SUPERSEDED IN PART BY AS 2885.2-1995

93006
93007

AS 2885—1987
AMDT 1 1990-05-c

*WITHDRAWN BUT MAY APPLY SUPERSEDED BY AS 2885.1-1997 2885.2-1995 & 2885.3-1997

Standards Association of Australia

Australian Standard®
2885—1987

PIPELINES—
GAS AND LIQUID PETROLEUM

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This Australian Standard was prepared by Committee ME/38, Gas and Liquid Petroleum Piping Systems. It was approved on behalf of the Council of the Standards Association of Australia on 2 July 1987 and published on 1 September 1987.

The following interests are represented on Committee ME/38:

Australasian Corrosion Association
Australasian Institute of Mining and Metallurgy
Australian Gas Association
Australian Institute for Non-Destructive Testing
Australian Institute of Energy
Australian Institute of Petroleum Limited
Australian Liquefied Petroleum Gas Association Limited
Australian Petroleum Exploration Association Limited
Australian Pipeline Industry Association
Australian Welding Institute
Australian Welding Research Association
Bureau of Steel Manufacturers of Australia
Department of Industrial Relations, N.S.W.
Department of Industry, Technology and Resources, Vic.
Department of Mines and Energy, N.T.
Department of Mines and Energy, S.A.
Department of Mines, Qld
Department of Mines, W.A.
Energy Authority of New South Wales
Institution of Engineers, Australia
Institute of Petroleum, U.K.
Metal Trades Industry Association of Australia
National Association of Australian State Road Authorities
New South Wales Institute of Technology
Pipeline Authority
Pipelines Authority of South Australia
Railways of Australia Committee
State Energy Commission, W.A.

This Standard was issued in draft form for comment as DR 83131.

STANDARDS AUSTRALIA

Amendment No 1
to
AS 2885—1987
Pipelines—Gas and liquid petroleum

REVISED TEXT

The 1987 edition of AS 2885 is amended as follows; the amendments should be inserted in the appropriate place.

SUMMARY: This Amendment applies to Clauses 8.4.3 and 8.5.3.

Published on 6 August 1990.

AMDT No 1 AUG 1990

Page 105. Clause 8.4.3

Delete existing Clause and *substitute:*

8.4.3 Buckle A buckle shall be deemed to be a defect where—

(a) it does not blend smoothly with the adjoining surfaces; or

(b) its height is greater than 25% of the nominal thickness and the width of its base is less than eight times its height.

AMDT No 1 AUG 1990

Page 106. Clause 8.5.3(ii)A

Delete existing Item A and *substitute:*

A. buckles that are deemed to be a defect according to Clause 8.4.3;

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AUSTRALIAN STANDARD

PIPELINES— GAS AND LIQUID PETROLEUM known as the SAA PIPELINE CODE

AS 2885—1987

First published as AS CB22 1972
Revised and redesignated as AS 1697 1975
Second edition 1979
Third edition 1981
AS 1958 first published 1976
Second edition 1981
AS 2018 first published 1977
Second edition 1981
AS 1958—1981, AS 2018—1981 and part of AS 1697—1981 revised, amalgamated, and redesignated as AS 2885 1987

PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
STANDARDS HOUSE, 80 ARTHUR ST, NORTH SYDNEY, N.S.W.
ISBN 0 7262 4691 3

PREFACE

This Standard was prepared by the Association's Committee on Gas and Liquid Petroleum Pipeline Systems as a consolidation, rationalization, and revision of AS 1697—1981, SAA Gas Pipeline Code (in part), AS 1958—1981, SAA Submarine Pipeline Code, and AS 2018—1981, SAA Liquid Petroleum Pipeline Code, and eventually (at the next edition, and probably by 1992) to supersede those Standards.

During this period of co-existence, a choice must be made for any new pipeline to be specified to this Standard, or to AS 1697, AS 2018, or AS 1958. A mixture of requirements from this Standard and AS 1697, AS 2018, or AS 1958 is not to be specified.

The consolidation into a single Standard has been made in recognition of the common technology and regulatory status applicable to transmission pipelines. Gas distribution systems classified as Division 2 continue to be covered by AS 1697 which is currently being revised.

