SECONDARY: 192.

PLACE BEFORE COMMITTEE: March 2015

RESPONSIBLE GROUP: Design Task Group

PURPOSE: Review existing GM and modify as appropriate in light of Amendment 192–119.

**Second LB Note:** The changes from previous public review are shown in yellow highlight.

Regulations Section 192.620

<table>
<thead>
<tr>
<th>To address increased risk of a maximum allowable operating pressure based on higher stress levels in the following areas:</th>
<th>Take the following additional step:</th>
</tr>
</thead>
</table>
| (7) Confirming external corrosion control through indirect assessment | (i) Within six months after placing the cathodic protection of a new pipeline segment in operation, or within six months after certifying a segment under §192.620(c)(1) of an existing pipeline segment under this section, assess the adequacy of the cathodic protection through an indirect method such as close-interval survey, and the integrity of the coating using direct current voltage gradient (DCVG) or alternating current voltage gradient (ACVG).  
(ii) Remediate any construction damaged coating with a voltage drop classified as moderate or severe (IR drop greater than 35% for DCVG or 50 dBµv for ACVG) under section 4 of NACE RP–0502–2002 (incorporated by reference, see §192.7).  
(iii) Within six months after completing the baseline internal inspection required under paragraph (d)(9) of this section, integrate the results of the indirect assessment required under paragraph (d)(7)(i) of this section with the results of the baseline internal inspection and take any needed remedial actions. |

Guide Material under Section 192.620

5 INTEGRITY MANAGEMENT REQUIREMENTS

...  
(h) The operator must define action thresholds, such as immediate or one-year, based on design criteria and calculated failure pressures (§192.620(d)(11)).

Note: Although PHMSA updated the incorporated-by-reference standard in §192.7 from NACE RP–0502–2002 to NACE SP0502-2010 under Amendment 192-119, §192.620(d)(7)(ii) was not updated.
Editorial Note for following GM: The added “IBR” indication as proposed under §§192.147, 192.151, 192.195, 192.199, 192.201, 192.743, and 192.925 have been deleted as the referenced listings in §192.7 do not specifically link to the respective sections, i.e., the column “IBR approved for:” does not list those sections. This was/is the position established earlier per detailed review by Editorial Section.

Section 192.7

Delete temporary qualification note: This guide material is under review following Amendments 192-119.

(a) Additional standards and specifications recommended for use under this Guide, and the names and addresses of the sponsoring organizations, are shown in Guide Material Appendix G-192-1. See Guide Material Appendix G-192-1A for documents previously incorporated by reference in the Regulations.

(b) Operators are cautioned that significant changes have been made between the 43rd and 44th editions of API Spec 5L. Significant changes include pipe dimensions, manufacturing tolerances, chemical composition, welding methods, inspection criteria, and pipe grade naming conventions. Note: For additional information regarding the changes, see API’s companion document referenced in API’s letter dated August 2008, “Re: Comparison of API Spec 5L 43rd 43rd edition and ISO 3183 (2nd ed.)/API Spec 5L 44th 44th edition.” Revised edition titled “Detailed comparison of API 5L (43rd) & API 5L (44rd) Requirements,” printed June 9, 2009 and available at: www.api.org/~/media/files/certification/monogram-apiqr/program-updates/api_5l_43rd_and_44th_ed_comparison_r1.pdf?la=en 2008_08_13_wg4208_5l_43_44_comparison.pdf?la=en

Section 192.147

FLANGES

1 Flange types.

1.1 The dimensions and drilling for all line or end flanges should conform to one of . . .

2.3 The dimensions and drilling for all line or end flanges should conform to one of . . .

2.3 Threaded companion flanges that comply with either ASME B16.1 or ASME B16.5 (see §192.7 for IBR for both), in sizes and for maximum service ratings covered by these standards, may be used.

3.3 Lapped flanges in sizes and pressure standards established by ASME B16.5 may be used.

4.3 Slip-on welding flanges in sizes and pressure standards established in ASME B16.5 may be used. Slip-on flanges or rectangular section may be substituted for hubbed slip-on flanges provided the thickness is increased as required to produce equivalent strength as determined by calculations made in accordance with Section VIII, Pressure Vessels, of the ASME Boiler and Pressure Vessel Code, Section VIII (see §192.7).

