

CIVIL LIABILITY AND FINANCIAL SECURITY FOR OFFSHORE OIL AND GAS ACTIVITIES

Civil Liability and Financial Security for Offshore Oil and Gas Activities provides insights into the liability and compensation regime for offshore-related damage. This book analyzes the legal regime in a number of countries (including the United States and the United Kingdom) as well as the EU regime. In addition, the various compensation mechanisms and amounts available today to compensate offshore-related damage are described and critically analyzed. Moreover, based on in-depth interviews with a wide variety of relevant stakeholders, including insurers, representatives from supervisory authorities, and oil and gas producers, this volume also provides a variety of policy recommendations formulated to provide an optimal compensation regime for offshore-related damage.

MICHAEL FAURE is Professor of Comparative Private Law and Economics at Erasmus University Rotterdam and Professor of Comparative and International Environmental Law at Maastricht University. He serves also as Academic Director of the Maastricht European Institute for Transnational Legal Research (METRO).

CIVIL LIABILITY AND
FINANCIAL SECURITY
FOR OFFSHORE OIL AND
GAS ACTIVITIES

Edited by
MICHAEL FAURE
Universiteit Maastricht, Netherlands



Cambridge University Press
978-1-107-16716-2 — Civil Liability and Financial Security for Offshore Oil and Gas Activities
Edited by Michael Faure
Frontmatter
[More Information](#)

CAMBRIDGE
UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning, and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9781107167162

© Michael Faure 2017

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 2017

A catalogue record for this publication is available from the British Library.

Library of Congress Cataloging-in-Publication Data

Faure, Michael (Michael G.) editor.

Civil liability and financial security for offshore oil and gas activities / edited by Michael Faure.

New York : Cambridge University Press, 2016.

LCCN 2016023670 | ISBN 9781107167162 (hardback)

LCSH: Liability for oil pollution damages. | Oil pollution of the sea – Law and legislation. | Offshore oil well drilling – Law and legislation. | Offshore gas well drilling – Law and legislation. | Oil and gas leases. | Liability (Law). | Compensation (Law). | BISAC: LAW / Civil Law.

LCC K956 .C58 2016 | DDC 343.07/72–dc23

LC record available at <https://lcn.loc.gov/2016023670>

ISBN 978-1-107-16716-2 Hardback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-party Internet websites referred to in this publication and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.

CONTENTS

<i>List of Figures and Tables</i>	page xvi
<i>List of Contributors</i>	xviii
<i>Preface and Acknowledgements</i>	xix
<i>List of Abbreviations</i>	xxi
1 Introduction	1
MICHAEL FAURE, NIELS PHILIPSEN AND HUI WANG	
1.1 Background for This Book	1
1.2 Objective of This Book	5
1.3 Methodology	5
1.3.1 Legal Analysis	6
1.3.2 Law and Economics	8
1.3.3 Empirics	9
1.3.4 Integration	10
1.4 Structure	10
2 Offshore-Related Damage: Facts and Figures	12
KRISTEL DE SMEDT AND HUI WANG	
2.1 General Issues Concerning Offshore Activities	12
2.1.1 Terminology in Offshore Activities	12
2.1.2 Industry Structure of Offshore Activities	13
2.1.3 Stakeholders	15
2.1.4 Importance of Offshore Activities	18
2.2 Location of Installations and Facilities in the European Union	18
2.2.1 General Information	18
2.2.2 Offshore Interests in the North Sea	20
2.2.3 Offshore Interests in the Mediterranean Sea	21

