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Guidance on Industry Standard for Offshore Pipeline Design and Construction (PD 8010-2)

GIS 43-211

BP GROUP
ENGINEERING TECHNICAL PRACTICES

Foreword

This is the first issue of Engineering Technical Practice (ETP) GIS 43-211. This GIS provides the minimum BP expectation on subsea pipeline engineering and construction.

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Introduction

- a. Guidance for offshore pipeline design and construction is based on BSI PD 8010-2, Code of practice for pipelines – Part 2: Subsea pipelines, 31 July 2004.
- b. Guidance statements of this GIS are modifications to PD 8010-2.
- c. Modifications to PD 8010-2 are identified as Add, Modify to Read, or Delete.
- d. Clause numbers in this GIS correspond to PD 8010-2.
- e. Clauses of PD 8010-2 that are not revised remain applicable.



1 Scope

Revise First Sentence to Read

...carbon steel subsea pipelines, flowlines, and pipeline risers in offshore, nearshore and landfall environments.

2 Normative references

Add

ASME B31.4	Pipeline Transportation Systems for Liquid Hydrocarbons and other Liquids, Chapter IX Offshore Liquid Pipeline Systems.
ASME B31.8	Gas Transmission and Distribution Piping Systems, Chapter VIII Offshore Gas Transmission.
API RP 1111	Design, Construction, Operation, and Maintenance of Offshore Hydrocarbon Pipelines.
DNV OS-F101	Submarine Pipeline Systems.

6 Design — Mechanical integrity

6.2 Design criteria

6.2.2 Pressure design of pipeline and pipeline components

6.2.2.1 Straight pipe under internal pressure

Add

If internally clad or lined linepipe is used for corrosive service, the strength contribution from the internal cladding/liner shall be ignored in calculating the pipe wall thickness required for pressure containment. If the thermal expansion coefficient of the internally clad/lined material is different from that of the outer pipe, the effects of differential expansion of the cladding/liner shall be considered in reducing the available pressure capacity.

Wall thickness tolerances shall be selected to ensure that the weight of the supplied pipe is equal or less than the nominal weight of the pipe.

Weight control is essential in selecting pipe to be used in a bundle for on-bottom tow.

Discussions with the pipe supplier should be initiated and reinforced at each stage of pipe manufacture to ensure that the above approach to wall thickness is taken.

This approach conflicts with normal mill practice of using a target wall thickness greater than the nominal thickness of the pipe.

6.2.2.2 Straight pipe under external loading

Modify to Read

...bending stresses, dimensional tolerance and external loads (see API RP 1111, DNV OS-F101, ASME B31.4, ASME B31.8 or Annex G of PD 8010-2).

The DNV Code has a 0.85 de-rating on the collapse strength of UOE pipe due to loss of compressive strength during cold expansion. Testing work carried out by the BP Deepwater R&D program and Mardi Gras Project has shown that the heat treatment the pipe receives during the coating process can thermally age the pipe so that the compressive strength is recovered. By closely monitoring the coating process this can be used in design and can significantly reduce wall thickness. This approach was

