49 CFR Parts** 195.557, .559, .561, .563, .567, .569, .571, .573, .575, .577, .579, .581, .583, .585, .587, .589

NACE Intl SPO169 (Latest Edition) Control of External Corrosion on Underground or Submerged Metallic Piping Systems

NACE Intl. RPO572 (Latest Edition) Design, Installation, Operation, and Maintenance of Impressed Current Deep Groundbeds Systems.

NACE Intl. RPO274 (Latest Edition) High-Voltage Electrical Inspection of Pipeline Coatings

NACE Intl. RPO177 (Latest Edition) Mitigation of Alternating Current and Lightning Effects on Metallic and Corrosion Control Systems.

NACE Intl. RPO281 (Latest Edition) Method for Conducting Coating (Paint) Panel Evaluation Testing in Atmospheric Exposures.

NACE Intl. RPO286 (Latest Edition) Electrical Isolation of Cathodically Protected Pipelines.

NACE Intl. RPO0188 (Latest Edition) Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates.

NACE Intl. RPO200 (Latest Edition) Steel-Cased Pipeline Practices

NACE Intl SPO502 (Latest Edition) Pipeline External Corrosion Direct Assessment Methodology.

NACE Intl. RPO102 (Latest Edition) In-Line Inspection of Pipelines.

NACE Intl. RPO176 (Latest Edition) Corrosion Control of Steel Fixed Offshore Platforms Associated with Petroleum Product.

Nace Intl. RPO492 (Latest Edition) Metallurgical and Inspection Requirements for Offshore Pipeline Bracelet Anodes.

Enbridge Painting, Coating and Lining - Database

A.W. Peabody Control of Pipeline Corrosion *Second Edition*

Handbook of Corrosion Engineering *McGraw-Hill*

Fundamentals of Designing for Corrosion Control *R. James Landrum*

Uhlig's Corrosion Handbook *Second Edition*

Deep Anode Systems - Design, Installation and Operations *T.H. Lewis, Jr.*

Practical Corrosion Control Methods for Gas Utility Piping *Section Edition*

Pipeline Design & Construction – A Practical Approach *M. Mohitpour, H. Golshan, A. Murray*

## Abbreviations

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| ANSI | American National Standards Institute |
| API | American Petroleum Institute |
| ASME | American Society of Mechanical Engineers |
| ASTM | American Society for Testing and Materials |
| bbls | barrels |
| CGA | Canadian Gas Association |
| COF | coefficient of friction |

# GLOSSARY

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| DOT | U.S. Department of Transportation |
| ECA | Engineering Critical Assessment |
| ETA | estimated time of arrival |
| EUB | Alberta Energy Utilities Board |
| HAZ | heat affected zone |
| HVP | high vapor pressure |
| ID | inside diameter |
| LDS | leaking defect sleeve |
| LTO | leave-to-open |
| LVP | low vapor pressure |
| MOP | maximum operating pressure |
| MPI | magnetic particle inspection |
| NACE | National Association of Corrosion Engineers |
| NCCER | National Center for Construction Education and Research |
| NDE | nondestructive examination |
| NDT | nondestructive testing |
| NEB | National Energy Board |
| NPS | nominal pipe size |
| NTSB | National Transportation Safety Board |
| O&MP | Operating & Maintenance Procedures |
| OD | outside diameter |
| PCS | pipeline control system |
| PHMSA | Pipeline Hazardous Material Safety Administration |
| PCV | pressure control valve |
| PLM | pipeline maintenance |
| psi | pressure per square inch |
| PVC | pressure vessel containment |
| ROW | right-of-way |
| RPR | rupture pressure ratio |
| RTD | resistance temperature device |
| S&W | sediment and water |
| SMYS | specified minimum yield strength |
| WFMPI | wet florescent magnetic particle inspection |
| WT | wall thickness |

**Notes**

**NOTE:** Notes are used to call attention to additional information.

▲CAUTION: Cautions are used to call attention to a hazard or unsafe practice that could result in equipment damage.

# GLOSSARY

> ⚠ WARNING: Warnings are used to call attention to a hazard or unsafe practice that could result in personal injury or fatality.

*Note:* Some terms and definitions can be found in NACE Glossary of related Terms & NCCER Glossary. For a copy of the complete Glossary from NACE or NCCER, contact Nace International, 1440 South Creek Dr., Houston TX 77084; contact NCCER, 3600 NW 43rd St., Gainesville, FL 32606. The Glossary is revised periodically, so information in an outdated version may not be accurate.