Operations and Maintenance Guidance
49 CFR 195 (Subpart F)

Introduction

The materials contained in this document consist of guidance, techniques, procedures and other information for internal use by the PHMSA pipeline safety enforcement staff. This guidance document describes the practices used by PHMSA pipeline safety investigators and other enforcement personnel in undertaking their compliance, inspection, and enforcement activities and is intended to be used solely as a reference by PHMSA personnel. This document is U.S. Government property and is to be used in conjunction with official duties.

The Federal pipeline safety regulations (49 CFR Parts 190-199) discussed in this guidance document contains legally binding requirements. This document is not a regulation and creates no new legal obligations. In the event of a conflict between this document and any regulation, the document would not be controlling. The materials in this document are explanatory in nature and reflect PHMSA's current application of the regulations in effect at the time of the issuance of the guidance to the implementation scenarios presented in the materials. Alternative approaches are not precluded if they satisfy the requirements of the applicable regulation(s).

Nothing in this guidance document is intended to diminish or otherwise affect the authority of PHMSA to carry out its statutory, regulatory or other official functions or to commit PHMSA to taking any action that is subject to its discretion. Nothing in this document is intended to and does not create any legal or equitable right or benefit, substantive or procedural, enforceable at law by any person or organization against PHMSA, its personnel, State agencies or officers carrying out programs authorized under Federal law.

Decisions about specific investigations and enforcement cases are made according to the specific facts and circumstances at hand. Investigations and compliance determinations often require careful legal and technical analysis of complicated issues. Although this guidance document serves as a reference for the staff responsible for investigations and enforcement, no set of procedures or policies can replace the need for active and ongoing consultation with supervisors and colleagues in enforcement matters.

Comments and suggestions for future changes and additions to this guidance document are invited and should be forwarded to your supervisor.

The materials in this guidance document may be modified or revoked without prior notice by PHMSA management.

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Term	Definition
Abandoned Pipeline	A pipeline that has been physically separated from its source of gas or hazardous liquid and is no longer maintained under regulation 49 CFR Parts 192 or 195, as applicable. Abandoned pipelines are usually purged of the gas or liquid and refilled with nitrogen, water, or a non-flammable slurry mixture. In 49 CFR Part 195 abandoned means permanently removed from service.
Active Corrosion	Active corrosion describes an ongoing electro-chemical process whereby microscopic metal particles are removed from ferrous-based materials. Corrosion can occur in moist atmospheric conditions but is more prevalent in subterranean environments. Active corrosion within the pipeline industry is a serious threat to pressure containing structures that, unless controlled, could result in a condition that is detrimental to public safety.
Actual wall thickness	The measured wall thickness of pipe from its inner surface to its outer surface. This measured dimension must be within tolerances stated in the manufacturer's specification. Actual wall thickness of installed pipe can be determined by using an ultra-sonic thickness gauge (UT gauge).
Actuator	A component designed to provide the mechanical energy to physically move a connected device. In the oil and gas industry, actuators are used extensively to move valves to their open and closed positions. Mounted on top of the valve bodies, the actuators can be pneumatic, hydraulic, or electric motor driven. On larger valves, a gearbox is often employed to add the mechanical advantage of high torque. Such devices can be automated to shut off flow without a person being physically at the location. Valve actuators on mainline systems are primary operated by pushing a local control button or remotely commanded from a centralized control room.
Administrator	The Administrator of the Pipeline and Hazardous Materials Safety Administration or any person to whom authority in the matter concerned has been delegated by the Secretary of Transportation.
Aerial river crossing	Where a pipeline crosses over a river and is either suspended by cables over the waterway or attached to the girders of a bridge designed to carry vehicular traffic. In essence, a pipeline that crosses a river where the pipe is not submerged in the water, buried, or bored under the riverbed.
Alternating current (AC)	An electrical current whose direction or polarity changes with time. The polarity or cycles are due to the alternating magnetic fields used in its generation. The time frequency cycle is also referred to as hertz. In North America, the common frequency is 60 hertz (cycles per second). In other parts of the world, 50 hertz is common.
Ambient temperature	The temperature of the surrounding air or environment. This thermal condition is often referenced to calculate how it might affect the design or operation of various devices on the pipeline.
Anhydrous ammonia	Under atmospheric conditions, anhydrous ammonia is a toxic colorless gas with a pungent-suffocating odor. It is normally shipped in a compressed liquid state and is considered to be a hazardous liquid by the Office of Pipeline Safety. It will burn skin if touched and can be deadly if inhaled.

Term	Definition
Anode	The electrode in a corrosion cell where oxidation or corrosion occurs. In a pipeline-related cathodic protection system, the anode is designed as the sacrificial material installed to purposely corrode and protect the structure (pipeline, tank bottom, or other underground structure). There are two basic types of anodes: the galvanic type and the impressed current type.
Anodeless riser	An anodeless riser is a plastic pipe sheathed inside a protective steel metallic casing. The steel-cased plastic pipe protrudes from the soil and is part of the service line carrying gas to the customer meter. An anode is not required in this instance because the plastic pipe contains the gas pressure and is not susceptible to the typical corrosive processes.
Anomaly	Any kind of imperfection, or defect, or critical defect that may be present in the wall of the pipe. Anomalies can be caused by such acts as external impacts, manufacturing flaws, poor welds, or corrosion. An anomaly is usually detected by visual or non-destructive testing methods.
Backfilling	Backfilling is the technique for covering a newly constructed or recently unearthed pipeline so that adequate fill material is provided and compacted around the pipe to completely fill the excavation. Proper backfilling is critical so that the pipe is properly supported and not subjected to added stresses due to soil subsidence or movement.
Ball valve	A valve in which a solid metal sphere with a hole in the center rotates within the valve body to control the flow of fluids. The ball usually rotates within a set of sealing rings. The hole can be the same size as the pipe's internal diameter (referred to as full-ported) and thus allow for passage of pigs.
Barlow's formula	A mathematical formula that calculates the pressure containing capabilities of pipe. As you can see, the formula takes into account the pipe diameter, wall thickness, and the manufacturer's specified minimum yield strength of the pipe. (P=2St/D)
Barrel	A unit of liquid petroleum measurement equal to 42 U.S. standard gallons. Storage tanks are rated in barrels of oil. Piping and other devices, such as pumps and meters, are rated by their flow rate capabilities in barrels per minute or barrels per hour. A common abbreviation within industry for barrel is "bbl."
Basic sediment and water (BS&W)	A test made on fuel oil, crude oils, and used crankcase oils to show the approximate amount of sediment and water contained in the sample.
Batch	A quantity of one type of crude pumped within a pipeline. Often different types of crude oils or products, known as "batches," are pumped in front of or behind one another within the same pipeline. Depending on the physical characteristics of the crude or products, the batches may stay relatively separate or mix (commingle) as they travel within the pipeline. Batch sizes can vary between a few hundred barrels to hundreds of thousands of barrels.
Batching	In pipelining, batching is the process of pumping a certain quantity of crude oil or petroleum product next to one of a different type. As different batches arrive at their destinations, valves are opened and closed to divert the different products to the correct locations, such as tanks or even other customer pipelines.

Term	Definition
Bell hole	An enlarged hole dug along the side of pipelines or in a trench to allow room for workmen to perform maintenance-related work on the pipeline (repairs, welding, or replacing pipe). In the broad sense, any hole, other than a ditch, opened for pipeline work.
Berm	A raised mound of soil usually placed around structures to form a dam such as those used around tanks for containing possible spills or overflows.
Boiling point	The temperature at which a liquid changes into a gas. For example, water at sea level boils at 212° F, whereas, the boiling point of natural gas is approximately -260° F. This characteristic helps determine under what conditions a hydrocarbon-based substance will vaporize or revert back to its liquid state.
Boilover	Boilover occurs during prolonged tank fires where heavier crude oils eventually heat up to a temperature of 400 to 500° F. The hot oil may circulate and come in contact with water in stratified layers or at the tank's bottom. When this occurs, the water quickly expands to steam at a 1,700 to 1 volume increase. This usually causes a violent explosion which blows the tank's contents upward, aerating and expanding in size gigantically, causing a fireball thousands of feet high. This burning froth then falls back to the ground, making a tidal wave of burning froth two or three feet high which can travel up to 20 miles per hour away from the tank.
Breakout tank	In 49 CFR Part 195 this means a tank used to: (a) Relieve pressure surges in a hazardous liquid pipeline system or (b) Receive and store hazardous liquid transported by a pipeline for re-injection and continued transportation by pipeline. This definition is critical as it determines inspection jurisdictional boundaries for the Office of Pipeline Safety.
Brine	A strong solution of salt(s) with totally dissolved solid concentrations in the range from 40,000 to 300,000 or more milligrams per liter. Potassium or sodium chloride brine is used in the regeneration stage of some water treatment processes as well as an injection solution for oil wells to "lift" or float the oil to assist in its recovery.
British Thermal Unit (BTU)	The quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit. BTU values of gas indicate the amount of heat a given unit of gas will provide. This BTU rating helps to compare the heating values of different gases and thus drives the market price.
Buckle	A partial collapse of the pipe wall due to excessive bending associated with soil instability, landslides, washouts, frost heaves, earthquakes, etc. Buckles can also occur in pipeline construction during a field bending operation using a side boom. Buckles cause localized stress concentrations and must not be installed in new construction or, if found, must be removed from existing systems.
Carbon dioxide	A fluid consisting of more than 90% carbon dioxide molecules compressed to a supercritical state. Carbon dioxide converts to a heavy gas when released into the atmosphere and is considered hazardous due to its ability to displace breathing air if a pipeline transporting it were to leak.

Term	Definition
Carbon steel	By common custom, steel is considered to be carbon steel when (1) no minimum content is specified or required for aluminum, boron, chromium, cobalt, columbium, molybdenum, nickel, titanium, tungsten, vanadium, zirconium, or any other element added to obtain a desired alloying effect; (2) the specified minimum content does not exceed 1.65% for manganese or 0.60% for copper. All carbon steels may contain small quantities of unspecified residual elements unavoidably retained from raw materials. These elements (copper, nickel, molybdenum, chromium, etc.) are considered incidental and are not normally determined or reported.
Cathodic protection	Pipeline cathodic protection (CP) systems are designed to limit corrosion of steel pipe and other underground metallic structures. If left unprotected, the natural electrolytic conditions in the soil will cause small electrical currents to flow away from the pipe's surface, carrying with it, microscopic metal particles. Cathodic protection prevents metal particles from leaving the pipe's surface by forcing electrical current to flow toward the pipe, which opposes or cancels out any natural current attempting to leave the structure.
Centrifugal pump	A centrifugal pump is a device used to boost the pressure of fluids in a pipeline system to transport them to another location. Centrifugal pumps contain a rotating impeller or rotating vanes mounted on a shaft rotated by an external power source - usually an electric motor of fuel-fed engine. The rotating impeller uses centrifugal force to move fluids in a steady stream (without pulsations) to their point of use. The rotating impeller is supported by bearings and is sealed in a case the holds the pressurized fluid.
Centrifuge	A machine that uses centrifugal force to separate substances of varying densities; also called the shakeout or grind-out machine. A centrifuge is capable of spinning substances at high speeds to force the heavier substances to the bottom of the sample container. Centrifuges are widely used in the petroleum industry to separate the water and sediment contained in crude oils. Centrifuges can be bench top models found in laboratories or mounted in a pickup truck to perform BS&W tests in the field. Most centrifuges contain a heating source to warm the sample to a specified temperature to aide in the separation process.
Centrifuge test	A test to determine the amount of BS&W in samples of oil or emulsion. The samples are placed in tubes and spun in a centrifuge, which breaks out the BS&W. These tests are often referred to as “running a cut” which describes the separation or cutting the water and sediment out of the oil.
Check valve	A valve which allows liquids or gases to pass in one direction, but closes to prevent reverse-flow or back-flow in the opposite direction. Check valves employ a flapper or split wafers that are spring-loaded or gravity-assisted to close upon reverse flow conditions.

Term	Definition
Christmas tree	The stacking of control valves, pressure gauges, and chokes at the top of a well to control the flow of oil and gas after the well has been drilled and completed. The term christmas tree was used to describe the pyramid-like shape of the stacked components.
Cleaning pig	A utility pig that uses cups, scrapers, or brushes to remove dirt, paraffin, rust, mill scale, or other foreign matter from the inside of a pipeline. Cleaning pigs are run to increase the operating efficiency of a pipeline or to prepare the pipeline for an internal inspection.
Coalescence	The joining or fusing of metals produced by extreme temperatures achieved from an electrical arc between the metal electrode of a welding rod and the base metal of the pipe or other metallic structure. The welding machine produces the high electrical current and voltage necessary to get the arc to jump between the two metals.
Combustion	The process of burning where a flammable substance is subjected to a heat source in the presence of oxygen. The degree of heat and the ratio of air to fuel will depend on the flammability characteristics of the substance.
Commingle	The mixing of crude oils or oil products rather than moving them as separate batches. The commingling process can occur in converging pipelines, within mixing tanks or between batches as they move great distances within pipelines. The commingled oils or products between batches in a pipeline are also referred to as "interface."
Component	In 49 CFR Part 195 this means a component is considered any part of a pipeline that may be subjected to pump or compressor discharge pressure including, but not limited to, pipe, valves, fittings, flanges, and closures.
Computational Pipeline Monitoring (CPM)	In 49 CFR Part 195 this means a software-based monitoring tool that alerts the pipeline dispatcher of a possible pipeline operating anomaly that may be indicative of a commodity release.
Control valve	A control valve is a mechanical device used to vary flow rates and pressures on liquid pipelines. Positioning signals are sent to the valve to achieve and maintain the desired set point. A control valve may be a globe, plug, or ball-type valve. Its actuator may be pneumatic, hydraulic, or electrically driven.
Corrosive Product	In 49 CFR Part 195 this means a corrosive material as defined by the DOT Hazmat Regulations (Title 49 CFR 173.136) means a liquid or solid that causes full thickness destruction of human skin at the site of contact within a specified period of time.
Cracks	Cracks in line pipe are separations in the molecular structure of the base metal and form as a result of improper manufacturing or due to operational stresses. Cracks are obviously detrimental to the pipe's pressure restraining capabilities and can propagate into complete failure or rupture zones.

Term	Definition
Critical bond	Buried pipelines in close proximity or crossing over/under one another will often have different levels of cathodic protection and thus a strong possibility of different electrical potentials (voltage differences). If the soil resistance path between the pipelines is low, electrical currents will flow off one pipeline and travel toward the other pipeline. The pipeline with the current leaving will experience metal loss or corrosion. To prevent this occurrence, pipeline companies electrically connect or bond their pipes to one another using a copper wire. The wire provides an electrical path for the current to flow through rather than allowing current to flow off the pipe and into the soil, thus eliminating corrosion. The connecting wire is referred to as an electrical bond. 'Critical bonds' are those that if not attached, would allow corrosion to occur and jeopardize the safe operation of one of the pipelines in question. Since they ensure the pipe's integrity, critical bonds must be inspected more often than non-critical bonds per Part 192.465c.
Crude oil	Crude oil is the raw substance found in the earth that is a varying mixture of all the hydrocarbon atoms. Crude oils can be very different in their makeup and consequently their value. The major characteristics that differentiate crude oils are: **Specific gravity or density** which is often referred to as its "weight." **Viscosity** which describes its ability or resistance to flow. **Sulfur content** that determines how corrosive the mixture will be on transportation and processing equipment. **Reid vapor** which indicates the amount of gases dissolved in the mixture. **D-86 test results** which indicate the proportions of its light and heavy hydrocarbon atoms. **BS&W test results** that indicate the amount of non-hydrocarbon elements in the mixture that are normally not marketable such as water, salts, and sand.
Current	The flow of electrons in a circuit. Current is usually measured in engineering units called amperes and indicates how much electrical energy is being consumed by an electrical device.
Dam	The perimeter of an impounding space forming a barrier to prevent liquid from flowing in an unintended direction. Also referred to as a dike or berm. Individual pieces of equipment can be dammed such as pumps, storage tanks, and pig traps, or entire pump stations or refining facilities may be bermed to prevent the migration of spill oil or products.
Deadman	An anchoring point against which the winch on a boring machine for pipelining can pull.

Term	Definition
Defect	The term defect describes an imperfection in a pressure vessel or pipe that should be analyzed using a recognized and approved procedure, such as ASME B31G. Defects may be determined to be minor or severe and may need to be removed or fortified with a protective sleeve depending on prescribed operating requirements.
Dent	A local depression in the pipe surface caused by an outside mechanical force which does not reduce the pipe wall thickness. The inward depression, if severe enough, may affect the passage of internal pigging tools. Pipeline repairs or replacement may be needed depending on the amount of deformation
Destructive testing	A physical testing process (such as a burst or a tensile test) during which the specimen being-tested is rendered unusable. These tests are typically conducted to prove the strength or chemical characteristics of the sample piece.
Determine	In pipeline regulatory language, this means to establish or ascertain **definitely** after considering an investigation or calculation. This is critical in differentiating between "discovering" vs. "determining" with respect to required time frames with which to file a "safety-related condition" report to the Office of Pipeline Safety (191.25a).
Direct Current (DC)	The polarity or direction of DC current stays constant with respect to time. DC current is normally generated through an electrochemical process such as that of a battery system. The polarity, or positive to negative swings of alternating current can be converted to direct current by the use of a rectifier. DC current is typically used in impressed current cathodic protection systems because of its ability to maintain a constant polarity for the pipe's protection.
Discovery	To gain knowledge of something through: observation, study, or research. To be the first to find, learn, or observe. The definition of "discovery" is critical from a regulatory standpoint in meeting deadlines for filing safety-related condition reports to the Associate Administrator of the Office of Pipeline Safety (per 191.25a).
Double submerged arc weld (DSAW)	A pipe having longitudinal or spiral seams produced by at least two weld passes, including at least one each on the inside and outside of the pipe. The molten metal is shielded by a blanket of granular, fusible material use to reduce the impurities (slag) introduced from the surrounding air. Pressure is not used and filler metal for the inside and outside welds is obtained from the electrode(s).
Ductile (nodular) iron	A cast ferrous material in which the free graphite (carbon) present is in a spherical form rather than a flake form as in cast iron. These round shaped carbon elements cause ductile iron to be more malleable than cast iron, yet retain its toughness. These desirable properties of ductile iron are achieved by means of chemistry and a specialized heat treatment of the castings.
Elbow (ELL)	A pipe fitting that makes an angle in a pipe run. Unless stated otherwise, the angle is usually assumed to be 90°. In larger pipelines, fitting type elbows may not be recommended due to their abrupt change in direction. Consideration should be given to running internal cleaning and inspection devices (also known as pigs). Piggable lines should be equipped with gradual bends of twice the pipe diameter or more.

Term	Definition
Electric flash welded pipe	Pipe having a longitudinal butt joint wherein coalescence is produced, simultaneously over the entire area of butting surfaces, by the heat obtained from resistance to the flow of electric current between the two surfaces, and by the application of pressure after heating is substantially completed. Flashing and upsetting are accompanied by the expulsion of metal from the joint.
Electric fusion welded pipe	Pipe having a longitudinal butt joint wherein coalescence is produced in the preformed tube by manual or automatic electric-arc welding. The weld may be single or double and may be made with or without the use of filler metal.
Electric resistance welded (ERW) pipe	Pipe which has a longitudinal butt joint wherein coalescence is produced by the application of pressure and by the heat obtained from the resistance of the pipe to the flow of an electric current in a circuit of which the pipe is a part.
Emergency response personnel	Any persons engaged in the response to hazardous materials emergency, including firefighters, police, civil defense/emergency management officials, sheriffs, military, and manufacturing and transportation personnel. In large emergencies, an Incident Command System (ICS) is usually established. This is an emergency management system whereby key decisions are made by a Unified Command group consisting of representatives of both the Federal and State Government, and the Responsible Party (in pipeline related events this would be the operator).
Explosive	Chemical material that can undergo a sudden and violent release of pressure and heat. This is extremely harmful to the surrounding environment as well as livestock and humans since the explosion is customarily associated with a tremendous outward moving pressure shock wave and very high temperatures due to the chemical reactions taking place.
Exposed Underwater Pipeline	In 49 CFR Part 195 this means an underwater pipeline where the top of the pipe protrudes above the underwater natural bottom (as determined by recognized and generally accepted practices) in waters less than 15 feet (4.6 meters) deep, as measured from mean low water.
Fire surface area	The approximate surface area inside a round storage tank that is determined by using the easy formula diameter squared times 0.8 (D^2 x .8). For example, using a 100-foot diameter tank, means 100 times 100 is 10,000 times 0.8 which equals a surface area of 8,000 square feet. This calculation is used to calculate the amount of fire suppressant foam needed to extinguish tank fires. It can also be used to estimate the amount of water or snow a tank roof might be supporting.
Fixture	Fixture is a term used in the petroleum industry to describe devices or components which transfer the load from the pipe or structural attachment to the supporting structure or equipment. They include hanging type fixtures such as hanger rods, spring hangers, sway braces, counterweights, turnbuckles, struts, chains, guides and anchors, and bearing type fixtures such as saddles, bases, rollers, brackets, and sliding supports.

