Institute of Environmental Sciences and Technology

IEST-RP-DTE032.2

Design, Test, and Evaluation Division
Recommended Practice 032.2

Pyroshock Testing Techniques

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1 SCOPE

This Recommended Practice (RP) provides an overview of pyroshock testing concepts and compares provisions from other pyroshock documents. Much of this RP is devoted to acquisition and analysis of pyroshock data because proper time-history data acquisition and test specification development are common test industry problems. To avoid corrupted pyroshock data and resulting inaccurate pyroshock specifications, recommended practices for instrumentation and data acquisition systems are given.

If pyroshock testing equipment is used to simulate the detonation of a pyrotechnic device, a unique, custom design is usually required, with a few exceptions. There is no universal pyroshock testing technique or equipment that can handle all specifications and all dimensions for units under test, whether test units are individual components, subsystems, or complete systems. This RP includes examples of different concepts and equipment configurations and notes any limitations. Several sections are devoted to the design and use of resonant fixtures for pyroshock simulations. Additionally, this RP contains an example of a three-dimensional pyroshock simulation with one impact to a resonant fixture that can provide a realistic simulation of pyroshock and prevent mechanical failure caused by overtesting with single-axis sequential test procedures.

CAUTION: Testing in accordance with this RP may involve hazardous materials, operations, and equipment. This RP does not purport to address all of the safety problems associated with its use. It is the responsibility of the user to consult safety guidelines and establish appropriate safety practices, and to determine the applicability of regulatory limitations prior to use of this RP.

2 REFERENCES

The following documents are incorporated into this RP to the extent specified herein. Users should apply the most recent editions of the references. See Appendix A for informative references cited in this RP and additional resources.

IEST-RD-DTE012: Handbook for Dynamic Data Acquisition and Analysis.

ISO 18431-4 Mechanical vibration and shock—Signal processing—Part 4: Shock-response spectrum analysis

MIL-STD-810: Environmental Engineering Considerations and Laboratory Tests, Method 517, Pyroshock.

NASA-STD-7003: Pyroshock Test Criteria.

2.2 Sources and Addresses

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