2.3	Overview of Major Offshore Accidents	22
2.3.1	Sources of Information	22
2.3.1.1	Worldwide Database	22
2.3.1.2	National Regulatory Authorities	24
2.3.1.3	Regional Database	31
2.3.1.4	Industry Database	33
2.3.1.5	Observation from Available Data	36
2.3.2	Overview of Serious Accidents Involving Offshore Facilities	37
2.4	Analysis of Recent Offshore Accidents in Europe: Case Studies	41
2.4.1	Gulfaks C Incident (19 May 2010): A Near Miss	41
2.4.2	Valhall PCP Production Platform Fire (13 July 2011)	41
2.4.3	Escape of Hydrocarbons at Ula Field Norway (12 September 2012)	42
2.4.4	Gannet Alpha Oil Spill (10 August 2011)	43
2.4.5	Elgin Platform Blowout (26 March 2012)	44
2.5	Analysis of Recent Offshore Accidents Outside EU Waters	45
2.5.1	Montara	45
2.5.1.1	Facts of the Incident	45
2.5.1.2	Trans-Boundary Complaints from Indonesia	48
2.5.2	Deepwater Horizon	49
2.5.2.1	Facts of the Incident and Legal Issues	49
2.5.2.2	Overview of Legal Proceedings	53
2.5.2.3	Post-Macondo Responses	56
2.5.2.4	Summary	57
2.5.3	More Accidents in 2015	58
2.5.3.1	Petrobras Brazil Offshore Explosion	58
2.5.3.2	Pemex Mexico Offshore Accidents	59
2.5.4	Risk of a Deepwater Horizon Oil Spill in the European Union?	59
2.5.4.1	Different Depths and Pressures	59
2.5.4.2	Concerns after Macondo	60
2.5.4.3	Expert Evaluation	61
2.5.4.4	Limits of Expert Opinion	64
2.5.4.5	Summary	66

CONTENTS

vii

3	Analysis of Existing Legal Regimes	68
	MICHAEL FAURE, JING LIU AND HUI WANG	
3.1	Introduction	68
3.2	International Legal Framework	69
3.2.1	The Civil Liability Convention and the Fund Convention	70
3.2.1.1	The Civil Liability Convention	71
3.2.1.2	Compensation Funds in the International Regime	77
3.2.1.3	Voluntary Mechanisms	79
3.2.2	UNCLOS	81
3.2.3	MARPOL 73/78	83
3.2.4	The OPRC Convention	84
3.2.5	Ongoing Discussion at the IMO	85
3.3	Offshore Liability Regimes	86
3.3.1	Regional Arrangements	86
3.3.2	North-East Atlantic Ocean (North Sea)	87
3.3.2.1	The OSPAR Convention	87
3.3.2.2	The Nordic Convention	88
3.3.3	The Mediterranean Sea	88
3.3.4	The Baltic Sea	90
3.3.5	The Black Sea	91
3.3.6	Summary of the Regional Seas Arrangements	91
3.4	Current EU Regime on Offshore Activities	91
3.4.1	EU Interest in Offshore Activities	91
3.4.2	Council Directive 92/91 EEC	92
3.4.3	Hydrocarbons Licensing Directive 1994 (94/22/EC)	92
3.4.4	The Marine Strategy Framework Directive	93
3.4.5	Communication of 2010	93
3.4.6	Directive on Safety of Offshore Oil and Gas Operations	94
3.5	Offshore Liability Regimes: Country Studies	97
3.5.1	Introduction	97
3.5.2	United Kingdom	98
3.5.2.1	National Interest in Offshore Activities	98
3.5.2.2	Legal Framework	98
3.5.2.3	Basis of Liability	103

3.5.2.4	Relationship with Regulation	104
3.5.2.5	Causation	104
3.5.2.6	Attribution of Liability	105
3.5.2.7	Damages and Remedies	105
3.5.2.8	Amount of Compensation	107
3.5.2.9	Claim Settlement	108
3.5.2.10	Compensation Mechanisms	109
3.5.3	Norway	115
3.5.3.1	National Interest in Offshore Activities	115
3.5.3.2	Legal Framework	116
3.5.3.3	Basis of Liability	119
3.5.3.4	Relationship with Regulation	120
3.5.3.5	Causation	120
3.5.3.6	Attribution of Liability	121
3.5.3.7	Damages and Remedies	122
3.5.3.8	Amount of Compensation	123
3.5.3.9	Claim Settlement	123
3.5.3.10	Compensation Mechanisms	124
3.5.4	Denmark	126
3.5.4.1	National Interest in Offshore Activities	126
3.5.4.2	Legal Framework	126
3.5.4.3	Basis of Liability	128
3.5.4.4	<i>Relationship with Regulation</i>	129
3.5.4.5	Attribution of Liability	129
3.5.4.6	Damages and Remedies	129
3.5.4.7	Compensation Mechanisms	130
3.5.5	United States	131
3.5.5.1	National Interest in Offshore Activities	131
3.5.5.2	Legal Framework	131
3.5.5.3	Basis of Liability	136
3.5.5.4	Relationship with Regulation	137
3.5.5.5	Causation	137
3.5.5.6	Attribution of Liability	138
3.5.5.7	Damages and Remedies	139
3.5.5.8	Amount of Compensation	141
3.5.5.9	Claim Settlement	144
3.5.5.10	Compensation Mechanisms	146
3.5.5.11	Jurisdictional Issues	153
3.5.5.12	Criminal Liability	153

