

Alternative Integrity Assessment: ASTM Standard G 158 as it relates to EPA guidance

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

MEMORANDUM

SUBJECT: Alternative Integrity Assessment: New ASTM Standard
FROM: Anna Hopkins Virbick, Director
Office of Underground Storage Tanks
TO: ST/LUST Regional Program Managers
State UST Program Managers

The purposes of this memorandum are to bring your attention to a new standard from ASTM (the American Society for Testing and Materials) for underground storage tank (UST) integrity assessment and to clarify how this standard relates to our previous guidance. While our guidance has not changed, this recent development can change the way integrity assessments (which are performed before upgrading bare steel tanks with cathodic protection) are done in jurisdictions that follow our guidance.

Background

EPA's July 25, 1997 guidance on this subject (attached) remains in effect essentially as written. As before, we recommend that implementing agencies determine that an alternative (to human entry) integrity assessment method be considered to meet the December 22, 1998 upgrading requirements *only if* it meets one of two options. Option A is accordance with a standard code of practice developed by a nationally recognized association or independent testing lab. Option B is using a procedure that has been successfully evaluated and certified by a qualified independent third party to meet the performance criteria specified in the guidance.

Regarding this issue, implementing agencies have been free to make their own determinations, including those different from EPA's guidance, and this will continue to be the case. First we discuss developments regarding Option A.

ASTM Action and Its Impacts

On September 10, 1998, ASTM approved an UST integrity assessment standard, ASTM G 158-98, "Standard Guide for Three Methods of Assessing Buried Steel Tanks." EPA believes that assessments done in accordance with ASTM G 158 satisfy Option A in our guidance, and can be relied on for

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compliance with the upgrade requirements, with the following condition on the visual inspection method. The condition is that the visual inspection method must be capable of detecting all pits and holes of size 1/8 inch (0.32 cm) or greater. (This stipulation was inadvertently left out of the standard during revision.)

We will provide you with a copy of the new standard as soon as possible. To purchase copies, please contact ASTM at (610) 832-9585 or www.astm.org. In the meantime, note that the new standard is substantially the same as the November 25, 1997 draft which we circulated to you on January 13 of this year. Other items in the standard that you should note include the following.

- Although the standard requires that a form be filled out with certain information and notarized, this form does not necessarily provide a representative, comprehensive evaluation of a procedure's performance, or meet EPA's Option B.
- The standard not only requires that a leak detection system be used within six months of the integrity assessment, it requires that this be a tightness test at the 0.1 gallon per hour leak rate (see section 1.4).
- A leak detection test by itself is not sufficient to determine that a tank is suitable for upgrade.
- Finally, the use of a model to determine tank suitability must be based on present, not future, calculated probabilities of corrosion failure.

Regarding implementation, ASTM G 158 is similar to the former ASTM ES 40 in that it provides a blueprint for assessments, but does not address field implementation in detail. In the past few years, problems have been encountered at some sites where vendors claimed to follow the former ES 40, and problems will not all be solved by G 158. These problems included deviation from the standard, use of the standard where not appropriate, and poor documentation. Field implementation issues are often better addressed by implementing agencies and owners, rather than at the national level. However, in response to input from regulators, we have prepared a checklist to help regulators, owners, and operators ensure that G 158 requirements are followed. Please find attached the checklist, which lists all the requirements of the new G 158 and of the former ES 40.

For your information, ASTM has notified us that it plans to offer training on G 158. The training will target at UST owners, regulators, and environmental professionals. The stated purpose is to help regulators and owners and operators understand: what the new standard will provide; how to evaluate the credentials of vendors; how to assure the quality of work; and what results should be expected for each of the methods. ASTM will send detailed information on the training to you. In recognition of the importance of this training information to state agencies, a New England Interstate Water Pollution Control Commission grant is available to reimburse certain travel costs for state employees with a demonstrated hardship. The grant can pay for only a limited number of travellers, for no more than one person per state, and for no training or registration fees.

Third-Party Evaluation

Third-party evaluation of integrity assessment procedures (Option B in our guidance) continues to be a viable means for meeting EPA's guidance. For more information on procedures available under Option B, please see the List of Integrity Assessment Evaluations, which is a product of a state/EPA work group, and available from our office. Remember to note the limitations of each evaluation.

A protocol document is available to help assessment vendors and evaluators who wish to go through third-party evaluation. It is titled "Test Protocol For Evaluating Integrity Assessment Procedures For Underground Storage Tanks" (EPA-510-B-98-004). EPA regional offices, state agencies, and interested trade and professional associations are receiving a copy. This document includes the Quality Assurance Project Plan written in 1995. While the information included in the document has been available from EPA for some time, this booklet combines test procedures, forms, and past guidance in a single technical resource that can be ordered through EPA's usual channels. To obtain a copy, call EPA's document center at 800 490-9198 or EPA's hotline at 800 424-9346.

