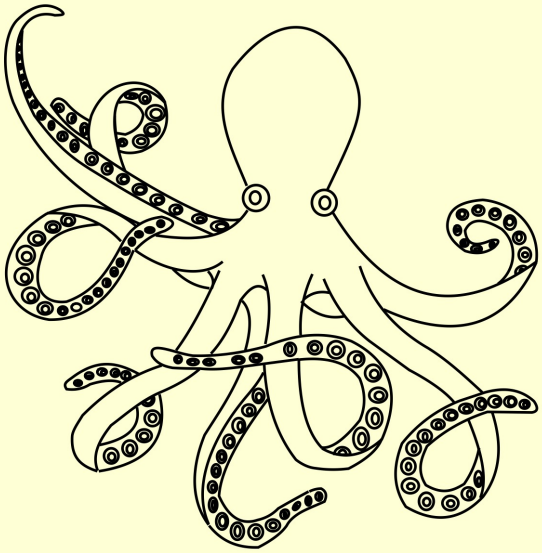

Diving & ROV specialists

Surface-Supplied Diving Handbook Series

Book #3

Legal aspects of project preparation

June 2025

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Diving & ROV Specialists

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This document is the third of eight books in the "Surface-Supplied Diving Handbooks Series", described below.

Book 1: Overview of surface-supplied diving operations and scope of this series
Book 2: Description and prevention of accidents associated to diving operations
Book 3: Legal aspects of project preparation
Book 4: Description and maintenance of surface supplied diving systems
Book 5: Managing Weather, Communications, Surface Supports & Underwater Vehicles
Book 6: Prepare and manage the dives
Book 7: Implement enhanced MT 92 tables
Book 8: Implement enhanced DCIEM tables

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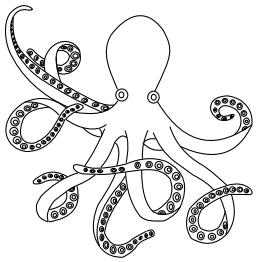

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1 - Organizations publishing rules and guidelines that influence diving operations.

1.1 - Purpose

Diving operations are risky activities as they consist of working in a surrounding that is not the one human body is initially designed for. Besides, since the development of industrial activities, the diver is also exposed to the dangers arising from these activities. As a result, the life of the diver depends on the performances and the reliability of the equipment he uses, the knowledge of the environment he is exposed to, and procedures to escape safely in case a problem happens. For these reasons, and in response to the numerous fatal accidents that have occurred during the early period, it has been necessary to publish guidelines and create training establishments where the divers are taught of the dangers they will be exposed to and how to control them. Also, to protect their citizen from abusive and unsafe working conditions, some counties' governments have published laws that indicate the minimum level of safety required when organizing such operations in waters under their jurisdiction. Some of these laws have been adopted by the United Nations and are in force throughout the globe. Also, in parallel with the laws emitted by States, companies involved in diving activities have issued their own rules that are based on the laws of the states and their experience. These rules are sometimes shared through structures such as professional associations or similar organizations that defend the interest of their profession.
As a consequence of the above, numerous organizations have been created that emit guidelines. Some of these guidelines can be considered useful for the protection of the divers, and some others have been published for the defense of the interests of some organizations, and are imposed on the companies and the divers operating on site. For this reason, they cannot and must not be ignored.
The organizations emitting such guidelines and rules that are described in the next point are those that are the most powerful. That does not mean that they are the sole organizations emitting their advice. Many other institutions and also some individuals have similar activities but not the same power to express and impose what they think. For this reason, we have to consider that every relevant advice can be useful whatever the size of the structure that issues it and that the reader must be sufficiently wise and smart not to fall into a monoculture. Note that monoculture is the opposite of progress.

1.2 - Organizations publishing guidelines, conventions, and standards

1.2.1 - IMO (International Maritime organization)

IMO (International Maritime Organization) is the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships.

IMO publishes maritime and diving resolutions and codes that are used to establishes standards and design diving systems. As an example, the resolution A.692, provides “guidelines and specifications for hyperbaric evacuations systems”. Note that the guidelines from this organization are the minimum to be in place everywhere in the world.

IMO also publishes international conventions such as MARPOL (International Convention for the Prevention of Pollution from Ships) and SOLAS (International Convention for the Safety of Life at Sea) that must be taken into account by the diving system manufacturers when designing the evacuation of used waters from the living chambers, or the firefighting system and the hyperbaric rescue units for abandoning the installation.

1.2.2 - NORSOK (Norsk Sokkels Konkuranseposisjon - Norway)

NORSOK is an organization created by the Norwegian petroleum industry that is involved in the offshore activities in Norway and emits specifications and recommendations. These specifications that are based on European (EN) and ISO standards are developed to ensure adequate safety, value-adding, and cost-effectiveness for the Norwegian petroleum industry developments and operations. They are intended to replace oil company specifications and serve as references in the regulations published by the authorities. So, they are to be applied in Norwegian waters.

NORSOK standards are among the most stringent, and are often taken as references by companies and safety organizations for this reason.
Among the documents published by this organization, NORSOK standards U100 and U101 are commonly used by the manufacturers for the conception of their system to be sure that they can be operated everywhere in the world.

1.2.3 - IMCA (International Marine Contractor association)

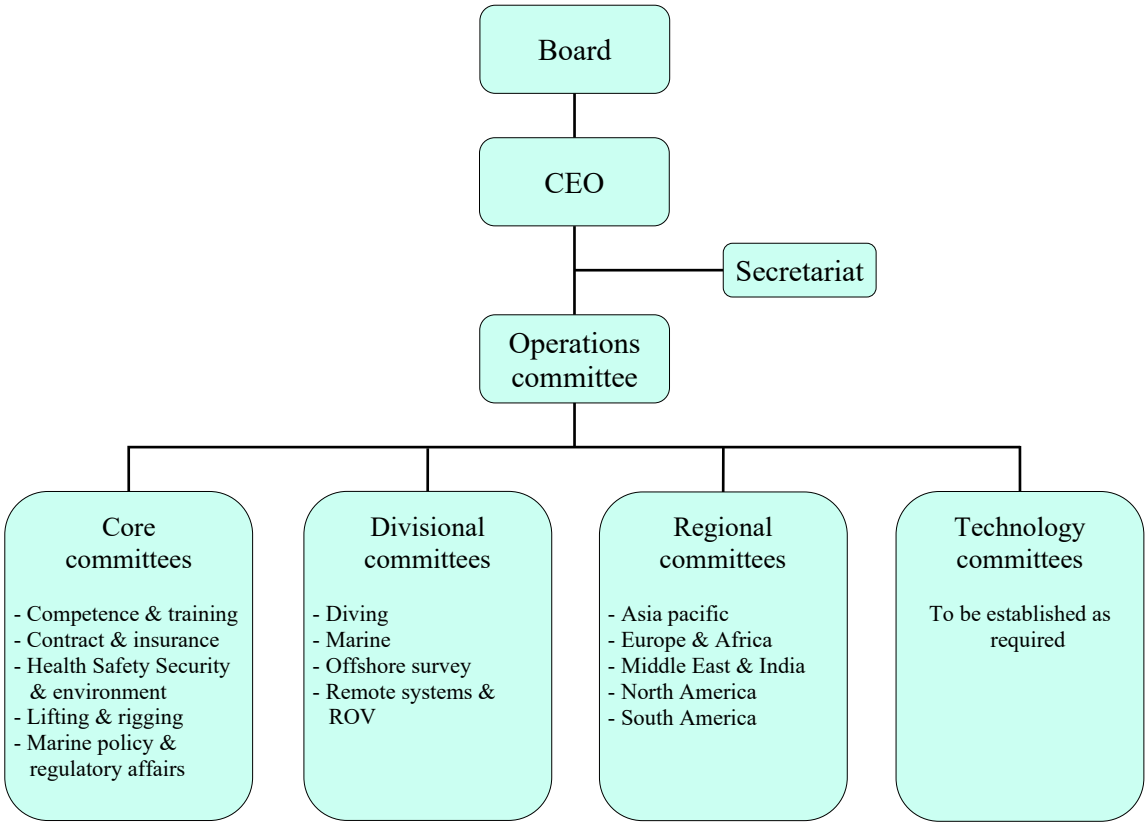
This association groups marine, diving, survey, & ROV contractors involved in offshore projects (outside the “territorial waters”) or using techniques implemented offshore for the petroleum industry.
IMCA was formed in 1995 through the merger of the former Association of Offshore Diving Contractors (AODC, established in 1972) and the Dynamically Positioned Vessel Owners Association (DPVOA, formed in 1989).
This organization, has published numerous safety guidelines that are taken as references by a lot of governmental standardization bodies and safety organizations.

In parallel to guidelines, the association has initiated formation and certification processes for divers, technicians, supervisors, ROV pilots, and other functions that are recognized internationally. So, we can say that the influence of IMCA in the diving industry is enormous.

IMCA is divided into four divisions:

- Diving
- Marine
- Offshore survey
- Remote systems & ROV

The current governance and corporate structure is composed of "the Board", "Operations Committee" and numerous "technical committees" and "workgroups".
Also, a secretariat manages the day-to-day business of the association.
This governance structure can be summarized as follows:



The working name of the International Marine Contractors Association is IMCA which, together with its logo, is trademarked. The legal entity of the Association to which members belong is IMCA Holdings Ltd, a company limited by guarantee and incorporated in England (this is the most common legal format of associations in the UK). The trading company, IMCA Trading Ltd, a company limited by shares, is a subsidiary of the holding company and conducts business on behalf of the Association. Thus, IMCA trading ltd is a commercial organization that has been recently created and did not existed at the origin of the association.
The published guidelines and reports can be found on the website of the association along, with safety alerts and other useful information. Among these documents, the "Diving Equipment Systems Inspection Guidance Notes" published this organization remains the most accurate guidance for the organization of audits.
Considering the new management system of this association, we must admit that it has become a commercial organization with nothing in common with the original one that emitted so many nice guidelines that were available free of charge and increased the industry's safety level.