Term	Definition
Flammable Product	In 49 CFR Part 195 this means “flammable liquid” as defined by §173.120 Class 3-Definitions of this chapter. OSHA defines flammable substances as those materials that have the ability to generate ignitable vapors (also referred to as its flash point) with temperatures at or below 100°F.
Flammable (explosive) limit	The range of a gas or vapor concentration that will burn or explode if an ignition source is introduced. Limiting concentrations are commonly called the “lower explosive or flammable limit” (LEL/LFL) and the “upper explosive or flammable limit” (UEL/UFL). Below the explosive or flammable limit the mixture is too lean to burn and above the upper explosive or flammable limit the mixture is too rich to burn. Caution must be exercised when viewing LEL/UEL readouts on gas sensing instruments.
Flammable liquid	A "flammable liquid" is typically defined as a liquid having a flash point less than 100ºF under normal atmospheric conditions.
Floating roof	A storage tank covering that rests on the surface of a hydrocarbon liquid in the tank and rises and falls with the liquid level. The use of a floating roof eliminates the vapor space above the liquid which could allow for air to mix with the oil or refined product and create a fire hazard. The floating roof also conserves the lighter hydrocarbon atoms that might otherwise evaporate out of the liquid. Floating roofs can also be found on tanks with solid roofs for the same purposes. In these instances, the floating roof is referred to as an “internal floating roof.”
Flow line	A smaller pipe run within an oil gathering lease that connects a flowing well to a storage tank. These lines typically have little if any pressure in them as the crude oil travels to the lease tank. These lines are considered non-jurisdictional by DOT inspectors since they are part of the gathering system and not transportation related.
Frictional loss	The loss of fluid pressure (head) experienced when fluid flows through a pipeline. The amount of friction loss depends upon viscosity of the fluid, velocity of the fluid, roughness of the pipe’s interior wall surface, size of the pipe, and the length of the pipeline. Frictional loss calculations are very critical to the design of new pipeline systems. On existing systems, frictional losses cause certain types of crude to be heated, blended with lighter crude, or additional horsepower and pump changes to be made.
Frothover	The continuously burping and frothing of a tank's contents over the side usually happens when the crude oil is very wet and comes into contact with very hot crude oil. This can occur just hours into the tank fire all the way to the end of it burning out.
Furnace lap welded pipe	Pipe which has a longitudinal lap joint that is produced by the forge welding process. In this process, coalescence is produced by heating preformed tube to welding temperature and then passing it over a mandrel. The mandrel is located between the two welding rolls that compress and weld the overlapping edges. The longitudinal seam of furnace-welded pipe is not considered as strong as other production processes and therefore becomes a limiting factor in the design formula for steel pipe (refer to Part 192.113).

Term	Definition
Galvanic series	A list of metals and alloys arranged according to their relative electrolytic potentials to one another in a given environment. The metals or alloys higher on the list (more negative) are anodic to those lower on the list, and the metals or alloys lower on the list (more positive) are cathodic to those higher on the list.

Metal/Alloy Classification	Potentials (VOLTS)	General
Commercially pure magnesium		
Magnesium alloy (6% A1, 3% Zn, 0.15% Mn)	-1.75	Anodic
Zinc	-1.1	
Aluminum alloy (5% zinc)	-1.05	
Commercially pure aluminum	-0.8	
Mild steel (clean and shiny)	-0.5 to -0.8	
Mild steel (rusted)	-0.2 to -0.5	
Cast iron (not graphitized)	-0.5	
Lead	-0.5	
Mild steel in concrete	-0.2	
Copper, brass, bronze	-0.2	
High silicon cast iron	-0.2	
Mill scale on steel	-0.2	
Carbon, graphite, coke	+0.3	Cathodic

Galvanic type anode	A galvanic type of anode is sacrificial material used to prevent metal structures from corroding. These anodes are made of materials with a relatively low electrolytic potential and thus will allow electrical currents to flow off themselves and toward the protected metal, usually a subsurface pipeline or other buried steel component such as a tank bottom in direct contact with the soil.
Gate valve	A gate valve is a mechanical device designed to open or close the flow pathway within a pipe or piping system. A thick slab of metal with a hole in the bottom half slides between two sealing elements. When the slab is in the upper position, the hole aligns with the valve body ports and allows flow. The slab is positioned by a metal rod called a stem. The stem connects to the top of the slab and rides within a stem seal assembly. The rod is threaded at the top and is operated by either a hand wheel or a mechanical actuator. The valve bodies can either be round or rectangular. Depending on the piping installation, valves can be positioned above or below ground.
Gathering line	In 49 CFR Part 195 this means a pipeline 219.1 mm (8 5/8 in) or less nominal outside diameter that transports petroleum from a production facility.

Term	Definition
Gauging	In a generic sense, gauging is the process of conducting certain measurement related tests to crude oil or other refined products in the field. When used in conjunction with storage tanks, it refers to using a specialized tape measurement instrument to determine the exact liquid level of a tank so that its volume can be calculated.
Gauging hatch	The small door opening in a tank lid or other vessel through which measuring and sampling are performed. For safety purposes, a gauging hatch should never be opened without the use of air sampling equipment to test for hazardous vapors.
Gauging table	Gauging tables are volumetric tables prepared by engineers to show the calculated number of barrels or cubic meters for any given depth of liquid in a tank. They are sometimes called strapping tables. Gauging or strapping tables are specific to only one tank and account for individual differences in internal components and other volume effecting factors.
General corrosion	A form of metallic deterioration of steel pipe that is distributed uniformly over the surface.
Geophone	A geophone is an acoustical monitoring device that is used to magnify sounds in and around pipelines. Geophones are typically used to monitor the passage of pipeline pigs or to detect leaks.
Girth weld	A complete circumferential weld joining pipe end-to-end, also called a butt weld. An actual girth weld is usually made up of a number of weld passes beginning with the root pass or stringer bead and completed with the cap pass.
Globe valve	A globe valve is internally equipped with a flat or conical plug attached to a stem that blocks flow when it is seated in a circular orifice. The body of valve is normally spherical in shape with a lateral incoming flow-path being directed vertically through the closure seat then exiting again laterally. This radical change in flow-path causes the characteristic attribute of a comparatively large pressure drop across this type of valve. Throttling or total shut-off is obtained by adjusting the plug downward against the flow-path toward the mating seat.
Ground temperature	The temperature of the earth at pipe depth. The temperature of the soil directly around the pipe is often affected by sub-freezing ambient temperatures
Gulf of Mexico and its Inlets	In 49 CFR Part 195 this means the waters from the mean high water mark of the coast of the Gulf of Mexico and its inlets open to the sea (excluding rivers, tidal marshes, lakes, and canals) seaward to include the territorial sea and Outer Continental Shelf to a depth of 15 feet (4.6 meters), as measured from the mean low water.
Half-cell (electrode)	A hand-held device consisting of a copper rod immersed in a copper sulfate solution. When connected to a voltmeter, it is used to measure the voltage potential between the metallic surface of the pipe and the soil or seawater (electrolyte) with respect to that of the junction of the copper rod and the copper sulfate solution within the half-cell probe. The voltage potential or difference will indicate the level of cathodic protection on the pipe. These readings, often called pipe-to-soil readings, are required to be taken at intervals prescribed in Part 192.465 or 195.416.
Hazardous liquid	In 49 CFR Part 195 this means petroleum, petroleum products, or anhydrous ammonia.

Term	Definition
Hazard to navigation	In 49 CFR Part 195 this means for the purpose of Part 195, a pipeline where the top of the pipe is less than 12 inches (305 millimeters) below the seabed underwater natural bottom (as determined by recognized and generally accepted practices) in water less than 15 feet (4.6 meters) deep, as measured from the mean low water.
Holiday	A discontinuity or break in the anti-corrosion coating on pipe or tubing that leaves the bare metal exposed to corrosive processes. Holidays are located by an electrical device called a “holiday detector” or "jeep."
Hoop stress (Barlow’s formula)	The stress in a pipe wall acting circumferentially in a plane perpendicular to the longitudinal axis of the pipe and produced by the pressure of the fluid or gas in the pipe. Hoop stress is a very critical factor in determining a pipe’s pressure holding capabilities and thus its appropriate application.
Hot pass	The second pass made on a weld. The hot pass immediately follows the root, or stringer bead pass and precedes the filler passes and cap weld.
Hot tap	The process of making branch piping connections to operating pipelines, mains, or other facilities while in operation. The connection of the branch piping to the operating line and the tapping of the operating line is done while it is under pressure. A split tee saddle is permanently welded to the carrier pipe. A full-ported gate valve is normally bolted onto the tee fitting. Next, a special pressure containing hole cutter or tapping machine is bolted to this valve. The valve is positioned to its full open position, the tapping machine is started, and its cutting bit is slowly lowered to the pipe surface. The portion of the pipe that is cut out is called a coupon and is retracted out of the hole along with the cutter bit. The valve is now closed and the cutting machine relieved of the line pressure. The tapping machine is removed and the valve is now ready for the branch connection piping to be bolted up to the valve’s flange.
Housekeeping	The administrative control that involves containing and removing chemical hazards, (e.g., vacuuming, proper storage and handling, prompt removal and correct disposal of chemical waste). In general terms, it refers to keeping a worksite free of debris and hazards that could contribute to accidents.
Hydraulic gradient	Graphical relationship between pipeline pressure (head) and elevation along a pipeline. If the hydraulic gradient is plotted in feet of liquid or head against a profile illustrating elevation and distances between the discharge of one station and the suction at another station down the pipeline, it describes the pressure conditions along this particular line segment. The amount of slope of the plotted gradient is based upon the fluid’s frictional losses between stations.
Hydraulic head	The force exerted by a column of liquid expressed by the height of the liquid above the point at which pressure is measured. Although head refers to distance or height, it is used to express pressure, since the force of the liquid column is directly proportional to its height. Also called head or hydrostatic head.
Hydrometer	Instrument used to determine the specific gravity of liquids. The hydrometer consists of a sealed glass tube which contains a weighted bottom, a numeric graduated scale and an internal thermometer. The liquid to be measured is placed in a tall slender cylinder and the hydrometer lowered into it. The hydrometer will float at a certain

Term	Definition
	level and graduated markings indicate the specific gravity of the sample liquid. The thermometer is used to indicate the temperature of the sample liquid, as its specific gravity will change with temperature fluctuations.
Hydrostatic pressure	The force exerted by a body of fluid at rest; it increases directly with the density and the depth of the fluid and is expressed in psi or kPa. The hydrostatic pressure of fresh water is 0.433 psi per foot of depth (9.792 kPa/m). In drilling, the term refers to the pressure exerted by the column drilling fluid in the well bore. In a water-driven reservoir, the term refers to the pressure that may furnish the primary energy for production.
Hydrostatic testing	Hydrostatic testing is the most common quality control check of the structural integrity of a pipeline. In this test, the line is filled with a liquid, usually water, and then a specified pressure is applied and maintained for a specific period of time; any ruptures or leaks revealed by the test must be properly repaired.
Ignition temperature	The minimum temperature required to ignite gas or vapor without a spark or flame being present.
Impressed current anode	Impressed-current cathodic protection systems bury anodes typically made of graphite or high-silicon cast iron in deep wells drilled along the pipeline route. The anodes are then covered or backfilled with a low electrical resistant material called coke breeze that helps conduct the DC current from the anode. These anodes or ground beds as they are often referred to, are electrically connected to a rectifier that converts commercial AC power to DC current. This DC current is then “force fed” into the surrounding soil to protect the pipe from harmful corrosion.
Inactive pipeline	A pipeline that is being maintained under Part 192 or 195 but is not presently being used to transport gas or liquids. Inactive lines will not need specialized testing (for example, hydro testing, smart pigging, etc.) prior to reactivating them back into service.
Inert gas	This is commonly referred to as a gas that is non-explosive (non-flammable). The most commonly used inert gas is nitrogen. Operators use inert gases for testing and purging pipelines. Nitrogen is often used to blanket an area or fuel source to keep it from contacting ambient air which contains the oxygen needed for combustion. Be aware that a high concentration of nitrogen is hazardous to animals and humans since it displaces breathable air.
In-plant piping system	In 49 CFR Part 195 this means piping and devices that are located on the grounds of a plant and used to transfer hazardous liquid or carbon dioxide between plant facilities or between plant facilities and a pipeline or other modes of transportation. Typically, these items are not DOT jurisdictional except for those components that directly effect or control pressure leading to a pipeline under DOT jurisdiction (per Part 195.406b). For example, if a non-jurisdictional facility has a pump, control valve, relief valve, or valve used to shutdown flow into a jurisdictional pipeline, then those components are DOT jurisdictional even though they a located in a non-jurisdictional facility.

Term	Definition
Instrument piping	Pipe, valves and fittings used to connect instruments to main piping, to other instruments and apparatus, or to measuring equipment. Instrument piping or tubing can be direct, meaning the process gas or liquid being measured is in direct contact with the instrument. Indirect piping or tubing may contain intermediary gases or liquids that prevent debris or other harmful substances from damaging or plugging the instrument but still can relay the measured parameter (for example, when a capillary tube filled with glycerin is used to relay pressure status to a pressure transmitter).
Internal night cap	A plug or cap attached to the open end of a pipe or pipeline to keep foreign objects or matter out of the pipe. These "night caps" are often used on construction or repair jobs and are usually installed at the end of a workday or shift.
Interstate pipeline	In 49 CFR Part 195 this means a pipeline or that part of a pipeline that is used in the transportation of hazardous liquids or carbon dioxide in interstate or foreign commerce.
Intrastate pipeline	In 49 CFR Part 195 this means a pipeline or that part of a pipeline to which this part applies that is not an interstate pipeline.
Jeep	A portable device for inspecting pipe coating which uses a spring-like coil of wire that surrounds the coated pipe. Another wire leads from its on-board self-contained power source to induce a small electrical charge in the pipe. When the coil passes over a hole or tear in the coating, an electrical circuit is formed and an audible beeping is heard to alert the operator of the break in the coating. The audible beep is what gives the instrument the name "jeep."
Joint	Refers to the connection between two lengths of pipe such as the weld joint for steel pipe and the heat fusion or glue joint for plastic pipe. Joint is also used as a slang term meaning a length of pipe (i.e., joint of pipe).
Laminar flow	Laminar flow describes the relatively straight travel path of the liquid molecules within the pipe. The flow velocity decreases with the distance from the center of the pipe. The velocity profile of a fluid in laminar flow is bullet shaped and concentric about the centerline. This shape accounts for the larger interface or commingling of batched streams of crude oils. Laminar flow conditions within a pipeline will also yield increased water dropout in low-lying areas.
Length	A piece of pipe as delivered from the mill. Each piece is called a length regardless of its actual dimension however, 40 feet is typical for larger diameter pipe. While this is sometimes called "joint," the term "length" is preferred.
Line section	In 49 CFR Part 195 this means a continuous run of pipe between adjacent pressure pump stations, between a pressure pump station and terminal or breakout tanks, between a pressure pump station and a block valve, or between adjacent block valves.
Liquid anhydrous ammonia	A compound formed by combination of the two gaseous elements, nitrogen and hydrogen, in the proportion of one part of nitrogen to three parts of hydrogen, by volume, compressed to a liquid state. Anhydrous Ammonia is considered to be a hazardous liquid by the Office of Pipeline Safety and therefore regulated by CFR Part 195. It will burn skin if touched and can be deadly if inhaled as a gas.
Liquefied Natural	Natural gas or synthetic gas having methane (CH_4) as its major constituent which

Term	Definition
Gas (LNG)	has been changed to a liquid or semisolid either by increasing its pressure or by lowering its temperature.
Liquefied Petroleum Gas (LPG)	A gas containing certain specific hydrocarbons which are gaseous under normal atmospheric conditions, but can be liquefied under moderate pressure at normal temperatures. Propane and butane are principal examples.
Liquefied Petroleum Gas (LPG) air mixture	Liquefied petroleum gases distributed at relatively low pressures and normal atmospheric temperatures which have been diluted with air to produce desired heating value and utilization characteristics.
Listed specification	A technical specification created by a panel of experts of a recognized research and development entity (i.e. ASTM, ASME, API, etc.) on a particular component or best practice used on pipelines. These specifications are referenced within the pipeline regulations so that the details of the specification are considered to be enforceable without needing to be entirely re-stated.
Low stress pipe	A hazardous liquid pipeline that is operated in its entirety at a stress level of 20% or less of the specified minimum yield strength of the line pipe. As such, low stress pipelines have limited jurisdiction by the Office of Pipeline Safety.
Lower explosive limit (LEL)	Lower explosive limit is read from a CGI or other air monitoring instrument. LEL is the minimum amount of airborne chemical that must be present in the air-chemical mixture to make it explosive. Caution must be exercised when viewing LEL and upper explosive limit (UEL) readouts on gas sensing instruments. Some instruments readout in percent of LEL/UEL and some in percent of gas concentrations in air. Always refer to the detector's instruction manual to be sure you understand the scale being used by on the instrument.
Magnesium anode	Anodes made of magnesium are used in galvanic-type cathodic protection systems to protect underground steel pipe and other metallic structures from being corroded by the electrolytic forces occurring in most soils. Magnesium has a higher naturally occurring electromotive force or potential as compared to the steel of the pipe. Because of this characteristic, the magnesium creates a small electrical current that flows from it to the steel pipe and thus protects the pipe from corroding
Manometer	A tube in the shape of a U, partially filled with liquid of suitable density. When sources of different pressure are connected to each end of the manometer, the liquid is pushed up in the low-pressure side of the manometer, and the difference in liquid level between the two sides of the U is an indication of pressure difference.
Maximum Allowable Hoop Stress	The maximum hoop stress permitted for the design of a piping system. It depends upon the material used, the location of the pipe and the operating conditions.
Maximum Allowable Test Pressure	The maximum internal fluid pressure permitted for testing pipe. The calculations will be dependant upon: (1) the testing media (water, natural gas, inert gas, etc.),

Term	Definition
	(2) the pipe materials (steel, plastic, etc.), (3) the intended working pressures (as a % of SMYS), and (4) the locations involved (class locations and proximity to buildings). See: Parts "192. 501 thru 192.517."
Meter	A meter is a device used to measure the volume of liquids moved within a system. Meters used in custody transfers must be periodically calibrated to ensure neither party is getting short-changed. Gross meter reading should always be corrected back to standard conditions (i.e. 60°F) to correct for thermal expansion or contraction. Meter types used in the liquids industry are usually turbine meters or positive displacement meters.
Miter joint	A joint made by cutting the pipe at an angle, then joining them together. 49 CFR Part 192.233 provides guidelines for miter joints in steel pipelines. Miter joints are not allowed in plastic pipelines.
MMCF	A measurement term used to indicate one million cubic feet of gas. 22 MMCF then would represent 22,000,000 cubic feet of gas.
Monitoring regulators	A pressure regulator set in series with another pressure regulator, for the purpose of providing automatic overpressure protection in the event of a malfunction of the primary regulator. These backup regulator systems can be assembled in a variety of arrangements. Monitoring regulators are typically set at a control pressure slightly higher than the primary regulators.
Multi-jurisdictional tank	A tankage facility having both terminal and breakout tanks. This type of facility is subject to the dual jurisdiction of both EPA and DOT.
Municipality	A city, county, or any other political subdivision of a state.
Needle Valve	A small valve used to regulate small amounts of gas or fluid flow. It contains a pointed plug or needle resting in an orifice or tapered orifice in the valve body. By adjusting the needle's position within the seat or orifice, small amounts of gas or liquids are finely regulated. Needle valves are typically used on instrument, control, or sampling pipe.
Nominal wall thickness	In 49 CFR Part 195 this means the wall thickness listed in the pipe specifications.
Non active corrosion	Corrosion that has been discovered and treated (coated, chemically inhibited, or otherwise controlled) to stop the metal particle loss on the walls of pressure containing structures. These discovered and treated corrosion areas are often monitored over time to verify the corrosion process is in fact halted.

Term	Definition
Non destructive testing (NDT)	Testing in which the part being tested is not rendered unusable. In pipeline related NDT testing, the pipe, its welds, or even steel components and tanks may need to be evaluated to verify their integrity. Pipeline NDT typically consists of: **1. Radiography (X-rays):** identifies laminations and weld discontinuities. **2. Ultrasonic:** locates lamination in the walls of pipe; determines wall thicknesses. **3. Magnetic particle inspection:** tests for surface cracks in welds and component bodies. **4. Dye penetrant:** locates surface cracks in welds or component bodies. **5. Ammonium persulfate:** identifies hard spots in welds due to arc burns.
Offshore	In 49 CFR Part 195 this means beyond the line of ordinary low water along that portion of the coast of the United States that is in direct contact with the open seas and beyond the line marking the seaward limit of inland waters.
Oil patch	A slang term used to describe an area in which there is substantial oil and gas exploration and development operations.
Oil Pollution Act of 1990 (OPA 90)	Public Law 101 to 380 passed in 1990, substantially expanding existing legislation relating to the discharge of oil into navigable waters and onshore locations. Out of this law came the CFR Part194 regulations concerning Oil Spill Response Plans for onshore pipelines.
Oil well	An oil well is a cylindrical shaft drilled in the earth's outer crust and typically lined with a pipe called a casing that is capable of transporting crude petroleum oil from its natural reservoir up to the surface. One oil well may be multiple production zones and therefore a mixture of different crude oils, gases, and other contaminants.
Open storage	Oil stored after production in open surface pits or earthen tanks. Increasing environmental regulations are phasing these types of storage systems out of active service.
Operating stress	The stress imposed on a pipe or structural member under operating conditions. This term normally refers to the internal forces due to the pressure of the gas or liquid in the pipeline; however, any other forces such as thermal growth, expansion, or contraction may need to be considered as well.
Operator	In 49 CFR Part 195 this means a person who owns or operates pipeline facilities.
Outer Continental Shelf (OCS)	In 49 CFR Part 195 this means all submerged lands lying seaward and outside the area of lands beneath navigable waters as defined in Section 2 of the Submerged Lands Act (43 U.S.C. 1301) and of which the subsoil and seabed appertain to the United States and are subject to its jurisdiction and control. Submerged pipelines involved in transportation of hazardous liquids or carbon dioxide are DOT jurisdictional. All "upstream operations" fall under Minerals Management Service

Term	Definition
	(MMS) jurisdiction.
Overpressure protection	The use of a device or equipment installed for the purpose of preventing pressure in a pipe system or other facility from exceeding a predetermined limit.
Parallel encroachment	Parallel encroachment describes that portion of the route of a pipeline system or main that lies within, or runs in a generally parallel direction, with the rights-of-way of a road, street, highway or railroad.
Parts per million	Parts per million is a very precise unit typically used to express chemical concentration limits. PPM figures are often found in Occupational Health and Safety Administration (OHSA) guidelines to describe permissible exposure limits of harmful substances. The term actually refers to the parts of the chemical in each one million (1,000,000) parts of the base material - usually air or water.
Performance language	Performance language is used by the Department of Transportation as a rulemaking approach that prescribes an end result (i.e., a certain level of pipeline safety) but leaves the method or how to achieve it up to the operator's discretion. As long as the end result meets the intent of the regulation, the operator is free to implement the task in a manner that best suits their operation. This approach is often used to allow each operator to accommodate their individual differences in equipment, procedures, and operational circumstances.
Person	In 49 CFR Part 195 this means any individual, firm, joint venture, partnership, corporation, association, State, municipality, cooperative association, or joint stock association, and includes any trustee, receiver, assignee, or personal representative thereof.
Personal protective equipment	Personal protective equipment, often referred to as PPE, describes equipment that protects the individual who wears it by placing a barrier between that individual and a potential or known hazard. Examples of PPE include protective eyewear, face shields, masks, gloves, boots, hats, clothing, and respirators.
Petrochemical	Chemical derived from processing or refining crude oil or natural gas.
Petroleum	In 49 CFR Part 195 this means crude oil, condensate, natural gasoline, natural gas liquids, and liquefied petroleum gas.
Petroleum Gas	Petroleum gas describes the heavier gases found naturally in well formations. Propane, propylene, butane, (normal butane or isobutanes), and butylene (including isomers), or mixtures composed predominantly of these gases, having a vapor pressure not exceeding 1434 kPa (208 psig) at 38°C (100°F).
Petroleum product	In 49 CFR Part 195 this means flammable, toxic, or corrosive products obtained from distilling and processing of crude oil, unfinished oils, natural gas liquids, blend stocks and other miscellaneous hydrocarbon compounds.
pH	pH is a 14-point scale that measures the acidic or alkalinity value of a substance. The measurement of the hydrogen ion concentrations in solution is called the pH; strong acids have low pH values and strong bases have high pH values. With a value of 7 being considered neutral, anything less than 7 is considered an acid and greater than 7 are alkaline or bases.

