

## Continuing Surveillance

2575.2700

### 1. Scope

This Operating Standard establishes the requirements for continuing surveillance of PSE's pipelines through periodic examination of records and through continuous visual examination of facilities during construction, operation, and maintenance activities.

### 2. Responsibilities

- 2.1 The *Manager Total Energy System Planning* shall be responsible for conducting a records review, as required by Section 5 of this Operating Standard.
- 2.2 The *Consulting Engineer, Corrosion Control* shall be responsible for conducting a records review, as required by Section 5 of this Operating Standard.
- 2.3 All Company and contractor personnel performing construction, operation, or maintenance activities shall be responsible to observe pipeline facilities and report unsafe, unsatisfactory, or non-standard conditions as defined under Section 3 of this Operating Standard.
  - 2.3.1 Report unsafe conditions to the *Manager First Response*.
    - 2.3.1.1 The *Manager First Response* shall be responsible for notifying the *Manager Maintenance Planning* when an unsafe condition is reported.
  - 2.3.2 Report unsatisfactory conditions to the *Manager System Control and Protection*.
    - 2.3.2.1 The *Manager System Control and Protection* shall be responsible for notifying the *Manager Maintenance Planning* when an unsatisfactory condition is reported.
  - 2.3.3 Report non-standard conditions to the *Manager Maintenance Planning*.
- 2.4 The *Manager Maintenance Planning* shall be responsible for:
  - 2.4.1 Reviewing and prioritizing maintenance and repair work to correct unsatisfactory pipeline conditions that are determined to require repair.
  - 2.4.2 Developing a remediation plan for unsafe conditions, as required by Section 7.
  - 2.4.3 Determining if remediation is necessary for non-standard conditions or if other actions are appropriate, such as suggesting revisions to Operating Standards and Field Procedures.
- 2.5 The *Manager First Response* shall be responsible for responding to unsafe conditions and developing a monitoring plan for sites with unsafe conditions that are not immediately remediated, as required by Section 7.
- 2.6 The *Manager System Control and Protection* shall be responsible for notifying the *Manager Maintenance Planning* when reports of patrols, surveys, and other maintenance activities identify unsatisfactory conditions.

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- 2.7 The *Response Planning Engineer* shall be responsible for reporting the safety related conditions to the WUTC and the Office of Pipeline Safety, in accordance with the requirements set forth in Operating Standard 2425.1200, "Reporting Requirements for Safety-Related Conditions."
- 2.8 The *Manager Contract Management* shall be responsible for ensuring remediation work is scheduled and completed.

### 3. General Requirements

(CFR 192.613)

- 3.1 For the purposes of this Operating Standard, the following definitions apply:
  - 3.1.1 *Unsafe* is any abnormal or unusual operating condition which, unless remediated and controlled, could result in an immediate hazard to public safety and property.
  - 3.1.2 *Unsatisfactory* is any abnormal or unusual operating condition that will not result in an immediate hazard to public safety and property.
  - 3.1.3 *Non-standard* is any abnormal or unusual operating condition that is a potential concern, such as a condition that does not meet current Operating Standards.
- 3.2 Classification of the conditions listed in Section 4 shall be made as either unsafe, unsatisfactory, or non-standard. Examples of unsafe conditions are listed in Section 4, most other conditions would be considered unsatisfactory or non-standard.
  - 3.2.1 The *Manager First Response* or the *Manager Engineering* shall be responsible for classifying pipeline conditions if the personnel reporting the condition is unable to define the condition as unsafe or unsatisfactory.
- 3.3 Reports of unsafe, unsatisfactory, or non-standard conditions shall be reported on the Reporting Abnormal or Unusual Operating Conditions on Gas Facilities Form.
  - 3.3.1 Report any unsafe condition that meets the description of a safety related condition, as defined in Operating Standard 2425.1200, in accordance with that Operating Standard.

