Pipeline Safety Committee

Pipe Speak 101 –

(for the uninitiated)
Pipe speak - 101

Purpose of Pipe Speak 101

A Basic Understanding of Pipelines and the language used in the pipeline transportation industry.
Pipe speak - 101

• We Will Consider five basic areas

  – Engineering
  – Construction
  – Operations
  – Maintenance
  – Code Compliance
  – DOT CFR 49 Part 192 Overview
  – Miscellaneous terms and definitions
Pipe speak - 101
Definitions DOT CFR 49 Part 192

Natural Gas

– *Pipeline* - means all parts of those physical facilities through which natural gas moves in transportation, including pipe, valves, and other appurtenance attached to pipe, compressor units, metering stations, regulator stations, delivery stations, holders, and fabricated assemblies.
Pipe speak - 101

- Maps
  - Oregon and Washington LDC Service areas

LDC – Local Distribution Companies
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Focusing in on one LDC Feeder Grid and mapping system
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- Hazardous Materials Products Line
- Liquid Phase Materials carried in a Pipeline between storage terminals.
- Products carried include:
  - Gasoline
  - Heating Oil
  - Aviation Fuels
  - Diesel Fuel
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**Hazardous Liquid Products**

**Pipeline** - means all parts of those physical facilities through which a hazardous liquid product moves in transportation, including pipe, valves, and other appurtenance attached to pipe, pump units, metering stations, delivery stations, holders, and fabricated assemblies.
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- *Pipe* - means any pipe or tubing used in the transportation of gas, including pipe-type holders.

- *Pipeline facility* means new and existing pipelines, rights-of-way, and any equipment, facility, or building used in the transportation of gas or in the treatment of gas during the course of transportation.
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- *Transmission line* means a pipeline, other than a gathering line, that: (1) Transports gas from a gathering line or storage facility to a distribution center, storage facility, or large volume customer that is not down-stream from a distribution center; (2) operates at a hoop stress of 20 percent or more of SMYS; or (3) transports gas within a storage field.
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- Feeder Line* means any larger diameter line to transport larger quantities of gas at higher than distribution pressures within a Local Distribution System (LDC) from gate stations to district regulators.

* not defined or addressed in Part 192 except by inference.
• **High-pressure distribution system** means a distribution system in which the gas pressure in the main is higher than the pressure provided to the customer.

Such systems nominally operate at 45 to 50 PSIG with a tail end pressure of 20 PSIG under load.
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- *Low-pressure distribution system* means - a distribution system in which the gas pressure in the main is substantially the same as the pressure provided to the customer. 

A distribution system in which the gas pressure in the main is substantially the same as the pressure provided to the customer. IE: inches of WC or Approximately ¼ PSIG

* None in the State of Washington
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- **Main** - means a distribution line that serves as a common source of supply for more than one service line.

- *Distribution line* means - a pipeline other than a gathering or transmission line.
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- **Service line** - means a distribution line that transports gas from a common source of supply to an individual customer, to two adjacent or adjoining residential or small commercial customers, or to multiple residential or small commercial customers served through a meter header or manifold. A service line ends at the outlet of the customer meter or at the connection to a customer's piping, whichever is further downstream, or at the connection to customer piping if there is no meter.
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ENGINEERING SERVICES

Why do Engineers talk so funny??!? 

Engineers and their language
Pipe speak - 101
ENGINEERING SERVICES

The characteristics of the young Engineer –

- Awkward
- No personality
- Nerdish
- Yearning for a pocket protector
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Let’s Do Some Design……
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- Design Considerations
  - How big? (how much gas do you want to carry at what pressure)
  - Application? (transmission or distribution)
  - Pipe material? (Steel or Plastic)
  - Pipe Wall Thickness (steel)
  - Desired Maximum Operating Pressure (MAOP)
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Standard Form of the Flow Loss Equation:

\[
Q = (n+1) \times 77.54 \left( \frac{T_b}{P_b} \right) \left( D - 2*WT \right)^{2.5} e^{\left( P_1^2 - P_2^2 - \left( 0.0375G(h_2 - h_1)P_a^2 / ZT_a \right) / GT_a L Z_f \right)^{0.5}}
\]
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CLASS 'B' MAIN EXTENSIONS
DESIGN PRESSURE DROP: 35 PSIG TO 28 PSIG
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Steel or Plastic?

