

Ensuring Your Underground Tanks Are Protected 2nd Edition w/ Revisions

This Fuel Tip is just a reissue of the one we sent out on March 21st, 2014. No information has been changed but new information has been added. Of note, new instructions are now included to help you add the Anode, Regulator, and Gas Check category types if you do not already have those category types. Also below is the link to the source Cathodic Protection Manual from the Propane Education and Research Council.

http://www.propanesafety.com/uploadedFiles/Safety/Workforce_Training_programs/Additional_Workforce_Training/Cathodic%20Protection%20Manual.pdf

Underground tanks and above ground tanks are essentially identical, aside from the minor aesthetical differences: namely, you can see an above ground tank and an underground tank is hidden out of sight. So other than digging a big hole and dropping my tank in it, are there other necessary preparations one must take when setting up an underground propane tank? Absolutely! And one such special note on underground tanks I wish to talk about in this tip is Cathodic Protection and Sacrificial Anodes. RCC can help you track your anode readings and schedule future tests.

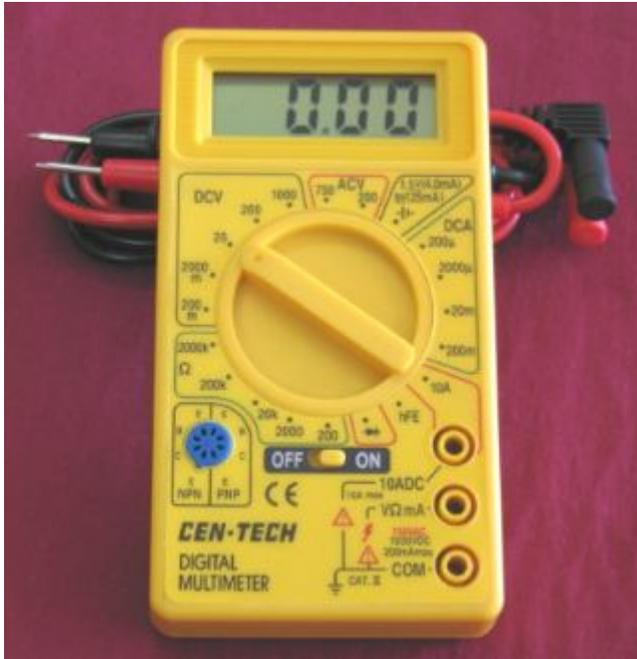
First, what is a sacrificial anode? Well, if you are implementing underground tanks, hopefully you already know what a sacrificial anode is. But for those of you that aren't familiar or just need a refresher course, here is a quick rundown.

Warning: Science ahead

An anode, in the most elementary terms, is a hunk of metal. And when linked to another metal called a cathode, this anodic metal will shower the cathode with so many electrons, the cathodic metal won't suffer from the ill effects of the ever present underground electrical current. It will not corrode and rust away. The sacrificial anode on the other hand, will eventually corrode away into nothing; thus the name "sacrificial anode". But that's ok. That's its purpose.

So how do we apply this to the fuel industry? Well, if you bury a propane tank, it will be susceptible to those adverse effects of the ever present underground electrical current. Eventually, the tank would corrode and rust. The tank would start to leak. "Oh, good! A leak!" said no one ever.

Enter the sacrificial anode. If we link an appropriate anodic metal the underground tank and bury it with the tank, it will make the tank cathodic and protect it from corrosion and rust; thus the term "cathodic protection". We can seemingly completely stop the corrosion process of a steel propane tank with a little bit of science and a sacrificial anode. If the science explanation is too much, black magic voodoo is another reasonable explanation.



Once a proper cathodic protection system is in place it must be tested regularly: 1 year after initial installation and then every 3 years. Testing procedures can vary but the most popular form of testing is by measuring the electrical current in the ground surrounding the tank with a voltmeter (above). **You should consult your local regulations and guidelines for acceptable testing procedures.**

Using a voltmeter to measure the voltage around an underground tank will render results ranging from -1.80 to 0.00 if you are testing against a copper electrode. Any reading between -1.80 and -0.85 implies that your tank is cathodically protected from rust and corrosion. Congratulations! Any readings outside of that range would imply your tank is not properly protected. Boo.

So we've tested. We have our readings. What do we do with them? We can use RCC to track the readings.

First, make sure a category is properly set up for Anode tests. It should look something like this in category maintenance. Most notably, the "Cat Type" needs to be set to "Anode". And the "Recurrence" needs to be set to 36 months.

Category Maintenance: Rural Gas Company, Inc.