### 4. Visual Surveillance

- 4.1 In the course of new construction, operation, and maintenance activities; visual inspections shall be made to identify following conditions:
  - 4.1.1 Exposure or movement of pipeline facilities.
    - 4.1.1.1 If the change in topography has resulted in exposure or excessive erosion over the pipeline, this shall be considered an unsafe condition.

- 4.1.1.2 If the pipeline has moved and is stressed as a result of the movement, this shall be considered an unsafe condition until further engineering analysis determines that the stress level is acceptable.
- 4.1.1.3 If land movement meets or exceeds the limitations of Operating Standard 2575.3100, "Patrolling Program," this shall be considered an unsafe condition.
- 4.1.2 Potential for or evidence of tampering, vandalism, or damage.
  - 4.1.2.1 If the pipeline or pipeline facility has been tampered with, vandalized, or damaged in a way that would impair its serviceability or safe operation, this shall be considered an unsafe condition. The Risk Management Department shall be contacted to conduct an investigation, and the situation shall be documented and remediated in accordance with this Operating Standard.
  - 4.1.2.2 Emphasis shall be given to damage caused by vehicular operation.
    - 4.1.2.2.1 The need for additional protection for meter assemblies or other Company facilities damaged by a vehicle shall be evaluated by the repair crew before leaving the site.
    - 4.1.2.2.2 If it is determined that additional protection should be installed to reduce the possibility of similar damage occurring in the future, the crew shall install suitable protection immediately, if possible.
    - 4.1.2.2.3 If protection is required, but cannot be installed immediately, the crew shall leave a protective barricade in place and shall institute an order for installation of a permanent protective device.
- 4.1.3 Encroachments on pipeline facilities.
  - 4.1.3.1 If any building has been installed upon a pipeline, this shall be considered an unsafe condition.
  - 4.1.3.2 Other encroachments or structures such as retaining walls, sound walls, etc. may be considered unsatisfactory conditions.
- 4.1.4 Potential for gas migration into buildings from vents through air intakes.
  - 4.1.4.1 If the air intake is located within 2 feet of a vent piping termination, this shall be considered an unsafe condition.
- 4.1.5 Atmospheric corrosion on aboveground facilities.
  - 4.1.5.1 If the atmospheric corrosion meets or exceeds the limitations of Operating Standard 2600.1800, "Monitoring Facilities for Atmospheric Corrosion," this shall be considered an unsafe condition.

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- 4.1.6 Damage to or imperfections of pipelines when buried pipelines are exposed.
  - 4.1.6.1 If the damage or imperfection of the pipeline meets or exceeds the limitations of Operating Standards 2575.2800, "Examining Buried Pipelines," 2575.1700, "Repairing Steel or Cast-Iron Pipelines," or 2575.1800, "Repairing Polyethylene Pipelines," this shall be considered an unsafe condition.
- 4.1.7 Irregular environmental conditions surrounding pipelines when buried pipelines are exposed.
  - 4.1.7.1 If the environmental condition meets or exceeds the cover or clearance criteria of Operating Standard 2575.2800, this shall be considered an unsafe condition.

## 5. Records Review

- 5.1 The *Manager Total Energy System Planning* shall be responsible for:
  - 5.1.1 Reviewing completed work orders (including leak repairs, maintenance, and other work), patrol records, leakage survey records, and inspection records for abnormal or unusual operating and maintenance conditions on cast iron, unprotected steel, and polyethylene pipelines.
  - 5.1.2 Determining the general status of pipeline facilities based on the above review and generating replacement work orders.
  - 5.1.3 Reviewing unsafe, unsatisfactory, and non-standard conditions to identify trends and to determine the appropriate follow-up to address those trends, such as suggesting revisions to maintenance requirements, Operating Standards, or Field Procedures.
- 5.2 The *Consulting Engineer, Corrosion Control* shall be responsible for:
  - 5.2.1 Reviewing completed work orders (including leak repairs, corrosion control, maintenance, and other work), leakage survey records, and inspection records for abnormal or unusual operating and maintenance conditions on all steel wrap and cathodically protected pipelines.
  - 5.2.2 Determining the general status of pipeline facilities and corrosion control mechanisms based on the above review and generating remedial work orders, or other follow-up as necessary; such as further engineering analysis or more stringent maintenance criteria.

