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ORIGINAL

Decision No. 90921 OCT 23 1979

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Application of CP NATIONAL CORPORATION, PACIFIC GAS AND ELECTRIC COMPANY, SAN DIEGO GAS & ELECTRIC COMPANY, SOUTHERN CALIFORNIA GAS COMPANY, and SOUTHWEST GAS CORPORATION, public utility gas corporations, for an Order modifying General Order 112-C adopted April 2, 1971, in Decision No. 78513 in order to conform with the changes to the Minimum Federal Safety Standards issued by the Department of Transportation, Office of Pipeline Safety, as more particularly set forth in the Application herein.

Application No. 58340
(Filed September 6, 1978;
Amended January 25, 1979)

In the Matter of the Application of CP NATIONAL CORPORATION, PACIFIC GAS AND ELECTRIC COMPANY, SAN DIEGO GAS & ELECTRIC COMPANY, SOUTHERN CALIFORNIA GAS COMPANY, and SOUTHWEST GAS CORPORATION, public utility gas corporations, for an Order modifying General Order 112-C adopted April 2, 1971, in Decision No. 78513 in order to conform with the changes to the Minimum Federal Safety Standards issued by the Department of Transportation, Office of Pipeline Safety, as more particularly set forth in the Application herein.

Application No. 58640
(Filed January 29, 1979)

A. 58340, A. 58640 FG**

O P I N I O N

These applications were filed pursuant to Section 142.1 of the Commission's General Order No. 112-C.^{1/2/} By these applications orders are requested from the Commission modifying certain sections of General Order No. 112-C to make it conform to changes in Part 192 of Title 49 of the Code of Federal Regulations (49 CFR Part 192), Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards, issued by the U.S. Department of Transportation (DOT) Materials Transportation Bureau (MTB).

MTB's amendments of Subchapter D - Pipeline Safety - of 49 CFR Part 192, (1) increase the maximum allowable operating temperature of thermoplastic pipe from 100°F. to 140°F., (2) prohibit the operation of thermoplastic pipe at a temperature higher than its long-term hydrostatic test temperature, (3) establish alternative temperature bases for determining the long-term hydrostatic strength of thermoplastic pipe, (4) establish a single design factor for all plastic pipe, (5) require that thermoplastic pipe be marked to indicate its long-term hydrostatic strength and related temperature

1/ Section 142.1 of General Order No. 112-C provides:

"142.1. For the purpose of keeping the provisions, rules, standards, and specifications of this General Order up-to-date, the gas utilities subject to these rules, either individually or collectively, shall file an application setting forth such recommended changes in rules, standards, or specifications as they deem necessary to keep this General Order up-to-date in keeping with the purpose, scope and intent thereof. However, nothing herein shall preclude other interested parties from initiating appropriate formal proceedings to have the Commission consider any changes they deem appropriate, or the Commission from acting upon its own motion."

2/ Commission Decision No. 90372 of June 5, 1979 revised General Order 112-C and designated it as General Order 112-D, effective July 5, 1979. Accordingly, all references to General Order 112-C or to the General Order in this decision should be read as meaning General Order 112-D.

basis, (6) provide for conversion of existing pipelines to gas service, (7) permit longitudinal welds in field bends of steel pipe to be placed near the neutral axis under certain conditions, (8) update and clarify several existing regulations and modify others pertaining to the operation and maintenance of corrosion control systems, and (9) update the list of documents incorporated by reference.

Since General Order No. 112-C incorporates, with the same section numbers, the Minimum Federal Safety Standards (49 CFR Part 192) issued by DOT's Office of Pipeline Safety, any change in those standards directly affects the General Order, often significantly. For this reason, the proposed modifications have been assessed by the Commission staff, and staff comments are included in the summaries of the two applications which follow.

I. Application No. 58340

Applicants' Request, with Staff Comments

In Application No. 58340, as amended, Applicants request an order from the Commission modifying General Order 112-C to:

1. Redesignate paragraphs (b), (c) and (d) in Section 192.63, Marking of materials, to (c), (d) and (e), respectively.
2. Incorporate the addition of a new paragraph 192.63(b) providing for marking of thermoplastic pipe to show its long-term hydrostatic strength and temperature basis of strength.
3. Change paragraph (d) in the introductory text of paragraph (a) of Section 192.63 to read paragraph (e).
4. Revise Section 192.121, Design of plastic pipe, paragraphs (a) and (b) to conform to changes in DOT-MTB Minimum Federal Safety Standards as to determination of plastic pipe design pressure and long-term hydrostatic strength.
5. Revise Section 192.123, Design limitations for plastic pipe, to conform to changes in the DOT-MTB Minimum Federal Safety Standards as to maximum plastic pipe operating temperatures.

