A Candidate Guide for the
Pennsylvania Storage Tank Installer and Inspector Certification Examinations

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Under Agreement with:
Commonwealth of Pennsylvania
Department of Environmental Protection
Bureau of Environmental Cleanup and Brownfields
Division of Storage Tanks
400 Market Street
P.O. Box 8762
Harrisburg, PA 17105-8762
Toll Free (in PA Only) 800-42-TANKS or
(717) 772-5599
www.dep.pa.gov
I. Examination Overview

All individuals testing for a Pennsylvania Tank Installer or Inspector Certification will be required to take both an Administrative Examination and at least one Technical Examination.

The Administrative Exam tests the knowledge of candidates on Pennsylvania’s storage tank laws and regulations. This examination will be open-book. Therefore, you will be allowed to use Act 32, as amended, and Chapter 245 during the exam. These documents will be accessible via links while taking the exam. Paper copies of the documents will not be allowed. This is a timed exam and you will have one hour to complete it.

The Technical Exams cover information specific to the specialty areas of tank modifications/installations/removals and inspections. There are 12 different exams which cover the Pennsylvania certification categories. It may be necessary for a candidate to take more than one Technical Exam if they are applying for more than one certification category (see the section in this booklet on Examination Structure). These exams are not open-book exams; therefore, the use of notes and/or reference materials during the technical exams will be strictly prohibited.

The Administrative Exam consists of 30 questions, all multiple-choice. The Technical Exams consist of 60 multiple-choice questions.

You will receive a separate score for the Administrative Exam and for each Technical Exam. A score of 80 percent is required to pass any of the exams.
II. Examination Questions

For each multiple-choice question, there are four possible answers. Only one of the possible choices is the correct answer. Questions vary in form and difficulty. The following descriptions of the major types of exam questions are included to guide you in preparing for the exams. Answers to example questions are found on the next page.

Questions Types:
1. Some questions describe a procedure or give a definition, and ask you to decide whether the procedure or definition is correct. If the procedure or definition is incorrect, you will be asked to choose the answer that explains why it is incorrect.

Example:
Secondary containment is commonly used to prevent leaking of fluids into the subgrade and into the groundwater below. This statement is:
   a. correct.
   b. incorrect; cathodic protection is more commonly used.
   c. incorrect; emergency relief is more commonly used.
   d. incorrect; emission control is more commonly used.

2. Some questions ask you to fill in the blank with a choice that will make a statement True or Correct.

Example:
According to manufacturer’s instructions, a pre-installation air/soap test should be completed for a minimum of ______ minutes.
   a. 15
   b. 30
   c. 45
   d. 60

3. Some questions ask you to choose one True or Correct statement out of four statements. Other questions ask you to choose the one statement out of the four statements that is Not True or Not Correct.

Example:
All of the following are internal inspection techniques for determining tank bottom corrosion rates EXCEPT:
   a. External ultrasonic measurement of the annular ring.
   b. Analyzing results of scheduled internal inspections.
   c. Obtaining material safety data sheet information.
   d. Analyzing historical field data.
III. Taking the Examination

Read each question very carefully. Give special attention to key words such as Not, Better, Most and Least. There are no "trick questions" on the exam. Choose the one best answer for each question.

You will be taking the exam on a computer. You will have two cameras and a live proctor observing you during the exam.

You will be able to go back over the exam to change any answers or answer any questions that you skipped.

IV. Examination Structure

The following table shows which exam or exams you will be taking depending upon the category or categories you have applied for.

An outline is provided for each of the examinations on the following pages. Theses outlines list in detail the areas to be tested and the references from which the questions are drawn. A composite list of examination references with complete titles and dates of publication follows the examination outlines.