1.2.4 - DMAC (Diving Medical Advisory Committee)

This independent body seeks to provide advice about medical and certain safety aspects of commercial diving.
The committee comprises doctors involved in the practice of diving medicine in Northern Europe *(currently France, The Netherlands, Norway and the United Kingdom)*, representatives of relevant health authorities *(the UK Health & Safety Executive and Norwegian Directorate of Public Health)*, medical representatives from relevant navies *(UK & The Netherlands)* and a diving safety officer nominated by IMCA *(the International Marine Contractors Association)*.
Members of the committee receive no payment for their time or contributions to committee proceedings; the work of the committee is entirely voluntary.
DMAC does not emit standards regarding the construction of diving systems. However its advice and guidelines lead to the creations of standards by the legal authorities and the modification of some equipment. For this reason, this organization is always taken into consideration by equipment manufacturers.

1.2.5 - ADCI (Association of Diving Contractors International)

ADCI (Association of Diving Contractors International) was originally a small group of American diving companies that created a nonprofit organization dedicated to commercial diving to establish safe practices throughout the world. Some of these guidelines have been adopted as standards by competent national bodies and other safety organizations and are today taken into account for the construction of diving systems.
This association, which is based in Houston (USA), represents today more than 600 members conducting safe underwater operations throughout the world.
Similarly to IMCA, this association has its formation and certification processes for divers, technicians, supervisors, and other functions.
The organization also share guidelines and point of views with other competent groups such as IMCA, NOAA (National Oceanic and Atmospheric Administrations), DMAC and others.

1.2.6 - IOGP (International Association of Oil and gas producers)

International Association of Oil and gas producers (IOGP) is an organization that defends the interest of some multinational petroleum companies such as Shell, Exxon, BP, Total, and others. This organization acts as a group of pressure to impose the point of view of its members to the contractors working for them and try to influence national and international safety organizations to establish its members in a dominant position.

1.2.7 - Dynamic Positioning Committee

The Dynamic Positioning Committee was founded in 1996 as a Professional Committee of the Marine Technology Society. This society promotes awareness, understanding, and the advancement and application of marine technology. Incorporated in 1963, the international society brings together businesses, institutions, professionals, academics, and students who are ocean engineers, technologists, policy makers, and educators.
The Dynamic Positioning Committee's mission is to encourage exchange of information, discussion of technology, training and education, foster improvement of DP reliability, develop guidelines, and address any other issues pertinent to dynamic positioning that facilitate incident free execution of DP operations, and are consistent with the objectives of the Marine Technology Society.

1.2.8 - National safety organizations and ministries of labour

These national organizations and authorities are in charge of the protection of the citizens of their country. They may impose standards for the diving operations in the waters under their jurisdiction. As a result, some of the rules they publish may impact the design of the diving systems, and the way they are certified.

As examples of these numerous organizations note the UK Health and Safety Executive, the French Ministry of Labour, NOAA (National Oceanic and Atmospheric Administration - USA), etc.

1.2.9 - European Standards – European committee for standardization

European Committee for standardization (CEN) is an organization based at Brussels (Belgium) that groups the national industrial standards of the members of the European Union plus some external members such as members of the European Free Trade Association (EFTA).
European Standards (EN) are a component of the European market, and for this reason, they cover nearly the totality of industrial activities. They are designed and created by all interested parties through a consensual process.
The European Committee for Standardization governance is composed of the general assembly, the presidential committee and its advisory bodies, and the administrative board. Other bodies such as technical boards, committees, and working groups support the achievement of the scope of the organization.
These standards are commonly used for the fabrication of devices such as chambers, helmets, regulators, gas cylinders, etc. Tools built according to these standards are marked with the initials "CE".
Note that these standards are distributed through the normalization bodies of the members. For this reason, the mention "EN" is usually preceded by the name of the normalization body of the country it is sold in. As an example, EN 1802 "Periodic inspection and testing of seamless aluminium alloy gas cylinders" is BS EN 1802 in the United Kingdom and NF EN 1802 in France. As a result, many authors of documents continue to refer to their national organization instead of the real emitter of these standards.

1.3.0 - ISO (International Organization for Standardization)

ISO (International Organization for Standardization) is an independent, non-governmental organization based in Geneva (Switzerland), the members of which are the standards organizations of the 168 member countries.
The organization provide standards that cover nearly the totality of industrial activities. It also provide certifications regarding quality management systems. The organization proposes three types of membership:

- Full members (or member bodies) influence ISO standards development and strategy by participating and voting in ISO technical and policy meetings. Full members sell and adopt ISO International Standards nationally.
- Correspondent members observe the development of ISO standards and strategy by attending ISO technical and policy meetings as observers. Correspondent members can sell and adopt ISO International Standards nationally.

- Subscriber members keep up to date on ISO's work but cannot participate in it. They do not sell or adopt ISO International Standards nationally.

The "council" is the governance body of the organization that reports to the "general assembly". It meets three times a year and is composed of twenty members. Council standing committees address matters related to finance, strategy and policy, nominations for governance positions, and oversight of the organization's governance practices. Membership to the council is open to all member bodies and rotates to make sure it is representative of the member community.
ISO standards are commonly used by manufacturers involved in the diving industry.

1.3.1 - ANSI (American National Standards Institute)

The American National Standards Institute (ANSI) is a private non-profit organization, based in Washington DC (USA) that oversees the development of standards for products, services, processes, systems, and personnel in the United States. ANSI does not write standards but accredits developers who are in charge of establishing consensus among qualified groups. Its guiding principles " consensus, due process, and openness " are followed by the 220 distinct entities currently accredited to develop and maintain the American National Standards (ANS).
The Institute's membership is composed of businesses and industrial organizations, standards-setting and conformity assessment bodies, trade associations, labour unions, professional societies, consumer groups, academia, and governmental organizations.
ANSI also promotes the use of United States standards internationally, and advocates United States policy and technical positions in standards organizations. It is the case with National Pipe Threads (NPT) standards that are promoted through this organization. Also, ANSI encourages the adoption of international standards as national standards where appropriate. Note that a lot of standards promoted by this organization are used in the diving industry.

1.3.2 - ASME (American Society of Mechanical Engineers)

ASME (American Society of Mechanical Engineers) is a professional association, which headquarters are in New York. It promotes art, science, and practice of multidisciplinary engineering and allied sciences around the world via education, training, codes and standards, research, conferences and publications, government relations, and other forms of outreach. This organization emit standards covering a lot of industrial activities such as pipelines, pressure vessels, and power plant systems. It is the reason these standards, that are developed by committees using a consensus process, are commonly used for the design of diving systems.
A lot of ASME standards are adopted by governmental agencies, and for this reason, the organization has three international offices in Beijing (China), Brussels (Belgium), and New Delhi (India).

1.3.3 - ASTM international

ASTM International, formerly known as the "American Society for Testing and Materials", is a nonprofit organization based in West Conshohocken (United States) that develops and publishes voluntary consensus technical standards covering procedures for testing and classification of materials. These standards are developed within committees, and new committees are formed as needed upon request of interested members.
Participation to committees is initiated at the member's request instead of by an appointment or invitation.
Membership in the organization is open to anyone with an interest in its activities. Members are classified as "users", "producers", "consumers", and "general interest". Also, to comply with American antitrust laws, "producers" must constitute less than 50% of every committee or subcommittee, and their votes are limited to one per producer company. Note that the organization report 30,000 members and says that its standards have been adopted in at least 140 countries. ASTM is also appointed for the United States Technical Advisory Group.

1.3.4 - ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers)

ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) is an American professional association seeking to advance heating, ventilation, air conditioning and refrigeration systems design and construction. This organization has already published more than four thousand standards for the design and maintenance of indoor environments. Three types of standards are available: method of measurement or test, standard design, and standard practice. These standards are often used in the conception of the heating and refrigeration systems of the chambers,

2 - Parts of the sea under the authority of States

The laws and rules applicable to a diving project depend on whether it is performed in an area that is under the authority of a state or in international waters. For this reason, it is essential to define the notions of "territorial sea,"exclusive economic zone", and "continental shelf", that are given in the 1982 - 2012 United Nations Convention on the Law of the Sea that is published by the International Maritime Organization (IMO).
The texts below that explain how these zones are delimited and the rights and duties of each party inside these areas are extracts of this convention.

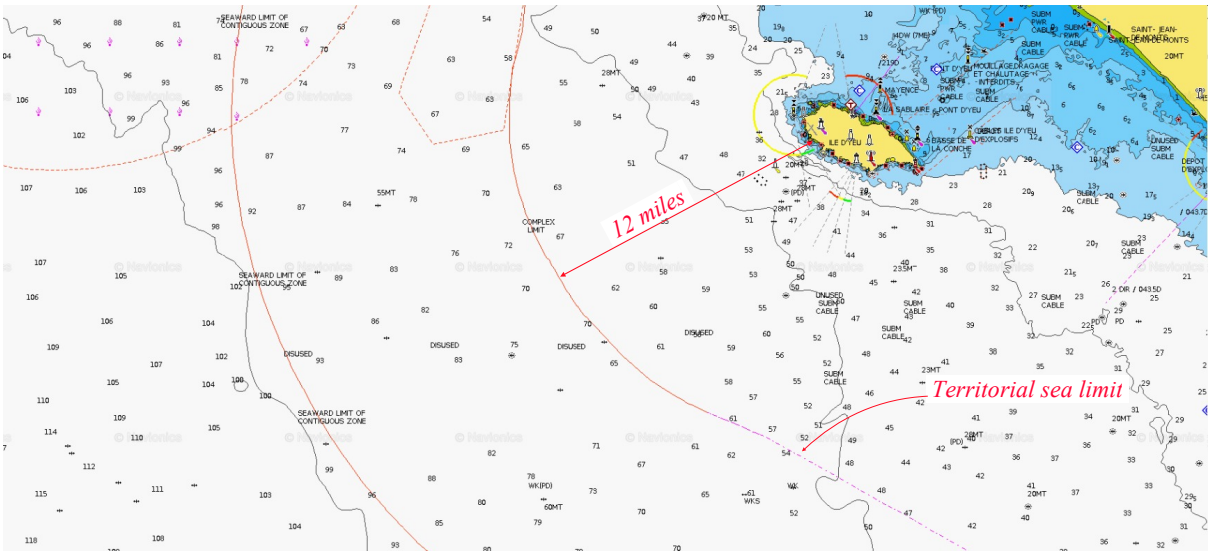
2.1 - Territorial sea & contiguous zone

2.1.1 - Legal status of the territorial sea, of the air space over the territorial sea and of its bed and subsoil

- The sovereignty of a coastal state extends beyond its land territory and internal waters to an adjacent belt of sea described as "the territorial sea".
- This sovereignty extends to the air space over the territorial sea as well as to its bed and subsoil.
- The sovereignty over the territorial sea is exercised subject to and to other rules of international law.