Steel for High Pressure Applications

Plastic for Distribution Pressure Applications
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- **Steel Pipe Specifications**
  - American Pipe Institute
  - Typical line pipe 5LX42
    - where the X42 indicates a SMYS of 42 KSI
    - Also available as X52* and X60* pipe for higher strength pipe

* note: as yield increases ductility decreases
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- *SMYS* - means specified minimum yield strength is:

- (1) For steel pipe manufactured in accordance with a listed specification, the yield strength specified as a minimum in that specification; or

- (2) For steel pipe manufactured in accordance with an unknown or unlisted specification, the yield strength determined in accordance with §192.107(b).
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MAOP

- Maximum Allowable Operating Pressure
- Design Pressure
- Test Pressure
- Nominal Operating Pressure

Typically, Design Pressure and MAOP are the same
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Class Locations

Class 1 Locations:

Any class location unit that has 10 or fewer buildings intended for human occupancy
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Class Locations

- **Class 2 Locations:**

  Any class location unit that has more than 10 but fewer than 46 buildings intended for human occupancy.
Class Locations

Class 3 Locations:

i) Any class location unit that has more than 10 but fewer than 46 buildings intended for human occupancy.

ii) An area where the pipeline lies within 100 yards (91 meters) of either a building or a small, well-defined outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period. (The days and weeks need not be consecutive.)
Class Locations

Class 4 Locations:
Any class location unit where buildings with four or more stories above ground are prevalent.
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Class Locations Definition

Class Location Unit

A “class location unit” is an onshore area that extends 220 yards (200 meters) on either side of the centerline of any continuous 1-mile (1.6 kilometers) length of pipeline.

Dwelling Unit

Within a class location unit Each separate dwelling unit, in a multiple dwelling unit building is counted as a separate building intended for human occupancy.
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- Over Pressure Protection
  - Two Methods
    - Relief Valve adequate to relieve capacity of a failed Regulator so as not to exceed MAOP.
    - A monitor regulator system - Two regulators in series with independent downstream sensing lines. (one is wide open for normal operation but will control in event of failure of controlling regulator)
• Construction

• Engineering Packet including
  – Sketches
  – Work Orders
  – Material Orders
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ENGINEERING SERVICES
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Testing

• A New Steel Line operating above 60 PSIG - Typically requires Hydro-Static Testing.
  – Minimum testing for all Pipe 150 percent of Design MAOP
  – Steel Pipe requiring Hydro-Static Testing is tested to 90% of Yield strength of the pipe material – a Hydro-static test will generally exceed 2,000PSI for a period of greater than 24 hours.
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- Testing
  - Smart Pigging – Require on certain transmission lines periodically – every five years) where the line has been installed or retrofitted* to smart piggable* requirements
    means has been constructed or retrofitted with a minimum of 3R bends

Smart Pigs collect running data on location, wall thickness, possible corrosion, sense dents or anomalies in the pipe which would affect its strength.
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• Operations
  – Underground Pipelines are out of public sight
  – Station Facilities are the most visible parts of pipeline operations
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Pipe speak - 101
Pipe speak - 101
Pipe speak - 101

• Code Compliance covers the operational requirements as required by CFR 49 Part 192

• Inspections and testing is covered under the Pipeline Integrity Requirements for verification of operability of a pipeline.
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- Code Compliance
    - General
    - Materials
  - State and Local Codes

- Pipe Design
  - Design of Pipeline Components
  - Welding of Steel in Pipelines
  - Joining of Materials Other Than by Welding
  - General Construction Requirements for Transmission Lines and Mains
  - Customer Meters, Service Regulators, and Service Lines
  - Requirements for Corrosion Control
  - Test Requirements
  - Uprating
  - Operations
  - Maintenance
  - Qualification of Pipeline Personnel
  - State and Local Codes
Pipe speak - 101

- Corrosion Control and Record Keeping
  - Includes required 60 day rectifier inspections and annual Pipe-to-Soil inspections to assure Cathodic Protection on all steel pipelines is active
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- *Pipeline environment* includes soil resistivity (high or low), soil moisture (wet or dry), soil contaminants that may promote corrosive activity, and other known conditions that could affect the probability of active corrosion.
Galvanic corrosion systems are utilized when a power source is not available for use. Galvanic corrosion systems are also known as sacrificial systems. A magnesium anode is energy supply for the systems.
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• Corrosion Definitions

– *Electrical survey* means a series of closely spaced pipe-to-soil readings over pipelines which are subsequently analyzed to identify locations where a corrosive current is leaving the pipeline.