<table>
<thead>
<tr>
<th>Examination</th>
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<td>AC</td>
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Answers to Example Questions on the previous page are:

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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<tbody>
<tr>
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<tr>
<td>2</td>
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<td>c</td>
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</table>
V. ABOVEGROUND STORAGE TANK EXAMINATIONS

AC Examination Outline:

1. Requirements of structural design and anchoring of large welded ASTs. (API 650 and API RP 12R1)
2. Foundations and ringwalls for large ASTs. (API 620, API 650 and API RP12R1, NFPA 30)
4. Cathodic protection of ASTs. (API 651)
5. Recommended safety practices and proper entry of ASTs. (ANSI Z117, API 2015, API 2003 and API 2202)
6. Requirements for grading and sub bases in the construction of large ASTs. (API 650 and API RP12R1)
7. Requirements for repair, maintenance, and inspection of large welded ASTs. (API 653)
8. Recommended working practices. (OSHA standards)
9. Use and construction of vaults for ASTs. (Pennsylvania Flammable and Combustible Liquids Regulations)
10. Standard concrete construction practices. (API 650 and NACE SP 0187)
AE Examination Outline:

1. Repair, alteration and inspection of ASTs. (API 620, API 12 R1, and API 653)
2. Recommended entry practices for ASTs. (API 2015, API 2016)
3. Product characteristics, harmful effects, and confined space entry in ASTs. (API 2003, API 2009, API 2015, NFPA 30, API 2202, and ANSI Z117)
4. Recommended work practices and electrical safety requirements in ASTs. (API 2003, API 2009, API 2015, API 2350, and NFPA 30)
5. Pumps and valves for ASTs. (API 650, PEI RP200, and NFPA 30)
6. Planning and accomplishment of new construction of ASTs. (API 620, API 650, and PEI RP200)
7. Venting of ASTs. (PEI RP200, NFPA 30, API 12 R1, and the Pennsylvania Flammable and Combustible Liquids Regulations)
8. Cathodic protection of ASTs. (API 651)
9. Overfill requirement for ASTs. (API 2350, PEI RP200, and NFPA 30)
10. Requirements for tanks, piping and fittings for ASTs. (API RP12R1, NFPA 30, UL, and PEI RP 200)
AF Examination Outline:

1. Alteration and repair of tank shells. (API 653)

2. Alteration and repair of tank bottoms, roofs, and the testing of repair integrity. (API 650, API 653, API 2015, API 2207, and API 620)

3. Electrical and hot work safety. (API 2003, API 2009, and API 2207)

4. Construction and testing of new tank shells. (API 650)

5. Construction of new tank bottoms, ringwalls, anchors and foundations. (API 650)

6. Low pressure tank construction. (API 650 and API 620)

7. Tank dismantling and reconstruction. (API 653 and API 2202)

8. Safety factors in the inverting (vapor freeing) and entering of tanks. (API 2015, API 2202, ANSI Z117, and NIOSH)


10. Miscellaneous systems, appurtenances, and preparations for lining of ASTs. (API 651, API 652, and API 2350)
AN Examination Outline:


3. Non-metallic tank appurtenances. (API 2350, Guidelines – Snyder Industries, and ASME RTP-1)


6. Foundations for non-metallic tanks. (API 650 and ASME RTP-1)

7. Personnel safety working with non-metallic tanks. (API 2015 and NIOSH)

8. Linings and containment for non-metallic tanks. (API 652, NFPA 30, and the Pennsylvania Flammable and Combustible Liquids Regulations)


10. Inspection of non-metallic tanks. (API RP12P and ASME RTP-1)
AR Examination Outline:

1. Characteristics of the products stored in ASTs as this relates to the entry and cleaning during removal. (API 2015)
2. Procedures involved in entry and cleaning of ASTs during removal. (API 2015)
3. Inspection, repair, and alteration of ASTs as this relates to removal activities. (API 653)
5. Recommended safety practices during the removal of ASTs. (API 2003, API 2009, ANSI Z117.1, and NFPA 30)
6. Effects of past product storage on the dismantling and disposal of ASTs. (API 2015 and API 2202)
7. Appropriate procedures in handling, dismantling and disposal of ASTs. (API 2202, API 1604, and NFPA 326)
8. Recommended safety practices when working in confined spaces. (NIOSH, API 1604, and API 2015)
9. Preparation of bottoms for hot work. (API 2207)
AS Examination Outline:

