Environmental Results Program

Certification Workbook

For

Underground Storage Tank Facilities

December 2004 (rev. 1)

State of Rhode Island
Department of Environmental Management
Office of Waste Management, UST Program
235 Promenade Street
Providence, RI 02908 (401) 222-2797
www.state.ri.us/dem

Guide For Periodic Walk-Through Inspections

✓ To assist in quickly detecting and preventing releases you should conduct basic walk-through inspections of your facility frequently to make sure that your essential equipment is working properly and that you have emergency response supplies on hand.

Your initials in each box below the date of the inspection indicate that the device/system was inspected and OK on that date.	**Date of Inspection**				
Release Detection System: Inspect for proper operation.					
Spill Buckets: Ensure spill buckets are clean and empty.					
Overfill Alarm: Inspect for proper operation. Can a delivery person hear or see the alarm when it alarms?					
Impressed Current System: Inspect for proper operation.					
Fill and Monitoring Ports: Inspect all fill/monitoring ports and other access points to make sure that the covers and caps are tightly sealed and locked.					
Spill and Overfill Response Supplies: Inventory and inspect the emergency spill response supplies. If the supplies are low, restock the supplies. Inspect supplies for deterioration and improper functioning.					
Dispenser Hoses, Nozzles, and Breakaways: Inspect for loose fittings, deterioration, obvious signs of leakage, and improper functioning.					
Dispenser and Dispenser Sumps: Open each dispenser and inspect all visible piping, fittings, and couplings for any signs of leakage. If any water or product is present, remove it and dispose of it properly. Remove any debris from the sump.					
Piping Sumps: Inspect all visible piping, fittings, and couplings for any signs of leakage. If any water or product is present, remove it and dispose of it properly. Remove any debris from the sump.					

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Chapter 1: Should You Use This Workbook?

This Workbook is designed to help owners and operators of underground storage tanks (commonly referred to as USTs) with the Rules and Regulations For Underground Storage Facilities Used For Petroleum Products and Hazardous Materials, effective October 22, 2002. The Workbook describes requirements and best management practices (BMPs) for your UST systems and helps you to determine whether your underground storage tanks are in compliance with the regulations.

The DEM has developed and implemented an Environmental Results Program (ERP). **If you have underground storage tanks at your facility that meet the criteria described on the following page, you must read and fill out the checklist questions that accompany this Workbook. If, after reading this section, you determine that the Workbook does not apply to you, fill out the Non-Applicability Statement included in the accompanying forms booklet and send it to the DEM.** This will inform the DEM that you do not have any UST systems that fall under this program. If you complete a Non-Applicability Statement, the DEM should not send you a workbook next year.

For each UST system that you operate, you are required to complete and submit the Compliance Certification Checklist and Certification Statement (and, if required, a Return to Compliance Plan form) and return these forms to the DEM. The Compliance Certification Checklist, Statement, and Return to Compliance Plan forms are included in the accompanying Forms Booklet. As part of the UST ERP program, the DEM will conduct random and targeted inspections. **If you do not meet the above requirements, you will be targeted.** Carefully review this Workbook to make sure that you understand the requirements you must meet and that you are able to accurately fill out the Compliance Certification Checklist, Certification Statement, and the Return to Compliance Plan forms.

To determine whether you must complete the required UST ERP Certification forms:

- Read and answer the question in this chapter.
- Use the information below the question to help you answer the question.
- Follow the directions in the grey box below the question.

How many UST systems at your facility meet at least one of the following criteria? These are types of UST systems covered by this Workbook.	**Number of USTs**
• contain hazardous materials Examples: a) contain petroleum or used oil (destined for recycling) at public gasoline stations or repair shops b) private petroleum tanks used for fueling of business vehicles (for example: bus terminals) c) store fuel for use by emergency power generators d) contain heating oils (fuel oils used for the purpose of producing heat) • holding tanks that serve floor drains or other piping outlets	

- **If you have at least one UST system that meets the criteria above,** complete the applicable portions of the Compliance Certification Checklist and Forms Booklet. Please note the list of exemptions below.
- **If you have no UST systems that meet the criteria above,** you do not have any UST systems covered by the Environmental Results Program. This workbook does not apply to you. Fill out the Non-Applicability Statement included in the accompanying Forms Booklet and send it to the DEM.

Exempt UST Systems: An UST system that meets at least one of the criteria below is an exception to the UST systems you identified above and is not covered by the UST ERP. If you received this Workbook, it would be uncommon for all of your tanks to meet at least one of the criteria below.

Types and use of tanks

- hydraulic lift tanks
- storage tanks located entirely within structures, such as a basement or cellar provided that:
  a) the structure allows for physical access to the storage tank
  b) the structure is not part of a secondary enclosure; and
  c) the tank is situated upon or above the surface of a concrete floor
- septic tanks
- pipeline facilities regulated under the Natural Gas Pipeline Safety Act of 1968 or the Hazardous Liquid Pipeline Safety Act of 1979
- flow through process tanks
- USTs storing propane or liquified natural gas
- USTs used for the temporary storage of raw materials or products by industry (so called "Intermittent" or "fill and draw" tanks)
- emergency spill protection or overflow tanks
- USTs connected to floor drains or other piping outlets which serve residential structures of a 1, 2, or 3 family dwelling
- oil water separators with a planned discharge required to be regulated under the Clean Water Act
- residential tanks < or = 1,100 gallons in capacity used for storing #2 heating oil serving a 1, 2, or 3 family dwelling
- farm tanks < 1,100 gallons in capacity and storing #2 heating oil for non-commercial purposes

If you are still not sure whether the UST ERP applies to you, call the DEM at (401) 222-2797. You may face substantial penalties if you intentionally falsify your applicability. The DEM will be checking your responses for accuracy.

Chapter 2: Introduction

2.1 What is the Purpose of this Workbook?

This Workbook is designed to:

- Clearly explain the environmental, record keeping, and compliance requirements and best management practices that apply to UST systems; and

- Assist owners and operators of regulated UST systems in Rhode Island to participate in the ERP.

2.2 Legislative Authority

Rhode Island law requires UST system owner/operators who answered "Yes" to the question in the previous chapter to comply with the RI DEM UST ERP. These owner/operators are required to complete and submit the applicable checklist questions in the accompanying Forms Booklet, complete and submit the Compliance Certification Statement, and, if necessary, complete and submit a Return to Compliance Plan(s) for any aspects of their UST system(s) that are determined to be out of compliance.

2.3 What is the Environmental Results Program?

The Environmental Results Program (ERP) is a common sense approach to achieving environmental protection. It was first developed and used successfully by Massachusetts in 1997. The DEM believes that the ERP will assist UST system owners and operators in understanding and complying with UST system regulations and lead to exceeding environmental standards. The ERP gives you the information to understand the maintenance and operational requirements that pertain to your UST systems while improving accountability to the public for environmental performance.

Rhode Island's Environmental Results Program includes:

- this **Workbook** which includes best management practices and compliance requirements. The Workbook has a direct relation to the Compliance Certification forms mentioned below;

- a **Compliance Certification Checklist** of questions that are required to be completed by the owner/operator. This checklist is included in the accompanying Forms Booklet;

- a **Certification Statement** form that UST system owners and operators are required to complete, sign, and return to the DEM. On the form, the UST system owners and operators must certify the current compliance status of the facility and acknowledge that the facility must comply with all applicable environmental laws. This form is included in the accompanying forms booklet;

- a **Return to Compliance Plan** form which is used for compliance problems identified in the process of filling out the Compliance Certification Checklist and that cannot be corrected prior to submittal of the certification forms. The Return to Compliance Plan describes what

steps the facility will take to meet its requirements and when it will return to full compliance. This form is included in the accompanying Forms Booklet;

- **workshops** so owners and operators can learn about their responsibilities under ERP;

- **audits/inspections** to confirm the accuracy of the certifications and compliance with the UST system regulations; and

- **Technical assistance**, which is available online at www.state.ri.us/dem/programs/benviron/assist/usterp/index.htm, by phone at (401) 222-2797 or by e-mail by contacting Kevin Gillen at kgillen@dem.state.ri.us

2.4 Why Participating in the UST ERP is Important

As an UST system owner or operator, you have an important role to play in protecting public health, the environment, and your economic investment. If UST systems are not operated and maintained properly, they could leak and pollute the environment. An ERP is an approach that will help you comply with UST system regulations, which will in turn help protect public health, the environment, and your economic investment.

- Public health and the environment: Releases from UST systems (spills, overfills, leaking tanks and piping) can contaminate groundwater, soil, surface water, air, etc. Approximately 50 percent of Americans depend on groundwater consumption. In addition, leaks can result in fires or explosions, which threaten human safety.

- Economic investment: It is important to quickly detect and report releases, as required by UST regulations. Any product that is lost in a release may cost you in terms of cleanup costs, potential penalties, and the lost revenue of product not sold. By responding quickly and containing a release, you may be able to reduce cleanup costs and environmental damage.

2.5 What It Means to Be in Compliance

To be in compliance means you meet the minimum DEM requirements for your UST system. You must meet all environmental requirements for each regulated UST system in order to be in compliance[1]. The UST system requirements include spill, overfill, corrosion protection, release detection, financial responsibility, proper installation, correct operation, maintenance, repair, testing, controlling releases, reporting releases, remediating releases, reporting and record-keeping, temporary closure, and permanent closure.

If you are the owner or operator of one or more UST system, there are certain things you MUST

[1]While this Workbook addresses most RI DEM environmental requirements that apply to UST systems, your facility may need to meet additional requirements that are not covered in this Workbook or in the UST ERP. For example, requirements related to Class V injection wells (motor vehicle waste disposal wells such as a gas station with a service floor drain that leads to a septic system), aboveground storage tanks, hazardous substances, used tires, and other requirements may apply to your facility as well. Also, this Workbook does not address liability for pollution or spills that may have occurred on your property in the past. If you are unsure whether additional requirements apply to your facility, please call RI DEM at (401) 222-2797.

do by law in order to protect human health and the environment. **You are responsible for preventing and quickly detecting releases from your UST systems**. You are also responsible for reporting and cleaning up any releases that occur. You will be held accountable if your UST system(s) leak. Therefore, you should do everything in your ability to ensure releases do not occur.

For further regulatory information, see either of the following:

The Federal UST regulations, 40 Code of Federal Regulations Part 280, are located at:

http://www.epa.gov/oust/fedlaws/cfr.htm#40cfr280

The DEM UST regulations are located at:

http://www.state.ri.us/dem/pubs/regs/regs/waste/ust1002.pdf

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Chapter 3: How To Use This Workbook

Read this chapter to learn how to use this Workbook. This chapter will tell you:

- what kind of information is contained in the rest of the Workbook,
- how that information is organized,
- how to work through Chapters 4 and 5,
- how a facility would fill out a section of Chapter 4 or 5, and
- what the symbols mean in Chapters 4 and 5.

3.1 Organization of the Workbook

You have already read Chapter 1 and Chapter 2. Chapter 1 showed you that you have at least one regulated UST system, and that you need to complete and submit the questions that accompany this Workbook and complete and submit Compliance Certification forms to the DEM (and, if required, a Return to Compliance Plan form). Chapter 2 explained what the ERP is and why it is important to comply with regulations. This chapter will help you understand the rest of the Workbook. After Chapter 3, there are *three* major parts of the Workbook:

Chapter 4: Regulatory Requirements and Best Management Practices at Your Facility
Chapter 4 will help you understand what you have to do to comply with UST regulations and to improve the environmental performance of your facility. You should review the material in Chapter 4 so that you will know how to complete the Compliance Certification Checklist and Certification Statement that you will need to send to the DEM.

Do not be worried by the size of Chapter 4. Most likely, only some parts of the sections in Chapter 4 will apply to your facility. You should review all sections that apply to your UST system(s) but you do not need to review the work if part of the section does not apply to your UST system(s). Each section in Chapter 4 will help you easily decide whether you should review the parts of that section.

Chapter 5: Stage I and Stage II Vapor Recovery System Requirements
Chapter 5 will help you understand what you have to do to comply with the stage I and stage II vapor recovery system regulations and to improve the environmental performance of your facility.

Appendices
The appendices contain information to help you understand the Workbook and comply with the regulations. They include forms and checklists that can help you stay in compliance. Appendix A also provides a list of UST program contacts and other resources that can help answer your questions.

In addition, the front and back covers of this Workbook contain other important information to review:
- the inside front cover has a guide you can use to do periodic walk-through inspections; and
- the inside back cover lists activities you need to do, even after finishing the Workbook.

3.2 Organization of Chapter 4

Chapter 4 will help you understand environmental requirements that apply to your facility. The beginning of Chapter 4 has a table for you to identify UST systems at your facility. You will use this information when reviewing the checklists and tables in Sections 4.1 through 4.11. Each of those sections covers a different part of the UST system requirements. You must review each of the 11 sections in Chapter 4 to see if they apply to your facility. Following your review of the sections, complete the Compliance Certification Checklist, Certification Statement, and any necessary Return to Compliance Plan forms found in the Forms Booklet that accompanies this Workbook.

Sections 4.1 through 4.11 contain:

- information on determining which compliance option your UST system uses to meet the requirements in that section,
- a table for you to identify the compliance options each UST system uses,
- lists of requirements and best management practices for each option,
- compliance checklist questions similar to those you must fill out in the accompanying Forms Booklet for each compliance option that your UST system(s) use, and
- summary of compliance questions for all UST systems at your facility.

3.3 Steps for Reviewing Each Section in Chapter 4

DIRECTIONS: Important directions are provided in gray boxes like this one. Read all directions! There will be specific directions to follow in each section of Chapter 4 that tell you how to proceed through that section. Below are the steps for completing a thorough review of Chapter 4. The example in the next section shows how one facility followed these directions to complete the section on overfill protection.

The steps for completing each section in Chapter 4 are as follows:

1. Read the beginning of each section to understand if it applies to your facility. If you are sure it does not apply, you can skip the section. If it does apply, you should review the questions associated with the section. The section may ask you to fill out a table to identify which compliance options are used by each of your UST systems. This table will help you understand how to complete the Compliance Certification Checklist questions associated with each section. Use the UST identification table at the beginning of Chapter 4 to keep track of the UST systems at your facility.

2. Read the information on requirements and best management practices (BMP) contained in each section. Then work on the checklists in each section as follows:
   - Circle the “UST #” at the top of the checklist for each UST system that uses the option or meets the characteristics of this checklist.
   - Answer the questions in the checklist for UST systems that you circled at the top. Circle “Y” for yes or “N” for no in the column below each UST that you circled. Leave all questions blank for USTs that you did not circle. Skip a question only if you are told to do so.
   - Notice that sometimes a question will tell you to complete a different section first to get the answer for the question. When you do the other section, be sure to come back!
   - Transfer your answers for the Workbook questions to the applicable portion of the Compliance Certification Checklist provided in the accompanying Forms Booklet. The questions in the Forms Booklet are similar to the questions provided throughout Chapter 4 of this ERP Workbook.

Note: If you prefer to answer the Compliance Certification Checklist questions in the Forms Booklet directly, without first reviewing and completing the information in this Workbook, you may do so. The Workbook and the accompanying checklist questions are organized to allow you to use this Workbook as a reference when completing the Compliance Certification Checklist questions.

3. Answer the final summary of compliance question for your facility on the last page of many longer sections (like Section 4.3). The final summary of compliance question asks whether all of your UST systems are in compliance with the major set of requirements discussed in that section. If you answered no to any compliance questions in a section, you must answer no to this summary of compliance question and complete a Return to Compliance Plan form provided in the Forms Booklet.

You will use the answers to the questions in Chapter 4 to complete your Compliance Certification Checklist, Certification Statement and, if necessary, Return to Compliance Plan form(s). Follow the instructions provided in the Forms Booklet to fill those forms out.

3.4 Example: Joe and the A&B Gas Station

The next few pages tell the story of Joe, the owner of a gas station, and how he filled out a few parts of Chapter 4 in this Workbook. Joe is not a real person, but we made up his story to help you understand how to begin to fill out the information in Chapter 4. Joe's story does not tell you everything he did to fill out Chapter 4, but his story will help you get started on the right foot.

Joe's example is explained in dark, bold letters over the next few pages. Try to read the whole story, because it will help you understand how to:

(1) fill out the tables in Chapter 4,
(2) complete the compliance checklists in Chapter 4,
(3) answer the summary of compliance question in Chapter 4, and
(4) fill out the Compliance Certification Checklist, Certification Statement and, if necessary, Return to Compliance Plan form(s) provided in the Forms Booklet.

Joe's story begins here...

Joe is the owner of A&B Gas Station on the corner of Elm and Main Streets. He also owns Y&Z Gas on the corner of Maple and State Streets. Joe is filling out this Workbook only for A&B Gas. He will use the information he writes in the Workbook to correctly fill out his checklist questions and his ERP Certification of Compliance form for A&B Gas. He will fill out a separate checklist and a Certification of Compliance form for Y&Z Gas.

Joe received the Workbook in the mail and starts working on the Workbook a little bit at a time. He knows that starting early will help make sure he has time to collect the right information and do everything the right way before the deadline.

Joe has three underground storage tank (UST) systems at A&B Gas. One UST holds gasoline, one holds kerosene, and one holds used oil. The gasoline UST is "compartmentalized." This means the tank is divided into different sections or compartments. (Usually, each compartment will have a different product in it.) This tank has a compartment for regular gasoline and a compartment for premium gasoline.

The three tanks are lined up in a row from east to west. Joe usually calls the gasoline tank the "east tank." He calls the kerosene tank the "middle tank" and the used oil tank

the "west tank." Joe's kerosene tank is a lot older than his other two tanks, so he does not know as much about that tank as he does about the gasoline tank and the used oil tank.

To start, Joe reads Chapters 1, 2, and 3. When he is done, he feels he has a pretty good idea of how to fill out the Workbook, so he turns to Chapter 4.

Joe Identifies the USTs at His Facility

Before Joe can begin filling out any of the questions in Chapter 4, he has to fill out the table at the beginning of Chapter 4 that helps him keep track of the tanks he has. He will use the numbers that he gives to each tank in this table (1-5) to identify them in the rest of Chapter 4. He follows the directions in the Workbook to put descriptive information for each tank into the table. You can see a copy of Joe's completed table at the bottom of this page.

Even though the premium and regular gas are stored in the same tank, the directions tell him to enter each compartment as a separate UST. So Joe calls the premium section of his gasoline tank "UST 1". Joe knows the registration number of this tank, so he puts that in the "Identification Number" column. Joe fills in the type of product contained in this compartment and the size of the compartment. In the column called "Other UST Identification Information" Joe writes that this tank is the east tank, since that is how he thinks of it.

Joe calls the regular compartment of the gasoline tank "UST 2" and fills in the registration number and location. These are the same as for the premium compartment. He also fills in the size of this compartment and the type of product it holds.

Joe calls his kerosene tank "UST 3". He does not know this tank's registration number, so he leaves that blank. He writes in the type of product and size, and that this is the middle tank.

Joe calls the used oil tank "UST 4" and fills in the information for this tank. He calls this tank the west tank.

Joe has a total of four USTs (since the premium and regular gasoline compartments count separately). So he does not put anything in the fifth row of the table.

UST Identification Table

UST Number	Identification Number	Type of Product	Tank Info. (Single-wall, Double-wall, Lining, etc.)	Piping Info. (Single-wall, Double-wall, Lining, etc.)	Tank Material	Size (Gallons)	Other Identifying Information
1	00123	Premium	Double	Single	Steel	4,000	East
2	00123	Regular	Double	Single	Steel	6,000	East
3		Kerosene	Single	Double	Steel	2,000	Middle
4	00012	Used Oil				1,000	West
5							

Now that Joe has identified all of his USTs, he is ready to look at the other sections in Chapter 4. Joe reads the directions and fills out Sections 4.1 and 4.2. He did not have

much trouble with these sections since he read the directions. We join Joe again when he starts Section 4.3. This section is a lot like the other sections in the workbook, so seeing how Joe fills it out will help you.

Joe Identifies the Types of Overfill Protection He Has

Joe is not exactly sure what to do when he starts Section 4.3, so he first reads the beginning of 4.3. He learns that overfill protection is equipment on USTs to prevent tanks from overflowing when they are being filled. He also learns that most USTs have to have at least one type of overfill protection to be in compliance.

Joe sees that there are three kinds of overfill protection that the regulations allow: overfill alarms, ball float valves, and automatic shutoff devices. An overfill alarm goes off when a tank is close to being full, and can be seen and/or heard. An automatic shutoff device is located at the fill pipe of a tank, and it stops product from flowing into a tank that is close to being full. A ball float valve is located inside a tank, and also slows down any product flowing into a tank that is almost full.

Joe already knows that he has an alarm for his gasoline tank. The information at the beginning of 4.3 helps him figure out that he has an automatic shutoff device on his kerosene tank and no overfill protection for his used oil tank.

At the beginning of Section 4.3, Joe fills out a table that asks about the kind of overfill protection that each of his USTs has. This table tells him which checklists in 4.3 he needs to fill out. A copy of Joe's table is at the bottom of this page.

Using the UST numbers from the table he filled out at the beginning of Chapter 4 (shown on the previous page of this story), Joe marks that USTs 1 and 2 have overfill alarms. (Remember that Joe has to think of each section of his gasoline tank as a separate UST.) He also marks that UST 3 (his kerosene tank) has an automatic shutoff device, and UST 4 (his used oil tank) has no overfill protection. From this table, he sees that he has to fill out checklists in Sections 4.3.1, 4.3.2, and 4.3.4. He will fill these checklists out next. None of Joe's USTs have ball float valves or vent alarms, so he can skip Section 4.3.3 and 4.3.4.

Choose the types of overfill protection used for each tank by checking the appropriate boxes						Go to these sections for information and compliance checklists
UST Number:	1	2	3	4	5	
Overfill Alarm	X	X				Section 4.3.1
Automatic Shutoff Device			X			Section 4.3.2
Ball Float Valve						Section 4.3.3
Vent Alarm						Section 4.3.4
No Overfill Protection				X		Section 4.3.5

Joe Completes the Overfill Alarm Section for His Gasoline Tank

Joe knows he needs to fill out Section 4.3.1 because Joe's USTs 1 and 2 have overfill alarms and the table at the beginning of 4.3 directed him to Section 4.3.1. Joe turns to Section 4.3.1 and reads about the requirements and best management practices for USTs with overfill alarms. Using that information, he answers the questions in this checklist.

A copy of Joe's answers to the questions in Section 4.3.1 is provided here so that you can follow along. The next few paragraphs will tell you why he answered the questions the way he did.

At the top of the checklist, he circles the numbers 1 and 2 to show that these two tanks have overfill alarms. He will not answer any questions on this checklist for USTs 3 and 4, since they do not have overfill alarms.

Joe recently had a technician check his overfill alarms, so he knows that they are working according to the requirements he sees in the workbook. He answers yes for both tanks to Questions 1 and 2.

Joe's Overfill Protection Checklist For USTs With Overfill Alarms

Circle the UST number for each UST that has an overfill alarm. Fill out the questions below for each UST you circled.	**UST # =**	**1**	**2**	**3**	**4**	**5**
Questions		**Yes (Y) or No (N)**				
1. Does your overfill alarm activate at 90% of tank capacity or at least one minute before being overfilled?		**1 Y** / 1 N	**2 Y** / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, have a qualified person adjust your overfill device to the right height. Also, submit a Return to Compliance plan and submit it with your Certificate of Compliance.						
2. Can your overfill alarm be seen and/or heard from the delivery location so that it will alert the delivery person that the tank is almost full?		**1 Y** / 1 N	**2 Y** / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, have a qualified person fix your overfill alarm so that it can be heard and/or seen from the delivery location. Also, submit a Return to Compliance plan and submit it with your Certificate of Compliance.						

Joe Completes the Automatic Shutoff Device Section for His Kerosene Tank

Joe knows that he needs to fill out Section 4.3.2 since the table at the beginning of 4.3 told him to fill out this section for his kerosene tank, which has an automatic shutoff device. He reads the information about automatic shutoff devices before he answers the questions. The questions about automatic shutoff devices are like the questions Joe answered about overfill alarms.

A copy of Joe's answer to the question in Section 4.3.2 is provided here so that you can follow along. The next few paragraphs will tell you why he answered the question the way he did.

Joe starts by circling UST 3 at the top of the checklist, since that is the only tank he has with an automatic shutoff device. He does not circle the other tanks, and will not answer any questions for them.

Joe's kerosene tank overflowed when it was being filled last month. So Joe does not think his automatic shutoff device is working, and circles "no" for the applicable question. He sees that he will have to have a qualified person fix his automatic shutoff device so that he can be in compliance with the requirements for automatic shutoff devices.

In addition to having a qualified person fix his automatic shutoff device, Joe reads the directions that tell him he must submit a Return to Compliance Plan and submit this with his Certification of Compliance. Since Joe answered "no" to this question, he must answer "no" to the summary of compliance question at the end of Section 4.3. He fills out a Return to Compliance Plan form included in his forms booklet. The Return to Compliance Plan tells the DEM how and when Joe will fix the problem. Joe will submit the Return to Compliance Plan with his ERP Certification of Compliance form.

Since Joe does not have any tanks with a ball float valve, the table at the beginning of Section 4.3 tells him he can skip Section 4.3.3. So he turns to Section 4.3.4 next to answer questions for his tank with no overfill protection.

Joe's Overfill Protection Checklist For USTs With Automatic Shutoff Devices

Circle the UST number for each UST that has an automatic shutoff device. Fill out the questions below for each UST you circled.	UST # =	1	2	3	4	5
Questions		**Circle Yes (Y) or No (N)**				
Does your automatic shutoff device properly activate at 95% of tank capacity or before the fittings at the top of the tank are exposed to fuel?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N (circled)	4 Y / 4 N	5 Y / 5 N

If no, then have a qualified person adjust your automatic shutoff device to properly activate at 95% of the tank capacity or before the fittings at the top of the tank are exposed to fuel. In addition, fill out a Return to Compliance plan and submit it with your Certification of Compliance.

Joe Completes the No Overfill Protection Section for His Used Oil Tank

Joe knows that he needs to fill out Section 4.3.4 since the table at the beginning of Section 4.3 told him to fill out this section for his used oil tank, which has no overfill protection. He reads the information about tanks with no overfill protection before he answers the question. The question in Section 4.3.4 is like the questions Joe answered for overfill alarms and automatic shutoff devices.

A copy of Joe's answer to the question in Section 4.3.4 is provided here so that you can follow along. The next few paragraphs will tell you why he answered the question the way he did.

Joe circles UST 4 at the top of the checklist since that is the only tank he has with no overfill protection. He does not circle the other tanks, and will not answer any questions for them.

Joe only puts used oil into this tank, and he never puts in 25 gallons or more at the same time. So Joe answers "yes" to the question in the checklist.

Joe's Checklist For USTs Without Overfill Protection

Circle the UST number for each UST that has an automatic shutoff device. Fill out the questions below for each UST you circled.	UST # =	1	2	3	4	5
Questions		**Circle Yes (Y) or No (N)**				
Does each UST system without overfill protection only receive fuel in amounts of 25 gallons or less?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, have a qualified person properly install an overfill protection device. Also, fill out a Return to Compliance plan and submit it with your Certification of Compliance.						

Joe Answers the Summary of Compliance With the Overfill Protection Question

Joe turns to the page that has the Summary of Compliance with Overfill Protection question. Joe first reads the directions in the gray direction box at the top of the page. Then he checks to make sure that he has filled out all of the checklists he needs to before he answers the summary question. Joe filled out the overfill alarm checklist for USTs 1 and 2, the automatic shutoff device checklist for UST 3, and the no overfill protection checklist for UST 4. Since he has filled out a checklist for each tank, he knows he is ready to answer the summary question.

A copy of Joe's answer to the Summary of Compliance question is provided here so that you can follow along. The next few paragraphs will tell you why he answered the question the way he did.

Joe reads the Summary of Compliance with Overfill Protection question. He knows that he answered "yes" to the questions for the overfill alarms on USTs 1 and 2 and for no overfill protection for UST 4. But he answered "No" to the question for the automatic shutoff device for UST 3. So he answers "No" to the Summary of Compliance with Overfill Protection, because he is not in compliance with all overfill protection requirements for his tanks. He knows that he has to fill out a Return to Compliance Plan form for the automatic shutoff device on UST 3, but that his other tanks are currently in compliance with overfill protection requirements.

Joe will copy his answer to this Summary of Compliance with Overfill Protection question to his Compliance Certification Checklist. So, he will answer "No" to this question on the checklist in the Forms Booklet.

Joe is now ready to move on to Section 4.4 and the other sections of Chapter 4, which he will fill out the same way he did Section 4.3.

Joe's Summary of Compliance With Overfill Protection

Make sure you have read and completed the checklists in the appropriate overfill protection sections for all of your USTs before answering the question below.

Summary Of Compliance With Overfill Protection		
Answer the following question:	**Yes**	**No**
Are all of your UST systems in compliance with overfill protection? To answer **YES** here, you must be able to answer yes to all applicable questions for each overfill protection device you have.		**X**
If you answered NO, fill out a Return to Compliance Plan and submit it with your Certification of Compliance. A Return to Compliance plan can be found in the accompanying Forms Booklet.		

You are now ready to review Chapters 4 and 5 in this workbook! Chapters 4 and 5 will help you complete the required Compliance Certification Checklist, Certification Statement and, if necessary, Return to Compliance Plan form(s) too. Do not forget that if you need help with this workbook, you can call the DEM. The phone number for help is on the front cover of this workbook and in the Forms Booklet.

