

DEP SPECIFICATION

COMPACTION AND SUBSIDENCE PREDICTION

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DESIGN AND ENGINEERING PRACTICE

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1. INTRODUCTION

1.1 SCOPE

This DEP specifies requirements and gives recommendations for compaction and subsidence modelling. It is applicable to the following Upstream Business Processes in the Business Management System (BMS):

- 18 - Manage Geomatics, e.g. baseline geodetic surveys
- 22 - Manage Legal & Compliance Processes, e.g. Netherlands regulations
- 60 - Plan Hydrocarbon Development, e.g., field development planning
- 63 - Deliver Wells, e.g., casing/completion design
- 64 - Design, Construct, Modify and Decommission Facilities, e.g., offshore platform design
- 72 - Maintain & Assure Facilities Integrity, e.g. infrastructure damage
- 73 - Execute Well & Reservoir Surveillance/Management

The purpose of this DEP is to ensure that reliable estimates of reservoir compaction and surface subsidence, which capture the full range of uncertainty, are provided as input to FDPs, Well Functional Specifications (development and appraisal) and facility design.

It is not in the scope of this DEP to specify which discipline(s) will provide and control the quality of the input data, or perform the analysis leading to the compaction/subsidence prediction. This responsibility varies between regions and OUs, and is specified in the region or OU governance.

The custodianship and accountability for this DEP resides with the Petrophysics and Geomechanics Global Discipline Head (PP/GM GDH).

This DEP contains mandatory requirements to mitigate process safety risks in accordance with Design Engineering Manual DEM 1 – Application of Technical Standards.

This is a revision of the DEP of the same number dated February 2013; see (1.5) regarding the changes.

1.2 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

Unless otherwise authorised by Shell GSI, the distribution of this DEP is confined to Shell companies and, where necessary, to Contractors and Manufacturers/Suppliers nominated by them. Any authorised access to DEPs does not for that reason constitute an authorization to any documents, data or information to which the DEPs may refer.

This DEP is intended for use in facilities related to oil and gas production. This DEP may also be applied in other similar facilities.

When DEPs are applied, a Management of Change (MOC) process shall be implemented; this is of particular importance when existing facilities are to be modified.

If national and/or local regulations exist in which some of the requirements could be more stringent than in this DEP, the Contractor shall determine by careful scrutiny which of the requirements are the more stringent and which combination of requirements will be acceptable with regards to the safety, environmental, economic and legal aspects. In all cases, the Contractor shall inform the Principal of any deviation from the requirements of this DEP which is considered to be necessary in order to comply with national and/or local regulations. The Principal may then negotiate with the Authorities concerned, the objective being to obtain agreement to follow this DEP as closely as possible.

1.3 DEFINITIONS

1.3.1 General definitions

The **Contractor** is the party that carries out all or part of the design, engineering, procurement, construction, commissioning or management of a project or operation of a facility. The Principal may undertake all or part of the duties of the Contractor.

The **Manufacturer/Supplier** is the party that manufactures or supplies equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party that initiates the project and ultimately pays for it. The Principal may also include an agent or consultant authorised to act for, and on behalf of, the Principal.

The word **shall** indicates a requirement.

The capitalised term **SHALL [PS]** indicates a process safety requirement.

The word **should** indicates a recommendation.

The word **may** indicates a permitted option.

1.3.2 Specific definitions

Term	Definition
ALARP	As Low As Reasonably Practicable
DCAF	Discipline Controls and Assurance Framework
FDP	Field Development Plan
GDH	Global Discipline Head
GM	Geomechanics
HSE-CA	Health, Safety and Environmental - Critical Activity
HSSE & SP CF	Health, Safety, Security, Environment & Social Performance Control Framework
OFG	Opportunity Framing Guide
ORP	Opportunity Realisation Process
ORG	Opportunity Realisation Guide
PP	Petrophysics
RAM	Risk Assessment Matrix (see HSSE & SP CF)
Region	An organisation within Upstream that represents a group of Assets involved in hydrocarbon exploration and production, often spanning across national boundaries.
VOI	Value of Information
WE	Well Engineering
WRFM	Wells, Reservoir and Facilities Management