Section 192.63, Marking of materials

DOT-MTB has amended Section 192.63 of the Federal Gas Pipeline Safety Standard to require that thermoplastic pipe be marked to show its long-term hydrostatic strength and related temperature basis. The proposed amendment of Section 192.63 of the General Order adopts this modification, which makes the marking requirements consistent with the increase in the operating temperature of thermoplastic pipe permitted by changes to Sections 192.121 and 192.123. (See Appendix, pp. 3, 4, and 5.) Applicants assert that this change in Section 192.63 will provide "a ready means" of identifying the operating temperature limit on the pipe. Similarly, the Commission staff quotes MTB's favorable comment that an additional marking on the pipe to indicate the temperature basis of strength is not so complex as to confuse field personnel and will help such personnel identify the operating temperature limit of the pipe.

Section 192.121, Design of plastic pipe

Applicants request revision of Section 192.121 to conform those portions of the General Order with changes to the DOT-MTB Minimum Federal Safety Standards.

Two major elements in Section 192.121 are modified - subject to the limitations of Section 192.123 - determination of design pressure and determination of long-term hydrostatic strength.

The first of these two elements is dealt with by creating a single design factor of 0.32 for all plastic pipe for all class locations, instead of using present variable design factors of 0.32 for Class 1 locations^{1/}, 0.25 for Class 2 and 3 locations, and 0.20 for Class 4 locations. DOT-MTB takes the position that the single

^{1/} Location classes are population density classifications based on the number and height of occupied buildings. Class 4 is the highest population density.

0.32 design factor is conservative for the allowable design stress of plastic pipe. Applicants also claim that the new design factor is conservative and that it will provide design flexibility. However, the Commission staff cites an opposing view that adoption of a single 0.32 design factor will result in thinner pipe walls in pipes 2 inches in diameter or less, with the consequence that the thin walls may cause problems in saddle fusion of side taps and service tees and in making butt fusion joints. MTB's reported response to this criticism is that reduced pipe wall thickness should not be a major concern in the fusion of plastic pipe if currently recommended installation procedures are correctly followed.

Taking into account these and other arguments for and against the revision, the Commission staff is of the opinion that the single 0.32 factor supported by MTB and Applicants should not be adopted, because the present design requirement based on a variable factor according to class location is more stringent, and provides a safer design. The staff points out that the 0.32 factor is used in California only for the lowest class (Class 1) locations.

The second proposed modification of Section 192.121 of the General Order provides that the long-term hydrostatic strength of thermoplastic pipe shall be determined in accordance with the listed specification (ASTM D-2513), at temperatures equal to 73°F., 100°F., 120°F. or 140°F. (See Appendix, p. 4.) This change is in conformity with the proposed amendment of Section 192.123(b)(2), discussed below.

Applicants state with respect to this modification that the long-term hydrostatic requirement at the elevated temperature (140°F.) will ensure the safety of the pipe when operated up to the qualifying temperature, as permitted by amended Section 192.123. The Commission staff favors the adoption of this change to Section 192.121 of the General Order.

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Section 192.123, Design limitations for plastic pipe

DOT-MTB's changes to Section 192.123 of 49 CFR Part 192 and the proposed modification of the same section of the General Order allow the use of thermoplastic pipe up to the 140°F. temperature at which the long-term hydrostatic strength used in the design formula under Section 192.121 is determined, except that pipe manufactured before May 18, 1978 may be used only up to a temperature of 100°F. One of the benefits MTB and Applicants claim will result from adoption of this amendment is that it will allow utilities to use specified thermoplastic pipe aboveground as gas service risers, so long as the risers are enclosed in a metallic casing. The present 100°F. temperature limit on thermoplastic pipe requires the pipe to terminate below ground level.