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Chapter 4: Regulatory Requirements and Best Management Practices at Your Facility

Symbols for Chapter 4

You will see symbols next to some parts of this workbook. The symbols are used to highlight key information. The following are the symbols, and what each means:

What the Symbols in Chapter 4 Mean

Requirement

- What you **must** do by law; things you, an owner or operator, must meet to be in compliance with RI regulations

Best Management Practice (BMP)

- What you **should** do to help prevent leaks; actions or activities you, an owner or operator, are encouraged to take in order to reduce the potential for leaks

Important general information

- Will provide you information to help you better understand an UST system regulatory option.

Describe the USTs at Your Facility

The table on the next page can help you identify and describe the USTs at your facility. To help you fill out this workbook, each UST at your facility will be referred to by a number (1, 2, 3...). **Use this UST number consistently throughout this Workbook and on the Compliance Certification Checklist** provided in the Forms Booklet.

- The USTs you identify should be those you counted in Chapter 1.
- The identification number could be:
  - a common identification you use
  - a more specific number such as the tank registration number
- The "Type of Product," "Tank Info.," "Piping Info.," "Tank Material" and "Size" columns allow you to provide descriptive information that will help you identify each UST system.
- In the "Other Identifying Information" column, list information that will help further identify each tank, such as:
  - the location of the UST at your facility (for example: north, east, southwest, etc.)
  - special features of the UST (for example: the specific compartment of a compartmentalized UST system, the specific tank in a manifolded system)

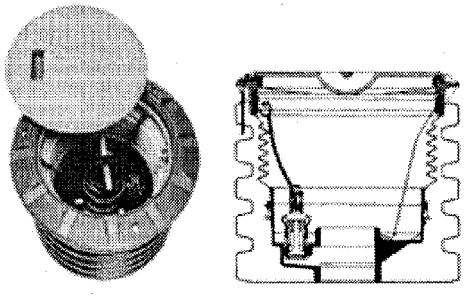
Unique Circumstances - If you have any of the following characteristics at your facility, read the instructions below. If not, begin to fill out the UST identification table below.

- **More than five USTs at your facility covered by this workbook -** Make copies of the table below. Change the UST numbers on each copy to show your additional tanks (6, 7, 8, etc). Also, copy the appropriate checklist questions in Chapter 4 and in the Compliance Certification Checklist for these USTs.
- **Compartmentalized tanks -** A compartmentalized tank is one tank that has multiple sections and can contain different products. Each section is called a compartment. If you have a compartmentalized tank, treat each compartment as a separate UST as you complete this workbook and the Compliance Certification Checklist.
- **Manifolded tanks -** Manifolded tanks are two or more tanks connected by piping which share the same type of product or fuel. If you have manifolded tanks, treat each manifolded tank as a separate UST when completing this workbook and the Compliance Certification Checklist.
- **Temporarily Closed USTs -** Temporarily closed USTs only have to meet certain requirements. Go to Section 4.11 for information about these USTs.
- **Dual-Usage Tanks -** A dual-usage tank is a UST in which its contents serve more than one use. (For example, the contents of the UST serve both a boiler and a diesel generator.) Such tanks are treated under the usage which is more stringently regulated.

UST Identification Table							
UST Number	**Identification Number**	**Type of Product**	**Tank Info. (Single-wall, Double-wall, Lining, etc.)**	**Piping Info. (Single-wall, Double-wall, Lining, etc.)**	**Tank Material**	**Size (Gallons)**	**Other Identifying Information**
Example	00123	Premium	Double	Double	Steel	10,000	Southeast
1							
2							
3							
4							
5							

Section 4.1: Spill Protection

Information Spill protection may be provided by a spill containment basin (a/k/a spill bucket/catchment basin) or similar device that contains drips and spills of fuel that may occur when the delivery hose is uncoupled from the fill pipe.



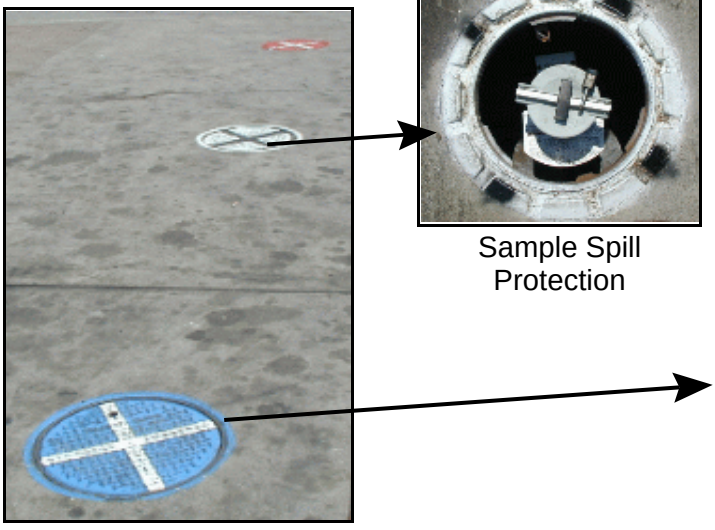
Sample Spill Bucket/Cross-Section

- Spill basin must be capable of holding a minimum of 3 gallons.
- Spill protection is not designed to contain fuel for long periods of time.
- Some spill protection devices have a drain valve or manual pump that allows you to drain accumulated fuel into your tank. But, when you pump out or drain your spill protection equipment into your tank, water and debris may also enter the tank. If it does not have a drain valve or pump, then any accumulated fuel or water must be removed manually and disposed of properly (i.e., not on the ground).

If you know you have spill protection, turn to the next page.

If you don't know whether you have spill protection, do the following:

- Lift each fill port lid and look to see if you have containment around your fill pipe.
- Look through your old papers and files to see if you have you have records of spill protection being installed.
- Contact the contractor who installed your underground storage tank.
- Contact your service contractor/environmental consultant for assistance.



Sample Fill Area

Sample Spill Protection

Sample Spill Protection

To determine requirements and BMPs for spill protection of your tank(s), read the requirements and BMPs that follow and fill out the ensuing checklist.

Requirements and Best Management Practices for Spill Protection

All USTs are required to have spill containment basins around all fill pipes. Spill containment basins are required to be properly maintained and kept free of water, product, or debris. (Note: Above-ground fill pipes may have different requirements.)

✓ Periodically check to see if your spill protection will hold liquid.

✓ Periodically inspect your spill protection for signs of wear, cracks, or holes.

✓ Make sure your spill protection is empty of liquid and debris before and after each delivery.

Checklist for Spill Protection

	UST # =	1		2		3		4		5	
QUESTIONS:		N/A		N/A		N/A		N/A		N/A	
		Circle the appropriate answer									
		Yes (Y) or No (N)									
1. Does your UST system have spill protection?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If you answered YES for an UST, you must answer the remaining questions in this checklist for that UST. **If no**, then have spill protection (such as a spill bucket) properly installed as soon as possible. If this can't be completed prior to submitting your Compliance Certification Checklist, you must also complete a Return to Compliance Plan form.											
2. Will your spill protection prevent the release of fuel to the environment when the transfer hose is detached from the fill pipe? (spill bucket is free of liquid and debris)		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, have your spill protection emptied, repaired or replaced as soon as possible so that it will prevent a release to the environment when the transfer hose is detached from the fill pipe. If this can't be completed prior to submitting your Compliance Certification Checklist, you must also complete a Return to Compliance Plan form.											

Section 4.2: Correct Filling Practices

As an owner or operator, you are responsible for any releases that occur due to spilling or overfilling during fuel delivery.

- You must make sure that the amount of fuel to be delivered will fit into the available empty space in the tank.
- You must make sure that the transfer operation is monitored constantly to prevent overfilling and spilling.

A good management practice that will help you meet the correct filling practices requirements is to follow the checklist below each time you have fuel delivered. The checklist describes important activities before, during, and after a fuel delivery.

Suggested Correct Filling Practices Checklist	
What To Do Before Your Tanks Are Filled	• Determine the amount of fuel and water in the tank before fuel delivery. • Record this amount in your logbook. • Order only the quantity of fuel that will fit into 90% of the tank. **REMEMBER, the formula for determining the maximum amount of gasoline to order is:** (Tank capacity in gallons X 90%) — gallons of liquid currently in tank = maximum amount of fuel to order **Example:** (10,000 gal X 0.9) — 2,000 gal = 7,000 gal maximum amount to order • Make sure fuel delivery personnel know the type of overfill device present at the tank and what actions to perform if it activates. For example, use the sample sign in Appendix B. • Review and understand the spill response procedures. A sample emergency numbers list in included in Appendix C. • Verify that your spill bucket is empty, clean, and will contain at least 3 gallons.
What To Do While Your Tanks Are Being Filled	• Keep fill ports locked until the fuel delivery person requests access. • Have an accurate tank capacity chart available for the fuel delivery person. • The fuel delivery person makes all hook-ups. The person responsible for monitoring the delivery should remain attentive and observe the entire fuel delivery, be prepared to stop the flow of fuel from the truck to the tank at any time, and respond to any unusual condition, leak, or spill which may occur during delivery. • Have spill response supplies readily available for use in case a spill or overfill occurs. • Provide safety barriers around the fueling zone. • Make sure there is adequate lighting around the fueling zone.
What To Do After Your Tanks Are Filled	• Following complete delivery, the fuel delivery person is responsible for disconnecting all hook-ups. • Return spill response kit and safety barriers to proper storage locations. • Determine and record accurate readings for fuel and water in the tank after fuel delivery. • Verify the amount of fuel received. • Make sure fill ports are properly secured. • Make sure the spill bucket is free of fuel and clean up any small spills.

Checklist for Requirements for Correct Filling Practices

ANSWER THE FOLLOWING QUESTIONS:	YES	NO
1. Do you have procedures that ensure the amount of fuel to be delivered will fit into the tank for each delivery at your facility?		
If no, make sure that the amount of fuel to be delivered will fit into the tank it is being placed into. Make sure you do this for each delivery.		
2. Do you have procedures to ensure that each delivery is monitored constantly to prevent overfilling and spilling?		
If no, put procedures in place to ensure that each delivery is monitored constantly to prevent overfilling and spilling.		
3. Do you have spill response supplies and safety barriers available during filling operations ?		
If no, make such items available to whomever is conducting the filling operation.		

Section 4.3: Overfill Protection

Information

Overfill protection is equipment installed on the UST to help prevent your tanks from being overfilled during fuel delivery. Overfill protection is designed to stop fuel flow, reduce fuel flow, or alert the delivery person during delivery **before** the tank becomes full and begins releasing petroleum into the environment.

There are four common types of overfill protection:
- overfill alarms
- ball float valves
- automatic shutoff devices
- vent alarms

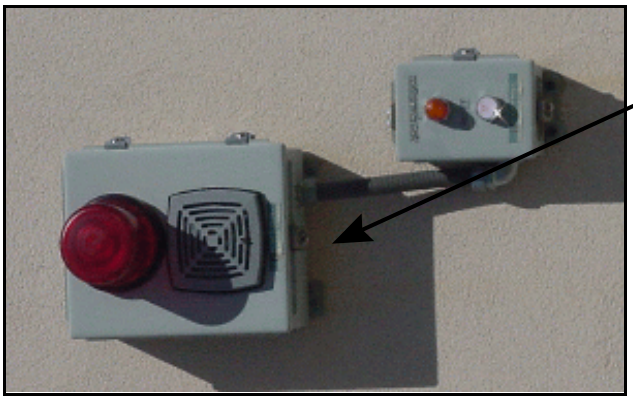
To determine the various types of overfill protection of your UST system(s), identify the type(s) of overfill protection you have for each UST.
Note: Different tanks at your facility may have different types of overfill protection. Select the appropriate type of overfill protection for each tank at your facility.
Note: Some of the tanks at your facility may have two or more types of overfill protection. Only choose the type of overfill protection you are using to comply with the overfill protection portion of the UST regulations.

What Type(s) Of Overfill Protection Do You Have for Each Tank at Your Facility?						Go to these sections for information and compliance checklists
UST Number:	**1**	**2**	**3**	**4**	**5**	
Overfill Alarm						Section 4.3.1
Automatic Shutoff Device						Section 4.3.2
Ball Float Valve						Section 4.3.3
Vent Alarm						Section 4.3.4
No Overfill Protection						Section 4.3.5

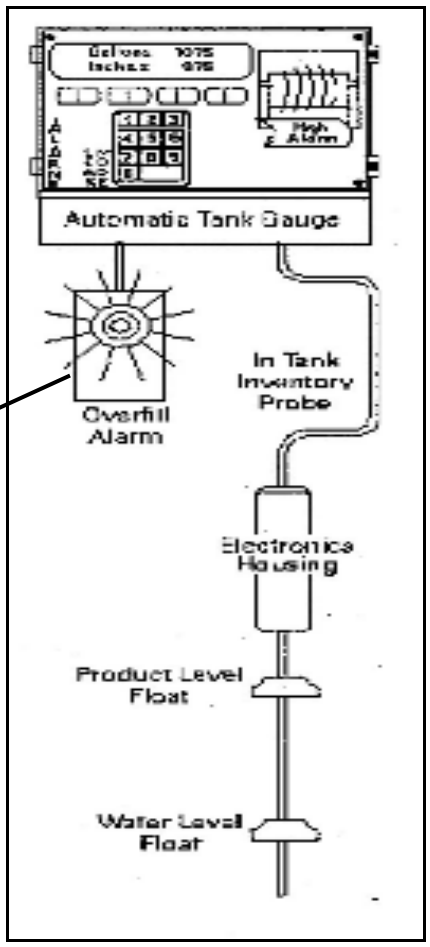
If you know the type(s) of overfill protection you have, skip the descriptions below and proceed as instructed in the table above. Otherwise, take the following steps to figure out what is at your facility:
- Read the following information to help determine your type(s) of overfill protection. If you still have problems, then
- Look through your old records to see if they help you.
- Contact the contractor who installed your underground storage tank.
- Contact your service contractor/environmental consultant for assistance.

Descriptions of the Different Types of Overfill Protection

Overfill Alarm - This type has a remote indicator located on a structure, such as the wall of a building near the tank. It is typically connected to a continuous monitoring device such as an automatic tank gauge, and provides an audible and/or visual warning to the delivery person when the tank is close to being full.



Sample Overfill Alarm



Sample Schematic for an Overfill Alarm

Automatic Shutoff Device - This type is a mechanical device located at the fill pipe of your tank. Look down your fill pipe to see part of this device. It will be similar to the picture below. You will see what appears to be a line cutting through your fill pipe (or a half moon shape in your fill pipe).

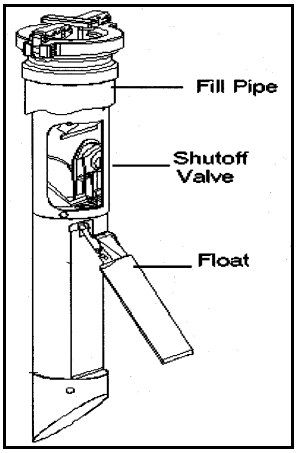
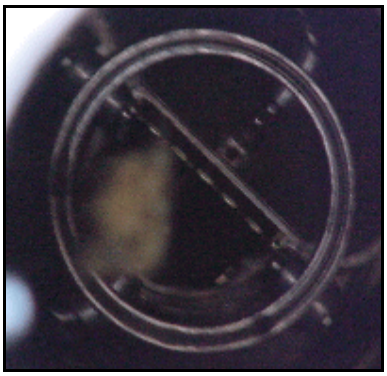


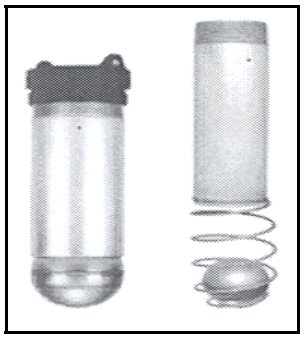
Diagram of an Automatic Shutoff Device



Looking Down a Fill Pipe at an Automatic Shutoff Device

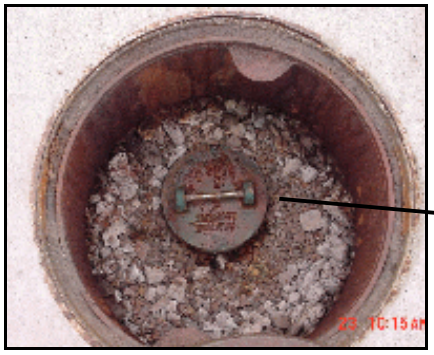
Looking Through the End of Automatic Shutoff Device

Ball Float Valve - You might find it difficult to determine whether or not you have this type of overfill protection because it is located inside the tank where the vent line exits the tank. You might be able to find an extractor port for the ball float valve (see picture below). Otherwise, you will need to look through your installation paperwork or call your contractor to determine whether your tank has this type of overfill protection.



Sample Ball Float Valves

Sample Ball Float Valve



Sample Extractor Port

Closeup of Extractor Port

Vent Alarm - A vent alarm is a small device, usually a tube, which is typically installed between your tank and the vent pipe. It signals that the tank is full, thereby minimizing the chance of overfilling. When oil is pumped into your tank, air is displaced from inside the tank through the vent pipe. As the air passes through the vent pipe, it makes a whistling sound as it passes through the alarm. When the level of the fuel reaches the end of the tube the whistling stops, which indicates that the tank is full.

Sample of Vent Alarm

Sample of Vent Alarm

You must have overfill protection (for example, an overfill alarm) for every UST filled with more than 25 gallons of fuel at a time.

4.3.1 Overfill Alarms

Information

Overfill alarms use an alarm or warning light to warn the delivery person to stop delivery because the fuel is approaching the tank capacity. After the alarm goes off, the delivery person must stop the flow of fuel to the tank.

Requirements and Best Management Practices for Overfill Alarms

The overfill alarm must activate when the fuel in the tank reaches 90% of the tank capacity or is within one minute of being overfilled.

The overfill alarm must be located so it can be seen and/or heard at the UST system delivery location. This ensures the delivery person will be alerted when the tank is almost full.

✓ A qualified UST contractor should check your overfill alarm annually to make sure it is set at the proper height in the tank and that the overfill alarm activates at 90% of the tank capacity or at least one minute before being overfilled. The UST contractor should manually trip the alarm to be assured that it is functioning properly.

✓ You should educate and alert your delivery person that you have an overfill alarm. One way is to place a sign near each fill pipe (in clear view of the delivery person) saying there is an overfill alarm for that tank, what occurs when it activates, and the necessary actions to take when it activates. Make sure your sign is durable. See the sample sign in Appendix B.

Overfill Protection Checklist for USTs with Overfill Alarms

	UST # =	1		2		3		4		5	
Questions		**N/A**		**N/A**		**N/A**		**N/A**		**N/A**	
		Circle the appropriate answer									
		Yes (Y) or No (N)									
1. Does your overfill alarm activate at 90% of tank capacity or at least one minute before being overfilled?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, have a qualified person adjust your overfill device to the right height. Also, submit a Return to Compliance Plan and submit it with your Certification of Compliance forms.											
2. Can your overfill alarm be seen and/or heard from the delivery location so that it will alert the delivery person that the tank is almost full?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, have a qualified person fix your overfill alarm so that it can be heard and/or seen from the delivery location. Also, submit a Return to Compliance Plan and submit it with your Certification of Compliance forms.											

4.3.2 Automatic Shutoff Devices

Information The automatic shutoff device slows down and then stops the delivery when the fuel has reached a certain level in the tank by shutting off the flow of fuel to the UST system.

Requirements and Best Management Practices for Automatic Shutoff Devices

Automatic shutoff devices must activate when the fuel in the tank reaches 95% of the tank capacity or before the fittings at the top of the tank are exposed to fuel.

- There must not be any object in the fill pipe that would keep the shutoff mechanism from activating.
- The automatic shutoff device must be positioned so that the float arm is not blocked and can move through its full range of motion.

✓ A qualified UST contractor should check your automatic shutoff device to make sure that it is functioning properly and that the automatic shutoff device activates at 95% of the tank capacity or before the fittings at the top of the tank are exposed to fuel.

✓ Automatic shutoff devices should not be used if your tank receives pressurized deliveries because it might result in dangerous situations.

Overfill Protection Checklist for USTs with Automatic Shutoff Devices

	UST # =	1		2		3		4		5	
Questions		N/A		N/A		N/A		N/A		N/A	
		Circle the appropriate answer									
		Yes (Y) or No (N)									
Does your automatic shutoff device properly activate at 95% of tank capacity or before the fittings at the top of the tank are exposed to fuel?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, then have a qualified person adjust your automatic shutoff device to properly activate at 95% of the tank capacity or before the fittings at the top of the tank are exposed to fuel. In addition, fill out a Return to Compliance Plan and submit it with your Certification of Compliance forms.											

4.3.3 Tanks with Ball Float Valves (also called Float Vent Valves)

Information The ball float valve is installed at the vent line in the tank and restricts vapor flow in an UST system as the tank gets close to being full. As the tank fills, the ball in the valve rises, restricting the flow of vapors out of the UST system during delivery. The flow rate of the delivery will decrease noticeably and should alert the delivery person to stop the delivery.

Requirements and Best Management Practices for Ball Float Valves

Ball float valves must activate by restricting fuel flowing into the tank when the fuel in the tank reaches 90% of the tank capacity or at least 30 minutes before the tank will be overfilled. For ball float valves to work properly:

- the air hole in the ball float valve must not be plugged,
- the ball cage must be intact,
- the ball must move freely in the cage,
- the ball must seal tightly on the pipe, and
- the top of the tank must be air tight during delivery so that vapors cannot escape from the tank. Everything from other tank access ports to fittings to drain mechanisms on spill buckets must be tight and be able to hold the pressure created when the ball float valve engages.

A qualified UST contractor should check your ball float valve to make sure that it is functioning properly and that the ball float valve activates at 90% of the tank capacity or at least 30 minutes before the tank will be overfilled.

You should not use a ball float valve for overfill protection if any of the following apply:

- Your UST system receives pressurized deliveries
- Your UST system has suction piping (see section 4.7.2.3 for information on suction piping)
- Your UST system has coaxial stage I vapor recovery (see Chapter 5 for the definition of stage I vapor recovery)

Overfills or dangerous situations (for example, pressure could build up in the tank and result in gasoline spraying out into the environment or onto the delivery person) may occur under any of the above circumstances.

Overfill Protection Checklist for USTs with Ball Float Valves

	UST # =	1		2		3		4		5	
Questions											
Does your ball float valve activate by restricting flow at 90% of tank capacity or at least 30 minutes prior to overfilling?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, have a qualified person adjust your ball float valve to the right height so that it restricts flow at 90% of the tank capacity. Also, fill out a Return to Compliance Plan and submit it with your Certification of Compliance forms.											

4.3.4 Vent Alarms

Requirements and Best Management Practices for Vent Alarms

The vent alarm is a device that makes a whistling sound as the tank is being filled. Once the whistling sound stops, it is an indication that the tank is full.

USTs used to store fuel oils consumed on-site solely for heating purposes are allowed to be equipped with an in-line vent whistle as a method of overfill prevention. Vent whistles may be used only when tight fill, pump-off deliveries are made. The vent opening must be located adjacent to the fill (within 8 feet). The vent whistle must be installed so as to alarm (stop whistling) when the tank is 90% full, Vent whistles must be installed so as to allow annual inspection for proper operation.

Overfill Protection Checklist for USTs with Vent Alarms

	UST # =	1	2	3	4	5
Questions						
Does your vent alarm activate at 90% of tank capacity?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N

If no, have a qualified person adjust your vent alarm so that it stops whistling at 90% of the tank capacity. Also, fill out a Return to Compliance Plan and submit it with your Certification of Compliance form.

4.3.5 No Overfill Protection

Only an UST system that is never filled with more than 25 gallons of fuel at a time is exempt from overfill protection requirements.

You should consider using overfill protection for UST systems that never receive deliveries of more that 25 gallons of fuel at a time as part of good UST system management because even small spills can be extremely costly.

USTs Without Overfill Protection

	UST # =	1	2	3	4	5
Questions		N/A	N/A	N/A	N/A	N/A
		Circle the appropriate answer				
		Yes (Y) or No (N)				
Does each UST system <u>without</u> overfill protection only receive fuel in amounts of 25 gallons or less?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N

If no, have a qualified person properly install an overfill protection device. Also, fill out a Return to Compliance Plan and submit it with your Certification of Compliance form.

Summary of Compliance with Overfill Protection

Summary of Compliance with Overfill Protection		
ANSWER THE FOLLOWING QUESTION:	**YES**	**NO**
Are all of your UST systems in compliance with overfill protection requirements? **To answer YES here, you must be able to answer yes to all applicable questions for each overfill protection device you have.**		
If you answered NO, fill out a Return to Compliance Plan and submit it with your Certification of Compliance form. A Return to Compliance Plan can be found in the accompanying forms booklet.		

Section 4.4: Corrosion Protection for Tanks

If your UST system contains fuel oil that is consumed on-site solely for heating purposes, you are not required to have corrosion protection for the tanks.

All of your regulated tanks that are underground and routinely contain regulated substances must be protected from corrosion.

You can protect your underground tank from corrosion in several ways. Your tank may be:
- a tank made of a non-corrodible material (such as fiberglass),
- a steel tank that is coated and cathodically protected,
- a steel tank jacketed or clad with a non-corrodible material, or
- a steel tank that is cathodically protected and/or internally-lined.

Internal lining and cathodic protection require periodic operation and maintenance.

All of your underground tanks that were installed after May 8, 1985 need to meet all appropriate construction standards and be installed according to a standard code of practice and the manufacturer's instructions. If your tank was installed before May 8, 1985, contact the DEM for information on corrosion protection.

Keep all paperwork related to your corrosion protected tanks (examples include paperwork related to installation, cathodic protection, integrity assessment, repair, and internal lining).

To determine requirements and BMPs for corrosion protection of your tank(s), do the following:

1. Identify the type(s) of tank(s) at your facility. Check the appropriate boxes in the table below.
   Note: If you have <u>compartmentalized tank(s)</u>, treat each compartment as a separate UST. If you have <u>manifolded tanks</u>, treat each as a separate UST.

2. For each type of tank you checked, go to the section of this Workbook listed in the right column of the table. Read the requirements and best management practices and fill out the appropriate checklist(s) in that section. You may need to go to more than one checklist – each tank type has a separate checklist.

What Type(s) Of Underground Tank(s) Do You Have at Your Facility?						Go to these sections for information and compliance checklists
UST Number:	1	2	3	4	5	
Fiberglass Reinforced Plastic (FRP) Tank						Section 4.4.1
Jacketed Steel Tank						Section 4.4.1
Clad Steel Tank						Section 4.4.1
Coated and Cathodically Protected Steel Tank						Section 4.4.2
Cathodically Protected Steel Tank						Section 4.4.3
Internally-Lined Steel Tank						Section 4.4.4
Internally-Lined and Cathodically Protected Steel Tank						Section 4.4.5
Steel Tank with No Additional Corrosion Protection						Section 4.4.6

Note: If your tank type is not listed on the table, contact the DEM to determine what you must do.

If you know the type(s) of tanks you have, skip the description information below and proceed as instructed in the table above. Otherwise, take the following steps to figure out what is at your facility:

- Read the descriptions below of the different tank types.
- Look through your old records to see if they match any of the names in the descriptions.
- Contact the contractor who installed your UST.

Tank Type Descriptions

Fiberglass Reinforced Plastic (FRP) Tank - This tank is made of fiberglass reinforced plastic; examples of tank makers include Owens Corning®, Xerxes®, Cardinal®, Fluid Containment®, and Containment Solutions®.

Jacketed Steel Tank - This is a steel tank that is encapsulated (or "jacketed") in a non-corrodible, nonmetallic material such as fiberglass or polyethylene. There is a space between the steel wall and the jacket material. This space may be monitored for a breach of either the inner or outer wall. Examples of jacketed tank brands include: Permatank®, Glasteel II®, Titan®, Total Containment®, and Elutron®.

Clad Steel Tank - This is a steel tank that has a thick layer of non-corrodible material such as fiberglass or urethane that is mechanically bonded (clad) to the outer wall of the steel tank which helps protect the outer part of the steel wall from corroding. Examples include: ACT-100®, ACT-100-U®, Glasteel®, and Plasteel®.

Coated and Cathodically Protected Steel Tank - This is a steel tank that has both an external coating and cathodic protection. An example of a coated and cathodically protected tank brand is the sti-P3® tank. This type of tank is usually installed with galvanic (sacrificial) anodes for cathodic protection. However, these tanks may have an impressed current cathodic protection system if the galvanic (sacrificial) anodes no longer protected the tank from corrosion. If you are not sure whether you have a cathodic protection system, see the "Determining If You Have Cathodic Protection" section on the next page.

Cathodically Protected Steel Tank - This is a steel tank without an external coating that has a cathodic protection system. Typically, this type of tank was originally installed as a bare steel tank before May 8, 1985 and had cathodic protection installed at some later date. Usually this type of tank will have an impressed current cathodic protection system. If you are not sure whether you have a cathodic protection system, see the "Determining If You Have Cathodic Protection" section on the next page.

Internally-Lined Steel Tank - This is a steel tank with an internal lining installed. Typically, this type of tank was installed as a bare steel tank before May 8, 1985 and had an internal lining installed at some later date.

