

Guidance on meeting expectations of
EI Process safety management framework

Element 7: Documentation, records and knowledge
management

GUIDANCE ON MEETING EXPECTATIONS OF
EI PROCESS SAFETY MANAGEMENT FRAMEWORK

ELEMENT 7: DOCUMENTATION, RECORDS AND KNOWLEDGE MANAGEMENT

1st edition

February 2014

Published by

ENERGY INSTITUTE, LONDON

The Energy Institute is a professional membership body incorporated by Royal Charter 2003

Registered charity number 1097899

The Energy Institute (EI) is the chartered professional membership body for the energy industry, supporting over 19 000 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 EI 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

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

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 © 2014 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 667 2

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.

Further copies can be obtained from: Portland Customer Services, Commerce Way, Whitehall Industrial Estate, Colchester CO2 8HP, UK.
t: +44 (0)1206 796 351 e: sales@portland-services.com

Electronic access to EI and IP publications is available via our website, www.energypublishing.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

| | Page |
|--|-----------|
| Publications in this series | 4 |
| Foreword | 5 |
| Acknowledgements | 6 |
| 1 Introduction | 7 |
| 1.1 Documentation, records and knowledge management | 7 |
| 1.2 Expectations for element 7: Documentation, records and knowledge management .. | 7 |
| 2 Arrangements for meeting expectations | 9 |
| 2.1 Descriptions of actions for each step in the logical flow diagram | 11 |
| 3 Suggested compliance checks and performance measures | 20 |
| 3.1 Performance measure 1: Element compliance and implementation status (EIPSS rating) | 21 |
| 3.2 Performance measure 2: Documentation and records development – progress against schedule | 22 |
| 3.3 Performance measure 3: Documents and records overdue for review and update .. | 23 |
| 3.4 Performance measure 4: Documentation, records and knowledge management – observed non-compliances | 24 |
| 3.5 Performance measure 5: Overdue field observations | 25 |
| 3.6 Performance measure 6: Incident root causes which are failures of element 7 | 26 |
| Annexes | |
| Annex A References and bibliography | 27 |
| A.1 References | 27 |
| A.2 Further resources | 27 |
| Annex B Glossary of acronyms and abbreviations | 28 |
| Annex C Mapping of steps to EI PSM framework | 29 |
| Annex D Example report template: management and supervisory field observation . . . | 31 |

PUBLICATIONS IN THIS SERIES

Guidance on meeting expectations of EI Process safety management framework

- *Element 1: Leadership, commitment and responsibility*
- *Element 2: Identification and compliance with legislation and industry standards*
- *Element 3: Employee selection, placement and competency, and health assurance*
- *Element 4: Workforce involvement*
- *Element 5: Communication with stakeholders*
- *Element 6: Hazard identification and risk assessment*
- *Element 7: Documentation, records and knowledge management*
- *Element 8: Operating manuals and procedures*
- *Element 9: Process and operational status monitoring, and handover*
- *Element 10: Management of operational interfaces*
- *Element 11: Standards and practices*
- *Element 12: Management of change and project management*
- *Element 13: Operational readiness and process start-up*
- *Element 14: Emergency preparedness*
- *Element 15: Inspection and maintenance*
- *Element 16: Management of safety critical devices*
- *Element 17: Work control, permit to work and task risk management*
- *Element 18: Contractor and supplier, selection and management*
- *Element 19: Incident reporting and investigation*
- *Element 20: Audit, assurance, management review and intervention*

FOREWORD

Process safety management (PSM) is vital to ensuring safe and continued operations in major accident hazard (MAH) organisations. However, PSM is a multifaceted process, and a number of high profile incidents since 2005 have suggested that without a holistic understanding of the various factors required for effective PSM it can be difficult and inefficient to ensure, and measure, performance.

In 2010 the Energy Institute (EI) published *High level framework for process safety management ('PSM framework')*, which aimed to define what PSM should involve. Divided into four focus areas (process safety leadership, risk identification and assessment, risk management, and review and improvement) and sub-divided into 20 'elements', it sets out a framework of activities MAH organisations should undertake to ensure PSM. Each element lists a number of high level activities organisations should meet (expectations).

EI Guidance on meeting expectations of EI Process safety management framework is a series of 20 publications ('guidelines') that build on the *PSM framework*. Commissioned by the EI Process Safety Committee (PSC) each guideline captures and presents current industry good practices and guidance on how organisations can meet the expectations set out in each element of the *PSM framework*. Each guideline includes:

- A logical flow diagram of activities ('steps') the organisation should undertake to manage that element.
- Descriptions of those steps.
- Example performance measures (PMs) to measure the extent to which key steps have been undertaken.
- A list of further resources to help undertake key steps.
- A table mapping the steps against the expectations in the *PSM framework*.
- Annexes of useful information.