– *Active corrosion* means continuing corrosion that, unless controlled, could result in a condition that is detrimental to public safety.
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- Leakage Inspections - DOT Required
  - Transmission mains* – Annually
  - Feeder mains – Annually
  - Distribution mains – Residential areas every five years
  - Hard Surface Areas - Annually
  - Business Areas - Annually
  - Buildings of Public Assembly – Annually
  - Pipeline casings - Annually

* Also quarterly flyover for visual inspection
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- **Leak survey methods** –
  - Mobile mounted sniffer equipment - Uses Flame Ionization Detector for methane in vicinity of mains. Equipment speed 3 to 5 mph with continuous sampling for detector.
    - (sensitive to 10 PPM Methane in air)
  - **Combustible Gas Indicator (CGI)** for sampling and identification at suspected sites.
    - (sensitive from 1,000 PPM to Percent concentrations)
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• Leakage Classifications – DOT

Class 1 - Spread against a foundation or building –
Action - Immediate response for elimination

Class 2 - Spread within 10 ft. of a building
Action – Schedule for repair or replacement and
monitor on a 30 day cycle until eliminated

Class 3 – Not considered a potential hazard. Monitor for
changes until repair or replacement
Pipe speak - 101

• Station and District Regulator inspections and Maintenance
  – Inspect for Proper regulator settings and operation
  – Verify Relief Valve Operability
  – Odorization Levels – Recognizable at 1/5th of LEL or 1% Methane in air
  – Valve Maintenance
    • Grease Valves and verify Operability
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Engineering Field Data -
- Oregon and Washington Dig Laws

Call Before You Dig!!

......Excavation means any operation in which earth, rock, or other material on or below the ground is moved or otherwise displaced by any means......beyond 12-inches in depth.

......The excavator must notify the Utility Notification Center at least (two) business days but not more than (ten) business days before the scheduled commencement of excavation.....

- Locate personnel - Over (40) company personnel performing locate activity each day PLUS contract resources as required.
- Company wide over 180,000 locate performed in 2006
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- DOT CFR 49 Part 192

- Note Parts 190 thru 194 cover aspects of underground transportation facilities.

- Part 190 covers operator drug testing and operator qualifications – Requirements and training
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- Reportable Incidents to State Regulatory Commission and/or PHMSA
  - Loss of Life
  - Major Property Damage/Personal Injury
  - Minor Property Damage
  - Emergency Shutdown of a Pipeline.
  - Unplanned Ignition
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A Brief Overview of CFR 49 Part 192 section titles.
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- **SUBCHAPTER D--PIPELINE SAFETY**
- **PART 192--TRANSPORTATION OF NATURAL AND OTHER GAS BY PIPELINE: MINIMUM FEDERAL SAFETY STANDARDS**
  - Subpart A--GENERAL
  - Subpart B--MATERIALS
  - Subpart C--PIPE DESIGN
  - Subpart D--DESIGN OF PIPELINE COMPONENTS
  - Subpart E--WELDING OF STEEL IN PIPELINES
  - Subpart F--JOINING OF MATERIALS OTHER THAN BY WELDING
  - Subpart G--GENERAL CONSTRUCTION REQUIREMENTS FOR TRANSMISSION LINES AND MAINS
  - Subpart H--CUSTOMER METERS, SERVICE REGULATORS, AND SERVICE LINES
  - Subpart I--REQUIREMENTS FOR CORROSION CONTROL
  - Subpart J--TEST REQUIREMENTS
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- Subpart K--UPRATING
- Subpart L--OPERATIONS
- Subpart M--MAINTENANCE
- Subpart N--QUALIFICATION OF PIPELINE PERSONNEL
- Subpart P--GAS DISTRIBUTION PIPELINE INTEGRITY MANAGEMENT (IM)
- Appendix B to Part 192 --Qualification of Pipe
- Appendix C to Part 192 --Qualification of Welders for Low Stress Level Pipe
- Appendix D to Part 192 --Criteria for Cathodic Protection and Determination of Measurements
- Appendix E to Part 192 --Guidance on Determining High Consequence Areas and on Carrying out Requirements in the Integrity Management Rule
SUBCHAPTER D--PIPELINE SAFETY
PART 192--TRANSPORTATION OF NATURAL AND OTHER GAS BY PIPELINE: MINIMUM FEDERAL SAFETY STANDARDS
Subpart A—GENERAL

