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| **Agenda Item:** | **653-2024** |
| **Title:** | Review Need for Revision to Annex C Checklist |
| **Date:** | Unknown |
| **Contact:** | Name: | Susan Marie Wenner |
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| **Purpose:** | Create clarifications on items with supporting API references. |
| **Source:** | Annex C |
| **Revision:** | 7 |
| **Impact:** | This will serve to provide better guidance to those utilizing the Standard for following an inspection checklist. |
| **Notes:** | Suggestion for Change discussed at F16 and agenda item assigned.05/09/17: Reviewed and discussed at Spring ’17 Mtg. Rev 1 will be balloted as reviewed.**Ballot 4202: 28 Affirm, 8 Affirm+C, 4 Neg, 0 Abs, 10 NR**11/14/17: Passed to Re-Ballot w / Changes as Discussed at Fall ’17 Mtg.**Ballot 4385: 42 Affirm, 8 Affirm+C, 5 Neg, 8 Abs, 19 NR**04/17/18: Remains “On Hold” Pending Resolution of Negative Comments. Suggestion to move Annex C checklist into API RP 575. Straw poll – all present 17 Move, 8 Keep. Owners Only – 9 Move, 3 Keep.11/13/18: Passed to re-ballot with Checklist changes as reviewed during Fall 2018 Meeting.**Ballot: 51 Affirm, 5 Affirm+C, 3 Neg., 7 Abs., 23 NR**05/07/19: Remains “On Hold” pending resolution of Negative Ballots (D. Boley Absent).11/19/19: Remains “On Hold” pending further evaluation and reconsideration.11/17/20: Remains “On Hold” pending further evaluation and reconsideration (D. Boley Absent).5/18/21: Remains “On Hold” pending further evaluation and revision. S/G about evenly split on going forward vs. dropping altogether.11/16.21: “On-Hold” pending further work until Spring 2022 Meeting. Assigned item to Sue Marie Wenner.**2022 – Note changes listed below** |

**Annex C**(informative)

# External (section 1-8) and Internal (section 9-14) Checklists for Tank Inspections

# Annex C contains sample checklist guides for tank components and auxiliary items that should be considered for internal and external inspection of tanks. This information is provided as guidance to the owner/operator for developing an inspection assessment schedule for any specific tank installation. The checklist format facilitates the recording of inspection findings starting at the bottom and rising to the top of the tank.

# NOTE 1: Users of checklists should not rely exclusively on the information contained in this document. Sound business, scientific, engineering, and safety judgment should be used in employing the information contained herein.

# NOTE 2: Where applicable, authorities having jurisdiction should be consulted

NOTE 3: The references listed may not include all the information that is available in the API Standards on a given checklist item.

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# External Checklist

# Secondary Containment

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| 1.1 | Record the type of dike/secondary containment. |  | 653-6.4.2.2.2.2 575- 8.2.11.4.1575-11.2 |
| 1.2 | Inspect the containment area for breaches and verify the operating condition of the dike drains. |  | 575.8.2.11.4.2 |
| 1.3 | Inspect the containment area for proper drainage. |  | -F |
| 1.4 | Inspect for vegetation or flammable materials in the dike. |  | -R  |
| 1.5 | Record the type, if any, of cathodic protection system utilized. |  | 651-6.1653-6.4.2.2.2.1 -G575.8.2.11.5575-11.2 |
| 1.6 | Review and record the cathodic protection potential readings and last inspection date. |  | 651-11.1651-9.4.8653-6.4.2.2.2.1 -G575-11.2 |
| 1.7 | Inspect the fire-fighting system, piping, etc. for corrosion/damage |  | 575- 8.2.11.4.3 |