Applicants favor this change permitting use of specified pipe aboveground as gas service risers because, they contend, it will be safer, more reliable, and more economical than present practice. The change adds "a significant safety factor", they argue, because the constant temperature it requires is more severe than actual operating conditions, while other instances where thermoplastic pipe could be exposed to elevated temperatures from other sources, such as steam lines, are rare and can be avoided by "proper design". As to greater economy and reliability, they point out that present practice entails higher costs than would be incurred under the modified General Order. To meet Section 192.465 standards, for example, "expensive" maintenance programs have been necessary, with the result that the utilities have turned to installing manufactured gas service risers which do not require cathodic protection. These risers are also said to be "expensive" and, because of their design, to require special quality control measures which add to their cost. Moreover, such risers have specific ground line limits, and Applicants contend that special care must be taken to keep within those limits during installation.

The Commission staff is in general agreement with the Applicants' favorable assessment of this change to Section 192.123 and concurs in their recommendation that it be adopted.

II. Application No. 58640
Applicants' Request, with Staff Comments

In Application No. 58640, Applicants request an order from the Commission modifying General Order No. 112-C to:

1. Amend Subsection 192.13(a), General.
2. Add Section 192.14, Conversion to service subject to this part.
3. Amend Subsection 192.313(a)(5), Bends and elbows.
4. Revise Section 192.451, Scope; delete paragraph (b).
5. Add Section 192.452, Applicability to converted pipelines.
6. Amend Subsections 192.457(a) and 192.457(b), External corrosion control, etc.
7. Amend Subsections 192.465(b) and 192.465(c), External corrosion control, etc.
8. Amend Subsection 192.467(b), External corrosion control, etc.
9. Amend Subsection 192.473(a), External corrosion control, etc.
10. Amend Subsection 192.475(a), Internal corrosion control: general.
11. Amend Section 192.477, Internal corrosion control: monitoring.
12. Amend Subsection 192.479(b), Atmospheric corrosion control: general.
13. Amend Section 192.481, Atmospheric corrosion control: monitoring.
14. Amend Subsection 192.485(a), Remedial measures: transmission lines.
15. Amend Subsection 192.491(a), Corrosion control records.
16. Amend Subsection 192.619(a)(2)(ii), Maximum allowable operating pressure: steel or plastic pipelines.
17. Amend Section II, Subsection IIA(5) and Subsection (IIA(6) of Appendix A, Incorporated by reference.
18. Amend Section I of Appendix B, Qualification of pipe.

Subsection 192.13, General

Subsection 192.619, Maximum allowable operating pressure, steel or plastic pipelines

Section 192.14, Conversion to service subject to this part

Section 192.452, Applicability to converted pipelines

The amendment of Subsections 192.13(a) and 192.619(a)(2)(ii), and the addition of Sections 192.14 and 192.452^{1/} provide new, separate and somewhat less stringent specifications in the General Order permitting used steel pipelines to qualify for use in gas service. The proposed amendments and additions require the pipeline operator to review the design, construction, operation, and maintenance history of the pipeline and to test the pipeline where records are insufficient to permit evaluation of safety of operation. Design and construction requirements of the General Order do not apply to used pipelines under the proposed changes.

Applicants argue that these revisions are needed to meet changing oil and gas pipeline transportation patterns in the United States. They postulate circumstances where, as new sources of gas become available and oil reserves decline, significant cost savings and environmental benefits could be projected from the use of existing oil pipelines to carry natural gas.

Applicants also contend, in arguing for adoption of these modifications, that the applicable sections of the present General Order are more stringent than necessary to provide for public or employee safety when they are applied to previously operated steel lines being converted to gas service subject to this Commission's jurisdiction under General Order 112-C. Pipelines being proposed for conversion have been operated safely, Applicants say, and it would impose an unnecessary burden on the future use of the nation's pipeline transportation systems, if the proposed use of such pipelines were denied for failure to meet the requirements applicable to new lines.

The Commission staff's review of the pressure testing requirements and other safety precautions imposed by the proposed modifications to the General Order leads it to concur in the Applicants' favorable assessment of these modifications. The staff, like Applicants, believes that economic and environmental benefits will ensue from reuse of buried pipeline systems.

^{1/} Appendix, pp. 1, 2, 6 and 10.