CONTENTS

ix

3.5.6	Australia	154	
3.5.6.1	National Interest in Offshore Activities	154	
3.5.6.2	Legal Framework	155	
3.5.6.3	Basis of Liability	158	
3.5.6.4	Relationship with Regulation	160	
3.5.6.5	Causation	160	
3.5.6.6	Attribution of Liability	160	
3.5.6.7	Damages and Remedies	161	
3.5.6.8	Amount of Compensation	161	
3.5.6.9	Compensation Mechanisms	161	
3.5.7	Canada	163	
3.5.7.1	National Interest in Offshore Activities	163	
3.5.7.2	Legal Framework	163	
3.5.7.3	Basis of Liability	164	
3.5.7.4	Attribution of Liability	164	
3.5.7.5	Damages and Remedies	164	
3.5.7.6	Amount of Compensation	165	
3.5.7.7	Applicability in Time	165	
3.5.7.8	Compensation Mechanisms	166	
3.5.8	Comparative Analysis	166	
3.5.8.1	Best Practice?	166	
3.5.8.2	Comparison of Legislation	167	
3.5.8.3	Comparative Comments	167	
3.6	Another High-Risk Sector: Nuclear	171	
3.6.1	International Compensation System for Nuclear Damage	172	
3.6.1.1	Origin of the International Regime	172	
3.6.1.2	First-Generation Nuclear Liability Conventions	173	
3.6.1.3	Second-Generation Nuclear Liability Conventions	178	
3.6.2	The Compensation System for Nuclear Damage in the United States	182	
3.6.2.1	Liability for Nuclear Damage	183	
3.6.2.2	The Requirement of Financial Protection	187	
3.6.2.3	Compensation under the Convention on Supplementary Compensation	190	
3.6.3	Critical Comparison	191	
3.7	Concluding Observations	195	

4	Pooling Mechanisms for Offshore Liability	197
	MICHAEL FAURE AND JING LIU	
4.1	Theory: Pooling versus Insurance	198
4.2	OPOL	201
4.2.1	Origins of OPOL	201
4.2.2	Main Features	202
4.2.3	Rules and Membership	203
4.2.4	Financial Responsibility	204
4.2.5	Claims Handling	205
4.2.6	Enforcement	206
4.2.7	Practice	207
4.2.8	Evaluation	208
4.3	OIL and OCIL	210
4.3.1	OIL	211
4.3.2	OCIL	213
4.4	Protection and Indemnity Clubs	214
4.4.1	Origins	214
4.4.2	Coverage	214
4.4.3	Entry and Premiums	215
4.4.4	Available Amount	217
4.5	Risk Pooling in the Nuclear Sector	217
4.5.1	Risk Pooling in the Price-Anderson Act	218
4.5.1.1	A Second Tier of Compensation	218
4.5.1.2	... Collectively Financed Through Retrospective Premiums	219
4.5.2	The Mutual Pool for Property Damage in the United States	220
4.5.3	Mutual Nuclear Pools in Europe	221
4.5.4	Nuclear Liability and Pooling System in Germany	223
4.5.5	Towards a European Pool for Nuclear Liability?	227
4.6	Concluding Observations	229
4.6.1	Advantages of Pooling	229
4.6.2	OPOL	232
4.6.3	P&I Clubs	232
4.6.4	Risk Sharing for Vessel-Based Pollution	233
4.6.5	Summary	234

