220 CMR 36.00: SAMPLE TEST PROCEDURES FOR NEW RESIDENTIAL AND SMALL COMMERCIAL GAS METERS

Section

36.01: General

220 CMR 36.00 provides a test procedure, according to an attributes sampling plan, for new residential and small commercial gas meters with rated capacity not greater than 425 cubic feet per hour (cfh), that insures compliance with M.G.L. c. 164, § 103.

36.02: Sampling Procedure

(1) Selection of samples and sample testing of new meters shall be conducted in accordance with 220 CMR 36.08~~Military Standard 105D, *Sampling Procedures and Tables for Inspection by Attributes*~~ using General Inspection Level II and Single Sampling Plan for Normal Inspection with an Acceptable Quality Level (AQL) of 2.5. ~~Pertinent details of Military Standard 105D incorporated in 220 CMR36.00 appear in 220 CMR 36.08.~~

(2) New meter lots shall be established consisting of meters of a single type and size, manufactured under the same conditions, and essentially at the same time. The lot size will determine the sample size and the accept/reject level as shown in 220 CMR 36.08(7).

(3) The sample shall be made up of a proportionate number of meters selected at random from each sublot, such that each meter in the lot has an equal chance of being selected for the sample.

~~(3)~~(4) Meters shall be tested using the best available technology, such as Sonic Nozzle Air Provers (SNAP) rather than bell provers.

36.03: Accuracy Requirements

(1) When purchasing new meters, accuracy specifications to the manufacturer shall be 100% ± .5% proof. All new meters must be tested by the manufacturer and the test records must be provided to the utility's manager in charge of meter testing and repair.

(2) The accuracy requirements of new meters tested by Department of Public Utilities ("Department") personnel shall be 100% ± 1% proof.

36.04: Rejected or Defective Meters in Accepted Test Lot

Any rejected or defective meter that is part of an accepted test lot of meters shall be adjusted by the utility's personnel and retested by the Department in accordance with 220 CMR 36.03(2).

36.05: Meters in Unaccepted Test Lot

When a test lot is not accepted, every meter in the lot shall be returned to the manufacturer or tested by the Department. If the meters are tested by the Department, all meters in the lot that are found to be rejected or defective shall be returned to the manufacturer, or adjusted by the utility's personnel and retested by the Department in accordance with 220 CMR 36.03(2).

36.06: Sealing of Accepted Meters

(1) Each accepted new meter shall be sealed by affixing to the meter, a prenumbered Department decal, colored other than yellow.

(2) Each accepted meter that is not new and was previously used to measure gas shall be sealed by affixing to the meter a yellow, prenumbered Department decal.

(3) Any accepted meter shall not be required to be sealed by any other means other than the aforementioned decals.

36.07: Records

(1) The following information shall be recorded on the Department Gas Meter Inspector's "Original Record of the Inspection of Gas Meters." For all accepted new meters the decal number shall be entered in the Inspector's number column and the manufacturer's or company's serial number of the meter to which the decal is affixed shall be entered in the maker's number column. The proof of each meter tested in the sample shall be recorded in the proof column.

(2) Each utility shall maintain a record of manufacturer and Department test or proof results for all new meters in each sample lot as required by the Department. Meter test records shall be recorded and stored in electronic format and retained for the service life of the meter.

36.08: ~~Military Standard 105D~~Selection of Samples and Sample Testing

(1) Scope.

(a) Purpose. 220 CMR 36.00 establishes sampling plans and procedures for inspection by attributes. When specified by the responsible authority, 220 CMR 36.00 shall be referenced in the specification, contract, inspection instructions, or other documents and the provisions set forth herein shall govern. The "responsible authority" shall be designated in one of the above documents.

(b) Application. Sampling plans designated in ~~this publication~~220 CMR 36.00 are applicable, but not limited, to inspection of the following:

1. End items;
2. Components and raw materials;
3. Operations;
4. Materials in process;
5. Supplies in storage;
6. Maintenance operations;
7. Data or records;
8. Administrative procedures.

These plans are intended primarily to be used for a continuing series of lots or batches. The plans may also be used for the inspection of isolated lots or batches, but~~,~~ in this latter case, the user is cautioned to consult the operating characteristic curves to find a plan ~~which~~ that will yield the desired protection.

(c) Inspection. Inspection is the process of measuring, examining, testing, or otherwise comparing the unit of product [*see* 220 CMR 36.08(1)(e)] with the requirements.

(d) Inspection by Attributes. Inspection by attributes is inspection whereby either the unit of product is classified simply as defective or nondefective, or the number of defects in the unit of product is counted, with respect to a given requirement or set of requirements.

(e) Unit of Product. The unit of product is the ~~thing~~ item inspected in order to determine its classification as defective or nondefective or to count the number of defects. It may be a single article, a pair, a set, a length, an area, an operation, a volume, a component of an end product, or the end product itself. The unit of product may or may not be the same as the unit

of purchase, supply, production, or shipment.

(2) Classification of Defects and Defectives.

(a) Method of Classifying Defects. A classification of defects is the enumeration of possible defects of the unit of product classified according to their seriousness. A defect is any nonconformance of the unit of product with specified requirements. Defects will normally be grouped into one or more of the following classes, but~~; however,~~ defects may be grouped into other classes~~,~~ or into subclasses within these classes.

1. Critical Defect. A critical defect is a defect that judgment and experience indicate is likely to result in hazardous or unsafe conditions for individuals using, maintaining, or depending upon the product; or a defect that judgment and experience indicate is likely to prevent performance of the tactical function of a major end item such as a ship, aircraft, tank, missile or space vehicle. *NOTE*: For a special provision relating to critical defects, *see* 220 CMR 36.08(6)(c).
2. Major Defect. A major defect is a defect, other than critical, that is likely to result in failure, or to reduce materially the usability of the unit of product for its intended purpose.
3. Minor Defect. A minor defect is a defect that is not likely to reduce materially the usability of the unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit.

(b) Method of Classifying Defectives. A defective is a unit of product which contains one or more defects. Defectives will usually be classified as follows:

1. Critical Defective. A critical defective contains one or more critical defects and may also contain major and/or minor defects. *NOTE*: For a special provision relating to critical defectives, *see* 220 CMR 36.08(6)(c).
2. Major Defective. A major defective contains one or more major defects~~,~~ and may also contain minor defects but contains no critical defect.
3. Minor Defective. A minor defective contains one or more minor defects but contains no critical or major defect.

(3) Percent Defective and Defects Per 100 Units.

(a) Expression of Nonconformance. The extent of nonconformance of product shall be expressed either in terms of percent defective or in terms of defects per 100 units.

(b) Percent Defective. The percent defective of any given quantity of units of product is 100 times the number of defective units or product contained therein divided by the total number of units of product, *i.e.*:

$$\text{Percent defective} = \frac{\text{Number of defectives}}{\text{Number of units inspected}} \times 100$$

(c) Defects Per Hundred Units. The number of defects per hundred units of any given quantity of units of product is 100 times the number of defects contained therein (one or more defects being possible in any unit of product) divided by the total number of units of product, *i.e.*:

$$\text{Defects per hundred units} = \frac{\text{Number of defectives}}{\text{Number of units inspected}} \times 100$$

(4) Acceptable Quality Level (AQL).

(a) Use. The AQL together with the Sample Size Code Letter~~,~~ is used for indexing the sampling plans provided herein.

(b) Definition. The AQL is the maximum percent defective (or the maximum number of defects per hundred units) that, for purposes of sampling inspection, can be considered satisfactory as a process average.

(c) Note on the Meaning of AQL. When a consumer designates some specific value of AQL for a certain defect or group of defects, ~~he~~ it indicates to the supplier that ~~his (~~the consumer's~~)~~ acceptance sampling plan will accept the great majority of the lots or batches that the supplier submits, provided the process average level of percent defective (or defects per hundred units) in these lots or batches ~~be~~ is no greater than the designated value of AQL. Thus, the AQL is a designated value of percent defective (or defects per hundred units) that the consumer indicates will be accepted most of the time by the acceptance sampling procedure to be used. The sampling plans provided herein are so arranged that the probability of acceptance at the designated AQL value depends upon the sample size, being generally higher for large samples than for small ones, for a given AQL. The AQL alone does not describe the protection to the consumer for individual lots or batches but more directly relates to what might be expected from a series of lots or batches, provided the steps indicated in ~~this publication~~ 220 CMR 36.00 are taken. It is necessary to refer to the operating characteristic curve of the plan~~,~~ to determine what protection the consumer will have.

(d) Limitation. The designation of an AQL shall not imply that the supplier has the right to supply knowingly any defective unit of product.

(e) Specifying AQLs. The AQL to be used will be designated in the contract or by the responsible authority. Different AQLs may be designated for groups

of defects considered collectively~~,~~ or for individual defects. An AQL for a group of defects may be designated in addition to AQLs for individual defects, or subgroups, within that group. AQL values of 10.0 or less may be expressed either in percent defective or in defects per hundred units; those over 10.0 shall be expressed in defects per hundred units only.

(f) Preferred AQLs. The values of AQLs given in these tables are known as preferred AQLs. If, for any product, an AQL be ~~designed~~ designated other than a preferred AQL, these tables are not applicable.

(5) Submission of Product.

(a) Lot or Batch. The term lot or batch shall mean "inspection lot" or "inspection batch~~,~~" (*i.e.*, a collection of units of product from which a sample is to be drawn and inspected to determine conformance with the acceptability criteria)~~,~~ and may differ from a collection of units designated as a lot or batch for other purposes (*e.g.*, production, shipment, etc.).

(b) Formation of Lots or Batches. The product shall be assembled into identifiable lots, sublots, batches, or in such other manner as may be prescribed [*see* 220 CMR 36.08(5)(d)]. Each lot or batch shall, as far as is practicable, consist of units of product of a single type, grade, class, size, and composition, manufactured under essentially the same conditions, and at essentially the same time.

(c) Lot or Batch Size. The lot or batch size is the number of units of product in a lot or batch.

(d) Presentation of Lots or Batches. The formation of the lots or batches, lot or batch size, and the manner in which each lot or batch is to be presented and identified by the supplier shall be designated or approved by the responsible authority. As necessary, the supplier shall provide adequate and suitable storage space for each lot or batch, equipment needed for proper identification and presentation, and personnel for all handling of product required for drawing of samples.

(6) Acceptance and Rejection.

(a) Acceptability of Lots or Batches. Acceptability of a lot or batch will be determined by the use of a sampling plan or plans associated with the designated AQL or AQLs.

(b) Defective Units. The right is reserved to reject any unit or product found defective during inspection whether that unit of product forms part of a sample or not, and whether the lot or batch as a whole is accepted or rejected. Rejected units may be repaired or corrected and resubmitted for inspection with the approval of, and in the manner specified by, the responsible authority.

(c) Special Reservation for Critical Defects. The supplier may be required at the discretion of the responsible authority to inspect every unit of the lot or batch for critical defects. The right is reserved to inspect every unit submitted by the supplier for critical defects, and to reject the lot or batch immediately~~,~~ when a critical defect is found. The right is reserved also to sample, for critical defects, every lot or batch submitted by the supplier and to reject any lot or batch if a sample drawn therefrom is found to contain one or more critical defects.

(d) Resubmitted Lots or Batches. Lots or batches found unacceptable shall be resubmitted for reinspection only after all units are re-examined or retested and all defective units are removed or defects corrected. The responsible authority shall determine whether normal or tightened inspection shall be used, and whether reinspection shall include all types or classes of defects or of the particular types or classes of defects which caused initial rejection.

(7) Drawing of Samples.

(a) Sample. A sample consists of one or more units of product drawn from a lot or batch, the units of the sample being selected at random without regard to their quality. The number of units of product in the sample is the sample size.

(b) Representative Sampling. When appropriate, the number of units in the sample shall be selected in proportion to the size of sublots or subbatches, or parts of the lot or batch, identified by some rational criterion. When representative sampling is used, the units from each part of the lot or batch shall be selected at random.

(c) Time of Sampling. Samples may be drawn after all the units comprising the lot or batch have been assembled, or samples may be drawn during assembly of the lot or batch.

SAMPLE SIZE AND ACCEPT/REJECT LEVEL FOR SINGLE SAMPLING PLAN GENERAL INSPECTION LEVEL II A.Q.L.AQL = 2.5

LOT SIZE		SAMPLE SIZE	ACCEPT/REJECT
2 to	8	2	0/1
9 to	15	3	0/1
16 to	25	5	0/1
26 to	50	8	0/1
51 to	90	13	1/2
91 to	150	20	1/2
151 to	280	30	2/3

281 to	500	50	3/4
501 to	1,200	80	5/6
1,201 to	3,200	125	6/8
3,201 to	10,000	200	10/11

Note that the first number on each line in the "Accept/Reject"~~"~~ column is the maximum number of defective meters allowable in a sample size ~~in order~~ for the lot to be accepted. The second number on each line in this column is the minimum number of defective meters in a sample size which requires that the lot be rejected.

REGULATORY AUTHORITY

220 CMR 36.00: M.G.L. c. 164, § 103.

~~NON-TEXT PAGE~~

220 CMR 69.00 PROCEDURES FOR THE DETERMINATION AND ENFORCEMENT OF VIOLATIONS OF SAFETY CODES PERTAINING TO PIPELINE FACILITIES, TRANSPORTATION OF NATURAL GAS, ~~AND~~ LIQUEFIED NATURAL GAS FACILITIES, AND STEAM DISTRIBUTION FACILITIES.

Section

69.01: Purpose and Scope

220 CMR 69.00 establishes the procedure for determining the nature and extent of violations of codes, regulations, or rules adopted or enforced by the Department of Public Utilities (Department) pertaining to the safety of pipeline facilities, ~~and~~ the transportation of natural gas, ~~and~~ liquefied natural gas facilities, and steam distribution facilities, including but not limited to, 220 CMR 20.00 and~~,~~ 101.00 through 115~~3~~.00, and all applicable federal pipeline safety standards that the Department has the authority to enforce, including the following: federal pipeline safety standards as set forth in 49 CFR Part 192, including all subsequent amendments; federal safety standards for liquefied natural gas (LNG) as set forth in 49 CFR Part 193, including all subsequent amendments; and federal drug and alcohol testing standards as set forth in 49 CFR Parts 40 and 199, including all subsequent amendments. 220 CMR 69.00 shall apply to violations of these state codes and these federal codes that occur at a time when the Department has submitted and has in effect the annual certification to the United States Secretary of Transportation provided for in 49 U.S.C. § 60105, pursuant to the provisions of M.G.L. c. 164, § 105A.

69.02: Inspections

Officers, employees, or agents authorized by the Commission of the Department (Commission) or its designee, upon presenting appropriate credentials, are authorized to enter upon, inspect and examine, at reasonable times and in a reasonable manner, the records and properties of gas companies, ~~and~~ municipal gas departments, and steam distribution companies to the extent such records and properties are relevant to determining ~~the~~ compliance ~~of such gas companies and municipal gas departments~~ with 220 CMR 20.00,

101.00 through 1153.00, and/or 49 CFR Parts 40, 192, 193 and 199. The facilities, reports, and records needed to ensure such compliance with 220 CMR 69.00 shall be accessible to the Department for such inspections. Each gas company, and municipal gas department, or steam distribution company shall provide the Department with such reports, supplemental data, and information as the Department may request for the enforcement and administration of 220 CMR 69.00, except that said companies and departments need not provide the Department with copies of security procedures for a pipeline facility, if such security procedures are made available at the facility for review and inspection by the Department.

