1 Purpose

1.1 To establish a standard procedure for pneumatic leak testing of piping assemblies.

2 Scope

2.1 This procedure applies to all Therma projects requiring pneumatic leak testing.

3 Responsibility

3.1 The Therma general foreperson/foreperson ensures compliance with this procedure.

4 Reference

4.1 ANSI/ASME B31.3 Standards, Chemical Plant and Petroleum Refinery Piping, 1993 Edition.

5 Procedures

5.1 Do not perform a pneumatic leak test unless the owner specifies or permits its use. It is recommended that pneumatic leak testing be used only when one of the following conditions exists:

5.1.1 When piping systems are designed not to be filled with water.

5.1.2 When piping systems are to be used, where traces of the testing medium cannot be tolerated.

5.1.3 When piping size is 6” or larger and where city water pressure is too low to meet the required test pressure. It is necessary to increase the test pressure.

5.2 Perform pre-test visual inspection.

5.2.1 Inspect the piping systems to be tested for defects

5.2.2 Ensure that all connections are tight.

5.2.3 Attach test assembly as shown in Diagram 1.

5.2.4 Examine test equipment to insure that it is tightly connected.

5.2.5 All items not subjected to the test pressure shall be disconnected or isolated by valves or any other suitable means. Remove any instrumentation or equipment that may be damaged by the higher test pressure.

5.2.6 Attach Pressure Test In Progress tags to all branch valves before filling the system.

5.2.6.1 Only use clean dry air, nitrogen, or argon as test medium.

CAUTION: Compressed gas may be hazardous when used as a test medium. It is recommended that special precautions for personnel protection should be observed.

5.3 Preliminary Check

5.3.1 Fill the piping systems with test medium to a test pressure either 25 psig or one-half (½) the design pressure, which ever is less.

5.3.2 Turn the supply off, and allow the system to stabilize for ten (10) minutes before inspecting for leaks.

5.4 Inspect all joints, welds, bonds, and connections for leakage and record results on Pressure Test Log, FN 6.004.1.

5.5 If no leaks are found and there is no pressure drop, increase the pressure in approximately 25 psig increments and allow the system to stabilize for ten (10) minutes before inspecting for leaks. Do not exceed 110% of design pressure.

5.6 Inspect all joints, by applying a soap and water solution, by looking for bubbles. At this point, pressure shall be reduced to design pressure.

5.7 Record results on Pressure Test Log, FN 6.004.1.

5.8 A pressure relief device shall be provided, having a set pressure not higher than the test pressure plus the lesser of 345 kPa (50 psi) or 10% of the test pressure.

5.9 Hold the final test pressure for one (1) hour (minimum 10 minutes).

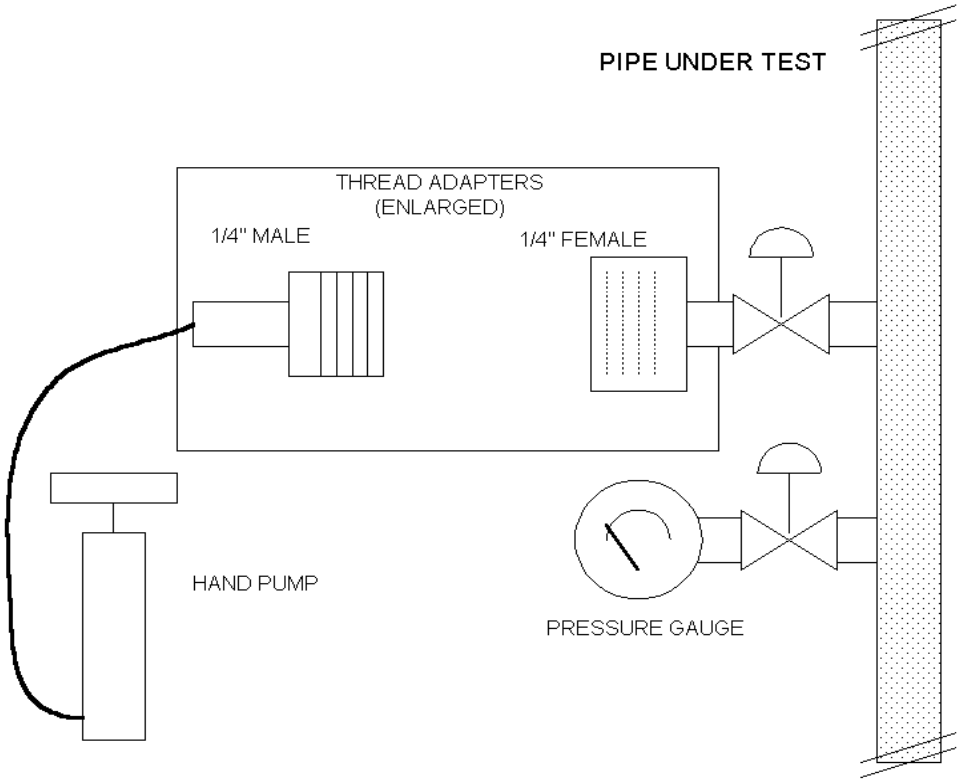
5.10 Consult QC Department for pneumatic test pressure on plastic pipe (B31.3, 345.2.2).

5.11 Replace all removed instrumentation and reconnect all equipment. Make provisions for visual leak verification during functional testing.

6 Review and Approval

6.1 No approval is necessary.

DIAGRAM 1 – General Pneumatic Leak Test Assembly



Document Approval

Field Operations Manager — Date: 3-23-03

Engineering Manager — Date: 3-20-03

Quality Assurance Manager — Date: 3-24-03