AS 1958—1981

Australian Standard

SAA SUBMARINE PIPELINE CODE

The following scientific, industrial and governmental organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

Australasian Corrosion Association
Australasian Institute of Mining and Metallurgy
Australian Gas Association
Australian Institute of Energy
Australian Institute for Non-Destructive Testing
Australian Institute of Petroleum
Australian Liquefied Petroleum Gas Association
Australian Petroleum Exploration Association
Australian Pipelines Industry Association
Australian Welding Institute
Australian Welding Research Association
Bureau of Steel Manufacturers of Australia
Department of Industrial Relations, N.S.W.
Department of Minerals and Energy, Victoria
Department of Mines and Energy, S.A.
Department of Mines, Queensland
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
Pipelines Authority of South Australia
Railways of Australia Committee
Snowy Mountains Engineering Corporation
The Pipeline Authority

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GAS AND LIQUID PETROLEUM SUBMARINE PIPELINES KNOW AS THE SAA SUBMARINE PIPELINE CODE

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PREFACE

This edition of this standard was prepared by the Association's Committee on Gas and Liquid Petroleum Piping Systems.

This edition includes a major revision of Section 8—Corrosion Mitigation, and also includes the changes made in Amendment No 1 which, in the main, incorporated requirements for determining a safe operating pressure for a corroded pipeline. The items which have been technically revised in this edition are listed in the 'Annex' following the Index.

The purpose of this standard is to establish requirements for safe design, construction, inspection, testing, operation, and maintenance of submarine petroleum pipelines constructed from steel pipe. Such requirements are necessary for the protection of the general public, the Operating Authority personnel, and the environment as well as to provide reasonable protection for the pipeline against accidental damage resulting from activities other than those of the Operating Authority.

The standard sets out requirements for good engineering practice based on known experience and on appropriate existing Australian and overseas standards. Close attention has been given to AS 1697, SAA Gas Pipeline Code; AS 2018, SAA Liquid Petroleum Pipeline Code; AS 1978, SAA Code for Field Pressure Testing of Pipelines; API 1104, Standard for Welding Pipe Lines and Related Facilities; USA Minimum Federal Safety Standards for Liquid Pipelines (Part 195, Title 49, Code of Federal Regulations); the USA Department of Transportation—Office of Pipeline Safety Register Volume 35, No 161 Part III—Transporting of Natural Gas by Pipelines; the UK Institute of Petroleum Model Code of Safe Practice, Part 6—Submarine Pipeline Supplement 1971, and other standards. Acknowledgement is made of the assistance provided from these sources.

Although safety is the basic consideration of this standard, other requirements will also control the specifications for any pipeline and these must be considered. The standard is not a design handbook and, although certain sections contain specific requirements, does not replace the need for appropriate experience and competent engineering judgement. Fundamental engineering principles should be followed. Provided that there is no specific prohibition, materials and procedures not included in this standard may be qualified for use as described in the applicable sections.

Environmental conditions are of importance in the design of submarine pipelines and must be considered fully in the design stage. In view of the wide range of conditions likely to be encountered in the submarine environment and the wide variations in available information concerning it, specific requirements cannot be incorporated in this standard; however recommendations for a route survey together with meteorological and hydrographic investigations are given in Appendix E. Whilst each recommendation requires consideration, the extent of the investigations necessary in a particular location will depend on the amount and reliability of the environmental information already available.

Attention is drawn to the requirements of both Commonwealth and State legislation, and to guides and codes issued by statutory authorities and local government bodies which may affect pipelines; this standard should be regarded as complementary to such requirements where these are applicable. Notes on Statutory Requirements are included as Appendix D.

This standard does not deal with, and is not intended to supplant, any matter of personnel safety with respect to work practices or such matters as the safe use of equipment and machinery in construction which may be required by law or which are current industrial practice.

This standard makes reference to a wide range of materials and components listed in standards originating from Australia, Great Britain, and the United States of America. Many of these standards require the reporting of results of tests. Such reporting should be in the form of approved test certificates. Listings of relevant standards are given in Appendices A and B.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
GAS AND LIQUID PETROLEUM SUBMARINE PIPELINES

SECTION 1. GENERAL REQUIREMENTS

1.1 SCOPE. This standard sets out minimum requirements for materials, design, construction, installation, inspection, testing, operation, and maintenance of submarine petroleum pipelines located on or in the sea bed of bays, estuaries, and the territorial sea and on or in the continental shelf, and used for the transport of hydrocarbon fluids such as natural gas, crude oils, natural gasoline, natural gas liquids, liquefied petroleum gas, and liquid petroleum products, in either a single or a dual phase condition, where—

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

(b) the temperature of the pipe transporting the fluid does not exceed 230°C and is not less than –30°C at any point in the pipeline.

1.2 APPLICATION. This standard is applicable to those parts of a pipeline which are located seaward of a mark which is not more than 100 m landward from the point where the pipeline crosses the highest high-water mark recorded (see Fig. 1.1) and to those parts of a pipeline that are located on platforms, piers, trestles, jetties, wharves, quays, and other structures (see Fig. 1.2).

The standard is applicable also to off-shore pipeline manifolds, whether sub-sea or on a structure, and to the launching and receiving traps for either scrapers or spheres and their associated piping, other than those located more than 100 m landward of the highest high-water mark.

Flowlines and gathering pipelines between subsea production facilities and fixed or floating processing or storage facilities will usually be covered by the standard, but it is not possible to define the terminal points of such lines more precisely than to say that they are those points at which the pipeline is connected to facilities designed according to other standards.

The terminal point of a pipeline associated with off-shore loading or discharge of a tanker is that

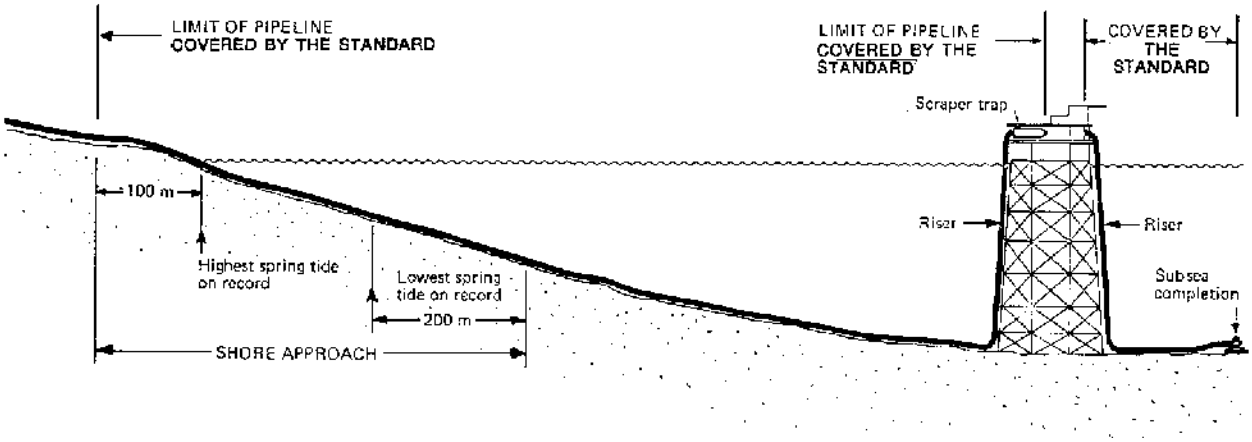

Fig. 1.1. LIMITATIONS OF STANDARD—SUBSEA COMPLETION TO PLATFORM AND PLATFORM TO SHORE (The arrangement shown is typical only)