Internally-Lined and Cathodically Protected Steel Tank - This is a steel tank that has both internal lining and cathodic protection. Typically, this type of tank was installed as a bare steel tank before May 8, 1985 and had cathodic protection and internal lining installed at some later

date. Usually this type of tank will have an impressed current cathodic protection system. If you are not sure whether you have a cathodic protection system, see the "Determining If You Have Cathodic Protection" section below.

Steel Tank with NO Additional Corrosion Protection - This is a steel tank that does not have cathodic protection, an internal lining, nor any non-corrodible material that encapsulates or is bonded to the outside of the tank. These tanks do not meet the UST requirements and therefore should be permanently closed.

Determining If You Have Cathodic Protection - There are two types of cathodic protection systems commonly used to protect your steel tank from corrosion - impressed current and galvanic (sacrificial) anodes.


Sample Rectifier


Sample Rectifier

Impressed current system - If you have an impressed current system you will have a rectifier (a device for converting alternating current into direct current) located somewhere at your facility.

Galvanic (sacrificial) anode system - It is more difficult to tell if you have this type of cathodic protection system because the anodes are buried and attached to the tank. You cannot see them and there is no rectifier. Look at any installation paperwork you have or contact the contractor who installed the tank or cathodic protection system to try to determine if you have a galvanic (sacrificial) anode system. For example, a sti-P_3® tank commonly uses a galvanic (sacrificial) anode system.

4.4.1 Fiberglass Reinforced Plastic (FRP) Tanks, Jacketed Steel Tanks, and Clad Steel Tanks

Information Fiberglass Reinforced Plastic (FRP) tanks, jacketed steel tanks, and clad steel tanks meet the corrosion protection requirements without additional equipment or operation and maintenance.

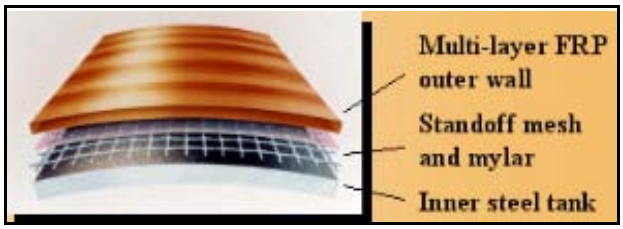
Best Management Practices for Fiberglass Reinforced Plastic (FRP) Tanks

✓ Have your tanks periodically checked for deflection (a measure of the roundness of your tank). Since these tanks become brittle, deflection may result in cracking or catastrophic failure. Contact your tank maker for information on deflection testing.


Sample FRP Tank

Best Management Practices for Jacketed Steel Tanks

✓ Have your jacketed steel tanks periodically tested by a qualified contractor to make sure the space between the steel tank and non-corrodible material is tight. This space is known as the interstitial space or secondary containment area. If your primary tank wall were to have a leak and the secondary containment space was not tight, a release could result in costly and time-consuming cleanup.



Sample Piece of a Jacketed Tank

Best Management Practices for Clad Steel Tanks

✓ If you have clad steel tanks that have cathodic protection then you should have your cathodic protection system tested periodically to make sure that it is operating properly. Section 4.6 describes procedures for operating and maintaining your cathodic protection.

Sample Clad Tank

4.4.2 Coated and Cathodically Protected Steel Tanks

Requirements for Coated and Cathodically Protected Steel Tanks

The coating is on the outside of the tank and must be made of a suitable dielectric material (a material that isolates the tank from the surrounding soil and does not conduct electricity). A sti-P3® tank is the most common type of coated and cathodically protected steel tank.

You must comply with specific testing and record keeping requirements for cathodic protection. This information can be found in Section 4.6. **Before completing the checklist on the next page,** read the cathodic protection section and fill out the checklists in that section.

Sample Coated and Cathodically Protected Tank

Corrosion Protection Checklist
for Coated and Cathodically Protected Steel Tanks

Circle the UST numbers for UST systems that are coated and cathodically protected steel tanks. Fill out the questions below for these tanks.	UST # =	1		2		3		4		5	
Questions:		N/A		N/A		N/A		N/A		N/A	
		Circle the appropriate answer									
		Yes (Y) or No (N)									
1. Is your tank coated with a suitable dielectric material?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, contact the DEM to determine how you may return to compliance.											
2. Do you meet the requirements for your cathodic protection system? To answer "Yes" here, you must be in compliance with all cathodic protection requirements in Section 4.6. Complete the cathodic protection system checklist in Section 4.6.		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, you must take action to comply with the requirements in Section 4.6, "Cathodic Protection System Checklist."											

4.4.3 Cathodically Protected Steel Tanks

Requirements and Best Management Practices for Cathodically Protected Steel Tanks

For any steel tank that uses cathodic protection without a dielectric coating for corrosion protection, installation of that UST system must have begun on or before May 8, 1985. If you have a coated and cathodically protected steel tank, see Section 4.4.2.

An integrity assessment of the tank must have been conducted before adding cathodic protection. The DEM requires that the tank be internally inspected by a trained professional who enters the tank to determine if it is structurally sound and free of corrosion holes.

A code of practice must be followed when adding cathodic protection to your tank, and prior written notification to and approval by the DEM is required.

You must comply with specific testing and record keeping requirements for cathodic protection. This information can be found in Section 4.6. **Before completing the checklist on the next page,** read the cathodic protection section and fill out the checklists in Section 4.6.

Keep records of your integrity assessment and cathodic protection installation. These records may be useful in determining whether your tank is in compliance with the corrosion protection requirements.

Corrosion Protection Checklist for Cathodically Protected Steel Tanks

Circle the UST numbers for UST systems that are cathodically protected steel tanks. Fill out the questions below for these tanks.	**UST # =**	**1**	**2**	**3**	**4**	**5**
QUESTIONS:		N/A	N/A	N/A	N/A	N/A
		Circle the appropriate answer				
		Yes (Y) or No (N)				
1. Did the installation for this UST system begin on or before May 8, 1985?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, then return to compliance: Any tank where installation began after May 8, 1985 that is cathodically protected but not coated does not meet the corrosion protection requirements. Contact the DEM to determine how you may return to compliance.						
2. Did this UST system pass an integrity assessment?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, contact the DEM to determine how you may return to compliance.						
3. Do you meet the requirements for your cathodic protection system? To answer "Yes" here, you must be in compliance with all cathodic protection requirements in Section 4.6.		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, you must take action to comply with the requirements in Section 4.6, "Cathodic Protection System Checklist."						

4.4.4 Internally-Lined Steel Tanks

Requirements and Best Management Practices for Internally-Lined Steel Tanks

For any steel tank that uses internal lining for corrosion protection, installation of that UST system must have begun on or before May 8, 1985.

You must keep all records of repairs for the life of the internally-lined tank.

A code of practice must be followed when adding or repairing an interior lining to your tank and prior written notification to and approval by the DEM is required.

Within 10 years of lining, lined tanks must be internally inspected by a qualified contractor and found to be structurally sound with the lining still performing in accordance with original design specifications. After the initial 10 year inspection, these inspections must be conducted at least every 5 years.

Keep records of your lining installation and lining inspections. These records may be useful in determining whether your tank is in compliance with the corrosion protection requirements. Inspection records are required to be kept for three (3) years beyond the life of a facility.

You should consider adding external corrosion protection (such as cathodic protection) as part of good UST system management.

Sample of a Tank being Interior Lined

Corrosion Protection Checklist for Internally-Lined Steel Tanks

Insert the date of your lining installation for each tank below the appropriate UST # (mm/dd/yy). Write N/A (not applicable) for any tanks that are not internally-lined.	**UST # =**	**1**		**2**		**3**		**4**		**5**	
1. Did the installation for this UST system begin on or before May 8, 1985?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, then return to compliance: Any tank where installation began after May 8, 1985 that is using internal lining alone does not meet the corrosion protection requirements. These tanks do not meet the regulatory requirements and must be permanently closed.											

Insert the date of your lining installation for each tank below the appropriate UST # (mm/dd/yy). Write N/A (not applicable) for any tanks that are not internally-lined.	UST # =	1		2		3		4		5	
2. Do you have all records of repairs for your lined tank? If your lined tank has never been repaired, then you will not have any repair records - answer yes to this question.		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, contact the inspector or repair company that worked on your tank lining. Secure a record of any repairs you have had completed on your lined tank.											
3a. Do you have your lined tank periodically inspected? Inspections are required within 10 years of installation and then every 5 years thereafter. If your tank was internally lined less than 10 years ago, this question does not yet apply - skip this question.		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
3b. What is the date of your most recent lined tank inspection, if applicable?											
If the answer to 3a is no, have a lining inspection conducted on your lined tank.											
4. Did your lined tank pass its most recent periodic inspection? If your tank was internally lined less than 10 years ago, this question does not yet apply - skip this question.		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, contact the DEM to determine how you may return to compliance.											

4.4.5 Internally-Lined and Cathodically Protected Steel Tanks

Requirements and Best Management Practices for Internally-Lined and Cathodically Protected Steel Tanks

For any steel tank that uses an internal lining and cathodic protection without a dielectric coating (see Section 4.4.2) for corrosion protection, installation of the UST system must have begun on or before May 8, 1985.

When you combine the use of internal lining and cathodic protection, you must meet specific testing and record keeping requirements for cathodic protection, which are in Section 4.6. **Before completing the checklist on the next page,** read the cathodic protection section and fill out the checklists in that section.

You must also meet the lining requirements in Section 4.4.4. **Before completing the checklist on the next page,** read the internally-lined steel tank section and fill out the checklist in that section.

There is one exception which relates to Questions 3 and 4 of the checklist in Section 4.4.4:

- If the integrity of the steel tank was ensured prior to adding cathodic protection, you do not have to conduct the periodic inspections of the lined tank. The method of integrity assessment is provided in Section 4.4.3 and must determine that the steel tank shell is structurally sound and free of corrosion holes.

✓ Have your internal lining checked periodically even if the inspections are not required.

✓ Keep records of your lining and cathodic protection installations. These records may be useful in determining whether your tank is in compliance with the corrosion protection requirements.

Corrosion Protection Checklist
for Internally-Lined and Cathodically Protected Steel Tanks

Circle the UST numbers for USTs that are internally-lined and cathodically protected. Fill out the questions below for these tanks.	**UST # =**	**1**		**2**		**3**		**4**		**5**	
QUESTIONS:		N/A		N/A		N/A		N/A		N/A	
		Circle the appropriate answer									
		Yes (Y) or No (N)									
1. Do you meet the requirements for your cathodic protection system? To answer "Yes" here, you must be in compliance with all cathodic protection requirements in Section 4.6.		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, you must take action to comply with the requirements in Section 4.6, "Cathodic Protection System Checklist"											
2. Did this UST system pass an integrity assessment at the time cathodic protection was added? Note: information about the integrity assessment is in Section 4.4.3.		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, contact the DEM to determine how you may return to compliance.											
3. Do you meet the lining requirements in Section 4.4.4? If you answered yes to all applicable questions in Section 4.4.4 for an UST system, then you meet the lining requirements. You can answer "Yes" here for that UST system.		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, you must take action to meet the requirements described in Section 4.4.4.											

4.4.6 Steel Tanks With No Additional Corrosion Protection

In general, steel tanks with no additional corrosion protection are not allowed under the DEM UST regulations. However, UST systems storing heating oil of any grade that is consumed on-site solely for heating purposes are exempt from this requirement.

If you have a regulated UST system without additional corrosion protection, you must notify the DEM immediately and submit a permanent closure application to permanently remove the UST system from service.

Note: A steel tank without corrosion protection in a regulated UST system is out of compliance with the regulations and must be permanently closed.

Summary of Compliance with Tank Corrosion Protection

Make sure you read and complete the checklists in the appropriate tank corrosion protection sections for all of your UST systems before answering the question below.

ANSWER THE FOLLOWING QUESTION:	YES	NO
Do all of your underground tanks meet corrosion protection requirements? To answer **YES** here, you must be able to answer yes to all applicable questions for each type of tank at your facility. List tanks that do not meet corrosion protection requirements. Tank ID _____ Substance _____ _____ _____		
If you answered no, fill out a Return to Compliance Plan and submit it with your Certification of Compliance form. A Return to Compliance Plan can be found in the accompanying forms booklet		

Section 4.5 Corrosion Protection for Piping

If your UST system contains fuel oil that is consumed on-site solely for heating purposes, you are not required to have corrosion protection for the piping.

All of your regulated piping that is in contact with the ground and routinely contains fuel must be protected from corrosion – **note that this piping is often underground or buried**. This also applies to ancillary equipment such as flexible connectors, swing joints, and other equipment.

You can protect this piping and ancillary equipment from corrosion in several ways. It may be:

- made of a non-corrodible material (such as fiberglass or flexible plastic),
- made of steel and coated and cathodically protected, or
- made of metal and cathodically protected (this option is only allowed for older piping – installed on or before May 8, 1985).

Metal joints, swing joints, flex connectors, and/or connections associated with piping that are in contact with the ground must be protected from corrosion.

Cathodic protection requires periodic operation and maintenance.

All of your piping and ancillary equipment that is in contact with the ground and routinely contains fuel needs to meet all appropriate construction standards and be installed according to a standard code of practice and the manufacturer's instructions.

Keep all paperwork related to your corrosion protected piping and ancillary equipment (examples include paperwork related to: installation, cathodic protection, and repair).

To determine requirements and BMPs for corrosion protection of your piping, do the following:

1. Identify the type(s) of piping that are in contact with the ground and routinely contain regulated substances for each UST system. Check the appropriate boxes in the table on the next page.

   Note: A piping run may consist of different types of piping. Make sure that you select ALL types of piping associated with each UST.

2. For each type of piping you check, go to the section of this Workbook listed in the right column of the table. Read the requirements and best management practices and fill out the appropriate checklist(s) in that section. You may need to go to more than one checklist - each piping type has a separate checklist.

What Type(s) of Piping Do You Have that are in Contact with the Ground and Routinely Contains Regulated Substances?						Go to these sections for information and compliance checklists
UST Number:	**1**	**2**	**3**	**4**	**5**	
Fiberglass Reinforced Plastic (FRP) Piping						Section 4.5.1
Flexible Plastic Piping						Section 4.5.1
Coated and Cathodically Protected Steel Piping						Section 4.5.2
Cathodically Protected Metal Piping						Section 4.5.3
Metal Piping with No Additional Corrosion Protection						Section 4.5.4
No Piping in Contact with the Ground						No Requirements

Note: If your piping type is not listed above, contact the DEM to determine what you must do.

If you know the type(s) of piping you have, skip the description information below and proceed to the sections as instructed in the table above. Otherwise, take the following steps to figure out what is at your facility:

- Look under your dispenser and in the sump on top of your tank or at the submersible pump to see if you can identify the piping. Note that some piping may have metal flexible connectors in these areas. These connectors are only at the ends of the piping and typically do not make up the entire piping run.
- Look through your old records to see if they match any of the names in the descriptions.
- Contact the contractor who installed your piping.

Piping Type Descriptions

Fiberglass Reinforced Plastic (FRP) Piping - This piping is made of fiberglass reinforced plastic. It is a rigid piping (it is not flexible). Examples of FRP piping makers include Ameron and Smith Fiberglass Products Inc. This piping type may also have metal connectors associated with it.

Sample FRP Piping

Flexible Plastic Piping - This type of piping is made of plastic that is flexible. Examples of nonmetal flexible piping brand names include: Poly-Tech, EnviroFlex, GeoFlex, Perma-Flexx, Omniflex, Pisces, and Co-Flex™. This piping type may also have metal connectors associated with it.

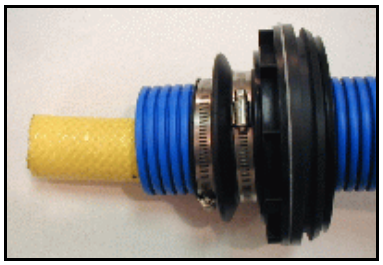
Coated and Cathodically Protected Steel Piping - This is steel piping that has both an external coating and cathodic protection. If you are not sure whether you have a cathodic protection system, see the "Determining If You Have Cathodic Protection" section on the next page.

Cathodically Protected Metal Piping - This is metal piping without an external coating that has a cathodic protection system. Typically, this type of piping was originally installed as a bare metal before May 8, 1985 and had cathodic protection installed at some later date. If you are not sure whether you have a cathodic protection system, the information in the "determining if you have cathodic protection" section on the next page may help you.

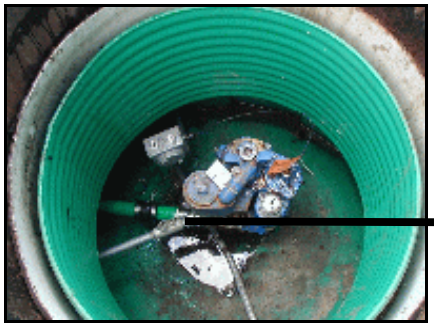
Metal Piping with NO Additional Corrosion Protection - This is metal piping that does not have any additional corrosion protection. This piping is not in compliance with the regulations and needs to be replaced.

Sample Flexible Piping

Sample Flexible Piping



Sample Flexible Piping



Sample Flexible Piping in a Sump

Closeup of Flexible Piping in a Sump

<u>Determining If You Have Cathodic Protection</u> - There are two types of cathodic protection systems commonly used to protect your metal piping from corrosion - impressed current (electrical) and galvanic (sacrificial) anodes.

Impressed current system - If you have an impressed current system you will have an electrical rectifier (a device for converting alternating current into direct current) located somewhere at your facility. Sample pictures of rectifiers are provided in Section 4.4.

Galvanic (sacrificial) anode system - It is more difficult to tell if you have this type of cathodic protection system because the anodes are buried and attached to the piping. You cannot see them and there is no rectifier. Look at any installation paperwork you have or contact the contractor who installed the piping or cathodic protection system to try to determine if you have a galvanic (sacrificial) anode system.

4.5.1 Fiberglass Reinforced Plastic (FRP) Piping and Flexible Plastic Piping

Fiberglass Reinforced Plastic (FRP) Piping and **Flexible Plastic Piping** types are made of non-corrodible materials and both meet the corrosion protection requirements without additional equipment or operation and maintenance.

Requirements for Fiberglass Reinforced Plastic (FRP) Piping and Flexible Plastic Piping

Any metal piping components associated with these types of piping that are in contact with the ground, such as turbine pump heads, metal flexible connectors, and metal swing joints must be protected from corrosion by one of the following:

- Effectively isolating the metal connector from direct contact with the ground (for example: by isolating the metal component so it is not in contact with the soil).
- Cathodically protecting metal components in contact with the ground. If you cathodically protect the metal component, you must meet the cathodic protection requirements in Section 4.6. **Before completing the checklist on the next page**, read the cathodic protection section and fill out the checklists in that section.

Corrosion Protection System Checklist for Fiberglass Reinforced Plastic (FRP) Piping and Flexible Plastic Piping

Circle the UST numbers for UST systems that have FRP or flexible plastic piping. Fill out the questions below for this piping.	**UST# =**	**1**		**2**		**3**		**4**		**5**	
QUESTIONS:		N/A		N/A		N/A		N/A		N/A	
		Circle the appropriate answer									
		Yes (Y) or No (N)									
1. Are all of your metal piping components associated with your fiberglass reinforced plastic (FRP) piping or flexible plastic piping effectively isolated from the soil? If you have no metal piping components, answer Yes to this question.		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
For each UST system for which you answered "No" to this question, proceed to Question 2 and answer that question. For each UST system for which you answered "Yes" to this question, skip Questions 2 and 3; that UST system is in compliance with piping corrosion protection.											

Circle the UST numbers for UST systems that have FRP or flexible plastic piping. Fill out the questions below for this piping.	UST# =	1		2		3		4		5	
QUESTIONS:		N/A		N/A		N/A		N/A		N/A	
		Circle the appropriate answer									
		Yes (Y) or No (N)									
2. Are all of your metal components associated with your fiberglass reinforced plastic (FRP) piping or flexible plastic piping that are in contact with the ground and routinely contain regulated substances cathodically protected?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N

If you answered no to both Questions 1 and 2 for a given UST system, have your metal piping components effectively isolated from the soil, cathodically protected, or have the soil removed such that they are no longer in contact with the ground.

3. Do you meet the requirements for your cathodic protection system? Fill out the cathodic protection compliance checklist in section 4.6 to make this determination.	1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N

Answer this question if you have cathodic protection on your metal piping components.

If no, you must take action to comply with the requirements in Section 4.6, “Cathodic Protection System Checklist.”

4.5.2: Coated and Cathodically Protected Steel Piping

All buried steel piping must be coated and cathodically protected. Make sure that metal piping components such as pump heads, flexible connectors and swing joints are either effectively isolated from the soil or are cathodically protected.

Requirements for Coated and Cathodically Protected Steel Piping

The coating is on the outside of the piping and must be made of a suitable dielectric material (a material that isolates the piping from the surrounding soil and does not conduct electricity).

You must comply with specific testing and record keeping requirements for cathodic protection. Descriptions of cathodic protection, requirements and BMPs, and checklists for cathodic protection are in Section 4.6. **Before completing the checklist on this page,** read the cathodic protection section (Section 4.6) and fill out the checklists in that section.

Corrosion Protection System Checklist for Coated and Cathodically Protected Steel Piping

Circle the UST numbers for UST systems that have coated and cathodically protected steel piping. Fill out the questions below for this piping.	**UST # =**	**1**		**2**		**3**		**4**		**5**	
QUESTIONS:		N/A		N/A		N/A		N/A		N/A	
		Circle the appropriate answer									
		Yes (Y) or No (N)									
1. Is your piping coated with a suitable dielectric material?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, contact the DEM to determine how you may return to compliance.											
2. Are all of your steel piping and metal components that are in contact with the ground and routinely contain regulated substances cathodically protected?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, contact the DEM to determine how you may return to compliance.											
3. Do you meet the requirements for your cathodic protection system? Fill out the cathodic protection compliance checklist in Section 4.6 to make this determination.		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, take action to comply with the requirements in Section 4.6, "Cathodic Protection System Checklist."											

4.5.3: Cathodically Protected Metal Piping (Other than Steel Piping)

All buried metal piping in contact with soil must be cathodically protected. Make sure that metal piping components such as pump heads, flexible connectors and swing joints are either effectively isolated from the soil or are cathodically protected.

Requirements for Cathodically Protected Metal Piping

For any metal piping in contact with the ground that uses cathodic protection without any coating for corrosion protection, installation of that UST system must have begun on or before May 8, 1985. [If you have a coated and cathodically protected steel piping run, go to Section 4.5.2.]

You must comply with specific testing and record keeping requirements for cathodic protection. Descriptions of cathodic protection, requirements and BMPs, and checklists for cathodic protection are in Section 4.6. **Before completing the checklist on the next page,** read the cathodic protection section and fill out the checklists in that section.

Keep records of your cathodic protection installation. These records may be useful in determining whether your piping is in compliance with the corrosion protection requirements.

Corrosion Protection System Checklist for Cathodically Protected Metal Piping

Circle the UST numbers for UST systems that have cathodically protected metal piping. Fill out the questions below for this piping.	**UST # =**	**1**		**2**		**3**		**4**		**5**	
QUESTIONS:		N/A		N/A		N/A		N/A		N/A	
		Circle the appropriate answer									
		Yes (Y) or No (N)									
1. Did the installation for this piping begin on or before May 8, 1985?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, then to return to compliance: Any metal piping that is in contact with the ground where installation began after May 8, 1985 that is not coated with a suitable dielectric material does not meet the corrosion protection requirements. Submit an Application to the DEM to replace your piping.											
2. Are all of your metal piping and metal components that are in contact with the ground and routinely contain regulated substances cathodically protected?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, contact the DEM to determine how you may return to compliance.											

Circle the UST numbers for UST systems that have cathodically protected metal piping. Fill out the questions below for this piping.	UST # =	1	2	3	4	5
QUESTIONS:		N/A	N/A	N/A	N/A	N/A
		Circle the appropriate answer				
		Yes (Y) or No (N)				
3. Do you meet the requirements for your cathodic protection system? To answer "Yes" here, you must be in compliance with all cathodic protection requirements in Section 4.6.		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, you must take action to comply with the requirements in Section 4.6, "Cathodic Protection System Checklist."						

4.5.4: Metal Piping - No Additional Corrosion Protection

Metal piping with no additional corrosion protection that is in contact with the ground and routinely contains regulated substances is not allowed under DEM underground storage tank regulations. However, piping for UST systems storing heating oil that is consumed on-site solely for heating purposes is exempted from this requirement.

If you have a regulated metal piping without additional corrosion protection that is in contact with the ground, you must notify DEM immediately and submit a proposal to either replace the piping or permanently close the UST system.

Summary of Compliance with Piping Corrosion Protection

Make sure you read and complete the checklists in the appropriate corrosion protection for piping sections for all of your piping that is in contact with the ground and routinely contains regulated substances before answering the question below.

Summary of Compliance with Piping Corrosion Protection		
ANSWER THE FOLLOWING QUESTION:	**YES**	**NO**
Does all of your piping that is in contact with the ground and routinely contains regulated substances meet corrosion protection requirements? To answer **YES** here, you must be able to answer yes to all applicable previous questions for each type of piping at your facility. List all of your tanks that have piping that does not meet the corrosion protection requirement. Tank ID Substance _____ _____ _____ _____		
If you answered no, fill out a Return to Compliance Plan and submit it with your Certification of Compliance forms. A Return to Compliance Plan can be found in the accompanying Forms Booklet.		

Section 4.6: Cathodic Protection

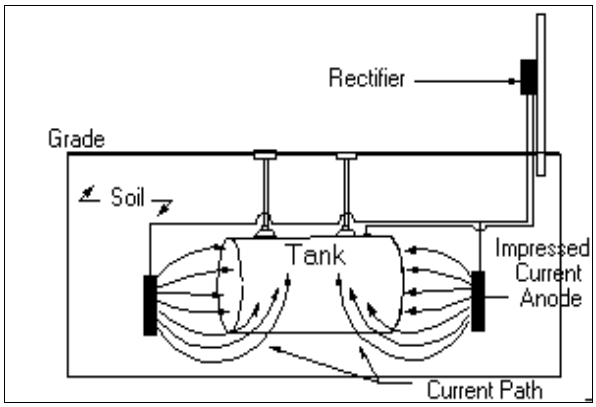
If your UST system contains fuel oil that is consumed on-site <u>solely</u> for heating purposes, you are not required to have cathodic protection

Information Cathodic protection is one option for meeting the corrosion protection requirements of metal UST components that are in contact with the ground and routinely contain regulated substances and are often buried. Components of your UST system that may have cathodic protection include: metal tanks, piping, and ancillary equipment such as turbine pump heads, flexible connectors, and swing joints.

Impressed Current Systems

An impressed current system uses a rectifier (an electrical device for converting alternating current into direct current) to provide direct current through anodes to the metal tank, piping, or other underground components to achieve corrosion protection. The diagram below illustrates impressed current cathodic protection.

How to tell if you have an impressed current system: You should have an electrical rectifier located somewhere at your facility.



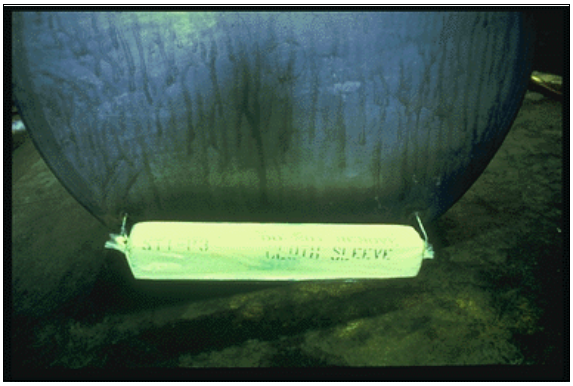
Sample Impressed Current System Diagram


Example
Rectifier

Galvanic (or Sacrificial) Anode Systems

A galvanic (or sacrificial) anode system uses anodes that are buried and attached to metal UST components for corrosion protection. The anode is more electrically active and will sacrifice itself (corrode) to protect the metal component from corrosion. A sample picture of an anode attached to a tank is shown on the next page.

How to tell if you have a galvanic anode system: It is more difficult to tell if you have a galvanic anode system because you typically cannot see the anodes and there is no rectifier. The anodes are attached to the underground component they are protecting and are buried. These anodes are usually installed on tanks at the factory (such as on the sti-P3® tank) and can be installed on piping and other underground metal components in the field. Ways to help you determine whether you have a galvanic system are to look at any installation paperwork you might have or to contact the contractor who installed the UST and/or cathodic protection system.



Sample Galvanic (or sacrificial) anode

Requirements and Best Management Practices for Cathodic Protection

Your cathodic protection system must operate continuously to protect the metal components of your UST system that are in direct contact with the ground.

- If your cathodic protection system is disconnected or turned off, your underground UST system components are not protected from corrosion.
  - Never turn off your rectifier.
  - Never disconnect a galvanic anode.
- Note that contractors may have to turn off or disconnect your cathodic protection for short periods during repairs.

All cathodic protection systems that are field-installed must be designed by a corrosion expert. Field-installed means that the cathodic protection system was not installed on the tank when the tank or piping was in the factory. An example of a tank that has a factory installed cathodic protection system is the sti-P3® tank.

A **corrosion expert** must meet specific qualifications. That person must be either:

1. Certified by NACE as a Corrosion Specialist or Cathodic Protection Specialist, or
2. A registered Professional Engineer that has certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks.