## 6. Frequency

- 6.1 Continuing surveillance reviews required under Section 5 shall be conducted on an annual basis.
- 6.2 Continuing surveillance as required in Section 4 shall be ongoing and performed in the course of new construction, operations and maintenance activities.

**7. Remediation**

(CFR 192.703)

- 7.1 Damage to pipe or pipe fittings shall be remediated in accordance with Operating Standards 2575.1700, 2575.1800, or 2600.1900, "Remedial Measures for Corrosion Control Discrepancies."
- 7.1.1 Damaged coatings shall be remediated in accordance with Operating Standard 2600.1100, "Field Coatings for Pipe and Fittings."
- 7.2 For situations that do not involve pipeline damage, such as encroachments, erosion, and irregular environmental conditions; the unsafe, unsatisfactory, or non-standard condition shall be remediated such that the pipeline meets current Operating Standards and Field Procedures.
- 7.3 If an unsafe condition is suspected, immediate investigative and corrective action shall be taken.
- 7.3.1 The *Manager Maintenance Planning* shall ensure a remediation plan is developed in consultation with Engineering, First Response, Contract Management, and System Control and Protection; including appropriate monitoring until the situation is remediated.
- 7.3.2 The *Manager First Response* shall ensure the site is monitored, as required by the monitoring plan, until the unsafe condition is remediated.
- 7.4 If an unsatisfactory condition is confirmed, a remediation plan shall be developed to recondition or replace the segment involved.
- 7.4.1 If the segment cannot be reconditioned or replaced, the maximum allowable operating pressure (MAOP) shall be reduced to a maximum safe pressure after considering the history of the segment, known corrosion, and the actual operating pressure.
- 7.4.1.1 Overpressure protective devices shall be installed on this segment to prevent the maximum safe pressure from being exceeded.
- 7.4.2.1 The *Manager Total Energy System Planning, Manager Standards and Compliance, Supervisor Maps and Records, Manager Gas System Operations, and Gas Control (through the System Manager)* shall be notified before reducing the MAOP.
- 7.5 If a non-standard condition is suspected, the *Manager Maintenance Planning* shall review the reported condition and determine if remediation is necessary.
- 7.6 The Maintenance Planning Department shall be responsible for scheduling and tracking remediation work orders for unsatisfactory and non-standard conditions.

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### 8. Records

- 8.1 A work order shall be opened and tracked for all conditions that are scheduled for remediation.
- 8.2 If a suspected unsafe, unsatisfactory, or non-standard condition is reevaluated and reclassified, the reason for reclassification shall be recorded on the Reporting Abnormal or Unusual Operating Conditions on Gas Facilities Form.
  - 8.2.1 A copy of the form indicating the reason for reclassification shall be distributed to the person who reported the condition, the manager of the person reporting the condition, and the *Manager Standards and Compliance*.

## Examining Buried Pipelines

2575.2800

### 1. Scope

This Operating Standard establishes the requirements for examining the condition of buried pipelines and inspecting the surrounding environmental conditions when pipelines are exposed.

### 2. Responsibilities

(CTS 401, CTS 402, CTS 505, CTS 1430, CTS 1431, and CTS 1432)