Term	Definition
Pig	A pig is a device used to clean and/or inspect the internal surface of a pipeline. Pigs are used to remove debris buildup such as paraffin to increase throughput (increase flow) and to remove harmful corrosive substances that can collect on the pipe's inner surfaces. Pigs can be barrel-shaped and made of dense foam or spool-shaped with a metal core having durable rubber or plastic cups installed. Some cleaning pigs can be outfitted with wire brushes to scour the inner pipe walls. Pigs are inserted into the pipeline by means of a device called a pig-trap and pushed through pipeline by pressure of flowing fluid or gas. The forward movement of the pig, together with its rotation, cleans the rust, deposited solids, liquids and other undesired substances from the pipeline. Pigs got their name from the occasional squealing noises heard as they travel through the pipe. Also called a go-devil.
Pinpointing	Pinpointing is the process of locating the exact source of a gas leak along a pipeline route with a minimum of excavation. This is accomplished using a gas measuring analyzer and a non-sparking metal plunger bar to punch holes in the ground along the pipeline's right-of-way.
Pipe or line pipe	In 49 CFR Part 195 this means a tube, usually cylindrical, through which a hazardous liquid or carbon dioxide flows from one point to another.
Pipe-supporting element	A pipe-supporting element consists of fixtures and structural attachments.
Pipeline or pipeline system	In 49 CFR Part 195 this means all parts of a pipeline facility through which a hazardous liquid or carbon dioxide moves in transportation, including, but not limited to, line pipe, valves and other appurtenances connected to line pipe, pumping units, fabricated assemblies associated with pumping units, metering and delivery stations and fabricated assemblies therein, and breakout tanks.
Pipeline facility	In 49 CFR Part 195 this means new and existing pipeline, 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.
Pitting	Pitting describes the metal loss causing the formation of small depressions in a metallic surface due to sand blasting, mechanical gouging, acid etching, or corrosion. Corrosion pitting so closely grouped as to affect the overall strength of the pipe is considered general corrosion.
Pitot tube	A pitot tube is a small device that can be inserted into a pipe to measure the flow of liquid or gas. This device is composed of two tubes arranged in such a manner that will allow the measurement of both the velocity and static pressures of the flowing liquid or gas. The difference in these pressures is a function of the flow within the pipe.
Plug valve	A plug valve is a quarter turn metal valve in which a pierced plug rotates in a tapered or cylindrical body to control flow through the valve. Plug valves are normally used in quick open or closed applications but sometimes can be used for throttling purposes.

Term	Definition
Positive displacement meter	A mechanical, fluid-measuring device that measures flowing volumes very accurately by filling and emptying chambers of specific volume; also known as a volume meter or volumeter. The displacement of a fixed volume of fluid may be accomplished by the action of reciprocating or oscillating pistons, rotating vanes or buckets, rotating disks, tanks or other vessels that automatically fill and empty. Positive displacement meters are also referred to as the "cash register" of the industry due to their extensive use in tracking barrels pumped and delivered to end users. Since vast sums of money are dependant on their accuracy, meter are often calibrated or "proved" to ensure exact volumes are accounted for.
Positive displacement pump	This type of pump is self-priming and the delivered capacity is virtually constant regardless of discharge pressure. There are two types of positive displacement pumps: reciprocating (i.e. piston or plunger) pumps and rotating (i.e. screw-type) pumps. Positive displacement pumps are known for their ability to generate very high pressures but are usually limited in their throughput capacities. The term "positive displacement" refers to the close tolerances that will move fluid even if it has to rupture a system component.
Pounds per square inch (PSI)	Pounds per square inch, often referred to as psi is the unit of pressure or measure of force on a given area. Within the oil and gas industry, psi normally refers to the pressure of the gas or product contained within the pipeline or pressure vessel.
Pounds per square inch absolute (PSIA)	Pounds per square inch absolute is the measure of force on a given area. The absolute refers to the total pressure sensed including the surrounding atmospheric pressure, if any. PSIA measurements are more precise since they can indicate a positive pressure above atmospheric as well as a vacuum condition if readings are less than the atmospheric pressure.
Pounds per square inch gauge (PSIG)	Pounds per square inch gauge refers to the pressure expressed in pounds exerted on one square inch of surface area. The designation "Gauge" indicates the readings are already adjusted or biased to ignore the surrounding atmospheric pressure which is 14.7 psi at sea level. If a PSIG type of gauge were not connected to any pressure source it would read zero even though it is actually sensing 14.7 psi at sea level.
Pressure	Pressure is the force on a given area expressed in pounds per square inch (PSI) or its metric equivalent of kilo Pascal's (kPa). Pressure readings within the oil and gas industry normally indicate the amount of force the compressed or packed molecules have on the container holding them.
Pressure surge	Sometimes referred to as "water hammer," pressure surges are shock waves generated by the sudden stoppage of flow. These shock waves travel at the speed of sound and are normally created in liquid pipelines by sudden closing of mainline valves, by a sudden pump shutdown, or by switching a moving stream into a static line. The primary danger of a surge is that design pressure limits of a pipeline may be exceeded somewhere along the line segment and cause a rupture, resulting in a spill of liquid. These shock waves can reflect back and forth and cause structural damage in the pipe as well as the supporting pipe structures.

Term	Definition
Private right-of-way	Private right-of-way is a land use grant obtained through negotiations between the private landowner and the pipeline company. The land use grant permits the pipeline operator to install and maintain the pipeline buried within or traversing over private property.
Producing well	An underground well that produces oil or natural gas.
Production facility	In 49 CFR Part 195 this means piping or equipment used in the production, extraction, recovery, lifting, stabilization, separation or treating of petroleum or carbon dioxide, or associated storage or measurement. (To be a production facility under this definition, piping or equipment must be used in the process of extracting petroleum or carbon dioxide from the ground or from facilities where CO_2 is produced, and preparing it for transportation by pipeline. This includes piping between treatment plants which extract carbon dioxide, and facilities utilized for the injection of carbon dioxide for recovery operations.)
Proprietary items	Proprietary Items are products or services made or provided by a company having the exclusive right of design, manufacture, and marketing. Proprietary items are often legally protected from infringement by patents and/or copyrights.
Pump	A mechanical device used to move liquid substances from one location to another. A pump is a machine designed for the conversion of mechanical energy to pressure energy. Pumps may be used singularly or in groups of two or more in pipeline applications. Depending on the flow or pressure requirements, multiple pumps may be arranged in series or parallel. **Series:** The discharge pressure of the first is fed into the suction of the next pump and so on. This arrangement multiplies the pressure but the flow is limited to the flow rating of the smallest pump in the line. **Parallel:** When multiple pumps pull off a common suction line and discharge their pressure into a common discharge line. This arrangement is best suited for some pressure increase but capable of very high throughput or flowrates.
Pumping station	One of the pumping facilities located at intervals along a main pipeline (trunkline) "pushing" the flow of liquids to their terminal point. The distance between the stations depends on the pump's size and driving horsepower, elevation changes in the terrain, the nature of the product being transported, and the diameter of the pipe, among other factors.
Purging	Purging is the act of replacing oxygen or fuel-laden atmosphere within a container with an inert substance in such a manner as to prevent the formation of explosive mixtures. Commonly used inert substances include: Nitrogen (N) or Carbon Dioxide (CO_2). Purging can also have the opposite effect by replacing the inert substance with natural gas or hazardous liquid before putting the pipeline back into service.
Qualified welder	A qualified welder is a welder who has demonstrated the ability to produce sound welds meeting the requirements of 49 CFR. DOT Parts 192.227 and 192.229 specify under what conditions and how often a welder must be re-qualified.

Term	Definition
Qualified welding procedure	A tested and detailed method by which sound welds can be produced. Welding Engineers are typically consulted to determine the best method of welding two components to one another. Careful consideration as to types of electrodes, amperage settings, travel speed and direction, number of beads, and other critical variables are specified in the procedure. Before a welding procedure can be considered "qualified," a test weld must be made within strict adherence to the prescribed specifications. The test welds are then destructively tested to ensure proper fusing and penetration is achieved and complete fusion without any defects.
Reciprocating pump	Reciprocating pumps move fluids by means of a piston or plunger operating from a crankshaft by means of a connecting rod. These types of pumps tend to cause oscillations in the flow which can be dampened with special add-on equipment if necessary.
Rectifier	A device for converting alternating current to direct current, used in the pipeline industry for external corrosion control of underground pipe and other subsurface metal structures. The positive DC lead is connected to the ground bed anode system and the negative lead wire is attached to the protected pipe.
Relief valve	An automatic valve designed to open and release excess pressure when a preset pressure setting is reached. The relieved pressure is dumped to a safe location that will not add to the upset pressure condition. These valves are sometimes referred to as a dump valve or pop-off valve. Relief valves are very important protective devices within the oil and gas industries and, as such, must be periodically inspected and calibrated to ensure they are working and adjusted properly.
Right-of-way	A strip of land, the use of which is acquired for the construction and operation of a pipeline or some other facility; may be owned outright or an easement taken for a specific purpose such as building and maintaining underground pipelines.
Riser	A general term for vertical runs of piping regardless of the size or application.
Rotary pump	Most consist of a rotating shaft turning a screw, cam, gear, or plunger within a fixed casing. They are commonly used for pumping higher viscosity liquids such as heavy crude oils, greases, molasses, syrups, slurries, catsup, mustard, pudding, etc. Rotary pumps usually have an upper pressure limit of about 1,000 - 2,000 psig.
Rupture	A violent, rapid bursting open of a container: such as a segment of pipeline. Pipe ruptures usually occur due to defective material or due to corrosion or other impact related defects that weaken the walls of the pipe. The use of smart pigs for internal pipeline inspection can usually identify potentially problem areas before a failure occurs.
Rural area	In 49 CFR Part 195 this means outside the limits of any incorporated or unincorporated city, town, village, or any other designated residential or commercial area, such as a subdivision, a business or shopping center, or community development.

Term	Definition
SAE	A classification, developed by the Society of Automotive Engineers (SAE), used on motor oil containers describing the oil's viscosity, or ability to flow. Light oils have a low number and thick, viscous oils have a high number.
Sample piping	Pipe, valves and fittings used for the collection of samples of gas or other fluids. These sample areas are usually set up in easy access locations.
Scraper	Any device that is used to remove debris or deposits (such as scale, rust or paraffin) from tubing, casing, rods, flow lines, or pipelines.
Seamless pipe	A wrought tubular product made without a welded seam. It is manufactured by hot working steel or, if necessary, by subsequently cold finishing the hot-worked tubular product to produce the desired shape, dimensions and properties.
Secondary stress	Stress created in the pipe wall by loads other than internal gas or fluid pressure. Examples are backfill loads, traffic loads, beam action in an unsupported span, loads at supports, and at connections of improperly supported pipe. Secondary stress can also be caused by thermal expansion and contraction forces.
Shading	The placing of sand-like material free of any hard objects (rocks, etc.) below, around, and above the pipe during backfill in order to protect its surface from puncture or excessive abrasion.
Smart pig	An instrumented inspection device used for internal pipe inspection. These specialized pigs travel along inside the pipe being pushed by the flow pressure in the line. These pigs can detect certain internal and external irregularities or anomalies in the pipe wall. An instrument on this type of pig records the existence, location, and relative severity of the anomalies, through use of recording equipment carried on board the pig. The recorded data is analyzed to determine the areas that need to be dug up and visually inspected to verify their existence and severity of recorded defects.
Sour crude	Crude oil containing large amounts of sulfur compounds or entrained Hydrogen sulfide (H_2S). H_2S gas vaporizing out of the crude oil is highly toxic to humans and animals and therefore requires special precautions when working with or around sour crude oils. The entrained sulfur compounds are highly corrosive in the presence of water and moisture.
Specific language	A detailed and exact regulatory language prescribing materials, dimensions, and workmanship for something being built, installed, or manufactured. For example, thermoplastic pipe used for gas distribution systems must meet the ASTM D 2513 standard.
Specific gravity	Specific gravity describes the physical characteristics of a substance in terms of whether the substance is lighter or heavier than a chosen standard. For a most liquids, its specific gravity will indicate whether it is lighter or heavier than water whereas natural gas is compared to air (water and gas have a specific gravity of 1.0).
Specified Minimum Yield Strength (SMYS)	In 49 CFR Part 195 this means the minimum yield strength, expressed in p.s.i. (kPa) gage, prescribed by the specification under which the material is purchased from the manufacturer.
Standard pressure test	A test to demonstrate that a pipe or piping system does not leak as evidenced by the lack of a drop in pressure over a specified period of time after the source of pressure has been isolated or removed.

Term	Definition
Static electricity	Static electricity should always be a concern anytime flammable vapor could be present. Static build-up in plastic or even steel pipe can be significant and cause arcing and possible explosive conditions. This demonstration was conducted in a laboratory setting and clearly illustrates the power of static electricity. In this test setup, standard 2-inch plastic pipe was used to build a test loop. The loop was attached to a blower circulating vermiculite foam beads. A fluorescent light bulb is illuminated by the electrical charge given off by the generated static electricity even while being held by hand. Any time a pipe system is to be separated, always bond the two pieces to one another or install a path to ground to prevent arcing due to static.
Steel	An iron-base alloy, malleable in some temperature ranges as when initially cast, containing manganese, carbon and often other alloying elements. The strength of steel can be manipulated in its manufacturing process by varying the amounts of carbon and manganese and other alloys.
Stress	The resultant internal forces within a material that resists change in the size or shape of the material when acted on by external forces. Prolonged excessive stresses can lead to cracking and general metal fatigue.
Stress level	In 49 CFR Part 195 this means the level of tangential or hoop stress, usually expressed as a percentage of "specified minimum yield strength," such as 20% SMYS.
Stringing	In pipeline construction, the process of delivering and distributing line pipe where and when it is needed on the right-of-way. Stringing also includes the delivery of special pre-bent joints or joints of special wall thickness and pipe grade to specific locations such as road crossings where heavy wall thickness may be specified by the contract or by regulations.
Structural attachments	Includes elements which are welded, bolted, or clamped to the pipe, such as clips, lugs, clamps, clevises, straps and skirts.
Supervisory Control and Data Acquisition (SCADA)	Supervisory control and data acquisition or SCADA systems are remote control systems used to monitor and control pipeline pump or compressor stations located along a pipeline system. Pressures, temperatures, flow rates, and other critical operational information is collected at the site and transmitted back to a centralized control room through a network of telephone, microwave, or satellite communication systems. Each site's data is then analyzed and displayed on a screen for the controllers to see. Any operating parameters out of pre-programmed ranges will normally generate an alarm. Controllers can also send out operational commands such as starting and stopping various types of station equipment, opening or closing valves, as well as increasing or decreasing flow rates or pressures.
Surge pressure	In 49 CFR Part 195 this means pressure produced by a change in velocity of the moving stream that results from shutting down a pump station or pumping unit, closure of a valve, or any other blockage of the moving stream.

Term	Definition
Sweet crude	Crude oil that contains little or no sulfur compounds or entrained H_2S. Since sweet crude oils are not as corrosive to handling and refining equipment, its market value is greater than that of sour crude.
Tank farm	A group of large tanks maintained by a pipeline company and used to store crude oil and refined products. Tank farms normally store many different types of petroleum products and control the various flow streams by both manual and automated valve manifolds.
Tanker	A tanker is a seagoing vessel that is specifically designed to transport petroleum products such as crude oil, LPG, LNG, and SNG. A tanker whose capacity is 100,000 deadweight tons or more is referred to as a "supertanker." Tankers will dock at specially designed mooring facilities where their cargo is taken on or off-loaded by very large pumps. Depending on the type of petroleum cargo, some tankers may be heated, chilled, or even pressurized to maintain the product in a liquefied state.
Temperature	Temperature is the amount of thermal energy a material possesses as measured on a definite scale. Within the pipeline industry, temperature is normally expressed in degrees Fahrenheit (°F) or degrees of Celsius (°C).
Tensile strength	Tensile strength is a unit of measure, usually expressed in psi, which describes the amount of stress a material can sustain before it fails or pulls apart. Tensile strength is greater than the initial yield strength of the material. In layman's terms, yielding refers to the stretching of the material and tensile refers to the actual separation or material failure.
Test point	A test point is an aboveground electrical test station where pipe-to-soil readings are taken to measure if the pipe is cathodically protected. As a minimum, a test point will have one terminal that has a wire electrically connected to the underground pipe or structure. Each pipeline under cathodic protection must have sufficient test points for electrical measurement to determine the adequacy of cathodic protection.
Thermo hydrometer	A measurement instrument which is a combination hydrometer and thermometer designed to measure API gravity and temperature.
Thickness	Thickness normally describes the measurement from one surface through the material to the opposite side. When dealing with pressure holding vessels such as pipe, thickness is a major factor in determining its design pressure holding capability.
Trench	A trench is a long ditch cut into the ground, which is dug by a backhoe or by a specialized digging machine such as a trencher. Underground installation of transmission, mains, or service pipelines, regardless of the kind of pipe are usually installed in a trench and then backfilled to cover it up.
Trunk line	A long distance transmission interstate mainline piping system used to transport natural gas or liquids from the producing areas of the country to the refineries or distribution facilities. Trunk lines are usually large diameter pipe - typically above 20 inches.

Term	Definition
Tubing	A string of pipe set into a well through which oil or gas is produced. Tubing also refers to smaller diameter pipe (usually stainless steel or copper) with diameter usually less than 1/2 inch and is generally used as instrumentation or control piping, to sense mainline conditions for instrumentation monitoring and control.
Turbulent flow	Turbulent flow describes the flow pattern of fluid molecules while traveling within a pipeline. The average (gross) shape of the velocity profile of a fluid in turbulent flow is flat disc perpendicular to the centerline of the pipe. Although it requires more energy, hazardous liquid pipelines prefer to operate in the turbulent flow mode because less commingling or interface occurs between batches. The haphazard molecular flow pattern also keeps sediment and water mixed up or suspended in the flowstream.
Ultra sonic testing	Ultrasonic testing is a non-destructive inspection method frequently used in the pipeline industry. It consists of an instrument with a probe that generates high-frequency sound waves and measures their reflection off the pipe inner wall. The reflected signals can be used to determine and locate defects such as laminations in the wall of pipe, as well as measure the remaining wall thickness. This device is particularly useful in locating internal corrosion in steel pipe where some of the inner wall surface may be corroded away.
Unaccounted for gas	The difference between the total gas purchased from all sources and the total gas accounted for as sales, net interchange, and internal company use. This difference includes leakage or other actual losses, discrepancies due to meter inaccuracies, variations of temperature and/or pressure, and other variants, particularly billing lag.
Underground storage	The utilization of subsurface facilities for storing gas which has been treated and transferred from its original location to temporary storage. The stored gas can later be withdrawn to augment high demand flow rates. These underground storage areas are usually natural geological reservoirs such as depleted oil or gas fields, salt domes, or water-bearing sands sealed on the top by an impermeable cap rock. The facilities may be manmade or natural caverns.
Uniform corrosion	Uniform corrosion is metal deterioration occurring relatively evenly over the entire metal surface. Rather than a few localized pits, uniform corrosion is seen as a textured surface similar to that of an orange peel where the surface area is deteriorating at an equal rate.
Union	A specialized threaded fitting used to couple two joints of threaded pipe together, without having to turn or dismantle either run of pipe.
Upper explosive level (UEL)	Read from the CGI, the upper explosive limit is the maximum amount of airborne chemical that can be present in an air-chemical mixture and still have it be explosive. A fuel and air mixture above the UEL is considered too rich to ignite.
Vacuum truck	A vacuum truck is a specially equipped vehicle used to suck up and transport various liquids. Vacuum trucks are used extensively in the petroleum and gas industries in many aspects of pipeline maintenance. Negative pressure is created in the truck's cargo vessel by an on-board vacuum pump. Heavy flexible hoses are used to collect the liquids and direct them into the tank.