2.1.2 - Limits of the territorial sea

1. Every State has the right to establish the breadth of its territorial sea up to a limit not exceeding 12 nautical miles, measured from baselines determined in accordance with this convention.
2. The outer limit of the territorial sea is the line every point of which is at a distance from the nearest point of the baseline equal to the breadth of the territorial sea.
3. Except where otherwise provided in this Convention on the Law of the Sea, the normal baseline for measuring the breadth of the territorial sea is the low-water line along the coast as marked on large-scale charts officially recognized by the coastal state.
4. In the case of islands situated on atolls or of islands having fringing reefs, the baseline for measuring the breadth of the territorial sea is the seaward low-water line of the reef, as shown by the appropriate symbol on charts officially recognized by the coastal State.

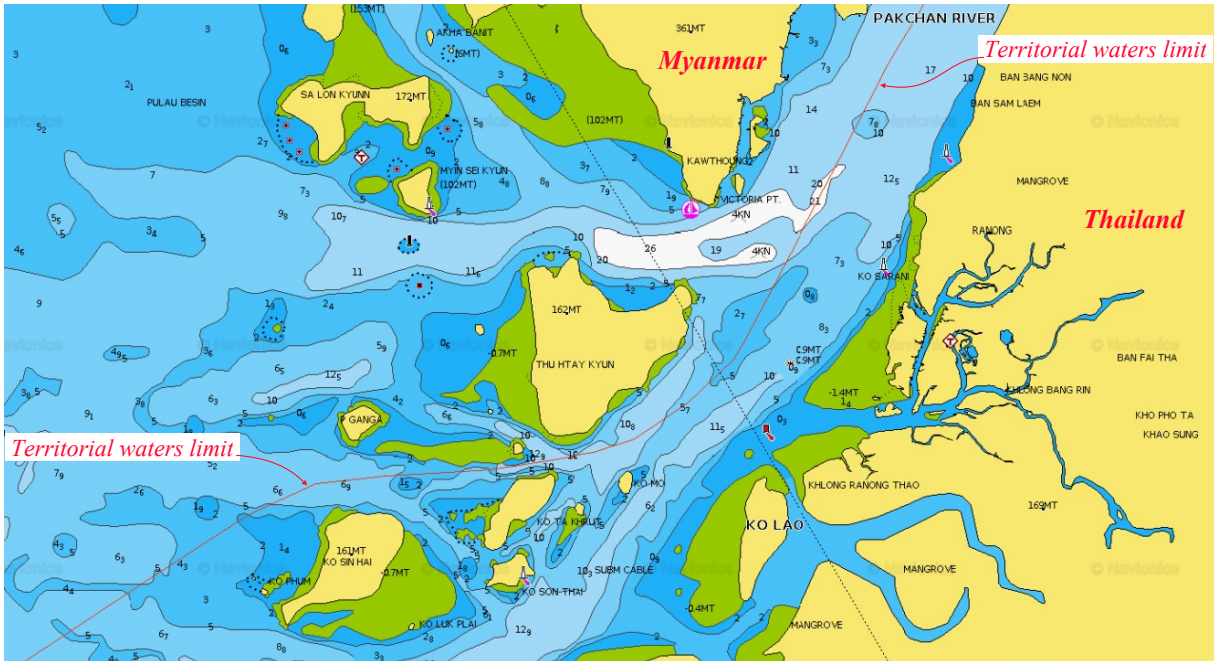


5. Straight baselines:
    - In localities where the coastline is deeply indented and cut into, or if there is a fringe of islands along the coast in its immediate vicinity, the method of straight baselines joining appropriate points may be employed in drawing the baseline from which the breadth of the territorial sea is measured.
    - Where because of the presence of a delta and other natural conditions the coastline is highly unstable, the appropriate points may be selected along the furthest seaward extent of the low-water line and, notwithstanding subsequent regression of the low-water line, the straight baselines will remain effective until changed by the coastal state in accordance with this Convention on the Law of the Sea.
    - The drawing of straight baselines must not depart to any appreciable extent from the general direction of the coast, and the sea areas lying within the lines must be sufficiently closely linked to the land domain to be subject to the regime of internal waters.
    - Straight baselines are not drawn to and from low-tide elevations, unless lighthouses or similar installations which are permanently above sea level have been built on them or except in instances where the drawing of baselines to and from such elevations has received general international recognition.
    - Where the method of straight baselines is applicable, account may be taken, in determining particular

economic interests peculiar to the region concerned, the reality and the importance of which are clearly evidenced by long usage.

- The system of straight baselines may not be applied by a State in such a manner as to cut off the territorial sea of another State from the high seas or an exclusive economic zone.

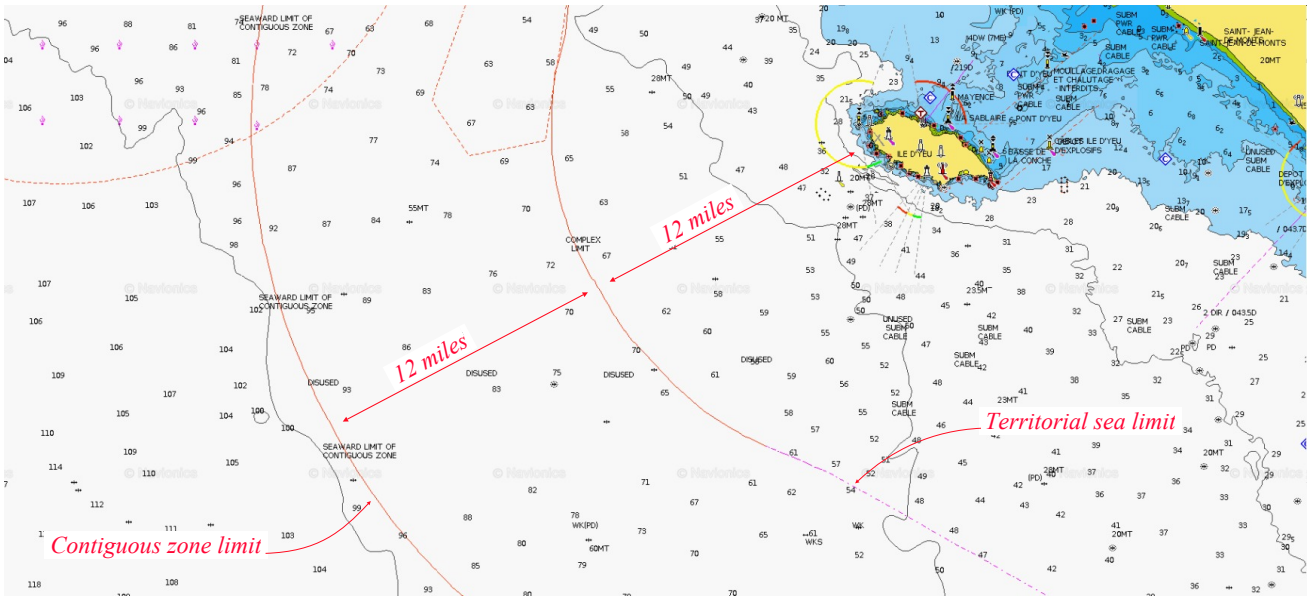
6. If a river flows directly into the sea, the baseline is to be a straight line across the mouth of the river between points on the low-water line of its banks.
7. Bays:
   - A bay is a well-marked indentation whose penetration is in such proportion to the width of its mouth as to contain land-locked waters and constitute more than a mere curvature of the coast. An indentation must not, however, be regarded as a bay unless its area is as large as, or larger than, that of the semi-circle whose diameter is a line drawn across the mouth of that indentation.
   - For the purpose of measurement, the area of an indentation is that lying between the low-water mark around the shore of the indentation and a line joining the low-water mark of its natural entrance points. Where, because of the presence of islands, an indentation has more than one mouth, the semi-circle is drawn on a line as long as the sum total of the lengths of the lines across the different mouths. Islands within an indentation are to be included as if they were part of the water area of the indentation.
   - If the distance between the low-water marks of the natural entrance points of a bay does not exceed 24 nautical miles, a closing line may be drawn between these two low-water marks, and the waters enclosed thereby are to be considered as internal waters.
   - Where the distance between the low-water marks of the natural entrance points of a bay exceeds 24 nautical miles, a straight baseline of 24 nautical miles is to be drawn within the bay in such a manner as to enclose the maximum area of water that is possible with a line of that length.
   - The foregoing provisions do not apply to so-called "historic" bays, or in any case where the system of straight baselines is applied.
8. For the purpose of delimiting the territorial sea, the outermost permanent harbour works which form an integral part of the harbour system are regarded as forming part of the coast. Offshore installations and artificial islands must not be considered as permanent harbour works.
9. Roadsteads which are normally used for the loading, unloading, and anchoring of ships, and which would otherwise be situated wholly or partly outside the outer limit of the territorial sea, are included in the territorial sea.
10. Low-tides elevations
    - A low-tide elevation is a naturally formed area of land which is surrounded by and above water at low tide but submerged at high tide. Where a low-tide elevation is situated wholly or partly at a distance not exceeding the breadth of the territorial sea from the mainland or an island, the low-water line on that elevation may be used as the baseline for measuring the breadth of the territorial sea.
    - Where a low-tide elevation is wholly situated at a distance exceeding the breadth of the territorial sea from the mainland or an island, it has no territorial sea of its own.
11. Where the coasts of two States are opposite or adjacent to each other, neither of the two States is entitled, failing agreement between them to the contrary, to extend its territorial sea beyond the median line every point of which is equidistant from the nearest points on the baselines from which the breadth of the territorial seas of each of the two States is measured. The above provision does not apply, however, where it is necessary by reason of historic title or other special circumstances to delimit the territorial seas of the two States in a way that is at variance therewith.