5.3 Welding neck flanges in sizes and pressure standards established in ASME B16.5, ASME B16.47, and MSS SP-44 (see §192.7 for IBR) may be used. The bore of the flanges . . .

6.3 Flanges made of ductile iron should conform to . . .
Section 192.151

1 DESIGN

1.1 Proprietary fittings.

(a) General. When using proprietary hot tap fittings, the operator should ensure that ….

(b) Pressure-temperature ratings. Published catalog or engineering data supplied by a reputable manufacturer or designer is usually sufficient. When the rating cannot be so established, it should be established by test in accordance with paragraph UG-101 of Section VIII of the ASME Boiler and Pressure Vessel Code, Section VIII (see §192.7).

Section 192.195

2 OVERPRESSURE PROTECTION

2.1 Facilities that might at times be bottle-tight.

Suitable protective devices to prevent overpressuring of facilities that might at times be bottle-tight include the following.

(a) Spring-loaded relief valves meeting the provisions of the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1 (see §192.7).

(b) Pilot-operated back-pressure regulators used as relief valves which are designed so that failure of the control lines will cause the regulator to open.

(c) Rupture disks of the type meeting the provisions of the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1.

2.2 High-pressure distribution systems.

Suitable devices to prevent overpressuring of high-pressure distribution systems include the following.

(a) Spring-loaded relief valves meeting the provisions of the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1.

Section 192.199

1 RUPTURE DISK

Rupture disks should meet the requirements for design as described in the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1 (see §192.7).

Section 192.201

2 DETERMINATION OF RELIEF DEVICE CAPACITY

(a) When installed in accordance with the provisions of §192.199(f):

(1) Relief devices stamped by the manufacturer with a capacity certified under the rules of Section VIII of the ASME Boiler and Pressure Vessel Code (see §192.7), including recertification stampings, may be considered capable of relieving the capacity stamped. An adjustment should be made to determine the capacity at actual operating conditions.

(2) and (3) …

(b) Relief device capacities as set out above are normally based on the pressure …. 

(c) References include the following.

(1) For the calculations in 2(a)(3) above, UG-131 of Section VIII of the ASME Boiler and Pressure Vessel Code, Section VIII. It is not the intent herein that the capacity be limited to 90% of the actual capacity as set out in Section VIII.
rules, but only that this information is useful in calculating the actual capacity of a relief device.

(2) and (3) …

Section 192.743

1 CAPACITY DETERMINATION BY IN-PLACE TESTING
1.1 Determination of actual flow.
The capacity of the relief valve system can be determined by direct measurement under full flow conditions or by determining a coefficient through limited flow tests that can be used in calculating the full capacity. References for performing the appropriate tests include the following.
(a) UG-131 of Section VIII of the ASME Boiler and Pressure Vessel Code, Section VIII (see §192.7).
(b) API RP 525, "Testing Procedure for Pressure-Relieving Devices Discharging Against Variable Back Pressure" (Revised 1960; Discontinued).

Section 192.925

Note: References to NACE throughout this section of guide material are specific to the edition of NACE SP0502 as incorporated by reference (IBR) in §192.7. Abbreviated references are used in guide material below. Example: "NACE 5.2.1" means NACE SP0502, Paragraph 5.2.1 of the IBR edition. See 3 of the guide material under §192.907.

3 PRE-ASSESSMENT STEP …
3.1 Thru 3.2 …
3.3 Selection of indirect inspection tools.
(a) The selection of indirect inspection tools is based on their ability to reliably detect potential corrosion activity or coating holidays. The operator is required to document the basis for tool selection …. 
(b) Section 192.925(b)(1)(ii) requires a minimum of two complementary indirect inspection tools for each ECDA region within a covered pipeline …. 
(c) Indirect inspection tools not listed in NACE Appendix A SP0207, "Performing Close-Interval Potential Surveys and DC Surface Potential Gradient Surveys on Buried or Submerged Metallic Pipelines" and NACE TM0109, "Aboveground Survey Techniques for the Evaluation of Underground Pipeline Coating Condition" (e.g., ultrasounds) are allowed, but the operator is required to justify and document the following for any other inspection method that is used (see §192.925(b)(1)(ii)). See following note.
(1) Thru (5) …

Note: Appendix A of the 2008 edition of NACE SP0502 listed several indirect inspection tools. During the revision and subsequent 2010 edition, NACE removed those indirect inspection tools from Appendix A to eliminate redundancy. However, when PHMSA adopted the 2010 edition of NACE SP0502, PHMSA did not revise §192.925(b)(1)(ii) to address this issue. Information regarding these indirect inspection tools formerly listed in Appendix A can now be found in NACE SP0207 and NACE TM0109.

