Designation: E1930/E1930M – 12

Standard Practice for Examination of Liquid-Filled Atmospheric and Low-Pressure Metal Storage Tanks Using Acoustic Emission[1]

This standard is issued under the fixed designation E1930/E1930M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This practice covers guidelines for acoustic emission (AE) examinations of new and in-service aboveground storage tanks of the type used for storage of liquids.

1.2 This practice will detect acoustic emission in areas of sensor coverage that are stressed during the course of the examination. For flat-bottom tanks these areas will generally include the sidewalls (and roof if pressure is applied above the liquid level). The examination may not detect flaws on the bottom of flat-bottom tanks unless sensors are located on the bottom.

1.3 This practice may require that the tank experience a load that is greater than that encountered in normal use. The normal contents of the tank can usually be used for applying this load.

1.4 This practice is not valid for tanks that will be operated at a pressure greater than the examination pressure.

1.5 It is not necessary to drain or clean the tank before performing this examination.

1.6 This practice applies to tanks made of carbon steel, stainless steel, aluminum and other metals.

1.7 This practice may also detect defects in tank linings (for example, high-bulk, phenolics and other brittle materials).

1.8 AE measurements are used to detect and localize emission sources. Other NDT methods may be used to confirm the nature and significance of the AE indications (s). Procedures for other NDT techniques are beyond the scope of this practice.

1.9 Examination liquid must be above its freezing temperature and below its boiling temperature.

1.10 Superimposed internal or external pressures must not exceed design pressure.

1.11 Leaks may be found during the course of this examination but their detection is not the intention of this practice.

1.12 *Units*—The values stated in either SI units or inch-pound units are to be regarded as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standards.

1.13 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* Specific precautionary statements are given in Section 8.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E543 Specification for Agencies Performing Nondestructive Testing

E650 Guide for Mounting Piezoelectric Acoustic Emission Sensors

E976 Guide for Determining the Reproducibility of Acoustic Emission Sensor Response

E1316 Terminology for Nondestructive Examinations

E2374 Guide for Acoustic Emission System Performance Verification

2.2 *ANSI/ASNT Standard:*

Recommended Practice ASNT SNT-TC-1A for Qualification and Certification of Nondestructive Testing Personnel[3]

ANSI/ASNT CP-189 Standard for Qualification and Certification of NDT Personnel[3]

2.3 *ASME Standard:*

Section V, Article 12, Boiler & Pressure Vessel Code[4]

[1] This practice is under the jurisdiction of ASTM Committee E07 on Nondestructive Testing and is the direct responsibility of Subcommittee E07.04 on Acoustic Emission Method.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from American Society for Nondestructive Testing (ASNT), P.O. Box 28518, 1711 Arlingate Ln., Columbus, OH 43228-0518, http://www.asnt.org.

[4] Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New York, NY 10016-5990, http://www.asme.org.

***A Summary of Changes section appears at the end of this standard**

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