

NATIONAL ENVIRONMENT AND PLANNING AGENCY (NEPA)

INTERIM GUIDELINES FOR PROPONENTS

STRUCTURAL INTEGRITY TESTING OF PETROLEUM STORAGE TANKS (TANK TIGHTNESS TESTING)

1. INTRODUCTION

The Structural Integrity test is used to establish whether there is a leak in a petroleum storage tank or pipeline. Structural Integrity tests include a variety of methods. Other terms used for these methods include tightness tests, precision tests, volumetric tests and non-volumetric tests. These methods are outlined by the United States Environmental Protection Agency (USEPA) and may be accessed at <http://www.epa.gov/OUST/>

2. OVERVIEW OF TEST METHODS

The following summarises the various tests used for the assessment of structural integrity:

- i) **Volumetric methods:** The change in product level in a tank over time is measured very precisely (in milliliters or thousands of an inch).
- ii) **Acoustics or tracer chemicals:** These methods are used to determine the presence of a hole in the tank.

These tests may be supplemented with internal tank inspections such as Hammer Testing and Ultrasonic Thickness Testing.

The tests vary in testing procedure, testing equipment, duration, personnel expertise requirements, etc. The cost implication for the owner/operator of the facility will therefore vary. The onus rests with the Permittee to select the most convenient test method and verify to NEPA the capability of this method to meet the requirements for leak detection.

The National Environment and Planning Agency (NEPA) will accept test methods approved by the USEPA.

3. REGULATORY REQUIREMENTS

- i) Structural integrity tests are required to be conducted on all **storage tanks and pipelines** as follows:
 - a) at installation,
 - b) six (6) months after commencement of operation, and

c) annually thereafter.

Generally, structural integrity tests capable of detecting a leak of 0.2 gallon per hour (0.76 litres per hour) may be utilized for six monthly or annual tests. These tests are typically pressure tests utilizing an inert gas or water, with the tank out of service for only a few hours.

ii) A **Precision Test** is required on all tanks and pipelines once every five (5) years. A Precision Test should be capable of detecting a leak at least as small as 0.1 gallon per hour (0.38 litres per hour). In this test the tank is typically not pressurized and the tank is out of service a few days.

3. GENERAL RECOMMENDATIONS

It is recommended that:

1. the structural integrity tests be used in conjunction with monthly inventory monitoring and reconciliation data to provide for effective leak detection in underground storage tank installations.
2. well-trained and experienced personnel be utilized in conducting structural integrity tests.