3.4 Thru 5.1 …
5.2 Determining the number of direct examinations.
(a) Factors. The following factors determine the minimum number of excavations required.
(1) Thru (5) …
(b) HCA considerations. In determining the number of direct examinations (digs), the requirements of NACE 5.40 5.3 may be combined with the requirement of
§192.925(b)(3)(i). For example, an operator may choose to perform one or more additional direct examination(s) to meet the requirements for first-time application of ECDA on a covered segment.

(c) No indications. When there are no indications identified during the application of the ECDA, NACE 5.10.1 5.3.1.1 requires the operator to determine the ECDA region most susceptible to external corrosion from information derived in the pre-assessment step and select an excavation site within that region. The following factors from the pre-assessment step should be considered to determine which ECDA region is most susceptible to external corrosion.

1. Thru 7 ...

(d) Tables and examples. Tables 192.925ii through 192.925vi and Figure 192.925A can be used to assist in understanding the required number of ...

<table>
<thead>
<tr>
<th>NUMBER OF DIRECT EXAMINATIONS REQUIRED BY NACE SP0502</th>
<th>When ECDA is Being Applied for the First Time in the Segment</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Identified Indications</td>
<td>No Identified Indications</td>
</tr>
<tr>
<td>Immediate Action</td>
<td>Scheduled Action</td>
</tr>
<tr>
<td>All indications that are prioritized as immediate require direct examination. <em>(NACE 1 5.10.2.1) (NACE 1 5.3.2.1)</em></td>
<td>If an ECDA region contains scheduled indications; If no immediate indications in region, then perform excavations examinations on the 2 most severe scheduled indications in each region. If only 1 scheduled indication exists, then examine a monitored indication. If a monitored indication does not exist, examine an indication most likely for corrosion. <em>(NACE 1 5.10.2.2.1) (NACE 1 5.3.3.2 and 5.3.3.2.1)</em></td>
</tr>
<tr>
<td>For indications that were reprioritized from immediate to scheduled, follow the scheduled guidelines in the next column. <em>(NACE 1 5.10.2.1.1)</em></td>
<td>If an ECDA region contains only monitored indications (i.e., no immediate or scheduled indications), 2 excavations examinations are required at the indications most likely to have corrosion. <em>(NACE 1 5.10.2.3.1) (NACE 1 5.3.4.2 and 5.3.4.2.1)</em></td>
</tr>
<tr>
<td>In the region identified as most likely for corrosion, from the Pre-Assessment Step, perform at least 2 excavations examinations at locations identified as the most likely to have corrosion. <em>(NACE 1 5.10.1 and 5.10.1.2) (NACE 1 5.3.1.1 and 5.3.1.1.1)</em></td>
<td></td>
</tr>
</tbody>
</table>
If the results of the excavation at a scheduled indication show corrosion that is deeper than 20% of the original wall thickness and that is deeper or more severe than at an immediate indication, then perform at least 2 more direct examinations (i.e., the indications with next highest priority).

| Process Validation Dig: | Perform at least 2 additional direct examinations on the pipeline segment |
| (NACE 6.4.2.4 6.7.2.1) | The direct examinations shall be conducted at randomly selected locations, one of which is categorized as scheduled (or monitored if no scheduled indications exist) and one in an area where no indication was detected. These digs must occur within an HCA. |

**TABLE 192.925ii**

**NUMBER OF DIRECT EXAMINATIONS REQUIRED BY NACE SP0502**
When ECDA is Being Applied a Second or Subsequent Time on the Segment