# Foundation

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| --- | --- | --- | --- |
| 2.1 | Record the type of foundation (concrete ringwall, concrete slab, gravel pad, earthen pad, etc.) |  | 653.6.3.1.3650-B.4575-8.2.4575-11.2575.5.2.2.2 |
| 2.2 | Inspect for debris, vegetation, flammables, or earth in contact with the tank. |  | 575-8.2.9.1 |
| 2.3 | Inspect for cavities or erosion around the tank. |  | 653-4.4.2653-6.3.1.3575-8.2.4 |
| 2.4 | Inspect for damage to the foundation such as cracking, spalling, exposed rebar, etc. |  | 653 4.5.1.1-4.5.2.2653-6.3.1.3575-8.2.3 |
| 2.5 | Inspect for indications of bottom leakage. |  | 653-4.4.2653-6.3.1.3 |
| 2.6 | Inspect if the foundation is beveled away from the tank. |  | 653-4.4.2653-6.3.1.3 |
| 2.7 | Inspect and record any grounding of the tank. |  | 653-6.3.2.32015 -5.4.5.1651-9.4.9575-8.2.6575-11.2 |
| 2.8 | Record bottom elevations according to the appropriate procedure for the tank. |  | 653-13.2.3-k653-B.2.1/2653-6.3.1.3575-8.2.4575-11.2 |

# Shell

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| 3.1 | Record the nameplate information. |  | 650-10.1653-13.1575-11.2 |
| 3.2 | Record the total shell height and the height of each shell course. |  | 653-13.2.3575-11.2 |
| 3.3 | Record the tank circumference and the elevation at which the circumference was measured. |  | 650-5.6.3.1 1 foot method653-6.3.1.3653-13.2.3575-11.2 |
| 3.4 | Record thickness measurements according to the appropriate procedure for the tank. |  | 653.6.3.3650-5.6.1.1650-5.6.4/5575-8.2.9.2653-13.2.3575-11.2 |
| 3.5 | For double bottom tanks, measure and record any shell offset between the shell and the dead shell. |  | 650-I.4 |
| 3.6 | Record the type of seal method used to join dead shell course to 2nd bottom. |  | 650- I.4.2575-11.2 |
| 3.7 | Record the type and location of drains in dead shell. Inspect for corrosion or damage. |  | 650-I.5.5575-8.2.9.1575-11.2 |
| 3.8 | Inspect the bottom-to-foundation seal, if any. |  | 653-6.3.1.3575-8.2.9.1 |
| 3.9 | Clean the shell-to-bottom joint and visually inspect the bottom and shell-to-bottom weld.  |  | 653-6.3.1.3650-7.2.4.1575-8.2.9.1 |
| 3.10 | Inspect anchor bolts for stretching, corrosion, or pull-out |  | 653 4.5.3650-5.3.2.4575-8.2.5 |
| 3.11 | Record the type/dimension of insulation |  | 653-6.3.1.3575-8.2.8575-11.2 |
| 3.12 | Inspect the insulation flashing and sealant for damage |  | 653-6.3.1.3653-6.3.2.2575-8.2.8 |
| 3.13 | Inspect paint or coating for blistering, thinning, cracks or discoloration. Identify areas of coating and paint loss. |  | 653-6.3.1.3575-8.2.9.1 |
| 3.14 | Inspect tank shell for corrosion or other damage |  | 653-6.3.1.3575-8.2.9.1 |
| 3.15 | Inspect tank shell for significant deformation including peaking, banding, bulging, or flat spots. |  | 653-4.1.3-i653-4.3.1.1653-6.3.1.3575-8.2.9.6.1575-8.2.9.6.5 |
| 3.16 | Inspect the conditions of the welds for leaks, paint failure, corrosion, deformation, etc. |  | 575-8.2.9.6.1653-6.3.1.3575-8.2.9.6.5 |