12. Archipelagic states:
    An "archipelago" means a group of islands, including parts of islands, interconnecting waters and other natural features which are so closely interrelated that such islands, waters and other natural features form an intrinsic geographical, economic and political entity, or which historically have been regarded as such. An "archipelagic State" means a State constituted wholly by one or more archipelagos and may include other islands.
    - An archipelagic State may draw straight archipelagic baselines joining the outermost points of the outermost islands and drying reefs of the archipelago provided that within such baselines are included the main islands and an area in which the ratio of the area of the water to the area of the land, including atolls, is between 1 to 1 and 9 to 1.
    - The length of such baselines must not exceed 100 nautical miles, except that up to 3 percent of the total number of baselines enclosing any archipelago may exceed that length, up to a maximum length of 125 nautical miles. The drawing of such baselines must not depart to any appreciable extent from the general configuration of the archipelago.
    - Such baselines must not be drawn to and from low-tide elevations, unless lighthouses or similar installations which are permanently above sea level have been built on them or where a low-tide elevation is situated wholly or partly at a distance not exceeding the breadth of the territorial sea from the nearest island.
    - The system of such baselines shall not be applied by an archipelagic State in such a manner as to cut off from the high seas or the exclusive economic zone the territorial sea of another State.
    - If a part of the archipelagic waters of an archipelagic State lies between two parts of an immediately adjacent neighbouring State, existing rights and all other legitimate interests which the latter State has traditionally exercised in such waters and all rights stipulated by agreement between those States must continue and be respected.
    - Land areas may include waters lying within the fringing reefs of islands and atolls, including that part of a steep-sided oceanic plateau which is enclosed or nearly enclosed by a chain of limestone islands and drying reefs lying on the perimeter of the plateau.
13. Except for archipelagic States, waters on the landward side of the baseline of the territorial sea form part of the internal waters of the State. Also, where the establishment of a straight baseline has the effect of enclosing as internal waters areas which had not previously been considered as such, a right of “innocent passage” *(see the description below)* as provided in this Convention on the Law of the Sea must exist in those waters.
14. The baselines for measuring the breadth of the territorial sea should be shown on charts of a scale or scales adequate for ascertaining their position. Alternatively, a list of geographical coordinates of points, specifying the geodetic datum, may be substituted.
    The coastal State must give due publicity to such charts or lists of geographical coordinates and depose a copy of each such chart or list with the Secretary-General of the United Nations.

2.1.3 - Contiguous zone

In a zone contiguous to its territorial sea, described as the contiguous zone, the coastal State may exercise the control necessary to prevent infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea, and punish infringement of the above laws and regulations committed within its territory or territorial sea.
The contiguous zone may not extend beyond 24 nautical miles from the baselines from which the breadth of the territorial sea is measured.



2.1.4 - Innocent passage in the territorial sea - Rules applicable to all ships

2.1.4.1 - Definitions

- Passage means navigation through the territorial sea for the purpose of traversing that sea without entering internal waters or calling at a roadstead or port facility outside internal waters, or proceeding to or from internal waters or a call at such roadstead or port facility.
- Passage must be continuous and expeditious. However, passage includes stopping and anchoring, but only in so far as the same are incidental to ordinary navigation or are rendered necessary by “force majeure” or distress or for the purpose of rendering assistance to persons, ships or aircraft in danger or distress.
- Passage is innocent so long as it is not prejudicial to the peace, good order or security of the coastal State. Such passage shall take place in conformity with the Convention on the Law of the Sea and with other rules of international law.
- Passage of a foreign ship is considered prejudicial to the peace, good order or security of the coastal State if in the territorial sea it engages in any of the following activities:
  - any threat or use of force against the sovereignty, territorial integrity or political independence of the coastal State, or in any other manner in violation of the principles of international law embodied in the Charter of the United Nations;
  - any exercise or practice with weapons of any kind;
  - any act aimed at collecting information to the prejudice of the defence or security of the coastal State;
  - any act of propaganda aimed at affecting the defence or security of the coastal State;
  - the launching, landing or taking on board of any aircraft;
  - the launching, landing or taking on board of any military device;
  - the loading or unloading of any commodity, currency or person contrary to the customs, fiscal, immigration or sanitary laws and regulations of the coastal State;
  - any act of wilful and serious pollution contrary to the Convention on the Law of the Sea;
  - any fishing activities;
  - the carrying out of research or survey activities;
  - any act aimed at interfering with any systems of communication or any other facilities or installations of the coastal State;
  - any other activity not having a direct bearing on passage.

2.1.4.2 - Laws and regulations of the coastal State relating to innocent passage

1. In the territorial sea, submarines and other underwater vehicles are required to navigate on the surface and to show their flag. Also, the coastal State may take the necessary steps in its territorial sea to prevent passage which is not innocent.
2. The coastal State may adopt laws and regulations, in conformity with the provisions of the Convention on the Law of the Sea, and other rules of international law, relating to innocent passage through the territorial sea, in respect of all or any of the following:
   - the safety of navigation and the regulation of maritime traffic;
   - the protection of navigational aids and facilities and other facilities or installations;
   - the protection of cables and pipelines;
   - the conservation of the living resources of the sea;
   - the prevention of infringement of the fisheries laws and regulations of the coastal State;
   - the preservation of the environment of the coastal State and the prevention, reduction and control of pollution thereof;
   - marine scientific research and hydrographic surveys;
   - the prevention of infringement of the customs, fiscal, immigration or sanitary laws and regulations of the coastal State.
3. The coastal State may, where necessary having regard to the safety of navigation, require foreign ships exercising the right of innocent passage through its territorial sea to use such sea lanes and traffic separation schemes as it may designate or prescribe for the regulation of the passage of ships.
   In particular, tankers, nuclear-powered ships and ships carrying nuclear or other inherently dangerous or noxious substances or materials may be required to confine their passage to such sea lanes.
4. In the designation of sea lanes and the prescription of traffic separation schemes under this article, the coastal State must take into account:
   - the recommendations of the competent international organization;
   - any channels customarily used for international navigation;
   - the special characteristics of particular ships and channels; and
   - the density of traffic
5. The coastal State must not hamper the innocent passage of foreign ships through the territorial sea except in accordance with this Convention. In particular, in the application of this Convention or of any laws or regulations adopted in conformity with the Convention on the Law of the Sea, the coastal State must not impose

requirements on foreign ships which have the practical effect of denying or impairing the right of innocent passage, or discriminate in form or in fact against the ships of any State or against ships carrying cargoes to, from, or on behalf of any State. Also, the coastal State shall give appropriate publicity to any danger to navigation, of which it has knowledge, within its territorial sea.

6. In the case of ships proceeding to internal waters or a call at a port facility outside internal waters, the coastal State also has the right to take the necessary steps to prevent any breach of the conditions to which admission of those ships to internal waters or such a call is subject.
7. The coastal State may, without discrimination in form or in fact among foreign ships, suspend temporarily in specified areas of its territorial sea the innocent passage of foreign ships if such suspension is essential for the protection of its security, including weapons exercises. Such suspension takes effect only after having been duly published.
8. No charge may be levied upon foreign ships by reason only of their passage through the territorial sea. Charges may be levied upon a foreign ship passing through the territorial sea as payment only for specific services rendered to the ship. These charges are to be levied without discrimination.
9. The criminal jurisdiction of the coastal State should not be exercised on board a foreign ship passing through the territorial sea to arrest any person or to conduct any investigation in connection with any crime committed on board the ship during its passage, save only in the following cases:
    - if the consequences of the crime extend to the coastal State;
    - if the crime is of a kind to disturb the peace of the country or the good order of the territorial sea;
    - if the assistance of the local authorities has been requested by the master of the ship or by a diplomatic agent or consular officer of the flag State; or
    - if such measures are necessary for the suppression of illicit traffic in narcotic drugs or psychotropic substances.

    The above provisions do not affect the right of the coastal State to take any steps authorized by its laws for the purpose of an arrest or investigation on board a foreign ship passing through the territorial sea after leaving internal waters.

    Regarding the points above, the coastal State must, if the master so requests, notify a diplomatic agent or consular officer of the flag State before taking any steps, and shall facilitate contact between such agent or officer and the ship's crew. In cases of emergency, this notification may be communicated while the measures are being taken.

    In considering whether or in what manner an arrest should be made, the local authorities must have due regard to the interests of navigation.

    Except as provided in this convention of the laws of the sea for the protection and preservations of the marine environment or with respect to violations of laws and regulations adopted in accordance with reclusive economic zones, the coastal State may not take any steps on board a foreign ship passing through the territorial sea to arrest any person or to conduct any investigation in connection with any crime committed before the ship entered the territorial sea, if the ship, proceeding from a foreign port, is only passing through the territorial sea without entering internal waters.
10. The coastal State should not stop or divert a foreign ship passing through the territorial sea for the purpose of exercising civil jurisdiction in relation to a person onboard the ship. Also, the coastal State may not levy execution against or arrest the ship for the purpose of any civil proceedings, save only in respect of obligations, or liabilities assumed or incurred by the ship itself in the course or for the purpose of its voyage through the waters of the coastal State.

    The paragraph above is without prejudice to the right of the coastal State, in accordance with its laws, to levy execution against or to arrest, for the purpose of any civil proceedings, a foreign ship lying in the territorial sea, or passing through the territorial sea after leaving internal waters.

2.2 - Exclusive economic zone

2.2.1 - Definition

The exclusive economic zone is an area adjacent to the territorial sea, that does not extend beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, and where the coastal state has the right of:

- exploring and exploiting the area;
- conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and off the seabed and its subsoil, and concerning other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents, and winds;
- establishing and using artificial islands, installations, and structures;
- protecting and preserving the marine environment.