192.1 What is the scope of this part?
192.3 Definitions.
192.5 Class locations.
192.7 What documents are incorporated by reference partly or wholly in this part?
192.8 How are onshore gathering lines and regulated onshore gathering lines determined?
192.9 What requirements apply to gathering lines?
192.10 Outer continental shelf pipelines.
192.11 Petroleum gas systems.
192.13 What general requirements apply to pipelines regulated under this part?
192.14 Conversion to service subject to this part.
192.15 Rules of regulatory construction.
192.16 Customer notification.
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- **Subpart B--MATERIALS**
- **192.51** Scope.
- **192.53** General.
- **192.55** Steel pipe.
- **192.57**[Reserved]
- **192.59** Plastic pipe.
- **192.61**[Reserved]
- **192.63** Marking of materials.
- **192.65** Transportation of pipe.
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- **Subpart C--PIPE DESIGN**
- **192.101** Scope.
- **192.103** General.
- **192.105** Design formula for steel pipe.
- **192.107** Yield strength () for steel pipe.
- **192.109** Nominal wall thickness () for steel pipe.
- **192.111** Design factor () for steel pipe.
- **192.112** Additional design requirements for steel pipe using alternative maximum allowable operating pressure.
- **192.113** Longitudinal joint factor () for steel pipe.
- **192.115** Temperature derating factor () for steel pipe.
- **192.117[Reserved]**
- **192.119[Reserved]**
- **192.121** Design of plastic pipe.
- **192.123** Design limitations for plastic pipe.
- **192.125** Design of copper pipe.
Subpart D--DESIGN OF PIPELINE COMPONENTS

192.141 Scope.
192.143 General requirements.
192.144 Qualifying metallic components.
192.145 Valves.
192.147 Flanges and flange accessories.
192.149 Standard fittings.
192.150 Passage of internal inspection devices.
192.151 Tapping.
192.153 Components fabricated by welding.
192.155 Welded branch connections.
192.157 Extruded outlets.
192.159 Flexibility.
192.161 Supports and anchors.
192.163 Compressor stations: Design and construction.
Pipe speak - 101

- **192.165** Compressor stations: Liquid removal.
- **192.167** Compressor stations: Emergency shutdown.
- **192.169** Compressor stations: Pressure limiting devices.
- **192.171** Compressor stations: Additional safety equipment.
- **192.173** Compressor stations: Ventilation.
- **192.175** Pipe-type and bottle-type holders.
- **192.177** Additional provisions for bottle-type holders.
- **192.179** Transmission line valves.
- **192.181** Distribution line valves.
- **192.183** Vaults: Structural design requirements.
- **192.185** Vaults: Accessibility.
- **192.187** Vaults: Sealing, venting, and ventilation.
- **192.189** Vaults: Drainage and waterproofing.
- **192.191** Design pressure of plastic fittings.
- **192.193** Valve installation in plastic pipe.
- **192.195** Protection against accidental overpressuring.
- **192.197** Control of the pressure of gas delivered from high-pressure distribution systems.
- **192.199** Requirements for design of pressure relief and limiting devices.
- **192.201** Required capacity of pressure relieving and limiting stations.
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- Subpart E--WELDING OF STEEL IN PIPELINES
  - 192.221 Scope.
  - 192.225 Welding procedures.
  - 192.227 Qualification of welders.
  - 192.229 Limitations on welders.
  - 192.231 Protection from weather.
  - 192.233 Miter joints.
  - 192.235 Preparation for welding.
  - 192.241 Inspection and test of welds.
  - 192.243 Nondestructive testing.
  - 192.245 Repair or removal of defects.
Pipe speak - 101

- **Subpart E--WELDING OF STEEL IN PIPELINES**
- **192.221** Scope.
- **192.225** Welding procedures.
- **192.227** Qualification of welders.
- **192.229** Limitations on welders.
- **192.231** Protection from weather.
- **192.233** Miter joints.
- **192.235** Preparation for welding.
- **192.241** Inspection and test of welds.
- **192.243** Nondestructive testing.
- **192.245** Repair or removal of defects.
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- **Subpart G--GENERAL CONSTRUCTION REQUIREMENTS FOR TRANSMISSION LINES AND MAINS**
  - **192.301** Scope.
  - **192.303** Compliance with specifications or standards.
  - **192.305** Inspection: General.
  - **192.307** Inspection of materials.
  - **192.309** Repair of steel pipe.
  - **192.311** Repair of plastic pipe.
  - **192.313** Bends and elbows.
  - **192.315** Wrinkle bends in steel pipe.
  - **192.317** Protection from hazards.
  - **192.319** Installation of pipe in a ditch.
  - **192.321** Installation of plastic pipe.
  - **192.323** Casing.
  - **192.325** Underground clearance.
  - **192.327** Cover.
  - **192.328** Additional construction requirements for steel pipe using alternative maximum allowable operating pressure.
Pipe speak - 101