# Nozzles

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| 4.1 | Record nozzle information according to the appropriate procedure for the tank |  | 650-7.5.6575-11.2 |
| 4.2 | Are telltale holes open to the atmosphere? |  | 650-5.7.2.10575-8.2.9.6.2 |
| 4.3 | Check for thermal relief piping |  | Good Engineering Practice. |
| 4.4 | Verify nozzle reinforcement plates have correct size and weld spacing |  | 650-5.7.2.1 653-4.3.9.1 |
| 4.5 | Inspect paint or coating for blistering, thinning, cracks or discoloration. Inspect for corrosion. |  | 653-6.3.1.3575-8.2.9.6575-8.2.7575-8.2.11.1.3575-8.2.11.1.1 |
| 4.6 | Inspect nozzles and appurtenances for damage and proper operation. |  | 653-6.3.1.3575-8.2.11.1.3575-8.2.11.6 |
| 4.7 | Inspect for cracks and leakage at welds at nozzles, man holes, and reinforcement plates. |  | 653-6.3.1.3575-8.2.11.1.3 |
| 4.8 | Inspect for flange and threaded connection leaks and leaks around bolting |  | 653-6.3.1.3575-8.2.11.1.3 |
| 4.9 | Inspect shell plate for dimpling around nozzles caused by excessive pipe deflection. |  | 653-6.3.1.3575-8.2.11.1.3 |
| 4.10 | Inspect temperature indicators for signs of damage. |  | 653-6.3.1.3575-8.2.11.6 |
| 4.11 | Inspect welds on shell-mounted davit clips. |  | 653-6.3.1.3575-8.2.11.6 |

# Shell Appurtenances

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| --- | --- | --- | --- |
| 5.1 | Record type of gauge system and product level. |  | 650-5.8.11.5575-8.2.11.6575.8.3.5653-13.2.3575-11.2 |
| 5.2 | Inspect auto gauge for damage, and check legibility. |  | 653-6.3.1.3575.8.3.5575-8.2.11.62350-4.5.5.6 |
| 5.3 | Inspect auto gauge guide and lower sheave housing for cracks, leaks or other damage. |  | 653-6.3.1.3575.8.3.5575-8.2.11.62350-4.5.5.6 |
| 5.4 | Bump the checker on the auto gauge head, inspecting for proper movement of the tape. |  | 653-6.3.1.3575.8.3.5575-8.2.11.62350-4.5.5.6 |
| 5.5 | Ask local personnel if tape tends to hang up or suffer other problems. |  | 2350-4.2 C2350-4.5.5.6 |
| 5.6 | Inspect the fire-fighting system, piping, etc. for corrosion/damage |  | 653-6.3.1.3575.8.2.11.4.3 |
| 5.7 | Inspect sample station lines, pumps, equipment, bracing and supports.  |  | 653-6.3.1.3575-8.2.11.6 |
| 5.8 | Inspect any electrical conduit and boxes for signs of damage. |  | 653-6.3.1.3575-8.2.11.6 |
| 5.9 | Inspect tank mixers for leakage or damage. |  | 653-6.3.1.3575-8.2.11.6 |
| 5.10 | Inspect wind girder and supports for paint failure, corrosion, standing water, etc. |  | 653-6.3.1.3575-8.2.9.3653-4.3.7 |
| 5.11 | Inspect shell mounted vents and overflow slots. Verify mesh screens are correct size, clean, and free of debris. |  | 575.8.2.11.2575.8.3.5.1 |

# Accessway (650-5.8.10) OSHA Recommended Standards

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| 6.1 | Record the type and dimensions of the accessway |  | 650-5.8.10575-11.2575-8.2.3575-8.2.2 |
| 6.2 | Inspect the railing and railing welds for corrosion, paint failure, or other damage. |  | 653-6.3.1.3575.8.2.9575-8.2.3575-8.2.2 |
| 6.3 | Identify any sharp edges. |  | 2015-A.1.14 |
| 6.4 | Inspect the safety devices at openings in the railing for integrity and operation. |  | 653-6.3.1.3575-8.2.2575-8.2.3 |
| 6.5 | Inspect the stair treads or ladder rungs for corrosion, paint failure, and weld failure.  |  | 650-Table5.18653-6.3.1.3575-8.2.2 |
| 6.6 | Inspect the stringers and weld/rung attachment point for corrosion, paint failure, and weld failure. |  | 653-6.3.1.3575-8.2.2 |
| 6.7 | Inspect the stairway/ladder support to shell welds and reinforcing plates. |  | 653-6.3.1.3575-8.2.2 |
| 6.8 | Inspect the platform frame, supports, welds, and reinforcement plates for corrosion and paint failure.  |  | 653-6.3.1.3575-8.2.2575-8.2.3 |
| 6.9 | Inspect the walking surface for corrosion, paint failure, or other damage. |  | 653-6.3.1.3575-8.2.2575-8.2.3 |