CONTENTS

xi

5	The Use of Financial Market Instruments to Cover Liability Following a Major Offshore Accident	236
	MICHAEL FAURE AND HUI WANG	
5.1	Self-Insurance	237
5.1.1	Theory	237
5.1.2	Practice	238
5.1.3	Analysis	240
5.2	Capital Market	242
5.2.1	Theory	242
5.2.2	Practice	243
5.2.3	Analysis	244
5.3	Guarantees	244
5.3.1	Theory	244
5.3.2	Practice	245
5.3.3	Analysis	245
5.4	(Re-)Insurance	246
5.4.1	Theory	246
5.4.2	Practice	248
5.4.2.1	Stakeholders in the Insurance Market (Major Insurance/Re-Insurance Providers)	248
5.4.2.2	Structure of Coverage of Offshore Insurance	250
5.4.2.3	Available Insurance Amount	252
5.4.2.4	Cost Estimation	255
5.4.2.5	Calculation of Premiums	257
5.4.2.6	Influence of the Deepwater Horizon Incident on the Insurance Industry	258
5.4.3	Analysis	260
5.5	Risk-Pooling Schemes	261
5.6	OPOL	263
5.7	Combinations	264
6	Potential of Financial and Insurance Instruments to Cover Liability Following a Major Offshore Accident	266
	MICHAEL FAURE AND HUI WANG	
6.1	Potential Costs of an Offshore Incident	267

6.1.1	Potential Costs and Verifications	268
6.1.1.1	Safety Regulation	269
6.1.1.2	Technical Differences in Different Waters	269
6.1.1.3	Differences in Operators	271
6.1.1.4	Different Liability Standards	271
6.1.2	Insolvency Risk and Different Scenarios	273
6.2	Self-Guarantee Through Tax	276
6.3	Expanding Possibility of Insurance?	277
6.3.1	Mandatory Insurance and Increasing Coverage?	277
6.3.2	Proposal of Munich Re-Insurance	280
6.3.2.1	An SOS Cover	280
6.3.2.2	Stakeholders Assessment	283
6.3.2.3	Reaction by Munich Re	284
6.3.2.4	Analysis	285
6.3.3	Cover for Vessel-Based Pollution	286
6.3.4	Developments in the Coverage of Nuclear Risk	287
6.3.5	Summary	289
6.4	Potential of Expanding Risk-Pooling Schemes	289
6.4.1	Expanding OIL and OCIL	290
6.4.2	Expanding OPOL?	291
6.4.3	Noble Energy Proposal	293
6.4.3.1	Background	293
6.4.3.2	Contents of the Proposal	294
6.4.3.3	Implementation?	296
6.4.3.4	Reactions from Stakeholders	297
6.4.3.5	Evaluation	298
6.4.4	Challenges	299
6.5	Summary: Flexibility	301
7	Towards Optimal Liability and Compensation for Offshore Oil and Gas Activities	303
	KRISTEL DE SMEDT, HUI WANG AND MICHAEL FAURE	
7.1	Principles of Efficient Compensation and Liability Rules	304
7.1.1	Why Compensate?	305
7.1.2	Principles of Efficient and Fair Compensation	306
7.2	Efficient Liability Rules	308

CONTENTS

xiii

7.2.1	Strict liability or Negligence?	308	
7.2.1.1	Economic Theory	308	
7.2.1.2	Application to Offshore-Related Risks		312
7.2.2	Attribution of Liability	313	
7.2.2.1	Channelling of Liability	313	
7.2.2.2	Joint and Several Liability	316	
7.2.3	Financial Cap?	317	
7.3	Liability versus Regulation	319	
7.3.1	Criteria for Safety Regulation	319	
7.3.1.1	Information Asymmetry as a Criterion for Regulatory Intervention		320
7.3.1.2	Insolvency Risk	320	
7.3.1.3	The Threat of a Liability Suit	321	
7.3.2	The Need to Regulate Offshore-Related Risks		322
7.3.3	Private or Public Regulation?	324	
7.3.4	Liability and Regulation Combined	326	
7.3.5	Stakeholder Assessment	328	
7.3.6	Policy Conclusions	330	
7.4	Mandatory Financial Security	331	
7.4.1	Criteria for Mandatory Financial Security	331	
7.4.2	Application to Offshore-Related Risks	332	
7.4.3	Stakeholder Assessment in the European Union		333
7.4.4	(European) Policy Issues	335	
7.4.5	Summary	338	
7.5	Compensation Instrument	339	
7.5.1	Self-Guarantee Through Taxes	339	
7.5.2	Mandatory Insurance and the Munich Re Proposal		340
7.5.3	Risk-Sharing Pools	341	
7.5.4	A Role for Government in Providing Compensation?	343	
7.5.4.1	Direct Compensation by Government?		343
7.5.4.2	Arguments in Favour	343	
7.5.4.3	Arguments Against	344	
7.5.4.4	Summary	345	
7.5.5	Re-Insurer of Last Resort?	346	
7.5.5.1	Arguments in Favour	346	
7.5.5.2	Arguments Against	347	
7.5.5.3	Summary	348	