<table>
<thead>
<tr>
<th>Immediate Action</th>
<th>Scheduled Action</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>All indications that are prioritized as immediate require direct examination. (NACE 5.10.2.1) (NACE 5.3.2.1)</td>
<td>If an ECDA region contains scheduled indications, if no immediate indications in region, then perform 1 excavation examination on the most severe scheduled indication in the region. (NACE 5.10.2.2.1) (NACE 5.3.3.2)</td>
<td>If an ECDA region contains only monitored indications (i.e., no immediate or scheduled indications), 1 excavation examination is required at the indication most likely to have corrosion. (NACE 5.10.2.3.1)</td>
</tr>
<tr>
<td>With Identified Indications</td>
<td>No Identified Indications</td>
<td></td>
</tr>
<tr>
<td>All indications that are prioritized as immediate require direct examination. (NACE 5.10.2.1) (NACE 5.3.2.1)</td>
<td>In the region identified as most likely for corrosion, from the Pre-Assessment Step, perform at least 1 excavation examination at the location identified as the most likely to have corrosion. (NACE 5.4.1 and 5.4.1.2) (NACE 5.3.1.1)</td>
<td></td>
</tr>
</tbody>
</table>
For indications that were reprioritized from immediate to scheduled, follow the scheduled guidelines in the next column. (NACE 5.10.2.1.1) (NACE 5.3.2.2)

If an ECDA region contains scheduled indications and 1 or more immediate indications, then perform 1 excavation on the most severe scheduled indication in the region. (NACE 5.10.2.2.2)

If the results of the excavation at a scheduled indication show corrosion that is deeper than 20% of the original wall thickness and that is deeper or more severe than at an immediate indication, then perform at least 1 more direct examination (i.e., the indication with next highest priority). (NACE 5.10.2.2.3) (NACE 5.3.3.3)

Process Validation Dig: Perform at least 1 additional direct examination at a random location within an HCA where no indications were detected in only one region in the segment (NACE 6.4.2 6.7.2).

1 All NACE references are to paragraphs in NACE SP0502-2008 2010.

<table>
<thead>
<tr>
<th>TABLE 192.925iii</th>
</tr>
</thead>
<tbody>
<tr>
<td>Following are three examples where a pipeline segment contains two HCAs (HCA 1 and HCA 2). There are two ECDA regions (R1 and R2) with Region 2 being the most likely to have corrosion. In these examples, no corrosion defects are found that are deeper than 20% of the original wall thickness and that are deeper or more severe than at an immediate indication (NACE 5.40.2.2.3 5.3.3.3). These examples assume that the results of the direct examinations do not require the need to reprioritize the severity classification (NACE 5.9 6.5).</td>
</tr>
<tr>
<td>Indirect inspections were conducted over the HCAs. The examples note the number of indications as a result of integrating the inspection data. …</td>
</tr>
<tr>
<td>The following three tables show the number of direct examinations necessary to meet the requirements of §192.925 and NACE SP0502 for each example.</td>
</tr>
</tbody>
</table>

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Process Validation Dig: Perform at least 1 additional direct examination at a random location within an HCA where no indications were detected in only one region in the segment (NACE 6.4.2 6.7.2).
### EXAMPLE 1: PIPELINE SEGMENT WITH NO INDICATIONS

<table>
<thead>
<tr>
<th>Number of Indications</th>
<th>Number of Direct Examinations</th>
<th>Additional Examinations for First-Time ECDA</th>
<th>Total Examinations (First Time)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 3 Direct Exam</td>
<td>Step 4 Validation</td>
<td>R2</td>
</tr>
<tr>
<td>Priority</td>
<td>HCA 1</td>
<td>HCA 2</td>
<td>Any HCA</td>
</tr>
<tr>
<td>R1</td>
<td>I 0  0  0  0</td>
<td>I 0  0  0  0</td>
<td>0  0</td>
</tr>
<tr>
<td>R2</td>
<td>S 0  0  0  0</td>
<td>S 0  0  0  0</td>
<td>0  0</td>
</tr>
<tr>
<td>R1</td>
<td>M 0  0  0  0</td>
<td>M 0  0  0  0</td>
<td>0  0</td>
</tr>
<tr>
<td>R2</td>
<td>NI 0  1A  0  0</td>
<td>1B 2</td>
<td>1C</td>
</tr>
</tbody>
</table>

**Priority Legend:**
- **I** = Immediate
- **S** = Scheduled
- **M** = Monitored
- **NI** = No Indications

A. If there are no indications, NACE \(^1\) 5.10.1 5.3.1.1 requires 1 excavation examination in the region identified as most likely for corrosion (for this example R2 was chosen).