Term	Definition
Valve	A valve is a mechanical device installed on a pipe or pipeline used to control the flow of gas or liquid. A valve can be used solely for fully open or closed applications, to control the direction of flow, or used to throttle flow or regulate pressure.
Vault	A vault is normally an underground concrete structure that houses valves and/or pressure regulation equipment. Depending on the size or volume of the vault, it must be ventilated or sealed per 49 CFR Part 192.187.
Viscosity	Viscosity describes the resistance to flow or the cohesiveness between molecules in a particular fluid. Honey is more viscous than water, and SAE 30 motor oil is more viscous than SAE 10 motor oil. In the petroleum pipeline industry, the more viscous the fluid the more difficult and expensive it is to pump. To improve its "pumpability" many operators will either heat the fluid or blend it with lighter products.
Welding process	A grouping of methods by which metals are fused together. Examples of processes are: submerged metal arc welding, oxyacetylene welding, and resistance welding.
X-Ray	X-ray is a non-destructive radiographic procedure used to analyze the quality of welded joints in metallic pipe. The electromagnetic waves are projected onto the inspection area by a radioactive source. These waves penetrate through the metal and cast an image onto a special strip of film. The film is then developed and interpreted by a trained technician to determine if there are any metallurgical defects in the base metal or the weld area.
Yield strength	The yield strength is the stress level at which a material exceeds its elastic limits and the material begins to deform permanently. For metal pipes used in the petroleum industry, the yield strength can be manipulated depending on the proportions of steel, carbon, and manganese in its production.

§195.401	General Requirements

Existing Code Language:	(a) No operator may operate or maintain its pipeline systems at a level of safety lower than that required by this subpart and the procedures it is required to establish under ' 195.402(a) of this subpart. (b) Whenever an operator discovers any condition that could adversely affect the safe operation of its pipeline system, it shall correct it within a reasonable time. However, if the condition is of such a nature that it presents an immediate hazard to persons or property, the operator may not operate the affected part of the system until it has corrected the unsafe condition. (c) Except as provided by ' 195.5, no operator may operate any part of any of the following pipelines unless it was designed and constructed as required by this part: (1) An interstate pipeline, other than a low-stress pipeline, on which construction was begun after March 31, 1970, that transports hazardous liquid. (2) An interstate offshore gathering line, other than a low-stress, on which construction was begun after July 31, 1977, that transports hazardous liquid. (3) An intrastate pipeline, other than a low-stress pipeline, on which construction was begun after October 20, 1985, that transports hazardous liquid. (4) A pipeline, on which construction was begun after July 11, 1991 that transports carbon dioxide. (5) A low-stress pipeline on which construction was begun after August 10, 1994.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	Amdt. 195-53, July 12, 1994
Interpretation Summary	Date 4-25-78: The code does not require the precise depths established during construction be maintained for the life of the pipeline. However, an operator who discovers any condition that could adversely affect the safe operation of the pipeline must correct it within a reasonable time.
Interpretation Summary	Date: 03-08-89 Alert Notice advising pipeline operators who have pre-70 low frequency pipe manufactured by the Electric Resistance Weld (ERW) process of the occurrence of twelve hazardous liquid pipeline failures and of actions which operators may take to reduce the risks of similar failures.

Interpretation Summary	Date: 12-27-95 To determine if any of the requirements of Part 195 apply to a pipeline or a piping facility, refer to §195.1 and related interpretations and amendments. - A line may be exempt from Part 195 requirements per §195.1, in part because the line is a Alow stress@ pipeline that operates in its entirety at or below a stress level of 20% pipe SMYS. Such a pipeline would lose low stress status, and possibly §195.1 exemption status, if evidence indicates the pipeline has/ is not being operated in its entirety at or below a stress level of 20% pipe SMYS.
Other Ref. Material & Source	ADB -99-03, July 7, 1999, Potential Service interruption in SCADA Systems.
New Guidance Material	- Operators should ensure that the requirements of §195.452 are met for those conditions that are in a pipeline segment that could impact a High Consequence Area. - Operators are expected to identify, evaluate and react to potentially adverse conditions. - Paragraph (a) is usually coupled with other regulations during enforcement actions. - Enforcement should be sought only when the investigator is convinced that corrective action was unreasonably delayed. -Examples of conditions which require evaluation to determine if they are unsafe include, but are not limited to: . washouts . exposed spanning pipe . mud-slides & landslides . ice-balls . snow accumulations . unprotected facilities from reasonably anticipated on-road and off-road vehicular damage . debris buildup on river/stream crossings that is detrimental to the pipe - The operator must evaluate any loss of cover to determine if an unsafe condition exists. When the operator becomes aware of an unsafe condition, it must take appropriate action to prevent damage in a reasonable time. Such action may be other than restored cover. - In the event of an immediate hazard not alleviated by a reduction in operating pressure, the operator must shutdown the pipeline until the condition is corrected.

Examples of a Violation	- An adverse condition was not corrected within a reasonable time. - The operator continued to operate a pipeline that presented an immediate hazard to persons or property. - Pipeline has been operated and it does not comply with design & construction requirements after the dates of applicability.
Evidence Guidance	- Documentation that an adverse condition was not corrected promptly. - Operator's records showing dates of discovery and remediation. - Documented statements from Operator- Public complaint reports. - Photographs.
Other Special Notations	None noted

§195.402(a)	**Procedural Manual - General**.

Existing Code Language:	(a) General. Each operator shall prepare and follow for each pipeline system a manual of written procedures for conducting normal operations and maintenance activities and handling abnormal operations and emergencies. This manual shall be reviewed at intervals not exceeding 15 months, but at least once each calendar year, and appropriate changes made as necessary to insure that the manual is effective. This manual shall be prepared before initial operations of a pipeline commence, and appropriate parts shall be kept at locations where operations and maintenance activities are conducted.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	Amdt. 195-69, Sept. 8, 2000
Interpretation Summary	None noted.
Other Ref. Material & Source	None noted.
New Guidance Material	- The operator=s O&M procedures may be a comprehensive set of cross-referenced volumes set up according to functional subjects or a single manual. - It is permissible to have on-line access to an electronic copy of the O&M Plan; however, appropriate portions of the plan must be readily accessible locally, even if network connectivity to headquarters is temporarily not available. The same is true for maps showing the location of emergency valves and other pertinent information. - Procedures are required for functions and facilities in a system. - Procedures are not just for the field personnel. - Procedures are required for tasks normally performed at the engineering, the operations control center, and other headquarters-type functions as applicable to O&M tasks. - The procedures should be clear, straight forward, and applicable to the company=s system. - Abnormal operations procedures must be included for liquid pipeline operations. - All procedures must be reviewed and updated by the operator at intervals not exceeding 15 months, but at least once each calendar year. - An operator must follow its written procedures, even if the procedures exceed specific code requirements.
Examples of a Violation	- The procedure is of a general nature and would provide little guidance when needed. - The procedure parrots the regulation. - Procedures not prepared prior to operation. - Written procedures that have not been followed.

	- Written procedures not reviewed and updated at required intervals.
Evidence Guidance	- Observation and/or photographs that indicate written procedures are not being followed. - Operator=s records and statements. - Copy of O&M plan or applicable portion that shows omission or deficiency in the plan. - Documented conversations with operator personnel who are charged with establishing the plan.
Other Special Notations	- If a Joint Team O&M Inspection has been completed, procedures do not have to be evaluated for content for five years from the inspection date. However, if inadequate procedures are discovered, appropriate amendments shall be required and findings discussed with the O&M Team Leader. - Procedures concerning new regulations that were placed in force after the Joint Team O&M Inspection, and those known to have changed since the Joint Team Inspection, should be reviewed.

§195.402(b)	**Procedural Manual –Authority for NOA.**

Existing Code Language:	(b) The Administrator or the State Agency that has submitted a current certification under the pipeline safety laws (49 U.S.C. 60101 et seq.) with respect to the pipeline facility governed by an operator's plans and procedures may, after notice and opportunity for hearing as provided in 49 CFR 190.237 or the relevant State procedures, require the operator to amend its plans and procedures as necessary to provide a reasonable level of safety.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-55, 04-26-96
Interpretation Summary	None noted
Other Ref. Material & Source	None noted
New Guidance Material	None required
Examples of a Violation	None required
Evidence Guidance	None required
Other Special Notations	None noted

Existing Code Language:	(c) Maintenance and normal operations. The manual required by paragraph (a) of this section must include procedures for the following to provide safety during maintenance and normal operations: (1) Making construction records, maps, and operating history available as necessary for safe operation and maintenance. (2) Gathering of data needed for reporting accidents under Subpart B of this part in a timely and effective manner. (3) Operating, maintaining, and repairing the pipeline in accordance with each of the requirements of this subpart and subpart H of this part. (4) Determining which pipeline facilities are located in areas that would require an immediate response by the operator to prevent hazards to the public if the facilities failed or malfunctioned. (5) Analyzing pipeline accidents to determine their causes. (6) Minimizing the potential for hazards identified under paragraph (c)(4) of this section and the possibility of recurrence of accidents analyzed under paragraph (c)(5) of this section. (7) Starting up and shutting down any part of the pipeline in a manner designed to assure operation within the limits prescribed by paragraph '195.406, consider the hazardous liquid or carbon dioxide in transportation, variations in altitude along the pipeline, and pressure monitoring and control devices. (8) In the case of pipeline that is not equipped to fail safe, monitoring from an attended location pipeline pressure during startup until steady state pressure and flow conditions are reached and during shut-in to assure operation within limits prescribed by '195.406. (9) In the case of facilities not equipped to fail safe that are identified under '195.402(c)(4) or that control receipt and delivery of the hazardous liquid or carbon dioxide, detecting abnormal operating conditions by monitoring pressure, temperature, flow or other appropriate operational data and transmitting this data to an attended location. (10) Abandoning pipeline facilities, including safe disconnection from an operating pipeline system, purging of combustibles, and sealing abandoned facilities left in place to minimize safety and environmental hazards. For each abandoned offshore pipeline facility or each abandoned onshore pipeline facility that crosses over, under or through commercially navigable waterways the last operator of that facility must file a report upon abandonment of that facility in accordance with '195.59 of this part. (11) Minimizing the likelihood of accidental ignition of vapors in areas near facilities identified under paragraph (c)(4) of this section where the potential exists for the presence of flammable liquids or gases. (12) Establishing and maintaining liaison with fire, police, and other appropriate public officials to learn the responsibility and resources of each government organization that may respond to a hazardous liquid or pipeline emergency and acquaint the officials with the operator's ability in responding to a hazardous

	liquid or carbon dioxide pipeline emergency and means of communication. (13) Periodically reviewing the work done by operator to determine the effectiveness of the procedures used in normal operation and maintenance and taking corrective action where deficiencies are found. (14) Taking adequate precautions in excavated trenches to protect personnel from the hazards of unsafe accumulations of vapor or gas, and making available when needed at the excavation, emergency rescue equipment, including a breathing apparatus and, a rescue harness and line.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-73, 12-27-01
Interpretation Summary	Date: 02-04-93 Operators must meet face-to-face with public officials and maintain an ongoing face-to-face liaison after the initial meeting. Current OPS policy does not require face-to-face meetings. See new guidance material below.
Interpretation Summary	Date: 10-11-94 It's apparent that operators only have to identify their high risk facilities to comply with §195.402(c)(4). So, by identifying all its facilities, as BP apparently has done, an operator would not only meet but exceed the requirements of §195.402(c)(4).
Interpretation Summary	Date: 01-21-00 A pipeline company must be able to convincingly demonstrate that any methods of establishing and maintaining liaison other than face-to-face meetings are at least as effective.
Other Ref. Material & Source	None noted
New Guidance Material	- The operator=s O&M procedures may be a comprehensive set of cross-referenced volumes set up according to functional subjects or a single manual. - Procedures are required for functions and facilities in a system. - Procedures are not just for the field personnel. - Procedures are required for tasks normally performed at the engineering, the operations control center, and other headquarters-type functions as applicable to O&M tasks. - The procedures should be clear, straight forward, and applicable to the company=s system. - Abnormal operations procedures must be included for liquid pipeline operations.

	- Personnel conducting pipeline operations need direct access (either on paper or electronically) to procedures, without delay when emergencies arise. - It is acceptable for operators to use the manufacturer=s recommended practices (engine books or other related literature) regarding the maintenance of the specific equipment at each location (these documents must be available at each location). It is also acceptable to post the specific start-up and shut-down instructions for each pump unit at or near the local control panel used for starting the equipment and having generic procedures in their O&M Plan. - Fail Safe generally means that equipment will automatically respond without exceeding the parameters set by the operator. This means not exceeding the MOP plus the 10% prescribed allowance (ref. §195.406). - It is an acceptable practice to identify their entire pipeline as an immediate response area if so designated in the operator=s O&M Plan. -Only abandoned (permanently removed from service) pipelines are exempt from Part 195 regulations with exception of abandonment inventory reporting requirements. Inactive, idle, or out-of-service pipelines that have not been permanently removed from service must meet all applicable requirements of Part 195. -The OPS procedures required to protect employees from vapors in excavations is different than the OSHA confined space procedures. -With regard to the potential overlap with OSHA rules. Section 4(b)(1) of the OSHA Act prohibits OSHA from exercising authority over working conditions when another agency exercises authority through regulation. - Areas where accidental ignition may occur: . operating internal combustion engines . activities that could generate static electricity or electrical arcing . welding, cutting, and other hot work . using certain non-approved electric equipment (flashlights, power tools/equipment, etc.) . working on motors or appurtenances . working inside pipeline buildings . use of spark-producing hand tools; etc. . engine exhaust stack temperatures - Operators should maintain restricted access to hazardous areas, including safety zones for vehicular and air space domains. - § 195.402(c)(13) is directed to procedures refinement, not employee evaluation. - Operators may apply various techniques to determine the adequacy of its normal O&M procedures, some examples are: . Incentive programs to identify procedural improvement . Procedure suggestion block on maintenance forms . Tailgate meeting agenda item . Discussions during employee performance review . Ongoing management of change process . Near miss and accident investigation analysis - It is acceptable to use third parties to conduct meetings with appropriate public

	officials on the behalf of the operator/s; however, the operator is ultimately responsible for compliance with this requirement. - Documentation must be kept concerning a good faith attempt to include who was invited and who attended to meet the requirements of code and topics discussed. - Appropriate materials must be sent to the public officials that were invited but did not attend.
Examples of a Violation	- The procedure is of a general nature and would provide little guidance when needed. - The procedure parrots the regulation. - There is no procedure. - The only procedure for taking adequate precautions in excavated trenches is OSHA=s confined space procedures. - The operator=s procedures for taking adequate precautions in excavated trenches does not include the use of appropriate instruments to test the atmosphere in the trench.
Evidence Guidance	- Copy of operator=s procedures or applicable portion that shows omission or deficiency. - Documented conversations with the operator.
Other Special Notations	- If a Joint Team O&M Inspection has been completed, procedures do not have to be evaluated for content for five years from the inspection date. However, if inadequate procedures are discovered, appropriate amendments shall be required and findings discussed with the O&M Team Leader. - Procedures concerning new regulations that were placed in force after the Joint Team O&M Inspection, and those known to have changed since the Joint Team Inspection, should be reviewed.

Existing Code Language:	(d) Abnormal operation. The manual required by paragraph (a) of this section must include procedures for the following to provide safety when operating design limits have been exceeded; (1) Responding to, investigating, and correcting the cause of; (i) Unintended closure of valves or shutdowns; (ii) Increase or decrease in pressure or flow rate outside normal operating limits; (iii) Loss of communications; (iv) Operation of any safety device; (v) Any other malfunction of a component, deviation from normal operation, or personnel error which could cause a hazard to persons or property. (2) Checking variations from normal operation after abnormal operation has ended at sufficient critical locations in the system to determine continued integrity and safe operation. (3) Correcting variations from normal operation of pressure and flow equipment and controls. (4) Notifying responsible operator personnel when notice of an abnormal operation is received. (5) Periodically reviewing the response of operator personnel to determine the effectiveness of the procedures controlling abnormal operation and taking corrective action where deficiencies are found.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-22, 07-27-81
Interpretation Summary	None noted
Other Ref. Material & Source	None noted
New Guidance Material	- Abnormal conditions and emergency conditions are not equivalent. - Abnormal conditions do not pose as immediate a threat to life or property as do emergency conditions. - Abnormal conditions are generally less severe, but could escalate to emergency conditions if not promptly corrected. - Any pipeline operator that chooses to treat abnormal conditions as emergency conditions still must comply with §195.402(d) and have separate procedures for abnormal conditions. - The operator=s O&M procedures may be a comprehensive set of cross-referenced volumes set up according to functional subjects or a single manual. - Procedures are required for all facilities in the system. - The procedures are not just for the field personnel. - Procedures are also required for tasks normally performed at the operations control

	center, engineering and other headquarters-type functions as applicable to O&M tasks. - The procedures should be clear, straight forward, and applicable to the company=s system. - All these procedures must be reviewed and updated by the operator at intervals not exceeding 15 months, but at least once each calendar year. - §195.402(d)(5) is directed to procedures refinement, not employee evaluation - Operators may apply various techniques to determine the adequacy of its abnormal O&M procedures, some examples are: . Root cause analysis . Post event reports . Tailgate meeting agenda item . Near-miss and accident investigation analysis . Simulation or event re-construction reviews . Abnormal operations drills and mock exercises . Ongoing management of change process - Refinement and efficiency of procedures must not compromise safety.
Examples of a Violation	- The procedure is of a general nature and would provide little guidance when needed. - The procedure parrots the regulation. - There is no procedure.
Evidence Guidance	- Copy of O&M plan or applicable procedure that shows omission or deficiency in the plan. -The only procedure for addressing vapors in excavated trenches is OSHA=s confined space procedures. - Copy of O&M plan or applicable portion that shows omission or deficiency in the plan. - Documented conversations with operator personnel who are charged with establishing the plan.
Other Special Notations	None noted

Existing Code Language:	(e) Emergencies. The manual required by paragraph (a) of this section must include procedures for the following to provide safety when an emergency condition occurs: (1) Receiving, identifying, and classifying notices of events which need immediate response by the operator or notice to fire, police, or other appropriate public officials and communicating this information to appropriate operator personnel for corrective action. (2) Prompt and effective response to a notice of each type emergency, including fire or explosion occurring near or directly involving a pipeline facility, accidental release of hazardous liquid or carbon dioxide from a pipeline facility, operational failure causing a hazardous condition, and natural disaster affecting pipeline facilities. (3) Having personnel, equipment, instruments, tools, and material available as needed at the scene of an emergency. (4) Taking necessary action, such as emergency shutdown or pressure reduction, to minimize the volume of hazardous liquid or carbon dioxide that is released from any section of a pipeline in the event of a failure. (5) Control of released hazardous liquid or carbon dioxide at an accident scene to minimize the hazards, including possible intentional ignition in the cases of flammable highly volatile liquid. (6) Minimization of public exposure to injury and probability of accidental ignition by assisting with evacuation of residents and assisting with halting traffic on roads and railroads in the affected area, or taking other appropriate action. (7) Notifying fire, police, and other appropriate public officials of hazardous liquid or carbon dioxide pipeline emergencies and coordinating with them preplanned and actual responses during an emergency, including additional precautions necessary for an emergency involving a pipeline transporting a highly volatile liquid. (8) In the case of failure of a pipeline transporting a highly volatile liquid, use of appropriate instruments to assess the extent and coverage of the vapor cloud and determine the hazardous areas. (9) Providing for a post accident review of employee activities to determine whether the procedures were effective in each emergency and taking corrective action where deficiencies are found.
Origin of Code	195-15, 07-13-79
Last FR Amendment	195-45, 06-12-91
Interpretation Summary	None provided
Other Ref. Material & Source	None noted

§195.402(e)	**Procedural Manual - Emergencies**

New Guidance Material	- Generic emergency plans are fine for the whole company; however, they must be specific for the individual locations covered by the local emergency plan. - Operators should have a contact list of local fire and other public emergency agencies. - References must be included in the emergency plan, if material in other manuals are to be used at the site i.e. Safety Manuals , OPA Oil Spill Response Plan, etc. - Individuals who normally receive calls for the operator should be appropriately trained to identify the situation, direct callers to seek safety first, and then gather critical information to promptly initiate the operator=s response efforts.
Examples of a Violation	-The procedure is inadequate, of a general nature and would provide little guidance when needed. - Outdated or incomplete listing of contact information for local fire and emergency agencies. - No listing of where emergency resources are located. - No listing of directions to emergency valves to isolate any segment of their assigned pipeline system. - No listing for the railroad road-master or individual with the authority to shut-down a segment of railroad that parallels a pipeline in their assigned area. -The procedure parrots the regulation.
Evidence Guidance	- Copy of emergency procedures or applicable portion that shows omission or deficiency in the plan. - Documented conversations with operator personnel who are charged with establishing the plan.
Other Special Notations	None noted

§195.402(f)	**Procedural Manual – Safety Related Condition Reports.**

Existing Code Language:	(f) Safety-related condition reports. The manual required by paragraph (a) of this section must include instructions enabling personnel who perform operation and maintenance activities to recognize conditions that potentially may be safety-related conditions that are subject to the reporting requirements of ' 195.55.
Origin of Code	195-39, 07-01-88
Last FR Amendment	None
Interpretation Summary	None noted
Other Ref. Material & Source	None noted
New Guidance Material	- The operator must meet the requirements of §195.452 for safety related conditions that occur in pipeline segments that could impact a High Consequence Area. - Many operators incorporate a safety related condition flow chart decision tree into this O&M procedure. - Field operations and maintenance personnel, controllers or corrosion personnel are expected to recognize potential safety-related conditions. - Operators should designate what personnel are ultimately responsible to assess and determine the existence of safety-related conditions.
Examples of a Violation	- The procedure is of a general nature and would provide little guidance when needed. - The procedure parrots the regulation. - There is no procedure.
Evidence Guidance	- Copy of O&M plan or applicable procedure that shows omission or deficiency in the plan. - Documented conversations with operator personnel who are charged with establishing the plan.
Other Special Notations	None noted

