1 Purpose

1.1 To establish a standard procedure for examination of automatic tungsten inert gas (GTAW) orbital welds.

2 Scope

2.1 This procedure applies to high purity stainless steel piping installations and tool hookup.

3 Responsibility

3.1 Quality Control Manager shall oversee the following tasks.

3.2 Quality Control Examiner (QCE) shall perform the following procedures.

4 Procedures

4.1 Verify that a qualification coupon has been performed as described in SOP 7.024 (Coupons).

4.2 Verify that the welder has been qualified under SOP 7.009 (Automatic GTAW Welder Qualification).

4.3 Verify that materials used in welding have been previously approved as per SOP 7.002 (Quality Control Examination for Pharmaceutical Material) and SOP 7.003 (Quality Control Examination for Semiconductor Material).

4.4 Verify that the materials used in weldment have been made from approved materials as described in SOP 7.002 (Quality Control Examination for Pharmaceutical Material) and SOP 7.002 (Quality Control Examination for Semiconductor Material).

4.5 Review project specifications form FN 7.002.2 (Specification Acceptance Criteria) for the material to be examined, for that particular job.

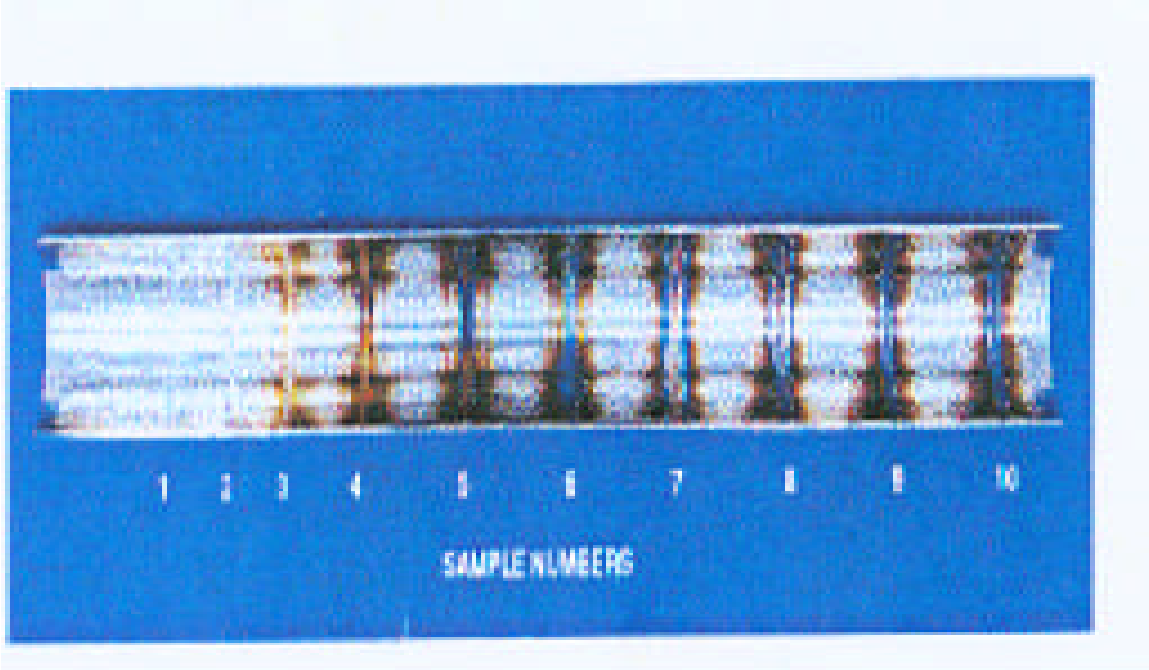
4.6 Visual Inspection

4.6.1 Verify outside diameter (OD) weld bead width is consistent and within the range of specification criteria.

4.6.2 Verify OD weld concavity/convexity is less than 10% of the wall thickness.

4.6.3 Weld Discoloration Levels on Inside of Austenitic Stainless Steel Tube (Reference to AWS D18.1/AWS D18.2 and current ASME BPE).

4.6.3.1 Weld surface shall not contain excessive oxidation. Oxidation indicated by a discoloration greater than a straw or light blue. The weld discoloration levels are shown below. Typically, Therma's QCE shall not accept sample number 3 or higher in the as-welded condition.



4.7 Verify weldment meets the following acceptance criteria.

4.7.1 Weld bead is to be even in width over the full circumference of welded joint.

4.7.2 The edges of the butt joint are to be completely consumed in the weld bead.

4.7.3 Weld can not have inclusions, holes, porosity or cracks.

4.7.4 To avoid formation of dross or slag crater, welding current shall taper off at the end of the weld into a suitable down slope as per proper weld program development recorded on FN 5.024.1 and FN 5.024.2.

4.7.5 There is to be no weld undercut.

5 Approval

5.1 If the weld meets the acceptance criteria in Step 4.7, note the 'Exam Type' and approve the weld by initialing in the space provided on Form FN 5.001 (Weld & Coupon Log).

5.1.1 After completion of weld examination, cap off all openings of spool assemblies with appropriated plastic end protection as example "Caplug" that is manufactured by Protective Industries, Inc.

5.2 If the weld has been rejected notify the appropriate personnel.

5.3 Verify weld has been properly documented by welder as described in SOP 5.005 (Automatic GTAW Welds).

Document Approval

Field / Operations Manager — Date: 3-6-12

Process Systems Manager — Date: 3-6-12

Engineering Manager — Date: 3/06/12

Quality Assurance Manager — Date: 3/6/12