69.03: Commencement of Enforcement Proceedings

(1) Warning Letters. Upon determining that a probable violation of 220 CMR 20.00, 101.00 through 1153.00, and/or 49 CFR Parts 40, 192, 193 and 199 has occurred or is occurring, the Department may issue a warning letter notifying the owner or operator of the probable violation and advising the owner or operator to correct it or be subject to enforcement action under 220 CMR 69.03(2) through 69.09. No such warning letter will be deemed to be based on a finding or adjudication by the Department that a violation exists, nor will it constitute evidence that a violation exists.

(2) Notice of Probable Violation. The Department may begin an enforcement proceeding by issuing a notice of probable violation (NOPV) if the Department has reason to believe that a violation of 220 CMR 20.00, 101.00 through 1153.00, and/or 49 CFR Parts 40, 192, 193 and 199 has occurred or is occurring. The NOPV may be issued by the Commission or its designee. The NOPV shall state the provision(s) of the codes, regulations or rules which the respondent is alleged to have violated and the evidence upon which the allegations are based, shall give notice of response options available to the respondent under 220 CMR 69.04, and, if a civil penalty is proposed, shall state the amount of the proposed civil penalty and the maximum civil penalty for which the respondent may be liable under law.

69.04: Response Options

(1) Within 30 days of receipt of an NOPV, the respondent shall respond to the Department in one of the following ways:
   (a) Agree to pPay the proposed civil penalty by check or money order made payable to the Commonwealth of Massachusetts, thus and closinge the case;
   (b) Submit an offer in compromise of the proposed civil penalty under 220 CMR 69.04(2);
   (c) Request an informal conference under 220 CMR 69.05; or
   (d) Submit a written reply to the Department disputing the violation(s) in the NOPV. The reply must include a complete statement of all relevant facts and authority and full description of the reasons why the respondent disputes the violation(s) alleged in the NOPV.

(2) An offer in compromise under 220 CMR 69.04(1)(b) is made by submitting a check or money order for the amount offered, payable to the Commonwealth of Massachusetts, to the Department. A respondent making an offer in compromise shall also submit written explanations, information, or other materials which may justify the Department's acceptance of the offer in compromise. If an offer in compromise is accepted by the Department, the respondent shall be notified in writing that the acceptance is in full settlement of the civil penalty action. If an offer in compromise is rejected by the Department, the check or money order shall be returned to the respondent with written notification. Within ten days of receipt of such notification, the respondent may request an informal conference under 220 CMR 69.05, or submit a written reply under 220 CMR 69.04(1)(d).

(3) Failure of the respondent to respond to the NOPV in accordance with 220 CMR 69.04 constitutes a waiver of respondent's right to contest the allegations in the NOPV and authorizes the Department, without further notice to the respondent, to find the facts to be as alleged in the NOPV and to issue a final order.

69.05: Informal Review

(1) The informal review shall be conducted by an investigator designated by the Commission. The informal review shall consist of an informal conference, if the respondent has chosen this option under 220 CMR 69.04(1)(c), or an analysis of the respondent's written reply under 220 CMR 69.04(1)(d).

(2) At the informal conference, the respondent shall have the right to be represented by an attorney or other person, and shall have the right to present relevant documents to the investigator. The investigator shall make available to the respondent any evidence which indicates that the respondent may have violated any provision of 220 CMR 20.00, 101.00 through 1153.00, ~~and/~~or 49 CFR Parts 40, 192, 193 and 199, and the respondent or the respondent's representative shall have the opportunity to rebut this evidence. However, this informal conference shall not be construed to be an adjudicatory hearing for purposes of M.G.L. c. 30A.

(3) The investigator shall make a decision in writing. If the respondent is not satisfied with the decision, the respondent may request an adjudicatory hearing, in writing, within seven days of the date of the decision. Failure to request an adjudicatory hearing within the time allowed will be deemed an admission of the factual allegations and legal conclusions stated in the investigator's decision, and the respondent shall be held liable to pay the civil penalty designated in the NOPV and to comply with a remedial order issued under 220 CMR 69.07.

69.06: Adjudicatory Hearing

(1) The adjudicatory hearing shall be a de novo hearing and shall be an adjudicatory

hearing for purposes of M.G.L. c. 30A, and shall be conducted pursuant to 220 CMR 1.00: *Procedural Rules*.

(2) At the adjudicatory hearing, the respondent shall have the right to be represented by an attorney or other representative.

(3) If the Department finds, after the adjudicatory hearing, that the respondent has violated any provision of 220 CMR 20.00, 101.00 through 1153.00, ~~and/~~or 49 CFR Parts 40, 192, 193 and 199, it may issue a remedial order pursuant to 220 CMR 69.07.

69.07: Remedial Orders

(1) If the Department finds that a violation has occurred or is occurring, it may issue a remedial order. The remedial order shall include a written opinion setting forth the factual and legal basis of the findings and shall direct any party to take or refrain from taking any action, including the payment of a fine or civil penalty provided by law.

(2) A remedial order issued by the Commission or its designee under 220 CMR 69.07 shall be effective upon issuance, in accordance with its terms, unless stayed, suspended, modified or rescinded.

(3) A remedial order is a final decision of the Commission within the meaning of M.G.L. c. 25, § 5, and subject to review by the Supreme Judicial Court.

(4) If the respondent fails either to appeal a remedial order to the Supreme Judicial Court or to comply fully with the order within 20 days after issuance of the order, the Department may refer the case to the Attorney General with a request that an action be brought in the Superior Court to seek appropriate relief, including collection of assessed penalties.

69.08: Consent Orders

(1) Notwithstanding any other provision to the contrary, the Department may at any time resolve an outstanding enforcement issue with a consent order. A consent order must be signed by the person to whom it is issued, or a duly authorized representative, and must indicate agreement with the terms therein. A consent order need not constitute an admission by any person that a violation has occurred.

(2) A consent order is a final order of the Department, having the same force and effect as a remedial order issued pursuant to 220 CMR 69.07.

(3) A consent order shall not be appealable and shall include an express waiver of appeal or judicial review rights that might otherwise attach to a final order of the

Department.

69.09: Civil Penalties

The determination of the amount and appropriateness of a civil penalty shall be made pursuant to M.G.L. c. 164, § 105A.

69.10: Hazardous Facility Orders

(1) Except as provided by 220 CMR 69.10(2), if the Department finds, after reasonable notice and opportunity for hearing in accord with 220 CMR 69.10(3), a particular pipeline facility, ~~or~~ LNG facility, or steam distribution facility to be hazardous to life or property, it shall issue an order pursuant to 220 CMR 69.10 requiring the owner or operator of the facility to take corrective action. Corrective action may include suspended or restricted use of the facility, physical inspection, testing, repair, replacement, or other action, as appropriate.

(2) The Department may waive the requirement for notice and hearing under 220 CMR 69.10(1) before issuing an order pursuant to 220 CMR 69.10 when the Commission or its designee determines that failure to do so would result in the likelihood of serious harm to life or property. However, the Department shall include in the order an opportunity for hearing as soon as practicable after issuance of an order. The provisions of 220 CMR 69.10(3)(a) apply to an owner or operator's decision to exercise such an opportunity for hearing. The purpose of such a post-order hearing is for the Department to determine whether the order should remain in effect or be rescinded or suspended in accordance with 220 CMR 69.10(7).

(3) Notice and Hearing:

(a) Written notice that the Department intends to issue an order under 220 CMR 69.10(3) shall be served upon the owner or operator of an allegedly hazardous facility. The notice shall allege the existence of a hazardous facility, stating the facts and circumstances supporting the issuance of a hazardous facility order, and providing the owner or operator an opportunity for a hearing, identifying the time and location of the hearing.

(b) An owner or operator may exercise the opportunity for a hearing under 220 ~~-~~CMR 69.10 by notifying the Department of that election in writing within ten days of service of the notice provided under 220 CMR 69.10(3)(a), or, when applicable, under 220 CMR 69.10(2). Absence of such written notification waives an owner or operator's opportunity for a hearing and allows the Department to proceed to issue a "hazardous facility order" in accordance with 220 CMR 69.10(4) through (7).

(c) A hearing under 220 CMR 69.10 shall be an adjudicatory proceeding as defined in M.G.L. c. 30A. The owner or operator of the allegedly hazardous facility shall have the right to be represented by an attorney at this hearing

(d) If the Department finds the facility to be hazardous to life or property, the

Department shall issue an order in accordance with 220 CMR 69.10. If it does not find the facility to be hazardous to life or property, the Department shall dismiss the allegations contained in the notice, and promptly notify the owner or operator in writing.

(4) The Department may find a pipeline facility, ~~or~~ LNG facility, or steam distribution facility to be hazardous under 220 CMR 69.10(1):
- (a) If, under the facts and circumstances, the Department determines that the particular facility is hazardous to life or property; or
- (b) If the ~~pipeline facility or LNG~~ facility or a component thereof has been constructed, operated, or maintained with any equipment, material or technique which the Department determines is hazardous to life or property, unless the operator involved demonstrates to the satisfaction of the Department that, under the particular facts and circumstances involved, such equipment, material or technique is not hazardous to life or property.

(5) In making a determination under 220 CMR 69.10(4), the Department shall consider, if relevant:
- (a) The characteristics of the pipe, components, and other equipment used in the pipeline facility, ~~or~~ LNG facility, or steam distribution facility involved, including its age, manufacturer, physical properties (including its resistance to corrosion and deterioration), and the method of its manufacture, construction or assembly;
- (b) The nature of the materials transported by such facility (including their corrosive and deteriorative qualities), the sequence in which such materials are transported, and the pressure required for such transportation;
- (c) The aspects of the areas in which the ~~pipeline facility or LNG~~ facility is located, in particular, the climatic and geologic conditions (including soil characteristics) associated with such areas, and the population density and population and growth patterns of such areas; and
- (d) Such other factors as the Department may consider appropriate.

(6) The hazardous facility order shall contain the following information:
- (a) A finding that the pipeline facility, ~~or~~ LNG facility, or steam distribution facility is hazardous to life or property.
- (b) The relevant facts which form the basis for that finding.
- (c) The legal basis for the order.
- (d) The nature and description of particular corrective action(s) required of the respondent.
- (e) The date by which the required action(s) must be taken or completed, and, where appropriate, the duration of the order.
- (f) If a hearing has been waived pursuant to 220 CMR 69.10(2), a statement that an opportunity for a hearing is provided at a particular location and at a certain time after issuance of the order.

(7) The Department shall rescind or suspend a hazardous facility order whenever it determines that the facility is no longer hazardous to life or property.

(8) At any time after an order issued under 220 CMR 69.10 has become effective, the Department may request the Attorney General to bring an action for appropriate equitable relief in the Supreme Judicial Court or the Superior Court, as provided in M.G.L. c. 164, § 79.

REGULATORY AUTHORITY

220 CMR 69.00: M.G.L. c. 164, §§ 66, 76, 76C, and 105A; ~~M.G.L.~~ c. 164B, §§ 1, 2.

220 CMR 100.00: MASSACHUSETTS GAS DISTRIBUTION CODE

Section

100.01: Purpose

220 CMR 101.00 through ~~113~~115.00 are designed to ensure safe operating practices for persons engaged in the storage, transportation and distribution of gas.

100.02: Applicability

Notwithstanding any language to the contrary, the provisions of 220 CMR 101.00 through ~~113~~115.00 shall apply to any persons engaged in the storage, transportation or distribution of gas and, unless the context so requires, shall not be limited to gas corporations, gas companies or municipal gas departments. Each such provision shall apply to all new construction and new installations made subsequent to the effective date of said provision and shall not apply retroactively to installations existing on the effective date of the provision.

REGULATORY AUTHORITY

220 CMR 100.00: M.G.L. c. 164, §§ 66, 76, 76C, and 105A.

220 CMR 101.00: MASSACHUSETTS NATURAL GAS PIPELINE SAFETY CODE

Section

101.01: Compliance with MFS Standards

Every gas piping system and liquefied petroleum gas plant in Massachusetts shall be constructed, operated, and maintained, except as otherwise provided in 220 CMR 101.00, in compliance with federal pipeline safety standards as set forth in 49 CFR Part 192 ~~--:~~ *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards* (MFS Standards). Every liquefied petroleum gas plant shall also be constructed, operated, and maintained according to the requirements of National Fire Protection Association 59 Utility LP-Gas Plant Code (2004) (NFPA 59).

In addition, each operator of pipeline facilities used for the transportation of natural gas or hazardous liquids and each operator of liquified natural gas or liquefied petroleum gas facilities shall comply with the provisions of 49 CFR Parts 40 and 199.

101.023: Definitions ~~Based on 49 CFR Part 192 (Subpart A Section 192.3) of the MFS Standards~~

Except as otherwise specified in ~~As used in~~ 220 CMR 101.00~~6~~, all words are as defined in 49 CFR Part 192, MFS Standards, § 192.3~~the following definitions apply:~~.

Department. Department of Public Utilities, Commonwealth of Massachusetts.

Distribution Line ~~means~~. A ~~a~~ pipeline other than a gathering or transmission line.

Gas ~~means~~ . N~~n~~atural gas, flammable gas, or gas ~~which~~that is toxic or corrosive.

Gathering Line ~~means~~ . A~~a~~ pipeline that transports gas from a current production facility to a transmission line or main.

~~High Pressure Distribution System means~~ . A~~a~~ distribution system in which the gas

~~pressure in the main is higher than the pressure provided to the customer. (*See* 220 CMR 101.06.)~~

Listed Specification ~~means~~. A ~~a~~ specification listed in 49 CFR Part 192, Appendix B, section I.

~~Low Pressure Distribution System means~~ . A~~a~~ distribution system in which the gas pressure in the main is substantially the same as the pressure provided the customer. ~~(*See* 220 CMR 101.06.)~~

Main ~~means a~~ . A distribution line that serves as a common source of supply for more than one service line.

~~Maximum Actual Operating Pressure means. T the maximum pressure that occurs during normal operations over a period of one year.~~

Maximum Allowable Operating Pressure (MAOP) ~~means~~ . T~~t~~he maximum pressure at which a pipeline or segment of a pipeline may be operated under 220 CMR 101.00.

Municipality ~~means a~~ . A city, county, or any other political subdivision of a State.

~~Offshore . means b~~B~~eyond 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.~~

Operator ~~means a~~ . A person who engages in the transportation of gas.

Person ~~means a~~. Any individual, firm, joint venture, partnership, corporation, association, ~~State~~state agency, municipality, cooperative association, or joint stock association, and including any trustee, receiver, assignee, or personal representative thereof.

Pipe ~~means a~~. Any pipe or tubing used in the transportation of gas, including pipe-type holders.

Pipeline . ~~means a~~All parts of those physical facilities through which gas moves in transportation, including pipe, valves, and other appurtenance attached to pipe, compressor units, metering stations, regulator stations, delivery stations, holders and fabricated assemblies.

