



Abbreviations, Acronyms and Glossary

ABBREVIATIONS AND ACRONYMS

AIS - automatic identification system

ALARP - As Low As Reasonably Practicable

API - American Petroleum Institute

ASEAN - Association of Southeast Asian Nations

ASME - American Society of Mechanical Engineers

ASTM - American Society for Testing and Materials (now ASTM International)

BIMCO - Baltic and International Maritime Council

BOG - Boil-Off Gas

BS&W - Basic Sediment and Water

BS/EN - British Standards/European Norm

BTEX - Benzene, Toluene, Ethylbenzene and Xylenes

BWM Convention - Ballast Water Management Convention (full title, International Convention for the Control and Management of Ships' Ballast Water and Sediments)

CALM - Catenary Anchor Leg Mooring

CAPEX - Capital Expenditures

CBM - Coalbed methane

CBP - Customs and Border Protection (United States of America)

CCR - Central Control Room

CCTV - Closed Circuit Television

CH₄ - methane

CHRIS - Chemical Hazards Response Information System

CO - carbon monoxide

CO₂ - carbon dioxide

ConTex - Container Ship Time Charter Assessment Index



COP21 - twenty-first session of the Conference of the Parties to the United Nations Framework Convention on Climate Change

COSCO - China Ocean Shipping Company

COW - Crude Oil Washing

CSI - Container Security Initiative

C-TPAT - Customs-Trade Partnership against Terrorism (United States of America)

CVAA - Cold Vapour Atomic Absorption

DFDE - Dual-Fuel Diesel Electric LNG vessel

dwt - dead-weight ton(s)

ECA - emission control area

e-commerce - electronic commerce

EEBD - Emergency Evacuation Breathing Device

EEDI - Energy Efficiency Design Index

EPC - Engineering, Procurement and Construction

ERT - Emergency Response Team

ESD - Emergency Shutdown

ETOP - Emergency Towing-Off Pennant

FEED - Front-end engineering and design study.

FERC - Federal Energy Regulatory Commission

FEU - 40-foot equivalent unit

FID - Final investment decision.

FLNG - Floating Liquefaction

FLNGV - Floating liquefied natural gas vessel.

FME(C)A - Failure Mode Effects (and Criticality) Analysis

FOB - Free On Board

FPSO - floating production, storage and offloading unit

FSO - Floating Storage and Offloading Unit



FSRU - Floating storage and regasification unit.

FSU - Former Soviet Union

GDP - gross domestic product

GHG greenhouse gas

GT - gross tonnage

H₂S - Hydrogen Sulphide

HAZID - Hazard Identification Study

HAZOP - Hazard and Operability Study (analysis)

HDI - Human Development Index

HF - High Frequency

HFO - Heavy Fuel Oil

HNS - Convention International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea

HNS - hazardous noxious substances

HP - High Pressure

HPU - Hydraulic Power Unit

HSSE - Health, Safety, Security and Environment

IACS - International Association of Classification Societies

IAPH - International Association of Ports and Harbors

IBM - International Business Machines

ICS - International Chamber of Shipping

IGF - Code International Code of Safety for Ships using Gases or Other Low-flashpoint Fuels

ILO - International Labour Organization

IMO - International Maritime Organization

IOC - International Oil Company

IOGP - International Association of Oil and Gas Producers



IPP - Independent Power Producers

IS Code - International Code on Intact Stability

ISGOTT - International Safety Guide for Oil Tankers and Terminals

ISM Code - International Safety Management Code

ISO - International Organization for Standardization

ISPS - Code International Ship and Port Facilities Security Code

kgCO₂e/modTEU - kilograms CO₂ emitted per modified 20-foot equivalent unit

LDC - least developed country

LEL - Lower Explosive Limit

LNG - liquefied natural gas

LP - Low Pressure

LPG - liquefied petroleum gas

LPI - Logistics Performance Index (World Bank)

LSBCI - Liner Shipping Bilateral Connectivity Index (UNCTAD)