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Section 192.313, Bends and elbows

The purpose of the amendment of Subsection 192.313(a)(5) is to permit longitudinal welds in field bends of steel pipe to be placed other than near the neutral axis when an internal bending mandrel is used, or when bending pipe of 12 inches or less in outside diameter, or when bending pipe which has a diameter to wall thickness ratio less than 70. This amendment, Applicants state, allows the utilization of new techniques for bending steel pipe in the field and the realization of attendant safety and economic benefits. According to Applicants, a November 25, 1977 corrected amendment of this section reflected the fact that advances in pipe manufacturing and bending methods had made it unnecessary to require placement of the longitudinal weld in a neutral axis when bending with an internal bending mandrel, either when bending pipe of 12-inch or less outside diameter or when bending pipe with a diameter-to-wall thickness ratio of less than 70. Moreover, Applicants note, DOT-MTB has received no reports of failure of bent pipe of 12-inch diameter or less, or of bent pipe with a diameter-to-wall thickness ratio of less than 70 that can be attributed to the fact that an internal bending mandrel was not used or that the location of the longitudinal weld seam in bending was a contributing factor. Finally, Applicants argue that the performance requirements in Section 192.313 of the General Order are sufficient to ensure that any pipe with a damaged weld seam would be detected and rejected before being placed in service. The Commission staff favors adoption of this modification, for essentially the same reasons as those offered by Applicants.

Section 194.451, Scope, et al.

The purpose of the amendments of Sections and Subsections 192.451(b), 192.457(a), 192.457(b), 192.465(b), 192.465(c), 192.467(b), 192.473(a), 192.475(a), 192.477, 192.479(b), 192.481, 192.485(a) and 192.491(a) is, Applicants state, to update and clarify several of the existing regulations and to modify others to provide flexibility in scheduling personnel and otherwise in conducting the required periodic operational and maintenance inspection of the corrosion control systems without reduction in public safety.

The proposed amendments of Section II, Subsections IIA(5) and IIA(6) of Appendix A and Section I of Appendix B update the lists of documents incorporated by reference in those recent editions of certain technical specifications to which reference is made in the various sections and subsection of General Order No. 112-D.

Applicants offer in support of adoption of the modifications to Appendix A and Appendix B the argument that by referencing the March 1976 supplement and the 1977 editions, pipeline operators will be permitted to use Grade X-70 pipe in the transportation of gas. Grade X-70, they state, is more economical than other available grades of steel pipe for certain uses.

The Commission staff joins Applicants in favoring adoption of these amendments.

Findings

Upon consideration of the evidence, the Commission finds that:

1. It is in the interest of the gas customers and the public utility corporations and will promote public safety in California for General Order No. 112-D to be revised to incorporate the addition of Sections 192.14 and 192.452 and the amendment of Sections:

192.13	192.451	192.473	192.481
192.63	192.457	192.475	192.485
192.123	192.465	192.477	192.491
192.313	192.467	192.479	192.619

and portions of Appendices A and B to conform with the changes to the Minimum Federal Safety Standards issued by the U.S. Department of Transportation's Materials Transportation Bureau. The above additions and amendments are set forth in the Appendix to this decision.

2. The proposed amendment to Section 192.121 permitting the use of a single design factor for different class locations is not in the public interest and should be rejected for the reasons cited by the Commission staff, supra — i.e., that the present rule is more stringent and provides for a safer design than the proposed amendment.

3. The proposed amendment to Section 192.121 establishing temperature bases for the determination of the long-term hydrostatic strength of thermoplastic pipe, as set forth in the Appendix to this decision, will further safer, more economical and more reliable gas utility operations, and should be adopted.

4. A public hearing is not necessary.

Conclusion

The Commission having found as hereinabove set forth concludes that it should issue its order as follows.

O R D E R

IT IS ORDERED that:

1. General Order No. 112-D is hereby revised to incorporate the addition of Sections 192.14 and 192.452 and the amendment of Sections

192.13	192.451	192.473	192.481
192.63	192.457	192.475	192.485
192.123	192.465	192.477	192.491
192.313	192.467	192.479	192.619

and portions of Appendices A and B to conform with the changes to the minimum Federal Safety Standards issued by the Materials Transportation Bureau, as shown in the Appendix to this decision.

2. Section 192.121 is amended to incorporate the establishment of temperature bases for determining the long-term hydrostatic strength of thermoplastic pipe, as shown in the Appendix to this decision.

3. A copy of this decision shall be mailed to each gas corporation under the jurisdiction of this Commission.

The effective date of this order shall be thirty days after the date hereof.

Dated OCT 23 1979, at San Francisco, California.

Commissioner Vernon L. Sturgeon, being necessarily absent, did not participate in the disposition of this proceeding.