In recognition of the high integrity required of a pipeline, several significant changes have been made and this Standard differs from the abovementioned Standards as follows:

(a) The Standard specifies requirements but does not inhibit the user by detailing the methods whereby these requirements can be achieved.

(b) The scope provides for a pipeline constructed to this Standard, but with appropriate changes, to convey other fluids.

(c) The temperature range has been changed to −30°C to 200°C, and, because the specified minimum yield strength of the nominated pipes is taken to be constant within this range, the temperature de-rating factor has been deleted.

(d) Only pipes with a weld joint factor of unity have been included.

(e) A preferred method of tensile testing line pipe has been included.

(f) Greater emphasis is placed on the engineering design, the approval process, and the competence of personnel.

(g) The methods by which the safety of the general public and the pipeline is protected have been improved.

(h) The methods to protect a pipeline from third-party damage have been extended.

(j) The welding section has been extensively revised. Essential variables for other than manual metal-arc welding processes have been added, and a change in the carbon equivalent is rated as an essential variable.

(k) Qualification tests for welding procedures and welders are portable and the number and type of tests have been altered and the criteria of acceptance of welds have been simplified.

The results of the field pressure strength test may now be used to establish the yield strength and the mechanical properties of the installed pipeline, and hence the maximum allowable operating pressure.

The appendices cover many aspects of pipelining and give guidance to the user.

Words importing the singular include the plural and *vice versa*; those importing the masculine gender include the feminine and the neuter.

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FOREWORD

This Standard establishes requirements for the safe design, construction, inspection, testing, operation and maintenance of a land or a submarine pipeline constructed from steel pipe. These requirements are necessary for the protection of the general public, the operating personnel, and the environment, as well as the protection of the pipeline against accidental damage.

This Standard provides an authoritative source of important principles and practical guidelines for use by responsible and competent persons or organizations. It should be noted that it is not practicable to include, or cover, every aspect of pipeline material, design, construction, welding, inspection, testing, corrosion mitigation, operation, and maintenance in this Standard.

Although safety is the basic consideration, other requirements will also control the engineering design of any pipeline, and these must also be considered.

The Standard is not to be regarded as being either an instruction manual for untrained persons or a fully complete detailed design specification. Although certain sections of this Standard contain specific requirements, they do not replace the need for appropriate experience and competent engineering judgement. Fundamental sound engineering principles should be followed.

Most pipelines to which this Standard applies will be designed, constructed, tested, and operated under some form of Statutory Authority licence or regulation. The Standard does not supersede or take precedence over the requirements of any Statute or Regulation.

A pipeline designed to this Standard is to be constructed only from materials that have been qualified. A wide range of nominated Standards is given and compliance with these Standards qualifies the materials. Methods for qualifying other materials are also given. Reporting of test results for material qualification should be in the form of approved test certificates.

Environmental matters are of importance in the construction and operation of pipelines and must be considered fully in the design stage. In view of the wide range of conditions that occur and the wide variations in available information, specific requirements cannot be incorporated in this Standard. The extent of the investigations that are necessary in a particular location will depend on the amount and reliability of the environmental information already available, and the sensitivity of the location to environmental damage.

The basis of the design is that a pipeline shall have sufficient strength to withstand all forces to which it will be subjected during construction, testing, and operation.

Specific provision is made for highly volatile hydrocarbons. Some of these are retained as liquids by the pressure in the pipeline and are designated high vapour pressure liquids (HVPL).

Before a pipeline is placed in operation, it is to be inspected and tested to prove its integrity by successful tests to determine its pressure strength and leak-tightness. The pressure strength of a pipeline is determined from either the nominal pressure ratings of pipeline components or the pressure test. External forces are evaluated for their effect on pressure strength. The maximum allowable operating pressure is determined from the pressure strength of the pipeline.

Where changes in the use of a pipeline or changes in land use invalidate the original design, or where deterioration has occurred, the appropriate steps are to be taken to ensure that continued operation is safe.