LSCI - Liner Shipping Connectivity Index (UNCTAD)

MARPOL - International Convention for the Prevention of Pollution from Ships

MAWP - Maximum Allowable Working Pressure

MBC - Marine Breakaway Couplin

MBR - Minimum Bend Radius

MDO - Marine Diesel Oil

ME-GI - M-type, Electronically Controlled, Gas Injection

MEPC - Marine Environment Protection Committee

MF - Medium Frequency

MLC - Maritime Labour Convention

MMA - Mooring and Manoeuvring Area

MSC - Maritime Safety Committee (IMO)



MSDS - Material Safety Data Sheet

MTMSA - Marine Terminal Management and Self Assessment

N₂O - nitrous oxide

NDB - Non-Directional Beacon

NFPA - National Fire Protection Association

NOC - National Oil Company

NO_x nitrogen oxides

OCIMF - Oil Companies International Marine Forum

OECD Organization for Economic Cooperation and Development

OPEC - Organisation of Petroleum Exporting Countries

OPEX - Operating Expenditures

OWS - Oily Water Separator

P/V - Pressure/Vacuum

PFS - Process Flow Scheme

PLEM - Pipeline End Manifold

Ppm - parts per million

PSD - Production Shutdown

PSPC - Performance Standards for Protective Coatings

PTW - Permit to Work

PVSV - Pressure/Vacuum Safety Valve

QRC - Quick Release Coupling

RBA - Risk Based Assessment

RBI - Risk Based Inspection

RO - Remotely Operated Vehicle

RWP - Rated Working Pressure

SALM - Single Anchor Leg Mooring



SEEMP - Ship Energy Efficiency Management Plan

SID - seafarers' identity document

SIMOPS - Simultaneous Operations

SO₂ - sulphur dioxide

SOLAS - International Convention for the Safety of Life at Sea

SO_x - sulphur oxides

SPM - Single Point Mooring

SSD - Slow Speed Diesel

STCW - International Convention on Standards of Training, Certification and Watchkeeping for Seafarers

SWL - Safe Working Load

TEU - 20-foot equivalent unit

TFA - Trade Facilitation Agreement (World Trade Organization)

TFDE - Tri-Fuel Diesel Electric LNG vessel

TRA - Task Risk Assessment

TWA - Time Weighted Average

UHF - Ultra High Frequency

UHP - Ultra High Pressure

UKC - Under Keel Clearance

UN/LOCODE - United Nations Code for Trade and Transport Locations

UNCLOS - United Nations Convention on the Law of the Sea

UNCTAD - United Nations Conference on Trade and Development

UNEP - United Nations Environment Programme

UNFCCC - United Nations Framework Convention on Climate Change

US DOE - US Department of Energy

US GOM - US Gulf of Mexico

US Lower 48 - US excluding Alaska and Hawaii



USCG - United States Coast Guard

UWILD - Underwater Inspection in Lieu of Drydocking

VGM - verified gross mass

VHF - Very High Frequency

VRU - Vapour Recovery Unit

VSAT - Very Small Aperture Terminal

Wg - Water gauge

WTO - World Trade Organization

YOY - Year-on-Year

Glossary

Adsorption: The adhesion of a thin film of molecules (of a gas, liquid or solid) to the surface of a liquid or solid that it is in contact with.

As Low As Reasonably Practicable (ALARP): Each company should develop their own definition of ALARP. OCIMF uses the UK Health and Safety Executive (UK HSE) definition in this publication: Making sure a risk has been reduced to ALARP is about weighing the risk against the sacrifice needed to further reduce it. The decision is weighted in favour of health and safety and against commercial interest because the presumption is that the duty-holder (e.g. the ship operator) should implement the risk reduction measure. To avoid having to make this sacrifice, the duty-holder must be able to show that it would be grossly disproportionate to the benefits of risk reduction that would be achieved. Thus, the process is not one of balancing the costs and benefits of measures but, rather, of adopting measures except where they can be ignored because they involve grossly disproportionate sacrifices.