- **Subpart H--CUSTOMER METERS, SERVICE REGULATORS, AND SERVICE LINES**
  - 192.351 Scope.
  - 192.353 Customer meters and regulators: Location.
  - 192.355 Customer meters and regulators: Protection from damage.
  - 192.357 Customer meters and regulators: Installation.
  - 192.359 Customer meter installations: Operating pressure.
  - 192.361 Service lines: Installation.
  - 192.363 Service lines: Valve requirements.
  - 192.365 Service lines: Location of valves.
  - 192.367 Service lines: General requirements for connections to main piping.
  - 192.369 Service lines: Connections to cast iron or ductile iron mains.
  - 192.371 Service lines: Steel.
  - 192.373 Service lines: Cast iron and ductile iron.
  - 192.375 Service lines: Plastic.
  - 192.377 Service lines: Copper.
  - 192.379 New service lines not in use.
  - 192.381 Service lines: Excess flow valve performance standards.
  - 192.383 Excess flow valve installation.
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- Subpart I--REQUIREMENTS FOR CORROSION CONTROL
  - 192.451 Scope.
  - 192.452 How does this subpart apply to converted pipelines and regulated onshore gathering lines?
  - 192.453 General.
  - 192.455 External corrosion control: Buried or submerged pipelines installed after July 31, 1971.
  - 192.457 External corrosion control: Buried or submerged pipelines installed before August 1, 1971.
  - 192.459 External corrosion control: Examination of buried pipeline when exposed.
  - 192.461 External corrosion control: Protective coating.
  - 192.463 External corrosion control: Cathodic protection.
  - 192.467 External corrosion control: Electrical isolation.
  - 192.469 External corrosion control: Test stations.
  - 192.471 External corrosion control: Test leads.
  - 192.475 Internal corrosion control: General.
  - 192.476 Internal corrosion control: Design and construction of transmission line.
  - 192.477 Internal corrosion control: Monitoring.
  - 192.479 Atmospheric corrosion control: General.
  - 192.481 Atmospheric corrosion control: Monitoring.
  - 192.483 Remedial measures: General.
  - 192.485 Remedial measures: Transmission lines.
  - 192.487 Remedial measures: Distribution lines other than cast iron or ductile iron lines.
  - 192.489 Remedial measures: Cast iron and ductile iron pipelines.
  - 192.490 Direct assessment.
  - 192.491 Corrosion control records.
Pipe speak - 101

- **Subpart J--TEST REQUIREMENTS**
- **192.501** Scope.
- **192.503** General requirements.
- **192.505** Strength test requirements for steel pipeline to operate at a hoop stress of 30 percent or more of SMYS.
- **192.507** Test requirements for pipelines to operate at a hoop stress less than 30 percent of SMYS and at or above 100 p.s.i. (689 kPa) gage.
- **192.509** Test requirements for pipelines to operate below 100 p.s.i. (689 kPa) gage.
- **192.511** Test requirements for service lines.
- **192.513** Test requirements for plastic pipelines.
- **192.515** Environmental protection and safety requirements.
- **192.517** Records.
Subpart L--OPERATIONS

- 192.601 Scope.
- 192.603 General provisions.
- 192.605 Procedural manual for operations, maintenance, and emergencies.
- 192.607 [Reserved]
- 192.609 Change in class location: Required study.
- 192.611 Change in class location: Confirmation or revision of maximum allowable operating pressure.
- 192.612 Underwater inspection and reburial of pipelines in the Gulf of Mexico and its inlets.
- 192.613 Continuing surveillance.
- 192.614 Damage prevention program.
- 192.615 Emergency plans.
- 192.616 Public awareness.
- 192.617 Investigation of failures.
- 192.619 Maximum allowable operating pressure: Steel or plastic pipelines.
- 192.620 Alternative maximum allowable operating pressure for certain steel pipelines.
- 192.621 Maximum allowable operating pressure: High-pressure distribution systems.
- 192.623 Maximum and minimum allowable operating pressure; Low-pressure distribution systems.
- 192.625 Odorization of gas.
- 192.627 Tapping pipelines under pressure.
- 192.629 Purging of pipelines.
- 192.631 Control room management.
Pipe speak - 101

- **Subpart M--MAINTENANCE**
  - 192.701 Scope.
  - 192.703 General.
  - 192.705 Transmission lines: Patrolling.
  - 192.706 Transmission lines: Leakage surveys.
  - 192.707 Line markers for mains and transmission lines.
  - 192.709 Transmission lines: Record keeping.
  - 192.711 Transmission lines: General requirements for repair procedures.
  - 192.713 Transmission lines: Permanent field repair of imperfections and damages.
  - 192.717 Transmission lines: Permanent field repair of leaks.
  - 192.723 Distribution systems: Leakage surveys.
  - 192.725 Test requirements for reinstating service lines.
  - 192.727 Abandonment or deactivation of facilities.
  - 192.731 Compressor stations: Inspection and testing of relief devices.
  - 192.735 Compressor stations: Storage of combustible materials.
  - 192.736 Compressor stations: Gas detection.
  - 192.739 Pressure limiting and regulating stations: Inspection and testing.
  - 192.741 Pressure limiting and regulating stations: Telemetering or recording gauges.
  - 192.743 Pressure limiting and regulating stations: Capacity of relief devices.
  - 192.745 Valve maintenance: Transmission lines.
  - 192.747 Valve maintenance: Distribution systems.
  - 192.749 Vault maintenance.
  - 192.751 Prevention of accidental ignition.
  - 192.753 Caulked bell and spigot joints.
  - 192.755 Protecting cast-iron pipelines.
Pipe speak - 101