~~Pipeline Facility . means n~~N~~ew and existing pipelines, rights-of-way, and any equipment facility, or building used in the transportation of gas or in the treatment of~~

~~gas during the course of transportation.~~

Secretary ~~means t~~. The U.S. Secretary of Transportation or any person to whom he or she has delegated authority in the matter concerned.

Service Line~~.~~ ~~means a~~A distribution line that transports gas from a common source of supply to:

(a) a customer meter or the connection to a customer's piping, whichever is farther downstream, or

(b) the connection to a customer's piping if there is no customer meter.

A customer meter is the meter that measures the transfer of gas from an operator to a consumer.

SMYS (Specified Minimum Yield Strength). ~~is:~~

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

(b) For steel pipe manufactured in accordance with an unknown or unlisted specification, the yield strength determined in accordance with 49 CFR 192.107(b).

State~~.~~ ~~means e~~Each of the several states, the District of Columbia, and the Commonwealth of Puerto Rico.

Transmission Line~~.~~ ~~means a~~A pipeline, other than a gathering line, that:

(a) Transports gas from a gathering line or storage facility to a distribution center or storage facility;

(b) Operates at a hoop stress of 20% or more of SMYS; or

(c) Transports gas within a storage field.

Transportation of Gas~~.~~ ~~means t~~The gathering, transmission, or distribution of gas by pipeline or the storage of gas in or affecting interstate or foreign commerce.

101.0~~3~~2: Applications for Exceptions and Waivers ~~220 CMR 101.04, 101.05, or 101.06~~

(1) ~~(1)~~ Any person engaged in the construction, maintenance, operation ~~gas corporation or municipal gas department~~ of a natural gas or liquefied petroleum gas facility may make a written request to the Department ~~of Public Utilities (Department)~~ for an exception to the provisions of 220 CMR 101~~.04, 101.05, or 101.06~~.00, in whole or in part. The request shall justify why the exception should be granted and shall demonstrate why the exception does not derogate from the safety objectives of 220 CMR 101.00. The request shall include details on the need for the exception, specific information on the circumstances surrounding the exception, the provisions of

the regulations from which exception is sought, and a description of any safety consequences that might result from the exception. Documentation in support of the request shall also be submitted.

The Department may, after consideration~~,~~ and the payment of the appropriate fee, issue a written decision denying the exception or granting the exception as requested or as modified by the Department and subject to conditions. An exception may be granted or denied in writing by the Director of the Pipeline Safety Division, or by the Director's functional successor in the event of an internal reorganization of the Department. Any person aggrieved by a decision of the Director may appeal the decision to the Department. Any appeal shall be in writing and shall be made not later than ten business days following issuance of the written decision.

In an emergency, a verbal request for an exception may be granted by the Department or the Director, provided that the verbal request is subsequently confirmed in writing within seven days of the exception being granted. ~~the exception requested or modification thereof to the particular gas corporation or municipality requesting such exception. In emergencies, a verbal exception may be granted by the Department, which will then be confirmed by written request within seven days.~~

(2) ~~———~~Pursuant to 49 U.S.C. 60118(d), t~~T~~he Department may ~~issue a~~ waive~~r~~ compliance with a federal safety standard to which ~~to a gas corporation or municipal gas department from a provisions~~ of 49 CFR Part 192~~,~~ of the federal regulations ~~provided~~ing that the waiver pertains to an intrastate facility~~ty~~the Department's 49 –U.S.C. 60105 certification applies, ~~and~~ provided that the Department gives notice of such waiver to the ~~U.S. Department of Transportation~~Secretary at least 60 days before the waiver becomes effective.

~~101.03: Definitions Based on 49 CFR Part 192 (Subpart A Section 192.3) of the MFS Standards~~

~~As used in 220 CMR 101.06, the following definitions apply:~~

~~Distribution Line means a pipeline other than a gathering or transmission line.~~

~~Gas means natural gas, flammable gas, or gas which is toxic or corrosive.~~

~~Gathering Line means a pipeline that transports gas from a current production facility to a transmission line or main.~~

~~High Pressure Distribution System means a distribution system in which the gas~~

~~pressure in the main is higher than the pressure provided to the customer. (*See* 220 CMR 101.06.)~~

~~Listed Specification means a specification listed in 49 CFR Part 192, Appendix B, section I.~~

~~Low Pressure Distribution System means a distribution system in which the gas pressure in the main is substantially the same as the pressure provided the customer. (*See* 220 CMR 101.06.)~~

~~Main means a distribution line that serves as a common source of supply for more than one service line.~~

~~Maximum Actual Operating Pressure means the maximum pressure that occurs during normal operations over a period of one year.~~

~~Maximum Allowable Operating Pressure (MAOP) means the maximum pressure at which a pipeline or segment of a pipeline may be operated under 220 CMR 101.00.~~

~~Municipality means a city, county, or any other political subdivision of a State.~~

~~Offshore 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.~~

~~Operator means a person who engages in the transportation of gas.~~

~~Person means any individual, firm, joint venture, partnership, corporation, association, State, municipality, cooperative association, or joint stock association, and including any trustee, receiver, assignee, or personal representative thereof.~~

~~Pipe means any pipe or tubing used in the transportation of gas, including pipe-type holders.~~

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

~~Pipeline Facility means new and existing pipelines, rights-of-way, and any equipment facility, or building used in the transportation of gas or in the treatment of gas during the course of transportation.~~

~~Secretary means the U.S. Secretary of Transportation or any person to whom he or she has delegated authority in the matter concerned.~~

~~Service Line means a distribution line that transports gas from a common source of supply to:~~

~~(a) a customer meter or the connection to a customer's piping, whichever is farther downstream, or~~

~~(b) the connection to a customer's piping if there is no customer meter.~~

~~A customer meter is the meter that measures the transfer of gas from an operator to a consumer.~~

~~SMYS (Specified Minimum Yield Strength) is:~~

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

~~(b) For steel pipe manufactured in accordance with an unknown or unlisted specification, the yield strength determined in accordance with 49 CFR 192.107(b).~~

~~State means each of the several states, the District of Columbia, and the Commonwealth of Puerto Rico.~~

~~Transmission Line means a pipeline, other than a gathering line, that:~~

~~(a) Transports gas from a gathering line or storage facility to a distribution center or storage facility;~~

~~(b) Operates at a hoop stress of 20% or more of SMYS; or~~

~~(c) Transports gas within a storage field.~~

~~Transportation of Gas means the gathering, transmission, or distribution of gas by pipeline or the storage of gas in or affecting interstate or foreign commerce.~~

101.04: Notice of Proposed Construction

At least 48 hours prior to the start of construction of pipeline installations, notice shall be filed with the Department in accordance with the requirements listed in 220 CMR 101.04(1) through (3):

(1) Pipeline installation projects of 5000 feet or more in length: All such projects.

(2) Pipeline installation projects of 2500 feet to 5000 feet in length: 25% of such projects, or a maximum of three of the projects in a calendar year.

(3) If no pipeline installation projects in a calendar year meet the requirements of 220 CMR 101.04(1) and (2), then there shall be reported to the Department no less than three pipeline installations irrespective of the length, provided this number or more are undertaken.

101.05: Preservation of Records

Nothing contained herein shall conflict with 220 CMR 75.00: *The Preservation of Records of Electric, Gas, and Water Utilities*.

101.06: Additional Rules or Modifications

Notwithstanding any provision of the MFS Standards which may allow less stringent requirements, the following additional rules or modifications shall apply.

(1) Low-Pressure Distribution System. (Section 192.3 MFS Standards.) For the purpose of 220 CMR 101.06, a low-pressure distribution system shall be defined as any system in which the gas pressure in the main is equal to or less than two pounds per square inch gauge (psig)~~psig~~.

(2) Intermediate-Pressure Distribution System. (Section 192.3 MFS Standards.) For the purpose of 220 CMR 101.06, an intermediate-pressure distribution system shall be defined as any system in which the gas pressure in the main is greater than two psig but equal to or less than 60 psig.

(3) High-Pressure Distribution System. (Section 192.3 MFS Standards.) For the purpose of 220 CMR 101.06, a high-pressure distribution system shall be defined as a system in which the pressure in the main is greater than 60 psig, but equal to or less than 200 psig.

(4) Class Locations. (Section 192.~~3~~ 5 MFS Standards.)

~~(a) Gas pipelines which are to be operated at pressures in excess of 200 psig shall not be installed within 40 feet of any building intended for human occupancy unless class 4 construction design criteria are met, or such other design criteria as the Department shall require.~~

~~(b)~~ For the purpose of 220 CMR 101.00, every gas piping system shall be designed, constructed, tested, operated, and maintained using a class 3 location as a minimum class location designation.

(5) Design Limitations for Plastic Pipe. (Section 192.123 MFS Standards.)

(a) The wall thickness for thermoplastic pipe may not be less than 0.090 inches.

(b) The Department may approve the use of reinforced thermosetting plastic pipe having a wall thickness not less than that listed in the following table:

Normal Size in Inches	Minimum Wall Thickness in Inches
2	0.060
3	0.060
4	0.070
6	0.100

(6) Distribution Line Valves. (Section 192.181 MFS Standards.) Each high--pressure and intermediate--pressure distribution system must have valves spaced so as to reduce the time to shut down a section of main in an emergency. The valve spacing is determined by the operating pressure, the size of mains, and the local physical conditions.

(7) Control of the Pressure of Gas Delivered from High--Pressure Distribution Systems. (Section 192.197 MFS Standards.) For the purpose of 220 CMR 101.00, Section 192.197 of the MFS Standards shall be entitled: *Control of the Pressure of Gas Delivered from Mains Operating at Higher Pressures Than the Pressure Provided to the Customer*.

(8) Required Capacity of Pressure Relieving and Limiting Stations. (Section 192.201 MFS Standards.) Relief valves or other pressure limiting devices must be installed at or near each regular station controlling the pressure to a system operating at a pressure that is substantially the same as the pressure provided to the customer, with a capacity to limit the maximum pressure in the main to a pressure that will not exceed the safe operating pressure for any connected and properly adjusted gas utilization equipment.

(9) Inspection and Test of Welds. (Section 192.241 MFS Standards.)

(a) Notwithstanding the requirements of 220 CMR 101.06(9)(b), not less than 10% of the welds randomly sampled over the length of at least three of the installations of which notice of construction is required under 220 CMR 101.04 shall be radiographically examined and available to the Department. If less than three installation projects are undertaken by any company, at least 10% of the welds shall be radiographically examined and available to the Department.

(b) The Department may at any time visually inspect any welding and if it is considered faulty, order the operating company to subject the weld to a

destructive test as outlined in MFS Standards, Appendix C, paragraph I or to a radiographic examination.

(10) Protection from Hazards. (Section 192.317 MFS Standards.)

(a) The method of protecting all new piping on trestles and bridges shall be subject to the approval of the Department. For each such bridge crossing, the operator shall submit a written request for approval and a detailed installation plan to the Department that includes the following items:

1. The proposed nominal pipe diameter, wall thickness, (minimum wall thickness 0.237"), and the Specified Minimum Yield Strength (SMYS).

2. ~~The maximum operating pressure of the pipeline and the test pressure. The maximum operating pressure for new pipelines on bridges shall not exceed 200 psig.~~

~~3.~~ For nominal pipe diameters 12" or greater, a calculation of the hoop stress (H) in accordance with the following formula:

$$H = \frac{PD}{2t}$$

H = Hoop stress in pounds per square inch
P = Maximum Operating Pressure in pounds per square inch gauge
D = The specified outer diameter in inches
t = Specified wall thickness in inches (not less than 0.237").

3~~4~~. Method of providing for expansion or contraction of the bridge, if necessary.

4~~5~~. Pipe support details, number of supports, and distances between supports.

5~~6~~. The plan shall indicate that valves are provided on both sides of the bridge and their approximate location.

(b) For bridges under the care and control of the Massachusetts Department of Transportation (MassDOT), the procedure for a MassDOT permit shall be as follows:

1. On new bridges, a preliminary design plan will be submitted by MassDOT to the pertinent utility company notifying it of the proposed construction and suggested location of pipe on or in the bridge structure. (A copy of this letter will be forwarded to the Director of the Pipeline ~~Engineering and~~ Safety Division of the Department).

2. The utility company will submit a plan to the Department within 30 days of the receipt of the afore described design plan if any construction is proposed on the particular bridge.
3. No permit for the installation of gas facilities on bridges will be considered unless MassDOT has received from the Department a letter approving the design.
4. All requests for permits for gas facilities on new bridges shall be directed to the Highway and Structures Engineer at the Highway Division of MassDOT.
5. All requests for new gas facilities on existing bridges shall be directed to the Maintenance Engineer at the Highway Division of MassDOT.

(11) ~~Casing.~~ (Reserved) ~~(Section 192.323 MFS Standards.) Where a pipeline is or is to be subjected to a maximum operating pressure in excess of 200 psig, it shall not be laid or maintained (for the purpose of 220 CMR 101.06, maintained shall mean any action of moving, replacing or changing the pipeline for the purposes of upkeep, repair, renewal or replacement) under a highway pavement or under a railroad except where it is necessary to cross a highway or railroad. Whenever such crossings are required, they shall be made as nearly as practicable, to an angle of 90° to the center line of the highway or railroad. In the case of a railroad or highway crossing, the pipe shall be enclosed in a casing. Each casing used on a transmission line or main under a highway or railroad must comply with the following.~~

~~(a) The casing must be designed to withstand the superimposed loads.~~

~~(b) If there is a possibility of water entering the casing, the ends must be sealed.~~

~~(c) If the ends of an unvented casing are sealed and the sealing is strong enough to retain the maximum allowable operating pressure of the pipe, the casing must be designed to hold this pressure at a stress level of not more than 72% of SMYS.~~

~~(d) If vents are installed on a casing, the vents must be protected from the weather to prevent water from entering the casing.~~

~~(e) In addition to 220 CMR 101.06(11)(a) through (d), casings under railroads in which the gas carrier pipe is or is to be subjected to operating pressure in excess of 200 psig shall meet the requirements of the specification in API Code No. 1102 (December 2007) issued by the American Petroleum Institute, Recommended Practice for Liquid Petroleum Pipelines Crossings Railroads and Highways.~~

~~(f) Casings under highways in which the gas carrier pipe is or is to be subjected to operating pressures in excess of 200 psig shall be designed in accordance with 220 CMR 101.06(11)(e) except that the minimum distance from the top of the casing to the used surface of the road shall be four feet, six inches and the casing shall extend beyond the edges of the pavement or of the used surface of~~

~~the road where there is no pavement, a distance of not less than 25 feet or to the line of the right of way, whichever is the lesser. (*See* also M.G.L. c. 164, § 72 and 220 CMR 111.00: *Construction of Streets, Places and Ways, Except Residential Driveways, Over, Along or Across High Pressure Gas Mains Operating at Pressures in Excess of 200 PSIG*).~~

(12) Cover. (Section 192.327 MFS Standards.)

(a) Except as provided in 220 CMR 101.06(12)(c), each buried transmission line must be installed with a minimum cover as follows:

TABLE I		
Location	**Normal Soil Inches**	**Consolidated Rock Inches**
Class 3 and 4 locations	36	24
Drainage and ditches of public roads and railroad crossings	36	24

(b) Gas mains to be installed in highways under the jurisdiction and control of the MassDOT shall be laid with a minimum cover of 36 inches from the top of the main to the used surface of the road.