- 2.1 *Consulting Engineer, Corrosion Control* shall be responsible for:
  - 2.1.1 Periodically monitoring metallic pipe condition self-audit records, to ensure that the minimum annual number of audits are completed Companywide.
- 2.2 *The Manager System Control and Protection* shall be responsible for:
  - 2.2.1 Recording the results of exposed pipe condition reports and exposed pipe condition audits on operation map overlays or in a database.
  - 2.2.2 Performing a monthly review of the corrosion control maintenance records to assure compliance with the requirements of this Operating Standard.
  - 2.2.3 Ensuring the minimum number of pipe condition self-audits is met. Consideration shall be given for additional self-audits based on factors such as frequency of pipe exposures and results of self-audits.
- 2.3 All Company and contractor personnel who expose an existing pipeline or remove a pipe segment shall be responsible for:
  - 2.3.1 Ensuring the pipe and environment is inspected, as required by this Operating Standard.
  - 2.3.2 Completing an Exposed Pipe Condition Report (Form 2453) for metallic pipelines.
- 2.4 *The Manager Contract Management* shall be responsible for:
  - 2.4.1 Ensuring the minimum number of pipe condition self-audits is met. Consideration shall be given for additional self-audits based on factors such as frequency of pipe exposures and results of self-audits.
  - 2.4.2 Ensuring remediation work is scheduled and completed.
- 2.5 *The Manager Jackson Prairie* shall ensure compliance with this Operating Standard for Jackson Prairie operations.
- 2.6 *The Manager Maintenance Planning* shall be responsible for prioritizing and monitoring remediation work that cannot be completed at the time of inspection.
- 2.7 *The Manager Total Energy System Planning* shall be responsible for prioritizing and monitoring remediation work for cast-iron pipelines that is not completed at the time of inspection.

### 3. Examination of Buried Steel Pipe When Exposed

(CFR 192.459 and WAC 480-93-110)

- 3.1 Pipe-to-soil potential (PSP) readings shall be taken as soon as possible after exposing steel pipe. PSP readings shall be taken in accordance with Field Procedure 4515.1210, "Taking Pipe-to-Soil Potential Reads."
  - 3.1.1 For wrapped steel pipe, if PSP readings are outside the acceptable range of -0.85 V to -2.0 V:
    - 3.1.1.1 During normal business hours, notify the *Corrosion Control Technician* immediately.
    - 3.1.1.2 Outside normal business hours, notify the *Corrosion Control Technician* the next business day.
  - 3.1.2 For bare steel pipe, record PSP reading on EPCR and continue pipe examination.
- 3.2 Buried metallic pipe (except for cast iron) shall be examined for evidence of external corrosion whenever the pipe is exposed for any reason.
  - 3.2.1 Damaged coatings shall be removed for inspection of the pipe surface. Sound (bonded) coatings shall not be removed unless required by the construction activity.
  - 3.2.2 The type of coating, if any, shall be examined and categorized as:
    - 3.2.2.1 X-Tru Coat.
    - 3.2.2.2 Coal tar enamel.
    - 3.2.2.3 Tape wrap.
    - 3.2.2.4 FBE.
    - 3.2.2.5 Powder coating.
    - 3.2.2.6 Other.
  - 3.2.3 The condition of the coating, if any, shall be examined and categorized as:
    - 3.2.3.1 Bonded.
    - 3.2.3.2 Disbonded.
    - 3.2.3.3 Cracked.
    - 3.2.3.4 Damaged.
  - 3.2.4 The surface of the pipe shall be examined for:
    - 3.2.4.1 No pits.
    - 3.2.4.2 Surface rust.
    - 3.2.4.3 Shallow pits.
    - 3.2.4.4 Deep pits.



- 3.2.5 The frequency of pitting, if any, shall be determined and categorized as:
  - 3.2.5.1 No pits.
  - 3.2.5.2 Isolated.
  - 3.2.5.3 Frequent.
  - 3.2.5.4 No original pipe surface left.
- 3.3 If corrosion is found on cathodically protected wrapped steel pipe, the *Consulting Engineer, Corrosion Control* shall be notified immediately, before pipe is wrapped and the excavation is backfilled.
- 3.4 If external corrosion requiring remedial action under Operating Standard 2600.1900, "Remedial Measures for Corrosion Control Discrepancies," is found, an investigation shall be initiated circumferentially and longitudinally beyond the exposed portion (by visual examination, indirect method, or both) to determine whether additional corrosion requiring remedial action exists in the vicinity of the exposed portion. The results of this investigation shall be documented on the comments section of the Exposed Pipe Condition Report.
- 3.5 The pipe depth shall be measured.
- 3.6 The requirements of this section shall be performed and recorded on the Exposed Pipe Condition Report as soon as possible after exposing steel pipe.