1. Site planning for installation of shop built ASTs. (PEI RP-200, NFPA 30, Pennsylvania Flammable and Combustible Liquids Regulations)
2. Foundations and anchors for shop built ASTs. (PEI RP-200, API 650, Pennsylvania Flammable and Combustible Liquids Regulations)
3. Product handling safety in shop built ASTs. (PEI RP-200, NFPA 30, API 2015 and API 650)
4. Record keeping, inspections, and special types of shop built ASTs. (PEI RP-200)
5. Environmental and safety issues related to the installation and use of shop built ASTs. (PEI RP-200, API 2015, NFPA 30, OSHA, and Pennsylvania Flammable and Combustible Liquids Regulations)
6. Use of dikes and vaults in connection with the installation of shop built ASTs. (PEI RP-200 and NFPA 30)
7. Pumps, valves, and pipes associated with the installation of shop built ASTs. (PEI RP-200 and NFPA 30)
8. Fill pipes, gauges, and vents associated with the installation of shop built ASTs. (PEI RP-200, API 12 R1 NFPA 30, and the Pennsylvania Flammable and Combustible Liquids Regulations)
9. Corrosion prevention and cathodic protection in shop built ASTs. (PEI RP-200 and API 651)
10. Recommended entry practices for shop built ASTs. (API 2015)
IA Examination Outline:

1. Inspection of ASTs in terms of general suitability for service. (API 653 and API 12-R1)
2. Inspection of ASTs in reference to reconstruction and dismantling for reconstruction. (API 653)
3. Inspection of welds in ASTs. (API 653 and API 650)
4. Record keeping in relation to the inspection of ASTs. (API 653)
5. Construction of ASTs. (API 620 and API 650)
6. Corrosion protection, tank foundations, and undertank leak detection in ASTs. (API 650, API 651, and the Pennsylvania Flammable and Combustible Liquids Regulations)
7. Safety issues and requirements relevant to the inspection of ASTs. (NFPA 30, NFPA 70, and the Pennsylvania Flammable and Combustible Liquids Regulations)
8. Alternate construction of ASTs. (API RP12D, API 12 R1, API RP12P, and UL-142)
9. Safety concerns during the inspection of ASTs. (API 2003, API 2009, API 2350, and API 2207)
10. Coating and surface preparation in ASTs. (API 652, SSPC)
TL Examination Outline:

1. General principles and procedures for the lining of ASTs. (API 652)
2. Characteristics of linings for ASTs. (API 652)
3. Problems and preparation procedures associated with the lining of ASTs (API 652)
4. General principles and procedures for the lining of USTs. (API 1631 and Guidance 263-3120-001)
5. Safety concerns arising from the work environment. (API 2015 and API 2202).
6. Safety concerns arising from the characteristics of the products stored in the tanks to be lined. (API 2015, API 2202, and NFPA 30)
7. Safety practices relevant to the lining of tanks. (API 2015, SSPC, and NFPA 326)
8. Confined spaces and recommended practices for entry. (API 2015, ANSI Z117, API 2009, and NIOSH)
9. Surface preparation required prior to the lining of storage tanks. (SSPC)
10. Miscellaneous aspects of storage tanks, in general, which are relevant to the activity of lining storage tanks. (API 651 and API 652)
VI. UNDERGROUND STORAGE TANK EXAMINATIONS