In exercising its rights and performing its duties, the coastal State must have due regard to the rights and obligations of other States and must act in a manner compatible with the provisions of the Convention on the Law of the Sea.
Also, the rights concerning the seabed and subsoil are to be exercised in accordance with those of the continental shelf that are discussed in the next topic.

In the exclusive economic zone, all States, whether coastal or land-locked, enjoy, subject to the relevant provisions of the Convention on the Law of the Sea, the freedoms of navigation and overflight and the laying of submarine cables and pipelines, and other internationally lawful uses of the sea related to these freedoms, such as those associated with the operation of ships, aircraft and submarine cables and pipelines and compatible with the other provisions of the Convention on the Law of the Sea.

Artificial islands, installations and structures do not possess the status of islands. They have no territorial sea of their own, and their presence does not affect the delimitation of the territorial sea, the exclusive economic zone or the continental shelf.

2.2.2 - Rights and duties of the State regarding artificial islands, installations and structures in the exclusive economic zone

In the exclusive economic zone, the coastal State has the exclusive right to construct and to authorize and regulate the construction, operation, and use of:

- artificial islands;
- installations and structures for the purposes indicated in point 2.2.1 and other economic purposes;
- installations and structures which may interfere with the exercise of the rights of the coastal State in the zone.

The coastal State has exclusive jurisdiction over such artificial islands, installations, and structures, including jurisdiction with regard to customs, fiscal, health, safety and immigration laws, and regulations.

Due notice must be given of the construction of such artificial islands, installations or structures, and permanent means for giving warning of their presence must be maintained.
Any installations or structures which are abandoned or disused must be removed to ensure the safety of navigation, taking into account any generally accepted international standards established in this regard by the competent international organization. Such removal must also have due regard to fishing, the protection of the marine environment, and the rights and duties of other States.
Appropriate publicity is to be given to the depth, position, and dimensions of any installations or structures not entirely removed.

The coastal State may, where necessary, establish reasonable safety zones around such artificial islands, installations, and structures in which it may take appropriate measures to ensure the safety both of navigation and of the artificial islands, installations, and structures.
The breadth of the safety zones is to be determined by the coastal State, taking into account applicable international standards. Such zones must be designed to ensure that they are reasonably related to the nature and function of the artificial islands, installations or structures, and must not exceed a distance of 500 metres around them, measured from each point of their outer edge, except as authorized by generally accepted international standards or as recommended by the competent international organization. Due notice must be given regarding the extent of the safety zones.
All ships must respect these safety zones and shall comply with generally accepted international standards regarding navigation in the vicinity of artificial islands, installations, structures, and safety zones.

Artificial islands, installations and structures, and the safety zones around them may not be established where interference may be caused to the use of recognized sea lanes essential to international navigation.
Artificial islands, installations and structures do not possess the status of islands. They have no territorial sea of their own, and their presence does not affect the delimitation of the territorial sea, the exclusive economic zone or the continental shelf.

2.3 - Continental shelf

2.3.1 - Definition

The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance.
The continental margin comprises the submerged prolongation of the landmass of the coastal State and consists of the seabed and subsoil of the shelf, the slope, and the rise. It does not include the deep ocean floor with its oceanic ridges or the subsoil thereof.

The fixed points comprising the line of the outer limits of the continental shelf on the seabed must not exceed 350 nautical miles from the baselines from which the breadth of the territorial sea is measured or must not exceed 100 nautical miles from the 2,500-metres isobath, which is a line connecting the depth of 2,500 metres.
Notwithstanding the provisions of the above, on submarine ridges, the outer limit of the continental shelf shall not exceed 350 nautical miles from the baselines from which the breadth of the territorial sea is measured.
This paragraph does not apply to submarine elevations that are natural components of the continental margin, such as its plateaux, rises, caps, banks, and spurs.

The coastal State must delineate the outer limits of its continental shelf, where that shelf extends beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, by straight lines not exceeding 60 nautical miles in length, connecting fixed points, defined by coordinates of latitude and longitude.

Information on the limits of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured must be submitted by the coastal State to the United Nations Commission on the Limits of the Continental Shelf on the basis of equitable geographical representation. This Commission makes recommendations to coastal States on matters related to the establishment of the outer limits of their continental shelf. The limits of the shelf established by a coastal State on the basis of these recommendations are final and binding.
Charts and relevant information, including geodetic data, permanently describing the outer limits of its continental shelf must be transmitted to the Secretary-General of the United Nations who must give due publicity thereto.

2.3.2 - Rights and duties of the coastal State

The coastal State exercises over the continental shelf sovereign rights for the purpose of exploring it and exploiting its natural resources.
These rights are exclusive in the sense that if the coastal State does not explore the continental shelf or exploit its natural resources, no one may undertake these activities without the express consent of the coastal State.
The rights of the coastal State over the continental shelf do not depend on occupation, effective or notional, or on any express proclamation.
The natural resources consist of the mineral and other non-living resources of the seabed and subsoil together with living organisms belonging to sedentary species, that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil.

The right and duties of the coastal state regarding artificial islands, installations, and structures on the continental shelf are similar to those in force for such constructions in the exclusive economic zone. Also, the coastal State has the exclusive right to authorize and regulate drilling on the continental shelf for all purposes.

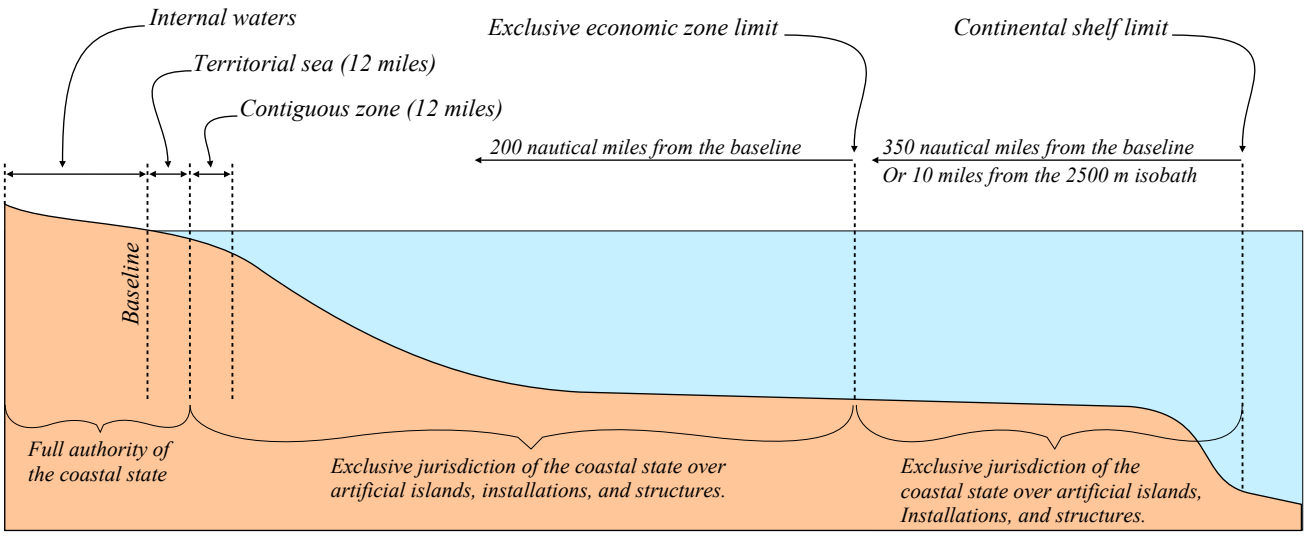
The exercise of the rights of the coastal State over the continental shelf must not infringe or result in any unjustifiable interference with navigation and other rights and freedoms of other States. Also, the coastal State must make payments or contributions in kind in respect of the exploitation of the non-living resources of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured. These payments and contributions are made annually with respect to all production at a site after the first five years of production at that site. For the sixth year, the rate of payment or contribution is 1 percent of the value or volume of production at the site. The rate is increased by 1 percent for each subsequent year until the twelfth year and remains at 7 percent thereafter. Production does not include resources used in connection with exploitation. However, a developing State which is a net importer of a mineral resource produced from its continental shelf is exempt from making such payments or contributions in respect of that mineral resource.
The payments or contributions are made through the Authority, which distributes them to States Parties to the Convention on the Law of the Sea, on the basis of equitable sharing criteria, taking into account the interests and needs of developing States, particularly the least developed and the land-locked among them.

2.3.3 - Rights and duties of the other states

All States are entitled to lay submarine cables and pipelines on the continental shelf.
Subject to its right to take reasonable measures for the exploration of the continental shelf, the exploitation of its natural resources and the prevention, reduction, and control of pollution from pipelines, the coastal State may not impede the laying or maintenance of such cables or pipelines. However, the delineation of the course for the laying of such pipelines on the continental shelf is subject to the consent of the coastal State.

When laying submarine cables or pipelines, States must have due regard to cables or pipelines already in position. In particular, the possibilities of repairing existing cables or pipelines shall not be prejudiced.

2.4 - Summary of the laws and rules applicable by states and the organizations they appoint



The sovereignty of a coastal state extends beyond its land territory and internal waters to the adjacent belt of sea described as “the territorial sea”. Also, the Coastal State has exclusive jurisdiction over artificial islands, installations, and structures, including jurisdiction concerning customs, fiscal, health, safety and immigration laws, and regulations in the “Exclusive economic zone” and the “Continental shelf” area under its jurisdiction. As a result, guidelines of independent non-governmental organizations are applicable in these areas only with the consent of the government of the coastal state. Also, a vessel transiting to the job site under the regime of “innocent passage” through waters that are under the jurisdiction of another State cannot undertake diving operations in such area without the consent of this State, even for training or testing purposes.