§195.403	**Emergency Response Training**

Existing Code Language:	(a) Each operator shall establish and conduct a continuing training program to instruct emergency response personnel to: (1) Carry out the emergency procedures established under §195.402 that relate to their assignments; (2) Know the characteristics and hazards of the hazardous liquids or carbon dioxide transported, including, in the case of flammable HVL, flammability of mixtures with air, odorless vapors, and water reactions; (3) Recognize conditions that are likely to cause emergencies, predict the consequences of facility malfunctions or failures and hazardous liquid or carbon dioxide spills, and to take appropriate corrective action; (4) Take steps necessary to control any accidental release of hazardous liquid or carbon dioxide and to minimize the potential for fire, explosion, toxicity, or environmental damage; and (5) Learn the potential causes, types, sizes, and consequences of fire and the appropriate use of portable fire extinguishers and other on-site fire control equipment, involving, where feasible, a simulated pipeline emergency condition. (b) At intervals not exceeding 15 months, but at least once each calendar year, the operator shall: (1) Review with personnel their performance in meeting the objectives of the emergency response training program set forth in paragraph (a) of this section; and (2) Make appropriate changes to the emergency response training program as necessary to ensure that it is effective. (c) Each operator shall require and verify that its supervisors maintain a thorough knowledge of that portion of the emergency response procedures established under §195.402 for which they are responsible to ensure compliance.
Origin of Code	195-15, 07-16-79
Last FR Amendment	195-78, 09-11-03
Interpretation Summary	None noted
Other Ref. Material & Source	None noted
New Guidance Material	- After October 28, 2002, only emergency response training requirements will be covered under §195.403 [Refer to Subpart G - Operator Qualification relating to qualification of individuals in performance of covered tasks and in recognizing and reacting to abnormal operating conditions]. - Training programs should include use of the written O&M (prior to 10/28/02) and emergency Plan procedures. - It is permissible to have on-line access to an electronic copy of the Emergency

	Plan; however, appropriate portions of the plan must be readily accessible locally, even if network connectivity to headquarters is temporarily not available. The same is true for maps showing the location of emergency valves and other pertinent information. - Individuals who normally receive calls for the operator should be appropriately trained to identify the situation, direct callers to seek safety first, and then gather critical information to promptly initiate the operator=s response efforts. - Emergency training programs typically include mandatory initial employee training, with periodic individual refresher training. The operator should require and Atrack@ individual employee training frequencies. - Emergency training should cover different levels of responsibility and complexity, including, as applicable to the operator, personnel from the control center, managers and/or supervisors, field personnel, patrol pilots, communications systems, SCADA, etc. - Emergency exercises may include Atabletop@ scenarios, on-scene Amock@ and/or corporate-wide exercises, simulated control room exercises, etc. - One method operators use to review performance, make appropriate changes, and verify that supervisors maintain a thorough knowledge, is by critiquing the performance of emergency exercises. All simulated and real emergencies should be self-critiqued, with deficiencies identified and recommendations made and followed up on.
Examples of a Violation	- A written, continuing training program has not been established. - Training program procedures are/have not been followed. - No (or insufficient) documented evidence that personnel have been, or are being, trained per the requirements of §195.403(a). - No evidence that the review with personnel is being performed at the prescribed frequency. - Appropriate changes to the training program are not made. - No requirement or evidence of verification that supervisors maintain a thorough knowledge of the prescribed procedures.
Evidence Guidance	- Written training program and procedures. - Training records, certifications, education history. - Documented statements of the operator. - Prescribed O&M and emergency response records required of §195.402. - Accident investigation reports.
Other Special Notations	None noted

§195.404	Maps and Records

Existing Code Language:	(a) Each operator shall maintain current maps and records of its pipeline systems that include at least the following information; (1) Location and identification of the following pipeline facilities; (i) Breakout tanks; (ii) Pump stations; (iii) Scraper and sphere facilities; (iv) Pipeline valves; (v) Facilities to which '195.402(c)(9) applies; (vi) Rights-of-way; and (vii) Safety devices to which '195.428 applies. (2) All crossings of public roads, railroads, rivers, buried utilities, and foreign pipelines. (3) The maximum operating pressure of each pipeline. (4) The diameter, grade, type and nominal wall thickness of all pipe. (b) Each operator shall maintain for at least 3 years daily operating records that indicate- (1) The discharge pressure at each pump station; and (2) Any emergency or abnormal operation to which the procedures under '195.402 apply. (c) Each operator shall maintain the following records for the periods specified; (1) The date, location, and description of each repair made to pipe shall be maintained for the useful life of the pipe. (2) The date, location, and description of each repair made to parts of the pipeline other than pipe shall be maintained for at least 1 year. (3) A record of each inspection and test required by this subpart shall be maintained for at least 2 years or until the next inspection or test is performed, whichever is longer.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-73, 12-27-01
Interpretation Summary	Date: 09-17-80 Continuous pressure recording is not required nor is it possible in most cases. The intent of the rule is to record pipeline pressures in sufficient detail to reveal the operating conditions at the time the records were made.

§195.404	Maps and Records

Interpretation Summary	Date: 04-06-92 §195.404(c)(3) does not prohibit operators from maintaining the required records on magnetic media. Also, original hard-copy (paper) records need not be retained after their conversion to magnetic media. However, like the original hard copy records, magnetic media records must contain sufficient information to comply with the record-keeping requirements of §195.404(c)(3).
Interpretation Summary	Date: 10-01-97 An appropriate minimum time interval for electronically recorded pressure data is that time interval which is frequent enough to collect the pressures attained during normal and abnormal conditions, such that the recorded data could be assembled to create a facsimile of the pressures that actually occurred, including the magnitude and time interval of all elevated pressures. This approach requires the operator to review the dynamics of their individual pipeline to determine what interval would be necessary and to ensure that all elevated pressures are captured. The use of the SCADA system in lieu of pressure chart recorders is acceptable, if the SCADA system is configured to collect and archive sufficiently detailed pressure records. The recording of average pressure every minute instead of the peak pressure each minute may not preserve the short-term, abnormal pressures that occur. The operator should perform an operations analysis to determine what SCADA configuration parameters are necessary to preserve the pressure history.
Other Ref. Material & Source	None noted
New Guidance Material	- All maps, schematics, documents, drawings and display screens critical to operations and emergency response situations must contain functionally accurate information. - Outstanding redline drawings need to be prioritized on the operator=s engineering/drafting as-built drawings schedule. - Control center and emergency response drawing revisions should have the highest priority. - No specific time interval for updating drawings is noted in the regulations; however, facility modifications should normally be incorporated into final records within the constraints of their procedures, but should not exceed 1 year. - Documents, drawings and display screens should be readily available to appropriate personnel. - Records requirements includes the operator=s pretested and stock pipe inventory.

	- Detailed pump discharge pressure records must be retained for 3 years. - When SCADA is used as the discharge pressure record utility, field data collection intervals (polling) of 20 seconds or faster is considered adequate enough for compliance to track pump discharge pressures (some hydraulic impulse phenomena may not be recorded at this interval). Associated data archiving must not diminish the accuracy or resolution of the data. - Records may be in the form of computer records or on magnetic tape but must be reproducible or available in a reviewable format.
Examples of a Violation	- Operator does not have complete and current maps or records. - Operator=s records do not contain at least 3 years of detailed operating pressure records. - Operator=s records do not contain maintenance, test and repair records for the prescribed time periods.
Evidence Guidance	- O&M procedures. - Operations and maintenance records. - Documented comments from the operator. - Copies of maps and records. - Photographs.
Other Special Notations	None noted

§195.405	**Protection Against Ignitions & Safe Access/Egress - Floating Roofs**

Existing Code Language:	(a) After October 2, 2000, protection provided against ignitions arising out of static electricity, lightning, and stray currents during operation and maintenance activities involving aboveground breakout tanks must be in accordance with API Recommended Practice 2003, unless the operator notes in the procedural manual ('195.402(c)) why compliance with all or certain provisions of API Recommended Practice 2003 is not necessary for the safety of a particular breakout tank. (b) The hazards associated with access/egress onto floating roofs of in-service aboveground breakout tanks to perform inspection, service, maintenance or repair activities (other than specified general considerations, specified routine tasks or entering tanks removed from service for cleaning) are addressed in API Publication 2026. After October 2, 2000, the operator must review and consider the potentially hazardous conditions, safety practices and procedures in API Publication 2026 for inclusion in the procedure manual ('195.402(c)).
Origin of Code	195-66, 04-02-99
Last FR Amendment	None
Interpretation Summary	None noted
Other Ref. Material & Source	Amdt. 195-66 04-02-99 Excerpts relating to §195.405: EPA said that although an operator would have to include in its procedural manual its reason for not applying a practice to a particular tank, the proposal did not provide a way for us to order compliance with the practice if we do not agree with the operator's reason . . . Under the enforcement procedures in 49 CFR 190.237, if our enforcement personnel have reason to believe an operator's operations and maintenance procedures are inadequate for safety, they conduct proceedings to determine the adequacy and can order the operator to change any procedures found inadequate. In addition, under 49 CFR 190.233, we can order immediate corrective action for any pipeline facility that we believe poses a serious threat to life or property. As 29 CFR 1910.5(b) indicates, OSHA's confined space requirements do not apply to employee working conditions for which another federal agency prescribes regulations affecting occupational safety or health.
Other Ref. Material & Source	- API Publication 2026 "Safe Access/Egress Involving Floating Roofs of Storage Tanks in Petroleum Service"

§195.405	**Protection Against Ignitions & Safe Access/Egress - Floating Roofs**

New Guidance Material	- API Recommended Practice 2003 "Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents" generally covers the following ignition areas, some or all of which may apply to an above ground breakout tank during operation and maintenance. The list is not comprehensive, and exceptions and/or alternative requirements may apply. The code-referenced edition of API RP 2003, along with operator=s procedures, must be used in helping determine compliance: . Control of electrostatic charge generation . Grounding . Blending and mixing . Sampling, gauging, high-level devices . Purging and cleaning . Bonding of Open floating and Internal floating roofs . Filter and relaxation chambers . Nonconductive above ground tanks . Use of vacuum trucks . Abrasive blasting . Lightening protection, ie. shunts, permanent grounding cables, etc. . Stray current - OSHA's confined space requirements do not apply to employee working conditions for which another federal agency prescribes regulations affecting occupational safety or health.
Examples of a Violation	- Inadequate documentation that the prescribed protection against ignition is provided. - Procedures do not convey a valid justification as to why compliance with all or certain provisions of API Recommended Practice 2003 are not necessary. - Inadequate documentation that the operator has reviewed and considered the potentially hazardous conditions, safety practices and procedures in API Publication 2026 "Safe Access/Egress Involving Floating Roofs of Storage Tanks in Petroleum Service" for inclusion in the procedure manual.
Evidence Guidance	- Written procedures (or lack of). - Engineering drawings/schematics. - Observations. - Photographs. - Accident investigation.
Other Special Notations	None

§195.406	Maximum Operating Pressure

Existing Code Language:	(a) Except for surge pressures and other variations from normal operations, no operator may operate a pipeline at a pressure that exceeds any of the following: (1) The internal design pressure of the pipe determined in accordance with '195.106. However, for steel pipe in pipelines being converted under '195.5, if one or more factors of the design formula ('195.106) are unknown, one of the following pressures is to be used as design pressure: (i) Eighty percent of the first test pressure that produces yield under section N5.0 of Appendix N of ASME B31.8, reduced by the appropriate factors in ''195.106(a) and (e); or (ii) If the pipe is 323.8 mm (12: in) or less outside diameter and is not tested to yield under this paragraph, 1379 kPa (200 psig). (2) The design pressure of any other component of the pipeline. (3) Eighty percent of the test pressure for any part of the pipeline which has been pressure tested under Subpart E of this part. (4) Eighty percent of the factory test pressure or of the prototype test pressure for any individually installed component which is excepted from testing under '195.305. (5) For pipelines under ''195.302(b)(1) and (b)(2)(i), that have not been pressure tested under Subpart E of this part, 80 percent of the test pressure or highest operating pressure to which the pipeline was subjected for 4 or more continuous hours that can be demonstrated by recording charts or logs made at the time the test or operations were conducted. (b) No operator may permit the pressure in a pipeline during surges or other variations from normal operations to exceed 110 percent of the operating pressure limit established under paragraph (a) of this section. Each operator must provide adequate controls and protective equipment to control the pressure within this limit.
Origin of Code	195-2, 11-07-70
Last FR Amendment	195-65, 11-04-98
Interpretation Summary	Date: 10-15-76 This requirement only applies to pipelines to which §195.106 applies (i.e., pipelines which are constructed, replaced, relocated, or otherwise changed on and after 04-01-70 for onshore; and 08-01-77 for offshore and inland navigable water platform riser design.
Interpretation Summary	Date: 06-17-81 - The design pressure of components is not prescribed in specific terms as it is for pipe under '195.106. Although sound design principles may require that a manufacturer's pressure rating and applicable factors in consensus standards be considered in determining the design pressure of a component, a pipeline operator is

	free under Part 195 to use equally sound principles to derive an independent design pressure. - Valves installed prior to code are not exempt from compliance with this regulation since this section is an operating rule.
Interpretation Summary	Date: 07-16-93 If a pressure test or operating pressure is used to satisfy the requirements of §195.406(a)(5), only those records which include a recording chart or a log documenting the pressures maintained over the 4-hour period would be acceptable. The chart or log must have been made throughout the duration of the 4-hour period.
Interpretation Summary	Date: 12-27-95 - To determine the MOP, a pressure must be calculated under each of the criteria in §195.406(a) that applies to the pipeline. MOP is the lowest of these pressures. - All criteria do not apply to all pipelines. Apart from converted pipelines, §195.406(a)(1) applies only to pipelines for which internal design pressure must be calculated under §195.106 (i.e., pipelines constructed, replaced, relocated, or otherwise changed after the applicable date in §195.401(c), or August 10, 1994, for low-stress pipelines). Also, the criteria in §195.406(a)(3) & (a)(4) do not apply to pipelines that are not subject to pressure testing under Subpart E of Part 195. And §195.406(a)(5) has limited application to existing low-stress pipelines. So, for low-stress non-HVL pipelines constructed before August 11, 1994, only component design pressure under §195.406(a)(2) applies to determining MOP. If this design pressure is unknown, then the operator would have to establish a maximum pressure for safe operation of the pipeline within the procedures for normal operation under §195.402(a). - If MOP cannot be determined under §195.406(a) for a low-stress pipeline constructed before August 11, 1994, the requirements of §195.106 (referenced in §195.406(a)) provide a guide to determining a maximum pressure for safe operation under §195.402(a). Section 106 permits 24,000 psi as yield strength in the design pressure formula if the pipe SMYS is unknown and the material is not tensile tested. - Although the 200 psig pressure under §195.406(a)(1) applies only to pipelines converted under ' 195.5, the 200 psig pressure may be used as a guide to determining a maximum pressure for safe operation of pipelines less than or equal to 12-3/4" whose MOP cannot be determined under §195.406.

Other Ref. Material & Source	Date: 04-22-85, Amdt. 195-33 In the case of onshore HVL interstate pipelines constructed before January 8, 1971, or onshore HVL intrastate pipelines constructed before October 21, 1985, that have not been tested under Subpart E of this Part, 80 percent of the test pressure or highest operating pressure to which the pipeline was subjected for four or more continuous hours that can be demonstrated by recording charts or logs made at the time the test or operations were conducted.
Other Ref. Material & Source	Date: 06-06-94, Amdt. 195-51 - In the final rules, §195.302(b)(2)(ii) reflects our decision to exclude older carbon dioxide field distribution lines in rural areas from the 25 percent safety margin requirement. - Only recording charts or logs made at the time of prior testing or operations show with certainty that the minimum margin exists for the pipeline concerned. Alternative documentation, including specifications, reports, or affidavits, is less probative. Such evidence leaves some room for doubt because it does not result directly from pipeline testing or operation. Although recording charts and logs may no longer be available for some older pipelines, RSPA does not believe a lack of proper records justifies allowing a lesser level of proof for a matter so serious as pipeline integrity. - §195.310 does not affect the documentation required by existing §195.406(a)(5), and would not affect documentation under the proposed revision of §195.406(a)(5). Thus, operators need not have documentation under final §195.406(a)(5) in the same detail as §195.310 requires.
Other Ref. Material & Source	Date: 07-12-94, Amdt. 195-53 For older existing low-stress HVL pipelines, the deadline for establishing MOP by either confirming or hydro test was 07-12-96
Other Ref. Material & Source	Date: 04-22-99, Email from Furrow relating to Aother variations from normal operations@ - §195.406(a) provides an exception for Asurge pressures and other variations from normal operation,@ the question becomes whether a temporary pressure boost to dislodge a stuck pig falls under this exception. Dislodging a stuck pig is not a normal operating condition. - §195.406(b) expressly allows operators to exceed MOP by 10% in non-normal situations.
New Guidance Material	- To determine if any of the requirements of Part 195 apply to a pipeline or a piping facility, refer to §195.1 and related interpretations and amendments. If pipelines are found to be Aexcepted@ under §195.1(b), Part 195 regulations do not apply. - For criteria that apply to Aconverted@ pipelines, refer to §195.5.

	- A line may be exempt from Part 195 requirements per §195.1, in part because the line is a Alow stress@ pipeline that operates in its entirety at or below a stress level of 20% pipe SMYS. Such a pipeline would lose low stress status, and possibly §195.1 exemption status, if the pipeline has/ is not being operated in its entirety (beginning to end) at or below a stress level of 20% pipe SMYS. - To determine the MOP, a pressure must be calculated under each of the applicable criteria in §195.406(a). MOP is the lowest of these pressures. - §195.406(b) expressly allows operators to exceed MOP by 10% in other than normal situations. For example, a temporary pressure boost in an attempt by the operator to dislodge a stuck pig in a pipeline would not violate §195.406(b), as long as the resultant pressure does not exceed 110% of MOP. - It is not a violation for operators to set discharge control pressure as high as MOP. - MOP of a pipeline segment must take into consideration both pump station discharge and pressure gradient profile along the entire segment. - The design pressure of components is not prescribed in specific terms as it is for pipe under §195.106. Although sound design principles may require that a manufacturer's pressure rating and applicable factors in consensus standards be considered in determining the design pressure of a component, a pipeline operator is free under Part 195 to use equally sound principles to derive an independent design pressure. - Administrative change control procedures are considered a part of the pressure control system. (§195.406(b)) For Low Stress Pipelines.... -§195. 406(a)(1) does not apply (apart from converted pipelines) to low-stress, non-HVL lines constructed or modified before 08-11-94. - The test pressure requirements of §195.406(a)(3) & (a)(4) do not apply to lines that are not subject to pressure testing under Subpart E. (See Pressure testing requirements section below). - §195.406(a)(5) has limited application to existing low-stress pipelines (does not apply to non-HVL low stress lines constructed prior to 8/11/94 per §195.302(b)(3) (See Pressure testing requirements section below). - For low-stress non-HVL pipelines constructed before August 11, 1994, only component design pressure under §195.406(a)(2) applies to determining MOP (components are not exempt from compliance with §195.406 since §195.406 is an operating rule). If this design pressure is unknown, the operator would have to establish a maximum pressure for safe operation of the pipeline within the procedures for normal operation under §195.402(a). If MOP cannot be determined under §195.406(a) for a low-stress pipeline constructed before 08-11-94, the requirements of §195.106 (referenced in §195.406(a)) provide guidance to determining a maximum pressure for safe operation under §195.402(a). §195.106 permits 24,000 psi as yield strength in the design pressure formula if the pipe SMYS is unknown and the material is not tensile tested (seam factors must still be applied). Although the 200 psig pressure under §195.406(a)(1) applies only to pipelines converted under §195.5, the 200 psig pressure may be used as a guide to

determining a maximum pressure for safe operation of pipelines less than or equal to 12-3/4" whose MOP cannot be determined under §195.406.

Pressure testing requirements....
- Any new pipeline segment subject to Part 195 regulations must be pressure tested (except for a component as allowed in §195.305), without leakage per subpart E, prior to operating the line.
- Converted pipelines must be tested in accordance with Subpart E (per §195.5(a)(4).
- Any replaced, relocated or otherwise changed pipeline segment that is subject to Part 195 regulations must be pressure tested (except for a component as allowed in §195.305 or for converted lines), without leakage per subpart E, prior to returning the segment to service.
- The regulations require (except for converted lines and certain lines that are covered under the risk assessment option in §195.303) the below listed Aolder@ pipelines to be either pressure tested per subpart E, or the maximum operating pressure established under §195.406(a)(5). Refer to §195.302(c) and/or §195.303 for applicable compliance deadlines.
  . A hazardous liquid interstate pipeline constructed before 01-08-71, unless it is a non-HVL low stress pipeline.
  . A hazardous liquid interstate offshore gathering line constructed before 08-01-77, unless it is a non-HVL low stress pipeline.
  . A hazardous liquid intrastate pipeline constructed before 10-21-85, unless it is a non-HVL low stress pipeline.
  . A hazardous liquid low-stress pipeline constructed before 08-11-94, which transports HVL.
  . Any carbon dioxide pipeline constructed before 07-12-91, unless located in a rural area as part of a production field distribution system.
- The testing/mop compliance deadlines for Aolder@ onshore non-low stress HVL pipelines (Amdt. 195-33) and all Aolder@ low stress HVL pipelines (Amdt. 195-53) have passed.
- The testing/MOP compliance deadlines for Aolder@ offshore non-low stress HVL pipelines are found in §195.302(c), or, if the risk based alternative applies, in §195.303. Refer to §195.302 (b)(1)(i), (b)(1)(ii), and (b)(1)(iii) for the applicable Aolder@ pipeline construction dates.
- Regulations allow the following pipelines to operate without pressure testing under Subpart E and without establishing MOP under §195.406(a)(5):
  . Any carbon dioxide pipeline constructed before 07-12-91, which is located in a rural area as part of a production field distribution system.
  . Any low-stress pipeline constructed before 08-11-94, which does not transport HVL.
  . Certain portions of older hazardous liquid and carbon dioxide pipelines as applicable to the risk based alternative to pressure testing (§195.303).
- Only those records which include a recording chart or a log documenting the pressures maintained over the 4-hour period are acceptable for complying with the records requirement of §195.406(a)(5). The chart or log must have been made

	throughout the duration of the 4-hour period. - The pressure test records required of Subpart E do not affect the documentation required of §195.406(a)(5); therefore, operators are not required to have the documentation details in §195.406(a)(5) that are required in Subpart E.
Examples of a Violation	- Operator has/is operating a pipeline above the MOP that is prescribed under §195.406(a), except for surge pressures or other variations from normal operations. This may include failure of the operator to provide adequate test pressure or highest operating pressure records, if §195.406(a)(5) applies. - The pipeline pressure exceeded 110% of MOP under surge pressures or other variations from normal operations. - Evidence that operator=s pressure control and protective equipment is not adequate to control the pipeline segment=s pressure, from beginning to end, within 110% of MOP as prescribed in §195.406(b). - Pressure control equipment did not promptly recover from abnormal pressures.
Evidence Guidance	- Documentation of facility MOP determination. - Facility specifications, records, nameplates. - Engineering drawings and records. - Component design and test data. - Elevation profiles. - Test records or operating pressure logs that establish MOP. - Operating pressure records (electronic and/or paper, SCADA). - Operating schematics. - Pressure control/relief equipment maintenance procedures; equipment inspection and test records. - Operator=s surge analyses, pipeline response model (under abnormal or transient conditions). - Documented comments from the operator. - Accident investigation report. - Abnormal or emergency operation reports. - Unscheduled equipment shutdown records.
Other Special Notations	None noted

§195.408	Communications

Existing Code Language:	(a) Each operator must have a communication system to provide for the transmission of information needed for the safe operation of its pipeline system. (b) The communication system required by paragraph (a) of this section must, as a minimum, include means for: (1) Monitoring operational data as required by '195.402(c)(9); (2) Receiving notices from operator personnel, the public, and public authorities of abnormal or emergency conditions and sending this information to appropriate personnel or government agencies for corrective action; (3) Conducting two-way vocal communication between a control center and the scene of abnormal operations and emergencies; and, (4) Providing communication with fire, police, and other public officials during emergency conditions, including a natural disaster.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-22, 07-27-81
Interpretation Summary	None noted
Other Ref. Material & Source	Advisory Bulletin, ADB-99-03, Potential Service Interruptions in Supervisory Control and Data Acquisition Systems
Other Ref. Material & Source	Advisory Bulletin, ADB-03-09, Potential Service Disruptions in SCADA Systems
New Guidance Material	- Transmission of information refers to both voice and operational data. - Operators can adequately monitor operations by various means, one of which may be a SCADA system. - Operators are not required to have SCADA systems. - Communications for pipeline control must be provided for facilities not equipped to fail-safe or where there is the potential to harm the public during an emergency condition (§195.402(c)(9)). - Fail Safe generally means that equipment will automatically respond without exceeding the parameters set by the operator. This means not exceeding the MOP plus the 10% prescribed allowance (ref. §195.406). - Emergency response vehicles should be equipped with two-way radios and/or cell phones. §195.408(b)(3). - Operator should have a sufficient number of phone lines to handle emergency situations. - Adequate monitoring would include an ongoing awareness of the pipeline=s condition, either by an individual monitoring a remote SCADA system or someone watching local gauges or listening for established alarms.