(c) Except as provided in 220 CMR 101.06(12)(d) and (e), each buried main must be installed with at least 24 inches of cover.

(d) Where an underground structure prevents the installation of a transmission line or main with the minimum cover, the transmission line or main may be installed with less cover if it is provided with additional protection to withstand anticipated external loads.

(e) A main may be installed with less than 24 inches of cover providing:

1. Adequate measures are taken to prevent damage to the pipe by external forces.
2. That the maximum allowable operating pressure will produce a stress level of less than 20% of SMYS.
3. That the Department approves the installation.

(13) Service Lines: Valve Requirements. (Section 192.363 MFS Standards.)~~.~~ Each service line valve on an intermediate~~-~~-pressure or high~~-~~-pressure service line installed above ground or in an area where the blowing of gas would be hazardous, must be designed and constructed to minimize the possibility of the removal of the core of the valve with other than specialized tools.

(14) Service Lines: Location of Valves. (Section 192.365 MFS Standards.) All

intermediate- and high--pressure services and all services two inches in diameter or larger shall be equipped with an underground curb shut off located in proximity to the property line, except that whenever gas is supplied to a theatre, church, school, factory, or other buildings where large numbers of persons assemble, an outside shut off in such case will be required regardless of the size of the service or of the service pressure. All underground curb shut offs shall be readily identifiable and available for easy access by gas company personnel.

(15) Test Requirements for Pipelines to Operate at a Hoop Stress Less than 30% of SMYS and Above 100 psig. (Section 192.507 MFS Standards.) Except for service lines and plastic pipelines, each segment of a pipeline that is to be operated at a hoop stress less than 30% of SMYS and above 100 psig must be tested in accordance with the following:

(a) The pipeline operator must use a test procedure that will ensure discovery of all potentially hazardous leaks in the segment being tested. However, loss of pressure due to leakage during the test period is not permitted.

(b) If, during the test, the segment is to be stressed to 20% or more of SMYS and natural gas, inert gas, or air is the test medium:

1. A leak test must be made at a pressure between 100 psig and the pressure required to produce a hoop stress of 20% of SMYS; or
2. The line must be walked to check for leaks while the hoop stress is held at approximately 20% of SMYS.

(c) Steel gas mains to be operated at pressures from 100 psig to 150 psig shall be air or hydrostatically tested for tightness to 1.5 times the maximum allowable operating pressure for at least one hour.

(d) Steel gas mains to be operated at pressures in excess of 150 psig shall be air or hydrostatically tested for tightness to 1.5 times the maximum operating pressure for at least four hours and may be witnessed by the Department. Calibrated recording instruments shall be verified by dead weight instruments and the recording submitted to the Department for certification that the steel gas main as defined may be operated at a pressure which is equal to the test pressure divided by a factor of 1.5.

(16) Test Requirements for Pipelines to Operate at or Below 100 psig. (Section 192.509 MFS Standards.) Except for service lines and plastic pipelines, each segment of a pipeline that is to be operated at or below 100 psig must be leak tested in accordance with the following:

(a) The pipeline operator must use a test procedure that will ensure discovery of all potentially hazardous leaks in the segment being tested. However, loss of pressure due to leakage during the test period is not permitted.

(b) At a test pressure of at least 90 psig for at least one hour.
(c) The tie-in joints to the live gas main, cast iron or steel, shall be tested using the soap bubble test.

(17) Test Requirements for Service Lines. (Section 192.511 MFS Standards.)
(a) Each segment of a service line (other than plastic) must be leak tested in accordance with 220 CMR 101.06 before being placed in service. If feasible, the service line connection to the main must be included in the test. If not feasible, it must be given a leakage test at the operating pressure when placed in service.
(b) Each segment of a service line (other than plastic) to operate at not more than 100 psig shall be tested after construction and before being placed into service to at least 90 psig for not less than 15 minutes. Pressure loss due to leakage during the test period is not permitted.
(c) Each segment of a service line (other than plastic) to operate at pressures in excess of 100 psig must be tested in accordance with 49 CFR 192.507 of the MFS Standards.

(18) Test Requirements for Plastic Mains and Services. (Section 192.513 MFS Standards.)
(a) The test procedure must ensure discovery of all potentially hazardous leaks in the segment being tested. However, loss of pressure due to leakage during the test period is not permitted.
(b) The test pressure shall be at least 150% of the maximum operating pressure or 90 psig whichever is the greater, for at least 15 minutes for services, or one hour for mains. However, the maximum test pressure may not be more than three times the design pressure of the pipe.

(19) Maximum Allowable Operating Pressure: Intermediate--Pressure and High--Pressure Distribution Systems. (Section 192.621 MFS Standards.) No person may operate a segment of an intermediate--pressure or high--pressure distribution system at a pressure that exceeds the lowest of the applicable pressures shown in 49 CFR 192.621(a)(1) through (5) and (b) of the MFS Standards.

(20) Odorization of Gas. (Section 192.625 MFS Standards.)
(a) A combustible gas in a distribution line shall have a distinctive odor of sufficient intensity so that a concentration of 0.15% gas in the air is readily perceptible to the normal or average olfactory senses of a person coming from fresh uncontaminated air into a closed room containing one part of the gas in 666 parts of air.
(b) In the concentrations in which it is used, the odorant in combustible

gases must comply with the following:

1. The odorant may not be deleterious to persons, material, or pipe.
2. The products of combustion from the odorant may not be toxic when breathed nor may they be corrosive or harmful to those materials to which the products of combustion will be exposed.

(c) The odorant may not be soluble in water to an extent greater than 2.5 parts to 100 parts by weight.

(d) Equipment for odorization must introduce the odorant without wide variations in the level of odorant.

(e) Equipment and facilities for handling the odorant shall be located so as to minimize the effect of an escape of odorant.

(f) Each operator shall conduct periodic samplings of the combustible gases to assure the proper concentration of odorant in accordance with 220 CMR 101.06.

(21) Distribution Systems: Leakage Surveys and Procedures. (Section 192.723 MFS Standards.) Each operator having a gas distribution system shall conduct leakage surveys, as frequently as experience and technology indicates they are necessary, but in no event shall such leakage surveys be less than the following minimum standards:

(a) Business Districts. A gas detector survey must be conducted in business districts including tests of the atmosphere in gas, electric, telephone, sewer and water system manholes, at cracks in pavement and sidewalks, and at other locations providing an opportunity for finding gas leaks, at least once in every consecutive 12 month period. In areas where an effectively prescribed and supervised survey of electric or other manholes and vaults is conducted and offers more frequent coverage than the previous, such a survey procedure may be substituted. Business districts are defined as areas with pavement from building wall to building wall and/or where the principal commercial activity of the city or town takes place. Such areas shall be outlined on a map and maintained by the operator.

(b) Distribution System Areas Not Included in the Principal Business District. Leakage surveys shall be made of the area not included in the principal business district at least once in every consecutive 24 month period.

(c) Type of Survey. Leakage surveys for 220 CMR 101.06(21)(a) and (b) shall include one or more of the following:

1. Gas detector surveys using combustible gas indicators, flame ionization equipment, infra-red equipment or other industry accepted testing equipment;
2. Bar tests;

3. Vegetation surveys;
4. Pressure drop tests.

(d) Other Surveys. In addition to the requirements of 220 CMR 101.06(21)(a) and (b), a survey of schools, churches, hospitals, theatres, and arenas shall be conducted at least once annually. The survey shall include tests for gas leakage and visual inspection of gas facilities in the immediate area of the service entrance.

(e) Hazardous Conditions Repaired. All disclosed conditions of a nature hazardous to persons or property shall be promptly made safe and permanent repairs instituted.

(f) Leakage Survey Records. Records of the leakage surveys required under 220 CMR 101.06 shall be maintained for a period of time not less than the interim between successive surveys.

(22) Test Requirements for Reinstating Service Lines. (Section 192.725 MFS Standards.)

(a) For the purpose of 220 CMR 101.06(22), each service line, temporarily disconnected from the main and to be operated at a pressure not in excess of one psig, shall be tested at a pressure of at least ten psig for not less than 15 minutes. Pressure loss due to leakage during the test period is not permitted.

(b) The operator shall make and retain a record of each pressure test required under 49 CFR 192.725 MFS Standards.

REGULATORY AUTHORITY

220 CMR 101.00: M.G.L. c. 164, §§ 66, 76, 76C, and 105A.

~~220 CMR: DEPARTMENT OF PUBLIC UTILITIES~~

(220 CMR 104.00: RESERVED)

~~220 CMR 104.00: PETROLEUM GAS PLANTS~~

~~Section~~

~~104.1 Petroleum Gas Plants~~

~~All liquefied petroleum gas plants in Massachusetts shall be constructed, operated, and maintained according to the requirements of National Fire Protection Association 59 Utility LP-Gas Plant Code (2004) (NFPA 59), and applicable provisions of 220 CMR 101.00: *Massachusetts Natural Gas Pipeline Safety Code* and 49 CFR Parts 40, 192, and 199.~~

~~104.2 Applications for Exceptions and Waivers~~

~~(1) A gas corporation or municipal gas department may make written request to the Department of Public Utilities (Department) for exception from any of the provisions of NFPA 59 or 220 CMR 104.01. The Department may, after consideration, and the payment of the appropriate fee, issue the requested exception or modification to the specific gas corporation or municipal gas department requesting such exception. Upon request or in an emergency, a verbal exception may be granted by the Department. This verbal request for grant of exception must be subsequently confirmed in writing to the Department within seven days of the time the exception is granted.~~

~~(2) The Department may issue a waiver to a gas corporation or municipal gas department from a provision of 49 CFR Part 192 of the federal regulations providing that the waiver pertains to an intrastate facility and the Department gives notice of such waiver to the U.S. Department of Transportation at least 60 days before the waiver becomes effective.~~

~~REGULATORY AUTHORITY~~

~~220 CMR 104.00: M.G.L. c. 164, §§ 66, 76, 76C, and 105A.~~

220 CMR 107.00: ABANDONMENT OF GAS SERVICE LINES AND LEAKAGE SURVEY PROCEDURES

Section

107.01: Applicability

~~Notwithstanding any other provisions of regulations,~~ 220 CMR 107.00 applies to any person engaged in the storage, transportation or distribution of gas and is not limited to gas corporations, gas companies or municipal gas departments.

~~107.02: Application for Exceptions from Provisions of 220 CMR 107.00~~

~~Any person engaged in the operation of a service line may make a written request to the Department for an exception to the provision of 220 CMR 107.00. The request shall justify why the exception should be granted and shall demonstrate why the exception sought does not derogate from the safety objective of 220 CMR 107.00.~~

~~The Department may deny the exception or grant the exception as requested, or as modified by the Department and subject to conditions. Any exception shall be issued in writing and may be made by the Director of the Pipeline Engineering and Safety Division of the Department. Any such person aggrieved by a decision of the Director regarding a request for an exception may appeal the Director's decision to the Commission. Any appeal shall be in writing and shall be made not later than ten business days following issuance of the written decision of the Director.~~

107.023: Definitions

For the purposes of ~~As used in~~ 220 CMR 107.00, the following definitions apply:

Abandoned ~~means that~~.:

(a) The service line is disconnected or cut off at or as close as practical to the main; and

(b) Any opening in the main or the open end of the segment of the service line left thereto is sealed; and

(c) The service line is purged of gas, except when the volume of gas is so small that there is no potential hazard; and

(d) The open end of the disconnected service line near the main and traversing to the premises is sealed.

Department~~. means the Massachusetts~~ Department of Public Utilities, Commonwealth of Massachusetts.

Distribution line ~~means a~~. A gas pipeline, other than a gas-gathering or transmission line, that is normally used by utilities for the transportation of natural gas and/or other flammable gas to customers.

Inactive service line ~~means a~~ . A service line where gas service to the customer has been discontinued but the service line has not been abandoned.

Main ~~means a~~ . A distribution line that serves as a common source of supply for more than one service line.

Operator ~~means a~~. A person who engages in the transportation of gas.

Person ~~means a~~. Any individual, firm, joint venture, partnership, corporation, association, state agency, municipality, municipal department, cooperative association, or joint stock association, and includes any trustee, receiver, assignee, or personal representative thereof.

Pipe ~~means a~~. Any pipe or tubing used in the transportation of gas, including pipe-type holders.

Pipeline ~~means a~~. All parts of those physical facilities through which gas moves in transportation including pipe valves and other appurtenances attached to pipe, compressor units, metering stations, regulator stations, delivery stations, holders and fabricated assemblies.

Purge ~~means t~~. The act of removing flammable gas from a distribution line and replacing it with a noncombustible gas.

Service Line ~~means a~~. A distribution line that transports gas from a common source of supply to:

(a) a customer meter or the connection to a customer's piping, whichever is further downstream; or

(b) the connection to a customer's piping if there is no meter.

107.032: Application for Exceptions from Provisions of 220 CMR 107.00

Any person engaged in the storage, transportation, or distribution of ~~operation of a service line~~ gas may make a written request to the Department for an exception to the provisions of 220 CMR 107.00, in whole or in part. The request shall justify why the exception should be granted and shall demonstrate why the exception does not derogate from the safety objectives of 220 CMR 107.00. The request shall include details on the need for the exception, specific information on the circumstances surrounding the exception, the provisions of the regulations from which exception is sought, and a description of any safety consequences that might result from the exception. Documentation in support of the request shall also be submitted.

~~The Department may deny the exception or grant the exception as requested, or as modified by the Department and subject to conditions. Any exception shall be issued in writing and may be made by the Director of the Pipeline Engineering and Safety Division of the Department. Any such person aggrieved by a decision of the Director regarding a request for an exception may appeal the Director's decision to the Commission. Any appeal shall be in writing and shall be made not later than ten business days following issuance of the written decision of the Director.~~

The Department may, after consideration and the payment of the appropriate fee, issue a written decision denying the exception or granting the exception as requested or as modified by the Department and subject to conditions. An exception may be granted or denied in writing by the Director of the Pipeline Safety Division, or by the Director's functional successor in the event of an internal reorganization of the Department. Any person aggrieved by a decision of the Director may appeal the decision to the Department. Any appeal shall be in writing and shall be made not later than ten business days following issuance of the written decision.

In an emergency, a verbal request for an exception may be granted by the Department or the Director, provided that the verbal request is subsequently confirmed in writing within seven days of the exception being granted.

107.04: Procedures for Abandonment of Service Lines

Each operator shall prepare and follow written procedures for the inactivation and abandonment of service lines. The procedures shall be included in the operator's procedural manual pursuant to 49 CFR ~~102~~192.605.

107.05: Abandonment of Service Lines

(1) Notwithstanding any provision of 220 CMR 107.05(2), (3), or (4), inactive service lines which shall be abandoned promptly, with due consideration to public safety, are those:
(a) Located in, or close to, excavations; or
(b) Located in, or close to, buildings being demolished; or
(c) Discovered to be leaking gas; or
(d) Unrecorded or previously unknown lines discovered in the course of leakage surveys, construction, maintenance or inspection of pipeline facilities.

(2) All service lines inactivated on or before August 8, 1985, and not later reactivated, shall be abandoned on or before August 8, 1995.

