



The OCIMF Human Factors Approach

A framework to materially reduce marine risk

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Oil Companies International Marine Forum

29 Queen Anne's Gate

London SW1H 9BU

United Kingdom

Telephone: +44 (0)20 7654 1200

Email: enquiries@ocimf.org

www.ocimf.org

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The Oil Companies International Marine Forum (OCIMF)

Founded in 1970, the Oil Companies International Marine Forum (OCIMF) is a voluntary association of oil companies having an interest in the shipment and terminalling of crude oil, oil products, petrochemicals and gas, and includes companies engaged in offshore marine operations supporting oil and gas exploration, development and production.

Our vision is a global marine industry that causes no harm to people or the environment.

Our mission is to lead the global marine industry in the promotion of safe and environmentally responsible transportation of crude oil, oil products, petrochemicals and gas, and to drive the same values in the management of related offshore marine operations. We do this by developing best practices in the design, construction and safe operation of tankers, barges and offshore vessels and their interfaces with terminals and considering human factors in everything we do.

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1 Introduction

OCIMF aims to improve safety and environmental protection in the maritime industry by considering human factors when providing guidance and recommendations.

This paper outlines how OCIMF will integrate human factors into its activities and contribute to making our industry progress on human factors. It includes:

- A set of principles that guide OCIMF's actions on human factors.
- An overall goal for OCIMF.
- A framework to understand how human factors issues impact operations.
- Opportunities to take action.

2 About human factors

Often incidents are attributed to human involvement. This gives the impression that people cause incidents. However, most mistakes, actions and decisions are themselves the result of the way the workplace is set up, how work is designed, equipment and control measures, and how leaders influence the culture in an organisation.

Human factors are the physical, psychological and social characteristics that affect human interaction with equipment, systems, processes, other individuals and work team(s).

It is the people on our ships and in our operations and support teams who make safety work. However, human error still occurs in interaction with conditions, systems and/or other people. By addressing these interactions, we can reduce human error, thereby reducing incidents and improving reliability and productivity.

OCIMF Human Factors focus group discussed what this human centred approach should be called. The choice was between *human factors*, the *human element* and *human performance*. It was recognised that each has its advantages and disadvantages.

- **Human element** is a term used by the IMO and recognised in many parts of the maritime industry. When it emerged, it was initially focussed on changing the person to reduce human error, tackling training, competence, motivation etc. although it has expanded into the underlying systems. Human element may not be recognised outside the maritime industry.
- **Human factors** (HF) is the term used across oil and gas, nuclear, aviation, space and military (including naval applications). It recognises that human error is not simply a feature of individual failure, but is caused by workplace factors, equipment and task design, and organisational conditions which can lead anybody to make an error or poor decision. Human factors is the term used by industry bodies that provide professionals in human-centred disciplines (such as the Chartered Institute of Ergonomics and Human Factors). Although the term human factors is not regularly used in maritime circles, it does appear in some IMO literature and in related domains.
- **Human performance** is a term which is gaining ground in industry and is focussed on accepting that human variability is inevitable and normal. Instead of focussing on the person it considers the influence of leadership, system design and human factors and how they can be designed to reduce the likelihood of errors and misjudgements.

OCIMF believes that the term human factors is the correct one to be adopted because human factors:

- Is most widely recognised, giving the maritime world instant access to knowledge, resources, tools and advice from multiple industries and companies.
- Addresses all individual, system and organisational issues.
- Is best supported by bodies that provide human-centred disciplines.
- Is consistent with and goes beyond IMO requirements associated with human element.

It should be noted that there could be areas outside OCIMF where these terms may be used interchangeably for practical purposes.

3 Guiding principles for OCIMF actions on human factors

These principles describe our approach to human factors, and are based on those from oil and gas, aviation and nuclear industries. We use the principles as a simple script to talk about human factors, and as a guide for the improvements we make in OCIMF activities.

The principle are:

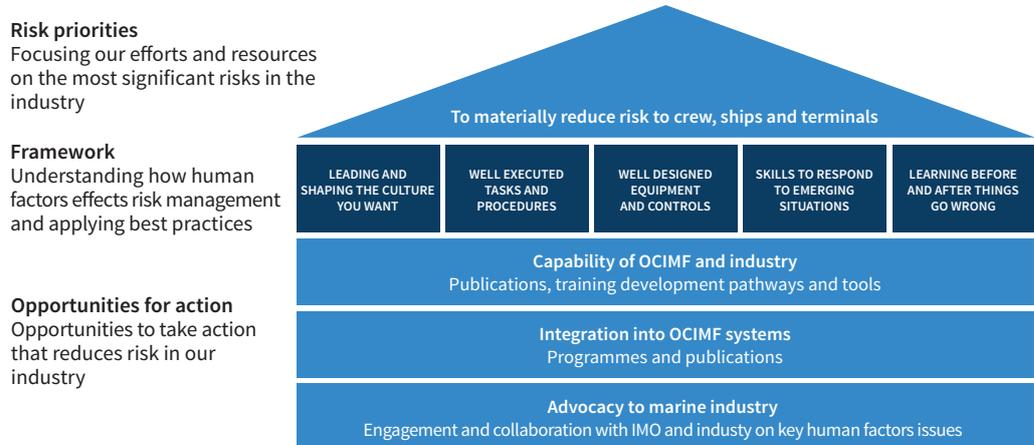
- People will make mistakes.
- People’s actions are rarely malicious and usually make sense to them at the time.
- Mistakes are typically due to conditions and systems that make work difficult.
- Understanding the conditions in which mistakes happen helps us prevent or correct them.
- People know the most about their work and are key to any solution.
- Plant, tools and activities can be designed to reduce mistakes and manage risk better.
- Leaders contribute in shaping conditions that influence what people do.
- It matters how leaders respond when things go wrong and take the opportunity to learn.