7.5.6	A Compensation Fund?	349
7.5.6.1	Funds versus Insurance	349
7.5.6.2	Economic Principles to Shape a Fund	351
7.5.6.3	Experiences with Environmental Funds	352
7.5.6.4	A Fund for Offshore-Related Risks? Stakeholder Opinions	356
7.6	Rapid Claims Management	359
7.6.1	Existing Schemes	359
7.6.1.1	OPOL	360
7.6.1.2	Norway	360
7.6.1.3	The Civil Liability and Fund Conventions	361
7.6.1.4	Claims Settlement in the Deepwater Horizon Case	363
7.6.2	Normative Analysis	369
7.6.2.1	Need for a Mechanism	369
7.6.2.2	Compensation Funds	371
7.6.2.3	Stimulate Rapid Payment within Liability Law	372
7.6.2.4	Combinations	372
7.6.2.5	Evaluation	374
7.7	Trans-Boundary Harm	376
7.8	Scenarios	379
7.8.1	Scenario 1: Damage Maximum US\$250 Million	379
7.8.2	Scenario 2: Damage between US\$250 Million and US\$750 Million	380
7.8.3	Scenario 3: Damage above US\$750 Million	381
8	Concluding Remarks	383
	MICHAEL FAURE, NIELS PHILIPSEN AND HUI WANG	
8.1	General	383
8.2	Efficient Liability Rules	384
8.3	Mandatory Financial Security	385
8.4	A Role for Government?	386
8.5	Rapid Claims Mechanism	387

CONTENTS

XV

<i>References</i>	388	
<i>Appendix 1: Overview of Interviews with Stakeholders</i>	406	
<i>Appendix 2: Checklist for Country Studies</i>	408	
<i>Appendix 3: Oil Pollution Act Liability Limits, 2012</i>		412
<i>Index</i>	431	

FIGURES AND TABLES

Figures

- 1 Oil companies with exploration/production licences in Europe (operators) *page 17*
- 2 Distribution of accidents according to type for accidents in the WOAD 23
- 3 Frequency/cumulative frequency of damage costs 24
- 4 Consequences according to WOAD 24
- 5 Damage costs according to WOAD 25
- 6 Accident category according to WOAD 25
- 7 Injuries by severity, 2004–2014 27
- 8 Major/specified injuries 2004–2014 28
- 9 Total amount of oil spilled from installations (United Kingdom) 29
- 10 Personal injury accident frequency in the exploration and production industry 32
- 11 Serious and fatal personal injury accidents in the exploration and production industry 32
- 12 Fatalities from offshore oil and gas operations 35
- 13 Global offshore energy premiums by market 250
- 14 Proposed offshore liability towers – with “no caps” 296

Tables

- 1 Overview of the Ten Most Expensive Operators’ Extra Expense (OEE) Losses in History 36
- 2 High-Profile Oil Spills from Offshore Blowouts 38
- 3 Upstream Losses in Excess of US\$50 million, 2013 39
- 4 Upstream Losses in Excess of US\$50 million, 2014 40
- 5 Compensation for Pollution Damage under the International Regime 80
- 6 Comparison of Liability Limits under OPA 90 and the Coast Guard and Maritime Transportation Act of 2006 142

LIST OF FIGURES AND TABLES

xvii

- 7 Financial Responsibility for Offshore Facilities Located Partially or Wholly on the Outer Continental Shelf 149
- 8 Financial Responsibility for Offshore Facilities Not Located on the Outer Continental Shelf 149
- 9 Well Blowouts That Have Occurred in Offshore Australia Since 1965 155
- 10 Comparison of Legislation 168
- 11 The Different Coverage Caps Before and After the Conventions' 2004 Amendments (in millions of euros) 181
- 12 Average Per-Unit Marine Oil Spill Clean-Up Costs by Nation (in 1999 US\$) 256
- 13 Payments 366