File Edit

General Tax Schedule

Category: EANO... Anode Test

Stmt Dtl/Summ: Detail	Cat Type: Anode
Prc Code: 0	Product Type: empty
Min Amt: []	Cyl Type: []
Extra Fee Cat: []	Maintenance Type: Equipment
<input type="checkbox"/> Budget	Group Type: All
<input type="checkbox"/> Tank Turns	Recurrence: 36.0
<input type="checkbox"/> Inv Req'd	Cycle Units: Months
<input type="checkbox"/> Extra Fee by Qty	
<input checked="" type="checkbox"/> Check Capacity	
Mtr Estimate: Yes	
Extra Fee: .00	

If the Anode category type is not available in your system, you can add it by going to **Setup Options** under **Utilities** on the RCC front page. On the "General" tab, set the **application** to "Fuel Distribution" and the **function** to "Category Types". In the small, unlabeled box, choose a number that isn't currently in use (it'll ask if you want to add record). Then for the description, type "Anode" and for the File Value,

use the letter "A". Likewise, these instructions can be used for adding other category types you would like to track, such as regulators.

General Tables

General Info

Application: Fuel Distribution

Function: Category Types

Sub-Function: No Function sub-keys

2

Language: English

Description: Anode

File Value: A

Now, the Anode category type will be available in the Category Maintenance section. Second, when you are ready to entering your test results in RCC, go into Enter Sales and open up a batch. Bring up the customer and location the reading was for. Then go to the "Gas Check" tab.

Enter Sales Batch info

Tran #	1	Acct #	68	Active
Cust ID	SMIMA1	Name	Mark & Jane Smith	
SALE		Addr	11588 45th Ave NE	
Location	1	Div Instr	Sec 14	Eastern Melville
Inv #		Comment	Date	1st time
Date	3/16/2014			

Drv/Sls	1	Joe Johnson
Truck	1	'98 Ford 350

Summary | Detail | Taxes | Eq Transfer | Note | **Gas Check**

Type	Cat	Inventory #	Quantity	Fill %	Unit
NF	EANO			0	

or

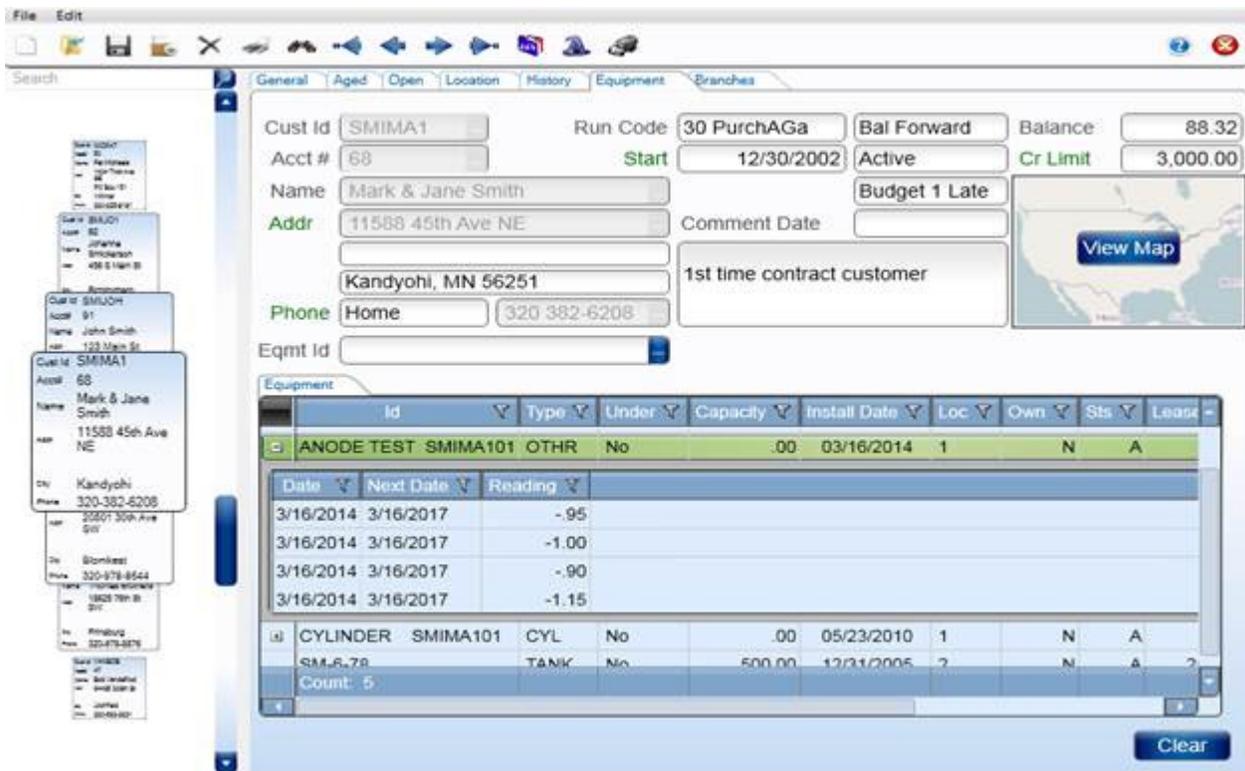
Here you can enter your Anode Test category and the tank the test should be linked to. Also to the right you will find a green hyperlink that reads "Anode Test". This will take you to the screen were you can enter your readings.

