Supporting safety decision making in companies: Briefing notes for Board members, managers and other leaders



1st edition

August 2016

The Energy Institute (EI) is the chartered professional membership body for the energy industry, supporting over 23 000 individuals working in or studying energy and 250 energy companies worldwide. The EI provides learning and networking opportunities to support professional development, as well as professional recognition and technical and scientific knowledge resources on energy in all its forms and applications.

The EI's purpose is to develop and disseminate knowledge, skills and good practice towards a safe, secure and sustainable energy system. In fulfilling this mission, the EI addresses the depth and breadth of the energy sector, from fuels and fuels distribution to health and safety, sustainability and the environment. It also informs policy by providing a platform for debate and scientifically-sound information on energy issues.

The EI is licensed by:

- the Engineering Council to award Chartered, Incorporated and Engineering Technician status;
- the Science Council to award Chartered Scientist status, and
- the Society for the Environment to award Chartered Environmentalist status.

It also offers its own Chartered Energy Engineer, Chartered Petroleum Engineer and Chartered Energy Manager titles.

A registered charity, the El serves society with independence, professionalism and a wealth of expertise in all energy matters.

This publication has been produced as a result of work carried out within the Technical Team of the EI, funded by the EI's Technical Partners. The EI's Technical Work Programme provides industry with cost-effective, value-adding knowledge on key current and future issues affecting those operating in the energy sector, both in the UK and internationally.

For further information, please visit http://www.energyinst.org

The EI gratefully acknowledges the financial contributions towards the scientific and technical programme from the following companies

BP Exploration Operating Co Ltd	RWE npower
BP Oil UK Ltd	Saudi Aramco
Centrica	Scottish Power
Chevron	SGS
CLH	Shell UK Oil Products Limited
ConocoPhillips Ltd	Shell U.K. Exploration and Production Ltd
DCC Energy	SSE
DONG Energy	Statkraft
EDF Energy	Statoil
ENGIE	Talisman Sinopec Energy (UK) Ltd
ENI	Tesoro
E. ON UK	Total E&P UK Limited
ExxonMobil International Ltd	Total UK Limited
Kuwait Petroleum International Ltd	Tullow Oil
Maersk Oil North Sea UK Limited	Valero
Nexen	Vattenfall
Phillips 66	Vitol
Qatar Petroleum	World Fuel Services

However, it should be noted that the above organisations have not all been directly involved in the development of this publication, nor do they necessarily endorse its content.

Copyright © 2016 by the Energy Institute, London. The Energy Institute is a professional membership body incorporated by Royal Charter 2003. Registered charity number 1097899, England All rights reserved

No part of this book may be reproduced by any means, or transmitted or translated into a machine language without the written permission of the publisher.

ISBN 978 0 85293 793 8

Published by the Energy Institute

The information contained in this publication is provided for general information purposes only. Whilst the Energy Institute and the contributors have applied reasonable care in developing this publication, no representations or warranties, express or implied, are made by the Energy Institute or any of the contributors concerning the applicability, suitability, accuracy or completeness of the information contained herein and the Energy Institute and the contributors accept no responsibility whatsoever for the use of this information. Neither the Energy Institute nor any of the contributors shall be liable in any way for any liability, loss, cost or damage incurred as a result of the receipt or use of the information contained herein.

Hard copy and electronic access to EI and IP publications is available via our website, **https://publishing.energyinst.org**. Documents can be purchased online as downloadable pdfs or on an annual subscription for single users and companies. For more information, contact the EI Publications Team.