Readers implementing the guidance in this publication should be aware of the *PSM framework* and the other publications in this series, particularly if they are a manager with oversight of the wider implementation of PSM.

The information contained in this publication 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, express 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.

Suggested revisions are invited and should be submitted through the Technical Department, Energy Institute, 61 New Cavendish Street, London, W1G 7AR. e: technical@energyinst.org

ACKNOWLEDGEMENTS

El *Guidance on meeting expectations of El Process safety management framework* was commissioned by the Energy Institute (EI) Process Safety Committee (PSC) and prepared by Martin Ball (Bossiney Consulting). During this project, PSC members included:

| | |
|-----------------------------|-----------------------------------|
| Martin Ball | Bossiney Consulting |
| David Bleakley | ConocoPhillips |
| John Brazendale | Health and Safety Executive |
| John Briggs | Kuwait Petroleum International |
| Jonathan Carter | Marsh |
| James Coull | Total |
| Kenny Crighton | Nexen |
| Peter Davidson | UKPIA |
| Graeme Ellis | ABB |
| Dr David Firth | Chilworth Group |
| Peter Gedge (Chair) | BP |
| John Henderson | CB&I Lummus (BCECA) |
| Bob Kilford | EDF Energy |
| King Lee (Vice-Chair) | Lloyd's Register |
| Keith Lewis | Total E&P UK Ltd |
| Paul McCulloch | E.ON |
| SreeRaj Nair | Chevron |
| Peter O'Toole | Tullow Oil |
| John Pond | Consultant |
| Dr Niall Ramsden | Resource Protection International |
| Toby St.Leger | ConocoPhillips |
| Dr Mark Scanlon (Secretary) | Energy Institute |
| Don Smith | Eni UK |

The following additional individuals are acknowledged for commenting on the drafts for consultation of this series of publications:

| | |
|----------------|--------------------------------|
| Lee Allford | European Process Safety Centre |
| Mike Beanland | ABB |
| Amanda Cockton | Health and Safety Executive |
| Edwin Ebiegbe | Perenco |
| Allan Ormond | ABB |

Technical editing was carried out by Stuart King (EI).

Affiliations are correct at the time of contribution.

1 INTRODUCTION

1.1 DOCUMENTATION, RECORDS AND KNOWLEDGE MANAGEMENT

This guideline sets out good practices for developing and maintaining the required documentation, records and process knowledge for effective process safety management (PSM). Accurate records and information are essential to identify, assess and manage health, safety and environment (HS&E) and process safety risk.

Management should ensure that the information required to support safe operation is identified, available and up to date.

1.2 EXPECTATIONS FOR ELEMENT 7: DOCUMENTATION, RECORDS AND KNOWLEDGE MANAGEMENT

Element 7 of EI *High level framework for process safety management* ('PSM framework') describes eight expectations – arrangements and processes that organisations should (to an appropriate degree) have in place in order to ensure they are appropriately managing this aspect of PSM:

'Overview Accurate records and information are essential to identify, assess and manage HS&E and process safety risk.
Management must ensure that the information required to support safe operation is identified, available and up to date.

7.1 There are procedures to define, develop and maintain the required documentation and records necessary to support robust operation and maintenance of facilities.

7.2 Documentation and records are readily available to those who need to use them.

7.3 Documentation and records including those kept electronically are appropriately safeguarded.

7.4 There are procedures to ensure that documentation and records are regularly reviewed and kept up to date as living systems.

7.5 A retention policy is defined for all documentation and records.

7.6 The required documentation and records include those generated to meet the requirements of all other EI *PSM framework* expectations, such as:

- process design considerations and basis for safe operation;
- drawings;
- asset register;
- equipment records (inspection, testing, maintenance and modification);
- equipment specification data;
- workplace inspection records;

- work logs;
- training and competency records;
- incident investigation reports;
- occupational health records;
- operating procedures;
- environmental authorisations;
- planning consents;
- relevant legislation;
- risk assessments;
- standards and practices;
- hazards of materials involved in operations, and
- product data sheets.

7.7 Arrangements for documentation, records and knowledge management are understood and followed; understanding of arrangements and compliance with them is regularly tested.

7.8 Compliance and performance trends are reviewed by specified levels of management.'

This guideline provides a process, along with guidance, to help organisations meet these expectations. It also suggests a number of compliance checks and performance measures (PMs) to measure the extent to which key activities involved in meeting these expectations have been or are being undertaken.