STATE OF MAINE

DEPARTMENT OF ENVIRONMENTAL PROTECTION

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To: Automatic Tank Guage Vendors and other interested parties

From: Automatic Tank Guage and Volumetric Tank Tightness Testing Committees of the National Workgroup on Leak Detection Evaluations (NWLDE)

Date: April 28, 1997

Subject: Can Automatic Tank Guages be used to test tanks with low levels (~50%) of product?

Several Automatic Tank Gauge (ATG) vendors have contacted the NWLDE regarding using their ATG equipment to test at levels lower then the levels used during evaluation of their equipment. At the March 14, 1997 meeting of the NWLDE, the use of automatic tank gauges (ATGs) to test underground tanks at low levels was discussed. After some discussion the following was decided.

If a vendor would like their ATG equipment to be listed for testing at levels below those used during equipment evaluation, then the following requirements must be made.

1. The equipment must have been evaluated both at 90-95% and 50% full. At least 12 tests should be done at each level.

2. The evaluator must review the results of the evalution and complete the additional calculations described in Section 7.3.5 (Test for Effect of In-Tank Product Volume) of E.P.A.'s standard protocol for evaluating ATGs. The results of this test must indicate that the equipment performed equally well at all levels, The results of all seven steps of this calculation must be submitted to the NWLDE.

3. The evaluator must inspect the model of probe used in the evaluation and determine the minimum depth of product necessary for the probe to function properly. This determination must be based on the technical and physical limitations of the equipment(e.g. temperature, product level and water level sensor location). An engineering drawing of probe construction that accurately shows the location of these sensors should be included with the letter from the evaluator.

4. A revised Results certification that includes the approved product level range must be signed and submitted by the evaluator.

If you or your evaluator have any questions about these requirements please contact one of the three people listed below.

- Ellen Van Duzee — 208-378-5762
  vanduzee.ellen@epamail.epa.gov — 208-378-5744 (fax)
- Beth DeHaas — 207-287-7883
  beth.dehaas@state.me.us — 207-287-7826 (fax)
- Russ Brauksieck — 518-457-4351
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United States Environmental Protection Agency

Meeting Summary of the National Work Group on Leak Detection Evaluations Whitefish, MT 11-12 September 1997

Office of Underground Storage Tanks

Members Present

Lamar Bradley
Russ Brauksieck
Beth DeHaas
Bill Faggart
Shahla Farahnak
Curt Johnson
Mike Kadri
Jeff Tobin
Ellen Van Duzee
David Wiley

Day 1

4. At last meeting, it was decided that ATG vendors could have their equipment listed for use with tank volumes under 50% if some additional data were provided to validate use at lower levels. Memo was sent out on April 28 to ATG companies. To date, no vendor has appeared overly eager to seek such a listing. The work group agreed that education is needed to alert inspectors to fact that currently tests performed at volumes under 50% have not been demonstrated as being valid.

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Date: March 6, 2001

To: Russ Brauksieck
cc: Beth DeHaas, John Reeder, James Mitchell (USTest)

From: Ken Wilcox

Re: Low-level Precision Test Matrix

Dear Russ:

I received you e-mail regarding the low level precision testing. I appreciate the fact that you have moved ahead as this will certainly speed thing up. Based on our phone conversation, we are currently planning to follow the matrix shown in Table 1, which includes both high level (90-95%) and low level (50%) tests.

The proposed testing described in Table 1 includes 24 tests at high level using the same heat/cool/transfer pattern that is specified in the Tank Tightness Test protocol. Twelve pairs of additional tests at 50% have been inserted between each pair of high-level tests that are obviously not part of the standard TTT protocol. A total of 48 tests will be conducted which will look essentially like two back-to-back ATGS evaluations.

The only deviation from the standard TTT test set would be that conducting the two low level tests increases the time between emptying the tank to low level and refilling with new conditioned fuel. In my opinion, this should not present a problem, as the filling to 90-95% is the key event in the TTT evaluation. In any case, the TTT protocol does not specify the time between emptying and filling of the tank.

It is my understanding from our conversation that the data analysis will include a comparison of the performance of the method at 9%% and 50%. If there is no statistical difference, USTest will be allowed to test over the full range of product levels within the limitations of their hardware. For them the minimum level would be 16" or around 10% of the tank volume. This is critical for them so if there is any uncertainty on this issue we need to resolve it as soon as possible.