B. For process validation, NACE \(^1\) 6.4.2 6.7.2 requires a second dig, which can be in any region or any HCA.

C. For first-time ECDA, NACE \(^1\) 5.40.4 5.3.1.1 requires an additional dig in R2, and

D. NACE \(^1\) 6.4.2 6.7.2.1 requires an additional validation dig which can be in any region.

\(^1\) All NACE references are to paragraphs in NACE SP0502-2008 2010.
### EXAMPLE 2: PIPELINE SEGMENT WITH SCHEDULED AND MONITORED INDICATIONS
(NO IMMEDIATE INDICATIONS)

<table>
<thead>
<tr>
<th>Number of Indications</th>
<th>Number of Direct Examinations</th>
<th>Additional Examinations for First-Time ECDA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Step 3 Direct Exam</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HCA 1</td>
</tr>
<tr>
<td>I</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>S</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>M</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>NI</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Total Examinations (If not first time)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Priority Legend:**
- **I** = Immediate
- **S** = Scheduled
- **M** = Monitored
- **NI** = No Indications

**A** Identifies the most severe scheduled indication defect in the Region. If there are no immediate indications, NACE 1 5.10.2.2 5.3.3.2 requires that the most severe scheduled indication in each region be examined.

**B** For process validation, NACE 1 6.4.2 6.7.2 requires a dig in a randomly selected location, which can be in any region within any HCA.

**C** For first-time ECDA, NACE 1 5.10.2.2 5.3.3.2.1 requires an additional examination of the next most severe scheduled indication in each region. If no other scheduled indications exist, then an additional monitored indication shall be examined. If no monitored indications exist, then examine an indication which has a likelihood for external corrosion.

**D** NACE 1 6.4.2 6.7.2.1 requires a second validation dig.

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1 All NACE references are to paragraphs in NACE SP0502-2008-2010.
### EXAMPLE 3: PIPELINE SEGMENT WITH IMMEDIATE, SCHEDULED, AND MONITORED INDICATIONS

<table>
<thead>
<tr>
<th>Priority Legend:</th>
<th>I = Immediate</th>
<th>S = Scheduled</th>
<th>M = Monitored</th>
<th>NI = No Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Indications</td>
<td>HCA 1</td>
<td>HCA 2</td>
<td>Number of Direct Examinations</td>
<td>HCA 1</td>
</tr>
<tr>
<td>Priority</td>
<td>R1</td>
<td>R2</td>
<td>R1</td>
<td>R2</td>
</tr>
<tr>
<td>I</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>S</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>M</td>
<td>6</td>
<td>9</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>NI</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total Examinations (If not first time)</td>
<td>7</td>
<td>Total Additional</td>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>

A. All immediate indications need to be excavated examined. (NACE 1 5.10.2.1 5.3.2.1)

B. Identify and excavate examine the most severe scheduled indication in each Region. (NACE 1 5.40.2.2 5.3.3.2)

C. For first-time application, identify and excavate the next most severe scheduled indication in each Region. (NACE 1 5.40.2.2 5.3.3.3.1)

D. For first-time application, NACE 1 6.4.2.1 6.7.2.1 requires an excavation at a scheduled indication (or monitored if no scheduled indications exist).

E. NACE 1 6.4.2 6.7.2.1 requires a validation dig at a randomly selected location where no indication was detected, which can be in any region within any HCA.

1. All NACE references are to paragraphs in NACE SP0502-2008 2010.

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**TABLE 192.925vi**

5.3 Data collection …

5.4 Evaluations of remaining strength in pipe wall.

(a) Corrosion defects. In accordance with NACE 5.5.1, the pipeline operator shall evaluate or calculate the remaining strength at locations where corrosion defects are found. Examples of corrosion defects that need remaining strength evaluation include the
The remaining wall strength should be evaluated using ASME B31G, PRCI PR-3-805 (RSTRENG), \[\text{see §192.7}\] or an equivalent method. If the remaining strength is not adequate for the pipeline segment's existing maximum allowable operating pressure (MAOP), a repair, replacement, or MAOP reduction is required. Alternatively, the MAOP may be lowered to a safe operating pressure as allowed by §192.933.

(b) Similar defects. If corrosion defects that exceed allowable limits are found, it should be evaluated as follows.