A code of practice must be followed when adding a cathodic protection system to your UST system.

You must have your cathodic protection system tested by a qualified cathodic protection tester within 6 months of installation and then at least every 2 years for an impressed system, and every 3 years for a sacrificial anode system. In addition, if you have any repairs conducted to your cathodically protected UST system, or if any maintenance or construction in the area of the structure occurs, you must have a cathodic protection test conducted within 6 months of that repair.

- You must keep all records of the operation, repair, and testing of the cathodic protection system for 3 years beyond the operational life of the facility. A sample cathodic protection test record is provided for you in Appendix D.
- If your cathodic protection system does not pass the test, have your cathodic protection system evaluated and fixed by a corrosion expert within 30 days and a report must be submitted to the DEM.

A **cathodic protection tester** is a person who can demonstrate an understanding of the principles of all common types of cathodic protection systems as applied to buried or submerged metal piping and tank systems.

If you have an impressed current cathodic protection system, you must inspect the rectifier at least every 60 days to make sure that it is on and operating properly.

- You must keep all records of these checks for 3 years beyond the operational life of the facility. A sample impressed current inspection record keeping form is provided for you in Appendix E.
- If your rectifier is not operating within the normal values, contact a corrosion expert to evaluate and fix your cathodic protection system within 30 days.

Keep all paperwork related to your cathodic protection system.

The person who installed your impressed current system should have provided you with paperwork to indicate what the normal operating voltage and amperage values are for your cathodic protection system. If you do not have values for the normal operating voltage and amperage, contact the person who installed the system and obtain that information. Record the amperage and voltage readings and compare them to the normal operating values during each inspection.

✓ Have cathodic protection tests conducted more frequently. The more often you have these tests conducted, the more likely you are to detect cathodic protection problems before releases occur.

✓ Perform inspections of your rectifier more frequently than the 60 day requirement. The more often you inspect the rectifier, the quicker you can detect problems with your cathodic protection system.

Cathodic Protection System Checklist

Circle the UST numbers that have cathodic protection and answer the questions below.	UST # =	1	2	3	4	5
Note: If your buried tank and piping components do not have cathodic protection, then circle N/A (not applicable) for that UST system. You do not need to answer questions for that UST.		N/A	N/A	N/A	N/A	N/A
QUESTIONS						
1. What type of cathodic protection system do you have for the tank of this UST system? (In the space provided, enter: **IC** for impressed current, **GAL** for galvanic, **BOTH** for both impressed current and galvanic anodes)						
2. What type of cathodic protection system do you have for the piping of this UST system? (In the space provided, enter: **IC** for impressed current, **GAL** for galvanic, **BOTH** for both impressed current and galvanic anodes)						
3. Enter the date or dates of installation for your cathodic protection system (mm/dd/yy).						

4. Does your cathodic protection system operate continuously?	1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N

Answer yes here if you never disconnect your galvanic (sacrificial) anodes and you never turn off your rectifier **or** if the only time this occurs is for short periods when a contractor works on your cathodic protection system.

If no, contact the DEM to determine how to return to compliance.

5. Was your cathodic protection system either designed by a corrosion expert or installed at the factory?	1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N

If no, then to return to compliance:
1. Have a corrosion expert evaluate your existing cathodic protection system.
2. If the design is not adequate, take the necessary steps to have your cathodic protection fixed.
3. Keep a record of the evaluation and repairs.
4. Contact the DEM to determine any further actions necessary to return to compliance.

6. Did you have your cathodic protection system tested within 6 months of installation, at least every 2 years for an impressed current system, or 3 years for a sacrificial anode system, and within 6 months following any repairs to your cathodically protected UST system, or within 6 months of any maintenance or construction in the area of the UST system?	1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N

If no, have a cathodic protection test conducted by a qualified cathodic protection tester as soon as possible. Contact the DEM to determine any further actions necessary to return to compliance.

Circle the UST numbers that have cathodic protection and answer the questions below.	UST # =	1	2	3	4	5
Note: If your buried tank and piping components do not have cathodic protection, then circle N/A (not applicable) for that UST system. You do not need to answer questions for that UST.		N/A	N/A	N/A	N/A	N/A
QUESTIONS						
7. Do you have records of your cathodic protection tests? Answer yes here if one of the following apply:		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
1. You have records of all cathodic protection tests as described in this section. 2. You have no records and your cathodic protection system was installed less than 6 months ago.						
Enter the date of your most recent test (mm/dd/yy).						
If no, contact the person who performed your cathodic protection tests and obtain records of your cathodic protection testing.						
8. Did your most recent cathodic protection test pass?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, have a corrosion expert evaluate your cathodic protection system and fix any problems as soon as possible. Also have a cathodic protection test conducted within 6 months of the repair and make sure the cathodic protection system passes the test.						
Questions 9 - 11 are for cathodic protection systems with rectifiers only (Impressed Current Systems). Skip these questions if you only have galvanic (sacrificial) anodes.						
9. Do you inspect your rectifier at least every 60 days?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, begin inspecting your rectifier at least every 60 days by recording amperage and voltage readings on your rectifier and comparing those readings with the normal operating values.						
10. Do you have records of your rectifier inspections? Answer yes here if one of the following apply:		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
1. You have records of all the rectifier inspections that are required as described in this section. 2. You have at least 2 records and your cathodic protection system was installed less than 6 months ago. 3. You have at least 1 record and your cathodic protection system was installed less than 4 months ago. 4. You have no records yet and your cathodic protection system was installed less than 2 months ago.						
Enter the date of your most recent inspection (mm/dd/yy).						
If no, begin keeping records of your rectifier inspection.						
11. Did your most recent cathodic protection inspection results fall within the amperage and voltage ranges established by the corrosion expert? If you do not have voltage and amperage ranges established by the corrosion expert, call the person who installed your cathodic protection system and get those values		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, have a corrosion expert evaluate your cathodic protection system and fix any problems as soon as possible. Also have a cathodic protection test conducted within 6 months of the repair.						

Section 4.7: Leak Detection for Tanks

If your UST system contains fuel oil that is consumed on-site solely for heating purposes, you are not required to have leak detection.

Leak detection (also called release detection) requirements for single-walled tanks include **Automatic Tank Gauging (ATG)**, **Tightness Testing**, and **Inventory Control**. For tanks with secondary containment, or double-walled tanks, leak detection requirements include **Continuous Interstitial Monitoring** and **Inventory Control**.

If you have a **Waste Oil** tank, then you must comply with one of the following leak detection requirements:

If the waste oil tank is single-walled and less than 2,000 gallons, you must conduct either:

1. Automatic tank gauging (0.2 gph monthly leak test required) and tank tightness testing at 5 year intervals, or if the tank has been installed for more than 20 years, tank tightness testing every 2 years; or

2. Annual tank tightness testing and inventory control modified for a waste oil tank (See Section 4.7.5).

If the waste oil tank is single-walled and greater than 2,000 gallons, you must conduct:

1. Automatic tank gauging (0.2 gph monthly leak test required) and tank tightness testing at 5 year intervals, or if the tank has been installed for more than 20 years, tank tightness testing every 2 years.

If the waste oil tank is double-walled, you must have:

1. Continuous Interstitial Monitoring.

If you have a **Diesel Generator UST**, then you must comply with all of the leak detection requirements for a diesel tank, except for inventory control. Diesel generator USTs are not required to conduct inventory control.

General Requirements and Best Management Practices for ALL Tank Leak Detection Methods

You are required to test and conduct system checks on your leak detection equipment.

The following tests are required to be conducted **annually**:

- Automatic Tank Gauge System Test
- Continuous Interstitial Monitoring System Test

- Tank Tightness Testing

The following tests/checks are required to be conducted **monthly**:

- Automatic Tank Gauge System Check to ensure it is operating effectively
- Automatic Tank Gauge System Leak Test
- Reconcile your Inventory

You are required to record your inventory **daily.**

Your release detection must be installed, calibrated, operated, and maintained according to the manufacturer's instructions.

The following information/documentation must be kept for 3 years beyond the life of the facility:

- annual leak detection device test results
- tank tightness test results
- all repair documentation

The following must be kept for 3 years:

- maintenance/inventory records
- strip chart and manual recordings for continuous monitoring
- results of all monthly system checks
- shear valve annual checks

If you ever suspect or confirm a release, you must take appropriate action and, if necessary, report the release. Refer to Section 4.9 for information on what to do. **Never ignore leak detection alarms or failed leak detection tests. Treat them as suspected leaks**!

If you have hazardous substance tanks (as defined under CERCLA), you must have double-walled tanks and use interstitial monitoring for release detection unless you have obtained a waiver from the DEM.

All leak monitoring devices shall not be shut off or deactivated at any time except for repair; any deactivation must be reported to the DEM. All monitoring devices shall employ an audible alarm and a visual indicator, which shall be located as to be heard and seen by the owner/operator or other personnel during normal working hours.

Keep all schedules of required calibration and maintenance provided by the equipment manufacturer.

Periodically have a qualified UST contractor, such as the vendor who installed your release detection system, service all the system components according to the manufacturer's service instructions.

- Components can wear out and must be checked periodically. Many vendors recommend or require this maintenance activity at least once annually.

✓ Make sure your vendor or installer provides you with the information and training necessary to make sure your release detection equipment works effectively to detect leaks. If you don't know how your system works, you will fail inspections and may find yourself with violations and penalties. Worse, you may discover that you have had a leak and may have to pay for extensive cleanup of a contaminated site and for damages caused to others. It is your responsibility to know how to operate all your release detection devices properly so that you meet regulatory requirements and protect the environment.

✓ Make sure employees who run, monitor, or maintain the release detection system are aware of correct operating procedures. Develop and maintain regular training programs for all employees.

To determine requirements and BMPs for release detection of your tank(s), do the following:

1. Identify the type(s) of release detection you use for your tanks. Check the appropriate boxes in the table below.

   Different tanks at your facility may use different types of leak detection. Make sure to select the appropriate type of leak detection for each tank at your facility.

   You may have more than one type of leak detection for a tank at your facility. For the purposes of determining your compliance, you should check only the method(s) of leak detection you are using to comply with the release detection for tanks portion of the UST regulations. If you use multiple types of leak detection for a single tank, then you need to meet the requirements for each type of release detection you checked.

2. For each type of leak detection you checked, go to the appropriate section and read and fill out the appropriate checklist(s). You may need to go to more than one checklist – each leak detection type has a separate checklist.

If you have an UST system that contains a hazardous substance (one common example is antifreeze), check the last row of the table below for that UST.

What Type(s) Leak Detection Do You Use for Your Tank(s)?						Go to these sections for information and compliance checklists
UST Number:	**1**	**2**	**3**	**4**	**5**	
Automatic Tank Gauging (ATG)						Section 4.7.1
Interstitial Monitoring for Double-Walled Tanks						Section 4.7.2
Tank Tightness testing						Section 4.7.3
Inventory Control Inventory Control for a Waste Oil Tank						Section 4.7.4 Section 4.7.5
Check here if your tank contains a hazardous substance						Section 4.7.2

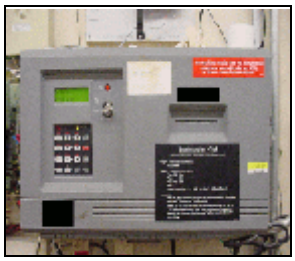
If your tank leak detection is not listed above, contact the DEM to determine what you must do.

If you know the type(s) of leak detection you have, skip the description information below and proceed as instructed in the table above. Otherwise, take the following steps to figure out what is at your facility:

- Read the descriptions below of the different tank leak detection types. Look through your old records to see if they match any of the names in the descriptions.
- Contact the contractor who installed your leak detection system.

Leak Detection Descriptions

Automatic Tank Gauging (ATG) - An ATG system consists of a probe permanently installed in a tank and wired to a monitor to provide information such as fuel level and temperature. You should have an ATG monitor mounted somewhere at your facility. ATG systems automatically calculate the changes in fuel volume that can indicate a leaking tank and can be set to alarm when there is a suspected problem with your tank.

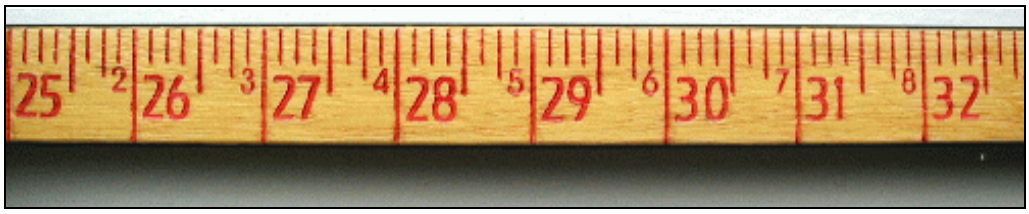


Sample ATG Monitor

Sample ATG Monitor

Double-Walled Tanks with Interstitial Monitoring - Secondary containment is an additional barrier between the portion of an UST system that contains fuel and the outside environment. Secondary containment is provided by the outer tank wall of a double-walled system. **Hazardous substance tanks must be double-walled with interstitial monitoring or you must obtain a waiver from the DEM.** The area between the inner and outer barriers is called the interstitial space (or annular space). You must have interstitial monitoring ports on the pavement at your facility. Electronic probes in the interstitial space are connected to and monitored by electronic equipment (such as an automatic tank gauge).

Inventory Control - This method involves measuring the contents of the tank and recording the amount of fuel pumped each day and reconciling that data with measurements and records of fuel delivery. Typically, a measuring stick or an ATG is used to take the measurements.



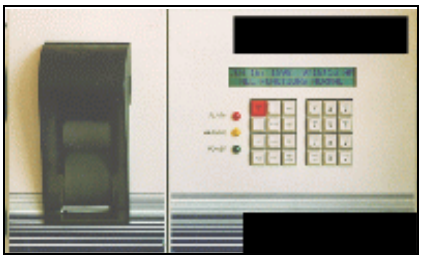
Sample Part of a Measuring Stick

Tank Tightness Testing - This is a tank testing method that is capable of determining whether or not an underground storage tank, line, or system is leaking, as defined by NFPA 329, "Handling Releases of Flammable and Combustible Liquids and Gases." The test is capable of accurately detecting a tank or a tank and line leak of 0.1 gallons per hour, adjusted for all variables, with a probability of detection of no less than 95 percent and a probability of false detection of no more than 5 percent. The test method must be approved by the DEM prior to use, follow the manufacturers protocol, and be conducted by persons who are licensed by the DEM.

4.7.1: Automatic Tank Gauging (ATG)

Information

ATG systems automatically calculate the changes in fuel volume that can indicate a leaking tank. ATG is not required for tanks upgraded by lining or cathodic protection for the first 10 years after the upgrade.



Sample ATG

Requirements and Best Management Practices for Automatic Tank Gauging (ATG) Systems

LEAK DETECTION TEST

You are required to use your ATG system to test for leaks at least once every **Month.**

- Remember to test each tank.
- Make sure you are properly testing the portion of the tank that routinely contains regulated substances.
- Make sure that the amount of fuel in your tank is sufficient to run the ATG leak test. The tank must contain a minimum amount of fuel to perform a valid leak detection test.
  - ✓ One source for determining that minimum amount is the performance certification for your leak detection equipment.

SYSTEM CHECK

Your ATG system is required to be tested on a monthly basis to ensure that they are operating according to the manufacturers specifications.

- Read your owner's manual, run the appropriate tests, and see if your ATG system is set up and working properly.
- Most ATG systems have a "test" or "self-diagnosis" mode that may run these checks.

All ATG systems must be inspected, calibrated, and tested annually by a qualified contractor to insure proper operation.

All records pertaining to the equipment manufacturer, warranties, maintenance requirements, repairs, and testing shall be maintained on-site for the life of the system or at an alternative location approved by the Director of the DEM in writing.

Test your tanks more frequently in order to catch leaks sooner and reduce cleanup costs and problems.

Periodically have a qualified UST contractor, such as the vendor who installed your ATG, service all the ATG system components according to the manufacturer's service instructions. Many vendors recommend or require this maintenance activity at least once annually.

Checklist for Automatic Tank Gauging

Circle the UST numbers for tanks that use ATGs.	UST # =	1		2		3		4		5	
QUESTIONS:		N/A		N/A		N/A		N/A		N/A	
		Circle the appropriate answer									
		Yes (Y) or No (N)									
1. Do you use your ATG to check each tank for leaks/releases at least once every month? Don't forget that you also need to have sufficient fuel in each tank for a valid test.		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, begin using your ATG to check each tank for releases at least once every month.											
2. Do you have records of your last 36 months of leak detection tests? Appendix F contains a sample record keeping form.		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, you may be able to obtain historical records of leak tests from your ATG. Consult your owner's manual to determine how to do this. Otherwise, begin keeping records of release detection testing.											
3. Do you have records of your last 36 months of ATG system checks to make sure it was working properly?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, begin performing monthly system checks of your ATG system.											
4. Do you have records of the required annual calibration, inspection and test by a UST contractor for the last 3 years? Enter the date of the most recent test. mm/dd/yy _____		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, contact the person who did the work and obtain these records.											

4.7.2: Interstitial Monitoring for Double-Walled Tanks

Double-walled tanks have an additional barrier between the portion of an UST system that contains regulated substances and the outside environment. Secondary containment is provided by the outer tank wall of a double-walled system. The area

between the inner and outer walls is called the interstitial space or annular space and can be monitored to catch problems before regulated substances reach the environment. **Hazardous substance tanks must be double-walled with interstitial monitoring or you must obtain a waiver from the DEM.**

Interstitial monitoring systems must be designed, constructed, and installed to detect a leak from any part of the tank that routinely contains fuel. For double-walled tanks, the test method must be able to detect a release through the inner wall of the double-walled tank.

Requirements and Best Management Practices for Double-Walled Tanks with Interstitial Monitoring

All leak monitoring devices shall not be shut off or deactivated at any time except for repair and must be reported to the DEM. All monitoring devices shall employ an audible alarm and a visual indicator, which shall be located as to be heard and seen by the owner/operator or other personnel during normal working hours.

SYSTEM CHECK

Test your interstitial monitoring system monthly to ensure it is operating effectively.

- Read your owner's manual, run the appropriate tests, and see if your interstitial monitoring system is set up and working properly.
- Most interstitial monitoring systems have a "test" or "self diagnosis" mode that may run these checks.

Have a qualified UST contractor inspect, calibrate, and test your interstitial monitoring system annually.

You should frequently test your interstitial monitoring system to make sure it is working properly.

Periodically have a qualified UST contractor, such as the vendor who installed your electronic interstitial monitoring system, service all the system components according to the manufacturer's service instructions.

Testing more often than monthly can catch leaks sooner and reduce cleanup costs and problems.

Checklist for Interstitial Monitoring of Double-Walled Tanks

Circle the UST numbers for tanks that use interstitial monitoring.	UST # =	1	2	3	4	5
QUESTIONS:		N/A	N/A	N/A	N/A	N/A
		Circle the appropriate answer				
		Yes (Y) or No (N)				
1. Do you continuously use interstitial monitoring to check each tank for leaks/releases.		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, contact the DEM to determine how to return to compliance.						
2. Do you have records of monthly interstitial monitoring system checks for the past 36 months? Appendix F contains a sample record keeping form.		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, begin conducting monthly checks of your interstitial monitoring system and maintain records of these checks.						
3. Do you have all records of maintenance, and repair of your interstitial monitoring system conducted in the last 3 years?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, contact the person who did the work and obtain the records.						
4. Do you have records of the required annual inspection, calibration, and test by a UST contractor for the last 3 years? Enter the date of the most recent test. MM/DD/YY _____		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, contact the person who did the testing and obtain the records.						

4.7.3: Tank Tightness Testing

Requirements and Best Management Practices for Tank Tightness Testing

You must perform tank tightness tests on all single-walled tanks.

If you have a waste oil tank less than 2,000 gallons and without an Automatic Tank Gauge installed, you are required to tightness test your tank annually.

All inconclusive or failed tests must be reported to the DEM within 2 hours of the test.

Tightness tests must be performed every 5 years after the installation of the ATG until the tank has been installed for 20 years and every 2 years thereafter.

UST systems upgraded with interior lining and/or cathodic protection do not have to have an ATG for 10 years after the upgrade. Tank tightness testing must be conducted annually during these 10 years. After 10 years, an ATG is required and tank tightness testing must be performed every 5 years until the tank has been installed for 20 years and then every 2 years thereafter.

Tightness tests must be conducted by a trained tester licensed by the DEM.

- Make sure that the method of tank tightness testing is approved by the DEM.
- Keep the results of all tightness tests for 3 years beyond the life of the facility.

Checklist for Tank Tightness Testing

Circle the UST numbers for tanks that use tank tightness testing.	**UST # =**	**1**		**2**		**3**		**4**		**5**	
QUESTIONS:		N/A		N/A		N/A		N/A		N/A	
		Circle the appropriate answer									
		Yes (Y) or No (N)									
Tanks upgraded with cathodic protection and/or lining less than 10 years ago and have no ATG: **Do you have results of tank tightness tests conducted every year for the last 5 years?** Enter the date of your most recent test: mm/dd/yy _____		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, have a tightness test conducted and keep the record. If you had a tightness test conducted, but do not have the record, contact the tightness testing vendor to obtain a record.											
Tanks installed less than 20 years ago and have an ATG: **Do you have results of a tank tightness test conducted within the past 5 years?** Enter the date of your most recent test: mm/dd/yy _____		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, have a tightness test conducted and keep the record. If you had a tightness test conducted but do not have the record, contact the tightness testing vendor to obtain a record.											

Circle the UST numbers for tanks that use tank tightness testing.	UST # =	1	2	3	4	5
QUESTIONS:		N/A	N/A	N/A	N/A	N/A
		Circle the appropriate answer				
		Yes (Y) or No (N)				
Tanks installed more than 20 years ago and have an ATG: **Do you have results of tank tightness tests conducted every 2 years after the tank had been installed for 20 years?** Enter the date of your most recent test: mm/dd/yy _____		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, have a tightness test conducted and keep the record. If you had a tightness test conducted but do not have the record, contact the tightness testing vendor to obtain a record.						
If the tank contains waste oil, is less than 2000 gallons in capacity, and does not have an automatic tank gauge installed, do you have the results of a tank tightness test conducted within the past 2 years? Enter the date of your most recent test: mm/dd/yy _____		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, have a tightness test conducted and keep the record. If you had a tightness test conducted but do not have the record, contact the tightness testing vendor to obtain a record.						

4.7.4 Inventory Control

Requirements and Best Management Practices for Inventory Control for all Tanks Except Diesel Generator Tanks and Waste Oil Tanks

The Department has a booklet available for you to keep that explains how to conduct inventory reconciliation called "Doing Inventory Control Right For Underground Storage Tanks". Contact the DEM if you wish to obtain a copy.

For Inventory Control you must do the following:

- Take inventory and dispenser readings and record the numbers at least once each day that fuel is added to or removed from your tank.
- Reconcile fuel deliveries with delivery receipts by taking inventory readings before and after each delivery.
- Reconcile all of your data at least once every 30 days. If the monthly reconciliation indicates a discrepancy of 1% or more of the flow-through plus 130 gallons, it must be reported to the Department.

Your equipment (for example: a stick or electronic monitoring device) must be capable of measuring to the nearest one-eighth inch and be able to measure the level of fuel over the full range of the tank's height.

- Check your measuring stick periodically to make sure that you can read the

markings and numbers and that the bottom of the stick is not worn.

You must measure the water in your tank to the nearest one-eighth inch at least once per month.

- You can use a paste that changes color when it comes into contact with water.

You must ensure that your fuel dispensers are calibrated according to local standards or to an accuracy of 6 cubic inches for every 5 gallons of fuel withdrawn.

- Look on your dispenser for a weights and measures sticker or contact your local department of weights and measures.

Circle the UST numbers for tanks that use inventory control.	**UST # =**	**1**		**2**		**3**		**4**		**5**	
QUESTIONS:		**N/A**		**N/A**		**N/A**		**N/A**		**N/A**	
		Circle the appropriate answer									
		Yes (Y) or No (N)									
1. Do you perform inventory control properly? Appendix G contains sample inventory worksheets. A sample manual tank gauging record can be found in Appendix H.		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
This includes: 1. Taking inventory and dispenser readings at least once each day that fuel is added to or removed from your tank. 2. Reconciling fuel deliveries with delivery receipts by taking inventory readings before and after each delivery. 3. Reconciling all of your data at least once every 30 days. 4. Calculation of 1% flow- through plus 130 gallons.											
If no, begin performing proper inventory control.											
2. Do you have records for, at minimum, the last 36 months of inventory control (including water measurements)? A sample inventory control worksheet is provided in Appendix G.		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, begin keeping records of inventory control and water measurements.											
3. Is the measuring equipment used capable of measuring to the nearest one-eighth inch over the entire height of the tank?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, get equipment (for example, a stick) that meets these requirements.											
4. Do you measure the water in each of your tanks at least once every 30 days to the nearest one-eighth inch?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, begin taking water readings of each tank at least once every 30 days.											

4.7.5 Inventory Control for Single-Walled Waste Oil Tanks Less Than 2,000 Gallons

Requirements and Best Management Practices for Inventory Control for single-walled Waste Oil Tanks 2,000 gallons or less

The Department has a booklet available for you to keep that explains how to conduct inventory reconciliation for waste oil tanks. Contact the DEM if you wish to obtain a copy.

For Inventory Control for single-walled waste oil tanks 2,000 gallons or less, you must do the following:

- Once each week, take the tank out of service for 36 hours and perform liquid level measurements before and after this period. The difference in volume must be 10 gallons or less for tanks up to 550 gallons, 13 gallons or less for tanks between 551 and 1,000 gallons, and 26 gallons or less for tanks between 1,001 and 2,000 gallons.
- Once a month, average the four weekly changes in tank volume (taking into consideration positive and negative numbers). This average is required to be 5 gallons or less for tanks up to 550 gallons, 7 gallons or less for tanks between 551 and 1,000 gallons, and 13 gallons or less for tanks between 1,001 and 2,000 gallons.
- If any weekly or monthly change exceeds the allowable amount, then a leak is suspected and the Department must be contacted immediately.

Your stick must be capable of measuring to the nearest one-eighth inch and be able to measure the level of fuel over the full range of the tank's height.

- Check your measuring stick periodically to make sure that you can read the markings and numbers and that the bottom of the stick is not worn.

You must measure the water in your tank to the nearest one-eighth inch at least once per month.

- You can use a paste that changes color when it comes into contact with water.

Checklist for Inventory Control for Single-Walled Waste Oil Tanks that are 2,000 gallons or less

Circle the UST number of the waste oil tank using **inventory control.**	UST # =	1	2	3	4	5
		N/A	N/A	N/A	N/A	N/A
QUESTIONS:		**Circle the appropriate answer**				
		Yes (Y) or No (N)				
1. Do you perform inventory control properly? Appendix G contains a sample inventory control worksheet. A sample manual tank gauging record can be found in Appendix H. This includes: 1. Once a week take tank out of service for 36 hours. 2. Take liquid measurements before and after the 36 hour shut down. 3. Reconciling your 4 weeks of data once every 30 days.		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, begin performing proper inventory control.						
2. Do you have records for, at minimum, the last 36 months of inventory control (including water measurements)? A sample inventory control worksheet is provided in Appendix G.		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, begin keeping records of inventory control and water measurements.						
3. Is the measuring equipment capable of measuring to the nearest one-eighth inch over the entire height of the tank?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, get equipment (for example, a stick) that meets these requirements.						
4. Do you measure the water in each of your tanks at least once every 30 days to the nearest one-eighth inch?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, begin taking water readings of each tank at least once every 30 days.						

Summary of Compliance with Release Detection for Tanks

Make sure you read and complete the checklists in the appropriate release detection sections for all of your tanks before answering the questions below.

Summary of Compliance with Release Detection for Tanks		
ANSWER THE FOLLOWING QUESTION:	**YES**	**NO**
1. Are all of your tanks in compliance with release detection requirements? To answer YES here, you must be able to answer yes to all applicable questions for each type of tank release detection at your facility. If you have a hazardous substance tank please read the information below this question. List all tanks that do not meet Release Detection requirements. Tank ID Substance _____ _____ _____ _____		
If you answered no, fill out a Return to Compliance plan and submit it with your certification of compliance. A Return to Compliance plan can be found in the accompanying forms booklet.		

If you have tanks that contain a hazardous substance listed on the CERCLA list of hazardous substances (an example would be a tank that contains antifreeze), you must meet one of the following for each of these tanks:

1. You must have a double-walled tank with interstitial monitoring (see Section 4.7.2)

   or

2. You must have a waiver from the DEM.

Section 4.8: Leak Detection for Piping

If your UST system contains fuel oil that is consumed on-site <u>solely</u> for heating purposes you are not required to have leak protection for your piping.

There are pressurized, suction, and gravity piping delivery systems for piping that could be used with USTs. In addition, piping could either be above or below ground and either single or double walled. There are line leak detection requirements for underground pressurized and suction piping. The leak detection requirements are different depending on the type of piping delivery system. **Do not include fill pipes as part of your piping.**

To determine requirements and BMPs for leak detection of your piping, do the following:

1. Identify the type(s) of piping you have at your facility. Check the appropriate boxes in the table below.

   Different piping runs at your facility may use different types of fuel delivery systems. Make sure to select the appropriate type of fuel delivery system for each piping run at your facility.

   Note: If <u>all</u> piping associated with an UST system is aboveground, then that piping has no requirements for leak detection.

