



VERIFICATION

UDM CHAPTER 1: INTRODUCTION

DATE: December 2023

This verification manual describes the verification, validation and sensitivity analysis for the individual modules in the Unified Dispersion Model (UDM) implemented into the DNV software packages PHAST / SAFETI.

Reference to part of this report which may lead to misinterpretation is not permissible.





No.	Date	Reason for Issue	Prepared by	Verified by	Approved by
1	May 2011	Phast 6.7, UDM v2			
2	Sep 2017	Phast 8.0, UDM v3 (AWD)			
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Table of contents

1	INTRODUCTION.....	1-2
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1 INTRODUCTION

This verification manual describes the verification, validation and sensitivity analysis for the individual modules of the Unified Dispersion Model (UDM) implemented into DNV software packages Phast and Safeti. Each of the modules has been investigated in detail in conjunction with a literature review and a sensitivity analysis. The modules have been improved where necessary, validated where possible, and been compared with external models like TNO models and the Shell package HGSYSTEM.

The subsequent chapters in this report investigate the following.

2. Modelling of far-field passive dispersion
3. Modelling of jet dispersion (including the effect of near-field passive dispersion and ground drag forces)
4. Modelling of heavy-gas dispersion
5. Modelling of transitions: touchdown (plume impact) and transition to passive
6. Modelling of unpressurised instantaneous dispersion (i.e. without initial energetic expansion phase)
7. Modelling of finite-duration releases (quasi-instantaneous model, finite-duration correction)
8. Time-varying dispersion (dispersion from pool, elevated release without or with rainout; along-wind diffusion and along-wind gravity spreading)



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