John E. Burns
President

Richard D. Swade

Robert J. DeLong

James M. [Signature]
Commissioners

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APPENDIX

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Amendments and Additions to General Order No. 112-D

Paragraph (a) of Section 192.13, General, is amended to read as follows:

- (a) No person may operate a segment of pipeline that is readied for service after March 12, 1971, or, in the case of an offshore gathering line, after July 31, 1977, unless --
 - (1) The pipeline has been designed, installed, constructed, initially inspected, and initially tested in accordance with this part; or
 - (2) The pipeline qualifies for use under this part in accordance with Section 192.14.

* * * * *

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Section 192.14, Conversion to service subject to this part, is added to read as follows:

Section 192.14, Conversion to service subject to this part.

- (a) A steel pipeline previously used in service not subject to this part qualifies for use under this part if the operator prepares and follows a written procedure to carry out the following requirements:
- (1) The design, construction, operation, and maintenance history of the pipeline must be reviewed and, where sufficient historical records are not available, appropriate tests must be performed to determine if the pipeline is in a satisfactory condition for safe operation.
 - (2) The pipeline right-of-way, all aboveground segments of the pipeline, and appropriately selected underground segments must be visually inspected for physical defects and operating conditions which reasonably could be expected to impair the strength or tightness of the pipeline.
 - (3) All known unsafe defects and conditions must be corrected in accordance with this part.
 - (4) The pipeline must be tested in accordance with Subpart J of this part to substantiate the maximum allowable operating pressure permitted by Subpart L of this part.
- (b) Each operator must keep for the life of the pipeline a record of the investigations, tests, repairs, replacements, and alterations made under the requirements of paragraph (a) of this section.

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Section 192.63, Marking of materials, is amended to read as follows:

Section 192.63, Marking of materials

- (a) Except as provided in Paragraph (e) of this section each valve, fitting, length of pipe, and other component must be marked as prescribed in --
 - (1) The specification or standard to which it was manufactured;
or
 - (2) MSS Standard Practice, SP-25.
- (b) In addition to the requirements in Paragraph (a), thermoplastic pipe manufactured in accordance with the 1974a or earlier listed edition of ASTM D2513 must be marked as required by Section 9.2 of ASTM D2513 (1975b edition) unless the pipe was manufactured before August 16, 1978, and is installed where operating temperatures are not above 38°C (100°F).
- (c) Surfaces of pipe and components that are subject to stress from internal pressure may not be field die stamped.
- (d) If any item is marked by die stamping, the die must have blunt or rounded edges that will minimize stress concentrations.
- (e) Paragraph (a) of this section does not apply to items manufactured before November 12, 1970, that meet all of the following:
 - (1) The item is identifiable as to type, manufacturer, and model.
 - (2) Specifications or standards giving pressure, temperature, and other appropriate criteria for the use of items are readily available.

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Paragraph (a) of Section 192.121, Design of plastic pipe, is amended to read as follows:

Section 192.121, Design of plastic pipe

- (a) The design pressure for plastic pipe is determined in accordance with the following formula, subject to the limitations of Section 192.123:

$$P = 2S \left[\frac{t}{D-t} \right] \times F$$

P = Design pressure, gage, kPa (psi).

S = For thermoplastic pipe the long-term hydrostatic strength determined in accordance with the listed specification at a temperature equal to 23°C (73°F), 38°C (100°F), 49°C (120°F), or 60°C (140°F), for reinforced thermosetting plastic pipe, 75,800 kPa (11,000 psi).

t = Specified wall thickness, mm (in.).

D = Specified outside diameter, mm (in.).

F = Design factor for plastic pipe

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Section 192.123, Design limitations for plastic pipe, is amended to read as follows:

Section 192.123, Design limitations for plastic pipe

- (a) The design pressure may not exceed a gage pressure of 689 kPa (100 psig) for plastic pipe used in --
 - (1) Distribution systems; or
 - (2) Class 3 and 4 locations.
- (b) Plastic pipe may not be used where operating temperatures of pipe will be --
 - (1) Below minus 29°C (-20°F); or
 - (2) In the case of thermoplastic pipe, above the temperature at which the long-term hydrostatic strength used in the design formula under Section 192.121 is determined, except that pipe manufactured before May 18, 1978 may be used at temperatures up to 38°C (100°F); or in the case of reinforced thermosetting plastic pipe, above 66°C (150°F).
- (c) The wall thickness for thermoplastic pipe may not be less than 1.57 millimeters (0.062 in.).
- (d) The wall thickness for reinforced thermosetting plastic pipe may not be less than that listed in the following table:

Nominal Size in Inches:	Minimum Wall Thickness In Millimeters (Inches)
2	1.52 (0.060)
3	1.52 (0.060)
4	1.78 (0.070)
6	2.54 (0.100)

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Paragraph (a) (5) of Section 192.313, Bends and elbows, is amended to read as follows:

Section 192.313, Bends and elbows.