2. For each type of piping you check in the table below, go to the appropriate section and read and fill out the appropriate checklist(s) for piping release detection. You may need to go to more than one checklist.

What Type(s) of Piping Do You Have at Your Facility?						Go to these sections for information and compliance checklists
UST Number:	**1**	**2**	**3**	**4**	**5**	
Pressurized (with some piping underground)						Section 4.8.1
Suction (with some piping underground)						Section 4.8.2
Gravity (with some piping underground)						No Requirements
No Underground Piping						No Requirements
No Piping						No Requirements

If you do not know the type(s) of piping you have, take the following steps to figure out what is at your facility:

- Read the descriptions below of the different types of fuel delivery systems for piping.
- Look through your old records to see if they match any of the names in the descriptions.
- Contact the contractor who installed your piping system.
- Contact your service contractor/environmental consultant for assistance.

<u>Fuel Delivery System Descriptions</u>

Pressurized fuel delivery pushes fuel from the tank to the dispenser through piping by using a submersible turbine pump (STP) located inside the tank. Usually there is a STP head in a sump above the tank. These sumps are often covered with a lid and may also have a sump cover under the lid.

Sample STP Head in a Sump on Top of a Tank

Sample STP Head in a Sump on Top of a Tank

Sample Lid and Sump Cover

Suction fuel delivery pulls fuel from the tank to the dispenser through the piping by using a suction pump located at the dispenser. You should be able to tell if you have suction piping by looking for a suction pump (you may see pulleys and belts) inside the dispenser. Also, there will not be a pump in a sump above the tank.

Gravity feed fuel delivery has no pump and relies on the downward slope of the piping to transport fuel from the tank to the dispenser.

Example of a Suction Pump Inside a Dispenser

4.8.1 Leak Detection: Pressurized Piping

Each pressurized piping run must have an automatic Line Leak Detector (LLD) installed. You must meet specific requirements for your LLDs. **See Section 4.8.1.1.**

Along with a LLD, each pressurized piping must have one of the following:

- **interstitial monitoring** - to use this method, your piping must be double-walled and you must be monitoring the interstitial space continuously for releases. If you have a **hazardous substance UST system**, you must either use interstitial monitoring or have a waiver from the DEM.

- **annual line tightness test** - If you have single-walled piping, you must have a line tightness test conducted at least annually. **See Section 4.8.3 for information and checklists for line tightness testing.**

Contact the DEM if you do not use one of these methods.

If you have interstitial monitoring (Section 4.7.2), the requirements are the same for both tanks and piping. **In addition,** you must ensure the following for interstitial monitoring for piping:

- Sensors are typically located in the piping collection sump areas for interstitial monitoring. These sumps must be tight and free of leaks for piping interstitial monitoring to operate correctly.
  - ✓ Piping should slope to the sump containing the monitoring probe.
  - ✓ Check to see that sensors are located near the bottom of the sump so that they activate quickly when a release occurs.
  - ✓ Sensors must be at least 1 inch below the lowest penetration fitting in the sump

.

Pressurized piping must be equipped with an emergency shut-off valve designed to close automatically in the event of impact or fire exposure. The automatic closing feature of the valve must be checked yearly by manually tripping the hold-open linkage. Records must be kept of this inspection check.

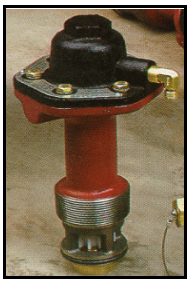
Checklist for Pressurized Piping Leak Detection

Circle the UST numbers for pressurized piping.	UST # =	1	2	3	4	5
Note: If you have an UST system with suction piping, gravity feed piping, above-ground piping, or no piping, circle N/A here for that UST.		N/A	N/A	N/A	N/A	N/A
Questions:		**Circle the appropriate answer**				
		Yes (Y) or No (N)				
1. Do you have a LLD on each pressurized piping run? If you answer no here, skip Question 2.		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, have a contractor install a LLD for your piping.						
2. Does your LLD meet the regulatory requirements? Read and fill out the checklist in Section 4.8.1.1 before answering this question.		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, have a contractor fix or replace your LLD so that it meets the requirements in Section 4.8.1.1.						
3. In addition to your LLD, what is the second method of leak detection you use for your pressurized piping?						
Use these abbreviations for this question: IM = interstitial monitoring (double-walled) LTT = line tightness testing (single-walled)						
4. Do you meet the leak detection requirements for your second method of leak detection for your pressurized piping?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If you use: **Piping interstitial monitoring** - to answer yes here, your piping must be double-walled, your sumps must be leak-free, the piping should slope toward sumps containing the sensors, your sensors should be located near the bottom of your sumps, and you must meet the interstitial monitoring requirements in Section 4.7.2. **Line tightness testing** - to answer yes here, your piping must be single-walled, and you must meet the tightness testing requirements for pressurized piping. **Fill out the checklist in Section 4.8.3 to make this determination.**						
If no, take action to meet all of the release detection requirements for the release detection method you are using or begin performing a method of release detection that meets the regulatory requirements.						
5. Did you test the shear/crash/impact valve? Enter the date this test was conducted: mm/dd/yy _____		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, take action to conduct the test.						

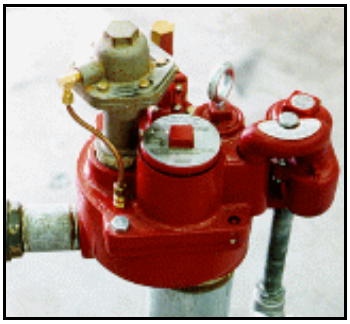
4.8.1.1 Leak Detection: Automatic Line Leak Detectors (LLDs)

Information

Automatic LLDs are devices installed in the piping run and are designed to detect a catastrophic release from pressurized piping. Typically, they are located on the submersible turbine pump (STP) head in the sump above your tank.



Sample LLD



Sample STP Head with LLD

There are two types of automatic LLDs:

- Mechanical LLDs are mechanically operated pressure valves that test for piping leaks each time the pump is turned on.
- Electronic LLDs have an electronic detection element that connects to an electronic control panel (such as an ATG system) and continuously monitors for piping releases.

Note: An electronic LLD may also be capable of conducting a line tightness test. Check with the DEM to see if this option applies to you.

Pressurized piping must have a LLD installed that can detect a release of 3 gallons per hour at a line pressure of 10 pounds per square inch within one hour.

When a leak is detected, automatic LLDs must either:
- shut off fuel flow;
- restrict fuel flow; or
- trigger an audible and visual alarm.

You must test each LLD at least once every year. The test must be performed according to the manufacturer's requirements and procedures by trained, qualified personnel.
- You must keep records of these annual tests for 3 years beyond the operational life of the facility.

You must maintain all records of maintenance or repair to your LLD for a period of 3 years beyond the operational life of the facility.

✓ Frequently test your automatic LLDs according to the manufacturer's instructions to make sure they are working properly.

✓ Make sure that your LLD is designed to operate with the type of fuel your UST system stores. For example, some LLDs are designed to work with gasoline, while others are intended to work with diesel.

Checklist for Automatic Line Leak Detectors

Circle the UST numbers for piping with a LLD.	UST # =	1	2	3	4	5
Questions:		N/A	N/A	N/A	N/A	N/A
		Circle the appropriate answer				
		Yes (Y) or No (N)				
1. Do you have a record indicating that your LLD has been tested annually?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
Enter the date of your most recent test (mm/dd/yy). _____						
If no, either find the records, obtain the records from the person who conducted the tests, or have a test conducted. If a test is conducted, make sure each LLD passes the test and keep records of the results for 3 years beyond the operational life of the facility. If a LLD fails a functionality test, have a trained person repair or replace the LLD.						
2. Do you have all records of any maintenance, or repair of your LLD?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, contact the person who did the work and obtain these records.						

4.8.2 Leak Detection: Suction Piping

If you have suction piping, you must use one of the following leak detection methods for each piping run:

Double-Walled Suction Piping

- **Interstitial monitoring** - You must be monitoring the interstitial space continuously for releases. If you have a **hazardous substance UST system**, you must either use interstitial monitoring or have a waiver from the DEM.

Single-Walled Suction Piping

- **Line tightness test** - You must have a line tightness test conducted at 5, 8, 11, and 13 years after installation and annually thereafter. This method is described in Section 4.8.3.

Contact the DEM if you do not use one of these methods.

If you have interstitial monitoring (Section 4.7.2), the requirements are the same for both tanks and piping. **In addition,** you must ensure the following for interstitial monitoring for piping:

- Sensors are typically located in the piping collection sump areas for interstitial monitoring. These sumps must be tight and free of leaks for piping interstitial monitoring to operate correctly.
  - ✓ Piping should slope to the sump containing the monitoring probe.
  - ✓ Check to see that probes are located 1 inch below the lowest penetration fitting or entry boot so that they activate quickly when a release occurs.
  - ✓ Secondary piping test boot must be disconnected.

Suction piping systems must be equipped with a check valve located underneath the dispensing unit or at the tank.

Checklist for Suction Piping Leak Detection

Circle the UST numbers for suction piping.	UST # =	1	2	3	4	5
Note: If you have an UST system with pressurized piping or no piping, circle N/A here for that UST.		N/A	N/A	N/A	N/A	N/A
		Circle the appropriate answer				
Questions:		**Yes (Y) or No (N)**				
1. What method of leak detection do you use for your suction piping?						
Use these abbreviations for this question: IM = interstitial monitoring (double-walled) LTT = line tightness testing (single-walled)						
2. Do you meet the leak detection requirements for your suction piping?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If you use: **Piping interstitial monitoring** - to answer yes here, your sumps must be leak-free, the piping needs to slope toward sumps containing the sensors, your sensors must be located 1 inch below the lowest fitting, and you must meet the interstitial monitoring requirements in Section 4.7.2. **Line tightness testing** - to answer yes here, you must meet the tightness testing requirements for suction piping. **Fill out the checklist in Section 4.8.3 to make this determination.**						
If no, begin performing a method of release detection that meets the requirements for that release detection method.						
3. Do you have a check valve under the dispensing unit?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, contact the DEM to determine how you may return to compliance.						

4.8.3 Leak Detection: Line Tightness Testing

A periodic line tightness test must be used to meet leak detection requirements for your single-walled piping. Line tightness testing may be performed by either a trained tester or by using a permanently installed electronic system. Line tightness testing must be able to detect a 0.1 gallon per hour leak rate at 1.5 times the operating pressure of the piping.

You must keep results of tightness testing for 3 years beyond the operational life of the facility.

- For pressurized piping, testing is required every 12 months.
- For suction piping, testing is required at 5, 8, 11, and 13 years after installation and annually thereafter.

If you use a permanently installed electronic system, it must be inspected, calibrated, and tested on a yearly basis. You must keep records of these annual tests.

Tightness tests must be conducted by a trained tester licensed by the DEM.

- Make sure that the method of tightness testing is approved by the DEM.
- Keep the results of all tightness tests for 3 years beyond the life of the facility.

If you use a permanently installed electronic system, periodically have a trained contractor, such as the vendor who installed the system, service that system according to the manufacturer's instructions.

Checklist for Line Tightness Testing

Circle the UST numbers for piping that uses line tightness testing.	UST # =	1		2		3		4		5	
Questions:		N/A		N/A		N/A		N/A		N/A	
		Circle the appropriate answer									
		Yes (Y) or No (N)									
1a. Do you have a record of a passing test for your most recent line tightness test?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, either find the record, obtain the record from the person who conducted the test, or have a test conducted.											
Enter the date of most recent test: mm/dd/yy _____											

Circle the UST numbers for piping that uses line tightness testing.	UST # =	1	2	3	4	5
Questions:		N/A	N/A	N/A	N/A	N/A
		Circle the appropriate answer				
		Yes (Y) or No (N)				
1b. Was your last tightness test conducted less than 1 year ago for pressurized piping or 5, 8, 11, 13 years after installation and annually thereafter for suction piping?		1 Y / 1 N	2 Y / 2 N	3 Y / 3 N	4 Y / 4 N	5 Y / 5 N
If no, have a tightness test conducted, make sure each piping run passes the test, and keep records of tightness testing. If a tightness test ever fails, your piping may be leaking. Report the problem to the DEM and take action to fix the problem.						
2. What type of piping do you have for your tanks?		1	2	3	4	5
Use these abbreviations for this question: PR = Pressurized piping SU = Suction piping						

Summary of Compliance with Piping Leak Detection

Summary of Compliance with Piping Leak Detection		
ANSWER THE FOLLOWING QUESTION:	**YES**	**NO**
1. Does all of your underground piping meet Leak detection requirements? To answer YES here, you must be able to answer yes to all applicable questions for each type of piping at your facility. If you have piping that contains a hazardous substance read the information below this question.		
If you answered no, fill out a Return to Compliance Plan and submit it with your Certification of Compliance forms. A Return to Compliance Plan can be found in the accompanying Forms Booklet.		

If you have piping that contains a hazardous substance listed on the CERCLA list of hazardous substances (an example would be a tank that contains antifreeze), you must meet one of the following for each of these piping runs:

1. You must have secondarily contained piping with interstitial monitoring. This is necessary for both pressurized and suction piping,

or

2. You must have a waiver from the DEM.

Section 4.9: What to Do for Suspected or Confirmed Releases

Personnel at your facility should be fully prepared to respond to releases before they may occur. In addition, everyone needs to know what to do when release detection methods indicate a suspected or confirmed release.

You must respond to and report suspected or confirmed releases when they occur. If you think you may have a release or your release detection indicates a suspected release, you need to take the following steps, as appropriate. **Never ignore leak detection alarms or failed leak detection tests; treat them as suspected leaks**.

Step 1. Stop the Release

- Take immediate action to prevent the release of more fuel.
- Turn off the power to the dispenser and "bag" the nozzle.
- Make sure you know where your emergency shutoff switch is located.
- If necessary, empty the tank, without further contaminating the site. You may need the assistance of your supplier or distributor.

Step 2. Call For Help

Contact your local fire or emergency response authority. Make sure you have these crucial telephone numbers prominently posted where you and your employees can easily see them.

Step 3. Contain the Spill or Overfill

Contain, absorb, and clean up any surface spills or overfills. You should keep enough absorbent material at your facility to contain a spill or overfill of regulated substances until emergency response personnel can respond to the incident.

The suggested supplies include, but are not limited to, the following:

- Containment devices, such as containment booms, dikes, and pillows
- Absorbent material, such as kitty litter, chopped corn cob, sand, and sawdust. Be sure you properly dispose of used absorbent materials
- Mats or other material capable of keeping spill or overfill out of nearby storm drains
- Spark-free flash light
- Spark-free shovel
- Buckets
- Reels of "caution tape," traffic cones, and warning signs
- Personal protective and safety gear

Step 4. Identify Any Hazards

Identify any fire, explosion, or vapor hazards and take action to neutralize these hazards.

Step 5. Report to Authorities

All persons shall immediately report all confirmed and suspected leaks or releases from UST systems to:

- The appropriate local fire official
- The DEM at (401) 222-2797
- The DEM 24 hour Emergency Response Hotline at (401) 222-3070
- The local public water supplier in the event that a spill occurs in a public supply watershed or in a wellhead protection area for community water supply wells.

✓ Keep a list of emergency contacts and make sure everyone at your UST facility is familiar with the list of contacts. **Appendix C contains a blank list for names and phone numbers of important contacts.** Fill out this information for your facility so that you will know who to call in the event of an emergency. Remove this page from the manual, copy it, fill it out, and post it in a prominent place at your facility.

Summary of Compliance with Suspected or Confirmed Releases		
ANSWER THE FOLLOWING QUESTIONS:	**YES**	**NO**
Did you appropriately respond to and report all suspected or confirmed releases? This includes responding to a suspected problem due to a failed release detection result. If you did not have a release, answer YES to this question.		
If you answered no, fill out a Return to Compliance Plan and submit it with your Certification of Compliance forms. A Return to Compliance Plan can be found in the accompanying Forms Booklet.		

Section 4.10: Financial Responsibility

To be in compliance, you must demonstrate financial responsibility (FR) – the ability to pay for cleanup or third-party liability compensation – for all of your regulated underground storage tank systems that store petroleum with the following exceptions.

These tanks do not require FR:

- Tanks storing fuel that is consumed on-site solely for heating
- Farm and residential tanks of 1,100 gallons or less capacity storing motor fuel which is not for resale
- Tanks storing fuel used solely by emergency power generators
- Tanks storing hazardous waste, including waste oil
- Airport hydrant fueling systems
- Tanks owned by state or federal government entities whose debts and liabilities are the debts and liabilities of a state or the United States

This section provides a general explanation of the FR requirements. For detailed information on FR, see the Office of Underground Storage Tank's web site at http://www.epa.gov/swerust1/ustsystm/finresp.htm.

Requirements for Financial Responsibility

You must have the appropriate FR mechanism(s),

- amount of coverage,
- scope of coverage, and
- certification.

Each of these components is discussed on the pages that follow.

Financial Responsibility: Mechanisms

Directions for Completing the Financial Responsibility Section.

Step 1. Read this section to determine the requirements you must meet for FR.

Step 2. Complete the checklist for FR for your facility.

Step 3. Complete the "Summary of Compliance with Financial Responsibility Requirements" question on the bottom of the last page of this section.

Information You must have an appropriate FR mechanism at your facility. The following mechanisms may be used to comply with the FR requirements. You may use one or a combination of these mechanisms:

A. **The Rhode Island Underground Storage Tank Financial Responsibility Fund** is a mechanism for demonstrating FR for UST systems subject to FR requirements. The Fund operates as a reimbursement program for expenses related to environmental cleanup and third party compensation costs. To be eligible, facilities must be in compliance with the UST regulations and must incur a $20,000 deductible expense. For more information, see the Fund's website as www.riustreviewboard.org.
B. **A financial test of self-insurance** - A firm with a tangible net worth of at least $10 million may demonstrate FR by passing one of the two financial tests listed in the federal regulations.
C. **A corporate guarantee** - You may secure a corporate guarantee from another eligible firm. The provider of the guarantee has to pass one of the financial tests listed in the regulations.
D. **Insurance coverage** - You may buy insurance from an insurer or a risk retention group.
E. **A surety bond** - You may obtain surety bond, which is a guarantee by a surety company that it will satisfy FR obligations if the owner or operator does not.
F. **A letter of credit** - You may obtain a letter of credit, which obligates the issuer to provide funding for corrective action and third-party compensation.
G. **A trust fund** - You may set up a fully-funded trust fund administered by a third-party to pay for corrective action and third-party compensation.
H. **Other DEM authorized methods** - You may use additional methods of coverage (e.g., certificate of deposit) authorized in Rhode Island. Contact the DEM UST program to find out if this can apply to you.

If you are a local government, there are four additional compliance methods that you can use to comply with the FR requirements:

I. **A bond rating test** - A local government may demonstrate (or guarantee) FR by passing a bond rating test.
J. **A financial test** - A local government may demonstrate (or guarantee) FR by passing a financial test.
K. **A guarantee** - A local government may obtain a guarantee from another local government or the state.
L. **A dedicated fund** - A local government may demonstrate (or guarantee) FR by establishing a fund.

You may also use one or a combination of mechanisms to meet your FR obligations. Combinations may be used to cover:

- Different sets of tanks - Tanks in one state may be covered by a state fund, while tanks in another state may be covered by insurance.
- Different scopes of coverage - Owner may use state fund to cover corrective action obligations and a letter of credit to cover third party liability obligations.
- Different dollar amounts of coverage - Owner may have a letter of credit for the first $20,000 (the deductible amount) and state fund coverage for the rest.

Financial Responsibility Requirements for: Amount of Coverage

Your FR mechanism (or combination of mechanisms) must provide the appropriate amount of coverage. The text and table below describe the appropriate coverage.

The amount of coverage required varies by the type of tank owner or operator and the number of tanks owned or operated. There are two general types of coverage required: per occurrence and annual aggregate.

- Per occurrence means the amount of money that must be available to pay the costs for each occurrence of a leaking UST. The amount of per occurrence coverage required depends on the type of facility and, in some cases, on the amount of throughput at the facility.

- Annual aggregate means the total amount of FR available to cover all obligations that might occur in one year. The amount of annual aggregate coverage required depends on the number of tanks that are owned or operated.

The amount of coverage required is provided in the table below.

REQUIRED COVERAGE OF FINANCIAL RESPONSIBILITY		
Group Of UST Owners and Operators	**Per Occurrence Amount**	**Aggregate Amount**
Group 1: Petroleum producers, refiners, or marketers	**$1 million**	**$1 million** (for 100 or fewer tanks) **or** **$ 2 million** (for more than 100 tanks)
Group 2: Non-marketers	**$500,000** (if throughput is 10,000 gallons monthly or less) **OR** **$1 million** (if throughput is more than 10,000 gallons monthly)	

Financial Responsibility Requirements for: Scope of Coverage

Your FR mechanism (or combination of mechanisms) must provide the appropriate scope of coverage.

The scope of coverage that your insurance must provide includes different types of obligations and releases.

- Types of Obligations - FR must cover the costs of **corrective action** and **third-party compensation**. Third-party compensation includes **bodily injury** and **property damage**.

- Types of Releases - Owners or operators must demonstrate FR for taking corrective action and for compensating third parties for bodily injury and property damage caused by **accidental releases**. FR is not required for **intentional** releases. An accidental release may be **sudden** or **non-sudden**. All releases, whether sudden or non-sudden, must be covered. This is necessary to ensure adequate coverage for USTs in particular, because it is often difficult to determine whether an UST release is sudden or gradual. Therefore, to ensure adequate protection of human health and the environment, both types of coverage are necessary.

Financial Responsibility Requirements for: Certification

You must maintain an up-to-date certification of FR.

The certification of compliance must identify the financial assurance mechanism(s) used to demonstrate FR. For each mechanism, the owner or operator must list the following:

- type of mechanism,
- name of issuer,
- mechanism number (if applicable),
- amount of coverage,
- effective period of coverage, and
- whether the mechanism covers "taking corrective action" and/or "compensating third parties for bodily injury and property damage caused by" either "sudden accidental releases" or "non-sudden accidental releases" or "accidental releases."

You must update this certification whenever the financial assurance mechanism(s) used to demonstrate FR change(s).

Financial Responsibility Requirements for: Records and Reporting

You must maintain the appropriate records.

- In addition to the certification of FR, you must keep evidence of all financial assurance mechanisms used.
- You must maintain the evidence of all financial assurance at the UST site or the place of work. Records maintained off-site must be made available upon request of the DEM.
- In all cases, you must maintain a copy of documentation for your FR mechanism as worded in the regulations. Depending upon the mechanism used, various other documentation must be maintained as well.

You must submit appropriate FR documentation to the DEM in the following circumstances:

- Within 30 days after you identify a release from an UST system.
- If you fail to obtain alternate coverage when required.
- At any time, as requested by the implementing agency.

Checklist for Financial Responsibility for your Facility		
Answer the following questions:	**Yes**	**No**
1. Do you have an appropriate FR mechanism or combination of mechanisms?		
List the FR mechanism(s) that you use at your facility. You may list more than one. _____ _____ _____		
If no, then to return to compliance: Obtain one or more FR mechanism(s).		
2. Does your FR mechanism (or combination of mechanisms) provide the appropriate amount of coverage?		
If no, then to return to compliance: Obtain the appropriate amount of coverage for FR.		
3. Does your FR mechanism (or combination of mechanisms) provide the appropriate scope of coverage?		
If no, then to return to compliance: Obtain the appropriate scope of coverage for FR.		
4. Do you have a current certificate of FR?		
If no, then to return to compliance: Complete a certificate as worded in the Federal Regulations, Section 280.111(b)11.		
5. Do you have all of your properly worded documentation for your FR mechanism (or combination of mechanisms), as specified in the Federal Regulations for FR?		
If no, then to return to compliance: Obtain the properly worded documentation.		
6. Do you keep all of your FR records at your UST site or at your off-site place of business?		
If no, then to return to compliance: Obtain the appropriate records and begin keeping them at your UST site or at your off-site place of business.		
7. Have you submitted the required FR documentation to the DEM? Rhode Island requires annual submission of FR documentation. Also, you must submit documentation within 30 days after you identify a release from an UST system, if you fail to obtain alternate FR coverage when required, or as requested by the DEM. **If no documentation is required to be submitted, answer "Yes" here**.		
If no, then to return to compliance: Submit any required documentation to the DEM.		

Summary of Compliance with Financial Responsibility Requirements		
ANSWER THE FOLLOWING QUESTION:	**YES**	**NO**
1. Are you in compliance with the requirements for FR? If you answered yes to all questions above, you are in compliance with FR mechanisms.		
If you answered no, fill out a Return to Compliance Plan and submit it with your Certification of Compliance form. A Return to Compliance Plan can be found in the accompanying forms booklet. Remember if you are a State or Federal government entity, you are not required to meet the FR requirements.		

Section 4.11: Temporarily Closed UST Systems

UST systems in temporary closure must meet certain requirements for leak detection, corrosion protection, and securing of all openings in the UST system.

If you have at least one UST system that is in temporary closure, read this section and complete the checklist on the next page for each UST system in temporary closure. Typically, you as an owner or operator would have actively made a decision to place an UST system in temporary closure. If you are not sure whether you have an UST system that is in temporary closure, contact the DEM. **If you do not have at least one UST system that is in temporary closure**, skip Section 4.11.

If your UST system is not empty, it must continue to meet the leak detection requirements of an active UST system. An "empty" tank, by definition, contains less than 1 inch of product.

All corrosion protection systems must remain operational on the tank and must continue to be monitored.

If an UST system remains temporarily closed, you must leave vent lines open, but cap and secure all other lines, pumps, manways, and ancillary equipment.

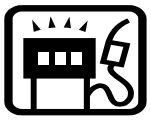
You must respond to any releases from your temporarily closed UST system just as you would from an UST system that you are currently using.

The DEM must be notified in writing within 15 days of any temporary closure which UST systems have been put into temporary closure and the actions taken to satisfy the above listed requirements. Temporary closure may not exceed 180 days without prior approval from the DEM.

Checklist for USTs in Temporary Closure

Circle the UST numbers for tanks in temporary closure.	UST # =	1		2		3		4		5	
Questions:		N/A		N/A		N/A		N/A		N/A	
		Circle the appropriate answer									
		Yes (Y) or No (N)									
1. Does your temporarily closed UST system contain less than 1 inch of product?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
Answer all of the questions for each UST system that you answered NO to this question. You may skip Question 2 for each UST system that you answered YES to this question.											
2. Does your temporarily closed UST system meet all the appropriate requirements for release detection in Section 4.7?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, either empty the UST or ensure that your UST system meets the appropriate leak detection requirements.											
3. Does your temporarily closed UST system meet the requirements for corrosion protection described in Section 4.4?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, ensure that your UST system meets the appropriate corrosion protection requirements.											
4. Are the vent lines open on your temporarily closed UST system?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, open the vent lines.											
5. For an UST system in temporary closure, have you capped all lines (except vent lines), pumps, manways, and ancillary equipment on that UST system?		1 Y	1 N	2 Y	2 N	3 Y	3 N	4 Y	4 N	5 Y	5 N
If no, cap all lines (except vent lines), pumps, manways, and ancillary equipment on the temporarily closed UST system.											

Chapter 5: Stage I and Stage II Vapor Recovery Systems



Section 5.1: Stage I Vapor Recovery

5.1.1: Overview - Stage I

Stage I refers to the control of vapors during the transfer of gasoline from the cargo tank to the gasoline dispensing facility. Stage I vapor recovery systems control emissions during delivery and storage of gasoline at the gasoline dispensing facility.

Gasoline is delivered by cargo tank truck from a bulk terminal to a stationary storage tank at a gasoline dispensing facility. During gasoline delivery, emissions are controlled by diverting the displaced gasoline vapor from the storage tank into the tanker compartment of the vehicle unloading gasoline. The captured vapor is then transported back to the terminal for processing by condensation, adsorption or incineration.

Vapor recovery is a control strategy developed to collect vapors generated during the transfer of gasoline in the marketing and distribution process. Vapors are created due to the high volatility of gasoline at atmospheric conditions; there is a strong tendency for gasoline to evaporate. When liquid evaporates in a closed system, molecules in the vapor state have a tendency to strike and condense on the surface of the liquid. At a point when the rates of evaporation and condensation are equal, a state of equilibrium is achieved. When a system is in equilibrium the concentration of vapor is highest near the surface of the liquid and decreases with the height above the surface. The pressure exerted by vapor in equilibrium with its liquid is referred to as vapor pressure.

Gasoline at a dispensing facility may be stored in either underground or aboveground storage tanks. Most commonly, the storage tanks are underground, with gasoline being unloaded by gravity.

Types of systems used are:

- Dual, or two-point system - the filling and vapor recovery provisions on the storage tank consist of two attachment points (one for liquid delivery and one for vapor return to the truck), which is the most commonly found system
- Coaxial, or single point system - the filling and vapor recovery provisions consist of a single attachment point.

Both systems must provide a liquid and vapor tight seal during delivery, and at all other times.

Stage I vapor recovery requires that vapors be collected in the cargo tank as product is delivered into the underground storage tank. Most gasoline dispensing facilities have more than one underground storage tank to store the different grades of gasoline that are sold. Each underground storage tank has fittings for gasoline delivery and vapor recovery.