CONTRIBUTORS

KRISTEL DE SMEDT
Maastricht University, Netherlands

MICHAEL FAURE
Maastricht University and Erasmus School of Law Rotterdam,
Netherlands

JING LIU
Wuhan University, China, and Erasmus School of Law Rotterdam,
Netherlands

NIELS PHILIPSEN
Maastricht University and Erasmus School of Law Rotterdam,
Netherlands

HUI WANG
Maastricht University, Netherlands

PREFACE AND ACKNOWLEDGEMENTS

On April 20, 2010, the world was shocked when an accident occurred at the mobile deep-water offshore rig Deepwater Horizon in the Gulf of Mexico, leading to an unprecedented spill that continued for several months with a total loss of several million barrels of oil. Immediately after the incident, the obvious question was asked whether the operator (BP) could be held liable to compensate for the damage that resulted from the incident. In the immediate aftermath of the disaster, steps were taken to force BP to make funds available for compensation of the victims in the light of its obligations under the US Oil Pollution Act. However, in other jurisdictions the question also arose as to how liability and compensation for the consequences of such an incident would be regulated. It appeared that whereas oil spills resulting from tankers had been largely regulated, to some extent to the surprise of many, there was no international convention with respect to civil liability and compensation for damage resulting from offshore oil and gas activities. This also led to great concern within the European Union and resulted, *inter alia*, in legislative action by the European Commission leading to a Directive (2013/30/EU of June 12, 2013) on the safety of offshore oil and gas operations. At the same time, the European Commission also commissioned an in-depth study into the liability and compensation for damage resulting from offshore oil and gas activities, where these activities occur in European waters. This study started in the fall of 2012, and the results were delivered in October 2013. Subsequently, the team of writers has substantially revised and updated the policy report into an academic study, of which this book is the result.

The aim of this book is not only to provide insights, *inter alia*, by focusing on past incidents, on the risks related to offshore incidents but also to provide an in-depth analysis of existing legal regimes at both the international and EU levels, as well as by analyzing various domestic legal regimes. This book equally analyzes how currently (through a variety of financial and insurance instruments) the liability for damage resulting

from a major offshore accident is covered. In addition to describing the status quo, this book also analyzes, taking both an empirical and a theoretical (law and economics) approach, how the compensation of damage following a major offshore accident could be arranged. The analysis in this book focuses on the question of how (using a variety of compensation mechanisms in combination), on the one hand, a high amount of compensation could be provided and, on the other hand, how various compensation mechanisms could equally provide effective incentives to prevent major offshore accidents.

Because the questions addressed in this book go beyond a simple legal analysis, the team of authors constituted lawyers (Faure, Liu, and Wang) and economists (Philipsen and De Smedt). Because our aim was not only to provide an academic study but also to obtain detailed insights into the scope of offshore-related risks and the compensation mechanisms available, more than twenty interviews were held with relevant stakeholders (listed in Appendix 1). We are grateful to the stakeholders we interviewed for the valuable information they provided, which substantially contributed to the quality of the final result. During the earlier phase of the collaboration with the European Commission, we benefited from interesting insights and comments provided by collaborators at the Commission. We are grateful to all of them and, in particular, to Eero Ailio, Arthur van Daelen, Xavier Goulay, Jorg Koehli, and Taf Powell.

Obviously, the usual disclaimer applies, implying that the contents of this book obviously do not bind the European Commission in any way and that all errors are ours alone.

We are equally grateful to Marjo Mullers and Marina Jodogne (METRO, Maastricht University) for editorial assistance, as well as to the team at Cambridge University Press for a pleasant collaboration in the preparation of this manuscript for publication.

We truly hope that with this book we can provide a modest contribution to improving the safety of offshore oil and gas activities and to an adequate compensation of victims.