e: pubs@energyinst.org

Contents

		Pag	es
Forev	vord		. 5
Ackno	owledge	ements	. 7
1	Introdu 1.1 V 1.2 C 1.3 S	Iction What are the Board's responsibilities for managing safety?	. 8 . 9 . 9
2	Setting 2.1 T 2.2 S 2.3 W 2.4 Free	the right safety culture	10 10 12 12 13
3	What C 3.1 C 3 3 3.2 T 3.3 T	ompetences should the Board have? iompetence 1.1 Safety knowledge 1.2 Problem solving 1.3 Social competence ailoring to Board competences. he safety director.	14 14 15 15 15
4	Ensurin are in p 4.1 Q	ag effective process and personal safety management arrangements place	17 18
5	Cogniti 5.1 Fa 5.2 C 5.3 G 5.4 C 5 5.5 Fi	ive biases and their impact on decision making. ast and slow decision making. ommon cognitive and social biases froupthink Overcoming cognitive biases and group think 4.1 Overcoming cognitive bias 4.2 Overcoming group think urther resources.	19 20 25 26 26 27 29
6	Safety 6.1 A 6 6 6 6.2 V 6.3 V 6.3 V 6.4 A 6.5 Fr 6.6 C	performance data – what does it all mean? A tale of two 'safeties'. A.1.1 Personal safety A.1.2 Process safety. A.1.3 False equivalency Vhat data should be provided? Vhat are leaders not being told? Avoiding target culture Araming information Questions for leaders (including Board members).	30 30 31 31 33 34 34 34 34 36

Contents continued

		P	'ages
7	What 7.1	t Is the company's 'appetite for risk'? Risk matrix approach	 37 38
	7.2 7.3	The softer side of risk perception Further resources	39 40
8	Avoid	ding the unintended consequences of business planning and budget	
	settir	1g	41
	8.1	Unintended consequences.	41
		8.1.1 Capital expenditure	43
	0 1	8.1.2 Koutine expense budgets	43
	8.Z	A risk-based approach	44
	8.3	Questions for the Board.	40
9	Sumr	nary	48
Anne	xes		
Anne	хA	References and bibliography.A.1References.A.2Bibliography.	 49 49 50
Anne	хB	Abbreviations and acronyms	52

FOREWORD

Safety within an organisation is heavily influenced by decisions made at executive Board level and by senior managers of the divisions in the case of large multilevel organisations ('leaders'). Lack of direction and oversight from leaders has been cited as a major contributory factor by investigations into some of the largest incidents that have occurred in the energy industry. However, leaders do not act in a vacuum; they are responding to the information they are provided with by managers and their understanding of that information, as they balance the demands placed on them by competing business drivers such as: optimisation of income and expenditure to maximise profit; and maintaining licence to operate and the confidence of all stakeholders.

Even if leaders are not directly involved in operational decision making about personal safety and process safety issues, they are responsible for creating the appropriate environment to assure the safety of the organisation's activities, create the right conditions for itself in which to make good decisions, and avoid falling into the pitfalls of bad decision making.

The Energy Institute (EI) Human and Organisational Factors Committee (HOFCOM) identified the requirement to provide guidance on supporting good decision making in companies to:

- enable companies to understand and manage the factors that influence decision making at leadership levels, and
- improve the quality, understanding, and flow of information at the top of organisations, in order to facilitate better informed decisions, specifically where those decisions can impact on major accident hazard safety.

In order to reach a large target audience, which includes Board members, other senior personnel, and others who wish to gain an insight into how companies operate, each section in this publication is designed to be, to a certain extent, a stand-alone briefing note. Each 'briefing note' focuses on a different aspect of supporting decision making by leaders, and can be read by Board members, senior managers and other personnel individually (giving a snapshot of one aspect of decision making), or as a single publication (giving a more complete picture).

This publication covers a number of subjects, including safety culture, social and cognitive biases, and risk assessment. The information within should not be considered to be definitive; instead, the publication aims to provide practical guidance, to be informative, and to give a well-rounded overview of the subject. It is clear that any one of the topics discussed within the publication can be expanded upon with a publication in its own right, and that practices around managing decision making are likely to develop and improve over the next few years. The first edition of *Supporting safety decision making in companies: briefing notes for board members, managers and other leaders* represents a starting point for beginning to address the subject.

The information contained in this document is provided for general information purposes only. Whilst the EI and the contributors have applied reasonable care in developing this publication, no representations or warranties, expressed or implied, are made by the EI or any of the contributors concerning the applicability, suitability, accuracy or completeness of the information contained herein and the EI and the contributors accept no responsibility whatsoever for the use of this information. Neither the EI nor any of the contributors shall be liable in any way for any liability, loss, cost or damage incurred as a result of the receipt or use of the information contained herein.