The illustration below shows the flow of gasoline and vapors in a typical dual, or two-point Stage I vapor recovery system:

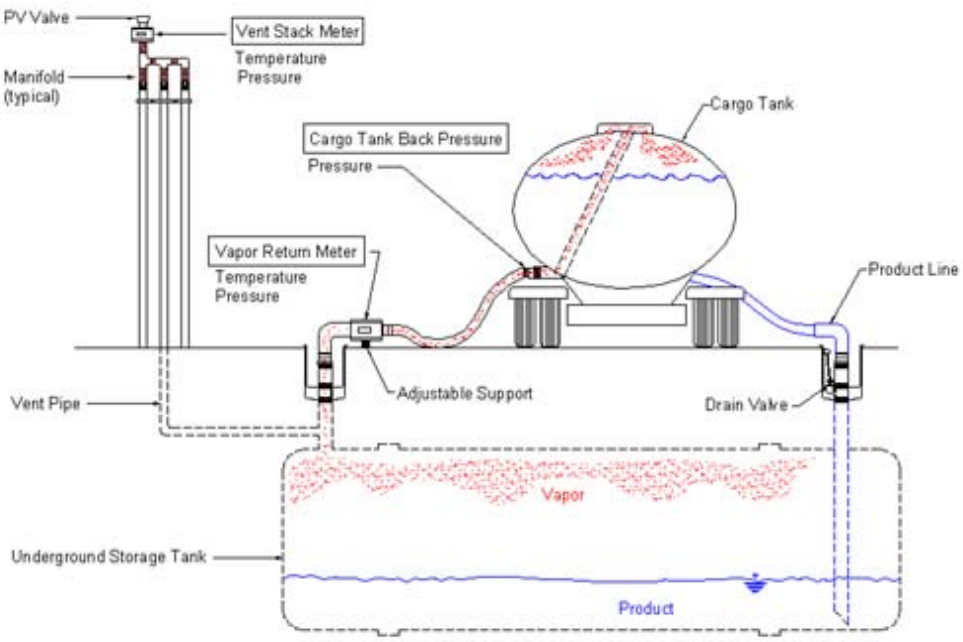


Figure 1 - Stage I Gasoline Vapor Recovery using Dual (Two-point) System

Pictured to the left, the more commonly found dual, or two-point system, has separate points for product delivery and vapor recovery. A product delivery elbow and vapor recovery elbow are attached to each point during a drop.

As shown on the previous page, the Stage 1 dual, or two-point vapor recovery system, consists of two separate spill containment boxes: one for gasoline delivery and the other for vapor collection. Product is delivered using one elbow, and vapor recovered through another elbow. A cross section of a dual system is shown in the illustration below:

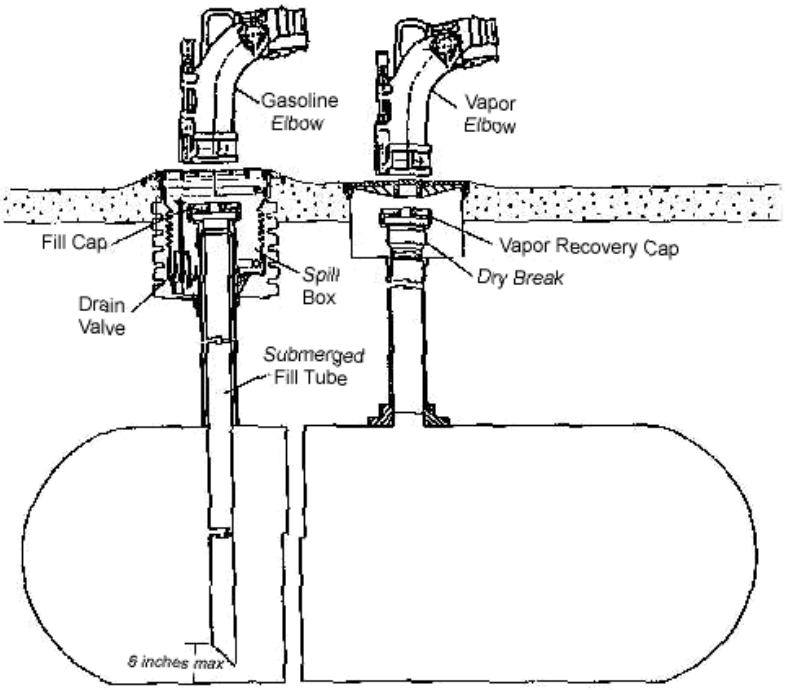


Figure 2 - Stage I Dual (or two-point) Vapor Recovery System

In the dual system, gasoline is delivered to the facility's stationary storage tank, and displaced gasoline vapor is recovered through two separate riser pipes on the tank.

Gasoline is delivered through a submerged drop tube, while the vapor is forced up a riser pipe from the vapor space (i.e. ullage - free space above liquid product in the gasoline storage tank). The dual system for underground tanks is enclosed in a manhole that is raised slightly above the surrounding pavement, in order to minimize the infiltration of surface water. Each riser pipe is encased in a spill container (i.e., spill bucket), and fitted with an adaptor and dust cap. Many of the gasoline spill buckets contain a valve through which accumulated gasoline can be drained back into the storage tank manually.

A Stage I coaxial (or single-point) system, which may be found on older gasoline dispensing facilities, utilizes a single containment box for the delivery of gasoline, and for the recovery of vapors. Product is delivered and vapor recovered using the same elbow. A cross section of a coaxial system is shown in the illustration on the following page:

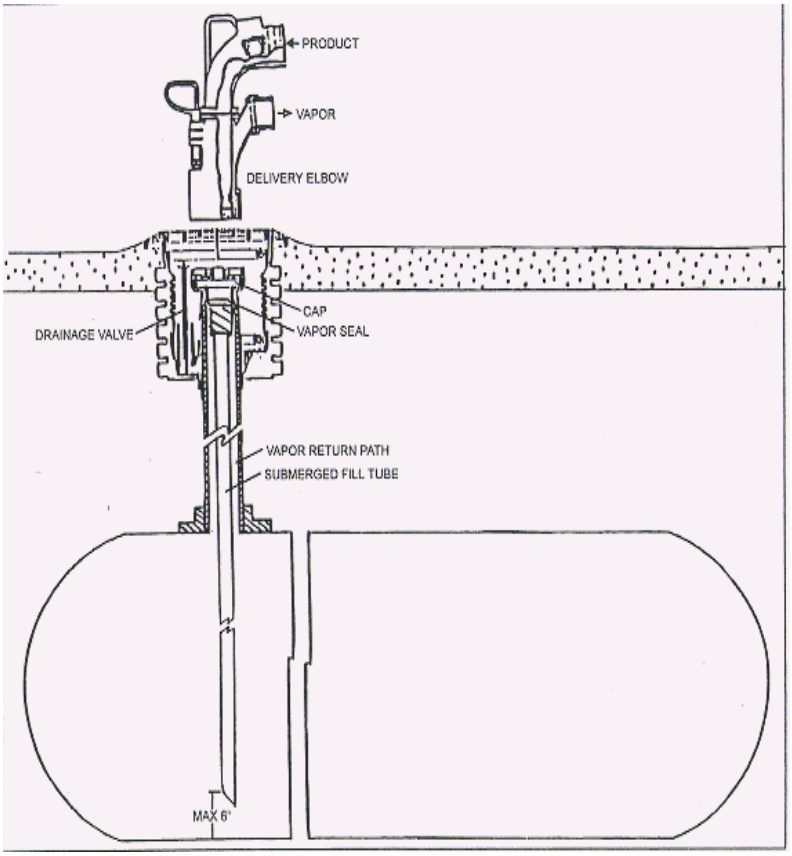
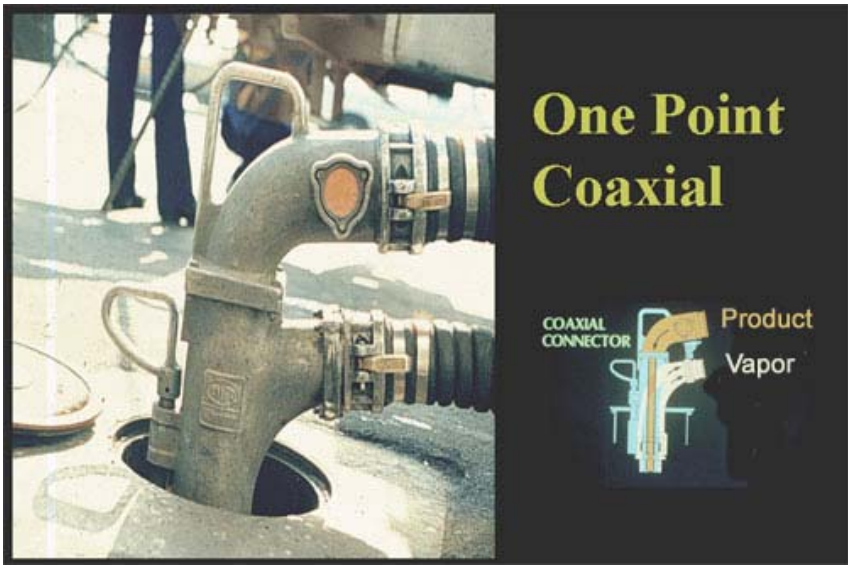


Figure 3 – Typical Stage I Coaxial Vapor Recovery System



The picture to the left shows a coaxial, or single-point system. Concentric tubing from the UST allows for recovery of vapors via one pipe, as product is delivered via the other. Product is delivered and vapor recovered using the same elbow.

5.1.2: Rhode Island Regulations

Stage I Vapor Recovery is addressed in the DEM "***Air Pollution Control Regulation No. 11, Petroleum Liquids Marketing And Storage***". The entire regulation can be found on the DEM's website at: http://www.state.ri.us/dem/pubs/regs/REGS/AIR/AIR11-01.PDF. For Stage I Vapor Recovery, the owner or operator needs to be concerned with Rule 11.5 of this regulation, entitled, "Gasoline Service Station Stage I Vapor Controls. This workbook will discuss the requirements to be met in the regulation.

5.1.3: Requirements

The Stage I Vapor Recovery requirements apply to all gasoline dispensing facilities except the following:

- Stationary gasoline storage vessels of less than 550 gallons capacity used exclusively for the fueling of farming equipment, provided the containers are equipped with submerged fill pipes
- Stationary storage vessels located at a gasoline dispensing facility with a capacity of less than 2,000 gallons, which is in place before July 1, 1979
- Any stationary storage vessels located at a gasoline dispensing facility with a capacity of 250 gallons or less which is installed after the effective date, July 5, 1979
- Any gasoline dispensing facility that is solely serviced by account trucks owned or under the control of bulk gasoline plants that are exempt from the Bulk Gasoline Plants section of this regulation.
- Any gasoline dispensing facility with an annual throughput of 120,000 gallons or less, a rolling 30-day throughput of less than 10,000 gallons, certified by the Office of Air Resources.
  - the owner or operator must submit tax records, sales slips, or other records to certify the quantity of the rolling 30-day throughput is less than 10,000 gallons for the most recent calendar year;
  - the request for exemption must have been received by May 1, 1981.

5.1.3.1: Control Systems

Except in situations as noted above, no person may transfer or allow the transfer of gasoline from any delivery vessel into any stationary storage vessel, unless the stationary storage vessel is equipped with a submerged fill pipe, and the vapors displaced from the storage vessel during filling are processed by a vapor control system. The vapor control system must be one or more of the following:

1. A vapor tight line from the storage vessel to the delivery vessel, and a system that will ensure that vapors will be transferred from the storage vessel to the delivery vessel, to include the following systems:

a. Installation of a vent pipe restrictive device to include a vent pipe cape that has an orifice of ½ inch to 3/4 inch inside diameter. For facilities with Stage II vapor recovery systems, install pressure relief vent valve with relief settings of 3, plus or minus 0.5 inches of water column pressure and 8, plus or minus 2 inches of water column pressure, unless otherwise specified in the applicable CARB certification, and

b. The vapor tight line from the storage vessel to the delivery vessel must be equipped with interlocking connections that will prevent fuel delivery unless the vapor line is connected.

2. A refrigeration-condensation system or equivalent designed to recover or process vapors that prevents emissions of volatile organic compounds to the atmosphere from exceeding 0.30 grams per gallon (80.0 grams/1000 liters) of gasoline loaded

3. A system demonstrated to have control efficiency equivalent to or greater than provided by the systems described above, and approved by the DEM Director and the EPA

5.1.3.2: Gasoline Storage Vessel (Tank) Requirements
Gasoline Delivery Vessel (Cargo Tank) Requirements

The Gasoline Delivery Cargo Tank is subject to the conditions outlined below:

1. The delivery cargo tank must be designed and maintained to be vapor tight at all times, and

2. The vapor-laden delivery vessel may be re-filled only at:
    a. Bulk gasoline terminals complying with the section of this regulation pertaining to Bulk Gasoline Terminals
    b. Bulk gasoline plants complying with the section of this regulation pertaining to Bulk Gasoline Plants

Each owner of a gasoline storage vessel (tank) and gasoline delivery vessel (cargo tank) shall:

1. Purchase and install all necessary control systems and make all necessary process modifications to comply with vapor control system and delivery cargo tank requirements described above

2. Provide instructions to the operator of the gasoline dispensing facility utilizing a refrigeration-condensation vapor control system that describe the necessary maintenance operations, and procedures for prompt notification of the owner in case of any malfunctions of the control system, and

3. Repair, replace or modify any worn out or malfunctioning component or element

5.1.3.3: Operators of Gasoline Dispensing Facilities

Operators of gasoline dispensing facilities with required vapor recovery systems must:

1. Maintain and operate the control system in accordance with the specifications and the operating and maintenance procedures specified by the owner of the vapor control system, and

2. Conduct Weekly Visual Inspections of the Stage I system components, and

3. Notify the owner of the vapor control system of any scheduled maintenance or malfunction requiring replacement or repair of major components in the system

5.1.3.4: Records

Written weekly Stage I inspection records must be maintained and kept at the facility for a period of five (5) years.

The operator of the gasoline dispensing facility must maintain gauges, meters, or other specified equipment in proper working order. The operator of a gasoline dispensing facility with a **refrigeration-condensation** vapor recovery system must maintain records at the facility that include:

1. the scheduled date for maintenance or the date a malfunction was detected, and

2. the date that the need for maintenance or malfunction of major system components was reported to the owner, and

3. the date the maintenance was performed or the malfunction corrected by either the operator or the owner.

4. records of daily throughput quantities of gasoline dispensed.

The records outlined above shall be maintained for a period of three (3) years, and should be accessible for review by the DEM Director or designated DEM personnel.

5.1.3.5: Compliance & Compliance Test Methods

Facilities subject to Stage I vapor recovery requirements are referred to Rule 11.5.4 and Rule 11.5.5 for Compliance and Compliance Test Methods requirements.

5.1.4: Stage I Weekly Inspection Information

Weekly inspections of Stage I vapor recovery systems must be conducted, as required by Stage II vapor recovery regulations described in Rule 11.10. The vapor recovery system information that follows is provided to assist owners and operators with properly identifying components of their systems, and completing the required weekly visual checks. The items that need to be inspected:

- ✓ **Fill/drybreak caps** - check to assure caps are fully intact and operational, sealing properly, have no cracks or damage
- ✓ **All gaskets** - check to assure that all gaskets in caps and dry tubes are intact, have no cracks
- ✓ **Drybreaks (vapor recovery adaptors)** - check to assure that drybreaks are intact and providing a tight, uniform seal, and that rubber gaskets are sealing properly and not damaged,
- ✓ **Fills and Adapters** – check to assure that all adaptors are tight on the riser
- ✓ **Spill containment plungers** - check to assure that all are intact, with no vapor emissions found.
- ✓ **Drop tubes** - check to assure that they are installed in all gasoline tanks.
- ✓ **Drop tubes** - check to assure that they are intact, in the proper position, not dented.

The regulation requires that weekly inspections are conducted and that written weekly inspection records be kept at the facility for a period of five (5) years.

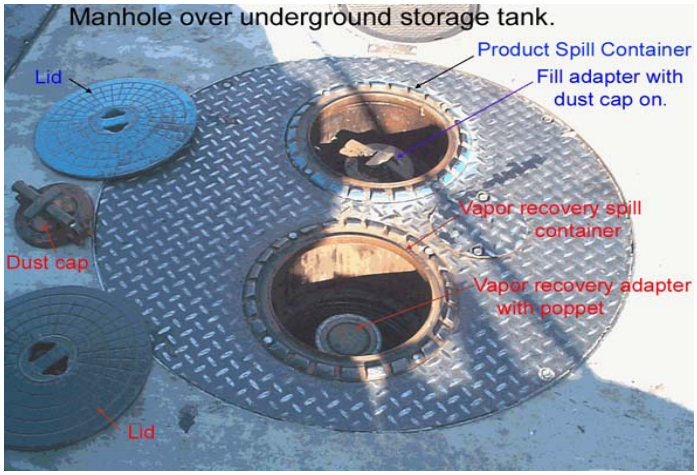
5.1.5: Stage I Vapor Recovery Components

All components and replacements parts of the Stage I Vapor Recovery System must be certified by the California Air Resources Board (CARB).

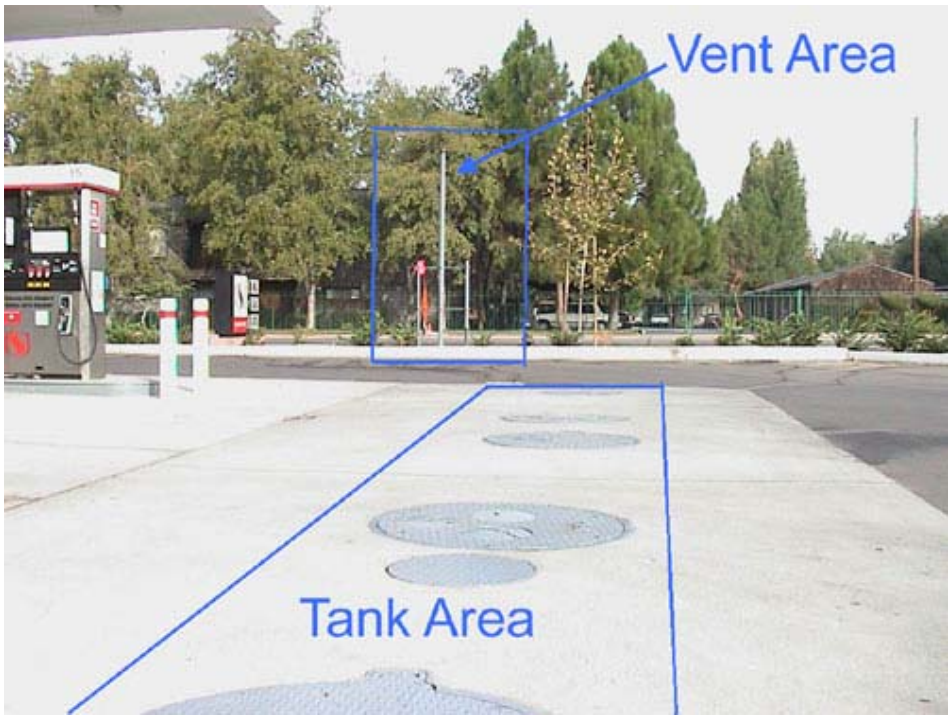
The Phase I Vapor Recovery System typically consists of the following components:

- **Spill Containment Box** - containment manhole, usually equipped with a drain valve, installed to and around the storage tank product riser pipe
- **Riser** - 3" or 4 " diameter pipe mounted to the top of the UST, with each riser fitted with an adaptor and dust cap
- **Adaptor (Coupler)** - a fitting on each riser pipe inside a spill container, allows a leak-proof seal with the delivery elbow of the cargo tank.
- **Drop Tube** - fill pipe through which product is delivered into a storage tank from a cargo tank
- **Dust Cap** - a cover, with a gasket, that seals the top of either a Stage I fill adapter or a Stage I drybreak/poppet
- **Drain Valves** - valves located at the bottom of a spill container to drain accumulated liquid into the UST

- **Dry Break (Poppet)** - a spring-loaded valve that prevents vapor from escaping through the vapor recovery riser pipe opening of a storage tank
- **Pressure/Vacuum (PV) Relief Valves** - dual purpose valves that automatically prevent excessive positive or negative pressure in the tank or pipe to which it is connected
- **Overfill Protection Device** - a device, added to a storage tank, to prevent overfilling and spillage during a fuel drop by a cargo tank



The image to the left shows the location of some Phase I Vapor Recovery System Components



The components of Stage I Vapor Recovery Systems are found in two locations at gasoline dispensing facilities, the **tank area** and the **vent area**, as shown to the left:

The Tank Area

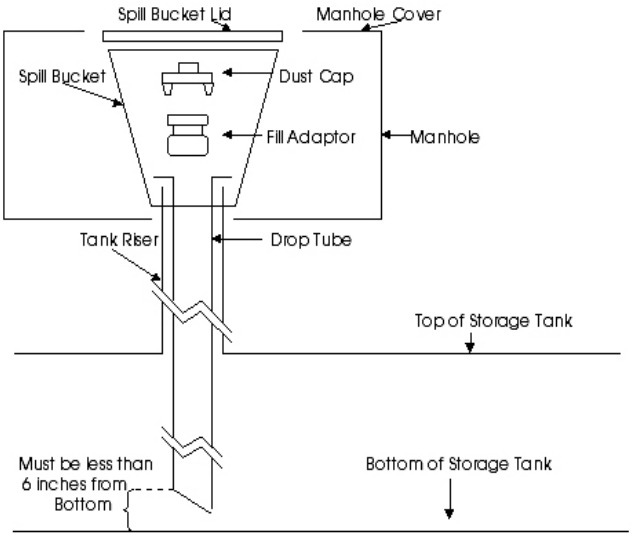
The tank area has manholes with access to each underground storage tank This allows gasoline product to be delivered from the cargo tank through one pipe and displaced vapor to be collected in the cargo tank by means of the other.

The illustration below shows a typical tank area of a gasoline dispensing facility, with a cargo tanker delivering gasoline product to, and recovering vapor, from two underground storage tanks.

The illustration below shows both product delivery and vapor recovery sides of a tank, with some of the components labeled. In the dual, two point system, as shown in the illustration, the manhole above the underground storage tank contains two tank risers. One riser is for delivering product from the cargo tank to the underground tank. The other riser, which includes the vapor recovery adapter (drybreak), is for delivering displaced vapor from the underground tank back to the cargo tank.

Stage I Product Delivery

DIAGRAM OF PRODUCT DELIVERY PIPING INTO THE UNDERGROUND STORAGE TANK AT A GDF



The schematic to the left shows the product delivery piping.

Product is delivered to the UST from the cargo tank via a submerged pipe called a drop tube.

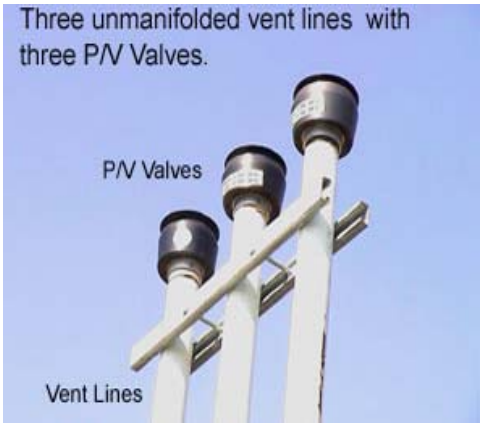
The drop tube is guided into the UST by the tank riser pipe.

The Vent Area

Storage tanks have vent pipes equipped with pressure/vacuum (P/V) relief valves. P/V valves are designed to open at specified positive and negative pressures, so that the tank is protected from physical damage or permanent deformation caused by routine increases in internal pressure or vacuum. They also provide a safeguard in the event any pipes become blocked or inoperable. Additionally, the P/V valve setting on the tank vent is such that it acts as a flow control device that preferentially allows displaced vapors to pass to the tanker compartment during a drop.

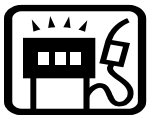
Tanks need to breathe because of volume fluctuations due to temperature changes, barometric pressure changes, and variations in the vapor/liquid ratio during refueling. When the internal pressure exceeds the valve design setting, the valve opens to vent the excess pressure to the atmosphere. When the vacuum exceeds the design setting, the valve opens to allow air to flow into the tank and relieve the excess vacuum condition.

The vent area contains one to three product vent lines, usually one vent for each underground storage tank. Each vent line must be capped with a pressure/vacuum relief (P/V) valve, as shown in the illustration below on the right, or manifolded with the other lines, as shown in the illustration on the left.



Thanks to California Air Resources Board, Stationary Source Division, Compliance Assistance Program Vapor Recovery Interactive CD, August 2002; CARB Interactive CD w/ Stage I & II

Section 5.2: Stage II Vapor Recovery



5.2.1: Overview - Stage II

Phase II vapor recovery refers to the control of gasoline vapors during vehicle refueling.

Gasoline consists of a variety of hydrocarbon compounds and additives blended together to obtain the desired performance characteristics for gasoline engines. However, gasoline vapors emitted into the atmosphere are a concern because they contain volatile organic compounds (VOCs) and hazardous air pollutants (HAPs) such as benzene. VOCs and oxides of nitrogen (NO_x) emissions in the atmosphere react in the presence of sunlight to form ground-level ozone, known as smog. Smog burns your eyes, damages your lungs, makes breathing difficult, and destroys crops and rubber products.

Two air pollution concerns from gasoline dispensing facilities are the amounts of VOC and toxic compound emissions that are emitted into the atmosphere. These emissions tend to be concentrated in urban areas, where air quality standards are most likely to be exceeded. Both Stage I and II gasoline vapor recovery lowers toxic exposure to the general public, and significantly helps to minimize the release of ozone precursors that form smog.

Vapor recovery is a control strategy developed to collect vapors generated during the transfer of gasoline in the marketing and distribution process. Vapors are created due to the high volatility of gasoline at atmospheric conditions. There is a strong tendency for gasoline to evaporate. When liquid evaporates in a closed system, molecules in the vapor state have a tendency to strike and condense on the surface of the liquid. At a point when the rates of evaporation and condensation are equal, a state of equilibrium is achieved. When a system is in equilibrium the concentration of vapor is highest near the surface of the liquid and decreases with the height above the surface. The pressure exerted by vapor in equilibrium with its liquid is referred to as vapor pressure.

Stage II vapor recovery captures saturated gasoline vapor that would otherwise escape into the environment when motorists refuel their vehicles (shown in Figure 1). This requires the use of special dispensing nozzles fitted with vapor return lines that direct saturated vapor from the fill pipes of refueling vehicles to the stationary storage tank. By design, vapor displaced during refueling replaces the volume space created by the dispensed fuel from the underground storage tank.

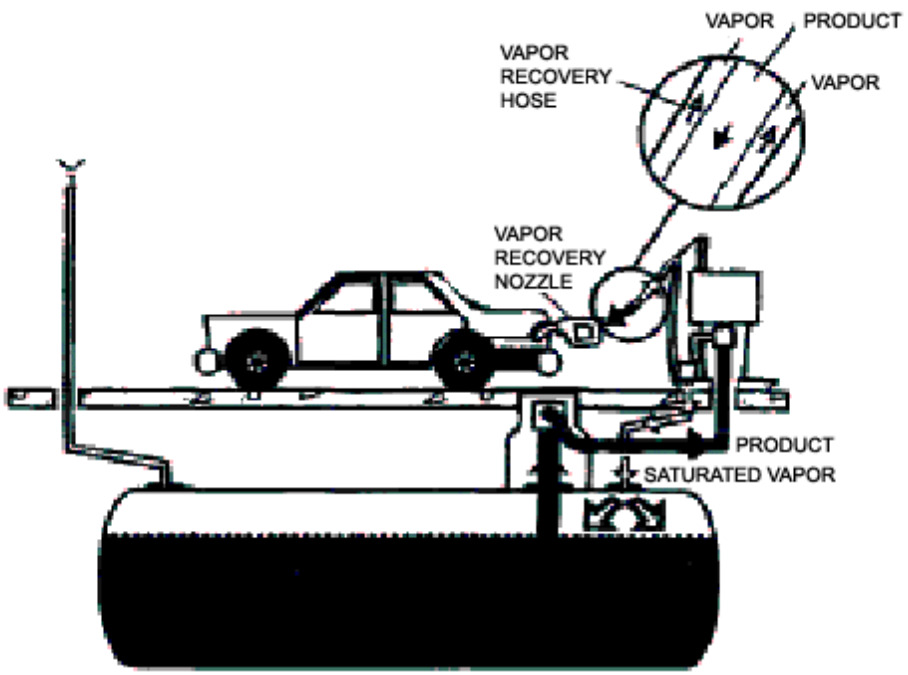


Figure 1 - Stage II Gasoline Vapor Recovery

5.2.2: Federal Regulations

Federal regulations set the minimum control requirements that must be incorporated into state regulations. The Clean Air Act Amendments (CAAA) of 1990 require the installation of gasoline vapor recovery systems at dispensing facilities with throughputs greater than 10,000 gallons per month in many ozone non-attainment areas across the United States.

For ozone, five non-attainment classes (marginal, moderate, serious, severe, and extreme) are used to match the air pollution control requirements with the severity of a region's air quality problem. Marginal designations are subject to the least stringent requirements while each subsequent classification is subject to more stringent requirements. Recovery of gasoline vapor from refueling vehicles is mandated for all moderate areas, as well as listed as serious, severe or extreme. As shown in Figure 2 on the following page, Southern New England is classified as a Serious Ozone Non-Attainment Area.