To develop the resources of the seafloor under their jurisdiction, coastal states often sign contract agreements with non-governmental organizations such as petroleum companies. Note that, except for those related to the petroleum industry, the procedures for the exploration and exploitation of the resources from the bottom of the sea are still not developed. Several types of contracts are signed between the selected company and the state, such as:

- Concession agreement:
  Such a contract gives the holder exclusive right to explore and exploit the seafloor for the resource he is authorized in a limited area. So, the selected company takes ownership of all production against the payment of a royalty to the state. Also, the contractor owns the equipment and installations used for this exploitation. Note that such a contract may involve a company or a consortium where a governmental organization may be part.
- Production sharing agreements
  The selected company or consortium provides technical expertise and capital and assumes project risk in return for exclusive rights of exploration and production in the chosen area. The State generally owns the equipment and installations. The selected organization usually pays income tax on profits to the State as well as any other fees and contributions provided for in the national legislation and the relevant contract. The charges paid by the organization may be indicated in detail in the agreement.
- Risk service agreements
  The State hires the service of a specialized company or consortium to benefit from its financial and technical expertise. The company or consortium assumes the risk and liability and is reimbursed by a service fee, usually paid in cash.

Note that when several companies are involved in a consortium, the company that has the most significant share is usually in charge of the management of the operations on site.
Depending on the type of agreement, the company in charge of the exploitation of the seabed may impose its rules on the diving contractor. These rules may be more stringent than those of the State, but cannot be less severe.
Also, based on the rights of the states regarding the exploitation of the seabed in the areas under its jurisdiction, in case of an incident, the State has the authority and the duty to organize an investigation.

3 - Team size and responsibilities

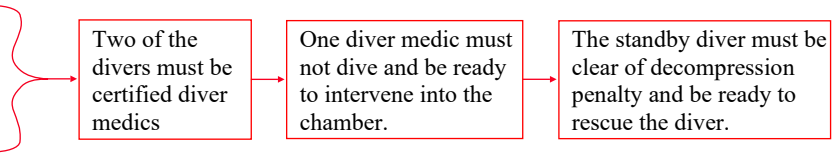
The size and composition of the diving team depend upon a number of factors that should have been discussed prior to starting the project. However, it is the duty of the persons in charge to make sure that the team will conduct the diving operation safely and effectively, and to take appropriate corrective measures in accordance with the practices promoted by recognized national and international safety organizations if they consider that the optimum conditions are not in place.
Note that the procedure for the recruitment of the personnel of the company is not explained in this chapter.

3.1 - Manning levels and working hours

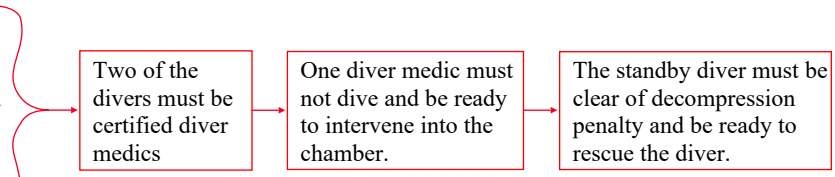
3.1.1 - Minimum manning level and working periods

The minimum manning level of diving teams is usually indicated in the national regulation of the country where the operation is undertaken. However, many countries have no commercial diving legislation, and in this case, the guidelines from organizations such as IMCA, DMAC, and IOGP are usually taken as references and implemented.

- According to IMCA D 014, and D 022, the absolute minimum for air and nitrox diving operations using a ladder or a basket is five, consisting of:
  - Diving Supervisor
  - Working Diver
  - Standby Diver
  - Tender for Working Diver
  - Tender for Standby Diver

  Note that IMCA D 22 /General Diving Procedures/ point 10.1 says: *The divers and standby diver all need to be medically fit to dive and clear of any decompression penalties*.
  IOGP has adopted this minimum manning level in appendix F "Mobile/portable surface supplied systems or scuba replacement" and appendix K "Surface supplied offshore diving – air" of their safety document No 411 "Recommended Practices for Diving Operations". It is also the case of ADCI in points 4.3.2 "Surface supplied air diving –100 fsw with planned decompression", and point 4.3.3 "surface supplied air diving 101-190 fsw".
- In point 5.2.5.2 of IMCA 14, it is said that the minimum team size for surface-supplied mixed gas diving is six, consisting of a diving supervisor and five personnel who are qualified to dive. However, in appendix M "Supplied mixed gas diving - heliox", IOGP 411 "diving recommended practices" considers that a team of seven people should be the minimum and organized as follows:
  - Diving Supervisor
  - Working Diver
  - Standby diver
  - Tender for Working Diver
  - Tender for Standby Diver
  - Surface standby diver
  - Tender surf. standby diver

  IOGP also says that the minimum team should be organized according to the following rules:
  - One tender for each diver tended from the surface.
  - One stand-by diver for every two divers in the water. Standby diver to be located in the wet bell.
  - The team size should be risk assessed so that there must be a sufficient number of competent personnel to operate all the diving plants and provide support functions to the dive team. Thus, additional deck support personnel and other management or associated technical support personnel may be required.

  This evaluation is valid if the divers are tended from the surface, so with the umbilical passing through the bell as with a basket. Still, it does not clearly explain the configuration if the umbilicals are terminated in the wet bell and where the bellman acts as tender and standby diver (like with closed bells), which is the case with most wet bells. In this case, a surface standby diver must be ready to be sent to assist the bellman. However, as the use of the bell depends on the possibility to send the standby diver, a 2nd bell is recommended.

Note that the winch operator is not indicated in all these evaluations and that this person is essential. Also, maintaining the system is vital, so a certified technician is necessary. It is usually admitted that this technician also acts as the winch operator of the basket or the bell. In addition, personnel for the management of the bell's umbilical must be considered. Thus, we can say that the minimum manning level of diving teams is linked to the means of deployment used.

The working periods planned for the teams should also be taken into account to complement the above to decide the manning level. Most safety organizations have established that incidents and accidents are more likely when people work during long daily periods because their efficiency, concentration, and safety awareness deteriorate. For these reasons, long working periods should be done exceptionally. Among the published guidelines regarding this point, those from IMCA D 014, which says the following in point 5.3.1, can be taken as a reference:

1. Members of the diving team should not be asked to work for more than 12 hours without having at least eight hours of unbroken rest during the previous 24 hours. Similarly, the most prolonged period a person is asked to work, and only in exceptional circumstances, is 16 hours before being given eight hours of unbroken rest (note that what IMCA calls "exceptional circumstances" are situations linked to unforeseen events).

2. No person is expected to work a 12-hour shift without a meal break taken away from his place of work. Personnel also need toilet and refreshment breaks during their shifts.
   To allow for these breaks, the diving contractor needs to ensure that the planned work either has natural breaks (for example, during periods of strong tide) or that qualified and experienced personnel are available to act as relief during breaks. This is particularly important in relation to supervisors whose responsibilities are often onerous and stressful. Any such handovers of responsibility should be recorded in writing in the operations log.
3. Extended work periods offshore without a break can reduce safety awareness. Work will therefore need to be planned so that personnel do not work offshore for long periods without being allowed time onshore. These times may need to vary to suit operational needs or exceptional circumstances, but personnel should be given a reasonable onshore break related to the period spent offshore.

In complement to the elements suggested above, the diving supervisors are key people whose fatigue resulting in loss of attention should be taken into account. For this reason, procedures should be in place to diminish it. Having two diving supervisors on duty in a shift has become a rule with some contractors and clients. In addition, the limitation of the diving monitoring times is recommended in the following guidelines:

- IMCA R004 says in point 9.3, *"The maximum number of hours that a member of the ROV team pilots an ROV should not exceed six hours in every 24 hours period under normal circumstances"*.
- NORSOK standard U-100 says in point 8.4.6, *"The diving supervisor shall have a rest period from the direct communication control after a period of 4 h. The rest period shall be at least 30 min. The total time for this function shall be limited to 8 h in the course of a 12 h period. The workload should determine the length of the rest periods. Inside a 24 h period supervisory personnel should normally have a 12 h period of continuous rest"*.

Because they are already in force to manage diving operations in some countries or control machines, similar precautions should be applied and discussed with the client if he plans for a minimum team. Thus the supervisor should not manage 12 hours of continuous diving operations.

Note that a common practice to control the effects of fatigue on the personnel is to renew a half team every 6 hours. For example, a 1st half team is on duty from 0:00 to 12:00, 2nd half is 6:00 to 18:00, 3rd half is 12:00 to 24:00, and 4th half team is 18:00 to 6:00. Such an organization avoids a shift change in a middle of a dive.

The following tables summarize and take into account the elements discussed above to decide of the minimum team for each type of surface supplied diving operation:

Diving operations using a ladder as means of deployment:

Positions	***Duration of the daily operations***		
	12 hours < 8 hrs diving	***12 hours > 8 hrs diving***	***24 hours***
Diving supervisor	*At least 1*	*At least 2*	*At least 3*
Working diver	*1 or 2 each dive*	*1 or 2 each dive*	*1 or 2 each dive*
Standby diver	*1 for 2 divers each dive*	*1 for 2 divers each dive*	*1 for 2 divers each dive*
Tender working diver	*1 per diver each dive*	*1 per diver each dive*	*1 per diver each dive*
Tender standby diver	*1 per standby diver each dive*	*1 per standby diver each dive*	*1 per standby diver each dive*
Dive system technician	*At least 1*	*At least 1*	*At least 2*

Diving operations using baskets as means of deployment:

Positions	***Duration of the daily operations***		
	12 hours < 8 hrs diving	***12 hours > 8 hrs diving***	***24 hours***
Diving supervisor	*At least 1*	*At least 2*	*At least 3*
Working diver	*1 or 2 each dive*	*1 or 2 each dive*	*1 or 2 each dive*
Standby diver	*1 for 2 divers each dive*	*1 for 2 divers each dive*	*1 for 2 divers each dive*
Tender working diver	*1 per diver each dive*	*1 per diver each dive*	*1 per diver each dive*
Tender standby diver	*1 per standby diver each dive*	*1 per standby diver each dive*	*1 per standby diver each dive*
Dive system technician	*At least 1*	*At least 1*	*At least 2*
*Winchman**	*At least 1*	*At least 1*	*At least 2*
Winchman: It is admitted that the dive system technician cumulates the functions of the dive technician and winch operator if the baskets are not used at the same time or can be controlled from the same console. A winchman must be assigned to each basket if the two baskets need to be used simultaneously and cannot be controlled from a single console.*			