The responsibility for the original engineering design, for the control of the construction in order to comply with the requirements, and intent of the engineering design, and for the maintenance of the pipeline integrity during operation is normally placed on the Operating Authority.

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
PIPELINES—GAS AND LIQUID PETROLEUM

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This Standard specifies the requirements for the materials, design, construction, installation, inspection, testing, operation, and maintenance of pipelines which are used to convey hydrocarbon fluids such as natural and manufactured gas, liquefied petroleum gas, natural gasoline, crude oil, natural gas liquids, and liquid petroleum products, in either a single-phase or a multiphase condition, where—

(a) those pipelines are manufactured from steel and qualify for use in terms of the relevant sections of the Standard;

(b) the temperature of the pipe conveying the fluid is not greater than 200°C nor less than −30°C at any point in the pipeline; and

(c) the operating pressure is above 1050 kPa or the hoop stress is above 20% of SMYS, or for interconnecting liquid pipelines (see Figure 1.2), is above 2000 kPa or 20% of SMYS.

This Standard covers the conditions of use of elements of pipeline systems, including pipe, fittings, flanges, bolting, gaskets, regulators, pressure vessels, pulsation dampeners, and pressure relief devices. It also contains provisions for the use of anchors, clamps, supports, and other means to prevent the overstressing of components.

The Standard also covers the development and implementation of emergency operating and maintenance procedures.

This Standard is not applicable to the following:

(a) Auxiliary piping such as that required for water, air, steam, lubricating oil, and fuel.

(b) Casing, tubing, or piping used in petroleum wells.

(c) Compressor and pump stations on offshore platforms.

(d) Compressors, pumps, and their prime movers and integral piping.

(e) Design and fabrication of proprietary items.

(f) Equipment for instrumentation, telemetering, and remote control.

(g) Flexible hose.

(h) Gas distribution (see AS 1697).

(j) Heat exchangers and pressure vessels (see AS 1210).

(k) Petroleum production and processing plants, gas manufacturing plants, tank farms and industrial plants.

(l) Wellhead assemblies and associated control valves and piping.

1.2 APPLICATION. This Standard is applicable to high pressure pipelines between production facilities, tank farms, processing plants, compressor stations, pump stations, terminals, and all other delivery points (see Figures 1.1, 1.2, and 1.3). The requirements for flowlines and gathering pipelines on land and between submarine production facilities and fixed or floating processing or storage facilities are included in the Standard, but the terminal points of such lines are defined only to the extent of being those points at which the pipeline is connected to facilities designed according to other Standards. In general, flowlines commence at the wellhead assembly outlet valve on a wellhead and terminate at the inlet valve of the collection manifold.

This Standard is also applicable to piping within facilities integral with the pipeline such as compressor stations, pump stations, valve stations, and metering stations.

It is not intended that this Standard be applied retrospectively to existing installations insofar as design, fabrication, installation, and testing at the time of construction are concerned. Further, it is not intended that this Standard be applied retrospectively to the established operating pressures of existing installations except as specified in Section 14. However, the requirements of this Standard apply to operating and maintenance procedures of existing installations when they are modified to operate under conditions within the scope of this Standard.

In the absence of applicable Standards, this Standard may be applied with appropriate additional precautions to pipelines for the conveyance of other fluids.

1.3 NEW DESIGNS AND INNOVATIONS. Any novel materials, designs, methods of assembly, procedures, etc, which do not comply with a specific requirement of this Standard, or are not mentioned in it, but which give equivalent results to those specified, are not necessarily prohibited. The SAA Committee on Gas and Liquid Petroleum Piping Systems can act in an advisory capacity concerning equivalent suitability, but specific approval remains the prerogative of the Operating Authority, and, where it is legally required, the Statutory Authority.

1.4 INTERPRETATIONS. Questions concerning the meaning, application, or effect on any part of this Standard may be referred to the SAA Committee on Gas and Liquid Petroleum Piping Systems for explanation. The authority of the Committee is limited to matters of interpretations and it will not adjudicate in disputes.

1.5 REFERENCED DOCUMENTS. A list with titles of the documents referred to in this Standard is given in Appendix O.