#### 4. Examination of Buried Cast-Iron Pipe When Exposed

(CFR 192.459 and CFR 192.489)

- 4.1 Whenever a section of cast-iron pipe is exposed, the pipe shall be inspected for evidence of graphitization.
  - 4.1.1 A graphitized cast-iron pipe is one in which iron has been converted to corrosion products leaving graphite, with the pipe seemingly left intact. This is evidenced by the pipe being soft and able to be shaved away with a blade. Graphitized cast-iron pipe is susceptible to fracture and leakage.
  - 4.1.2 Where inspection indicates that graphitization has proceeded to the extent that fracture or leakage may result, the extent of graphitization shall be determined by exposing additional pipe.
- 4.2 Each segment of cast-iron pipe on which general graphitization is found to a degree where a fracture or any leakage might result, shall be replaced.
- 4.3 Each segment of cast-iron pipe on which localized graphitization is found to a degree where any leakage might result, shall be replaced or repaired; or sealed by internal sealing methods adequate to prevent or arrest any leakage.
  - 4.3.1 The pipe may be repaired by a clamp or sleeve, provided that the repair clamp or sleeve will cover the graphitized area and the ends of the repair clamp or sleeve are over sound, non-graphitized pipe.

- 4.3.2 Where a repair of graphitized pipe is not feasible, the section of pipe shall be replaced.
- 4.3.3 Graphitized cast-iron pipe should also be considered for replacement under the following conditions:
  - 4.3.3.1 An inspection indicates a graphitized or soft condition adjacent to a building, sewer, manhole or duct, or in an area subject to heavy traffic.
  - 4.3.3.2 Graphitized pipe and breaks due to graphitization are recorded in a concentrated area or in unstable soil.
  - 4.3.3.3 Graphitization is found in excavations.

## **5. Examination of Buried Polyethylene Pipe When Exposed**

- 5.1 Buried polyethylene shall be examined for cuts, gouges, deep scratches, punctures, and other imperfections whenever the pipe is exposed.
  - 5.1.1 Pipe containing defects exceeding 10% of the wall thickness shall be repaired according to Operating Standard 2575.1800, "Repairing Polyethylene Pipelines."

## **6. Examination of Pipeline Environmental Conditions When Exposed**

- 6.1 The pipeline environment for all pipelines shall be examined for proper backfill, adequate cover, and sufficient clearance from other utilities.
  - 6.1.1 The following backfill conditions shall be considered unsatisfactory:
    - 6.1.1.1 Rocks impinging upon the surface or coating of the pipe.
    - 6.1.1.2 Rocks larger than 10 inches present in the backfill material.
    - 6.1.1.3 For polyethylene pipe, sharp rocks found within the bedding or initial backfill material.
    - 6.1.1.4 Foreign material such as construction debris, material that will no longer compact, or other material that may cause damage to the pipe or pipe coating; found in contact with the pipe.
  - 6.1.2 If the pipeline has less than 12 inches of cover and no concrete cap exists, it shall be considered unsafe.
  - 6.1.3 The following clearance conditions shall be considered unsafe:
    - 6.1.3.1 The pipeline is in direct contact with the other utility.
    - 6.1.3.2 A direct-buried polyethylene pipeline is within 6 inches of direct-buried electric cables.
    - 6.1.3.3 The pipeline is routed through another utility.
- 6.2 If, upon exposing the pipe, it is discovered that the backfill material is not compliant with current Operating Standards, the backfill in the area of excavation shall be replaced with proper backfill, in accordance with Operating Standard 2525.1800, "Backfill for Pipelines."