UR Examination Outline:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>General principles and regulatory requirements related to UST closure/removal. (PA Code and Tank Closure)</td>
</tr>
<tr>
<td>2</td>
<td>Regulatory requirements related to suspected releases and the temporary closure. (PA Code)</td>
</tr>
<tr>
<td>3</td>
<td>Purging of USTs. (API 1604 and &quot;Tank Closure Without Tears&quot;)</td>
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<tr>
<td>4</td>
<td>Inerting of USTs. (API 1604 and &quot;Tank Closure Without Tears&quot;)</td>
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<tr>
<td>5</td>
<td>General procedures for the closure or removal of USTs. (API 1604, and &quot;Tank Closure Without Tears&quot;)</td>
</tr>
<tr>
<td>6</td>
<td>General procedures for the proper handling of USTs following closure or removal. (API 1604, and &quot;Tank Closure Without Tears&quot;)</td>
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<tr>
<td>7</td>
<td>Health and safety issues involved with working in or around the tank during closure or removal of USTs. (API 2015, API 1604 and NFPA 326)</td>
</tr>
<tr>
<td>8</td>
<td>Health and safety issues related to the products previously stored in USTs being closed or removed. (API 2015, API 1604, NFPA 326)</td>
</tr>
<tr>
<td>9</td>
<td>Tank layout and components as they pertain to closure and/or removal of USTs. (PEI RP100 and API 1615)</td>
</tr>
<tr>
<td>10</td>
<td>Relevant guidance for the removal of USTs. (NFPA 30 and the Pennsylvania Flammable and Combustible Liquids Regulations)</td>
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</tbody>
</table>
UT Examination Outline:

1. General principles involved in tank tightness testing. (EPA 530 and PEI RP100)
2. Effects of product characteristics on the procedures involved in tank tightness testing. (EPA 530 and NFPA 32)
3. Effects of structural characteristics of tanks on the principles and procedures involved in tank tightness testing. (EPA 530, PEI RP100, API 1615, and Containment Solutions)
4. Effects of piping and other appurtenances on the principles and procedures involved in tank tightness testing. (EPA 530 and NFPA 329)
5. Data collection concerns and special problem effects involved in tank tightness testing. (EPA 530)
6. Pre-installation tank tightness testing. (PEI RP100, Containment Solutions, and manufacturer's recommendations)
7. Regulations pertinent to tank tightness testing. (PA Code and EPA 530)
8. Tank layout as it influences tank tightness testing. (PEI RP100 and API 1615)
9. Piping layout as it influences tank tightness testing. (PEI RP100, API 1615, and PA Code)
10. Piping tightness testing. (API 1615, PEI RP100, NFPA 329 and EPA 530)
UX Examination Outline:

1. Practices and procedures involved in the anchoring of USTs. (PEI RP 100, API 1615, and Containment Solutions)

2. Practices and procedures involved in the testing of USTs. (PEI RP 100, API 1615, PA Code, EPA 530, and Containment Solutions)

3. Practices and procedures for the installation of piping associated with USTs. (PEI RP 100, EPA 530, and API 1615)

4. Excavating and backfilling associated with the installation of USTs. (PEI RP 100 and API 1615)

5. Components and appurtenances associate with the installation of USTs. (PEI RP 100, API 1604, and API 1615)

6. Tank characteristics and handling requirements during installation of USTs. (PEI RP 100, API 1615, and Containment Solutions)

7. Requirements for installation of piping associated with the installation of USTs. (PEI RP 100 and API 1615)

8. Cathodic protection of USTs. (API 1632 and PEI RP100)

9. Regulations and requirements for the installation of USTs. (PA Code and EPA 530)

10. Safe practices and requirements in the installation of USTs. (NFPA 30 and the Pennsylvania Flammable and Combustible Liquids Regulations)
IU Examination Outline:

1. Regulatory requirements related to leak detection equipment and methods for USTs. (PA Code and EPA 530)

2. Regulatory requirements related to line tightness, piping, spill and overfill protection in USTs. (PA Code, EPA 530, and NFPA 329)

3. Regulatory requirements related to tank tightness testing, activities and methods for USTs. (PA Code, EPA 530, and NFPA 329)

4. Regulatory requirements related to special concerns such as record keeping and secondary containment for USTs. (PA Code and EPA 530)