	- A 24-hour phone number must be provided; although recorded messages can be announced, there must be means to speak to the operator=s personnel.
Examples of a Violation	- Two-way communications were not available during emergency and abnormal situations. - Unmanned facilities that are not being adequately monitored. - 24-hour phone number that does not provide contact with an individual qualified to receive emergency calls.
Evidence Guidance	- Photos. - Job descriptions. - Contact information sheet for local fire and emergency agencies. - Dictated phone message monologue. - SCADA display printouts. - Station piping & instrument drawings.
Other Special Notations	None noted

§195.410	Line Markers

Existing Code Language:	(a) Except as provided in paragraph (b) of this section, each operator shall place and maintain line markers over each buried pipeline in accordance with the following: (1) Markers must be located at each public road crossing, at each railroad crossing, and in sufficient number along the remainder of each buried line so that its location is accurately known. (2) The marker must state at least the following on a background of sharply contrasting color: (i) The word "Warning," "Caution," or "Danger" followed by the words "Petroleum (or the name of the hazardous liquid transported) Pipeline," or "Carbon Dioxide Pipeline," all of which, except for markers in heavily developed urban areas, must be in letters at least one inch (25mm) high with an approximate stroke of one-quarter inch (6.4mm). (ii) The name of the operator and a telephone number (including area code) where the operator can be reached at all times. (b) Line markers are not required for buried pipelines located- (1) Offshore or at crossings of or under waterways and other bodies of water; or (2) In heavily developed urban areas such as downtown business centers where- (i) The placement of markers is impracticable and would not serve the purpose for which markers are intended; and (ii) The local government maintains current substructure records. (c) Each operator shall provide line marking at locations where the line is above ground in areas that are accessible to the public.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-63, 07-13-98 (metric conversion)
Interpretation Summary	Date: 04-02-91 Federal regulation requires operators to mark the presence of pipelines carrying their products by using signs or other objects. The particular type or size of marker is not specified in the regulation, but is left to the operator's discretion provided the objectives of the rule - to warn others of the presence of underground pipelines and to provide an emergency telephone number - are carried out. Flush markers may technically be permissible under the pipeline safety regulations, we do not encourage their use because they can become obscured by snow, debris, or vegetation.
Interpretation Summary	Date: 05-19-88 The pipeline safety statutes we administer provide criminal penalties for any person who willfully and knowingly inures or destroys, or attempts to injure or destroy, any gas or hazardous liquid interstate pipeline facility (49 App. U.S.C. 60123). Such facilities include line markers.

§195.410	Line Markers

Interpretation Summary	Date: 09-19-74 Concerning the practice of marking pipelines installed in a common trench. The regulations require carriers to place and maintain line markers "over each" buried liquid line at certain locations.
Other Ref. Material & Source	Date : 09-30-98, Advisory Bulletin ADB-98-4 This advisory bulletin establishes the boundaries that will be used to delineate the locations over which the Department of Transportation and the Department of Interior will exercise their respective regulatory authority over pipelines on the OCS. The rule required operators to durably mark the specific points on their pipeline or to depict the transfer point on a schematic maintained near the transfer point where operating responsibility transfers from a producing operator to a transporting operator.
New Guidance Material	- Install line markers for each pipeline that crosses or lies in close proximity to any high risk area where, in the operator's judgment, the potential for future excavation or damage is likely such as: . Flood zone areas . Irrigation ditches and canals subject to periodic excavations for cleaning out or deepening . Drainage ditches subject to periodic grading, including those along roads . Agricultural fields subject to deep plowing or where deep-pan breakers are employed. . Active drilling or mining areas . Fence lines, notable changes in direction if practicable. . Exposed pipe including wash outs and spans, in areas accessible to the public. - Line of sight (can physically see from one marker to the next marker) is not required in areas where the land use does not reasonably permit such installation (i.e. corn field, swamp, and other such examples). - Temporary or permanent line markers are required when the pipeline becomes exposed by design or through acts of nature (erosion by wind or water), in areas accessible to the public. - Projects of long duration near or on the pipeline may require more frequent verification that markers are in place (see damage prevention guidance). - Letters on the marker should be about 1" high, and easily readable. - Remote valves must be identified by a marker or similarly labeled placard. - Stickers, as long as permanently affixed and fully legible must be applied as soon as practicable (within six months) over outdated information; however, the telephone number must reach the pipeline operator at all times.

Examples of a Violation	- The route of the pipeline cannot be determined in a specific area by observation of the pipeline markers, except in areas where impracticable due to land use. - The information on the marker does not include all the required elements. - Markers not installed at above-ground piping accessible to the public, either by design or from a washout. - The information on the marker is not entirely correct. - Letters on the marker are not easily read. - The listed telephone number does not reach the pipeline operator, or their contracted service provider, at all times.
Evidence Guidance	- Photos showing the pipeline right-of-way where markers should be placed. - Photos of incorrect information, or other similar problems. - Photographs that show the date the picture was taken on the picture. - Copies of company drawings or procedures indicating the policies and practices relative to marking their pipelines.
Other Special Notations	None noted

§195.412	Inspection of Rights-of-Way and Crossings Under Navigable Waters

Existing Code Language:	(a) Each operator shall, at intervals not exceeding 3 weeks, but at least 26 times each calendar year, inspect the surface conditions on or adjacent to each pipeline right-of-way. Methods of inspection include walking, driving, flying or other appropriate mean of traversing the right-of-way. (b) Except for offshore pipelines, each operator shall, at intervals not exceeding 5 years, inspect each crossing under a navigable waterway to determine the condition of the crossing.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-52, 06-28-94
Interpretation Summary	Date: 03-08-94 Navigable waters or waterways include those waterways which have been designated as being navigable by the United Stated Coast Guard in 33 CFR Subpart 2.05-25(a). As defined by this section, navigable waters include: 1. Territorial seas of the United States; 2. Internal waters of the United States that are subject to tidal influence; and 3. Internal waters of the United States not subject to tidal influence that: i. Are or have been used, or are or have been susceptible for use, by themselves or in connection with other waters, as highways for substantial interstate or foreign commerce, notwithstanding natural or man-made obstructions that require portage, or ii. A government or non-government body, having expertise in water improvement, determines to be capable of improvement at a reasonable cost (a favorable balance between cost and need) to provide, by themselves or in connection with other waters, highways for substantial interstate or foreign commerce.
Interpretation Summary	Date: 06-26-91 The use of airplanes and helicopters to perform these inspections complies with the regulation. Aerial inspections are an established industry practice and we consider such inspections to be an effectual way to disclose excavation activities on either side of the right-of-way that occasionally extend to the pipelines within the right-of-way. Checking for excavation activities is an important part of the inspection, because excavation activities, or "dig-ins," are the leading cause of damage to underground pipelines.

Interpretation Summary	Date: 05-28-91 The regulations do not require that trees be removed or that rights-of-way be inspected from the air. It is the position of the Department that, if visual aerial inspections are used by the operator to meet the requirements of the regulations, the rights-of-way must be kept clear of brush and trees. Normally, this is a matter subject to negotiation in the rights-of-way agreement between the pipeline companies and the landowners involved.
Other Ref. Material & Source	Date: 04-12-96 (See Other Reference Material 05-17-02 below) This is in response to Shell Oil Products Company's (Shell) request for a waiver from the requirements of 49 CFR ' 195.412 (b), Inspection of Rights-Of-Way and crossings under navigable waters at nine bored river crossings (Exhibit A). You alleged that, because the subject pipelines were bored and had a depth of cover exceeding 15 feet, the pipelines were too deep to be subject to water related damage. Section 195.412(b) does not specify any methods for inspecting the condition of the crossings. However, the method employed must be sufficient to verify that the crossing is sound and does not pose a hazard. This must be based upon the parameters of the particular crossing, subject to special circumstances, (i.e., events reasonably expected to alter or disturb the waterway bottom such as flood scour, sand mining, and Corp of Engineers projects) discovered during required biweekly patrols. Your bored crossings are well documented to demonstrate they are substantially below river bottom. Therefore, the Office of Pipeline Safety concludes that your request for a waiver is unnecessary.

Other Ref. Material & Source	Date: 05-17-02 This responds to your request for a waiver from compliance with 49 CFR 195.412(b) for the crossing of a 16-inch interstate HVL pipeline under the Atchafalaya River near Krotz Springs, Louisiana. Because the crossing was directionally drilled at least 35 feet below the river bottom, Texaco Pipelines LLC (Texaco) believes an underwater inspection would not reveal any exposed pipe. Section 195.412(b) requires operators, at intervals not exceeding 5 years, to inspect each crossing under a navigable waterway (except offshore) to determine the condition of the crossing. The purpose of the inspection is to look for any damage, unanticipated loading, or loss of protection that could threaten the integrity of the pipeline. In a rulemaking proceeding intended to eliminate unnecessary requirements in 49 CFR Part 195 (59 FR 33388; June 28, 1994), the Office of Pipeline Safety (OPS) addressed the need for periodic inspections of bored (or drilled) crossings. Several commenters opposed a proposal to except bored crossings from the inspection requirement. In consideration of these comments, OPS concluded that, in the absence of a recognized standard on the subject, it is too speculative to judge when bored crossings are buried at a sufficient depth to be safe from damage by external forces. OPS concluded that it would not be in the interest of public safety to except bored crossings from §195.412(b). In light of this earlier decision, OPS does not agree that initial burial depth is an adequate reason to waive the inspection requirement for the Atchafalaya River crossing. The inspection requirement is intended to detect any detrimental changes in the river bottom or river banks, even though, as you indicated, these conditions do not now present a problem. Section 195.412(b) does not specify a particular method of inspecting crossings. While the method Texaco uses must be capable of verifying that the crossing is sound, the initial depth of the crossing is a factor to consider in deciding what method to use and how rigorously to inspect the crossing.

New Guidance Material	The patrol program to observe surface conditions on and adjacent to the transmission line ROW for indications of leaks, construction activity, and other factors affecting safety and operation should include the following: . Indication of leaks may include dead vegetation, product, sheen or bubbles on the water, and/or odor. . Indication of construction activity may include clearing of trees or vegetation, heavy equipment including directional drilling on or near the ROW. . Dredging activities on a waterway in the ROW crossing vicinity, a building, fence or shed, on or near the ROW. . Presence of a coffer dam or bell hole on the ROW, or the presence of marking flags, ribbon, or paint on or near the ROW. . Areas of continual earth moving activities (ie. gravel/sand pits, quarries, land fills, etc.). . Pipe spans, bank or shoreline erosion at water crossings, removal of rip rap. . Land slides, flooding, exposed pipe. . Dumping or burying of trash on ROW. . Damaged or missing pipeline markers. . If aerial patrols are used, trees or vegetation obscuring the ROW. - An operator may select any or several of the different types of patrolling of their pipelines and facilities (walking, driving, air, or others). - The pipeline right-of-way conditions must be maintained as appropriate at a level that is appropriate for the type of patrol chosen. - As indicated in waiver/interpretation (05-17-02), in the absence of a recognized standard on bored (or drilled) crossings the current rule requiring inspections at intervals not exceeding 5 years applies to bored crossings. The initial depth of the crossing is a factor to consider in deciding what inspection methods to use and how rigorously to inspect the crossing. This interpretation appears to supersede the exemption to the 5 year inspection interval implied in the 04-12-96 waiver/interpretation. - The specific requirement for an underwater pipeline crossing inspection needs to be based on actual commercial water traffic in that area. - Aerial Patrols should take into consideration factors that affect the ability to adequately observe the pipeline ROW such as angle of sunlight, and shadows cast on the ROW that would conceal signs of leakage.
Examples of a Violation	- The maximum interval between patrols is being exceeded without an acceptable explanation. - The minimum number of patrols was not completed within the required time frame. - The underwater navigable river crossing was not inspected or the maximum time intervals between inspections was exceeded. - Construction, vegetation growth, washouts, encroachments, etc. not detected and reported during scheduled patrol. - For aerial patrols, tree canopy and vegetation overgrowth not adequately trimmed,

	inhibiting the ability to evaluate surface conditions. - When the route of a surface patrol does not provide adequate observation of the ROW. - The patrol program fails to promptly communicate critical patrol intelligence to assure the safety and operation of the pipeline. - Inadequate documentation of patrol follow-up activities, including dates.
Evidence Guidance	- Copies of the operator=s patrolling procedures. - Copies of supporting documents showing the missing inspection or inspection interval that has been exceeded. - Photos showing the condition of the right-of-way at a specific location, with dates.
Other Special Notations	None Noted

§195.413	**Underwater inspection and reburial of pipelines in the Gulf of Mexico and its inlets**

Existing Code Language:	(a) Except for gathering lines of 42 in (114.3 mm) nominal outside diameter or smaller, each operator shall prepare and follow a procedure to identify its pipelines in the Gulf of Mexico and its inlets in water less than 15 feet (4.6 meters) deep as measured from mean low water that are at risk of being an exposed underwater pipeline or a hazard to navigation. The procedures must be in affect August 10, 2005. (b) Each operator shall conduct appropriate periodic underwater inspections of its pipelines in the Gulf of Mexico and its inlets in water less than 15 feet (4.6 meters) deep as measured from mean low water based on the identified risk. (c) If an operator discovers that its pipeline is an exposed underwater pipeline or poses a hazard to navigation, the operator shall - (1) Promptly, but not later than 24 hours after discovery, notify the National Response Center, telephone: 1-800-424-8802 of the location, and, if available, the geographic coordinates of that pipeline; (2) Promptly, but not later than 7 days after discovery, mark the location of the pipeline in accordance with 33 CFR Part 64 at the ends of the pipeline segment and at intervals of not over 500 yards (457 meters) long, except that a pipeline segment less than 200 yards (183 meters) long need only be marked at the center; and (3) Within 6 months after discovery, or not later than November 1 of the year that the discovery is made, place the pipeline so that the top of the pipe is 36 inches (914 millimeters) below the underwater natural bottom (as determined by recognized and generally accepted practices) for normal excavation or 18 inches (457 millimeters) for rock excavation (i) An operator may employ engineered alternatives to burial that meet or exceed the level of protection provided by burial. (ii) If an operator cannot obtain required state or Federal permits in time to comply with this section, it must notify OPS; specify whether the required permit is State or Federal; and justify the delay.
Origin of Code	Amendment 195-47, 12-05-91
Last FR Amendment	195-82, 08-10-04
Interpretation Summary	None provided.

§195.413	**Underwater inspection and reburial of pipelines in the Gulf of Mexico and its inlets**

Other Ref. Material & Source	Final Rule Preamble: Fisheries Institute suggested the following inlet waters list based on known fishing areas (not an exhaustive listing): 1. Fresh Water Bayou/Inter- coastal Waterway to Calcasieu River, Cameron, La. 2. Calcasieu Pass, Cameron, Louisiana. 3. Intercoastal Waterway to Morgan City, Louisiana. 4. South West Pass across Vermillion Bay, Intercoastal City, Louisiana. 5. Fresh Water Bayou, Intercoastal City, Louisiana. 6. Houma Navigation Channel/Intercoastal Waterway to Bayou Chene, Morgan City, La. 7. Houma Navigation Channel through Grand Calliou Bayou/Calliou Lake, DuLac, La. 8. Houma Navigation Canal through Cat Island Pass, DuLac, Louisiana. 9. East Pascagoula River, Moss Point, Mississippi.
Other Ref. Material & Source	33 CFR Part 64 Title 33--Navigation and Navigable Waters CHAPTER I--COAST GUARD, DEPARTMENT OF TRANSPORTATION PART 64--MARKING OF STRUCTURES, SUNKEN VESSELS AND OTHER OBSTRUCTIONS
New Guidance Material	- The required procedure (§195.413(a)) to identify pipelines in the Gulf of Mexico and its inlets in waters less than 15 feet deep mean low water is an on going periodic requirement to review and update. - The NRC reporting requirements and subsequent remediation for the discovery of a GOM/inlet offshore pipeline condition at any time after the required survey in waters less than 15 feet deep that poses a hazard to navigation is a continuing requirement. - Notification to the NRC is required, even though the condition does not meet the NRC leak reporting criteria. - Periodic inspection of underwater pipelines should be based upon the operator's procedures. Underwater pipelines should be inspected based upon operator procedures unless the operator can show compelling evidence of why an inspection of the pipeline is not required. An example would be a horizontal drilled river/bay crossing that has the pipe with an original cover of 20 feet in a water crossing area that has low water flow velocities and minimum bank and bottom scouring.
Examples of a Violation	- The operator has not prepared a listing of all pipelines requiring underwater inspection and a procedure for determining when these inspections shall be conducted. The procedures must be in effect August 10, 2005. - The operator does not perform its operational/engineering review of pipelines requiring underwater inspection based upon the operator's procedures. Underwater pipelines shall be periodically inspected based upon the operator's procedure measures. - An operator after discovering that a pipeline it operates is exposed on the seabed or constitutes a hazard to navigation, as result of an inspection under paragraph (a and b) of this section, or upon notification by any person, the operator has not complied with any of the following -

§195.413	**Underwater inspection and reburial of pipelines in the Gulf of Mexico and its inlets**

	(1) Promptly, but not later than 24 hours after discovery, notify the National Response Center, telephone: 1-800-424-8802, of the location and, if available, the geographic coordinates of that pipeline; (2) Promptly, but not later than 7 days after discovery, mark the location of the pipeline in accordance with 33 CFR Part 64 at the ends of the pipeline segment and at intervals of not over 500 yards (457 meters) long, except that a pipeline segment less than 200 yards (183 meters) long need only be marked at the center; and (3) Within 6 months after discovery, or not later than November 1 of the following year if the 6 month period is later than November 1 of the year the discovery is made, bury the pipeline so that the top of the pipe is 36 inches (914 millimeters) below the underwater natural bottom (as determined by recognized and generally accepted practices) for normal excavation or 18 inches (457 millimeters) for rock excavation. An operator may employ engineered alternatives to burial that meet or exceed the level of protection provided by burial.
Evidence Guidance	- No operator procedures for performing operational/engineering analysis of the appropriate underwater pipelines. - No initial identification or ongoing updates of underwater pipelines that should be evaluated and inspected based upon this code requirement. - No documentation or records available to support that the initial underwater survey was required (all offshore pipelines in water exceeding 15 feet in depth), or that a required periodic survey was conducted. - No NRC report on file or a NRC report indicating that they were *not promptly* notified within 24 hours of discovery of an exposed underwater pipeline or that it poses a hazard to navigation. - The OPS 2 hour minimum guideline for *promptly* reporting a reportable leak to the NRC cannot be cited; the rule specifically defines prompt notification to be any time less than 24 hours. - The discovered offshore pipeline not meeting the minimum cover requirement §195.413(c)(3), was not marked (buoys) in accordance with §195.413(c)(2) requirements, and/or at the ends and within the required minimum distance intervals. - No documentation or records available to support that reburial of the pipeline was performed as required §195.413(c)(3) or that the operator has not obtained a waiver from OPS.
Other Special Notations	None noted

§195.420	Valve Maintenance

Existing Code Language:	(a) Each operator shall maintain each valve that is necessary for the safe operation of its pipeline systems in good working order at all times (b) Each operator shall, at intervals not exceeding 72 months, but at least twice each calendar year, inspect each mainline valve to determine that it is functioning properly. (c) Each operator shall provide protection for each valve from unauthorized operation and from vandalism
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-24, 11-22-82 This amendment restates the time intervals
Interpretation Summary	None noted
Other Ref. Material & Source	None noted
New Guidance Material	- The operator should establish, and periodically review, a master list of critical valves. - The critical valve list and the process to identify related valves should be reviewed for requirements. - Operator must inspect and partially operate all critical valves within the required time intervals. - Operator should use specific valve manufacturer's recommendations to develop an appropriate maintenance program. - Valves must have an indicator, to clearly show the valve position. - Maintenance discrepancies identified during valve inspections must be addressed and remedial actions documented.
Examples of a Violation	- Operator did not maintain each critical valve that is necessary for the safe operation of its pipeline systems in good working order at all times. - Operator exceeded the valve inspection interval. - Operator did not provide protection for each critical valve from unauthorized operation and vandalism.
Evidence Guidance	- O&M Manual. - Operator=s personnel statements. - Maintenance records. - Manufacturer=s maintenance recommendations. - Photos of valves in regard to maintenance and position indicator.
Other Special Notations	None noted