(a) * * *

(5) On pipe containing a longitudinal weld, the longitudinal weld must be as near as practicable to the neutral axis of the bend unless --

(1) The bend is made with an internal bending mandrel; or

(11) The pipe is 12 inches or less in outside diameter or has a diameter to wall thickness ratio less than 70.

* * * * *

Paragraph (b) of Section 192.451, Scope, is deleted. Section 192.451 is revised to read as follows:

192.451, Scope.

This subpart prescribes minimum requirements for the protection of metallic pipelines from external, internal, and atmospheric corrosion.

Section 192.452, Applicability to converted pipelines, is added to read as follows:

Section 192.452, Applicability to converted pipelines.

Notwithstanding the date the pipeline was installed or any earlier deadlines for compliance, each pipeline which qualifies for use under this part in accordance with Section 192.14 must meet the requirements of this subpart specifically applicable to pipelines installed before August 1, 1971, and all other applicable requirements within 1 year after the pipeline is readied for service. However, the requirements of this subpart specifically applicable to pipelines installed after July 31, 1971, apply if the pipeline substantially meets those requirements before it is readied for service or it is a segment which is replaced, relocated, or substantially altered.

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Paragraphs (a) and (b) of Section 192.457, External corrosion control: buried or submerged pipelines installed before August 1, 1971, are amended to read as follows:

Section 192.457, External corrosion control: buried or submerged pipelines installed before August 1, 1971.

- (a) Except for buried piping at compressor, regulator, and measuring stations, each buried or submerged transmission line installed before August 1, 1971, that has an effective external coating must be cathodically protected along the entire area that is effectively coated, in accordance with this subpart. For the purposes of this subpart, a pipeline does not have an effective external coating if its cathodic protection current requirements are substantially the same as if it were bare. The operator shall make tests to determine the cathodic protection current requirements.
- (b) Except for cast iron or ductile iron, each of the following buried or submerged pipelines installed before August 1, 1971, must be cathodically protected in accordance with this subpart in areas in which active corrosion is found:

* * * * *

Paragraphs (b) and (c) of Section 192.465, External corrosion control: monitoring, are amended to read as follows:

Section 192.465, External corrosion control: monitoring.

* * * * *

- (b) Each cathodic protection rectifier or other impressed current power source must be inspected six times each calendar year, but with intervals not exceeding 2 1/2 months, to insure that it is operating.
- (c) Each reverse current switch, each diode, and each interference bond whose failure would jeopardize structure protection must be electrically checked for proper performance six times each calendar year, but with intervals not exceeding 2 1/2 months. Each other interference bond must be checked at least once each calendar year, but with intervals not exceeding 15 months.

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Paragraph (b) of Section 192.467, External corrosion control: electrical isolation, is amended to read as follows:

Section 192.467, External corrosion control: electrical isolation.

* * * * *

- (b) One or more insulating devices must be installed where electrical isolation of a portion of a pipeline is necessary to facilitate the application of corrosion control.

* * * * *

Paragraph (a) of Section 192.473, External corrosion control: interference currents, is amended to read as follows:

Section 192.473, External corrosion control: interference currents.

- (a) Each operator whose pipeline system is subjected to stray currents shall have in effect a continuing program to minimize the detrimental effects of such currents.

* * * * *

Paragraph (a) of Section 192.475, Internal corrosion control: general, is amended to read as follows:

Section 192.475, Internal corrosion control: general.

- (a) Corrosive gas may not be transported by pipeline, unless the corrosive effect of the gas on the pipeline has been investigated and steps have been taken to minimize internal corrosion.

* * * * *

Section 192.477, Internal corrosion control: monitoring, is amended to read as follows:

Section 192.477, Internal corrosion control: monitoring.