**7. Remediation**

- 7.1 Pipe or pipe fittings shall be repaired or replaced as required by Operating Standards 2575.1700, "Repairing Steel and Cast-Iron Pipelines," and 2575.1800.
  - 7.1.1 Corrosion found on steel pipe shall be evaluated and remediated in accordance with Operating Standard 2600.1900.
  - 7.1.2 Damaged coatings shall be repaired in accordance with Operating Standard 2600.1100, "Field Coatings for Pipe and Fittings," before the pipe is backfilled.
  - 7.1.3 Arc burns found on steel pipe shall be cut out or repaired in accordance with Field Procedure 4900.1110, "Removing Arc Burns by Grinding."
- 7.2 Pipeline environmental conditions identified as unsafe, unsatisfactory, or non-standard shall be reported and remediated in accordance with Operating Standard 2575.2700, "Continuing Surveillance."
- 7.3 A work order shall be generated for any work that cannot be completed at the time of inspection.
- 7.4 Any metallic pipe removed from service shall be examined for internal corrosion in accordance with Operating Standard 2600.1700, "Monitoring and Remedial Measures for Internal Corrosion."

**8. Records**

(CFR 192.491 and WAC 480-93-110)

- 8.1 Inspection results for buried metallic pipe which has been exposed shall be reported on the Exposed Pipe Condition Report (Form 2453). The following information is required:
  - 8.1.1 Address of excavation, including city.
  - 8.1.2 Plat and OP map numbers.
  - 8.1.3 Order number.
  - 8.1.4 Leak number, if applicable.
  - 8.1.5 Date.
  - 8.1.6 Name of individual performing the examination and company name.
  - 8.1.7 Type, size, and operating pressure of facility inspected.
  - 8.1.8 Length inspected.
  - 8.1.9 Depth of facility.
  - 8.1.10 First PSP read and location.
  - 8.1.11 Second PSP read and location. (Required only when a fitting is cut in, such as bottom outs, line stoppers, and any type of fitting installed that may interrupt the CP of the pipe.)
  - 8.1.12 Pipe external condition.

- 8.1.13 Pipe internal condition, if applicable, in accordance with Operating Standard 2600.1700.
- 8.1.14 Graphitization, if applicable.
- 8.1.15 Construction activity.
- 8.1.16 Location of wire box, if installed.
- 8.1.17 Location of anode, if installed.
- 8.2 Records of metallic pipe inspections shall be retained for as long as the facility remains in service.

## 9. Self Audit

- 9.1 Each PSE department and all contractors who perform gas pipeline construction or maintenance work on steel pipelines must periodically inspect and audit Exposed Pipe Condition Reports to ensure that the reports are being filled out properly.
  - 9.1.1 Each department or contractor mentioned in Section 9.1 shall perform self-audits at least twice each calendar year, using the Exposed Pipe Condition Report Audit (Form 3206).
  - 9.1.2 Each department or contractor shall designate a qualified inspector to visit a site where steel pipe is exposed. The crew performing the work must not be notified in advance of the inspection/audit. The crew must have completed the examination requirements of Section 3 prior to the inspector notifying the crew of the Exposed Pipe Condition Report audit. The inspector shall then compare/contrast his results to the results of the crew and document them on the back of the report in the Audit Results section. The Exposed Pipe Condition Report Audit form shall be forwarded along with the Exposed Pipe Condition Report to PSE for record keeping.
  - 9.1.3 If the crew failed to identify a situation requiring remedial action according to Operating Standard 2600.1900, they will be informed by the inspector on site. Immediate corrective action must be taken.
  - 9.1.4 The inspector shall notify the responsible supervisor for the crew of the results of the audit. It shall be the responsibility of the supervisor of the crew to determine if and what corrective action is necessary, including coaching or retraining of the specific individuals involved, communicating with all crews (in writing or in person), or other action as necessary. If additional training is required either the *Consulting Engineer, Corrosion Control* or the *Manager System Control and Protection* should be notified and consulted.
  - 9.1.5 Records of exposed pipe condition self-audits shall be maintained by the *Supervisor Maintenance Programs* and made available to the *Consulting Engineer, Corrosion Control* on request.