(3) A service line which was installed on or before July 31, 1971, and which becomes inactive after August 8, 1985, shall be abandoned not later than five years after the most recent inactivation date, provided, however, that if the operator can demonstrate that such service line is plastic or, in the alternative, is cathodically protected in accordance with 49 CFR 192.463 and 49 CFR 192.455(a)(1) and (2), then such service line shall be abandoned in accordance with 220 CMR 107.05(4).

(4) A service line which was installed after July 31, 1971, and which becomes inactive after August 8, 1985, shall be abandoned not later than ten years after the most recent inactivation date.

107.06: Records and Reports ~~f~~For Inactive and Abandoned Service Lines

(1) Readily accessible records of inactive service lines shall be maintained by the operator. Such records shall include the service line's location, the date the service line was installed, and the date the service line became inactive. If any information is unavailable to or unobtainable by the operator, it shall be listed on the record as "unknown."

(2) Readily accessible records of the location of any service line that is abandoned after August 8, 1985 shall be maintained by the operator for at least five years after the date of abandonment or for such longer time as the operator deems appropriate.

(3) Not later than March 15th of each year, each operator shall submit to the Department an annual report indicating the total number of inactive service lines in its distribution system on December 31st of the preceding calendar year, and the number of inactive service lines abandoned during the preceding

year.

107.07: Leakage Survey of All Service Lines

(1) Each operator of gas service lines shall conduct leakage surveys over all service lines as frequently as experience and technology indicate are necessary, and in accordance with 49 CFR Part 192.

(2) If any part of 220 CMR 107.07 conflicts with Department regulations contained in 220 CMR 101.06, 220 CMR 107.07 shall be controlling.

REGULATORY AUTHORITY

220 CMR 107.00: M.G.L. c. 164, §§ 1 66, 76, 76C, and 105A.

(220 CMR 108.00: RESERVED)

~~220 CMR 108.00: CONTROL OF DRUG USE~~

~~Section 108.01: Compliance with Minimum Federal Safety Standards~~

~~108.01: Compliance with Minimum Federal Safety Standards~~

~~Each operator of pipeline facilities used for the transportation of natural gas or hazardous liquids and each operator of liquified natural gas facilities shall comply with the provisions of 49 CFR Parts 40 and 199. The Department of Public Utilities will maintain a reference file containing the aforementioned federal regulations and incorporated documents.~~

~~REGULATORY AUTHORITY~~

~~220 CMR 108.00: M.G.L. c. 164, § 105A; 49 CFR 199.~~

220 CMR 109.00: DESIGN, CONSTRUCTION, OPERATION, AND MAINTENANCE OF INTRASTATE PIPELINES OPERATING IN EXCESS OF 200 PSIG

Section

109.01: Applicability and Scope

(1) 220 CMR 109.00 regulates the design, construction, operation, and maintenance of a pipeline with a maximum allowable operating pressure (MAOP) in excess of 200 pounds per square inch gauge (~~PSIG~~psig).

(2) 220 CMR 109.00 applies to every gas company, municipal gas department, or other person engaged in the design, construction, operation, and maintenance of a pipeline with an MAOP in excess of 200 ~~PSIG~~ psig and within the jurisdiction of the Commonwealth of Massachusetts.

~~109.02: Applications for Exceptions to 220 CMR 109.00~~

~~Any person engaged in the design, construction, operation, or maintenance of a pipeline with an MAOP in excess of 200 PSIG may make a written request to the Department for an exception to the provisions of 220 CMR 109.00. The request shall justify why the exception should be granted and shall demonstrate why the exception sought does not derogate from the safety objectives of 220 CMR 109.00. The Department may deny the exception or may grant the exception as requested or as modified by the Department and subject to conditions imposed by the Department. Any exception shall be issued in writing and may be made by the Director of the Division. Any person aggrieved by a decision of the Director regarding a request for~~

~~an exception may appeal from the Director's decision to the Commission established under~~
~~M.G.L. c. 25, ' 2. Any appeal shall be in writing and shall be made not later than ten business days following issuance of the written decision of the Director.~~

109.023: Definitions

Except as otherwise specified in 220 CMR 109.023, all words are as defined in 49 CFR Part 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*.

Department means the Department of Public Utilities, Commonwealth of Massachusetts.~~he Massachusetts Department of Public Utilities.~~

Determine means to make appropriate investigation using scientific or other definitive methods, reach a decision based on sound engineering judgment, and be able to demonstrate, substantiate, and document the basis of the decision.

Division means the Pipeline Safety Division of the Department, or its successor.

Gate Station means a location at which gas changes ownership or responsibility for transportation, from one party to another, neither of which is the ultimate consumer. Also referred to as "take station" or "delivery point."

Jetting means compaction of soil using a stream of high pressure water.

Operator means any person who owns, operates, or maintains a pipeline.

Person means any individual, firm, joint venture, partnership, corporation, association, state agency, municipality, municipal department, cooperative association, or joint stock association, and includes any trustee, receiver, assignee, or personal representative thereof.

Pipeline means a natural gas main or transmission line with an MAOP greater than 200 psig, including, but not limited to, pipe, valves, and other appurtenances attached to the pipe.

Puddling means use of water to aid in soil compaction.

Sectionalizing Block Valve means an operator-designated valve that is capable of starting and stopping the flow of gas in a segment of a pipeline.

Uprate ~~means t~~. To increase the Maximum Allowable Operating Pressure (MAOP) of a pipeline.

109.03~~2~~: Applications for Exceptions from Provisions of ~~to~~ 220 CMR 109.00

Any person engaged in the design, construction, operation, or maintenance of a pipeline with an MAOP in excess of 200 ~~PSIG~~psig may make a written request to the Department for an exception to the provisions of 220 CMR 109.00, in whole or in part. The request shall justify why the exception should be granted and shall demonstrate why the exception ~~sought~~ does not derogate from the safety objectives of 220 CMR 109.00. The request shall include details on the need for the exception, specific information on the circumstances surrounding the exception, the provisions of the regulations from which exception is sought, and a description of any safety consequences that might result from the exception. Documentation in support of the request shall also be submitted.

~~The Department may deny the exception or may grant the exception as requested or as modified by the Department and subject to conditions imposed by the Department. Any exception shall be issued in writing and may be made by the Director of the Division. Any person aggrieved by a decision of the Director regarding a request for an exception may appeal from the Director's decision to the Commission established under~~

~~M.G.L. c. 25, ' 2. Any appeal shall be in writing and shall be made not later than ten business days following issuance of the written decision of the Director.~~The Department may, after consideration and the payment of the appropriate fee, issue a written decision denying the exception or granting the exception as requested or as modified by the Department and subject to conditions. An exception may be granted or denied in writing by the Director of the Pipeline Safety Division, or by the Director's functional successor in the event of an internal reorganization of the Department. Any person aggrieved by a decision of the Director may appeal the decision to the Department. Any appeal shall be in writing and shall be made not later than ten business days following issuance of the written decision.

In an emergency, a verbal request for an exception may be granted by the Department or the Director, provided that the verbal request is subsequently confirmed in writing within seven days of the exception being granted.

109.04: Applicability to Existing Pipelines

(1) The siting, design, and construction requirements of 220 CMR 109.00 shall not apply to any pipeline constructed before February 19, 1999.

(2) Any pipeline constructed before February 19, 1999 shall comply with 220 CMR 109.07: *Pipeline Location Marking* and 220 CMR 109.13: *Operations and Maintenance* within 180 days of February 19, 1999~~the effective date of 220 CMR 109.00~~.

(3) Any pipeline constructed before January 1, 1971 with an MAOP of 275 ~~PSIG~~psig or less shall not be uprated to an MAOP greater than 275 ~~PSIG~~psig.

(4) Any pipeline constructed on or after January 1, 1971, but before February 19, 1999~~the effective date of 220 CMR 109.00~~, with an MAOP of 275 ~~PSIG~~psig or less may be uprated to an MAOP greater than 275 ~~PSIG~~psig if the pipe itself and all associated fittings and valves are suitable for the higher MAOP.

109.05: Compliance with Other Codes and Standards

(1) Unless otherwise authorized, the minimum safety standards for all pipelines are those issued under:
(a) 49 C~~.~~F~~.~~R~~.~~ Part 192~~,.~~ including all subsequent amendments thereto~~,~~; and
(b) 220 CMR 100.00 through 1153~~3~~.00, including all subsequent amendments thereto~~, and~~.

(2) To the extent that any provision of 49 C~~.~~FR~~.F.~~ Part 192 and 220 CMR 100.00 through 1153~~3~~.00 conflict, the more stringent regulation controls.

109.06: Location of a Pipeline

No segment of a pipeline shall be installed less than 40 feet from a building intended for human occupancy unless the construction criteria for a Class 4 area, as defined in 49 C~~.~~F~~.~~R~~.~~ Part 192, are met.

109.07: Pipeline Location Marking

(1) An aboveground line marker shall be placed and maintained at or as close as practicable over each buried pipeline to meet the transmission line requirements set forth in 49 C~~.~~F~~.~~R~~.~~ ~~Part~~ 192.707, except for buried pipelines within the confines of a gate station. The references to location class requirements shall be as defined in 49 C~~.~~F~~.~~R~~.~~ ~~Part~~ 192.5.

(2) The operator shall maintain drawings or plans showing the actual location of the pipeline, valves, pressure regulating stations, and any other pipeline facilities. The drawings or plans shall be updated whenever any changes are

made to the pipeline. Each pipeline and its routing shall be reviewed in the field at least once each calendar year, but at intervals not to exceed 15 months, to determine whether the drawings or plans must be revised. The annual review shall be documented. Maps indicating the route of the pipeline shall be given to the fire department and public works department of each municipality through which the pipeline passes. Updated maps, whenever prepared, shall also be provided.

109.08: Materials

(1) All pipe six inches or greater in diameter shall have a specified minimum yield strength (SMYS) of at least 35,000 ~~PSIG~~psig.

(2) All pipe six inches or greater in diameter shall have a wall thickness of at least 0.280 inches. All pipe less than six inches in diameter shall be at least Schedule 40 wall thickness.

109.09: Cover and Backfill

(1) Except as provided in 220 CMR 109.09(2), any buried pipeline shall be installed with a minimum cover of three feet from the top of the pipe to the finished grade.

(2) Where an underground man-made structure prevents the installation of a pipeline with a minimum cover, the pipeline may be installed with less cover provided that it is installed with additional protection to withstand anticipated external loads.

(3) Bed, side, and top fill material shall extend at least six inches around the circumference of the pipe after compaction. The fill material shall be a natural granular soil or sand with 100% of the particles finer than a 3/4-inch sieve and less than 10% of the particles finer than a No. 200 sieve.

(4) Material used for backfilling over the top fill to a point approximately two feet over a pipeline shall contain no rock larger than eight inches in its greatest dimension. There shall be no concentrated organic matter in the backfill.

(5) All fill material shall be placed in lifts of no more than 12 inches, loose measurement. Each lift shall be thoroughly compacted by mechanical or pneumatic means before the next lift is placed.

(6) There shall be no puddling or jetting of the backfill material.

(7) Reinforced yellow-colored warning tape, at least eight inches wide and composed of a material resistant to deterioration in soil, shall be buried flat, over the pipeline along the entire buried portion of its route. The warning tape shall be buried approximately one foot below grade. The following caption or its equivalent, shall be repeatedly printed on the warning tape: "CAUTION - GAS PIPELINE BURIED BELOW."

109.10: Welding and Welding Inspection

(1) All welding procedures shall be qualified in accordance with A~~.P.I.~~PI Std. 1104 (as referenced in 49 C~~.~~F~~.~~R~~.~~ Part 192).

(2) Each welder shall be qualified in accordance with A~~.P.I~~PI Std. 1104 (as referenced in 49 C~~.~~F~~.~~R~~.~~ Part 192) no more than six months before performing welding on a pipeline.

(3) All butt welds on a pipeline six inches or greater in diameter shall be nondestructively tested by radiographic inspection in accordance with A~~.P.I.~~PI Std. 1104 (as referenced in 49 C~~.~~F~~.~~R~~.~~ Part 192), except for girth welds that are determined impracticable to test by radiographic inspection, provided that 90% of all girth welds, on pipelines six inches or greater in diameter, are nondestructively tested by radiographic inspection.

(4) All pipeline tie-in welds shall be nondestructively tested.

(5) All other welds shall be tested in a manner that is determined by the operator to reasonably indicate defects that may affect the integrity of the weld. Such testing shall be by means of radiographic inspection, other industry approved means of nondestructive testing, or visual inspection. Visual inspections of welds shall be performed and approved by a qualified welding inspector.

(6) All welds that are found unacceptable under 220 CMR 109.10 shall be removed or repaired in accordance with 49 C~~.~~F~~.~~R~~.~~ ~~Part~~ 192.245.

(7) A record of each nondestructive weld test or visual inspection, including radiographs pertaining thereto, shall be retained for the life of the pipeline. The disposition of rejected welds shall be part of the record.

109.11: Pressure Testing

(1) The operator shall use a test procedure that will ensure discovery of all

hazardous leaks in the segment of pipeline being tested.

(2) All sections of the pipeline shall be successfully hydrostatically or pneumatically tested to at least 1.5 times the MAOP for at least eight hours before being placed into service. Any leaks found during the test shall be repaired or removed before the pipeline is placed into service. When pneumatic testing is used for aboveground piping, consideration shall be given to protecting the public and personnel or providing mitigating measures (*e.g.*, blast mats, barriers, temporary burial of the pipe) during the test.

(3) Each joint used to tie in a test segment of pipeline is exempt from the specific test requirement of 220 CMR 109.11(2). However, it must be leak tested at no less than its normal operating pressure.

(4) Each pressure test conducted to comply with 220 CMR 109.11(2) shall be documented with a calibrated recording instrument.

(5) All pressure testing records and pressure charts shall be maintained for the life of the pipeline. The test information shall comply with 49 C~~.~~F~~.~~R~~.~~ ~~Part~~ 192.517.

109.12: Valves

(1) Each valve installed on a pipeline shall comply with the following:
- (a) The valve and its operating device to open or close the valve shall be at a location that is readily accessible to authorized personnel to operate.
- (b) The valve and its operating device shall be reasonably protected from tampering, unauthorized operation, or damage.
- (c) The valve shall be supported to prevent settling of the valve or movement of the pipe to which it is attached.
- (d) If the valve is installed below ground with a valve box or in an enclosure, the box or enclosure shall be installed so that it will not transmit external loads to the pipeline.

(2) Each pipeline shall have sectionalizing block valves spaced so that each point on the pipeline is within four miles of a sectionalizing block valve. If the pipeline passes through an area designated as a Class 4 location, as defined in 49 C~~.~~F~~.~~R~~.~~ ~~Part~~ 192.5, the federal transmission line spacing requirements shall be applicable, as set forth in 49 C~~.~~F~~.~~R~~.~~ ~~Part~~ 192.179(a)(1).

(3) Each section of a pipeline located between sectionalizing block valves shall have a blow-down valve. Each blow-down valve shall be sized so as to

reduce the time needed to reduce the pressure in the pipeline safely and quickly. The discharge point of each blow-down valve shall be located to minimize the hazard to the public in the event gas is vented to the atmosphere.

(4) Where practicable, each regulating station that supplies gas to a pipeline shall have a valve in the pipe supplying the regulating station, provided that the pipe is owned by an operator under the jurisdiction of the Department. The valve shall be located where it can be operated during an event that could preclude access to the station.

