



Exploration & Production

GENERAL SPECIFICATION

PIPELINES - RISERS

GS PLR 103

Design of submarine pipelines as per DNV OS-F101

02	10/04	Minor corrections
01	09/03	Addition § 3.6 and 4 – Change of Group name and logo
00	10/02	First issue
Rev.	Date	Notes



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1. Scope

This General Specification is supplementing the **GS PLR 100** when the **DNV OS-F101** "Submarine Pipeline Systems" is the selected Prime Reference.

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
ASME/ANSI B31.8	Gas Transmission and Distribution Piping System
DNV OS-F101	Submarine Pipeline Systems
DNV OS-F201	Offshore Standard - Dynamic Risers

Professional Documents

Reference	Title
DNV RP E305	On-bottom Stability Design of Submarine Pipelines
DNV RP F105	Free Spanning Pipelines

Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
Not applicable	

Other documents

Reference	Title
OTC 5851	Forces on Sheltered Pipelines

Total General Specifications

Reference	Title
GS PLR 000	General Specification Catalogue
GS PLR 100	Subsea Pipeline Systems

3. Amendments to DNV OS-F101

3.1 General

This section outlines COMPANY additional requirements to be made to [DNV OS-F101](#).

Under Project requirements, these amendments may partly or totally apply.

3.2 Section 4 § C402

Hydrodynamic coefficients used in the design shall not be less than the ones given by [DNV RP-E305](#) as per Section 5 § E409.

For a pipe in a trench, hydrodynamic forces can be decreased due to sheltering effects, if relevant (trench, partial burial) following [OTC 5851](#) article "Forces on Sheltered Pipelines".

3.3 Section 5 § B706

After:

"An external corrosion allowance of 3 mm shall be applied to C-Mn steel risers of safety class Normal and High in the splash zone..."

add:

"A specific coating to be approved by COMPANY can substitute this requirement for the splash zone".

3.4 Section 5 § C104

After:

"A load controlled design criterion can always be applied in place of a displacement controlled design criterion"

add:

"The distinction between the two cases is often unclear, consequently it is recommended to always to check the design under load controlled criterion even if load displacement is retained in principle –for instance when checking the local buckling."

In addition, stiffness of concrete shall be used in the pipelay analysis; the method proposed in [DNV RP-F105](#) - section 6.3 for the evaluation of the stiffening effect is recommended.

3.5 Section 5 § D302

The selection of the applicable load combinations a and/or b to be used along each step of the design check under SLS and ULS formats shall be assessed in a clearly understandable way.

3.6 Section 5 § D503

Collapse is a system failure mode likely to occur at the weakest part of the pipeline i.e. in the location of the thinnest pipe wall where $t=t_1$. As a result, wall thickness calculation for collapse resistance shall use the [DNV OS-F201](#) (2001) section 5 D300 criteria.

3.7 Section 5 § E301

Natural frequency of spanning risers shall be also checked in order to prove that the riser will not be subject to any damaging vibrations

3.8 Section 5 § C401

Stress intensification factors at bends shall be calculated in accordance with Appendix E of [ASME B31.8](#).

3.9 Section 5 § E409

The pipe on-bottom stability shall be checked 10% corroded.

3.10 Section 12 § K300

During preliminary approach only a static calculation shall be performed with a relevant safety factor.

During the engineering of installation at least pseudo quasi static mode shall be checked.

If the loads are such that we are at the limit of the proposed barge capacity or of the pipeline design then a full dynamic check shall be made.

4. Material welding and Non Destructive Testing

The material, welding and Non Destructive Testing requirements for any temporary or permanent components of the SYSTEM are covered by relevant General Specifications and especially by those listed in the [GS PLR 000](#).

Any conflicts between General specification and DNV code shall be identified and resolution shall be approved.