# Fixed Roof

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| 7.1 | For safety, before accessing roof, check roof thickness.  |  | 653-4.2.1575-8.2.10.1.1 |
| 7.2 | Record the roof type  |  | 650-G.1575-11.2 |
| 7.3 | Record roof UT measurements according to the appropriate procedure for the tank. |  | 575.8.2.10.1.1575-11.2 |
| 7.4 | Inspect for of standing water and debris. |  | 575-8.2.10.5 |
| 7.5 | Inspect the roof plates and welds for paint failure, corrosion, holes, and other damage. |  | 653-6.3.1.3575.8.2.10.6 |
| 7.6 | Inspect the roof angle and other exterior structural supports for damage. |  | 653-6.3.1.3653-4.2.2.1 |
| 7.7 | Inspect the gauge/sample hatch and seal. |  | 575.8.11.6 |
| 7.8 | Record the dip-height of the tank. |  | 653-6.3.1.3575-11.2 |
| 7.9 | Inspect the weld and reinforcement pad of all roof appurtenances. |  | 575.8.2.11.11.1575.8.11.6653-4.2.2.1 |
| 7.10 | Inspect all roof nozzles for paint failure, corrosion, and other damage. |  | 653-6.3.1.3575.8.11.6575.8.2.9.1575.8.2.7 |
| 7.11 | Inspect all flanges for missing bolts. |  | 575.8.2.9.7575.8.2.11.1.1 |
| 7.12 | Inspect the scaffold support for corrosion, wear, and structural soundness. |  | 653-6.3.1.3575-8.2.3 |
| 7.13 | Record the type, size, number, and manufacturer of all vents, emergency vents, and flame arrestors. |  | 575.8.2.11.2575-11.2 |
| 7.14 | Inspect vents, mesh, and flame arrestors for damage and proper airflow.  |  | 575.8.2.11.2 |
| 7.15 | Record the type and manufacturer of the overfill protection devices.  |  | 575.5.5575-11.2 |
| 7.16 | Inspect overfill protection devices for signs of damage. |  | 575.5.5575.8.11.6 |
| 7.17 | Confirm with local personnel routine testing of overfill protection devices is performed. |  | 2015-4.5.5.1 |
| 7.18 | Inspect any conduit and boxes for signs of damage. |  | 653-6.3.1.3575.5.5.4 |

# Floating Roof

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| 8.1 | For safety, before accessing roof, test the atmosphere with a gas monitor. |  | 2015-10.1.2RP-2026 5.1.2575-8.2.10.1.1-2 |
| 8.2 | Record the roof type  |  | 650-C.1.1650-C.1.2650-H.2575-11.2 |
| 8.3 | Inspect for level floatation, no dips or deformations. |  | 650-H.4.1.2653-4.2.3.1-2 |
| 8.4 | Inspect the floating roof top surface for standing water and debris. |  | 650-C.3.3.4650-C.4.3653-4.2.3.1-2 |
| 8.5 | Inspect the floating roof top surface for corrosion, paint failure, and other damage. |  | 650-C.4.4653-6.3.1.3575.8.2.7653-4.2.3.1-2 |
| 8.6 | Inspect the roof legs for integrity and that they are all pinned at the same height. |  | 650-C.3.10.1650-H.4.6 |
| 8.7 | Inspect the grounding/static bond cables for damage and proper attachment. |  | 650-C.3.1.6650-H.4.1.6653-6.3.1.3575.8.2.6 |
| 8.8 | Record the type of seal(s) |  | 650-H.4.4650-C.3.13650-C.3.13.5650-C.1.2575.8.3.3575-11.2 |
| 8.9 | Inspect the seals for holes, tears, or other openings. |  | 650-C.3.3.6650-H.4.4575.8.3.3.5653-4.2.3.3 |
| 8.10 | Inspect metallic seal components for corrosion and wear.  |  | 650-H.4.4.4575.8.3.3.5653-4.2.3.3575-8.4.3 |
| 8.11 | Record the number and type of each well in the floating roof. |  | 575-8.2.10.3650-C.3.1.3650-H.4.5575-11.2 |
| 8.12 | Inspect the well seals/wipers/sock. |  | 650-C.3.1.3650-H.4.4/5575-8.2.10.3575.8.2.10.6653-4.2.3.3 |
| 8.13 | Check the automatic gauge tape cable for wear or fraying.  |  | 575.8.11.62350-4.2 C2350-4.5.5.6 |
| 8.14 | Inspect the roof vents and drains for damage and proper function. |  | 650-H.5.2.1.4575-8.2.10.4575-8.2.11.2653-4.2.3.3 |
| 8.15 | Inspect the rolling ladder for damage and proper function. |  | 650-C.3.7650-H.5.1.2653-4.2.3.3653-6.3.1.3575.8.2.2 |
| 8.16 | For pontoon compartments, check the condition of the covers and that static bond cables are present.  |  | 650-C.3.1.6650-H.4.1.6 |
| 8.17 | Inspect the pontoon compartments for product, standing water, corrosion, or other damage.  |  | 653-4.2.3.1650-C.3.5650- H.4.1.7653-6.3.1.3575-8.3.3.2.2 |