Ballast: A voyage with no cargo on board to get a ship in position for the next loading port or docking. A ballast tank is a tank that is filled with seawater when a vessel is in ballast, in order to ensure stability.

bareboat (b/b): The hiring or leasing of a vessel from one company to another (the charterer), which in turn provides crew, bunkers, stores etc. and pays all operating costs.



Basic Sediment and Water (BS&W): The amount of suspended solids and water in crude oil, expressed as a percentage of the overall volume.

Best practice: We view this as a method of working or procedure to aspire to as part of continuous improvement. OCIMF

Bottom slamming: The impact of the bottom structure of an F(P)SO onto the sea surface. In rough seas, the F(P)SO's bow and stern may occasionally emerge from a wave and re-enter the wave with a heavy impact or slam, as the hull structure comes in contact with the water.

Bow chain stopper: A mechanical device for securing chafe chains on board a tanker.

Bunkers: The ship's fuel.

CAP: Condition Assessment Programme. Det Norske Veritas' (DNV) voluntary rating system for vessels describing and quantifying the standards of a vessel.

Cathodic protection: The prevention of corrosion by electrochemical techniques.

Chafe chain: A length of stud link chain at the end of a single point mooring (SPM) hawser. It passes through a ship's fairlead and connects the SPM hawser to a tanker's bow chain stopper.

Charterer: Cargo owner or another person / company who hires a ship.

Charter-party: Transport contract between ship-owner and shipper of goods.

Class: A Classification Society is a non-governmental organisation (NGO) that establishes and maintains technical standards for the construction and operation of ships and offshore structures.

COA: Contract of affreightment – quantity contract. An agreement between ship-owner and shipper concerning the freight of a defined amount of cargo. The ship-owner chooses the ship.

COFR: Certificate of Financial Responsibility. Certificate required by the US Coast Guard for tonnage transporting oil products in the US economic zone (due to OPA90), to confirm the owner's financial responsibility up to a specified amount for pollution caused in US waters.

Conventional tanker: An oil tanker equipped for regular trading. It is not specially designed or adapted for loading at offshore terminals that require specialised mooring or bow loading equipment.



Crash tank: A slack storage tank designated to receive crude oil in the event of an operational disruption.

crude (oil): Unrefined oil directly from the reservoir.

daily operating costs: The costs of a vessel's technical operation, crewing and insurance (excluding costs of financing).

Demurrage: Money paid to ship-owner by charterer, shipper or receiver for failing to complete loading / discharging within the time allowed according to charter-party.

Displacement: The mass of water displaced by a vessel, at a given draught, in metric tonnes.

Double block and bleed valve: A single valve with two seating surfaces that, in the closed position, provides a seal against pressure from both ends of the valve, with a means of venting/bleeding the cavity between the seating surfaces.

dry docking: To put a vessel into a dry dock for inspection, repair and maintenance. Normally done on a regular basis every 3 or 5 years.

dwt (deadweight ton): A measure expressed in metric tons (1,000 kg) or long tons (1,016 kg) of a ship's carrying capacity, including bunker oil, fresh water, crew and provisions. This is the most important commercial measure of the vessels capacity.

Flow rate: The linear velocity of flow of liquid in a pipeline, as measured in metres per second.

Front End Engineering and Design (FEED): An engineering design study used to thoroughly plan a project and control project cost.

Gas free: A tank, compartment or container is gas free when sufficient fresh air has been introduced into it to lower the level of any flammable, toxic or inert gas to that required for a specific purpose, e.g. hot work, entry, etc.

Green water: A large quantity of water rolling onto an F(P)SO's deck as a result of high waves and vessel motions during bad weather.

Hazard and Operability study (HAZOP): A structured, team-based approach to investigate how a system or plant in operation deviates from the design intent and creates risk for personnel and equipment and results in operability issues.

Hazard Identification study (HAZID): A structured, team-based approach to identify hazards, their potential consequences, and requirements for risk reduction.