5. Special installation requirements such as venting, vapor recovery, observations, and spill containment. (PEI RP-100 and API 1615)

6. Installation requirements for layout and anchoring of USTs. (PEI RP-100 and API 1615)

7. Special installation concerns for non-metallic tanks. (PEI RP-100, API 1615, and Containment Solutions)

8. Corrosion prevention and cathodic protection systems and requirements. (PA Code, NACE RP-0285, PEI RP-100, and API 1615)

9. Regulations and requirements for tank closure and temporary closure. (PA Code and API 1604)

10. Fire code regulations, requirements for UST systems. (NFPA 30, Pennsylvania Flammable and Combustible Liquids Regulations)
VII. Reference List

1. Act 32 of 1989, as amended, The Storage Tank and Spill Prevention Act


23. Commonwealth of PA Flammable & Combustible Liquids Regulations. Title 34, Chapters 14 and 14a, and Title 37, Chapter 14.


37. PA DEP Technical Guidance 257-3120-001
VIII. Abbreviation List

List of abbreviations that may be found on the exams:

AMPP  Association for Materials Protection and Performance
ANSI  American National Standards Institute
API    American Petroleum Institute
ASME  American Society of Mechanical Engineers
ASNT  American Society for Nondestructive Testing
AST   Aboveground Storage Tank
ASTM  American Society of Testing and Materials
AWS   American Welding Society
AWA   American Welding Association
cm/sec centimeters per second
DEP   Department of Environmental Protection
EPA   Environmental Protection Agency
FRP   Fiberglass Reinforced Plastic
gal/hr gallons per hour
mil   1/1000 inch or .0254 millimeter
NACE  National Association of Corrosion Engineers
NEIWPC New England Interstate Water Pollution Control Commission
NFPA  National Fire Protection Association
NIOHSA National Institute for Occupational Safety and Health
OSHA  Occupational Health and Safety Administration
PEI   Petroleum Equipment Institute
SCFH  standard cubic feet of air per hour
SSPC  Steel Structures Painting Council
STI   Steel Tank Institute
UL    Underwriters Laboratory
UST   Underground Storage Tank
IX. Source List for Publications

American National Standards Institute (ANSI)
www.ansi.org

American Petroleum Institute (API)
www.api.org

American Society of Mechanical Engineers International
www.asme.org

American Society for Nondestructive Testing
www.asnt.org

American Society for Testing and Materials International
www.astm.org

American Welding Society
www.aws.org

Association for Materials Protection and Performance (AMPP)
[formerly NACE and SSPC]
www.ampp.org

Environmental Protection Agency (EPA)
www.epa.gov

Containment Solutions, Inc.
www.containmentsolutions.com

National Fire Protection Association (NFPA)
www.nfpa.org

National Institute for Occupational Safety and Health (NIOSH)
www.cdc.gov/niosh

New England Interstate Water Pollution Control Commission
www.neiwpcc.org

Occupational Safety and Health Administration (OSHA)
www.osha.gov

PA Department of Environmental Protection (DEP)
www.dep.pa.gov (Search "Storage Tanks")
X. The Scheduling Process

You must be approved by DEP in advance of the test. The Storage Tank Installer and Inspector Certification Application must be submitted to the Department at least 60 days prior to when you would like to take the exam.

Once you are approved for an exam, you will receive an email from DEP affirming which exams you are approved for. You will receive a separate email from Assess.com with instructions for paying for and accessing the exams. Exams can be taken any day and time, with the exception of some holidays.

XI. The Administrative Examination

The Administrative Exam is based on the following specific reference documents:


* Title 25, Pennsylvania Code, Chapter 245 Administration of the Storage Tank and Spill Prevention Program: Subchapter A. General Provisions; Subchapter B. Certification Program for Installers and Inspectors of Storage Tanks and Storage Tank Facilities; and Subchapter D. Corrective Action Process for Owners and Operators of Storage Tanks and Storage Tank Facilities and Other Responsible Parties.