# Internal Checklist

# Tank Bottom

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| 9.1 | Visually inspect the entire bottom and record anything that would impact the ability to perform an inspection. |  | 575.8.4.2.1575.8.4.3575-11.2 |
| 9.2 | Inspect the bottom with appropriate NDT according to procedure. |  | 650-5.4.1575.8.4.5.2 |
| 9.3 | Mark areas requiring patching or further inspection. Record the findings in the field data and layout sketch. |  | 575-11.2 (This step was not mentioned in the standards but a good engineering practice.) |
| 9.4 | Record UT measurements in critical zone and x-pattern according to procedure. |  | 653-4.4.4575-11.2 |
| 9.5 | Take bottom elevation measurements per API 653 Appendix B. |  | 653-Fig B.1 |
| 9.6 | Inspect all welds for corrosion and leaks, particularly the shell-to-bottom weld. |  | 575-8.4.6575.8.4.5.2 |
| 9.7 | Inspect sketch plates and/or annular ring for corrosion. |  | 575.8.4.5.2 |
| 9.8 | Inspect the coating for failure and damage. |  | 575.8.4.5.2575-8.4.8 |
| 9.9 | Inspect for excessive voids under the bottom and areas that do not drain. |  | 575-8.4.5.6575.8.4.5.2653-B.2.5.2 |
| 9.10 | Inspect the sump, if applicable. Sump bottom, sidewall plate and welds should be evaluated for product-side and soil-side corrosion. |  | 575.8.4.5.2575.8.4.5.6 |
| 9.11 | Check the column bases of fixed roof supports for adequate pads and restraining clips. |  | 575-8.4.5.2 |
| 9.12 | Is the bottom reinforced at all attachments to the bottom? |  | 575-8.4.5.6575.8.4.5.2 |
| 9.13 | Inspect floating roof leg pads for pitting or cutting, and excessive dimpling (indicating excessive loading). |  | 575-8.4.5.6 |
| 9.14 | Check for wear of the bottom at gauging datum locations |  | 575.8.4.5.2 |

# Shell

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| 10.1 | Visually inspect the interior of the shell. |  | 575-8.4.6 |
| 10.2 | Inspect for corrosion and damage. |  | 575-8.4.6 |
| 10.3 | Inspect the coating for failure and damage. |  | 575-8.4.8 |
| 10.4 | Inspect for damage from floating roof seals. |  | 575-8.4.3575-8.4.4 |
| 10.5 | Inspect rivet heads for metal loss. |  | 575-8.4.5.5 |
| 10.6 | Inspect and record any door sheets in the tank shell. |  | 575-10.2.5.2575-11.2653-12.1.6.3653-12.1.5653-12.1.8.1 |
| 10.7 | On cone up bottoms, closely inspect for metal loss on the lower 6” of shell.  |  | Good Engineering Practice.  |