§195.422	**Pipeline Repairs**

Existing Code Language:	(a) Each operator shall, in repairing its pipeline systems, insure that the repairs are made in a safe manner and are made so as to prevent damage to persons or property. (b) No operator may use any pipe, valve, or fitting, for replacement in repairing pipeline facilities, unless it is designed and constructed as required by this part.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-22, 07-27-81
Interpretation Summary	None noted
Other Ref. Material & Source	None noted
New Guidance Material	- If the pipeline is to be repaired without taking it out of service, the operating pressure during the repair must be monitored to insure a safe pressure during the repair process. - Determination of the safe operating pressure is left up to the operator, through the application of their pre-established guidance material. - UT examination of the repair area should be performed immediately prior to the intended repair work to assure safe working conditions. - Appropriate NDT methods must be used after the repair to evaluate the integrity of the repair. - Alternatives to composite pipe wrap type repair should be considered on above-grade piping where there is a possibility of fire hazards. - Direct deposit welding requires a specific qualified welding procedure and welder qualification. - Precautionary safety measures may include: . Lower pressure for pipe assessment and welding . Take line out of service for major repair or cutout . Purge line of hazardous product for major repair or cutout . Appropriate pipe support . Ditch/bell hole stabilization or adequate shoring . Prevention of over pressuring of blind flanges/skillets . Application of tag-out and lockout . Implementing isolation via double block and bleed . Appropriate pressure containment considerations . Hot work restrictions . Hazardous gas, fumes or vapor testing and adequate ventilation . Provisions for fire fighting equipment and protective clothing

Examples of a Violation	- Operator failed to insure that the repairs are made in a safe manner and to prevent damage to persons or property. - An accident occurs as a result of the repair process. - Operator repaired the pipeline with pipe segment or component not designed or constructed as required by other paragraphs of Part 195.
Evidence Guidance	- O&M procedures. - Documented statements of the Operator. - AFirst discovery@ records/reports. - Maintenance records/reports. - Photos of repair location site and pipe. - Accident reports.
Other Special Notations	None

§195.424	**Pipeline Movement**

Existing Code Language:	(a) No operator may move any line pipe, unless the pressure in the line section involved is reduced to not more than 50 percent of the maximum operating pressure. (b) No operator may move any pipeline containing highly volatile liquids where materials in the line section involved are joined by welding unless- (1) Movement when the pipeline does not contain highly volatile liquids is impractical; (2) The procedures of the operator under ' 195.402 contain precautions to protect the public against the hazard in moving pipelines containing highly volatile liquids, including the use of warnings, where necessary, to evacuate the area close to the pipeline; and (3) The pressure in that line section is reduced to the lower of the following: (i) Fifty percent or less of the maximum operating pressure; or (ii) The lowest practical level that will maintain the highly volatile liquid in a liquid state with continuous flow, but not less than 50 psig (345 kPa gage) above the vapor pressure of the commodity. (c) No operator may move any pipeline containing highly volatile liquids where materials in the line section involved are not joined by welding unless- (1) The operator complies with paragraphs (b)(1) and (2) of this section; and (2) That line section is isolated to prevent the flow of highly volatile liquid
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-63, 07-13-98
Interpretation Summary	Date: 02-04-94 ANo operator may move any line pipe, unless the pressure in the line section involved is reduced to not more than 50 percent of the maximum operating pressure." The plain meaning and history of this rule would not support an interpretation that small movements are excluded from the rule. However, §195.424(a) does not apply unless an operator moves pipe as a necessary step in a maintenance activity. Thus, the rule applies, for example, when pipe is lowered to accommodate a road crossing, and when displaced pipe is moved back into its original position. But the rule does not apply to movement that results from operating pressure or temperature fluctuations, because such movement is not part of a maintenance activity. Also, the rule does not apply to movement that is incidental to pipeline repair, such as movement that occurs when temporary pipe support is added or removed, or when pipe strain is relieved by excavation. Movements such as these are not a necessary part of the repair procedure.
Other Ref. Material & Source	API-RP 1117, Movement of In-Service Pipelines (formerly lowering in-service pipelines)

Other Ref. Material & Source	Alert Notice ALN-91-03 Conductingm analyses before moving pipelines, whether or not the pipelines are pressurized at the time of movement.
Other Ref. Material & Source	Battelle Report Guidelines for Lowering Pipelines While in Service - July 1990.
Other Ref. Material & Source	Pipeline Accident Report PB91-916501, NTSB/PAR-91/01 - A Liquid Propane Pipeline Rupture and Fire, Texas Eastern Products pipeline Company, North Blenheim, NY, March 13, 1990.
New Guidance Material	- The majority of pipeline operators have their engineering group develop a site specific plan for lowering any pipeline segment in their system. - This plan should include at a minimum an analysis of the following factors prior to considering the lowering of an in service pipeline: the required deflection, the diameter, wall thickness, grade of the steel, characteristics of the pipeline, the terrain, the soil, safety, the stress while moving and after lowering, and the toughness of the of the steel. The plan should include sufficient details such as the calculations concerning the length of pipe that can span (unsupported) an excavation prior to lowering the pipe. - There should be information regarding the maximum vertical movement (should be in steps) allowed at each stage of the lowering process. - Detailed plans should include notification and possible evacuation of nearby residents if applicable, evacuating the medium in the pipe, excavation of the pipeline and checking for coating damage during the lowering process. - A heavy emphasis must be placed on protecting the public and the operator=s employees while accomplishing this hazardous task.
Examples of a Violation	- Operating pressure was not reduced to less than 50% of MOP prior to lowering a pipe segment. - There was no documentation to indicate that it was impracticable to evacuate the HVL from a pipeline segment prior to lowering the segment.
Evidence Guidance	- Copy of the site specific lowering plan for the project and other pertinent information concerning the line lowering project. - Photos of the site before, during and after the project. - Copy of the associated procedures.
Other Special Notations	None noted

§195.426	Scraper and Sphere Facilities

Existing Code Language:	No operator may use a launcher or receiver that is not equipped with a relief device capable of safely relieving pressure in the barrel before insertion or removal of scrapers or spheres. The operator must use a suitable device to indicate that pressure has been relieved in the barrel or must provide a means to prevent insertion or removal of scrapers or spheres if pressure has not been relieved in the barrel.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-22, 07-29-82
Interpretation Summary	Date: 1971 The "lock and bleed" device on Yale closures and the "pressure warning device" on Tube Turn closures satisfy the requirement to either prevent the closure from being removed prior to release of the pressure on the barrel or to indicate that pressure still remains on the barrel.
Other Ref. Material & Source	None noted
New Guidance Material	- Closure devices similar to the Yale or Tube Turn closure doors, that indicate to the operator that pressure remains on the barrel prior to opening the closure, such as "lock and bleed" or "pressure warning@ devices are adequate devices. - A valved fitting capable of accepting a pressure gauge is adequate for determining that pressure has been relieved, even if the gauge is attached only during trap operations. -Drain lines that can clearly indicate there is no pressure on the scraper facility is adequate for determining that pressure has been relieved.
Examples of a Violation	- Operator uses a launcher or receiver that is not equipped with a prescribed relief device, such as a drain valve. - Operator does not use a suitable, functional pressure indicating device, and does not provide a means to prevent insertion or removal of scrapers or spheres if pressure has not been relieved in the barrel.
Evidence Guidance	- Accident investigation. - Documented statements of the operator. - Copy of applicable procedures. - Photos.
Other Special Notations	None noted

§195.428	**Over-pressure Safety Devices**

Existing Code Language:	(a) Except as provided in paragraph (b) of this section, each operator shall, at intervals not exceeding 15 months, but at least once each calendar year, or in the case of pipelines used to carry highly volatile liquids, at intervals not to exceed 72 months, but at least twice each calendar year, inspect and test each pressure limiting device, relief valve, pressure regulator, or other item of pressure control equipment to determine that it is functioning properly, is in good mechanical condition, and is adequate from the standpoint of capacity and reliability of operation for the service in which it is used. (b) In the case of relief valves on pressure breakout tanks containing highly volatile liquids, each operator shall test each valve at intervals not exceeding 5 years. (c) Aboveground breakout tanks that are constructed or significantly altered according to API Standard 2510 after October 2, 2000, must have an overfill protection system installed according to section 5.1.2 of API Standard 2510. Other aboveground breakout tanks with 600 gallons (2271 liters) or more of storage capacity that are constructed or significantly altered after October 2, 2000, must have an overfill protection system installed according to API Recommended Practice 2350. However, operators need not comply with any part of API Recommended Practice 2350 for a particular breakout tank if the operator notes in the manual required by '195.402 why compliance with that part is not necessary for safety of the tank. (d) After October 2, 2000, the requirements of paragraphs (a) and (b) of this section for inspection and testing of pressure control equipment apply to the inspection and testing of overfill protection systems.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-66, 04-02-99
Interpretation Summary	Not applicable
Other Ref. Material & Source	API-2510, Design and Construction of LPG Installations API-RP-2350, Overfill Protection for Storage Tanks in Petroleum Facilities
Other Ref. Material & Source	From Amendment 195-66: An operator would be expected to follow the provisions of an API Recommended Practice, unless the operator notes in its procedural manual the reasons why compliance with all or certain provisions are not necessary for the safety of a particular break-out tank(s).

New Guidance Material	- Operating pressure control set points may not exceed MOP. - Redundant control or pressure safety equipment may be set as high as 110% of MOP, or so that 110% of MOP is not exceeded. - LPG tanks (API-2510, Design and Construction of LPG Installations) must have overfill protection equipment, if newly constructed or significantly altered after 10-02-00. - Other breakout tanks, if newly constructed or altered after 10-02-00, must have overfill protection equipment as per API-RP-2350 (Overfill Protection for Storage Tanks in Petroleum Facilities) unless the operator provides adequate justification that it is not necessary. One form of justification would be an equivalent method of overfill protection. - Discharge pressure control valves are included in this requirement and must be inspected to ensure proper set point, span, and zero of the control device. - Applicable electronic control devices, such as transducers, station logic controller and communications linkage between components must also be inspected and tested. - Maintenance/calibration records should include as-found and as-left settings. - Thermal relief valves are included in this requirement and must be inspected. - Factors affecting the calculation of capacity can be derived from manufacturer data and/or direct measurement during fullflow conditions. - Calculated capacity must include the effect of piping size and length associated with the relief device. - If calculations or determination otherwise indicates that capacity is not adequate, adjustments should be made promptly. - Set points and capabilities of back-up or secondary over-pressure safety devices do not have to meet the code requirements, but the devices must be tested for functionality on an annual basis, not to exceed 15 months.
Examples of a Violation	- Maintenance records do not demonstrate an adequate inspection or the inspection interval requirements were not met. - Pressure control or relief device not listed on operator=s maintenance records. - Device setting is within allowable pressure, but connection to control equipment is not tested or does not function properly. - Applicable tank overfill devices not inspected within allowable time intervals - Applicable tank overfill device set at a level that exceeds the tank=s design settings - Pressure control or relief valve target set points are in conflict with MOP limitations.
Evidence Guidance	- Equipment maintenance records. - Segment MOP listings. - Accident reports. - Station discharge pressure records. - Tank strapping tables.

Other Special Notations	None noted

§195.430	**Firefighting Equipment**

Existing Code Language:	Each operator shall maintain adequate firefighting equipment at each pump station and breakout tank area. The equipment must be-- (a) In proper operating condition at all times; (b) Plainly marked so that its identity as firefighting equipment is clear; and (c) Located so that it is easily accessible during a fire.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-22, 07-27-81
Interpretation Summary	None noted
Other Ref. Material & Source	NFPA-30, Flammable and Combustible Liquids Code OSHA-1910, Testing of Fire Extinguishers
New Guidance Material	- Operator=s O&M may address extinguisher inspections under OSHA standards. - Each extinguisher should have an individual identification mark or durable tag.
Examples of a Violation	- Firefighting equipment is not maintained at each pump station and breakout tank area. - Operator has not established an adequate inspection program to assure: . the equipment is in proper operating condition at all times . plainly marked . located so that it is easily accessible during a fire.
Evidence Guidance	- O&M procedures. - Documented statements from the Operator. - Maintenance records/reports. - Visual observation. - Photographs.
Other Special Notations	None noted

Existing Code Language:	(a) Except for breakout tanks inspected under paragraphs (b) and (c) of this section, each operator shall, at intervals not exceeding 15 months, but at least once each calendar year, inspect each in-service breakout tank. (b) Each operator shall inspect the physical integrity of in-service atmospheric and low-pressure steel aboveground breakout tanks according to section 4 of API Standard 653. However, if structural conditions prevent access to the tank bottom, the bottom integrity may be assessed according to a plan included in the operations and maintenance manual under ' 195.402(c)(3). (c) Each operator shall inspect the physical integrity of in-service steel aboveground breakout tanks built to API Standard 2510 according to section 6 of API 510. (d) The intervals of inspection specified by documents referenced in paragraphs (b) and (c) of this section begin on May 3, 1999, or on the operator's last recorded date of the inspection, whichever is earlier.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-66, 04-02-99
Interpretation Summary	None noted
Other Ref. Material & Source	Amendment 195-66, 04-02-99 Excerpts If the referenced part of a standard, specification, or code allows or calls for the use of engineering judgment, in determining compliance with the referenced part, we will not object to the use of judgment. We will, however, compare the judgment used against what is reasonable under the circumstances. If an operator wishes to achieve a particular objective in a way that differs from the referenced part of a standard, specification, or code or falls outside the range of allowable judgment, it can request permission to do so by applying to us or the appropriate state agency, as applicable, for a waiver of the referenced part (see 49 U.S.C. 60118). So final Section195.432(a) includes an exception for tanks that are subject to the other inspection requirements of Section195.432. We did not eliminate the existing annual inspection requirement as API suggested, because it provides for maintenance inspection of breakout tanks that are not subject to the new integrity inspection requirements, such as anhydrous ammonia tanks and non-steel tanks. Some tank bottoms cannot be inspected under API Standard 653 because the steel bottom has been repaired by a concrete cover. The final rule allows an operator to use an assessment technique included in its operations and maintenance manual for tank bottoms to which access is prevented by structural conditions. The references to consensus standards do not include parts of those standards that are not directly related to carrying out inspections. For example, parts of section 4 of API Standard 653 concerning records, reports, and inspector qualifications (Sections

	4.8-4.10) are not incorporated by reference.
Other Ref. Material & Source	API-653, Tank Inspection, Repair, Alteration, and Reconstruction API-2510, Design and Construction of LPG Installations API-12F, Specification for Shop Welded Tanks for Storage of Production Liquids API-12C (forerunner to API 650) API-650, Welded Steel Tanks for Oil Storage API-620, Design and Construction of Large, Welded, Low-Pressure Storage Tanks API-510, Pressure Vessel Inspection Code: Maintenance Inspection, Rating, Repair, and Alteration
Other Ref. Material & Source	Date: 02-04-00 Letter Agreement between OPS and EPA for jurisdictional boundaries
Other Ref. Material & Source	Breakout Tank Inspection Form, 07-21-00: §195.432(b) guidance: - Monthly (routine) visual inspection procedures for the following: Tank exterior surface checking for: Leaks, Shell distortions, Signs of settlement, and Corrosion. - The condition of the: Foundation, Paint coating, Insulation systems, and Appurtenances. - Provision for a visual in-service external inspection by an API Std 653 Authorized Inspector at least once during the following intervals, whichever is less: . At least every 5 years or . At the quarter of corrosion rate life of the shell (if known). - Provision of the ultrasonic shell thickness inspection procedures. - Provision for an out-of-service internal inspection, with an API Std 653 Authorized. - Inspector conducting visual inspection and reviewing NDE results, with the intervals determined by the following: . If corrosion rate is known based on actual measurements or similar service condition, the interval set according to the bottom plate minimum thickness at the next inspection. The interval shall not exceed 20 years. . If corrosion rate is NOT know and similar service condition not available, within 10 years (starting from the time specified in '195.432(d) below) to establish corrosion rate. §195.432(d) guidance: The intervals of inspection referenced in paragraphs (b) and (c) begin on May 3, 1999, or on the operator's last recorded date of the inspection, whichever is earlier. For API 12F, 12C, 650, and 620 tanks, the Aclock@ starts at the earliest of: 1) May 3, 1999 2) Last record date of the inspection (annual), or 3) Whenever API Std 653 program was established for the particular tank.
New Guidance	- To determine if a tank is a breakout tank and subject to the requirements of Part

Material	195, refer to §195.1 and §195.2 (and related interpretations and amendments). - Per §195.1(c), §195.432(b) & (c) do not apply to anhydrous ammonia breakout tanks. - Operator=s written O&M procedures should cover, in sufficient detail, the requirements of §195.432 (ref. §195.402(a)). - If the operator uses engineering judgment (if allowed or called for by Part 195 reference(s) to part of a standard, such as API Standard 653; such judgment must be reasonable under the circumstances. - As applicable to tanks covered under §195.432(b), some tank bottoms cannot be inspected under API Standard 653 because the steel bottom has been repaired by a concrete cover. In this case, and possibly others, §195.432(b) allows an operator to use an assessment technique included in its operations and maintenance manual for the tank bottom. - §195.432 code reference to API standards (such as section 4 of API Standard 653) apply only to physical integrity inspections; therefore, parts of the referenced sections concerning records, reports, inspector qualifications, and cathodic protection surveys are not covered. - Generally, as applicable to tank physical integrity inspection performance per Section 4 of API Standard 653, the following would apply. The list is not comprehensive, and exceptions and/or alternative requirements may apply. The code-referenced edition of API 653 (or of), API Standard 2510 along with operator=s procedures, must be used in helping determine compliance with §195.432(b), (c), or (d). - Routine (not to exceed one month) in-service visual inspections of tank exterior surface by knowledgeable personnel, checking for: . Leaks . Shell distortions . Signs of settlement . Corrosion . Paint coating . Foundation . Insulation . Appurtenance/s. - Visual external inspection by an API Std 653 Authorized Inspector (AI) at least once during the following intervals, whichever is less: . 5 years . At the quarter of corrosion rate life of the shell (if known). - Ultrasonic shell thickness external inspection. When used, maximum inspection frequency: . 5 years (if corrosion rate is unknown) . A time determined by the shell corrosion rate and the remaining corrosion allowance, not to exceed 20 years. - Internal out-of-service inspection (primarily required to inspect and evaluate the tank bottom for corrosion, leakage, settlement) . API Std 653 Authorized Inspector (AI) conducts visual inspection and reviews NDE results

	. Maximum inspection frequency: - A time determined by the tank bottom corrosion rate (known or based on similar service condition) and the minimum required tank bottom thickness, not to exceed 20 years. - 10 years, if corrosion rate is unknown and similar service experience is unavailable. - For breakout tanks built per API Specification 12F, API Standard 12C (forerunner to API 650), API Standard 650 and API Standard 620. The intervals of inspection referenced in paragraphs §195.432(b) and (c) begin on the earliest of: 1) May 3, 1999 2) Last recorded date of inspection (annual) 3) Whenever the API Standard 653 program was established for the particular tank.
Examples of a Violation	- In service anhydrous ammonia or non-steel breakout tanks are not inspected within the prescribed time intervals of §195.432(a). - Applicable tanks are not inspected according to section 4 of API Standard 653 or according to section 6 of API 510. - If applicable, the tank bottom integrity is not assessed according to operator=s procedures. - Required tank inspection time intervals are exceeded - Engineering judgment, if used, is not reasonable.
Evidence Guidance	- Referenced edition of API-653 or API-510. - Operator=s procedures. - Engineering drawings/schematics. - Tank nameplates. - Tank inspection records. - Photographs.
Other Special Notations	None noted

§195.434	Signs

Existing Code Language:	Each operator must maintain signs visible to the public around each pumping station and breakout tank area. Each sign must contain the name of the operator and a telephone number (including area code) where the operator can be reached at all times.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-78, 09-11-03
Interpretation Summary	None noted
Other Ref. Material & Source	None noted
New Guidance Material	- Signs must be posted on each side of a pump station and/or breakout tank facility. - Verify the accuracy of the operator=s name on the sign. - Verify that the emergency phone number posted on the signs is correct. - Stickers applied to signs to update certain information are satisfactory, as long as they are permanently applied and remain legible. - Pipeline markers meeting the requirements of §195.410, may be used to satisfy this requirement, provided they are located within/on the facility fence or immediately adjacent to the fence.
Examples of a Violation	- Operator=s pumping station or breakout tank area is not posted with signs as required. - The information on the operator=s signs do not fulfill the requirements. - Posted signs have become illegible as a result of corrosion or vandalism.
Evidence Guidance	- O&M procedures. - Photographs.
Other Special Notations	None noted

§195.436	Security of Facilities

Existing Code Language:	Each operator shall provide protection for each pumping station and breakout tank area and other exposed facility (such as scraper traps) from vandalism and unauthorized entry.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-22, 07-27-81
Interpretation Summary	Date: 08-13-80 Although fencing is not necessarily required, one of the ways to comply with this regulation would be to construct a fence adequate to protect the facility from vandalism and unauthorized entry. A barbed wire fence is generally used to control livestock, but would not deter entry by unauthorized persons. Likewise, hourly inspections will not deter unauthorized entry or prevent vandalism and, therefore, will not meet the requirements
Other Ref. Material & Source	None noted
New Guidance Material	- The side/s of an enclosure, constructed solely of barbed wire, is not considered adequate to prevent unauthorized entry. - The level of security for the facility may need to be enhanced, based on the threat posed by the surrounding area. - Hourly inspections in and of themselves are not considered adequate security. - Entrance to the facility and appropriate structures in the facility should be locked. - Simply locking items, such as valves or catchers, at a facility does not address the Afrom...unauthorized entry@ portion of the code. - By example, if a facility has a secure fence with a locked gate (meeting this requirement), the enclosed pig launcher is not required to be locked. - Isolated remote valves, are not considered Aother exposed facilities@ in relationship to this requirement; thereby not requiring perimeter security.
Examples of a Violation	- The operator is not in compliance with the requirements in the O&M Manual. - The protection provided does not prevent unauthorized entry or vandalism.
Evidence Guidance	- O&M procedures. - Photographs.
Other Special Notations	None noted.