Relationship of Option A to Option B

EPA's recommends that either Option A or B be met. Of course, both can be met as well. Some implementing agencies may allow one option, but not the other. In such cases it is important to note that procedures meeting Option A do not necessarily meet Option B, and vice versa.

Human-Entry Inspection

Please remember that traditional, human-entry inspection remains an integrity assessment option that is standardized, viable, and compliant with federal requirements. Today's memorandum is not intended to discourage the use of the human-entry inspection method in any way.

Compliance Options

Some questions and concerns have been raised regarding the compliance status of tanks assessed with alternative integrity procedures and then upgraded with cathodic protection. Please see the attached table, "Compliance Options for Tank Leak Detection and Integrity Assessment." It shows how EPA leak detection and upgrading requirements and guidance apply to various situations. The table is intended as a reference for implementing agencies, which may share its contents with owners and operators if applicable and appropriate. Please note that, in several cases, state requirements supersede the information contained in the table. To give owners and operators a clear understanding of key aspects of compliance, we have created a brief flyer (attached). Below, we further describe certain integrity assessment situations and how our guidance applies to them.

Compliance Concerns: Alternative Assessments Done On or Before March 22, 1998

One group expressed a concern that our guidance might lead regulatory agencies to fine owners of tanks that were assessed with alternative procedures in accordance with ASTM ES 40 before March 23, 1998. This should not be a concern. EPA did not and does not recommend that agencies following our guidance find such alternative integrity assessments -- those meeting ASTM ES 40 and accompanied by monthly leak detection monitoring -- invalid for compliance with December 22, 1998 requirements. This is true even if the procedure used never meets Option A or Option B. In support of this position, we believe that owners and operators which chose a procedure in full compliance with the requirements in place at that

time should not have to do rework. We also note that procedures and methods may not meet Option A or Option B for a variety of reasons. For example, a former vendor may choose not to submit its procedure for third-party evaluation because it has left the assessment business. Please note that if an alternative assessment procedure does not meet Option A, does not meet Option B, *and* does not meet ASTM ES 40, then it has never been recommended by EPA for use as part of compliance.

Compliance Concerns: Alternative Assessment Done After March 22, 1998

For those assessments performed after March 22, 1998, another concern involves the point in time when an assessment first meets Option A or B. This issue is best understood by looking ahead to the day *after* the December 22, 1998 corrosion protection deadline. On this day the three possible scenarios regarding post-March 22 alternative assessments and our related guidance are as follow.

- An alternative assessment met either Option A or B at the time it was done. Thus, this assessment is valid for compliance.
- An alternative assessment did not meet either Option A or B at the time it was done, but on or before December 22, 1998 the same procedure used *does* meet Option A or B. For example, the assessment procedure used in the past now adheres to a new standard, such as ASTM G 158. This assessment is valid for compliance. (Note that the procedure used cannot have been a scaled down or less stringent version of the one that meets Option A or B.)
- An alternative assessment still meets *neither* Option A nor B. This assessment is *not* valid for compliance, and unless another assessment has been done, the corrosion protection requirements have not been met. This non-compliance continues until the old assessment procedure is shown to meet Option A or B, or until a compliant substitute assessment is performed.

Thus, for an assessment done after March 22, 1998, unless a procedure meets Option A or B at the time it is performed, the vendor cannot accurately represent that the UST will certainly meet the December 22, 1998 requirements. It may turn out to be the case; but it may not.

Compliance Concerns: Potential Uncertainty

One commenter voiced a concern that there has been uncertainty in the market. It is true that integrity assessment has been an active and contentious subject area for years. *However, this does not support or excuse failure to comply with the December 1998 deadline.* At all times during the ten years since federal regulations were published, an owner could perform either a traditional human-entry inspection method or an alternative method, in full compliance with EPA regulations and guidance.

Conclusion

We believe that the national UST program has, in part via implementation of our July 1997 guidance, built a framework that provides for a safe and environmentally protective outcome, but allows flexibility in choosing the means to achieve that outcome. Some claimed that no companies would be able to or would choose to meet our guidance, leaving owners with less flexibility and higher costs. History has shown this claim to be false. Better performance has been achieved without higher costs. The UST

community has seen that industry can provide standard and proven methods. It has seen that, when it comes to the 1998 requirements, *we do not bluff*.

We appreciate the honest feedback and the support that many have provided, including regulators, industry, and members of ASTM Committees G1 and E50. If you have any questions, comments, or suggestions, please contact David Wiley by e-mail at wiley.david@epa.gov, by phone at 703-603-7178, or by fax at 703-603-9163.

Attachments:

- July 25, 1997 EPA "Guidance On Alternative Integrity Assessment Methods For Steel USTs Prior To Upgrading With Cathodic Protection"
- "Checklist of Requirements of Former ASTM ES 40 and Current ASTM G 158"
- "Compliance Options for Tank Leak Detection and Integrity Assessment"
- Flyer -- "Owners Upgrading USTs: Make Sure Your Integrity Assessment Has Integrity"

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