# Nozzles and Piping

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| 11.1 | Identify and describe internal piping. |  | 575-8.4.10.1575-8.4.10.4 |
| 11.2 | Are pipes free to move longitudinally? |  | 575-8.4.10.1 |
| 11.3 | Inspect heater stream nozzle flanges and valves for wire cutting. |  | 575-8.4.10.1 |
| 11.4 | On elbow-down fill lines, inspect the wear plate on the tank bottom. |  | 575-8.4.10.1 |
| 11.5 | On elbow-up fill lines, check that opening is directed against underside of roof, not against a vapor space. Inspect impact area for erosion. |  | 575-8.4.10.1 |
| 11.6 | Inspect diffuser pipe and supports for thinning, corrosion, or damage. |  | 575-8.4.10.1 |
| 11.7 | Record diffuser dimensions and UT on underside |  | 575-8.4.10.1575-11.2 |
| 11.8 | Check that diffuser supports restrain lateral but not longitudinal movement. |  | 575-8.4.10.1 |
| 11.9 | Record the dimensions of any flexible pipe/swing pipe. |  | 575-8.4.10.1575-11.2 |
| 11.10 | Inspect flexible joint for cracks and leaks. |  | 575-8.4.10.1 |
| 11.11 | Check that flexible joints over 6 in. are supported. |  | 575-8.4.10.1 |
| 11.12 | Inspect the swing pipe for corrosion. |  | 575-8.4.10.1 |
| 11.13 | Inspect the pontoons for corrosion. |  | 575-8.4.10.1 |
| 11.14 | Inspect the pull-down cable connections to the swing. |  | 575-8.4.10.1 |
| 11.15 | Inspect the bottom-mounted support and limiting bumper for weld and bolt corrosion, and seal welding to bottom or shell. |  | 575-8.4.10.1 |
| 11.16 | Inspect safety hold-down chain for corrosion and weak links. |  | 575-8.4.10.1 |
| 11.17 | Check that there is a welded reinforcing pad where the chain connects to the bottom. |  | 575-8.4.10.1 |
| 11.18 | If the swing line in an IFR tank does not have a limiting device preventing the line from exceeding 60°, determine the maximum angle possible. |  | 575-8.4.10.1 |
| 11.19 | All cable: check for wear or fraying. |  | 575-8.4.10.1 |
| 11.20 | Inspect for three cable clamps where cable attaches to end of swing line or roof assembly. |  | 575-8.4.10.1 |

# Appurtenances

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| 12.1 | Inspect the gauge pole for corrosion, damage, and proper operation. |  | 575-5.5.2575-8.4.10.12350-4.2 C2350-4.5.5.6 |
| 12.2 | Inspect the gauge well supports and welds. |  | 575-5.5.2575-8.4.10.12350-4.2 C2350-4.5.5.6 |
| 12.3 | Identify and report pipe outside diameter and wall thickness, and whether pipe is solid or slotted. Report slot size. |  | 575-11.2575-8.4.10.1575-5.5.2 |
| 12.4 | Inspect vapor control float and cable. |  | 575-5.5.2575-8.4.10.12350-4.2 C2350-4.5.5.6 |
| 12.5 | Inspect gauge well guide in floating roof for pitting and thinning. |  | 575-5.5.2575-8.4.10.1 |
| 12.6 | Inspect the guide rollers and sliding plates for freedom of movement. |  | 575-5.5.2575-8.4.10.12350-4.2 C2350-4.5.5.6 |
| 12.7 | Inspect condition of gauge well pipe seal system. |  | 575-5.5.2575-8.4.10.12350-4.2 C2350-4.5.5.6 |
| 12.8 | Inspect the condition of the gauge pole sleeve. |  | 575-5.5.22350-4.2 C2350-4.5.5.6 |
| 12.9 | Inspect gauge float tape and tape cable for twisting and fraying. |  | 575-5.5.22350-4.2 C2350-4.5.5.6 |
| 12.10 | Test the tape’s freedom of movement through guide sheaves and tape guide pipe. |  | 575-5.5.22350-4.2 C2350-4.5.5.6 |
| 12.11 | On open-top tanks, check that gate tapes with cables have no more than one foot of tape exposed with float at lowest point. |  | 575-5.5.22350-4.2 C2350-4.5.5.6 |
| 12.12 | Check float for leakage. |  | 575-5.5.22350-4.2 C2350-4.5.5.6 |
| 12.13 | Test float guide wire anchors for spring action by pulling on wire and releasing. |  | 575-5.5.22350-4.2 C2350-4.5.5.6 |
| 12.14 | Inspect float wells in floating roofs for corrosion of walls just above the liquid level. |  | 575-5.5.22350-4.2 C2350-4.5.5.6 |
| 12.15 | Check that the auto gauge tape is firmly attached to the float. |  | 575-5.5.22350-4.2 C2350-4.5.5.6 |
| 12.16 | Inspect the tape cable and float guide wire fabric seals through the float well cover. |  | 575-5.5.22350-4.2 C2350-4.5.5.6 |
| 12.17 | Inspect the bottom guide wire attachment clip. inspect for a temporary weighted bar instead of a permanent welded down clip. |  | 575-5.5.22350-4.2 C2350-4.5.5.6 |
| 12.18 | Inspect board-type auto gauge indicators for legibility and freedom of movement of indicator. |  | 575-5.5.22350-4.2 C2350-4.5.5.6 |