Diving operations using wet bells with the diver umbilicals terminated in the bell as means of deployment:

Positions	***Duration of the daily operations***		
	12 hours < 8 hrs diving	***12 hours > 8 hrs diving***	***24 hours***
Diving supervisor	*At least 1*	*At least 2*	*At least 3*
Working diver	*1 or 2 each dive*	*1 or 2 each dive*	*1 or 2 each dive*
*Bellman**	*1 each dive*	*1 each dive*	*1 each dive*
*Surface standby diver**	*1 each dive*	*1 each dive*	*1 each dive*
*Tender surface standby diver**	*1 each dive*	*1 each dive*	*1 each dive*
Dive system technician	*At least 1*	*At least 1*	*At least 2*
*Winchman**	*At least 1*	*At least 1*	*At least 2*
*Tender main umbilical**	*At least 1 per bell*	*At least 1 per bell*	*At least 2 per bell*

Bellman: As for diving operations from a closed bell, the bellman acts as tender and rescue diver.*

Surface standby diver: He can be deployed from a basket for dives above 50 m. However, it is recommended to deploy him with a 2nd bell. The 2nd bell should be mandatory for operations deeper than this 50 m limit.*

Tender surface standby diver: He operates at the surface or as a bellman in the bell, depending on the means of deployment used.*

Winchman: It is admitted that the dive system technician cumulates the functions of the dive technician and winch operator if the bells are not used at the same time or can be controlled from the same console. A winchman must be assigned to each bell if the two bells need to be used simultaneously and cannot be controlled from a single console.*

Tender main umbilical: At least one person should be assigned to help with the main umbilical deployment and recovery of each bell if these operations are not automatic (case of many wet bells).*

In complement to the tables above, the rescue procedures for the most extreme scenarios must be considered to decide the minimum manning level. The policy regarding successive dives must also be taken into account.
Also, it must be taken into account that operations organized with minimum personnel are uncomfortable for the supervisors, more subject to incidents due to fatigue, and can be interrupted due to the unavailability of team members due to undesirable events such as sickness, wounds, and others.

3.1.2 - Additional key personnel

Based on the elements discussed above, it is evident that a basic team is able to carry out only small tasks. For more important projects, additional personnel are needed, and a stronger management structure must be organized in addition of having two supervisors on shift.

3.1.2.1 - Diving superintendent

When the diving team is working twenty-four hours per day, it is necessary to appoint several diving supervisors. Besides, a diving superintendent, who is an experienced diving supervisor, should be appointed to coordinate the work of the shifts of divers.

3.1.2.2- Offshore manager

Most diving projects involve different skills and subcontractors. For this reason, companies usually appoint an offshore manager to co-ordinate and control all the aspects of the project, and to liaise with the client's representative. On small projects, it is possible that the Offshore manager cumulates his functions with those of diving superintendent.

3.1.2.3 - Project engineer

For most construction and repair projects, the diving contractor appoints one or several project engineers to coordinate and control engineering aspects of the work. These people work closely with the diving superintendent.

3.1.2.4 - Safety officer.

A safety officer should be onboard when 24 hours projects involving different activities are undertaken. His function is to ensure safety on board. He reports to the offshore manager and is helped by specialists, depending on the size of the project and its specifications.

3.1.2.5 - Onboard diving doctor or nurse.

The divers holding an IMCA “diver medic certificate” can be considered “advanced first aiders” (also called “Advanced first responders”), but are not medics. That is because it takes a 15 days courses to obtain this certificate, while the formation of an actual nurse takes five years, and ten years are necessary for a student to become a recognized doctor. Therefore, it is evident that “IMCA diver medics” have limited knowledge in medical

matters and need professional support onboard. Also, medical interventions are strictly regimented in some countries, which may limit the possibilities of intervention of the “IMCA diver medics”, even under the remote direction of a doctor.
For these reasons, and even though this is not possible for small operations with a limited number of persons, at a minimum, a nurse who has a recognized formation in diving accidents and emergency medicine should be onboard the surface support when 24 hours operations are undertaken. Note that some companies cumulate the functions of the onboard medic with those of the safety officer to amortize the expenses linked to this function, which is essential in case of accidents or illnesses on board.
Implementing this medical support does not question the benefit of having what IMCA calls “diver medics”.

3.1.2.6 - Diving system technician leader

Even though surface supplied diving systems are less complicated than saturation systems, they may include complex elements such as hot water machines, diver gas reclaims, and diver monitoring systems. In such cases, competent technicians must be onboard to maintain them and should be directed by a lead technician having an overall knowledge of the systems in use.

3.1.2.7 - Additional key people

The workload of key personnel such as the offshore manager, lead engineer, safety officer, and others should be considered. For this reason, it often happens that one or two secretaries are on board to help the people mentioned above. Their essential activities consist of doing paperwork up to date and transmitting those of the people they help.

3.1.3 - Organization of the personnel

The Person in charge of the project must take care not to have overlapped functions and sufficient experienced personnel. Also, the use of unqualified diving personnel in the team is not permitted.

3.1.3.1 - Overlapping

IMCA says that members of a diving team may perform more than one function in the course of a single dive provided that this does not detract from the safety of the operation by the interference of one function with another, particularly in an emergency.

3.1.3.2 - Experienced personnel

It is essential to employ newly qualified personnel to provide them sufficient experience to ensure the future of the diving company. However, the diving team should be mainly composed of experienced staff. Note that to ensure that this point is under control, a lot of clients limit the quota of beginners in their company rules (it is often 25% maximum). For this reason, it is highly recommended to liaise with the clients regarding this aspect of job organization.

3.1.3.3 - Additional personnel

IMCA says that additional personnel may be included in the diving team for the purpose of operating special equipment. Such personnel must not act as a diver or diving supervisor unless they are suitably qualified and experienced to do so, or are employed by the diving contractor and are covered by their employer's liability insurance.
In certain circumstances, where the size of a diving team may be insufficient for the task, it is sometimes suggested that it should be supplemented by additional personnel employed on other work on the DSV or installation. This is not to be permitted for the following reasons:

- Lack of knowledge of the diving rules and diving procedures, particularly in an emergency, on the part of the non-diving personnel.
- Potential difficulties for the diving supervisor in exercising control and authority over people who are not directly responsible to him for their work.
- Possible third party liability.

Therefore if the circumstances of the diving work change so as to require increasing the size of the diving team the diving contractor will be required to mobilise additional personnel for that purpose.

3.2 - Role and duties

The role and responsibilities of people involved in a diving project are dependent on the laws published by the states where the operations are performed, and international codes such as the International Safety Management (ISM) Code published by IMO (International Maritime Organization), when the activities are performed outside the water controlled by the states. Note that IMO is a specialized agency of the United Nations.
As the IMO codes are not sufficiently precise to manage diving operations, professional associations such as IMCA have emitted guidelines that are applied outside territorial waters and in states where no laws regarding diving are published. Note that most nations issuing diving rules are developed countries and that these rules are usually very similar. These laws may partially apply in the exclusive economic zone defined by the convention of the law of the sea 1982 that provides the states with sovereign rights for the purpose of exploring, exploiting, conserving and managing natural

resources, whether living and nonliving, of the seabed and subsoil and the superjacent waters and concerning other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water currents and winds.

3.2.1 - Client

UK Diving at work regulations - Approved Codes Of Practice (ACOP) define the client as the operator or owner of the installation where diving operations take place, or a contractor acting on behalf of the operator or owner.
This code says that clients should:

- ensure that nominated on-site representatives are competent for the task;
- Ensure that any diving contractor selected is capable of complying with the diving regulations in force;
- make available to the diving contractor the results of any risk assessments undertaken by other people under other statutory legislation that could affect the health and safety of the dive team;
- agree to provide facilities and extend all reasonable support to the supervisor or diving contractor in the event of an emergency. The diving project plan should reflect this;
- consider whether any known underwater or above-water items of plant under their control may cause a hazard to the dive team. Such items may include ship propellers, water intakes or discharge points causing suction or turbulence, gas flare mechanisms that may activate without warning, or plant liable to start operating automatically. The diving contractor should be informed of the location and nature of such hazards. This information should be provided in sufficient time so that it can be taken into account by the diving contractor when preparing the risk assessment before producing the diving project plan. They should also provide the diving contractor, in good time, with details of any changes to this information occurring before or during the course of the diving project;
- ensure that suitable facilities and time are available to the diving contractor to allow for a familiarisation programme;
- consider whether other activities in the vicinity affect the safety of the diving project, for example, they may need to arrange for the suspension of loading or unloading of vessels, seismic operations, scaffolding work or similar activities;
- ensure that they have a formal control system in place to cover diving activities, for example a permit-to-work system;
- provide the diving contractor with details of any possible substance likely to be encountered by the dive team that would be a hazard to their health, for example drill cuttings on the seabed. This information should be provided in writing and in sufficient time to allow the diving contractor to carry out the relevant risk assessment and, if necessary, to take appropriate action;
- keep the supervisor informed of any changes that may affect the supervisor’s diving operation, for example vessel movement, so that diving can be suspended if the diving site is, or may be, endangered.

In addition to onsite representatives, clients usually appoint a project manager who is in charge of the project on behalf of the company he represents. This person ensures that the requirements above are applied and that the financial aspects of the project are within those initially planned by the management. He is often not qualified in diving activities and uses the services of the client representative or a permanent specialist for this purpose.

