



Exploration & Production

GENERAL SPECIFICATION

PIPELINES - RISERS

GS PLR 101

Design of submarine pipelines as per DNV 1981

01	10/03	Change of Group name and logo
00	10/02	First issue
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1. Scope

This General Specification is supplementing the **GS PLR 100** when the **DNV 81** is the applicable reference for a specific project.

2. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the CONTRACT.

Standards

Reference	Title
Not applicable	

Professional Documents

Reference	Title
DNV 81	Rules for Submarine Pipeline Systems

Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
Not applicable	

Other documents

Reference	Title
Not applicable	

Total General Specifications

Reference	Title
GS PLR 000	General Specification Catalogue
GS PLR 100	Submarine pipeline systems

3. Amendments to DNV 81

3.1 General

This section covers the amendments made to DNV 81. Under Project requirements, these amendments may partly or totally apply, otherwise they shall not be considered.

3.2 Extreme internal pressure

The following technical term is added to DNV 81 [1.2]:

- The Extreme Internal Pressure denotes an extreme (or abnormal) internal pressure corresponds to a loading with a low frequency of occurrence at between 10^{-3} and 10^{-4} per year.
- As an example, the overpressure protection equipment may induce a pressure equal to the reservoir pressure, denoted as WHSP for "Well Head Shut in Pressure".

3.3 Zones

As per DNV 81 [1.3.13 and 1.3.14], the battery limit between zone 1 and zone 2 is normally of 500 m, however it may be reduced as low as 30 m (but never less) under specific Project requirement.

Spool pieces, expansion loops or dog legs are within Zone 2, whatever the selected distance for the zone break.

3.4 Rules

Unless otherwise stated in the local regulations, DNV 81 [1.4] shall be understood as design guidelines only.

3.5 Certificate of compliance

Unless otherwise stated in the Project requirements, the Certificate of Compliance as described in DNV 81 [1.5] is of no concern.

3.6 Documentation

Unless otherwise stated in in the Project requirements, DNV 81 [1.5] and [1.8] shall be understood as design guidelines only.

3.7 Hoop stress

For hoop stress checks only - that is excluding the wall thickness sizing - the use of the Lamé formula as follows:

$$\sigma_H = (P_i - P_e)^2 \left(\frac{1 + \alpha}{1 - \alpha} \right) \text{ where } \alpha = \left(\frac{D - 2t}{D} \right)^2$$

is permitted as it provides more allowance for further stress checks, which is especially (but not only) of interest for re-assessment steps.