- **Subpart N--QUALIFICATION OF PIPELINE PERSONNEL**
  - **192.801** Scope.
  - **192.803** Definitions.
  - **192.805** Qualification program.
  - **192.807** Recordkeeping.
  - **192.809** General.
Pipe speak - 101

- **192.901** What do the regulations in this subpart cover?
- **192.903** What definitions apply to this subpart?
- **192.905** How does an operator identify a high consequence area?
- **192.907** What must an operator do to implement this subpart?
- **192.909** How can an operator change its integrity management program?
- **192.911** What are the elements of an integrity management program?
- **192.913** When may an operator deviate its program from certain requirements of this subpart?
- **192.915** What knowledge and training must personnel have to carry out an integrity management program?
- **192.917** How does an operator identify potential threats to pipeline integrity and use the threat identification in its integrity program?
- **192.919** What must be in the baseline assessment plan?
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- How is direct assessment used and for what threats?
- What are the requirements for using External Corrosion Direct Assessment (ECDA)?
- What are the requirements for using Internal Corrosion Direct Assessment (ICDA)?
- What are the requirements for using Direct Assessment for Stress Corrosion Cracking (SCCDA)?
- How may Confirmatory Direct Assessment (CDA) be used?
- What actions must be taken to address integrity issues?
- What additional preventive and mitigative measures must an operator take?
- What is a continual process of evaluation and assessment to maintain a pipeline's integrity?
- What are the required reassessment intervals?
Pipe speak - 101

- 192.941 What is a low stress reassessment?
- 192.943 When can an operator deviate from these reassessment intervals?
- 192.945 What methods must an operator use to measure program effectiveness?
- 192.947 What records must an operator keep?
- 192.949 How does an operator notify PHMSA?
- 192.951 Where does an operator file a report? Subpart P--GAS DISTRIBUTION PIPELINE INTEGRITY MANAGEMENT (IM)
- 192.1001 What definitions apply to this subpart?
- 192.1003 What do the regulations in this subpart cover?
- 192.1005 What must a gas distribution operator (other than a master meter or small LPG operator) do to implement this subpart?
- 192.1007 What are the required elements of an integrity management plan?
Pipe speak - 101

• **192.1009** What must an operator report when compression couplings fail?
• **192.1011** What records must an operator keep?
• **192.1013** When may an operator deviate from required periodic inspections under this part?
• **192.1015** What must a master meter or small liquefied petroleum gas (LPG) operator do to implement this subpart?
CC

CATHODIC PROTECTION - A method for controlling corrosion of steel pipe caused by electrolysis.

CATHODIC PROTECTION WIRE - A copper wire laid in the trench with PE pipe that allows cathodic protection to span from one steel pipe system to another.

CLAMP - A metal band fastened over a pipe to close off a leak.

COALESCE - A tank or vessel used to condense liquids out of the gas stream.

COATED PIPE - Steel pipe that has been coated with a substance that retards corrosion in combination with cathodic protection. Also called wrapped pipe.

CODE - The U.S. Department of Transportation Pipeline Safety Regulations which regulate safety operations on the Company's pipeline. (Other codes also exist.)

COMBUSTIBLE GAS INDICATOR - A device for measuring the percentage of gas in air.

COMMERCIAL METER - A natural gas meter at a business or apartment. Small commercial meters deliver 1000 cubic feet of natural gas per hour or less, and large commercial meters deliver more than 1000 cubic feet per hour.

CONSTRUCTION DRAWINGS - Drawings with instructions provided for field personnel showing how something should be built.

CONVERSION - Changing a portion of the gas system from low pressure Class A to high pressure Class B.

CUBIC FOOT OF NATURAL GAS - Approximately 1,000 Btus.

CURB COCK - A turn-on, turn-off valve on a service located near the curb, away from the building, that enables the Company to turn off the service in an emergency. Curb cocks are usually installed on commercial and larger services.
Pipe speak - 101
ENGINEERING SERVICES

Dd

D.O.T. - U.S. Department of Transportation.

DCS - Distribution Construction System. A computer system that allows an operator to manage construction costs.

DIAPHRAGM METER - A meter that measures the volume of natural gas used through a series of sliding valves and flexible chambers that capture pockets of gas.