ABBREVIATIONS

ACV	actual cash value
AEC	Atomic Energy Commission (US)
AIPN	Association of International Petroleum Negotiators
AMSA	Australian Maritime Safety Authority
ANI	American Nuclear Insurers
ANP	National Petroleum Agency (Brazil)
AtG	Atomgesetz
AUD	Australian dollar
Barcelona Convention	Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean
BAT	best available techniques
bio.	billion
BOE	barrels of oil equivalent
BOEM	Bureau of Ocean Energy Management
BOEMRE	Bureau of Ocean Energy Management, Regulation and Enforcement
BOP	blowout preventer
BP	British Petroleum
BSEE	Bureau of Safety and Environmental Enforcement (US)
Bucharest Convention	Convention for Cooperation in the Protection of the Black Sea Against Pollution 1992
CBT	contingent business interruption
CCC	care, custody, or control
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (US)
CESE	Conseil Économique, Social et Environnemental
CFR	Code of Federal Regulations (US)
CGAA	Coast Guard Authorization Act (US)
CGMTA	Coast Guard and Maritime Transportation Act (US)
CLC	International Convention on Civil Liability for Oil Pollution Damage

xxii	LIST OF ABBREVIATIONS
CLEE	The Convention of Civil Liability for Oil Pollution Damage Resulting from Exploration for and the Exploitation of Seabed Mineral Resources
COFR	certificate of financial responsibility
COPE	Compensation for Oil Pollution in European Waters
CRISTAL	Contract Regarding an Interim Supplement to Tanker Liability for Oil Pollution
CSC	Convention on Supplementary Compensation for Nuclear Damage
CSSP	court-supervised settlement program
CWA	Clean Water Act (US)
DEA	Danish Energy Agency
DECC	Department of Energy and Climate Change (UK)
DEFRA	Department for Environment, Food and Rural Affairs (UK)
DEM	Deutsche mark
DEPA	Danish Environmental Protection Agency
DMITRE	Department of Manufacturing, Innovation, Trade, Resources and Energy
DNV	Det Norske Veritas
DOE	Department of Energy (US)
DOI	Department of the Interior (US)
DOJ	Department of Justice (US)
DUC	Dansk Undergrunds Consortium
EED	Energy Exploration and Development (Insurance)
EEZ	exclusive economic zone
EIA	Energy Information Administration (US)
ELD	Environmental Liability Directive
ELINI	European Liability Insurance for the Nuclear Industry
EMANI	European Mutual Association for Nuclear Insurance
EMSA	European Maritime Safety Agency
ENI	Italian Hydrocarbons Agency
ENO	extraordinary nuclear occurrence
EPA	Environmental Protection Agency (US)
EU	European Union
EUR	euro
FERC	Federal Energy and Regulatory Commission (US)
FR	Financial Responsibility Form
Fund Convention	International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage
GCCF	Gulf Coast Claims Facility (US)

LIST OF ABBREVIATIONS

xxiii

GT	tonnage of ship
HCRs	hydrocarbon releases
Helsinki Convention	Convention for the Protection of the Marine Environment of the Baltic Sea Area 1992
HP	high-pressure wells
HSE	Health and Safety Executive (UK)
HT	high-temperature wells
IADC	International Association of Drilling Contractors
IAEA	International Atomic Energy Agency
IAT	incident analysis team
IEA	International Energy Agency
IMO	International Maritime Organization
IMR	Institute of Maritime Research
INPO	Institute of Nuclear Power Operations
INTERTANKO	International Association of Independent Tanker Owners
IOPC Fund	International Oil Pollution Compensation Fund
IRF	International Regulators' Forum
IRMI	International Risk Management Institute
ITRE	European Parliament's Committee on Energy
IUMI	International Union of Marine Insurance
J&S	joint and several liability
JNCC	Joint Nature Conservation Committee
JOA	joint operating agreement
JRC	Joint Research Centre
Klif	Climate and Pollution Agency (Norway)
KPI	key performance indicator
LNG	liquefied natural gas
LOGIC	Leading Oil Government's Oil and Gas Industry Task Force
LTA	lost-time accident
MAERP	Mutual Atomic Energy Re-Insurance Pool
MARPOL 73/783	1973 International Convention for the Prevention of Pollution from Ships as Amended by the Protocol 1978
MCA	Maritime and Coastguard Agency (UK)
MDL	multidistrict litigation
MEP	Member of the European Parliament
MIA	Mutual Indemnity Agreement
mio.	million
MIT	Massachusetts Institute of Technology
MMS	Minerals Management Service (US)
MODU	mobile offshore drilling unit
MOEX	Mitsui Oil Exploration Company