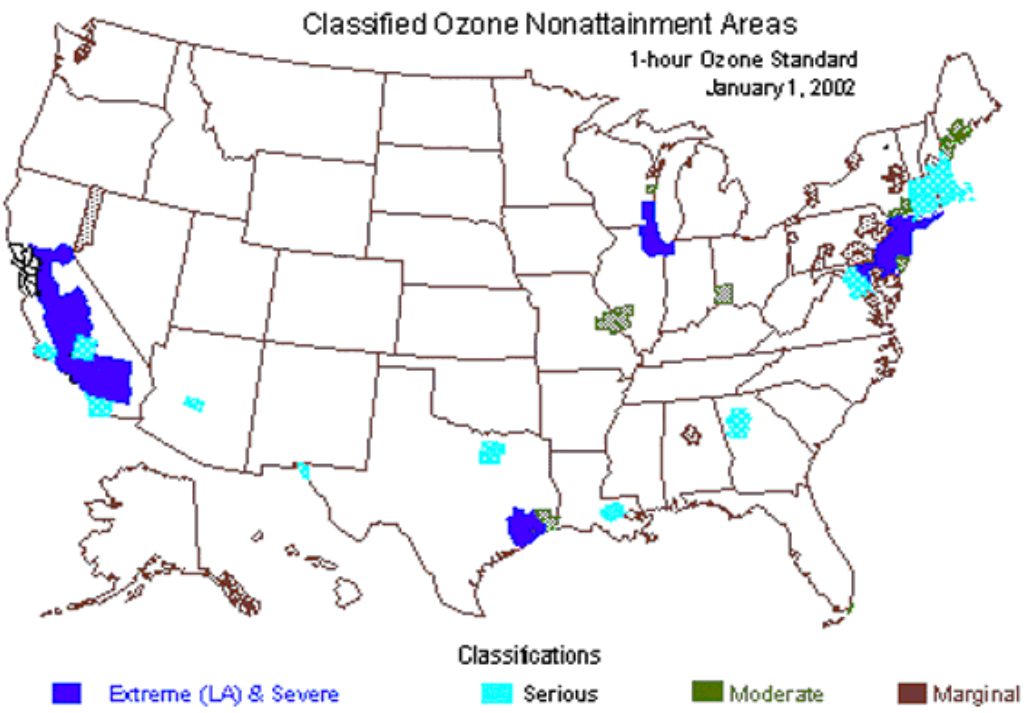


Figure 2 – Federal Ozone Non-Attainment Regions

5.2.3: Rhode Island Regulations

Stage II Vapor Recovery is addressed in DEM "***Air Pollution Control Regulation No. 11, Petroleum Liquids Marketing And Storage***". The entire regulation can be found online on DEM's website at: http://www.state.ri.us/dem/pubs/regs/REGS/AIR/AIR11-01.PDF. For Stage II Vapor Recovery, the owner or operator needs to be concerned with Rule 11.10 of this regulation, entitled, "Gasoline Dispensing Facilities – Stage II Vapor Controls. This workbook will discuss the requirements to be met in the regulation.

5.2.4.: Requirements

The Stage II Vapor Recovery requirements apply to:

- All gasoline dispensing facilities that were constructed or substantially modified after November 15, 1992.
- All other gasoline dispensing facilities which have or have had a monthly throughput of greater than 10,000 gallons in any one month after November 1991.

5.2.4.1: Exemptions

Facilities that are exempted from this regulation must still comply with record keeping and reporting requirements that are outlined in Section 5.3.

1. To be exempted from the regulation because throughput has not exceeded 10,000 gallons per month, the owner/operator of a gasoline dispensing facility is obligated to demonstrate in writing and with clear and convincing evidence that this has been the case.

2. Facilities that were constructed or substantially modified after November 15, 1992 may request from DEM in writing, an exemption from the Stage II regulatory requirements. A request for exemption must demonstrate:

   (a) That monthly output has not exceeded 10,000 gallons in any month since November 1991, and will not exceed 10,000 gallons in any future month.

   (b) That installation of a Stage II system at the facility is not technically and/or economically feasible.

   (c) It must include the following information, at a minimum:

   - nature of the facility
   - number of dispensers, hoses, and nozzles
   - number and volume of all gasoline storage tanks at the facility
   - gasoline output for the facility for every month for the two years preceding the request; for new facilities, expected maximum monthly gasoline output.

3. Stage II Vapor Recovery requirements, including record keeping and reporting, do not apply to gasoline dispensing facilities that dispense gasoline solely to marine vessels.

5.2.4.2: Installation of Stage II Vapor Recovery Systems

Persons who own, lease, operate or control a gasoline dispensing facility must comply with Rule 11.10.2.1(a)-(e) of the regulation, relating to installation and training, prior to initial system operation. Please see that Rule for requirements that must be met.

5.2.4.3: General Maintenance and Inspection Requirements

Operating instructions for dispensing gasoline using the vapor recovery system must be posted conspicuously on the front of each dispensing pump. They must include:

- a warning not to attempt to continue refueling after initial automatic shutoff
- the telephone number of the Department of Environmental Management
- a request that inoperable control devices be reported

Maintain the Stage II vapor recovery system in proper operating condition, and free of defects that would impair the effectiveness of the system.

Visually inspect all aboveground parts of the Stage II vapor recovery system once a week, including, at a minimum, checking for:

- missing components
- slits and tears in nozzle boots
- face cone defects
- flattened, kinked, or torn hoses
- faceplate defects that hinder any contact with the filler inlet area of a vehicle

Remove from service any dispenser if:

- Any part of the Stage II system associated with the dispenser fails a compliance test conducted or ordered by the DEM, or is found to defective
- Any part of the Stage II system associated with the dispenser is not operating properly
- Any part of the Stage II system associated with the dispenser is found to be defective during a visual inspection

NOTE: If the defect is in a single hose or nozzle on a multi-product dispenser, only the nozzle associated with the defect must be removed from service.

5.2.5: Testing, Record Keeping, & Reporting Requirements

5.2.5.1: Facility Information

The following information must be reported in writing to the DEM:

- Name and address of the facility
- Name and address of the owner or operator or other responsible individual
- Number of nozzles used to dispense gasoline
- Monthly output for each of the previous twelve months

At least thirty days prior to installation of a Stage II system, the owner or operator must notify the DEM in writing of the expected date of installation of the underground piping, and of the type and manufacturer of the Stage II equipment.

5.2.5.2: Testing Requirements

Prior to operation of the new system, the following tests must be conducted:

- A leak test
- A liquid blockage test on each nozzle
- A vapor space tie test
- A ten gallon per minute test
- For vacuum assist Stage II systems, an Air to Liquid Ratio test performed each nozzle
- Any additional tests specified in the California Air Resources Board (CARB) certification applicable to the Stage II system

Function of Stage II systems must be retested periodically as noted below:

- A leak test, a vapor space tie test, and a ten gallon per minute test must be performed **annually**
- A liquid blockage test on each nozzle must be performed **every three years**
- For vacuum assist Stage II systems, an Air to Liquid Ratio test performed on each nozzle must be performed **annually**
- Any additional tests specified in the CARB certification applicable to the Stage II system according to the frequency in the certification

At least seven (7) days before testing, the owner or operator must notify DEM that testing will be conducted, and must certify within fifteen (15) days of the test that testing has been completed.

5.2.5.3: Record Keeping

The following records must be kept for a period of five (5) years, and made available to the DEM for inspection:

- Dates and result of weekly visual inspections, as required
- Date that any dispenser is removed from operation, and date returned to service
- Identification of parts repaired or replaced, and dates of replacement
- Identification of tests performed, and the dates and results
- Proof of attendance and completion of training for each employee who has received Stage II training, maintained for as long as employees continue to be employed at the facility.

NOTE: There must be a person with Stage II training present at the facility at all times when it is in operation.

For exempted facilities (except for those facility dispensing gasoline to marine vessels only) the facility will maintain documented monthly output of gasoline, and make those records available for inspection by DEM. The documentation will include:

- Dates and quantities of gasoline delivered
- Monthly records of gasoline dispensed

5.2.5.4: Weekly Visual Inspection Information

The vapor recovery system information below is provided to assist owners and operators with properly identifying components of their systems, and completing the required weekly visual checks.

Information The following items are components in Phase II vapor recovery systems:

- Fuel Dispenser
- Vacuum Source (vacuum assisted systems only)
- Hanging Hardware
- Flow limiter (optional)
- Whip hose
- Breakaway
- Coaxial Hose
- Swivel
- Nozzle

Stage II vapor recovery systems use either a vapor balance system or a vacuum assisted system.

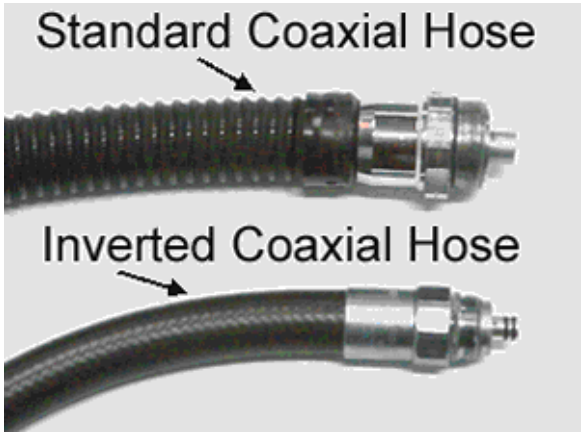
The diagrams and captions below make it easier to visually identify the system used by the nozzle type.

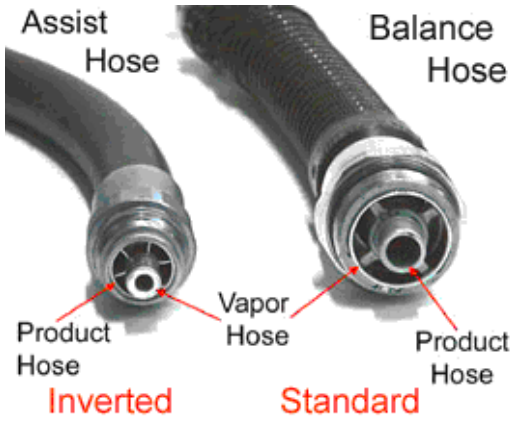
There are two types of vapor recovery systems - vapor balance and vacuum assist. Vapor balance and vacuum assist nozzles have a distinctly different appearance. **Vapor *Balance* nozzles** have a bellows and faceplate. ***Vacuum* Assist nozzles** may have a bellows and face cone, a mini-boot, or are bootless. Vacuum Assist nozzles usually have vapor collection holes near the end of the spout.

A vapor balance recovery system uses direct displacement to move vapor out of the vehicle tank and back into the head space of the gasoline storage tank.

Hose Types Used

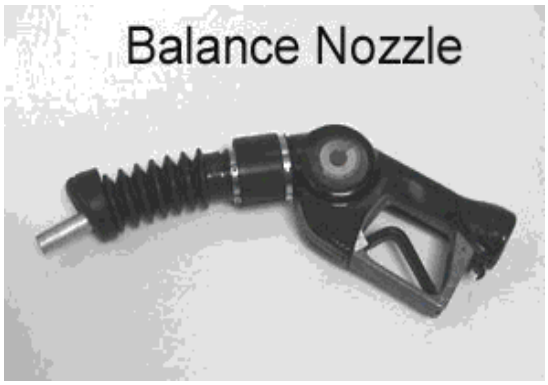
Vapor balance systems use a standard coaxial hose. Most assist systems use the inverted coaxial hose. A standard coaxial hose may be found on some assist systems. A diagram showing both types of hose is shown below:

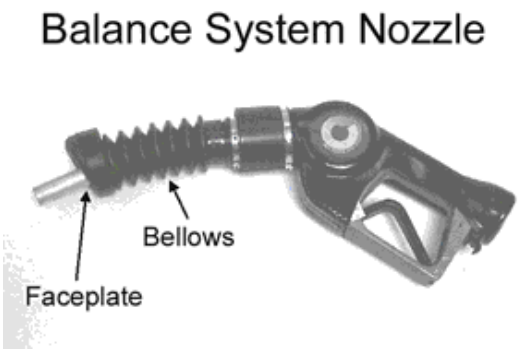


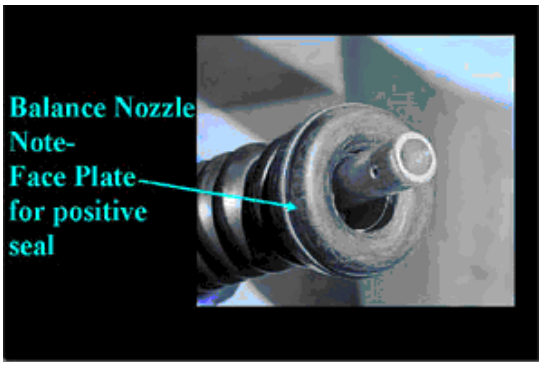


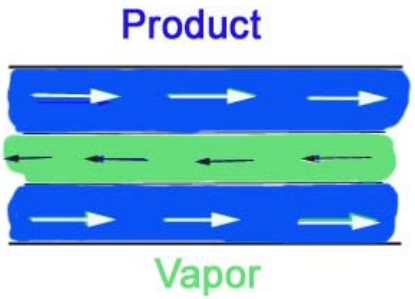
Nozzles on Vapor Balance Systems

Vapor Balance nozzles are readily identifiable by the **bellows** and **faceplate**.





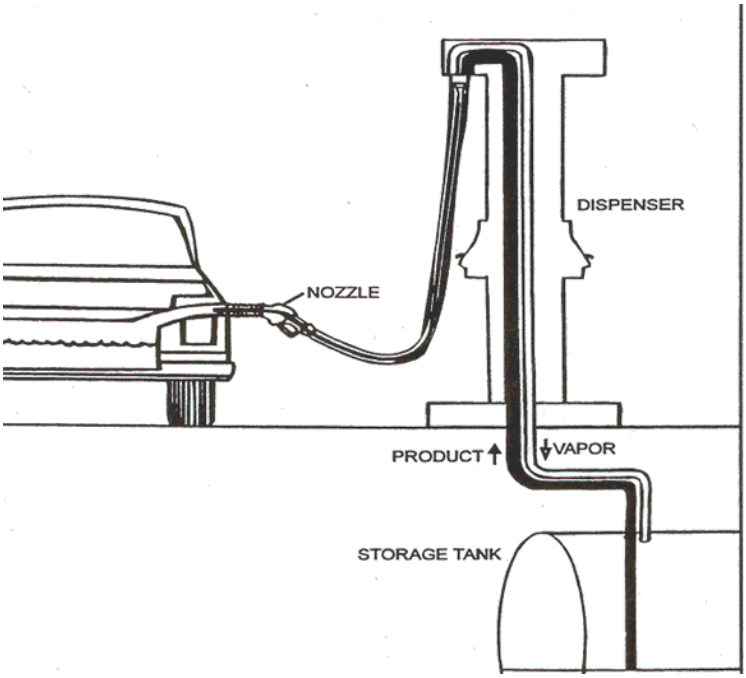




The diagram to the left shows product and vapor flow with a standard coaxial hose used on vapor balance systems.

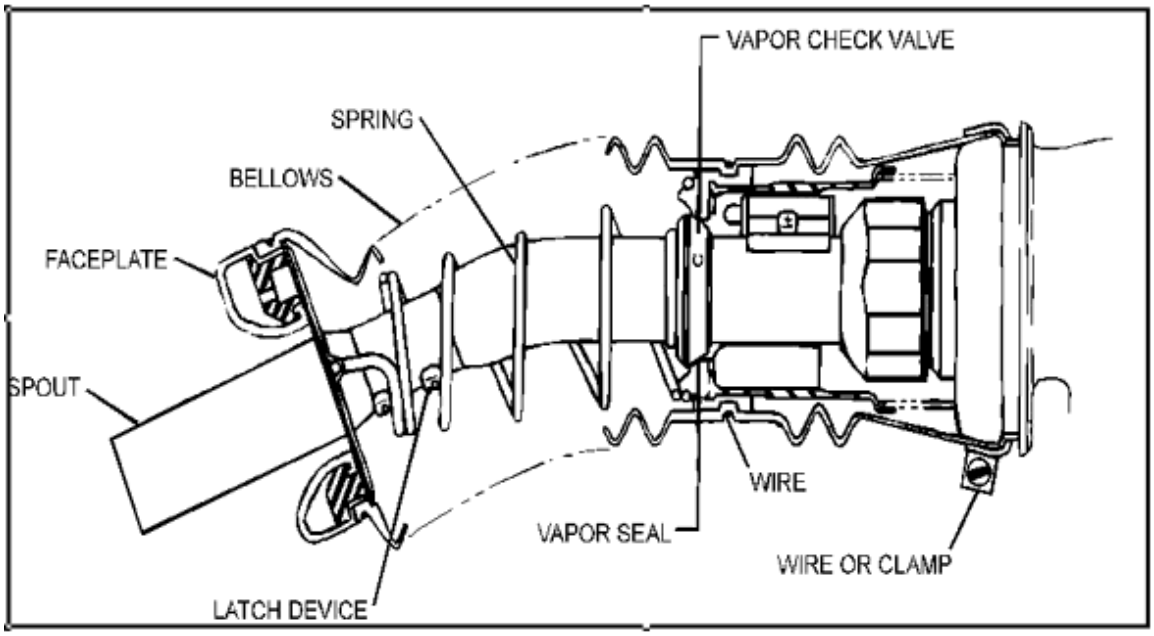
Balance System

The photograph to the left illustrates the hose setup on the dispenser with a vapor balance system.



The diagram to the left shows a Vapor Balance recovery system. The system uses direct displacement to move vapor out of the vehicle tank and back into the head space of the gasoline storage tank.

Below is a diagram of a vapor balance nozzle with its components labeled, and describing items to be inspected in the weekly visual inspection:



✓ Dispenser - On each dispenser, fueling instructions must be clearly displayed, with the appropriate telephone number, which will allow consumers to register any complaints regarding the refueling of vehicles.

✓ Bellows - Bellows must be securely attached to the nozzle and free of any deformities that could hinder the recovery of vapor. Stretch the bellows to uncover any holes, rips or tears. The latching device, latch bar, rivet or ring must be present.

✓ Faceplate - Faceplates and face cones must be intact, and should be smooth and uniform with the faceplate, capable of providing a tight seal at the vehicle fill pipe.

✓ Check valve - The vapor check valve, normally installed at the base of the bellows, must be properly attached by a tightly fastened wire or clamp around the bellows, and must be checked to make sure it is operating. The valve should open and close when the bellows is compressed.

✓ Spout - The spout must be tight and the spout tip should be uniformly round.

✓ Hose - Check the whip hose for damage such as kinks, holes, rips and tears.

✓ Hose retractor – Check hose retractors, which keep hoses from dragging on the ground, and should fully retract the hose when the nozzle is properly replaced in the dispenser. Hose must not contact the ground.

✓ Liquid Accumulation – Check for presence of a liquid removal device. If the distance from the nozzle end of the hose to the lowest point of the hanging hose is more than ten (10) inches, the hose must have a liquid removal mechanism installed. When a liquid removal device is not required, determine if there are any low points in which liquid could

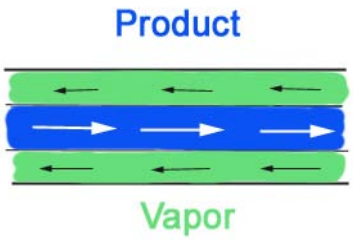
sit. Observe whether or not liquid can be cleared by natural drainage into the vehicle or storage tank when a nozzle is used.

- Check for liquid accumulation within the hanging hardware by using a 500 ml graduated cylinder, a funnel, and the following procedure:
  1. Stretch the nozzle/hose assembly out to its limit.
  2. Place the funnel inside the graduated cylinder and hold the nozzle (spout pointed down) over the funnel.
  3. Holding the nozzle in one hand, compress the nozzle bellows with the other and drain any accumulated liquid into the funnel.

A Vacuum Assisted System is a gasoline vapor recovery system that uses a vacuum-inducing device to collect vapor from the receiving container and direct it back into the space of the container from where the liquid product was withdrawn.

Nozzles on Vacuum Assisted Systems

A nozzle for an assist vapor recovery system has vapor collection holes in the spout or around the base of the spout. Vapor hole configuration varies depending on the nozzle design. An assist nozzle may have a mini-boot. Because vapors are actually being pulled from the auto fuel tank, it is important not to have a tight seal. A tight seal could create a vacuum that could damage the fuel tank. Many new nozzles have mini-boots to capture vapors that may escape around the spout.

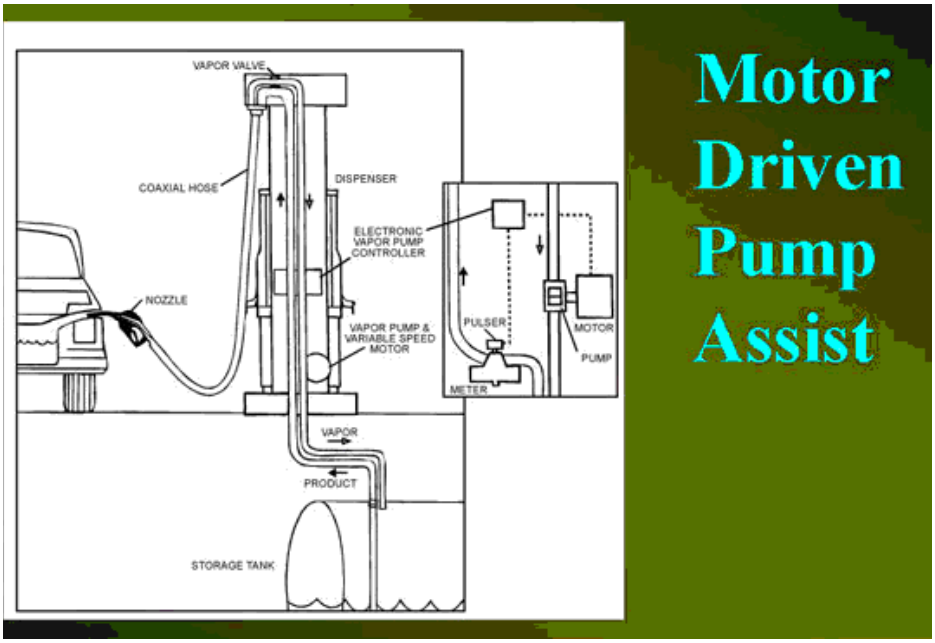


The diagram to the left shows product and vapor flow with an inverted coaxial hose used on most vacuum assist systems.

Below are photographs of booted and bootless nozzles used with vacuum assisted vapor recovery systems.

The photograph to the left illustrates the hose setup on the dispenser with a vacuum assist system.

The diagram below shows a Vacuum Assisted recovery system. The system pulls the vapors from the vehicle's fuel tank into the underground storage tank using a pump. The vapor pump may be fluid driven, motor driven, or electronically driven. The pump, or pumps, may be located anywhere along the path from the dispenser to the tank.



Below is a description of items to be inspected in the weekly visual inspection of a vacuum assisted system:

- ✓ Dispenser - On each dispenser, fueling instructions must be clearly displayed, with the appropriate telephone number, which will allow consumers to register any complaints regarding the refueling of vehicles.
- ✓ Spout - The spout must be tight and the spout tip should be uniformly round. On coaxial spouts, check vapor holes for damage and or obstructions.
- ✓ Faceplate - Faceplates and face cones must be intact, and should be smooth and uniform with the faceplate, capable of providing a tight seal at the vehicle fill pipe.
- ✓ Check valve - The vapor check valve must be checked to make sure it is operating.
- ✓ Mini-boots (vapor guards) - Check condition of mini-boot.
- ✓ Product Hose - Check the product hose for damage such as kinks, holes, rips, tears, and crushed or kinked sections.
- ✓ Whip hose - Check the whip hose for damage such as kinked or crushed sections. Hose retractor - Hose retractors keep hoses from dragging on the ground and should fully retract the hose when the nozzle is properly replaced in the dispenser. Hose retractors with weakened or broken springs should be repaired.
- ✓ Liquid Leaks - Inspect the entire length of the nozzle/hose assembly, from the dispenser outlet casting to the nozzle end, for liquid leaks. Most leaks will occur at joints or connections. Any nozzle/hose assembly with a leak needs to be tagged out of service and repaired.

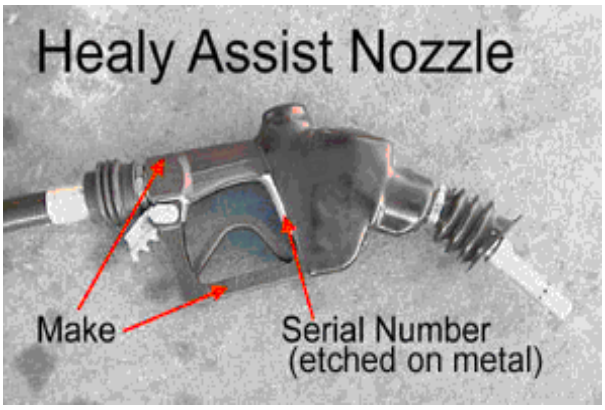
Nozzles on Healy Systems

Healy nozzles are used exclusively with Healy assist systems. Healy manufactures all of the components of a Healy assist system. As shown below, different information is found on the left and right side of the nozzle.

The Healy system is a vacuum assisted vapor recovery system with a dispenser based electrically driven vacuum pump, or a fluid driven, aspirated assist vapor recovery system.

The Healy/Franklin and the Healy Model 600 ORVR/800 Nozzle Systems utilize one vacuum pump per dispenser instead of one vacuum pump per fueling point. The vacuum pumps with these systems run at a constant speed, creating a constant vacuum level within the dispenser vapor piping, from the pump inlet to the nozzle. This vacuum is then regulated by the nozzle to maintain the correct air-to-liquid ratio.

Left side



Right side

ORVR COMPATIBLE HEALY NOZZLE

Healey has manufactured a nozzle, shown to the left, that is compatible with vehicular refueling vapor recovery (ORVR)

Below is a description of items to be inspected in the weekly visual inspection of a Healy assist system:

- ✓ Dispenser - On each dispenser, fueling instructions must be clearly displayed, with the appropriate telephone number, which will allow consumers to register any complaints regarding the refueling of vehicles.
- ✓ Spout - The spout must be tight and the spout tip should be uniformly round.
- ✓ Faceplate - Faceplates and face cones must be intact, and should be smooth and uniform with the faceplate, capable of providing a tight seal at the vehicle fill pipe.
- ✓ Check valve - The vapor check valve must be checked to make sure it is operating.
- ✓ Hose - Check the whip hose for damage such as kinks, holes, rips and tears.

The regulation requires that written weekly inspection records be kept for a period of five (5) years.

Thanks to California Air Resources Board, Stationary Source Division, Compliance Assistance Program
Vapor Recovery Interactive CD, August 2002; CARB Interactive CD w/ Stage I & II

Appendix A: For More Information

This section identifies UST program contacts and other resources that can help answer your questions and provide you with information about good UST management.

State Regulatory Agency Information

RI DEM
Office of Waste Management
235 Promenade Street
Providence, RI 02908
(401) 222-2797

WEB SITE: www.state.ri.us/dem

Internet Resources

Government Links

- U.S. Environmental Protection Agency's Office of Underground Storage Tanks Home Page: http://www.epa.gov/oust. To go directly to the compliance assistance section of the Home page go to: http://www.epa.gov/swerust1/cmplastc/index.htm. To go directly to EPA's listing of publications, go to: http://www.epa.gov/swerust1/pubs/index.htm.

Professional And Trade Association Links

- American Petroleum Institute (API): http://www.api.org/
- American Society of Testing and Materials (ASTM): http://www.astm.org/index.html
- Fiberglass Tank and Pipe Institute (FTPI): http://www.fiberglasstankandpipe.com
- NACE International - The Corrosion Society: http://www.nace.org/
- National Fire Protection Association (NFPA) : http://www.nfpa.org
- Petroleum Equipment Institute (PEI): http://www.pei.org
- Steel Tank Institute (STI): http://www.steeltank.com/
- Underwriters Laboratories (UL): http://www.ul.com

Free Informative Publications Available

The publications listed on the next pages are free and available from the U.S. Environmental Protection Agency (EPA). You can access these publications via EPA's website or you can call, write to, or fax EPA. You can download, read, or order documents from http://www.epa.gov/swerust1/pubs/index.htm. To order free copies or ask questions, call EPA's **toll-free** RCRA/Superfund Hotline at 800-424-9346 or call EPA's publication distributor's **toll-free** number at 800-490-9198 or fax 513-489-8695. You can also write and ask for **free** publications by addressing your request to EPA's publication distributor: National Service Center for Environmental Publications (NSCEP), Box 42419, Cincinnati, OH 45242. Fax-on-Demand allows you to call 202-651-2098 on your fax to access over 220 UST documents.