# Fixed Roof

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| 13.1 | Visually inspect the roof underside. |  | 575-8.4.9 |
| 13.2 | Inspect for corrosion and damage. |  | 575-8.4.9 |
| 13.3 | Inspect the coating for failure and damage. |  | 575-8.4.8 |
| 13.4 | Inspect support columns for corrosion and plumbness. Record metal thickness. |  | 575-11.2650-5.10.2.2575-8.4.9 |
| 13.5 | On built-up columns check for corrosion scale breaking the welds. |  | 650-5.10.4.7a |
| 13.6 | Are columns free to move vertically relative to the bottom, and restrained from moving horizontally relative to the bottom? |  | 650-5.10.4.7c,d |
| 13.7 | Are pipe columns concrete-filled or open? If open, is there a drain opening at the bottom of the pipe? |  | 575-11.2650-5.10.4.5 |
| 13.8 | Inspect rafters for corrosion, particularly near the center of the roof. Record metal thickness. |  | 575-11.2575-8.4.9 |
| 13.9 | Check for loose or twisted rafters. |  | 650-5.10.4.6575-8.4.9 |
| 13.10 | Inspect girders for corrosion. Record metal thickness. |  | 575-11.2575-8.4.9 |
| 13.11 | Check that girders are attached securely to the top of the columns. |  | 575-8.4.3 |