109.13: Operations and Maintenance

(1) The pressure at the beginning of a pipeline and at each of the end points of a pipeline shall be monitored except for short segments of pipe within the confines of a gate station.

(2) The flow rate and other pressures or operating functions determined necessary by the operator for the safe operation of a pipeline shall be monitored.

(3) The functions listed in 220 CMR 109.13(1) and 109.13(2) shall be monitored at a continuously attended control center. Any abnormal condition of a monitored function shall activate audible and visible alarms at the control center.

(4) The entire route of the pipeline shall be patrolled at least four times each calendar year but at intervals of no more than 4 1/2 months.

(5) Each pipeline shall he leakage surveyed at least once each calendar year but at intervals of no more than 15 months. Leakage surveys shall be done with flame ionization detectors or equivalent devices.

(6) There shall be written procedures for any maintenance or repairs performed on a pipeline. The materials and equipment used for maintenance or repair shall be suitable for the MAOP of the pipeline. Personnel shall be trained in the procedures and use of the materials and equipment before any maintenance or repairs are performed.

REGULATORY AUTHORITY

220 CMR 109.00: M.G.L. c. ~~30A, ' 2; c.~~ 164, ~~' '~~ §§ 66, 76, 76C, and 105A.

220 CMR 111.00: CONSTRUCTION OF STREETS, PLACES AND WAYS, EXCEPT RESIDENTIAL DRIVEWAYS, OVER, ALONG OR ACROSS HIGH--PRESSURE GAS MAINS OPERATING AT PRESSURES IN EXCESS OF 200 PSIG.

Section

~~111.01: Definitions~~
111.01~~2~~: Application
111.02~~1~~: Definitions
111.03: General Provisions
111.04: Specifications for the Installation of Pipe Under a Road

111.01~~2~~: Application

220 CMR 111.00 shall apply only to the laying out or construction of any street, place or way, except a residential driveway, over, across or along that portion of high--pressure gas mains located within a right of way which the gas company holds in fee or by easement.

111.02~~1~~: Definitions

For the purposes of 220 CMR 111.00, the following definitions apply:

Department. Department of Public Utilities, Commonwealth of Massachusetts.

Gas company ~~as mentioned in 220 CMR 111.00 is a~~. Any person, firm or corporation engaged in the transmission or delivery of gas through high--pressure gas mains or pipelines.

Person ~~as used in 220 CMR 111.00 shall include a~~. Any individual, firm, joint venture, partnership, corporation, association, state agency, municipality, cooperative association, or joint stock association, and including any trustee, receiver, assignee, or personal representative thereof ~~firm, corporation or other legal entity~~.

Construction ~~as used herein s~~. Shall include repair, reconstruction and alteration.

High--pressure gas main ~~as used herein is a~~. Any gas main or pipeline subjected to, or to be subjected to, an internal pressure in excess of 200 pounds per square inch gauge (psig).

~~111.02: Application~~

~~220 CMR 111.00 shall apply only to the laying out or construction of any street, place or way, except a residential driveway, over, across or along that portion of high pressure gas mains located within a right of way which the gas company holds in fee or by easement.~~

111.03: General Provisions

Unless otherwise ordered by the Department in any particular case, no street, place or way subject to the provisions of 220 CMR 111.00 shall be constructed over a high~~-~~pressure gas main except where it is necessary for said street, place or way to cross said main. Whenever such ~~-~~crossings are required, they shall be made as nearly as practicable to an angle of 90E to the center line of said main. The main shall be enclosed in a casing and constructed in a manner which meets the requirements of the specifications ~~in A.P.I. Code No. 2 (Second Edition, dated November, 1955)~~ issued by the American Petroleum Institute,~~-~~ API RP 1102 (7th ed.),~~and entitled~~ "~~Recommended Practice on Form of Agreement and Specifications for~~Steel Pipe~~l Li~~nes Crossing~~s Under~~ Railroads and Highways~~ Tracks~~," except that the minimum distance from the top of the casing to the used surface of the road shall be four feet six inches and the casing shall extend beyond the edges of the pavement or used surface of the street, place or way where there is no pavement a distance of not less than 25 feet or to the line of the right of way for the street, place, or way, whichever is the lesser. In cases where said right of way is not defined, the casing shall extend 25 feet beyond the edges of the pavement or the used surface of the street, place or way where there is no pavement. The Department will ordinarily grant a reduction in depth of cover limitations provided that all such construction be in accordance with the ~~following~~ specifications for excavation and backfill set forth in 220 CMR 111.04, and the Department will also grant a variance from the requirement of casing if the pipeline facility can be adequately safeguarded and such installation is made in accordance with 220 CMR 111.04~~the following specifications for excavation and backfill~~.

111.04: Specifications for the Installation of Pipe Under a Road

(1) Construction Method. (Refer to Figure 1.)
- (a) Excavation: Excavate trench sides as nearly vertical as practical. Make trench width at least 12 inches but not ~~-~~more than 24 inches wider than the diameter of the pipe (where practicable).
- (b) Bed Fill: Place, compact and shape the bed fill. Locate the bed so that the pipe will lie in the center of the trench.
- (c) Pipe: Lay pipe on bed.
- (d) Side Fill: Fill both sides of the pipe simultaneously in six inch lifts.

Compact each lift.

(e) Top Fill: Place the top fill at the same time the last lift of side fill is placed. Do not compact top fill for first six inches over pipe.

(f) Back Fill: Place in six inch lifts and compact above six inch layer.

(2) Compaction.

(a) The bed side and top fill must be compacted by any one of the following methods:

1. Three inch lifts and two coverages with a hand tamper weighing from 15 to 25 pounds having an area of tamping face 50 to 90 inches.
2. Four inch lifts with two coverages of a pneumatic compactor or a jackhammer fitted with a plate six to eight inches in diameter.
3. Six inch lifts of fill with two coverages of a rubber-tired roller or the wheels of a rubber-tired earth-moving equipment.

(b) The backfill must be placed in six inch lifts with each lift being compacted by at least one coverage of a mechanical compactor or of construction equipment. That portion of the backfill within the subgrade and base of a road or railroad must be compacted to the standard specified for the particular base or subgrade.

(3) Fill Materials.

(a) Bed, side and top fill: Use a natural granular soil (concrete sand, asphalt course base sand) having the following size characteristics ~~(as determined by ASTM D422-54T)~~:

1. 100% finer than 3/4 inches.
2. 30% to 90% finer than No. 10 sieve.
3. 10% to 40% finer than No. 40 sieve.
4. Less than 10% finer than No. 200 sieve.

(b) Backfill: Use a soil having:

1. No particles larger than 12 inches.
2. No concentrated organic matter.

(c) Backfill: Within the depth of road, subgrade and base must meet the specifications in force for the particular base or subgrade.

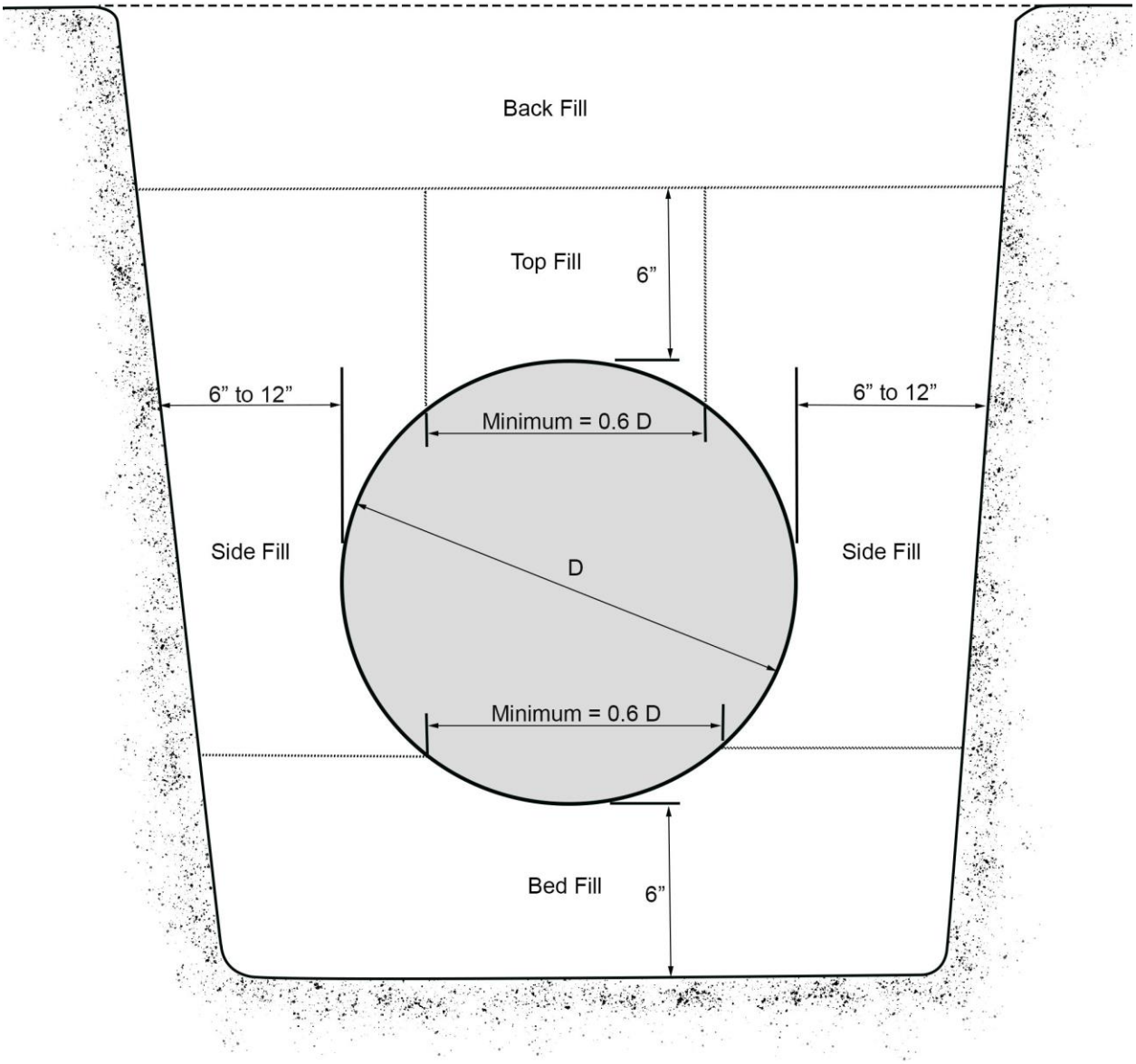
(d) No person or municipality shall uncover, disturb, change or otherwise alter or interfere with the safety of any high-~~-~~pressure gas main or portion thereof subject to the provisions of 220 CMR 111.00.

(e) Any person or municipality laying out or intending to construct a street, way, or place over, across or along a high-~~-~~pressure gas main subject to the provisions of 220 CMR 111.00 shall so notify in writing the Department and the owner of the high-~~-~~pressure pipeline at least 30 days before undertaking such construction. The notice shall accurately

describe the location of the street, place or way in sufficient detail as to width, length, grade and proposed date of construction. Upon request the gas company shall within seven days have a qualified representative inspect the location and describe to said person or municipality the work necessary to effect compliance with 220 CMR 111.00 and the gas company shall, upon request, provide an estimate of the cost of said construction within 30 days.

(f) Any person, municipality or gas company may make written request to the Department for exception from or modification of any of the provisions of 220 CMR 111.00.

FIGURE 1: INSTALLATION OF PIPE UNDER ROAD



REGULATORY AUTHORITY

220 CMR 111.00: M.G.L. c. 164, ~~§~~§§ 66, 76, 76B, 76C, and 105A.

220 CMR 112.00: DESIGN, OPERATION, MAINTENANCE AND SAFETY OF LIQUEFIED NATURAL GAS (LNG) PLANTS AND FACILITIES

Section

112.01: Applicability and Scope

~~(1) 220 CMR 112.00 is adopted pursuant to M.G.L. c. 30A, ' 2, and M.G.L. c. 164, ' 76, and is effective on final publication in the Massachusetts Register.~~

(1) ~~(2)~~ 220 CMR 112.00 regulates the design, construction, operation or maintenance of a facility or plant to liquefy, store, or vaporize natural gas.

(2~~3~~) 220 CMR 112.00 applies to every gas company, municipal gas department, or other person engaged in the siting, design, construction, operation, maintenance, security, or fire protection of an LNG facility or plant within the jurisdiction of the Commonwealth of Massachusetts.

(3~~4~~) 220 CMR 112.00 applies to each new facility or plant installed after September 14, 1990~~the effective date of 220 CMR 112.00~~.

(4~~5~~) 220 CMR 112.00 applies to each facility and plant~~,~~ existing in Massachusetts on September 14, 1990~~the effective date of 220 CMR 112.00 (9/14/90)~~, to the maximum extent not inconsistent with 49 CFR Part 193 -- *Liquefied Natural Gas Facilities: Federal Safety Standards*, the Natural Gas Pipeline Safety Act of 1968 as amended, and the United States Constitution.

(5~~6~~) Each facility or plant made subject to the requirements of 220 CMR 112.01(4) and (5) shall comply with any requirement subsequently imposed under 220 CMR 112.00 within 18 months of September 14, 1990 ~~the effective date~~.

112.02: Definitions

Except as otherwise specified in 220 CMR 112.02, all words are as defined ~~as~~ in 49 CFR Part 193 -- *Liquefied Natural Gas Facilities: Federal Safety Standards*.

Department. Department of Public Utilities, Commonwealth of Massachusetts.

Operator. A person who owns, operates, or maintains an LNG facility or plant.

Person. Any individual, firm, joint venture, partnership, corporation, association, state agency, municipality, cooperative association, or joint stock association, and includes any trustee, receiver, assignee or personal representative thereof.

112.03~~2~~: Applications for Exceptions from Provisions of 220 CMR 112.00

Any person engaged in the operation of an LNG plant or facility may make a written request to the Department for an exception to the provisions of 220 CMR 112.00 in whole or in part.

The request shall justify why the exception should be granted and shall demonstrate why the exception ~~sought~~ does not derogate from the safety objectives of

220 CMR 112.00. The request shall include details on the need for the exception, specific information on the circumstances surrounding the exception, the provisions of the regulations from which exception is sought, and a description of any safety consequences that might result from the exception. Documentation in support of the request shall also be submitted.

~~The Department may issue the exception as requested, or as modified and subject to conditions, to the person requesting such exception. After receipt of a written request, the Department shall set forth in writing its reasons for granting or denying the request. The Department may authorize the Director of the Division of Pipeline Engineering and Safety Division to grant or deny requests for exceptions.~~The Department may, after consideration and the payment of the appropriate fee, issue a written decision denying the exception or granting the exception as requested or as modified by the Department and subject to conditions. An exception may be granted or denied in writing by the Director of the Pipeline Safety Division, or by the Director's functional successor in the event of an internal reorganization of the Department. Any person aggrieved by a decision of the Director may appeal the decision to the Department. Any appeal shall be in writing and shall be made not later than ten business days following issuance of the written decision.

In an emergency, a verbal request for an exception may be granted by the Department or the Director, provided that the verbal request is subsequently confirmed in writing within seven days of the exception being granted.