§195.438	**Smoking or Open Flames**

Existing Code Language:	Each operator shall prohibit smoking and open flames in each pump station area and each breakout tank area where there is a possibility of the leakage of a flammable hazardous liquid or of the presence of flammable vapors.
Origin of Code	Original Code Document, 10-04-69
Last FR Amendment	195-22, 07-27-81
Interpretation Summary	None noted
Other Ref. Material & Source	None noted
New Guidance Material	- Applicable procedures should be reviewed during an inspection. - No smoking and no open flame signs must be posted where appropriate. - Observe compliance with posted signs. - Operator should take precautions to minimize the potential of accumulating flammable vapors or liquids.
Examples of a Violation	- Appropriate signs are not posted - Signs are not posted at appropriate locations
Evidence Guidance	- Operator=s procedures - Photographs
Other Special Notations	None noted

§195.440	Public Awareness

Existing Code Language:	(a) Each pipeline operator must develop and implement a written continuing public education program that follows the guidance provided in the American Petroleum Institute's (API) Recommended Practice (RP) 1162 (IBR, see § 195.3). (b) The operator's program must follow the general program recommendations of API RP 1162 and assess the unique attributes and characteristics of the operator's pipeline and facilities. (c) The operator must follow the general program recommendations, including baseline and supplemental requirements of API RP 1162, unless the operator provides justification in its program or procedural manual as to why compliance with all or certain provisions of the recommended practice is not practicable and not necessary for safety. (d) The operator's program must specifically include provisions to educate the public, appropriate government organizations, and persons engaged in excavation related activities on: (1) Use of a one-call notification system prior to excavation and other damage prevention activities; (2) Possible hazards associated with unintended releases from a hazardous liquid or carbon dioxide pipeline facility; (3) Physical indications that such a release may have occurred; (4) Steps that should be taken for public safety in the event of a hazardous liquid or carbon dioxide pipeline release; and (5) Procedures to report such an event. (e) The program must include activities to advise affected municipalities, school districts, businesses, and residents of pipeline facility locations. (f) The program and the media used must be as comprehensive as necessary to reach all areas in which the operator transports hazardous liquid or carbon dioxide. (g) The program must be conducted in English and in other languages commonly understood by a significant number and concentration of the non-English speaking population in the operator's area. (h) Operators in existence on June 20, 2005, must have completed their written programs no later than June 20, 2006. Upon request, operators must submit their completed programs to PHMSA or, in the case of an intrastate pipeline facility operator, the appropriate State agency. (i) The operator's program documentation and evaluation results must be available for periodic review by appropriate regulatory agencies.
Origin of Code	195-15, 07-16-79
Last FR Amendment	195-84, 05-19-2005
Other Ref. Material	Dig Safely, National Campaign

& Source	
Other Ref. Material & Source	Pipeline Safety Act of 2002 Not later than 12 months after the date of enactment of the Pipeline Safety Act of 2002 (December 17, 2002), each owner or operator of a gas or hazardous liquid pipeline facility shall review its existing public education program for effectiveness and modify the program as necessary. The completed program shall include activities to advise affected municipalities, school districts, businesses, and residents of pipeline facility locations. The completed program shall be submitted to the Secretary or, in the case of an intrastate pipeline facility operator, the appropriate State agency, and shall be periodically reviewed by the Secretary or, in the case of an intrastate pipeline facility operator, the appropriate State agency.
Other Ref. Material & Source	API 1162, Public Awareness Programs for Pipeline Operators, currently referenced edition, see §195.3.
New Guidance Material	**Note to Inspectors: The review of operator's WRITTEN public awareness programs will be a function of A CLEARINGHOUSE ESTABLISHED BY PHMSA HQ in Washington DC. Inspectors should focus on determining if an operator's program was in effect on or before the dead lines listed above. Additionally Inspectors should review public awareness program implementation documentation to determine if the operator is following through on the provisions listed in their WRITTEN public awareness program.** By June, 20, 2006 the operator of a hazardous liquids and carbon dioxide pipeline must have a written program in English and in other languages commonly understood by a significant number and concentration of the non-English speaking population in the operator's area that follows the guidance given in API 1162. PUBLIC AWARENESS PROGRAM PROVISIONS: **Note: the following is a general compilation of the requirement of both API 1162 and §195.440. For further clarification and descriptions API 1162 should be referenced.** STAKEHOLDER AUDIENCE: A written public awareness program must include provisions to educate: (1) The Affected Public (all residents, municipalities, school districts, churches, businesses and other places of congregation near either the transmission pipeline ROW or near pipeline facilities), periodically (API 1162 advises every 2 years), through means of printed materials and if appropriate personal contacts, telephone calls, group meetings, and/or open houses. (2) Emergency Officials (local, state, or officials, agencies and organizations

with emergency response or public safety jurisdiction along the pipeline route including pipeline facilities), periodically (API 1162 advises annually), through means of personal contacts (preferred), targeted distribution of printed materials, group meetings, or telephone calls with targeted distribution of print materials and if appropriate emergency table top deployment exercises, facility tours, and/or open houses.

(3) Public Officials (local, city, county, state, or federal officials and their staffs having land use and street/road jurisdiction along the pipeline route including pipeline facilities), periodically (API 1162 advises every 3 years), through means of targeted distribution of print materials and if appropriate personal contacts, telephone calls, and/or videos and CDs.

(4) Excavators/Contractors (companies and local/state/federal government who are involved in any form of excavation activities), periodically (API 1162 advises annually), through means of targeted distribution of print materials and one call outreach and if appropriate personal contacts and/or group meetings.

(5) Land Developers (companies and private entities involved in land development and planning), at frequencies that are appropriate, through means of targeted distribution of print materials, personal contact, group meetings, and/or telephone calls.

(6) Membership in the appropriate One-Call Center, at frequencies required by the applicable One Call Centers, requirements of the applicable One-Call Center and all maps as required by the appropriate One-Call Center. As pipeline routes change additional targeted distribution of print materials, personal contacts, and/or telephone calls should be made.

The written program must include methods and frequencies for delivering the following messages at the level of detail appropriate for each audience unless the operator provides justification as to why one or all messages would not be practicable and not necessary for safety.

BASELINE MESSAGES:

To the Affected Public, Emergency Officials, Public Officials, Excavators/Contractors, and Land Developers

(1) Pipeline and/or Facility Purpose and Reliability

(2) Potential Hazards and Prevention Measures

a. Specific information about release characteristics and potential hazards posed by the accidental release of the substance from the pipeline and/or pipeline facility.

b. Preventative measures undertaken by the operator in planning, design, operation, maintenance, inspection and testing of the pipeline. Should reinforce how the audience can play an important role in preventing third-party damaged and right of way encroachments.

(3) Leak Recognition and Response

a. Recognizing a Pipeline Leak by sight, sound, and or smell.

b. Response to a Pipeline Leak
    i. What to do and what not to do if a leak is suspected (including specific information on detection response if the pipeline contains product that, when released, could be immediately hazardous to health (e.g. high concentration of hydrogen sulfide).
    ii. How to report a leak.

(4) Pipeline Location Information
    a. Maps appropriate to the audience.
    b. Transmission pipeline markers, how to identify them, what information is on them and a statement that the markers merely indicate the pipeline ROW and not necessarily the exact pipeline location.
    c. How to get additional information and the availability of pipeline operators in the area through NPMS.

To the Affected Public, Public Officials, and Excavators/Contractors.

(1) Damage Prevention (the importance to report any suspected signs of damage consistent with the key "Dig Safely" messages developed by the Common Ground Alliance).
(2) Use of One Call Notification System (the appropriate One Call System phone number and a request to call the One Call System in their area before they begin any excavation activity. If the state or locality has established penalties for failure to use established One Call System, that fact may also be communicated, depending on the audience and situation).

To Emergency Officials and Local Public Officials.

(1) Emergency Preparedness Communications
    a. Operator considers public safety and environmental protection as top priorities in any pipeline emergency response.
    b. Emergency 24 hour contacts and phone numbers, ensuring that both the operator and emergency officials have current phone numbers and calling priorities.
    c. The operators Emergency Response Plan.
    d. Information on the unified command system, roles, operating procedures, and preparedness for various emergency scenarios through hands on drills and exercises.

To One-Call Centers.

(1) Membership in the appropriate One-Call Center.
(2) Requirements of the applicable One-Call Center.
(3) All maps as required by the appropriate One-Call Center.
(4) As pipeline routes change additional targeted distribution of print materials, personal contacts, and/or telephone calls should be made.

SUPPLEMENTAL MESSAGES:

Supplemental messages at appropriate frequencies as listed in API 1162 to:

(1) The Affected Public, information about the operator's Integrity Management Program, right-of-way encroachment prevention, any planned maintenance and or construction activity, special response notification and or evacuation measures if appropriate to the product or facility, and facility, i.e. tanks etc., propose.

(2) Emergency Officials, information about the operator's Integrity Management Program and any construction activity.

(3) Local Public Officials, information about HCA designations and summaries of integrity measures undertaken by the operator, ROW encroachment prevention, and maintenance and construction activity.

(4) Excavators, information about the pipeline purpose, prevention measures and reliability.

(5) Land Developers, information about the pipeline purpose and reliability, awareness of hazards and prevention measures undertaken, Damage Prevention Awareness, One-call requirements, leak recognition and response, ROW encroachment prevention, and the availability of lists of pipeline operators through NPMS.

(6) One-Call Centers the One-Call performance, accurate line location information, and one-call system improvements.

SPECIAL CONSIDERATIONS:

Operators should consider widening the public awareness program coverage area for:

- HVL pipelines in high population areas. The coverage area should be extended beyond the $1/8^{th}$ mile minimum distance on each side of the pipeline. The coverage area should be extended as appropriate based on a sound engineering analysis which should include as a minimum, topography, worst case spill volume, and any other applicable considerations.
- Large diameter, high pressure, high volume pipelines where a pipeline emergency would likely affect the public outside the specified minimum coverage area. The coverage area should be extended to a wider distance as deems prudent

PROGRAM EVALUATION:

The written program must have a plan to evaluate the implementation and effectiveness of their public awareness program.

DOCUMENTATION:

The operator must have documentation showing implementation and the evaluation of their public awareness program. Both the implementation and the evaluation must in compliance with their public awareness program.

§195.440	**Public Awareness**

Examples of a Violation	- An operator has not established, or followed its public awareness program to enable customers, the public, appropriate government organizations, and persons engaged in excavation related activities to recognize a pipeline emergency for the purpose of reporting it to the operator or the appropriate public officials. - A written public awareness program completed after June 20, 2006. - An operator has not met the time frames shown in their public awareness program. - The program and the media used do not reach all areas in the operator=s area. - The program is not conducted in other languages commonly understood by a significant number and concentration of the non-English speaking population in the operator's area. - Operator did not collect and retain documentation to demonstrate compliance.
Evidence Guidance	- Sign-in sheets for attendees of emergency agencies facility tours. - Lack of a written public awareness program. - Documented date of an operator’s initial public awareness program. - Documented conversations with operator. - Records and documentation of the frequency or specific media employed. - Statements and/or documents from the public, appropriate government organizations, and/or excavators which indicate they have not received the required information. - Local newspapers, radio/TV, and business communications demonstrating a significant use of non-English language in the area.
Other Special Notations	Consult the operator’s Integrity Management Program for notification distances.

§195.442	**Damage Prevention Program**

Existing Code Language:	(a) Except as provided in paragraph (d) of this section, each operator of a buried pipeline must carry out, in accordance with this section, a written program to prevent damage to that pipeline from excavation activities. For the purpose of this section, the term >>excavation activities== includes excavation, blasting, boring, tunneling, backfilling, the removal of above-ground structures by either explosive or mechanical means, and other earthmoving operations. (b) An operator may comply with any of the requirements of paragraph (c) of this section through participation in a public service program, such as a one-call system, but such participation does not relieve the operator of the responsibility for compliance with this section. However, an operator must perform the duties of paragraph (c)(3) of this section through participation in a one-call system, if that one-call system is a qualified one-call system. In areas that are covered by more than one qualified one-call system, an operator need only join one of the qualified one-call systems if there is a central telephone number for excavators to call for excavation activities, or if the one-call systems in those areas communicate with one another. An operator=s pipeline system must be covered by a qualified one-call system where there is one in place. For the purpose of this section, a one-call system is considered a >>qualified one-call sys-tem== if it meets the requirements of section (b)(1) or (b)(2) or this section. (1) The state has adopted a one-call damage prevention program under ' 198.37 of this chapter; or (2) The one-call system: (i) Is operated in accordance with ' 198.39 of this chapter; (ii) Provides a pipeline operator an opportunity similar to a voluntary participant to have a part in management responsibilities; and (iii) Assesses a participating pipeline operator a fee that is proportionate to the costs of the one-call system=s coverage of the operator=s pipeline. (c) The damage prevention program required by paragraph (a) of this section must, at a minimum: (1) Include the identity, on a current basis, of persons who normally engage in excavation activities in the area in which the pipeline is located. (2) Provides for notification of the public in the vicinity of the pipeline and actual notification of persons identified in paragraph (c)(1) of this section of the following as often as needed to make them aware of the damage prevention program: (i) The program=s existence and purpose; and (ii) How to learn the location of underground pipelines before excavation activities are begun. (3) Provide a means of receiving and recording notification of planned excavation activities. (4) If the operator has buried pipelines in the area of excavation activity, provide for actual notification of persons who give notice of their intent to excavate of the type of temporary marking to be provided and how to identify the markings. (5) Provide for temporary marking of buried pipelines in the area of excavation

	activity before, as far as practical, the activity begins. (6) Provide as follows for inspection of pipelines that an operator has reason to believe could be damaged by excavation activities: (i) The inspection must be done as frequently as necessary during and after the activities to verify the integrity of the pipeline; and (ii) In the case of blasting, any inspection must include leakage surveys. (d) A damage prevention program under this section is not required for the following pipelines: (1) Pipelines located offshore. (2) Pipelines to which access is physically controlled by the operator.
Origin of Code	195-54, 03-20-95
Last FR Amendment	195-60, 11-13-97
Interpretation Summary	Date: 05-30-95 OPS suggested various sources for persons who normally engage in excavation activities in the area in which the pipeline operates. The sources suggested were: A Offices where contractor licenses or excavation permits are obtained A Yellow pages and advertisements in regional newspapers A Regional contractor's associations or other entities with contractor registration lists A Vendors of excavation equipment A One-call systems covering the areas where the pipelines are located A Other sources suggested by gas operators with pipelines in the same areas.
Other Ref. Material & Source	Advisory Bulletin ADB-99-04, Directional Drilling and Other Trenchless Technology Operations Conducted In Proximity to Underground Pipeline Facilities
New Guidance Material	- An operator must have a written program to prevent damage to their pipeline by excavation activities. This may be a separate written program or made part of the operator=s written O&M plan as required by §195.402(a). The written procedures should state the purpose and objectives of the damage prevention program, and provide methods and procedures to achieve them. Applicable state and local requirements should also be noted. (§195.442(a)). - A one-call system or an information service provider may not be able to perform all the tasks required by the damage prevention program. However, an operator may still use these resources to assist in the compliance of this requirement. - The process used to receive and record notifications of planned excavation activities must assure that all notifications are received and recorded. - It is acceptable to use third parties to conduct meetings with excavators on behalf of the operator; however, the operator is ultimately responsible for compliance with this requirement. - Documentation must be kept concerning a good faith attempt to include who was

	invited and who attended to meet the requirements of code and topics discussed. - An operator is ultimately responsible to assure that all of the damage prevention requirements are being performed. - Notification of all excavators who normally operate within the vicinity of the operator=s pipeline may be difficult. It is important that the operator=s process assures that a reasonable effort has been made to identify all excavators. - Operator=s process should include provisions for monitoring ongoing construction and encroachment activities, and monitoring ongoing excavating, mining/quarry work, and landfill operations, etc.
Examples of a Violation	- A written program to prevent damage to a pipeline by excavation activities has not been established as required, omits specific requirements of §195.442(c), or has not been carried out in accordance with the program=s written procedures. §195.402(a) - The operator does not participate in a qualified one-call system (see §195.442(b)(1) or 2), for receiving and recording notification of planned excavation activities. §195.402(b) - The damage prevention program omits one or more of the required provisions under §195.442(c)(1) thru (6), or lacks sufficient detail for adequate compliance with one or more of those provisions. §195.402(c) - Through spot checking, the operator=s list of identified contractors does not include excavators listed in the current local yellow pages directory, or other excavator listings, who are indicated as working in the area of the pipeline. §195.402(c)(1) - The process by which mailing lists are developed including mailing frequency, or other documentation (meeting attendance records, etc.) demonstrate that a reasonable effort has not been put forth to assure actual notification of the identified excavators was carried out. The communication process (mailings, news media, meetings) either has not been implemented or fails to provide sufficient information about the existence and purpose of the operator=s damage prevention program to the public (right-of-way residents or landowners). §195.402(c)(2) - The process used to receive and record notification of planned excavation activities does not have a means to recover from equipment outages, so that no messages are lost. §195.402(c)(3). - The operator has not contacted an excavator who gave notice of their intent to excavate in the area of the pipeline. §195.402(c)(4) - The operator has not provided for temporary marking of buried pipelines in the area of excavation activity before, as far as practical, the activity begins. §195.402(c)(5) - The operator did not inspect their pipelines in which the operator has reason to believe could have been damaged by excavation activities. §195.402(c)(6)

§195.442	**Damage Prevention Program**

Evidence Guidance	- Statements from contractors, public, or other persons. - Records supporting non-compliance. - Omission of records to support compliance. - Photographs of improper marking, lack of required marking, excavation damage, etc. - Copy of Damage Prevention Program written plan or specific procedure. - Copy of brochure, letters, news media advertisements indicating communications failed to provide required information to the public. - By admission, records, or lack of records that the operator has not identified (on a current basis) persons who normally engage in excavation activities in the area in which the pipeline is located. - Documentation of meetings, invitation lists, and list of those that attended the meeting.
Other Special Notations	None noted

§195.444	CPM Leak Detection

Existing Code Language:	Each computational pipeline monitoring (CPM) leak detection system installed on a hazardous liquid pipeline transporting liquid in single phase (without gas in the liquid) must comply with API 1130 in operating, maintaining, testing, record keeping, and dispatcher training of the system.
Origin of Code	195-62, 07-06-98
Last FR Amendment	None
Interpretation Summary	None noted
Other Ref. Material & Source	API-1130, Computational Pipeline Monitoring Section 3.1 defines computational pipeline monitoring or CPM: an algorithmic monitoring tool that allows the Pipeline Controller to respond to a pipeline operating anomaly which may be indicative of a commodity release. API-1149, Pipeline Variable Uncertainties and Their Effect on Leak Detection API-1155, Evaluation Methodology for Software-based Leak Detection Systems March 28, 2002 internal memo defines a CPM system that is covered under §195.134 and §195.444: 1) If the output of a computer-based CPM-type system provides some information or alarm, such that company procedures require the Controller to take immediate action to change the hydraulic state of the pipeline, then that CPM will be inspected against §195.134 and §195.444. 2) If the output of a computer-based CPM-type system is connected to any field stations (perhaps through a SCADA system) to automatically change the hydraulic state of the pipeline, then that CPM will be inspected against §195.134 and §195.444. 3) If the output of a computer-based CPM-type system provides some information or alarm, such that company procedures require the Controller to undertake further analysis or some other more in-depth review before hydraulic action is undertaken, then that CPM will NOT be inspected against §195.134 and §195.444.

New Guidance Material	- Simple line balance or flow-rate alarms are not necessarily CPM systems. - Associated instruments should be calibrated at least as frequently as manufacturer=s recommendations. - A test and calibration plan should be in place. - All tests should be documented, including the results of any remedial work that ensues. - Care should be applied to coordinate maintenance and testing with operations, so as not to create un-necessary upset conditions. - (API-1130, 6.2.3) states a 5-year test interval to demonstrate continued effectiveness; but many operators perform annual testing. - Thorough testing will include an actual commodity withdrawal. - Record keeping (API-1130, 6.2.4) of initial or retesting should include date, time, duration of test, alarms generated, amount of commodity withdrawn compared to that detected, and control personnel reactions. Records should be sufficiently archived to demonstrate that training, testing and maintenance intervals are being accommodated. - System documentation (API-1130, 6.6) should be readily available to operations and engineering personnel, that includes: . system map, profile and equipment layout for all applied pipeline segments . Hydraulic influencing factors of all commodities in each segment . expected system response variations to different types of commodities . tabulation of inputs, along with how such data is collected and what interval . procedures or flow-charts to help assess the range of possible system presentations and alarms, to include real alarm conditions and possible equipment malfunctions . supervision=s expectation of control personnel actions in the event of a suspected leak. - Maintenance activities at established periodic intervals should be performed and documented to sustain accuracy. - Operations and change control procedures need to be established and periodically reviewed. - Testing procedures and chosen frequencies should verify system performance, as well operational procedures. - Training techniques should validate Controller=s recognition and that appropriate, timely actions are taken.
Examples of a Violation	- No testing to verify system operation. - Informal testing without documentation. - No established plan for instrumentation maintenance. - No script, checklist, or guide to assist operations personnel in the event of an alarm. - Large variation between actual events and CPM generated information, without some form of prompt, post-event analysis and possible remediation.

§195.444	CPM Leak Detection

Evidence Guidance	- Procedures. - Test and maintenance records. - Instrument manufacturer=s recommended maintenance practices. - Alarm records. - Abnormal operations reports. - Post accident analysis reports. - Discharge pressure records. - Unscheduled shutdown or flow diversion reports.
Other Special Notations	None noted