

## **Revision and Harmonisation of AS/NZS 2885.2 with Parts 0,1,3 and 5**

**Paul Grace - Chairman ME-038-02**

AS 2885 series consists of six parts. Because the revision date of each part is different, there is always some inconsistency among the parts. AS 2885 Part 0, 1, 3 & 5 were published in late 2012. A new format for all parts of AS 2885 was introduced in the 2012 editions leaving a gap of consistency with AS 2885.2. The Australian pipeline industry has seen a dramatic increase in design and construction activity over the past five years, particularly in large diameter thick wall pipelines for the CSG market. This step change has resulted in the use of different technology for welding and non-destructive testing on these mega pipeline projects. The 2007 version of AS 2885.2 did not cater well for this new technology. The 2016 revision addresses the major shortcomings to allow sufficient guidance for this technology. Major areas of revision include: essential variables for the common pipeline welding processes and consumables, AUT revision, ECA revision, qualification of personnel, welders, welding operators, welding supervisors, welding inspectors and welding engineers. The ME-038-02 sub-committee is a joint Australian, New Zealand thus this revision is AS/NZS 2885.2. The revision also addressed a number of minor revisions to clarify parts of the Standard that have caused confusion to users of the Standard since 2007.

APGA (formerly APIA) conducted a one day seminar on the subject of automatic welding and the appropriateness of the current Standards including AS 2885.2-2007, in Brisbane during 2012. The seminar was well attended with more than 80 attendees including two overseas expert presenters. All participants agreed that the new revision of AS 2885.2 was a major need for the pipeline industry.

At the M-0E38 main Committee meeting (27 February to 1 March 2013) the committee fully supported the case for revision.

AS 2885 series is adopted by each Australian State as the basis for technical and safety regulation of complying gas and liquid petroleum pipelines. The Licence for each complying pipeline specifies that it is to be designed, constructed, operated and maintained in accordance with AS 2885 series.

The revision of AS 2885.2 commenced in 2013 and went out for public comment in 2015, approximately 400 items were submitted to the sub-committee for consideration. The final draft was sent to the main ME-038 committee for Ballot and received a positive vote in early March 2016. Major changes included new essential variables for processes and consumables, AUT revision, ECA revision, qualification of personnel, welders, welding operators, welding supervisors, welding inspectors and welding engineers.

The revision also addressed a number of minor revisions to clarify parts of the Standard that have caused confusion to users of the Standard since 2007.

This Standard specifies the minimum requirements for safety, welding consumables, weld preparations, welding processes, qualifications of welding procedures and personnel, and fabrication and inspection requirements for the construction and maintenance welding of carbon and carbon-manganese steel pipelines down to 3.2 mm wall thickness designed and constructed in accordance with AS 2885.1.

The welding of corrosion resistant alloy steel pipelines, or pipelines with nominal thicknesses less than 3.2 mm, is not precluded, but is not expressly covered by this Standard. The welding of such pipelines has to be given special consideration.

Originated as AS CB28—1992.

Previous edition AS 2885.2—2002, AS 2885.2—2007.

Fourth edition Revised and redesignated as AS/NZS 2885.2:2016.

The objective of this Standard is to provide requirements for the welding and NDT of pipelines designed and constructed in accordance with AS 2885.1.

The objective of this revision was to include technical changes which became necessary as a result of experience in the use of the Standard in the intervening years since the previous edition, in particular in relation to the construction of large diameter thick wall pipelines in recent years.



## Major Changes

- (a) Definitions have been updated to match AS 2885 series definitions, where applicable.
- (b) The sections in the document have been rearranged to match the sequence of steps in qualifying a welding procedure and the subsequent welding and testing.
- (c) The qualifications for welding engineers, welding supervisors, welding inspectors, welders and welder operators have been defined and put in a new Section 3, Qualifications.
- (d) The materials section has been updated to put limits on boron in welding consumables; and the welding consumable table has been modified to reflect currently available consumables.
- (e) The welding design requirements have been updated and added to Section 5 (Design of a welded joint).
- (f) Section 6 (Qualification of a welding procedure specification) has been updated to include other welding processes and their specific requirements.
- (g) Requirements for qualifying aluminothermic and pin brazing welding have been added to Section 6.
- (h) Section 7 (Assessment of the test weld to qualify a welding procedure) has been updated to include requirements for sub-size Charpy tests and additional mechanical testing for some types of procedure qualification including repairs.
- (i) Section 13 (Post-weld heat treatment and post-weld cooling) has been updated to make it a requirement for weld procedure qualification requirements (WPS) to test the weld and base metal in the heat treated condition.
- (j) The items to consider prior to in-service welding has been added to Section 16 (Welding onto an in-service pipeline).
- (k) Section 17 (Criteria of acceptance for girth weld discontinuities) has been updated to include more comprehensive requirements for using Tier 3; and in addition, the Tier 1 acceptance criterion for ultrasonic testing has been added. The use of Tier 2 has been extended to include material grade with yield strength 485 MPa subject to undertaking all-weld metal tensile tests.
- (l) Figure 18.1 (Maximum height of external weld reinforcement in butt welds that are to be radiographed in order to achieve effective radiography) has been updated to relax the maximum height of external reinforcement in butt welds for radiographic testing (RT).
- (m) Section 19 (Non-destructive testing) has been modified to require 100 per cent NDT.
- (n) Section 22 (Ultrasonic testing) has been updated to refer to a new Appendix H on the requirements for qualifying and using AUT on pipelines
- (o) The Appendices have been re-arranged and include three new Appendices that provide additional requirements and supporting information on weld procedure requirements associated with changes to the consumable classification system, additional requirements for automated/mechanized welding and AUT system requirements.