Summary	Detail	Taxes	Eq Transfer	Note	Gas Check
Category	EAN0		Link to	560316	
Pressure Test	System Leak Test	Regulator		Anode test	
Start Pressure	Start Pressure	<input type="checkbox"/>		<input type="checkbox"/>	
End Pressure	End Pressure	Anode test		Y	
Time Held	Time Held	Gas check		<input type="checkbox"/>	
<input type="checkbox"/> Pressure Held	<input type="checkbox"/> Pressure Held	Piping check		<input type="checkbox"/>	
<input type="button" value="Scan"/> <input type="button" value="Header"/> <input type="button" value="Detail"/> <input type="button" value="Back"/> <input type="button" value="Next"/> <input type="button" value="Finish"/> <input type="button" value="Clear"/>					

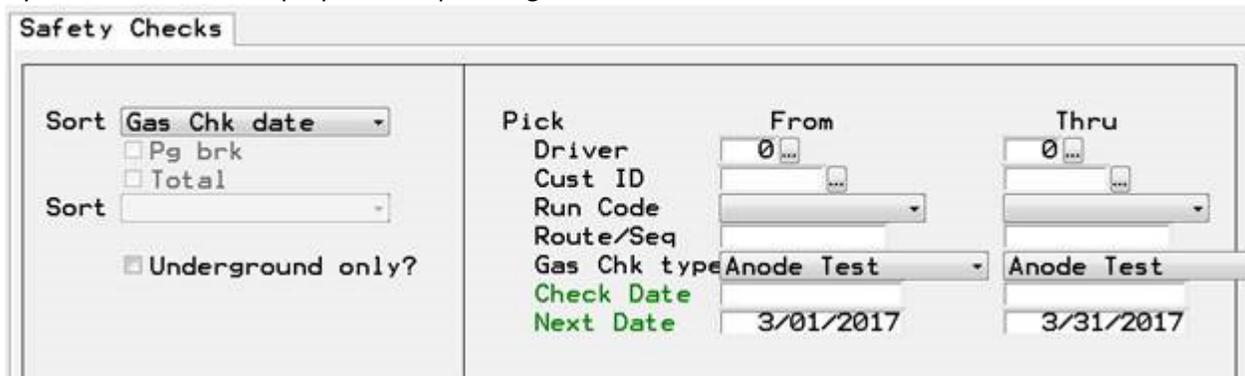
The Reading Date will be auto-populated with today's date. The Next Date will be auto-populated with a date dependent on the recurrence you set up in Category Maintenance. In this example, it's 3 years later. However, if this is the initial reading, you will want to change the Next Date to a date one year in the future. There are also 4 fields for you to enter readings. Each Anode Test should have 4 readings REGARDLESS of how many anode bags are connected to the tank. The four readings should be taken from each side of the tank and if one of the readings falls outside the -1.8 to -0.85 range, the tank is not protected. RCC will even prompt you to let you know that your reading is outside the safety range.

Anode				
Reading Date	3/16/2014		Next Date	3/16/2017
Bag 1	Bag 2	Bag 3	Bag 4	
Reading	-0.95	-1.00	-0.90	-1.15
<input type="button" value="Return"/>				

Once you post the Anode check, an equipment item will be created linked to the tank. The readings will show in Inquiry for quick reference, and reports are available to help schedule necessary anode readings.



Finally, we can view the results, history, and upcoming schedule for anode tests via the Reports >Equipment> Safety Check Report. The report done under the parameters below will list all anode tests by date so that we can prepare for upcoming tests.



If you have other personnel in your office that you would like to add to our list server to get these tips – you can use this link to read more about how to get them signed up: <http://www.rccbi.com/registration.aspx>
 If you wish to unsubscribe to this free service of RCC you can send an email to: fdslistservice-unsubscribe@lists.rccbi.com