5.5 Thru 7 …

8 REFERENCES

(a) AGA Pipeline Research Committee Project PRCI-PR-3-805, "A Modified Criterion for Evaluating the Remaining Strength of Corroded Pipe," (RSTRENG) (see §192.7).
(b) ASME B31G, "Manual for Determining the Remaining Strength of Corroded Pipelines." (see §192.7).
(c) NACE SP0502-2008 2010, "Pipeline External Corrosion Direct Assessment Methodology." (see §192.7 for IBR).
(d) PHMSA-OPS Protocols, "Gas Integrity Management Inspection Manual, Inspection Protocols with Results Forms," specifically Section D, DA Plan.
(e) GTI-04/0071, "External Corrosion Direct Assessment (ECDA) Implementation Protocol."

Section 192.927

6 POST-ASSESSMENT EVALUATION AND MONITORING …

6.1 Determining ICDA effectiveness. …

6.2 Determining reassessment intervals.

In accordance with §192.927(c)(4), the operator is required to determine if the covered segment should be reassessed at more frequent intervals than specified in §192.939. The following process determines reassessment intervals for ICDA (§192.939(a)(3)).

(a) Remaining defect size estimation.

(1) No corrosion found. If no corrosion defects are found, then the remaining defect size is zero.

(2) Corrosion found. In accordance with §192.939(a)(3)(ii), use the largest remaining corrosion defect to estimate the reassessment interval.

(b) Remaining life determination.

An operator should use sound engineering analysis to estimate the remaining life of the largest remaining defect. If no corrosion defects are found, then the remaining life is the same as new pipe. The operator may use the formula provided in NACE SP0502-2008 2010, Paragraph 6.2.4.1 6.7.2.1 (see §192.7), or an equivalent equation such as the following.

(c) and (d) …

Section 192.935

2 THIRD-PARTY DAMAGE (§192.935(b)(1))

To comply with §192.935(b)(1) for the specific threat of third-party damage, an operator must do the following.

(d) Thru (d) …

(e) When there is physical evidence of an excavation near a covered segment that the operator did not monitor, either excavate the area or conduct an aboveground survey (e.g., DCVG) as defined in NACE SP0502-2008 2010 (see §192.7 for IBR). Examples of how to identify an encroachment might include the following.
Section 192.941

2 EXTERNAL CORROSION

2.1 Cathodically protected pipe where electrical surveys are practical.

(a) If low stress reassessment is used on cathodically protected pipe, an electrical survey (i.e., indirect examination tool or method) is required. Examples of electrical surveys are listed below. Appendix A of NACE SP0502-2008, "Pipeline External Corrosion Direct Assessment Methodology" (see §192.7 for IBR) NACE SP0207, "Performing Close-Interval Potential Surveys and DC Surface Potential Gradient Surveys on Buried or Submerged Metallic Pipelines" and NACE TM0109, “Aboveground Survey Techniques for the Evaluation of Underground Pipeline Coating Condition” provides additional information on each type of survey listed.

2. Current voltage gradient surveys (ACVG and DCVG).

Section 192.945

3 EXTERNAL CORROSION DIRECT ASSESSMENT

Operators using ECDA are required to define performance measures. Guidance can be found in Paragraph 6.4 6.7 of NACE SP0502-2008 (see §192.7 for IBR).

GMA G-192-1

Add the following to Section 1.9 CORROSION RELATED:

<table>
<thead>
<tr>
<th>NACE SP0207</th>
<th>Performing Close-Interval Potential Surveys and DC Surface Potential Gradient Surveys on Buried or Submerged Metallic Pipelines</th>
<th>§192.925</th>
<th>§192.941</th>
</tr>
</thead>
<tbody>
<tr>
<td>NACE TM0109*</td>
<td>Aboveground Survey Techniques for the Evaluation of Underground Pipeline Coating Condition</td>
<td>§192.467</td>
<td>§192.925</td>
</tr>
</tbody>
</table>

Delete the entry as indicated:

<table>
<thead>
<tr>
<th>B</th>
<th>192.55(c)</th>
<th>Steel pipe</th>
<th>Visual examination, weldability test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>192.63</td>
<td>Marking of materials</td>
<td>Material marking</td>
</tr>
<tr>
<td></td>
<td>192.65(a)(2)</td>
<td>Transportation of pipe</td>
<td>Test</td>
</tr>
</tbody>
</table>