An additional issue that you may want to consider is whether or not testing at less than 10% full is too low. This seems to be a policy issue that could be specified by each State regardless of the actual test levels. We are just attempting to show whether or not the system will work at the lowest possible level. If it seems to be too low, can you suggest a level that might be more appropriate?

Regarding the issue of low-level stabilization time, we are allowing thirty minutes to an hour for stabilization time for the USTest evaluation at the low level. It could possibly be shorter in many instances, particularly when tank usage is low. Since this is a precision test, a test operator is always present to make determinations on how the test is

proceeding. The level data and leak rate data are displayed graphically in real time so that trends are easily identified as the test is in progress. The operator might be reasonably expected to make decisions on when to start the test and how long to continue until consistent data have been collected.

I discussed the stabilization at 50% with Jerry Flora. He does not feel that there should be any particular limitation here because at actual operating stations the usage usually occurs over an extended time period as fuel is sold. Under these conditions, it is likely that the tank will be stable right from the start. This is different from the test site where around 40-45% of the fuel is removed within an hour or so. The question from USTest is likely to be whether or not the test operator will be allowed to use his judgment as to when to start the test? We may need to consider starting tests earlier if the stabilization time is considered to be fixed.

As a final note, the USTest system has already been approved for low level testing on the 10,000-gallon tanks at our old test site. Because of fuel capacity limitations, these tests were conducted at around 20 inches and 67 inches, resulting in high-level limitations that have caused considerable difficulty for USTest. This proposed evaluation is intended to resolve these issues as well as increase the maximum testable tank size to 20,000 gallons. If these objectives are not met, the entire effort will have been largely wasted. It is accordingly imperative that we resolve an issues as quickly as is practical.

I hope that this proposed approach will be satisfactory. Please let me know at your earliest convenience whether or not we should proceed as indicated. Thank you in advance for all of your efforts. I hope to spend some time with you in Albuquerque.

Sincerely,

KEN WILCOX ASSOCIATES, INC.

H. Kendall Wilcox, President

Proposed Matrix for Low-level Tank Tightness Evaluations

Tightness Test Matrix			Added Low-level Tests			
First Pair			Second Pair			Temp.
Test No.	Prod Level[1]	Leak Rate[2]	Test No.	Prod Level	Leak Rate[2]	dT
1	90-95%	LR2	3	50%	LR3	T2
2	90-95%	LR1	4	50%	LR4	T2
Empty/fill cycle between each pair of 90-95% tests						
5	90-95%	LR3	7	50%	LR1	T3
6	90-95%	LR2	8	50%	LR4	T3
Empty/fill cycle between each pair of 90-95% tests						
9	90-95%	LR1	11	50%	LR2	T3
10	90-95%	LR4	12	50%	LR3	T3
Empty/fill cycle between each pair of 90-95% tests						
13	90-95%	LR3	15	50%	LR2	T1
14	90-95%	LR1	16	50%	LR4	T1
Empty/fill cycle between each pair of 90-95% tests						
17	90-95%	LR2	19	50%	LR1	T1
18	90-95%	LR4	20	50%	LR3	T1
Empty/fill cycle between each pair of 90-95% tests						
21	90-95%	LR4	23	50%	LR2	T3
22	90-95%	LR1	24	50%	LR3	T3
Empty/fill cycle between each pair of 90-95% tests						
25	90-95%	LR1	27	50%	LR3	T2
26	90-95%	LR4	28	50%	LR2	T2
Empty/fill cycle between each pair of 90-95% tests						
29	90-95%	LR1	31	50%	LR4	T1
30	90-95%	LR2	32	50%	LR3	T1
Empty/fill cycle between each pair of 90-95% tests						
33	90-95%	LR3	35	50%	LR4	T2
34	90-95%	LR2	36	50%	LR1	T2
Empty/fill cycle between each pair of 90-95% tests						
37	90-95%	LR4	39	50%	LR2	T2
38	90-95%	LR3	40	50%	LR1	T2
Empty/fill cycle between each pair of 90-95% tests						
41	90-95%	LR2	43	50%	LR4	T3
42	90-95%	LR3	44	50%	LR1	T3
Empty/fill cycle between each pair of 90-95% tests						
45	90-95%	LR4	47	50%	LR3	T1
46	90-95%	LR2	48	50%	LR1	T1

[1]Product levels are nominal +/- 1 in

[2]Leak Rates will be randomized accoring to protocol requirements