The EI welcomes feedback on its publications. Feedback or suggested revisions should be submitted to:

Technical Department Energy Institute 61 New Cavendish Street London, W1G 7AR e: technical@energyinst.org

ACKNOWLEDGEMENTS

Supporting safety decision making in companies: briefing notes for Board members, managers and other leaders is based on a report originally by Martin Ball (Bossiney Ltd.), produced for the Energy institute (EI) Human and Organisational Factors Committee (HOFCOM), with extensive contributions from Alix Davis (EDF Energy), as well as EI staff and HOFCOM members. At the time of publication, HOFCOM members included:

Tony Atkinson	ABB
Ed Corbett	HSL
Bill Gall	Kingsley Management Ltd.
Peter Jefferies	Phillips 66 (Vice-chair)
Stuart King	EI (Secretary)
Eryl Marsh	HSE
Richard Marshall	Essar Oil UK
Rob Miles	Hu-Tech Risk Management Services Ltd (Chair)
Simon Monnington	BP plc
Helen Rycraft	IAEA
Jonathan Ryder	ExxonMobil Corporation
Rob Saunders	Shell International
Gillian Vaughan	EDF Energy
Mark Wilson	ConocoPhillips
Razif Yusoff	Shell International

Management of this project and technical editing were carried out by Stuart King (EI).

Formatting was carried out by Jack Keaney (EI).

The EI also wishes to acknowledge the following individuals who contributed to the development and/or review of this project:

Sam Botterill	El
Karel Burgoyne	Wood Group
John Burnett	RVVE
Heinz Cznotka	Bayer Technology Services
Karen Dickens	ExxonMobil
Jim Ewen	Wood Group
Zoila Harvey	
David Jenkins	INPEX Australia
Soren Jeppesen	Maersk Drilling
Bob Kilford	KCA Deutag
Dr Kathryn Mearns	
Graham Reeves	BP
John Wilkinson	Keil Centre

Affiliations are correct at the time of contribution.

1 INTRODUCTION

Safety within an organisation is heavily influenced by decisions made at executive Board level and by senior managers of the divisions in the case of large multilevel organisations ('leaders'). Lack of direction and oversight from leaders has been cited as a major contributory factor by investigations into some of the largest incidents that have occurred in the energy industry. For example, the CSB report into the incident at Texas City in 2005 stated, '[The company] Board did not provide effective oversight of the company's safety culture and major accident prevention programs' (Report no. 2005-04-I-TX). However, leaders do not act in a vacuum; they are responding to the information they are provided with by other managers and their understanding of that information, as they balance the demands placed on them by competing business drivers such as: optimisation of income and expenditure to maximise profit; and maintaining licence to operate and the confidence of all stakeholders.

In large public companies, the Board tends to exercise more of a supervisory role, and individual responsibility and management tends to be delegated downward to individual professional executives (such as a finance director, marketing director or an operations director) who deal with particular areas of the company's affairs. In smaller companies, the Board members themselves may also be executive managers in the company, and directly responsible for operational areas.

Even where leaders are not directly involved in operational decision making about process and personal safety issues, they are responsible for creating the appropriate environment to assure the safety of the organisation's activities, create the right conditions for good internal decision making, and avoid falling into the pitfalls of bad decision making.

As suggested by various models of human error, such as Shappel and Wiegmann's human factors analysis and classification system and Reason's Swiss cheese model, decision making and latent failures at all levels of the organisation (i.e. not just Board members and leaders) can have an impact on unsafe acts by operators. In many organisations, the term 'leader' can refer to those at the operational level, such as control room supervisors, as well as those further up the organisational structure. This guidance is not specifically aimed at those leaders/supervisors further down the organisational ladder, such as maintenance and operational supervisors. The focus is instead on senior managers or 'leaders' who interact and support Board members, as well as Board members themselves, although some guidance is applicable to a broader audience.

1.1 WHAT ARE THE BOARD'S RESPONSIBILITIES FOR MANAGING SAFETY?

The Board's responsibilities for managing process and personal safety can be split into five areas:

- 1. Setting the safety culture of the organisation.
- 2. Ensuring that effective process and personal safety management arrangements are implemented.
- 3. Defining and monitoring the required performance measurement and reporting arrangements, and stewarding the organisation's progress to achieve the defined performance targets.
- 4. Defining the organisation's 'appetite for risk'.