Document	Description
General Information about USTs and your requirements	
Catalog Of EPA Materials On USTs (January 2000)	An annotated list of UST materials, including ordering information. Most of the leaflets, booklets, videos, and software items listed provide UST owners and operators with information to help them comply with federal UST requirements.
Operating and Maintaining Underground Storage Tank Systems: Practical Help and Checklists (August 2000)	Contains brief summaries of the federal UST requirements for operation and maintenance (O&M), as well as practical help that goes beyond the requirements. Checklists prompt the user to look closely at what kinds of equipment are in use and how to keep that equipment working properly over the lifetime of the UST system. The manual provides record keeping forms that also help the UST owner and operator keep equipment operating properly.
Musts For USTs: A Summary Of Federal Regulations For Underground Storage Tank Systems (July 1995)	Plain language summary of federal UST requirements for installation, release detection, spill, overfill, and corrosion protection, corrective action, closure, reporting and record keeping.
Underground Storage Tanks: Requirements And Options (June 1997)	Trifold leaflet alerts UST owners and operators who are "nonmarketers" (who do not sell stored petroleum) of their responsibilities and choices for complying with Federal UST regulations.
Leak Detection Information	
Straight Talk On Tanks: Leak Detection Methods For Petroleum Underground Storage Tanks (September 1997)	Explains federal regulatory requirements for leak detection and briefly describes allowable leak detection methods.
Automatic Tank Gauging Systems for Release Detection: Reference Manual for Underground Storage Tank Inspectors (August 2000)	Contains detailed information on automatic tank gauging (ATG) systems, including information on various types of ATGs, information on certified detectable leak rate/threshold, test period duration, product applicability, calibration requirements, restrictions on the use of the device, vendor contact information, printing and interpreting reports, sample reports, and so on.
Getting The Most Out Of Your Automatic Tank Gauging System (March 1998)	Trifold leaflet provides UST owners and operators with a basic checklist they can use to make sure their automatic tank gauging systems work effectively and provide compliance with federal leak detection requirements.

Document	Description
Doing Inventory Control Right: For Underground Storage Tanks (November 1993)	Booklet describes how owners and operators of USTs can use inventory control and periodic tightness testing to temporarily meet federal leak detection requirements. Contains record keeping forms.
Manual Tank Gauging: For Small Underground Storage Tanks (November 1993)	Booklet provides simple, step-by-step directions for conducting manual tank gauging for tanks 2,000 gallons or smaller. Contains record keeping forms.
List Of Leak Detection Evaluations For UST Systems, 9th Edition (November 2001)	A summary of specifications, based on third-party certifications, for over 275 systems that detect leaks from USTs and their piping. Each summary provides information on such items as certified detectable leak rate/threshold, test period duration, product applicability, calibration requirements, restrictions on the use of the device, and so on.
Introduction To Statistical Inventory Reconciliation: For Underground Storage Tanks (September 1995)	Booklet describes how Statistical Inventory Reconciliation (SIR) can meet federal leak detection requirements (12 pages).
Closing Underground Storage Tanks Information	
Closing Underground Storage Tanks: Brief Facts (July 1996)	Trifold leaflet presents “brief facts” on properly closing USTs in order to comply with federal closure requirements**.**
Financial Responsibility Information	
Dollars and Sense: Financial Responsibility Requirements for Underground Storage Tanks (July 1995)	Booklet summarizes the “financial responsibility” required of UST owners and operators.
List of Known Insurance Providers for Underground Storage Tanks (January 2000)	Booklet provides UST owners and operators with a list of insurance providers who may be able to help them comply with financial responsibility requirements by providing suitable insurance mechanisms.
Financial Responsibility for Underground Storage Tanks: A Reference Manual (January 2000)	This detailed, comprehensive manual provides UST inspectors with the restrictions, limitations, and requirements of each financial responsibility mechanism provided in the federal UST regulations.

DELIVERY PERSON — AVOID OVERFILLS

- An **overfill alarm** is used for overfill protection at this facility.
- Do not tamper with this alarm in any attempt to defeat its purpose.
- When the tank is **90% full or is within 1 minute of being overfilled**, the **overfill alarm sounds and/or a light comes on or flashes**.
- **If you hear the alarm sound or see the light on or flashing,**

STOP THE DELIVERY IMMEDIATELY!

DELIVERY PERSON — AVOID OVERFILLS

- A **ball float valve** is used for overfill protection at this facility.
- Do not tamper with this device in any attempt to defeat its purpose.
- When the tank is **90% full**, or **30 minutes prior to when the product would overfill the tank**, the ball float will activate and the flow rate of the delivery will decrease noticeably.
- **When you notice a decrease in flow rate,**

STOP THE DELIVERY IMMEDIATELY!

DELIVERY PERSON — AVOID OVERFILLS

- An **automatic shutoff device** is used for overfill protection at this facility.
- Do not tamper with this device in any attempt to defeat its purpose.
- When the tank is **95% full or before the fittings on top of the tank are exposed to fuel**, the device will activate and slow down, and then stop, the delivery before the tank is overfilled.
- **When the automatic shutoff device activates,**

  STOP THE DELIVERY IMMEDIATELY!

Appendix C: Sample Emergency Numbers List

Important Contact Information

	Contact Name	Phone #
State UST Agency:	**Rhode Island DEM**	**(401) 222-2797 (or call the 24 hr Emergency Hotline at (401) 222-3070)**
Local UST Agency:		
Fire Department:		
Ambulance:		
Police Department:		
Repair Contractor:		
Other Contacts:		

✔ Release Response Checklist

- ❑ **Stop the release:** Take immediate action to prevent the release of more product. Turn off the power to the dispenser and "bag" the nozzle. Make sure you know where your emergency shutoff switch is located. Empty the tank, if necessary, without further contaminating the site.
- ❑ **Contain the spill or overfill:** Contain, absorb, and clean up any surface releases. Identify any fire, explosion or vapor hazards and take action to neutralize these hazards.
- ❑ **Call for help and to report suspected or confirmed releases:** Contact your local fire emergency response authority. Contact the DEM UST Section at **(401) 222-2797** immediately. After hours releases may be reported to the DEM 24-hour Emergency Response Hotline at (401) 222-3070.

Appendix D: Cathodic Protection Testing Form

(for use by a qualified cathodic protection tester)

TEST DATE:___/___/___ FACILITY NAME/ID:_____

NOTE: Provide site sketch as directed on the back of this page.

Cathodic Protection (CP) Tester Information:
Name: _____ Phone Number:_____
Address:_____
Testing must be conducted by a qualified CP tester. Indicate your qualifications as a CP tester:

Identify which of the following testing situations applies:

- ❑ Test required within 6 months of installation of CP system (installation date was ___/___/___)
- ❑ Test required at least every 3 years after installation test noted above
- ❑ Test required within 6 months of any repair activity – note repair activity and date below:

Indicate which industry standard you used to determine that the Cathodic Protection test criteria are adequate: _____

Cathodic Protection Test Method Used (check one)	
	100 mV Cathodic Polarization Test
	-850 mV Test (Circle 1 or 2 below) 1) Polarized Potential (“instant off”) 2) Potential with CP Applied, IR Drop Considered **Note: All readings taken must meet the -850 mV criteria to pass**
	Other Accepted Method (please describe):

Is the Cathodic Protection System working properly? Yes No (circle one)

My signature below affirms that I have sufficient education and experience to be a cathodic protection tester; I am competent to perform the tests indicated above; and that the results on this form are a complete and truthful record of all testing at this location on the date shown.

CP Tester Signature**:** _____ Date:_____

Site Sketch: Provide a rough sketch of the tanks and piping, the location of each CP test, and each voltage value obtained (use space below or attach separate drawing). Voltage readings through concrete or asphalt do not provide accurate readings and are

not acceptable. Perform sufficient testing to evaluate the entire UST system.

If CP System fails a test, you must have a corrosion expert fix the system. If your CP system does not meet the requirements for cathodic protection, you must have a ***corrosion expert*** investigate and fix the problem. A corrosion expert has additional training, skills, and certification beyond the corrosion tester who filled out the bulk of this form. A corrosion expert must be 1) accredited/certified by NACE International, the Corrosion Society, as a corrosion specialist or cathodic protection specialist, or 2) a registered professional engineer with certification or licensing in corrosion control. As long as you have the UST, be sure you keep a record that clearly documents what the corrosion expert did to fix your CP system.

Appendix E: Impressed Current 60 Day Inspection Form

FACILITY NAME:_____

AMP RANGE RECOMMENDED:_____

VOLTAGE RANGE RECOMMENDED:_____

Date	Your Name	Voltage Reading	Amp Reading	Is Your System Running Properly? (Yes/No)

- If the rectifier voltage and/or amperage output(s) are outside the recommended operating levels, contact a cathodic protection expert to address the problem.
- Never turn off your rectifier.
- **KEEP THIS RECORD FOR AT LEAST 3 YEARS BEYOND THE OPERATIONAL LIFE OF THE FACILITY**

Appendix F: Sample 30-Day Leak Detection Monitoring Record

(May be used for interstitial monitoring (IM) and automatic tank gauging (ATG))

LEAK DETECTION METHOD:_____

FACILITY NAME:_____

Date	Your Name	UST System (Tank & Piping) (Enter "N" for NO LEAK DETECTED or "Y" for a SUSPECTED OR CONFIRMED RELEASE)				
		UST #	UST #	UST #	UST #	UST #

If your leak detection system suspects or confirms a release, take appropriate release response actions. See Section 4.9 of the Workbook for appropriate actions.

KEEP THIS PIECE OF PAPER AND ANY ASSOCIATED PRINTOUTS ON FILE FOR AT LEAST 3 YEARS FROM THE DATE OF THE LAST ENTRY

Appendix G: Sample Daily Inventory Worksheet

FACILITY NAME: _____

YOUR NAME: _____

DATE: _____

TANK IDENTIFICATION					
Type of Fuel					
Tank Size in Gallons					
END STICK INCHES					
AMOUNT PUMPED	↓	↓	↓	↓	↓
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
Totalizer Reading					
TODAY'S SUM OF TOTALIZERS					
Previous Day's Sum of Totalizers					
AMOUNT PUMPED TODAY					
DELIVERY RECORD	↓	↓	↓	↓	↓
Inches of Fuel Before Delivery					
Gallons of Fuel Before Delivery (from tank chart)					
Inches of Fuel After Delivery					
Gallons of Fuel After Delivery (from tank chart)					
GALLONS DELIVERED (STICK) [Gallons "After" – Gallons "Before"]					
GROSS GALLONS DELIVERED (RECEIPT)					

Sample Monthly Inventory Record

MONTH/YEAR :_____/_____ TANK IDENTIFICATION & TYPE OF FUEL:_____

FACILITY NAME:_____

DATE OF WATER CHECK: _____ LEVEL OF WATER (INCHES):_____

DATE	START STICK INVENTORY (GALLONS)	GALLONS DELIVERED	GALLONS PUMPED	BOOK INVENTORY (GALLONS)	END STICK INVENTORY (INCHES)	END STICK INVENTORY (GALLONS)	DAILY OVER (+) OR SHORT (–) ["End" – "Book"]	INITIALS
1	(+)	(-)	(=)					
2	(+)	(-)	(=)					
3	(+)	(-)	(=)					
4	(+)	(-)	(=)					
5	(+)	(-)	(=)					
6	(+)	(-)	(=)					
7	(+)	(-)	(=)					
8	(+)	(-)	(=)					
9	(+)	(-)	(=)					
7	(+)	(-)	(=)					
8	(+)	(-)	(=)					
9	(+)	(-)	(=)					
10	(+)	(-)	(=)					
11	(+)	(-)	(=)					
12	(+)	(-)	(=)					
13	(+)	(-)	(=)					
14	(+)	(-)	(=)					
15	(+)	(-)	(=)					
16	(+)	(-)	(=)					
17	(+)	(-)	(=)					
18	(+)	(-)	(=)					
19	(+)	(-)	(=)					
20	(+)	(-)	(=)					
21	(+)	(-)	(=)					
22	(+)	(-)	(=)					
23	(+)	(-)	(=)					
24	(+)	(-)	(=)					
25	(+)	(-)	(=)					
26	(+)	(-)	(=)					
27	(+)	(-)	(=)					
28	(+)	(-)	(=)					
29	(+)	(-)	(=)					
30	(+)	(-)	(=)					
31	(+)	(-)	(=)					

TOTAL GALLONS PUMPED > _____ **TOTAL GALLONS OVER OR SHORT >** _____

LEAK CHECK:
Drop the last two digits from the **TOTAL GALLONS PUMPED** number and enter here: _____ + 130 =

Compare these numbers

_____ gallons

Is the "TOTAL GALLONS OVER OR SHORT" **LARGER** than "LEAK CHECK" result? **YES** **NO** (circle one)

If your answer is "YES" for 2 MONTHS IN A ROW, **notify the DEM** immediately.

KEEP THIS PIECE OF PAPER ON FILE FOR AT LEAST 3 YEARS

Appendix H: Manual Tank Gauging Record For Waste Oil Tanks Less Than 2000 Gallons

MONTH _____ YEAR _____
TANK IDENTIFICATION: _____
PERSON COMPLETING FORM:_____
FACILITY NAME:_____
FACILITY ID #_____

Circle your tank size, test duration, and weekly/monthly standards in the table below:

Tank Size	Minimum Duration Of Test	Weekly Standard (1 test)	Monthly Standard (4-test average)
up to 550 gallons	36 hours	10 gallons	5 gallons
551-1,000 gallons (also requires periodic tank tightness testing)	36 hours	13 gallons	7 gallons
1,001-2,000 gallons (also requires periodic tank tightness testing)	36 hours	26 gallons	13 gallons

Compare your weekly readings and the monthly average of the 4 weekly readings with the standards shown in the table on the left.

If the calculated change exceeds the weekly standard, the UST may be leaking. Also, the monthly average of the 4 weekly test results must be compared to the monthly standard in the same way.

If either the weekly or monthly standards have been exceeded, the UST may be leaking. As soon as possible, call the DEM to report the suspected leak and get further instructions.

Start Test (month, day, and time)	First Initial Stick Reading	Second Initial Stick Reading	Average Initial Reading	Initial Gallons (convert inches to gallons) [a]	End Test (month, day, and time)	First End Stick Reading	Second End Stick Reading	Average End Reading	End Gallons (convert inches to gallons) [b]	Change In Tank Volume In Gallons + or (—) [a—b]	Tank Passes Test (circle YES or NO)
Date: Time: AM/PM					Date: Time: AM/PM						Y N
Date: Time: AM/PM					Date: Time: AM/PM						Y N
Date: Time: AM/PM					Date: Time: AM/PM						Y N
Date: Time: AM/PM					Date: Time: AM/PM						Y N
								To see how close you are to the monthly standard, divide the sum of the 4 weekly readings by 4 and enter result here >			Y N

KEEP THIS PIECE OF PAPER ON FILE FOR AT LEAST 3 YEARS

Appendix I: Registration Form

STATE OF RHODE ISLAND
UNDERGROUND STORAGE TANK REGISTRATION FORM
FOR EXISTING TANKS, REPLACEMENT TANKS, AND
INSTALLATION OF NEW TANKS

DEM USE ONLY

Registration #
Town Code
Sub Code
Data Entry Initials

CHECK ALL THAT APPLY ☐ New Facility ☐ Replacement Facility ☐ Never Registered
☐ Previously Registered Facility ☐ Transfer of Ownership/New Owner

I. FACILITY INFORMATION

Name of Facility:			
Facility Address:			
City:	State:	Zip:	Phone: ( )
Contact Person:	Job Title:		
Assessor's Plat:	Assessor's Lot:		

II. PROPERTY OWNER INFORMATION

Name of Owner:			
Owner's Address:			
City:	State:	Zip:	Phone: ( )
Contact Person:	Job Title:		

Ownership (please check one):
☐ Corporate/Ltd. Partnership ☐ Municipal ☐ State ☐ Individual/Partnership
☐ Federal (GSA Facility ID# _____)
☐ Other (please specify): _____ Date Ownership Acquired:
Date Operation Commenced:

III. FACILITY OPERATOR INFORMATION (☐ Same as Property Owner)

Name of Operator:			
Operator's Address:			
City:	State:	Zip:	Phone: ( )
Contact Person:	Job Title:		

Ownership (please check one):
☐ Corporate/Ltd. Partnership ☐ Municipal ☐ State ☐ Individual/Partnership
☐ Federal (GSA Facility ID# _____)
☐ Other (please specify): _____ Date Operation Commenced:

IV. TANK OWNER INFORMATION (☐ Same as Property Owner ☐ Same as Facility Operator)

Name of Tank Owner:			
Mailing Address:			
City:	State:	Zip:	Phone: ( )
Contact Person:	Job Title:		

Ownership (please check one):

☐ Corporate/Ltd. Partnership ☐ Municipal ☐ State ☐ Individual/Partnership

☐ Federal (GSA Facility ID# _____)

☐ Other (please specify): _____ Date Ownership Acquired:

V. FACILITY CLASSIFICATION

☐ (A) Farm	☐ (ES) Education/State	☐ (ET) Education/Town
☐ (EP) Education/Private	☐ (P) Private Residence	☐ (M) Multiple Residence
☐ (C) Commercial	☐ (I) Industrial	☐ (G) Gasoline Station
☐ (S) State Government	☐ (F) Federal Government	☐ (T) City/Town Government
☐ (FD) Nonprofit Fire District	☐ (O) Other (please specify):	

VI. REGULATORY INFORMATION

Does the Facility have a drinking water well? If **Yes**, how far from the nearest tank? _____ft.		☐ YES	☐ NO
Is the facility within 400 feet of any public water supply wells or reservoirs?		☐ YES	☐ NO
Is the facility within 200 feet of any facility served by a private well?		☐ YES	☐ NO
Is the facility in or adjacent to State-regulated freshwater wetlands (including, but not limited to, swamps, ponds, marshes, watercourses, or 100-year floodplain)? If **YES**, Application or Complaint Number (if available):	☐ Unknown	☐ YES	☐ NO
Have any leaks or spills ever occurred at this facility? If **Yes**, an incident report must be attached to this application.	☐ Unknown	☐ YES	☐ NO
Are rcovery wells installed around this facility?		☐ YES	☐ NO
Are groundwater monitorin wells installed around this facility?		☐ YES	☐ NO
Does the facility have financial responsibility? If **Yes**, Insurer:_____ Policy Number:		☐ YES	☐ NO

VII. TANK & PIPING INFORMATION (If more than 5 tanks – copy pages 3 & 4 and complete for additional tanks)

TANK	Tank No. 1	Tank No. 2	Tank No. 3	Tank No. 4	Tank No. 5
Date of Installation (month/day/year) (If unknown, please enter 99)	/ /	/ /	/ /	/ /	/ /
Tank Capacity in Gallons					
Tank Status: E = In Use C = Permanently Closed T = Temporarily Closed A = Abandoned					
Material of Construction:					
(01) steel	☐	☐	☐	☐	☐
(04) fiberglass reinforced plastic	☐	☐	☐	☐	☐
(27) steel-fiberglass-reinforced plastic	☐	☐	☐	☐	☐
(20) double-wall steel	☐	☐	☐	☐	☐
(23) double-wall fiberglass (reinforced plastic)	☐	☐	☐	☐	☐
(31) alcohol resistant	☐	☐	☐	☐	☐
(06) concrete	☐	☐	☐	☐	☐
(99) unknown	☐	☐	☐	☐	☐
other (specify)	☐	☐	☐	☐	☐
External Corrosion Protection:					
(11) cathodic protection	☐	☐	☐	☐	☐
(15) asphalt/tar coated	☐	☐	☐	☐	☐
(97) fiberglass/plastic/epoxy coated	☐	☐	☐	☐	☐
(98) none	☐	☐	☐	☐	☐
(99) unknown	☐	☐	☐	☐	☐
other (specify)	☐	☐	☐	☐	☐
Internal Protection:					
(17) internal lining	☐	☐	☐	☐	☐
(18) wear plate	☐	☐	☐	☐	☐
(19) submerged fill tube	☐	☐	☐	☐	☐
(98) none	☐	☐	☐	☐	☐
(99) unknown	☐	☐	☐	☐	☐
other (specify)	☐	☐	☐	☐	☐
Piping:					
(R) pressurized	☐	☐	☐	☐	☐
(I) suction	☐	☐	☐	☐	☐
other (specify)	☐	☐	☐	☐	☐
Piping Construction:					
(28) equipped with secondary containment	☐	☐	☐	☐	☐
(01) bare steel	☐	☐	☐	☐	☐
(04) fiberglass-reinforced plastic	☐	☐	☐	☐	☐
(20) double wall steel	☐	☐	☐	☐	☐
(23) double wall fiberglass-reinforced plastic	☐	☐	☐	☐	☐
(29) flexible single wall	☐	☐	☐	☐	☐
(30) flexible double wall	☐	☐	☐	☐	☐
(31) alcohol resistant	☐	☐	☐	☐	☐
(32) cathodic protection	☐	☐	☐	☐	☐
(09) coated/wrapped	☐	☐	☐	☐	☐
(99) unknown	☐	☐	☐	☐	☐
other (specify)	☐	☐	☐	☐	☐

TANK	Tank No. 1	Tank No. 2	Tank No. 3	Tank No. 4	Tank No. 5
Monitoring & Leak Detection System: (Check all that apply)					
line leak detection (piping)	☐	☐	☐	☐	☐
sump monitoring (piping)	☐	☐	☐	☐	☐
continuous in-tank gauging system	☐	☐	☐	☐	☐
continuous interstitial space tank monitoring	☐	☐	☐	☐	☐
groundwater monitoring wells	☐	☐	☐	☐	☐
precision test (tank & piping) (provide copies)	☐	☐	☐	☐	☐
other (specify)	☐	☐	☐	☐	☐
Overfill Prevention Equipment:					
high-level alarm	☐	☐	☐	☐	☐
flow restriction float vent valve	☐	☐	☐	☐	☐
automatic shut-off valve	☐	☐	☐	☐	☐
other (specify)	☐	☐	☐	☐	☐
Spill Prevention Equipment:					
spill containment basin	☐	☐	☐	☐	☐
shear valve/impact valve (pressurized piping)	☐	☐	☐	☐	☐
check valve (suction piping)	☐	☐	☐	☐	☐
other (specify):	☐	☐	☐	☐	☐
Substance Stored or to be Stored (mark only one box):					
(02) heating oil (No. 2) - consumed on site	☐	☐	☐	☐	☐
(2C) heating oil (No. 2) - consumed off site	☐	☐	☐	☐	☐
(04) heating oil (No. 4) - consumed on site	☐	☐	☐	☐	☐
(4C) heating oil (No. 4) - consumed off site	☐	☐	☐	☐	☐
(05) heating oil (No. 5) - consumed on site	☐	☐	☐	☐	☐
(5C) heating oil (No. 5) - consumed off site	☐	☐	☐	☐	☐
(06) heating oil (No. 6) - consumed on site	☐	☐	☐	☐	☐
(6C) heating oil (No. 6) - consumed off site	☐	☐	☐	☐	☐
(1D) light diesel fuel (No. 1-D)	☐	☐	☐	☐	☐
(2D)medium diesel fuel (No. 2-D)	☐	☐	☐	☐	☐
(01) number 1 kerosene	☐	☐	☐	☐	☐
(UG) regular/midgrade unleaded gasoline	☐	☐	☐	☐	☐
(SU) super unleaded gasoline	☐	☐	☐	☐	☐
(GH) gasohol (alcohol-gasoline blend)	☐	☐	☐	☐	☐
(DS) diesel	☐	☐	☐	☐	☐
(AG) aviation gasoline	☐	☐	☐	☐	☐
(JA) jet A	☐	☐	☐	☐	☐
(WO) waste oil	☐	☐	☐	☐	☐
(MO) motor oil	☐	☐	☐	☐	☐
(MX) mixture (specify)	☐	☐	☐	☐	☐
hazardous material (specify) CERCLA number: CAS number:	☐	☐	☐	☐	☐
(98) empty/no contents	☐	☐	☐	☐	☐
(99) unknown	☐	☐	☐	☐	☐
other (specify)	☐	☐	☐	☐	☐

VIII. FACILITY SITE PLAN

EXISTING FACILITY

If a detailed plan is not available, this space is provided for a site plan drawing of all equipment locations for facilities **already in existence** (*see requirements in Rule 6, Facility Registration and Notification, of the RI DEM Rules and Regulations For Underground Storage Facilities Used For Petroleum Products and Hazardous Materials*).

NEW FACILITY

If a new facility, a set of detailed engineering plans certified by a Registered Professional Engineer and project specifications including operation and maintenance requirements is required with this application (*see Rule 6, Facility Registration and Notification, of regulations*). ***All new facilities cannot use this space, separate installation plans must be submitted with this application.***

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Signature Date Print Name and Title

Please specify: ☐ Owner ☐ Operator ☐ Property Owner

rev. 10/02

UNDERGROUND STORAGE TANK (UST) REGISTRATION FORM

If you are a tank owner, operator or own property (owner/operator) where a tank is located, you are considered responsible for the UST located at the facility. Please fill out the attached form indicating all USTs located at the facility that are currently in use or that will be brought into use, and which contains or will contain a "regulated substance".

NEW AND REPLACEMENT TANKS AND/OR PRODUCT PIPING

An owner/operator must apply for a certificate of registration before commencing construction. Upon receipt and review of a complete application and installation plans, written approval will be issued.

No person shall commence construction of a new facility, replacement UST system, or a substantial modification to a UST system (including product piping replacement) until a written letter of approval has been issued authorizing the installation.

REGISTRATION FEE

Upon receipt of a completed application, the Department shall send an invoice for the payment of registration fees. Once the payment is received, a certificate of registration will be issued to the facility.

All owners/operators who hold valid certificates of registration shall pay an annual registration fee of $75.00 for each underground storage tank so registered, except:

- Owners/operators of one, two or three family dwellings with tanks used for storing fuel for residential heating purposes (consumed solely on site);
- Owners/operators of farm tanks storing fuel for heating purposes (consumed solely on site);
- Federal, state and local governments;
- Nonprofit fire districts.

HOW TO COMPLETE REGISTRATION FORM

Print in ink or type all items. Assign each tank a number and maintain that number consistently throughout this form and site plan. In Section VII of this registration form, mark each box with an "x" if it is applicable to the associated tank.

PLEASE MAIL COMPLETED REGISTRATION FORMS TO:

Department of Environmental Management
Division of Waste Management
Underground Storage Tank Section
235 Promenade Street
Providence, Rhode Island 02908

If you have any questions, please call the Underground Storage Tank Section at (401) 222-2797 for assistance.

Appendix J: Transfer of Certification of Registration

This document must be filled out by the new owner
<u>This document must be notarized</u>

FACILITY INFORMATION:

Facility Identification Number: _____

Facility Name: _____

Facility Address: _____
_____

Telephone Number: _____

NEW OWNER(S) INFORMATION: ☐ TANK OWNER ☐ PROPERTY OWNER

New Owner(s) Name: _____

New Owner(s) Address: _____
_____

Telephone Number: _____

Proposed Transfer Date: _____

CERTIFICATION:

Please put an "X" in the box that applies:

I have read the Original Application for a Certification of Registration and:

☐ **Believe, to the best of my knowledge, that there has been no substantial modification in the operations of the facility since the certificate was issued.**

☐ **Believe, to the best of my knowledge, that there have been substantial modifications in the operation of the facility since the certification was issued; and I have included a description of all the changes that have occurred since the certificate was issued.**

Owner's Signature: _____
☐ **TANK OWNER** ☐ **PROPERTY OWNER**

Notary Public Signature/Seal: _____

Reminder of Typical Ongoing Testing Requirements for UST Systems

(Keep the appropriate records of these tests!)

Spill Prevention and Overfill Protection		
Type	**Activity**	**Minimum Frequency**
Spill Prevention	**Keep Spill Bucket Free of Product, Water, and Debris**	At all times
Overfill Alarm, Automatic Shutoff Device, Ball Float Valve, Vent Alarm	**Inspect for Proper Operation**	Annually
Release Detection - Activities may vary on the type(s) of release detection you use		
Release Detection	**Activity**	**Minimum Frequency**
Automatic Tank Gauging, and Interstitial Monitoring	**Release Detection Monitoring**	Every 30 days
Inventory Control	**Inventory Measurements**	Daily
	Reconcile Daily Inventory Control Measurements	Once per month
	Check Tank for Water	Once per month
	Tank Tightness Test	Every 2 years
Manual Tank Gauging (for Waste Oil and Emergency Generator USTs)	**Inventory Measurements**	Weekly
	Reconcile Weekly Manual Tank Gauge Tests	Every 4 weeks
	Tank Tightness Test (if required)	Every Year
Line Leak Detector	**Test to Demonstrate Proper Function of Line Leak Detector**	Every 12 months
Line Tightness Test	**Line Tightness Test - for pressurized piping**	Every 12 months
	Line Tightness Test - for suction piping	Every 3 years
For all Release Detection	**Periodic Calibration and Maintenance of Release Detection Equipment**	Per Manufacturer's Instructions
If you have Cathodic Protection - Activities vary depending on the type of cathodic protection		
Cathodic Protection	**Activity**	**Minimum Frequency**
Impressed Current	**Rectifier Inspection** - keep records for at least 3 years beyond the operational life of the facility	Every 60 days
For both Impressed Current and Galvanic (Sacrificial) Anodes	**Cathodic Protection Test** - performed by a qualified cathodic protection tester - keep records for at least 3 years beyond the operational life of the facility	Within 6 months of Installation
		Every 2 years for impressed current system Every 3 years for sacrificial anode system
		Within 6 months of any repairs to your UST system
If you have Internal Lining		
Internal Lining	**Activity**	**Minimum Frequency**
Internally Lined Steel Tank	**Internally Lined Tank Inspection -** not required if combined with cathodic protection and tank passed an assessment before adding cathodic protection - recommend keeping a record of the inspection	Within 10 years of installation
		Every 5 years thereafter