If corrosive gas is being transported, coupons or other suitable means must be used to determine the effectiveness of the steps taken to minimize internal corrosion. Each coupon or other means of monitoring internal corrosion must be checked two times each calendar year, but with intervals not exceeding 7 1/2 months.

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Paragraph (b) of Section 192.479, Atmospheric corrosion control: general, is amended to read as follows:

- * * * * *
- (b) Pipelines installed before August 1, 1971. Each operator having an aboveground pipeline or portion of a pipeline installed before August 1, 1971 that is exposed to the atmosphere, shall --
- * * * * *

Section 192.481, Atmospheric corrosion control: monitoring, is amended to read as follows:

Section 192.481, Atmospheric corrosion control: monitoring.

After meeting the requirements of Section 192.479 (a) and (b), each operator shall, at intervals not exceeding 3 years for onshore pipelines and at least once each calendar year, but with intervals not exceeding 15 months, for offshore pipelines, reevaluate each pipeline that is exposed to the atmosphere and take remedial action whenever necessary to maintain protection against atmospheric corrosion.

Paragraph (a) of Section 192.485, Remedial measures: transmission lines, is amended to read as follows:

Section 192.485, Remedial measures: transmission lines.

- (a) General corrosion. Each segment of transmission line with general corrosion and with a remaining wall thickness less than that required for the maximum allowable operating pressure of the pipeline must be replaced or the operating pressure reduced commensurate with the strength of the pipe based on the actual remaining wall thickness. However, if the area of general corrosion is small, the corroded pipe may be repaired. Corrosion pitting so closely grouped as to affect the overall strength of the pipe is considered general corrosion for the purpose of this paragraph.
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Paragraph (a) of Section 192.491, Corrosion control records, is amended to read as follows:

Section 192.491, Corrosion control records.

- (a) Each operator shall maintain records or maps to show the location of cathodically protected piping, cathodic protection facilities, other than unrecorded galvanic anodes installed before August 1, 1971, and neighboring structures bonded to the cathodic protection system.

* * * * *

Paragraph (a) (2) (ii) of Section 192.619, Maximum allowable operating pressure: steel or plastic pipelines, is amended to read as follows:

Section 192.619, Maximum allowable operating pressure: steel or plastic pipelines.

- (a) * * *
(2) * * *
(i) * * *
(ii) * * *

Factor 1/

Class Location	Factor <u>1/</u>		
	Segment Installed Before (July 1, 1961)	Segment Installed After (June 30, 1961)	Converted Under Section 192.14
1	1.1	1.25	1.25
2	1.25	1.25	1.25
3	1.4	1.5	1.5
4	1.4	1.5	1.5

1/ For segments installed, updated, or converted after July 31, 1977, that are located on an offshore platform or on a platform in inland navigable waters (including a pipe riser), the factor is 1.5.

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Section II of Appendix A, Incorporated by Reference, is amended to read as follows:

APPENDIX A - INCORPORATED BY REFERENCE

* * * * *

II. Documents incorporated by reference. Numbers in parentheses indicate applicable editions. Only the latest listed edition applies except that an earlier listed edition may be followed with respect to pipe or components which are manufactured, designed, or installed in accordance with the earlier edition before the latest edition is adopted, unless otherwise provided in this part.

A. * * *

- (5) API Standard SIS "API Specification for Spiral-Weld Line Pipe" (1967, 1970, 1971 plus Supp. 1, 1973 plus Supp. 1, 1975 plus Supp. 1, and 1977).
- (6) API Standard SIX "API Specification for High-Test Line Pipe" (1967, 1970, 1971 plus Supp. 1, 1973 plus Supp. 1, 1975 plus Supp. 1, and 1977).

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Section I of Appendix B, Qualification of Pipe, is amended to read as follows:

APPENDIX B - QUALIFICATION OF PIPE

- I. Listed Pipe Specifications. Numbers in parentheses indicate applicable editions. Only the latest listed edition applies except that an earlier listed edition may be followed with respect to pipe or components which are manufactured, designed, or installed in accordance with the earlier edition before the latest edition is adopted, unless otherwise provided in this part.

* * * * *

API 5LS, Steel pipe (1967, 1970, 1971 plus Supp. 1, 1973 plus Supp. 1, 1975 plus Supp. 1, and 1977).

API 5LX, Steel pipe (1967, 1970, 1971 plus Supp. 1, 1973 plus Supp. 1, 1975 plus Supp. 1, and 1977).

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