4 Our goal and approach

Our goal

Our goal is to reduce risk to crew, ships and terminals, by systemically addressing the systems and latent conditions that influence errors, actions and decisions.

Our approach



Risk priorities: we will focus our efforts and resources on the most significant risks in the industry as defined by OCIMF e.g. loss of primary containment, fatality/serious injury.

Framework: we will understand how human factors effects risk management through the five focus areas of human factors that are relevant to the marine industry and form the pillars to this approach (see table below). The focus areas will be used as the basic structure to:

- Provide operators (and others) with processes and guidance allowing them to analyse and develop controls for their own situation.
- Analyse accidents and data to understand the human factors issues and latent conditions that contribute to failure of a pillar.
- Identify and recommend good practice to prevent or mitigate any failure of a pillar.
- Explain and educate human factors issues.

The following are some example topics under the focus areas of the framework:

Focus areas	Example topics falling under this pillar
Leading and shaping the culture you want	<ul style="list-style-type: none"> • The role of latent and organisational conditions in accidents • How leadership shapes culture • Diverse cultures • Industry-wide culture • Workplace influence on crew well being • People as a solution, not a problem • Listening to the workforce • Responding when things go wrong
Well-executed tasks and procedures	<ul style="list-style-type: none"> • Designing tasks to reduce error • Effective control of work • Effective procedures • The effectiveness of regulations • Training and skill building • Work as we imagine it, and as it really is • Taking human factors into account in risk assessments • Manning and workload management • Selection and capability of individuals • Fatigue • Situational awareness
Well-designed equipment and controls	<ul style="list-style-type: none"> • Human-centred design of bridge, engine room, cargo, deck and terminal equipment • Human-machine interfaces • The impact of automation and increased complexity
Skills to respond to emerging situations	<ul style="list-style-type: none"> • Building bridge, engine room and crew skills • Situational awareness and recovery • Team communications
Learning before and after things go wrong	<ul style="list-style-type: none"> • Effective human factors investigation • Learning from the people who do the task, to get ahead of incidents

Opportunities for action: we will take the following strategic actions on human factors to reduce risk in the marine industry:

1. **Capability:** we will aim to build human factors capability in OCIMF and the industry by a combination of:
 - Providing publications and training.
 - A development pathway to build capability across the industry.
2. **Integration:** we will build human factors perspectives into OCIMF’s high impact risk-related priority areas such as:
 - Programmes: integrating human factors in all aspects of OCIMF inspection and self assessment programmes, e.g. SIRE, OVID and TMSA.
 - Publications: selectively integrating human factors into OCIMF publications, e.g. MEG and ISGOTT.
3. **Advocacy:** we will engage and collaborate with IMO and other industry organisations, institutions and regulatory bodies on key human factors issues, e.g. improving quality of marine incident investigations, skills and training.

Appendix A – Recommended reading

An introduction to anyone interested to know more about Human Factors

- a) *5 Principles of Human Performance*, Todd Conklin
- b) *The Field Guide to Understanding Human Error*, Sidney Dekker
- c) *Human Error*, James Reason
- d) *The Design of Everyday Things*, Don Norman
- e) *Pre-Accident Investigations: An Introduction to Organizational Safety*, Todd Conklin

Practical applications of human performance principles beyond introductory

- a) *Safety at the Sharp End: A Guide to Non-Technical Skills*, Rhona Flin (Author) and Paul O'Connor (Contributor)
- b) *Safety 1 and Safety 2*, Erik Hollnagel
- c) *Pre-Accident Investigations: Better Questions – An Applied Approach to Operational Learning*, Todd Conklin
- d) *The Field Guide to Human Error Investigations*, Sidney Dekker
- e) *Conduct of Operations and Operational Discipline: For Improving Process Safety in Industry*, Center for Chemical Process Safety (CCPS)

Senior Leaders and Management

- a) *Humble Inquiry: The Gentle Art of Asking instead of Telling*, Edgar Schein
- b) *Managing the Risks of Organizational Accidents*, James Reason
- c) *The Invisible Gorilla: How our Intuitions Deceive Us*, Christopher Chabris and Daniel Simons
- d) *Just Culture: Restoring Trust and Accountability in your Organization*, Sidney Dekker



Our vision

A global marine industry that causes no harm to people or the environment

**Oil Companies
International Marine Forum**
29 Queen Anne's Gate
London SW1H 9BU
United Kingdom

T +44 (0)20 7654 1200
E enquiries@ocimf.org

ocimf.org