Hazardous area: An area that is regarded as dangerous for the purposes of the installation and use of electrical equipment, is regarded as dangerous. Hazardous areas are graded depending on the probability of the presence of a flammable gas mixture.

Hot work: Work involving sources of ignition, or temperatures high enough to cause the ignition of a flammable gas mixture. This includes any work requiring the use of welding, burning or soldering equipment, blow torches, some power-driven tools, portable electrical equipment that is not intrinsically safe or contained within an approved explosion-proof housing and internal combustion engines. In the offshore industry different categories of hot work may be used, e.g. activities may be classed as having low energy (spark potential) or high energy (open flame).

Knot: A measure of the speed of the vessel. 1 knot = 1 nautical mile per hour, that is 1,85 km/h.

Live crude oil: Processed crude oil with a flashpoint less than 60° C.

Marine breakaway coupling (MBC): A device designed to protect the cargo transfer system and the hose assembly against surge pressures and/or axial tension in the hose. It automatically shuts off liquid flow and separates before the hose's integrity is damaged.

Messenger rope: A light fibre rope used to heave the mooring pick-up rope on board the tanker.

Minimum breaking load (MBL): The manufacturer's declared minimum breaking load of a new rope or chain. It does not allow for splicing or wear and tear.

Mooring leg: A chain assembly used to moor a buoy to the seabed.

net revenue / time charter (t/c) equivalent: Gross charter income less voyage costs (bunker costs, port, canal duties etc.).

OPA-90: The US Oil Pollution Act of 1990. Federal law imposing regulations on ship-owners trading in US waters.

Pelican or slip hook: A type of rigging shackle that includes an arrangement to facilitate quick release.

Permit to Work (PTW) system: A system for controlling activities that expose the F(P)SO, personnel or the environment to hazard. The system will provide risk assessment techniques and apply them to the varying levels of risk that may be experienced. The system should conform to a recognised industry guideline.



Permit to work: A document issued by a responsible person that allows work to be performed in compliance with a Safety Management System (SMS).

Petroleum: Crude oil and the liquid products derived from it.

Pick-up rope: A fibre rope used to lift the mooring chafe chain on board the tanker.

Pigging: In the context of pipelines, pigging refers to the practice of using devices known as pigs to perform various maintenance operations on a pipeline.

Pipeline end manifold (PLEM): A structural base supporting a piping manifold. It facilitates the subsea termination of the pipeline and the connection to the marine hoses.

Positive isolation: The physical disconnection and/or blinding to positively segregate the energy, substances and materials from the proposed activity, without relying on valves or control systems.

Quick release coupling (QRC): A manual or hydraulic mechanical device used to clamp the rail hose presentation flange to the ship's manifold without the use of bolts.

Rated working pressure (RWP): This is also known as, and is equivalent to, the maximum rated working pressure, and the maximum allowable working pressure (MAWP). The International Safety Guide for Oil Tankers and Terminals (ISGOTT) states that rated working pressure is the common oil industry reference that defines the maximum cargo system pressure capabilities. This pressure rating is not expected to account for dynamic surge pressures, but it does include nominal pressure variations to a maximum of 10%, as would be expected during normal cargo transfer operations, due to the change in velocity that results from the shutting down of a pump or the closing of a valve.

Risk Based Assessment (RBA): Overall process of risk analysis and risk evaluation to support Risk Based Inspection (RBI).

Routine Simultaneous Operations (SIMOPS): Concurrent activities identified in the SIMOPS matrix and covered by existing, approved written instructions or procedures.

Safe working load (SWL): A load less than the yield or breaking load, by a safety factor defined by code, standard or good engineering practice.

ship management: The technical administration of a ship, including services such as technical operation, maintenance, repair, crewing and insurance.

Shipbroker: A person / company who on behalf of a ship-owner / shipper negotiates a deal for the transportation of cargo at an agreed price. Shipbrokers are also active when



shipping companies negotiate the purchasing and selling of ships, both second-hand tonnage and newbuilding contracts.

Simultaneous Operations (SIMOPS): Activities that take place at the same time and are either in the same area, and/or could directly or indirectly affect the safe performance of any other activity on the facility.