~~112.03: Definitions~~

~~Except as otherwise specified in 220 CMR 112.03, all words are defined as in 49 C.F.R. Part 193, Liquefied Natural Gas Facilities: Federal Safety Standards.~~

~~Department means, the Massachusetts Department of Public Utilities.~~

~~Operator means a person who owns, operates, or maintains an LNG facility or plant.~~

~~Person means any individual, firm, joint venture, partnership, corporation, association, state agency, municipality, cooperative association, or joint stock association, and includes any trustee, receiver, assignee or personal representative thereof.~~

112.10: Standards and Codes

(1) Unless otherwise authorized, the minimum safety standards for all LNG plants and facilities are those issued under:

(a) The Natural Gas Pipeline Safety Act of 1968, ~~49 U.S.C. 1671-1684,~~ as amended, as set forth in 49 C~~.~~F~~.~~R~~.~~ Part 193, including all subsequent amendments thereto; and

(b) The regulations set forth in 220 CMR 112.00.

(2) To the extent that any provision of 220 CMR 112.00 conflicts with the regulations of 49 C~~.~~F~~.~~R~~.~~ Part 193, the more stringent regulation controls.

(3) Subject to 220 CMR 112.01(~~45~~), each LNG plant or facility designed and constructed before September 14, 1990,~~the effective date of 220 CMR 112.00~~ shall comply with the standards and codes in effect at the time the plant or facility was designed and constructed.

(4) Each modification to a component of an existing LNG plant or facility that is made after September 14, 1990, ~~the effective date of 220 CMR 112.00~~ shall comply with the standards, codes and documents incorporated by reference in ~~Appendix A of~~ 49 C~~.~~F~~.~~R~~.~~ Part 193.

112.11: Plans and Procedures

(1) At each LNG plant, the operator shall prepare, adhere to, and maintain in promptly updated form the plans and procedures required by 220 CMR 112.00 and by 49 C~~.~~F~~.~~R~~.~~ Part 193 for that plant. The plans and procedures shall be made available on request by the Department for review and inspection. In addition, each change to the plans or procedures shall be available at the LNG plant for review and inspection within 20 days after the change is made.

(2) Each operator shall timely submit the plans and procedures and any changes thereto to the Department, except for security plans and procedures subject to the provisions of 220 CMR 69.02.

(3) The Department may require the operator to amend its plans and procedures to provide a reasonable level of safety.

112.12: Records

(1) Each operator shall keep records adequate to ~~–~~substantiate compliance with 49 C~~.~~F~~.~~R~~.~~ Part 193 and 220 CMR 112.00.

(2) Subject to the provision of 220 CMR 69.02, the Department may have access to records for inspection and copying.

(3) Each operator shall keep a record of all materials used for components, buildings, foundations, and support systems. These records shall be maintained for the operating life of the aforementioned items.

112.20: Operations Control Center

(1) Each LNG plant shall have a control center from which operations and warning devices are continuously monitored.

(2) A control center shall have personnel in continuous attendance while any of the components under its control are in operation. If a plant is being operated from a remote control center, the controls shall be linked to an alarm audible throughout the plant.

(3) Each control center shall have a means of communicating a warning of hazardous conditions to all locations in the plant frequented by personnel.

(4) If more than one control center is located at an LNG plant, there shall be at least two means of communication between all such control centers.

(5) All gas detectors and fire detectors shall be linked to visible and audible alarms at a continuously attended control center.

112.21: Alarm Systems at Plants Not Continuously Attended

An alarm system shall be provided in each plant that is not continuously attended to transmit an alarm to a continuously attended facility of the operator. Such alarm system shall be capable of indicating abnormal pressure, temperature, gas concentration, security breach, fire, and other abnormal conditions.

112.22: Inspection of Plants Not Continuously Attended

Each plant that is not continuously attended shall be visually inspected at least once a day by a qualified representative of the operator to ensure that it is in a safe

condition.

112.23: Emergency Controls

Emergency controls shall be conspicuously marked with their designated function and located for ready access in emergencies.

112.24: Cargo Transfer Operations

Each hazardous fluid cargo transfer system shall be inspected before every use to verify that the valves and controls are in their proper operating position. Transfer operations shall allow time for proper cooldown of piping and equipment. If any unusual pressure or temperature variations occur, transfer shall be stopped, as soon as safely possible, until the cause has been determined and corrected. Pressure readings shall be observed during LNG, propane, or refrigerant cargo transfer operations.

112.25: Portable Vaporizers

Portable LNG vaporizers shall be located inside the plant's fenced perimeter when used to vaporize gas from the LNG plant.

112.30: Maintenance -- General

(1) All components in service shall be maintained in sound condition consistent with operational or safety purposes. The operator shall keep and update written maintenance procedures for all components whose failure to function as designed could result in a danger to the public or to plant personnel.

(2) Written maintenance procedures shall include, but not be limited to, the following:
   (a) details of inspection and testing to meet the requirements of 49 C.F.R. Part 193, Subpart G - *Maintenance*;
   (b) frequency of inspection and testing;
   (c) procedures for each maintenance activity performed on each component;
   (d) description or procedures to follow for all other actions necessary to maintain the subject LNG plant in accordance with 49 C.F.R. Part 193, Subpart G - *Maintenance*, and Subpart I - *Fire Protection*, including maintenance procedures required to reduce to a minimum the occurrence and consequences of fire; and
   (e) methods used to verify that maintenance standards for components are met.

112.31: Relief Valves

The means for adjusting the set point pressure on all adjustable relief devices shall be sealed.

112.32: Transfer System Valves

Each shutoff valve on any transfer system shall be located and equipped for ready access, operation, and maintenance.

112.40: Fire Prevention and Control -- Fire Study and Prevention Plan

(1) Each LNG plant or facility shall have a written fire prevention plan that includes the determinations and supporting documentation for those determinations to substantiate compliance with 49 C.F.R. ~~Part~~ 193.2801~~5~~ - *Fire ~~Prevention Plan, 49 C.F.R. Part 193.2817 - Fire Equipment~~Protection*, and 220 CMR 112.00. The operator shall review the plan at least once every two years and shall review the plan whenever any major change occurs in the plant's design, operations, or neighboring environment.

(2) The plan shall include, but not be limited to:
- (a) determination of potential sources of flammable fluids (*e.g.*, natural gas, propane, gasoline) and flammable materials (*e.g.*, insulation, wood);
- (b) determination of potential ignition sources within the plant;
- (c) determination of potential ignition sources in the area around the plant that could be covered by a vapor cloud if any single component containing LNG within the plant failed;
- (d) determination of the areas within the plant or facility where the potential exists for the leakage of flammable fluids, including, but not limited to, those areas described in the National Fire Protection Association NFPA 70 (National Electrical Code), Section 500.5(B)~~-4~~, *Class I Locations*;
- (e) determination of the types, sizes and foreseeable consequences of LNG and other cryogenic or hazardous liquid spills that may reasonably be expected to occur within the plant (including the extent vapor clouds travel outside the plant);
- (f) determination of the types, sizes and consequence of fires that may reasonably be expected to occur inside or within a reasonable distance of the LNG facility or plant; and

(g) a training program prepared with cooperating local police, fire, and emergency management~~civil defense~~ departments, including, but not limited to, training on controls, piping, and fire equipment, procedures, and emergency drills. Such training program may be augmented by local fire department requirements. An annual report outlining the training program for the preceding year shall be submitted to the Department no later than January 30th of each year. The report shall include the name and job title of operating and maintenance personnel and any appropriate official public personnel that have participated in the program.

(3) In developing the fire prevention plan, each operator shall analyze and consider the benefits, estimated cost, and feasibility of installing the following fire prevention, safety, and operating equipment at the plant:

(a) sumps, grading, and open drainage trenches to confine and mitigate the effects of LNG spills including, but not limited to vaporizer, liquefaction, and storage tank dike areas;
(b) automatic or motorized valves, capable of local or remote operation, located at flammable fluid cargo transfer areas, and designated for use during an emergency;
(c) existing fire-fighting equipment and revisions of fire-fighting procedures;
(d) use of high-expansion foam systems for fire-fighting and vapor control;
(e) adequacy of existing control and alarm systems, including, but not limited to control panel layout and instrumentation, location of controls, emergency shutdown systems, and fail-safe design of control systems;
(f) location, construction, and protection of LNG plant control rooms;
(g) location and protection of each auxiliary generator and related fuel supplies;
(h) protection of pipe supports and equipment foundations from cryogenic fluid spills;
(i) protection of LNG cargo transfer station piping, valves, and hoses from damage caused by vehicles;
(j) prevention of valve freeze-up caused by icing;
(k) controls, equipment, and procedures to keep LNG from entering lines that run outside the plant (*e.g.*, internal condensate lines from vaporizers, surface water drainage lines);
(l) adequacy of existing fire detection and gas detection systems;
(m) removal of existing copper or copper-alloy tubing and piping carrying hazardous or cryogenic fluids and replacement with stainless steel tubing and piping;
(n) location and distribution of relief valve vents to eliminate hazards to

personnel and equipment; and

(o) replacement or modification of buildings constructed with combustible materials with buildings made primarily of non-combustible materials.

(4) Each operator shall file a copy of the written fire study and prevention plan and all updates with the Department's Pipeline ~~Engineering and~~ Safety Division or its successor division.

112.41: Emergency Plan: Equipment and Procedures

In making determinations required by 220 CMR 112.40 and 49 C~~.~~F~~.~~R~~.~~ 193.2801~~5 and 193.2817~~, the operator shall provide the following emergency equipment and supplies:

(1) fire-fighting and control equipment, supplies and materials;

(2) components including impounding systems, to control flammable fluid leakage, spill and release;

(3) procedures to be followed by the operator's personnel and appropriate local public officials and their personnel in the event of an emergency and the manual required by 49 C~~.~~F~~.~~R~~. Part 193, Section~~ 193.2509 - *Emergency Procedures*;

(4) protective clothing, safety and communications equipment, first-aid supplies, and tools necessary for the operator's personnel to perform emergency duties.

112.42: Evacuation Plan

In association with cooperating local police, fire, ~~civil defense~~emergency management departments, and other public officials, each operator of an LNG facility or plant shall prepare a written evacuation plan to protect the public in the event of a determined controllable or uncontrollable emergency. Each operator shall review evacuation plans at least annually and revise plans as circumstances warrant. Each operator shall file a copy of the written evacuation plan and all updates with the Department's Pipeline ~~Engineering and~~ Safety Division or its successor division.

112.43: Accessibility to Plant Site

All plant sites shall be designed, maintained, and operated to provide ease of access and egress for personnel, equipment, and materials of the operator and public authorities in controlling leakage, spill or release of flammable and hazardous fluids, fire-fighting, and evacuating and rescuing personnel.

112.44: Fire Detection System

Each building that contains flammable fluids shall have a fixed fire detection system that provides an audible and visible alarm at an attended control room and an audible or visible alarm outside the building.

112.45: Dike Penetrations

(1) No dike penetrations for piping or other purposes may be added after September 14, 1990~~the effective date of 220 CMR 112.00~~.

(2) Any dike penetrations in place as of ~~the effective date of 220 CMR 112.00~~September 14, 1990, shall be constructed of or lined with pipe capable of withstanding cryogenic temperature and any dike penetration in place as of September 14, 1990, ~~the effective date of 220 CMR 112.00~~ shall be equipped with a valve designed to close automatically on exposure to cryogenic temperatures. Such valve shall also be capable of being closed remotely from outside the dike and capable of withstanding cryogenic temperatures. Such valve shall be closed except when in use for its intended purpose.

112.46: Sumps and Grading

(1) Grading, drainage, impounding systems, and separation distances shall be

provided to the extent determined practicable by the operator, consistent with good engineering practice, at plants existing as of September 14, 1990, ~~the effective date of 220 CMR 112.00~~ and at all plants constructed after September 14, 1990 ~~the effective date of 220 CMR 112.00~~, to ensure that accidental hazardous liquid spills from the following areas do not endanger other areas, adjacent property, or enter navigable waterways. ~~This requirement applies to the following five areas~~:

(a) liquefaction and other process areas;
(b) vaporizer areas;
(c) cargo transfer system areas;
(d) tank truck or tank car parking areas; and
(e) areas for handling or storing portable containers.

(2) Each LNG cargo transfer station shall have an associated sump to contain spilled liquid. A system of trenches shall be used to conduct spilled liquid from the transfer station.

(a) The sump volume shall be at least 10,000 gallons for transfer stations designed to handle one or two trucks. The sump volume shall be at least 15,000 gallons for transfer stations handling three or more trucks.
(b) The sump shall be located so as to minimize the vapor concentration and thermal radiation at the transfer station and plant boundaries. A truck station sump shall be so located that the thermal radiation from a fire may not exceed 3,700 Btu/sq. ft./hour at an LNG storage tank.

(3) When determined by the operator to be practicable, each diked storage tank area shall have a sump and trenches to reduce the vaporization and thermal radiation from a ten minute spill. The spill rate shall be determined according to the following formula:

$$q = (4/3)\ (d2)\ \%h$$

where:

q = Liquid flow rate, cubic feet per minute
d = Diameter of largest tank penetration below LNG liquid level (expressed in inches); and
h = Maximum liquid height above the penetration (expressed in feet).

112.47: Transfer Piping Protection

(1) LNG cargo transfer piping, valves, and hoses shall be protected from damage by vehicles, as follows:

(a) Piping and valves shall be shielded by steel and/or concrete barriers

(*e.g.*, highway guardrails, Jersey barriers).

(b) A hose rack or other protective structure shall be provided at the transfer stations. Transfer hoses may not be stored on the ground.

(c) Barriers and racks shall, however, permit ready escape by personnel in an emergency.

(2) Sources of ignition (*e.g.*, welding, flames, unclassified electrical equipment) may not be permitted within 50 feet of tank trucks or tank cars during transfer.

112.48: Control Room Warning Devices

Each operator shall install warning devices in the control room to warn of hazardous conditions detected by all sensing devices required by 220 CMR 112.00 and by the applicable sections of 49 C~~.~~F~~.~~R~~.~~ Part 193. The warning devices shall:

(1) provide audible and visible alarms designed to gain the attention of personnel; and

(2) indicate the location and type of hazard detected.

112.49: High Expansion Foam Systems

Each LNG plant shall have a high expansion foam system. The size, location, and type shall be determined as part of the fire study and prevention plan required by 220 CMR 112.40.

112.50: Cargo Transfer System Valves

(1) All cryogenic or hazardous fluid cargo transfer systems shall have at least one remotely operated valve at the cargo transfer station. Emergency shut-off valves for LNG and other cryogenic or hazardous fluid cargo transfer systems shall be designed to be:

(a) manually operable at the valve, and

(b) power operable at the valve, and

(c) power operable at a remote location at least 50 feet from the valve.

(2) Cargo transfer systems equipped with a check valve to prevent backflow from the storage tank are exempt from the requirements of 220 CMR 112.50(1).

112.60: Notification of Plant Modifications

Each operator shall notify the Department of any modifications of, or change in, a component or facility at an LNG plant estimated to cost $50,000 or more. Except in an emergency, notification shall include a written detailed description and shall be submitted to the Department at least 30 days before the modification or change may be made. In other, non-emergency situations where 30 days notice is impracticable, the Department may allow work effecting the modification or change to begin after the elapse of at least 24 hours or some other period of less than 30 days following its receipt of notification. In the event of a bona fide emergency, the operator may, without prior notice to the Department, commence such modifications as circumstances require but shall notify the Department as soon as is practicable.