DISTRICT REGULATOR - A pressure-reducing station on the pipeline that controls gas pressure from an inlet system to an outlet system and serves a district of six or more customers.

DOMESTIC METER - A residential meter.

DOWNSTREAM - Any point farther along in the direction of the flow of gas from a reference point.

Ee

ELECTROLYSIS - In a pipeline, the decomposition or destruction of the pipe wall by stray electrical current. Negative ions are transferred through the moist ground to the more passive ion section of the pipe.

EXPANDER PLUG - A stopper placed with a special tool in a pipe that expands to stop the flow of gas. It stays there until removed with the same special tool.
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Ff

F.I. - Flame ionization unit. Used aboveground, outside, to detect leaks. Its sensitivity is much higher than a CGI.

FEEDER LINE - A natural gas line that is pressured over 60 psig but is not a transmission line.

FINK (Also FINK STATION) - A free-standing, aboveground, poly pipe with a removable lid that houses test leads and/or tracer wire.

FLARING - Allowing natural gas to burn as it dissipates in the open air.

FOOTLINE - The number of feet from the property line or the center line of the right-of-way to the Company's main.

FUSILEER - A person who has been tested and passed the exam for fusing polyethylene (P.E.) pipe. P.E. pipe is fused by heating each end until it melts and then pressing the ends together.

FUSION - The joint or the process where two ends of polyethylene pipe have been fused together.

Gg

GATE STATION - The location where the Company's pipeline is connected to Northwest Pipeline's transmission line and natural gas changes ownership. Gate stations consist of meters for custody transfer, regulators, valves, relief valves, and possibly odorizers, and are enclosed with fencing.

GROUNDBED - A 400-foot-deep well that normally has 10-15 anodes spaced at 17-foot intervals on the bottom half of the well. Coke breeze is also added to decrease resistance between the anodes and the ground. The anodes are attached between the rectifiers and the pipeline.
HIGH PRESSURE SYSTEM - A natural gas distribution system that operates at a higher pressure than the standard service pressure delivered to the customer. A regulator is required on each service to control pressure delivered to the customer.

HOUSEPIPE or HOUSELINE - The portion of gas piping, fittings, etc. that extends from the outlet of the meter or point of delivery to the customer's appliance. Housepipe or houseline is owned by the customer.

HYDROSTATIC TESTING - A strength test of pipe in which the pipe is filled with water, subjected to pressure, and shut in and monitored for leaks or loss of pressure.

I.C. - Insulated coupling. Used to attach a coated steel pipe to a bare steel pipe to keep the electric current that causes corrosion from traveling from the bare pipe to the coated pipe.

INCHES OF WATER COLUMN - The actual measurement of pressure in a manometer for very low pressures. Twelve inches water column equals about 1/2 psi.

INLET VALVE - The valve that closes off the flow of gas upstream of a district regulator or other facility for safety purposes or for maintenance.

KB PIPELINE - A joint-venture pipeline project for the Gas Company and Portland General Electric. The line is 17 miles long through Washington state from Kelso to the PGE Beaver Plant in Oregon.

KEROTEST - Two pieces of pipe bonded together in the middle with fiberglass-type material. Used as in-line insulation on pipelines.

KILL A MAIN - Same as abandon a main.
L.E.L. - Lower explosive limit, 5 percent gas in air. Sometimes called L.F.L., Lower Flammable Limit, the thinnest mixture of gas in air that will ignite.

LOCATE - An activity by Field Data workers who mark the ground over gas lines, usually with yellow paint, so people who are constructing or excavating in the area won't hit our lines.

LOW PRESSURE SYSTEM - A natural gas distribution system that operates at the same pressure as that delivered to the customer's appliances (commonly about 7 inches of water column).
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Mm

MAIN - A distribution line that serves as a common source of supply of natural gas for more than one service line

MAIN CLASSIFICATIONS, A, B, C, D, F - A rating system for the internal pressure in a pipeline as shown below:
   A - Inches of water column
   B - 1-60 psig
   C - 61-175 psig
   D - 176-400 psig
   E - 401-720 psig
   F - 721 psig or more

MAIN EXTENSION - A new section of main added to an existing main to serve new customers

M.A.O.P. - Maximum Allowable Operating Pressure, the highest pressure at which a pipeline segment can be legally operated

MARKET COST ASSESSMENT - An estimate of gas consumption and company profitability compared to construction costs for a new or existing customer to determine if the Company can add or expand the service to that customer

MCF (Mcf) - One thousand standard cubic feet of gas

MAIN SKETCH - A drawing showing a proposed main extension

MERCAPTAN - The main ingredient that is added to natural gas to give it its distinct odor

METER - An instrument for measuring and indicating or recording the volume of natural gas that has passed through it

METHANE - The primary component of natural gas (CH4)

MMCF (Mmcf) - One million standard cubic feet of gas

Nn

NORTHWEST PIPELINE - Northwest Pipeline Company, a natural gas transmission company that moves natural gas from the gas fields in Canada and the Southwest to gate stations where NNG takes custody of the gas in its distribution system
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Pp

PIG - An internal squeegee that cleans out the gas pipeline. 'Pigging' is necessary to remove liquids or for inspection of the pipe's internal surface condition.