xxiv	LIST OF ABBREVIATIONS
MOPU	mobile offshore production units
MOU	memorandum of understanding
MPE	Ministry of Petroleum and Energy (Norway)
MRF	mutual response fund
NatCats	natural catastrophes
NCA	Norwegian Coastal Administration
NEA	Nuclear Energy Agency
NEB	National Energy Board (Canada)
NEIL	Nuclear Electric Insurance Limited
NELIA	Nuclear Energy Liability Insurance Association
NFWF	National Fish and Wildlife Foundation
NGO	nongovernmental organization
NINA	Norwegian Institute for Nature Research
NM	nautical mile(s)
NOAA	National Oceanic and Atmospheric Administration (US)
NOGEPAN	Netherlands Oil and Gas Exploration and Production Association
NOK	kroner (Norway)
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority (Australia)
Nordic Convention	Nordic Environmental Protection Convention
NPCA	Norwegian Pollution Control Authority
NPD	Norwegian Petroleum Directorate
NPDES	National Pollutant Discharge Elimination System (US)
NPFC	National Pollution Fund Centre (US)
NRC	Nuclear Regulatory Commission
NSOAF	North Sea Offshore Authorities Forum
OCES	Operators' Co-operative Emergency Services
OCIL	Oil Casualty Insurance Limited
OCS	outer continental shelf
OCSLA	Outer Continental Shelf Lands Act
OECD	Organization for Economic Cooperation and Development
OEE	operators extra expense (insurance policy)
Offshore Protocol	Protocol for the Protection of the Mediterranean Sea Against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and Its Subsoil, 1994
OGP	International Association of Oil and Gas Producers
OIL	Oil Insurance Limited
OOG	Overlegorgaan Olie en Gas (Netherlands)
OPA	Oil Pollution Act 1990 (US)

LIST OF ABBREVIATIONS

XXV

OPEC	Organization of the Petroleum Exporting Countries
OPEP	Oil Pollution Emergency Plan (UK)
OPGGSSA	Offshore Petroleum and Greenhouse Gas Storage Act (Australia)
OPOP	Offshore Pollution Liability Agreement
OPRC Convention	International Convention on Oil Pollution Preparedness, Response, and Cooperation 1990
OSCAR	Oil Spill Contingency and Response
OSFR	Oil Spill Financial Responsibility for Offshore Facilities
OSIS	Oil Spill Information System
OSLTF	Oil Spill Liability Trust Fund (US)
OSPAR Convention	Convention for the Protection of the Marine Environment of the North-East Atlantic of 1992
OSPRAG	Oil Spill Prevention and Response Advisory Group
PAA	Price-Anderson Act (US)
P&I Clubs	Protection and Indemnity Clubs
PLA	public liability action
PSA	Petroleum Safety Authority (Norway)
PTTEP	PTT exploration and production
PTTEP AA	PTTEP Australasia
RCV	replacement-cost value
REG	regulation
RWC	restricted work cases
RWS NZ	Rijkswaterstaat Noordzee (Netherlands)
SDFI	State's Direct Financial Interest (Norway)
SDR	Special Drawing Rights
SEC	Securities and Exchange Commission
SEMS	Safety and Environmental Management System
SFS 1968:45	Swedish Nuclear Liability Act
SIR	self-insured retention
SL	strict liability
SLA	Submerged Lands Act 1953
SOS	sudden oil spill
SPV	special-purpose vehicle
SSM	State Supervision of Mines (Netherlands)
STOPIA	Small Tanker Oil Pollution Indemnification Agreement
TOPIA	Tanker Oil Pollution Indemnification Agreement
TOVALOP	Tanker Owners Voluntary Agreement Concerning Liability for Oil Pollution
UK	United Kingdom
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea

xxvi

LIST OF ABBREVIATIONS

UNEP

United Nations Environment Program

US

United States

US\$

US dollars

VoOs

vessels of opportunity

WANO

World Association of Nuclear Operators

WELD

Willis Energy-Loss Database

WOAD

Worldwide Offshore Accident Databank