Single point mooring (SPM): An integrated mooring arrangement for bow mooring a conventional tanker. For example, a conventional tanker's bow mooring arrangements to a catenary anchor leg mooring (CALM), a single anchor leg mooring (SALM) or a floating production, storage and offloading unit (FPSO).

Skim pile caisson: A large diameter pipe, fitted with baffle plates and suspended from the F(P)SO to a point well below the sea surface, with means to skim any oil carryover back to the facility's hazardous drain or slop system.

spot market: Short-term contracts, normally not longer than three months in duration.

Storage tanks: Cargo oil tanks, slop tanks, off-spec reception tanks, settling tanks and produced water treatment tanks in the F(P)SO hull.

Summer deadweight: The displacement at summer draught, minus the lightship weight in metric tonnes.

Surge pressure: Occurs in a cargo transfer system when the flow in a pipeline is stopped too quickly by closing a valve or stopping a pump. The water or oil will attempt to continue flowing, causing an increase in pressure that can damage the pipe.

Tandem mooring: A hawser mooring arrangement between two vessels, either bow-to-bow or bow-to-stern. In the context of this Guide, tandem mooring refers to the mooring arrangement between the bow of a conventional tanker and the stern or bow of an FPSO.

Tcf: Trillion cubic feet.

time charter (t/c): An arrangement whereby a ship-owner places a crewed ship at a charterer's disposal for a certain period. Hire is customarily paid in advance. The charterer also pays for bunker charges, canal fees, port duties etc.

Ton: 1,000 kilos (metric ton = 2,204 lb)

Tonne: Metric tonne equalling 1,000 kilograms.

Total Acid Number (TAN): A measurement of acidity that is determined by the amount of potassium hydroxide in milligrams that is needed to neutralise the acids in one gram of oil. It is an important quality measurement of crude oil.



Under keel clearance (UKC): The distance between the vessel's bottom, at its deepest point of immersion, and the seabed or any objects resting on the seabed (for example, submarine pipelines, manifolds or concrete clumps).

voyage charter: The transportation of cargo from port(s) of loading to port(s) of discharge. Payment is normally per day, and the ship-charterer pays for bunker, port and canal charges etc.

voyage costs: Costs of chartering in third party vessels together with canal, port, fuel and other expenses incurred predominantly for vessels that are not on charter.

Units used for natural gas and LNG

Unit	Symbol	Explanation
cubic metres	m³	Measure of volume
cubic feet	ft³	Measure of volume
barrels of oil equivalent	BOE	BOE is a unit of energy based on the approximate energy released by burning one barrel (42 US gallons or 158.9873 litres) of crude oil.
tonnes of oil equivalent	TOE	TOE is a unit of energy defined as the amount of energy released by burning one tonne of crude oil.
British thermal units	BTU	A BTU is a measure of the energy content in fuel. One BTU is equivalent to 1.06 joules.
litres	l	Measure of volume
tonnes	t	Measure of mass
billion cubic feet per day	Bcfd	
billion cubic meters	bcm	
cubic meters	cm	
thousand tonnes per annum	KTPA	
thousand cubic meters	mcm	
million cubic feet per day	mmcfd	
million cubic meters	mmcm	
million tonnes	MT	
million tonnes per annum	MTPA	
nautical miles	nm	
trillion cubic feet	Tcf	



Conversion factors

	← Multiply by →					
	Tonnes LNG	cm LNG	cm gas	cf gas	MMBTU	boe
Tonnes LNG		2.222	1,300	45,909	53.38	9.203
cm LNG	0.45		585	20,659	24.02	4.141
cm gas	7.692×10^{-4}	0.0017		35.31	0.0411	0.0071
cf gas	2.178×10^{-5}	4.8×10^{-5}	0.0283		0.0012	2.005×10^{-4}
MMBTU	0.0187	0.416	24.36	860.1		0.1724
boe	0.1087	0.2415	141.3	4,989	5.8	