PIG LAUNCHER - An assembly of valves and short sections of pipe that allow for the insertion of a pig without the interruption of gas flow.

PIG TRAP - An assembly of valves and short sections of pipe that allow for the removal of a pig without the interruption of gas flow.

PLAT - A drawing showing one-quarter of a square mile or section. A plat shows the exact location of our mains, services, valves, and street rights-of-way.

POLYETHYLENE, or P.E. Pipe - Plastic pipe, usually yellow, used in natural gas distribution systems.

POTENTIAL - The electrical charge on a pipeline between the pipe and the ground.

POTHOLING - The process of digging a hole to observe the depth of the pipe.

PRELIMINARY PLAT - A plat that has been drawn but has not yet been checked and approved.

PROPOSED MAIN LINE - A planned main drawn on a main extension sketch with a dashed line.

P.S.I. - Pounds per square inch.

P.S.I.G. - Pounds per square inch gauge.

PURGE - The process of cleaning out a pipeline of unwanted gas or air.

PUSH SERVICE - The process of installing a service using water boring equipment to avoid digging an open trench.
RANGE - A surveyed area numbered to identify land. Range lines are identified in six-mile increments running east and west and divided by the Willamette Meridian.

RECTIFIER - A transformer that changes 110 or 220 A.C. volts into a D.C. component which is then impressed between the groundbed and the pipeline.

RECTIFIER RUN - A survey of rectifiers. A rectifier must be checked to see if it is adequately protecting its area. The Corrosion Technician uses this opportunity to readjust the rectifiers for proper output.

REGULATOR - A device that limits the pressure in a pipeline, regardless of the rate of flow in the line or the change in the upstream pressure.

RELIEF VALVE - A device that prevents the pressure in a pipeline or distribution system from exceeding a set pressure. The relief vents the natural gas into the atmosphere when the pressure becomes too high.

RIGHT-OF-WAY - The area between property lines owned by the county or city according to the assessor's maps.

RESIDENTIAL METER - The Company meter which is set at the end of a service for a single family residence.

RISER - The pipe that rises from the ground bringing natural gas to the meter.

RISER COCK - A turn-on, turn-off valve located on the riser that enables the Company to turn off the service in an emergency.

ROTARY METER - A meter that measures the volume of natural gas used through lobes that rotate and capture pockets of
TEST LEAD - Two wires connected to the pipe for the purpose of measuring the cathodic protection potential. A test lead can also be used to facilitate locating the pipe.

THERM - 100,000 Btus, the amount of energy in approximately 100 cubic feet of natural gas.

TINKER - A transmitting and receiving unit used to find coating loss and unwanted foreign contacts on buried pipelines.

TOWNSHIP - A survey area used to identify land. Township lines are identified in six-mile increments running north and south and divided by the Willamette Baseline.

TRANSMISSION LINE - A pipeline that transports gas from a gathering line or storage facility to a distribution center or storage facility and any line with a pressure higher than 20 percent SMYS.

TURBINE METER - A meter that measures the volume of natural gas used using blades, like fan blades, that capture pockets of gas.

UNDERGROUND UTILITIES - The pipe and any other underground structures that belong to the gas, electric, water, or telephone company.

UPSTREAM - Any point located nearer the origin of flow of natural gas compared to a reference point.

UTILITY - The utility company (gas, water, electric, telephone, etc.).
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Vv

VALVE - A mechanical device, similar to a faucet, used to start, stop or regulate the flow of natural gas by a movable part that opens, shuts, or partially obstructs the flow of the gas.

VALVE KEY - A steel rod with a special end to fit the valve head used to turn on and turn off valves at institutions, gate stations, district regulator stations, etc.

VALVE NUMBERS - Numbers assigned by the Drafting Section to certain valves on plat sheets to identify them for availability and maintenance. Maintenance means that the valves are operated and greased, if needed, once a year.

Ww


WALER (WALE) - A support brace used in shoring and construction.

W.C. - Water column.

WELD - To unite steel pipe or fittings by heating and allowing the metals to fuse together.

W.U.T.C. - Washington Utilities and Transportation Commission, the state agency that regulates NNG’s operations in the State of Washington.
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Questions??