112.61: Piping Materials

Piping made of cast iron, malleable iron, ductile iron, copper, or copper alloys, may not be used to carry cryogenic or hazardous fluids, except that copper or copper-alloy tubing and piping two inches or less in diameter and installed as of September 14, 1990, ~~the effective date of 220 CMR 112.00~~ may be used to carry cryogenic or hazardous fluids.

112.62: Welding

(1) After September 14, 1990~~the effective date of 220 CMR 112.00~~, welding of pressurized piping for LNG or other cryogenic or hazardous fluids shall comply with 49 C~~.~~F~~.~~R~~.~~ Part 192, Subpart E - *Welding of Steel in Pipelines*. Such welding shall conform to the restrictions expressed in the 220 CMR 112.62 in addition to other sound engineering and work practices.

(2) Materials to be qualified by impact testing shall be welded using procedures that preserve the low temperature properties of the material.

(3) Piping attachments shall be welded using procedures to prevent burn-through and stress intensification.

(4) Oxygen-fuel gas welding is prohibited.

(5) Marking materials used to identify pipe welds shall be compatible with the basic pipe material.

(6) Any permitted die-stamping must be done with a die with edges blunted to minimize stress concentrations. Surfaces of components less than 0.25 inches

thick may not be field die-stamped.

112.63: Threaded Joints

(1) Threaded joints shall be free of stress from external loading.

(2) All threaded joints, except those requiring removal for regular maintenance, such as relief valve connections, shall be seal-welded or sealed by other means that have been tested and proven reliable and acceptable in industry practice.

(3) Threaded pipe and fittings installed after ~~the effective date of 220 CMR 112.00~~September 14, 1990, and used in cryogenic or hazardous fluid piping shall be designated as at least extra-strong (Schedule 80).

112.64: Bolted Connections

Care shall be taken to ensure the tightness of all bolted connections. All bolted connections made after ~~the effective date of 220 CMR 112.00~~ September 14, 1990 shall be tightened to the proper torque, as determined by the relevant equipment specification or by sound industry practice, with a torque wrench. Spring washers or similar devices designed to compensate for expansion and contraction shall be used in all new or replacement bolted connections. Potential fire exposure shall be considered when selecting gaskets.

REGULATORY AUTHORITY

220 CMR 112.00: M.G.L. c. 164, ~~§ 1~~ § 66, 76, 76C, and 105A.

220 CMR 113.00: OPERATION, MAINTENANCE, REPLACEMENT, AND ABANDONMENT OF CAST-IRON PIPELINES

Section

113.01: Applicability and Scope

(1) 220 CMR 113.00 regulates the operation, maintenance, replacement and abandonment of cast-iron pipelines that are used to distribute gas.

(2) 220 CMR 113.00 applies to every gas company, municipal gas department or other person engaged in the distribution of gas within the Commonwealth of Massachusetts.

~~113.02: Application for Exceptions from Provisions of 220 CMR 113.00~~

~~Any person engaged in the operation of a cast-iron pipeline may make a written request to the Department for an exception to the provisions of 220 CMR 113.00, in whole or in part.~~

~~The request shall justify why the exception should be granted and shall demonstrate why the exception sought does not derogate from the safety objectives of 220 CMR 113.00. The request shall include details on the need for the exception, specific information on the circumstances surrounding the requested exception, the provisions of the regulations from which exception is sought, and a description of any safety consequences that might result from the exception. Documentation in support of the request shall also be submitted.~~

~~The Department may deny the exception or grant the exception as requested, or as modified by the Department and subject to conditions. Any exception shall be issued in writing and may be made by the Director of the Division or by the Director's functional successor in the event of an internal reorganization of the~~

~~Department. Any such person aggrieved by a decision of the Director regarding a request for an exception may appeal the Director's decision to the Commission. Any appeal shall be in writing and shall be made not later than ten business days following issuance of the written decision of the Director.~~

113.0~~23~~: Definitions

Except as otherwise specified in 220 CMR 113.00, all words are as defined ~~as~~ in 49 ~~C.F.R.~~ Part 192 ~~,~~ *Transportation of Natural a~~A~~nd Other Gas b~~B~~y Pipeline: Minimum Federal Safety Standards*.

Angle of Influence ~~means a~~. A 45E angle above the horizontal starting from the bottom edge of the trench nearest to the main.

Deep t~~T~~rench ~~means a~~. An excavation that is more than five feet in depth.

Department ~~means t~~. ~~he Massachusetts~~ Department of Public Utilities, Commonwealth of Massachusetts.

Determine ~~means t~~. To make appropriate investigation using scientific or other definitive methods, reach a decision based on sound engineering judgment, and be able to demonstrate, substantiate, and document the basis of the decision.

Division ~~means the~~ . Pipeline ~~Engineering and~~ Safety Division ~~within~~ of the ~~the Massachusetts~~ Department, ~~of Public Utilities~~ or its successor.

High-pressure cast-iron pipe ~~means a~~ . A distribution line in which the gas pressure in the pipe is higher than the pressure provided to the customer.

Immediately ~~. means, e~~Except in the case of a gas-related emergency, the first regular workday that the operator can gain access to its facilities after the necessary State, City, or Town permits are expeditiously obtained and the statutory notification requirements have been met.

Low-pressure cast-iron pipe ~~means a~~. A distribution line in which the gas pressure in the pipe is substantially the same as the pressure provided to the customer.

Person ~~means a~~. Any individual, firm, joint venture, partnership, corporation, association, state agency, municipality, municipal department, cooperative association, or joint stock association, and includes any trustee, receiver, assignee, or personal representative thereof.

Shallow trench. A ~~means a~~n excavation that is five feet or less in depth.

Sheeting ~~means a~~ . A bracing or shoring used to support the sides of an excavation to prevent its collapse during an excavation project.

Soft clay. E ~~means e~~arth that is easily molded by hand, or that has an unconfined compressive strength of 0.5 to 1.0 kips per square foot.

Strain. ~~means t~~The physical deformation of a body caused by the application of an external force. It is usually expressed as a percentage.

113.03~~2~~: Application for Exceptions from Provisions of 220 CMR 113.00

Any person engaged in the operation of a cast-iron pipeline may make a written request to the Department for an exception to the provisions of 220 CMR 113.00, in whole or in part.

The request shall justify why the exception should be granted and shall demonstrate why the exception sought does not derogate from the safety objectives of 220 CMR 113.00. The request shall include details on the need for the exception, specific information on the circumstances surrounding the requested exception, the provisions of the regulations from which exception is sought, and a description of any safety consequences that might result from the exception. Documentation in support of the request shall also be submitted.

~~The Department may deny the exception or grant the exception as requested, or as modified by the Department and subject to conditions. Any exception shall be issued in writing and may be made by the Director of the Division or by the Director's functional successor in the event of an internal reorganization of the Department. Any such person aggrieved by a decision of the Director regarding a request for an exception may appeal the Director's decision to the Commission. Any appeal shall be in writing and shall be made not later than ten business days following issuance of the written decision of the Director.~~

The Department may, after consideration and the payment of the appropriate fee, issue a written decision denying the exception or granting the exception as requested or as modified by the Department and subject to conditions. An exception may be granted or denied in writing by the Director of the Pipeline Safety Division, or by the Director's functional successor in the event of an internal reorganization of the Department. Any person aggrieved by a decision of the Director may appeal the decision to the Department. Any appeal shall be in writing and shall be made not later than ten business days following issuance of the written decision.

In an emergency, a verbal request for an exception may be granted by the

Department or the Director, provided that the verbal request is subsequently confirmed in writing within seven days of the exception being granted.

~~Strain means the physical deformation of a body caused by the application of an external force. It is usually expressed as a percentage.~~

113.04: General

(1) Cast-iron pipe shall not be installed for the distribution of gas after April 12, 1991.

(2) Any written program and procedures required by 220 CMR 113.00 shall be included in the operator's operating and maintenance plan required by 49 C~~.~~F~~.~~R~~.~~ 192.605~~3~~. This inclusion in the operating and maintenance plan shall be completed within 180 days of April 12, 1991~~the effective date of 220 CMR 112.00~~.

(3) Any written program and procedures shall be reviewed and modified by the operator as necessary, provided that a review shall be conducted at least once each calendar year.

(4) Each operator shall maintain accurate and readily accessible records to administer and verify the implementation of these regulations. The records shall be maintained at a minimum for five consecutive years after the calendar year to which the records apply.

(5) Cast-iron pipe replacements required by 220 CMR 113.06 and 113.07 are not applicable to normal gas operations and maintenance activities such as repair of joint leaks and breaks, service installations or abandonments, main extensions or branch connections. The provisions of 220 CMR 113.05 pertaining to the development and implementation of a program and procedures regarding the replacement and abandonment of cast-iron pipelines shall apply to normal gas operations and maintenance activities.

113.05: Replacement and Abandonment Program and Procedures

(1) Each operator of buried cast-iron pipelines shall develop and implement, in accordance with ~~this part~~220 CMR 113.05, a written, comprehensive program and procedures regarding the replacement and abandonment of cast-iron pipelines. The program and procedures shall include, but not be limited to:
(a) categorizing pipe by size and age;
(b) determining the methodology for selecting and prioritizing pipeline

segments for replacement or abandonment; and

(c) replacing or abandoning within ten years of April 12, 1991, all cast-iron pipe with a nominal diameter of eight inches or less that is known, or has been determined, to have been installed before the year 1860.

(2) Each operator, to meet the requirements of 220 CMR 113.05(1)(b), shall consider, but not be limited by, the following criteria. In considering these criteria, each operator shall give reasonable regard to incorporating each criterion into the operator's program and procedures required by 220 CMR 113.05(1)(b). If any criterion is not included in the program and procedures, the operator shall make a detailed explanation of the consideration given the excluded criterion and the reason for the exclusion.

(a) mechanical properties of the pipe, including the extent that graphitic corrosion (graphitization) has occurred and affected those properties;
(b) chemical properties and corrosiveness of the soil in which the pipe is buried;
(c) external loads to which the pipe is subjected;
(d) operating pressure of the pipe;
(e) location and/or depth of the pipe;
(f) leak history of pipe segments;
(g) repair and maintenance history of pipe segments;
(h) the probability and consequences of pipe rupture and gas leakage;
(i) the existence of redundant gas mains in a street;
(j) repavement or reconstruction of streets in which pipelines are buried;
(k) capacity of a pipeline to meet gas supply requirements; and
(l) any known abnormal condition to which a pipe segment has been, or will be, subjected.

(3) Each operator shall establish a written time schedule for replacement or abandonment of cast-iron pipe. The schedule may be updated at any time during each year by the operator and shall include, as practicable, the size, length and location of pipe segments to be replaced or abandoned for each of the next three consecutive calendar years.

113.06: Replacement of Cast-Iron Pipe at Trench Crossings

(1) Cast-iron pipe, eight inches or less in nominal diameter, that is exposed and undermined by a trench crossing the pipeline shall be replaced immediately:

(a) When there is less than 24 inches of cover; or
(b) When there is 24 inches or more of cover and the trench widths set forth in Table 1 are exceeded.

Table 1
Maximum Allowable Trench Width

Nominal Pipe Diameter	Depth of Cover	
	2 to 4 feet	4 feet or more
4 inches or less	3 feet	4 feet
6 inches	4 feet	6 feet
8 inches	5.5 feet	8 feet

The trench width shall be determined by the distance along the centerline of the exposed pipe.

(2) The minimum length of the replacement shall be equal to the trench width plus twice the distance from the top of the pipe to the bottom of the crossing trench, extending equally on both sides of the crossing trench.

(3) When cast-iron pipe is intersected by a trench and the pipe must be replaced in accordance with 220 CMR 113.06, the pipe shall be surveyed daily for gas leakage and monitored daily until the pipe is replaced.

(4) At the operator's discretion, cast-iron pipe does not have to be replaced to comply with 220 CMR 113.06(1)(b) when a pipe segment is exposed and undermined in a shallow trench crossing, provided that:
   (a) the backfill supporting and surrounding the pipe shall be thoroughly compacted for the full trench width and for a distance equal to 1/2 of the trench width on both sides of the centerline of the pipe;
   (b) the backfill shall be free of objectionable material or debris, such as, but not limited to, pavement, frozen soil, trash and rocks; and
   (c) The backfilling techniques used to comply with 220 CMR 113.06(4)(a), and (b) shall be included in the operator's operating and maintenance plan.

113.07: Replacement of Cast-Iron Pipe Adjacent to Parallel Excavations

(1) Cast-iron pipe eight inches or less in nominal diameter, that is adjacent to parallel excavation shall be replaced immediately, provided that the excavation exceeds eight feet in length and a condition exists as set forth in 220 CMR 113.07(2), (3) or (4).

(2) A low-pressure cast-iron pipe that is parallel to a shallow trench excavation shall be replaced if:

(a) the pipe is exposed and undermined; or
(b) at least 1/2 of the pipe diameter lies within the angle of influence; and
1. the bottom of the excavation is below the water table; or
2. the excavation is in soft clay.

(3) A low-pressure cast-iron pipe that is parallel to a deep trench excavation and lies within the angle of influence shall be replaced if:
(a) the pipe is exposed and undermined; or
(b) the pipe is totally, or in part, within three feet of the edge of the trench and sheeting that may have been used is not left in place; or
(c) the operator determines that the strain on the pipe caused by, but not limited to, excessive ground movement or inadequate pipe support shall exceed 0.05% (500 microstrain).

(4) A high-pressure cast-iron pipe that is parallel to a shallow or deep trench excavation shall be replaced if:
(a) the pipe is exposed and undermined; or
(b) at least 1/2 of the pipe diameter lies within the angle of influence and sheeting that may have been used is not left in place.

(5) When cast-iron pipe is adjacent to a parallel excavation and must be replaced in accordance with 220 CMR 113.07, the pipe shall be surveyed daily for gas leakage and monitored daily until the pipe is replaced.

(6) Any pipe that replaces cast-iron pipe shall extend a safe distance, determined by the operator, beyond the point where parallel excavation terminates.

113.08: Training

(1) Each operator shall provide and implement a written plan of initial training to instruct all appropriate operating, maintenance, supervisory, and engineering personnel about:
(a) the requirements of 220 CMR 113.00;
(b) the programs and procedures that are developed to comply with 220 CMR 113.00;
(c) the methodology for selecting, prioritizing, and scheduling cast-iron pipe for replacement or abandonment; and
(d) any operating and maintenance plans or procedures adopted to meet the requirements of 49 C~~.~~F~~.~~R~~.~~ Part 192 pertaining to cast-iron pipe.

The initial training shall be completed within 210 days of April 12, 1991~~the effective date of 220 CMR 113.00~~.

(2) A written plan of continuing instruction shall be developed and carried out at intervals of not more than two years to keep all appropriate personnel current on the knowledge and skills they have gained in the initial program and any modifications that have occurred as a result of the operator's annual review of any program and procedures.

REGULATORY AUTHORITY

220 CMR 113.00: M.G.L. c. 164, §§ 66, 76, 76C, and 105A.