# Floating Roof

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| 14.1 | Perform the following safety checks. Visually inspect the topside of the roof form the top of the tank. Confirm all legs are straight and in the proper location. Inspect the roof for sagging/low spots.  |  | 2015-10.1.2RP-2026 5.1.2575-8.4.3650-H.4.6.1653-4.2.3.3 |
| 14.2 | Record the type of floating roof |  | 575-11.2650-C.1.2650-H.2 |
| 14.3 | Record roof UT measurements according to the appropriate procedure for the tank. |  | 575-11.2575-8.3.3.2.1 |
| 14.4 | Inspect for level floatation, no dips or deformations. |  | 650-H.4.1.2650-C.3.3.5 |
| 14.5 | Inspect the floating roof top surface for corrosion, paint failure, and other damage. |  | 650-C.4.4653-6.3.1.3 |
| 14.6 | Inspect for standing water, product stains, or debris. |  | 650-C.3.3.4650-C.4.3575-8.1.3 |
| 14.7 | Inspect the weld seams for evidence of product leakage. |  | 575-8.2.9.6.5650-C.3.6 |
| 14.8 | Inspect the roof legs for integrity and that they are all pinned at the same height. |  | 650-C.3.10.3650-H.4.6653-4.2.3.3653-4.2.3.3 |
| 14.9 | Record whether roof is in high or low leg position. |  | 575-11.2650-C.3.10.3650-H.4.6.2 |
| 14.10 | Check the automatic gauge tape cable for wear or fraying. Inspect the tank shell for scrapes, gouges, or other indications of roof interference/damage. |  | 575-8.3.5.2575-8.4.3653-4.2.3.3575-5.5.2 |
| 14.11 | Inspect the roof vents and drains for damage and proper function. Record the number and type of each well in the floating roof. |  | 575-11.2653-4.2.3.3 |
| 14.12 | Inspect the rolling ladder for damage and proper function.Inspect the well seals/wipers/sock. |  | 650-C.3.7653-4.2.3.3 |
| 14.13 | Record the rim spacing in 4 locations. Check the automatic gauge tape cable for wear or fraying.  |  | 575-8.3.5.2575-11.2653-4.2.3.3 |
| 14.14 | Inspect the annular rim for corrosion. Inspect the roof vents and drains for damage and proper function. |  | 650-C.3.9653-4.2.3.3575-8.2.11.2 |
| 14.15 | Record the primary seal type. Inspect the rolling ladder for damage and proper function. |  | 653-4.2.3.3650-C.3.13.5 |
| 14.16 | Inspect the primary seal for damage or missing hardware. Record the rim spacing in 4 locations. |  | 575-11.2653-4.2.3.3 |
| 14.17 | Inspect the primary seal for gaps from the shell, recording any gaps length and location. Inspect the annular rim for corrosion. |  | 575-11.2653-4.2.3.3 |
| 14.18 | Inspect the seals at any penetration through the roof. Record the primary seal type.  |  | 575-11.2653-4.2.3.3650-C.3.13.5 |
| 14.19 | Record the secondary seal type. Inspect the primary seal for damage or missing hardware. |  | 575-11.2653-4.2.3.3650-C.3.13.5 |
| 14.20 | Record the seal height above the adjacent deck surface. Inspect the primary seal for gaps from the shell, recording any gaps length and location. |  | 575-11.2653-4.2.3.3650-C.3.13.5 |
| 14.21 | Inspect the secondary seal for damage or missing hardware. Inspect the seals at any penetration through the roof. |  | 653-4.2.3.3 |
| 14.22 | Inspect the secondary seal for gaps from the shell, recording any gaps length and location. Record the secondary seal type. |  | 575-11.2653-4.2.3.3650-C.3.13.5 |
| 14.23 | Inspect the foam dam and other roof appurtenances for damage. Record the seal height above the adjacent deck surface. |  | 575-11.2653-4.2.3.3 |
| 14.24 | Record height, diameter, and number of floating roof legs. Inspect the secondary seal for damage or missing hardware. |  | 575-8.4.9575-11.2650-C.3.10.1653-4.2.3.3 |
| 14.25 | Inspect the roof legs for corrosion, damage, as well as check for full and level contact support. Inspect the secondary seal for gaps from the shell, recording any gaps length and location. |  | 575-11.2653-4.2.3.3575-8.4.9 |
| 14.26 | Identify and inspect roof leg “strike pad” reinforcement plates and isolating spacers. Inspect the foam dam and other roof appurtenances for damage. |  | 650-C.3.10.5653-4.2.3.3 |
| 14.27 | Record the size and number of pontoons. Record height, diameter, and number of floating roof legs. |  | 575-11.2653-4.2.3.3 |
| 14.28 | Check pontoons for combustible vapors and product stains. Inspect the roof legs for corrosion, damage, as well as check for full and level contact support. |  | 653-4.2.3.3 |
| 14.29 | For pontoon compartments, check the condition of the covers and that static bond cables are present. Identify and inspect roof leg “strike pad” reinforcement plates and isolating spacers. |  | 575-11.2653-4.2.3.3 |
| 14.30 | Inspect pontoons and pontoon structure for corrosion or other damage. Record the size and number of pontoons. |  | 575-11.2653-4.2.3.1 |
| 14.31 | Inspect the roof drain piping and swing joints, record the size and location. Check pontoons for combustible vapors and product stains. |  | 575-8.4.10.1575-8.4.10.5575-11.2653-4.2.3.3 |
| 14.32 | For pontoon compartments, check the condition of the covers and that static bond cables are present. |  | 653-6.3.2.3 |
| 14.33 | Inspect pontoons and pontoon structure for corrosion or other damage.  |  | 575-8.4.10.2 |
| 14.34 | Inspect the roof drain piping and swing joints, record the size and location. |  | 575-8.4.10.1575-8.4.10.5575-11.2653-4.2.3.3 |