3.2.2 - Diving contractor

The diving contractor is the employer of the personnel engaged in the diving project.
Due to the cost of diving operations, it is usually a company that has sufficient resources to organize such works. According to the UK Approved Codes Of Practice (ACOP), the diving contractor shall ensure, so far as is reasonably practicable, that the diving project is planned, managed and conducted in a manner which protects the health and safety of all persons taking part in that project. For this reason, the diving contractor should ensure that:

- the diving project is properly and safely managed;
- risk assessments have been carried out;
- the place from which the diving is to be carried out is suitable and safe;
- a suitable diving project plan is prepared which includes emergency and contingency plans. The diving project plan should be authorised and dated by a responsible person acting on behalf of the diving contractor;
- the supervisor and dive team are fully briefed on the project and aware of the contents of the diving project plan;
- there are sufficient personnel in the dive team to enable the diving project to be carried out safely;
- the personnel are qualified and competent;
- supervisors are appointed in writing and the extent of their control fully documented;
- a suitable mobilisation and familiarisation programme is completed by all the members of the dive team. Other personnel involved in the diving project, for example ship’s crew, may also need to complete the programme;
- adequate arrangements exist for first aid and medical treatment;
- suitable and sufficient plant is provided and that it is correctly certified and maintained;
- the divers are medically fit to dive;
- diving project records are kept containing the required details of the diving project;

- a clear reporting and responsibility structure is laid down in writing;
- all other relevant regulations are complied with.

Note that with complex projects involving several contractors, one of them is to be appointed the main contractor who represents the interests of the others who act as sub-contractors. The company selected is usually the one having the most significant share of the project. In this case, the main contractor is in charge of organizing the project and coordinating the operations of the sub-contractors.

3.2.3 - Contractor's project manager

The Project Manager manages all aspects of offshore/onshore projects, including client interaction, offshore or onshore activities, personnel, & project cost control for the diving contractor in charge of the diving project. He reports to the Diving/ROV/Marine and the HSE/quality managers of the company he represents, and he is responsible for:

- developing project plans, procedures and budgets for the specific work scope;
- ensuring project compliance with company quality and HSE policies and client guidelines;
- selecting and managing the project team(s), including all crew, engineering, and sub-contractor personnel;
- ensuring that selected personnel and equipment are suitable;
- managing modifications and changes with the relevant departments;
- controlling financial planning and progress of projects;
- conducting workplace inspections on site;
- advising and providing input to tenders and contract negotiations;
- Having regular consultation with his/her management and the client throughout the project.

3.2.4 - Offshore Construction Manager *(also called Offshore Manager)*

The offshore manager is the diving contractor's representative at the work site and is generally appointed on large projects.

Offshore managers have overall responsibility for the project execution and their responsibilities and tasks include:

- Ensuring that activities are carried out in accordance with the requirements in the diving project plan and the applicable laws and regulations
- Ensuring that personnel are competent, qualified and familiar with the work procedures, safety precautions to be taken, laws and regulations to be applied and guidelines from well known competent bodies such as IMCA, IOGP, and others.
- The offshore manager is the primary point of contact with the client representative working offshore. He may or may not have a diving background. Note that if the offshore manager has no diving background, a diving superintendent must be appointed to assist him.

For the reasons listed above, this person should have competencies in management and leadership, and be familiar with the management and working procedures of the company he/she represents.

3.2.5 - Diving superintendent

A diving superintendent should be appointed on projects requiring more than one supervisor.

If an offshore manager has not been appointed, then the diving superintendent is the diving contractor's representative at the work site.

Diving superintendents are responsible for and competent to manage the overall diving operation (Ref. IMCA C 003). They have authority to forbid the start or order the termination of diving operations for safety or other reasons. Their responsibilities, tasks, and duties include:

- Ensuring the activities are carried out in accordance with the requirements in the diving project plan and the applicable laws and regulations
- Ensuring the personnel are competent and qualified and familiar with the work procedures, safety precautions to be taken, laws and regulations, and guidelines and information notes from national and international safety organizations.
- If qualified and holding a letter of appointment the diving superintendent can act as a diving supervisor. Regarding this last point, IMCA C 003 says that the diving superintendent should have demonstrated competence as a bell or air supplied dive supervisor. However, this requirement applies if the dive superintendent acts as a supervisor whilst in the role of dive superintendent and is required to be in charge of the panel. If qualified as an air diving supervisor, then the dive superintendent cannot act as a bell diving supervisor. For this reason, most companies and clients request a supervisor in this position.

As for the offshore construction manager, this person should have competencies in management and leadership, and be familiar with the management and working procedures of the company he represents.

3.2.6 - Vessel master

The Master is responsible to the owner, or, if the vessel is under a charter, to the charterer, for the operation of the vessel. Regarding the project, he reports to the offshore construction manager and follows his instructions.

Nevertheless, he is responsible for the safety of his vessel and his passengers. Thus, in the case of a situation where, based on his knowledge of safe marine practices, he considers that the safety of the vessel and passengers can be compromised, he has the power to order to terminate the operation in progress to return his vessel to a safe position. The Master is in charge for:

- the navigation and the care and safety of the vessel;
- the safety and well being of the crew and all other personnel on board as well as the safety of the equipment and
- cargo carried on board;
- the employment of the crew in a safe and efficient manner to carry out the assigned missions of the vessel;
- the cargo operation in ports which includes loading, unloading, and cargo planning;
- maintaining proper order and discipline on board at all times;
- keeping himself fully informed of, and adhering to, all relevant laws, regulations and directives affecting the operation of the vessel;
- the respect of the rules in force in the ports visited;
- the security of the ship both in port and at sea;
- the maintenance of the vessel he is in charge of;
- looking after supply, overtime, cost control records, purchase order, requisition, and other paper work on behalf of shore management.

3.2.7 - Chief mate

When the master is at rest, he is replaced by the Chief officer, who is second in command. The chief officer has similar duties as the master, and is responsible for:

- reporting to and following the instructions of the master;
- the vessel navigation watch duties;
- the cargo operation in ports which includes loading, unloading, and cargo planning;
- the maintenance of cargo gears and cargo carried on board the ship;
- the stability of the ship;
- the maintenance of ship’s hull and accommodation;
- the life saving and fire fighting appliances;
- scheduling and distributing work to deck crew;
- the co-ordination with other departments and take part in conflict resolution;
- the garbage management for the deck and accommodation part of the ship;
- the ballast and de-ballasting operation done on board;
- making sure that all the crew members are complying with latest rules of MARPOL, SOLAS and STCW (Standards of Training, Certification and Watchkeeping).
- the training in all the above regulations and conventions are to be carried out by the chief officer as per company policy.
- the security of the ship both in port and at sea.
- the safety of the deck crew.

3.2.8 - Project Engineer

His role is to coordinate engineering tasks that are planned or in process. The engineering tasks are inspection or construction. He works in coordination with the Project Manager and the Offshore Construction Manager. Note that inspection coordinators 3.4 U are considered inspection engineers. He is responsible for:

- Collecting the information necessary for the planned works and ensuring they are accurate. Assisting the engineers and technicians in the preparation of the planning and the selection of working methods.
- Assisting the engineers and project teams during the mobilization of projects, and during projects.
- Representing the engineering department of the company during project preparation meetings.
- Recording and analysing information transmitted by the project teams.
- Giving instruction, guidance, and advice.
- Assisting the engineers in preparing the final report, and making sure that the reports are technically consistent. and commercially acceptable (content and presentation).
- Assisting the human resources department for recruiting engineers.

3.2.9 - Diving supervisor

The diving supervisor should have competencies in leadership, and be familiar with the management and working procedures of the company he represents. An accurate definition of the function and duties of the diving supervisor is given in IMCA D 014 that says:

- Supervisors are appointed by the diving contractor in writing and are responsible for the operation that they have been appointed to supervise.

- Unless an offshore manager or diving superintendent has been provided by the diving contractor, then the diving supervisor is the diving contractor's representative at the work site.
- A diving supervisor should only hand over control to another supervisor appointed in writing by the diving contractor. Such a handover will need to be entered in the relevant operations logbook.
- Supervisors can only supervise as much of a diving operation as they can personally control, both during routine operations and if an emergency should occur.
- The supervisor responsible for the operation is the only person who can order the start of a dive, subject to appropriate work permits, etc. Other relevant parties, such as a diving superintendent, offshore manager, ship's master, client representative, or the installation manager, can however, tell the supervisor to terminate a dive for safety or operational reasons.
- When the supervisor needs to liaise closely with other personnel, such as the vessel master or the DP operator. The supervisor must recognise that the vessel master has responsibility for the overall safety of the vessel and its occupants.

To ensure that the diving operation is carried out safely, supervisors should:

- explain the risks, hazards and mitigations needed for safe diving operations to people who may not have a full appreciation of such operations;
- ensure that the legal documents and proof of competencies of his team are adequately updated;
- check, as far as they are reasonably able, that the diving personnel are fit and in possession of a valid medical certificate of fitness;
- ensure that they are in possession of a letter from the diving contractor appointing them as a diving supervisor.
- ensure of the well being of their team and report any problem to the relevant person in charge;
- ensure that they and their team are competent for the operations that are planned;
- ensure that the team they are in charge of understand the work;
- ensure that the relevant documentation for the project, which includes the diving project plan, tasks plans with the appropriate risk assessments, and the Emergency Response Plan, is in place;
- ensure that the dive system is adequate for the operations, properly certified, maintained, audited, and documented;
- ensure that the operation they are being asked to supervise complies with the best practices.
- review the task plans and ensure that some hazardous situations have not been forgotten or under-evaluated;
- ensure that all hazards are fully understood by all relevant parties and that, if required, training is given.
- ensure that if the situation has changed, further risk assessment and management of change are undertaken.
- ensure that work permits and dive permits are in place and signed by the people in charge before launching any operation;
- ensure that audible and visual communications with any personnel under their supervision are in place (that includes the divers inside the bell or the transfer lock);
- Ensure that the rules for the communications with divers are in place and followed:
    - The supervisor has direct communications with any diver in the water at all times, even if another person needs to talk to, or listen to, the diver.
    - In case another person is talking to the diver a number of fundamental rules should be followed to ensure the continued safety link between the diver and supervisor.
        - The supervisor must not pass over the total communication responsibility to anyone, other than another properly appointed diving supervisor.
        - At all times, the diving supervisor needs to be able to hear the diver's voice communication and breathing pattern, even if another person is joined into the communications link.
        - In any communications system the diving supervisor needs to be able to disconnect all other personnel immediately so that the direct link between the diver and supervisor is uninterrupted.
- ensure that the relevant means of communication with the bridge, ROV Pilot, crane driver, and key personnel are in place;
- ensure that all vessel alarms are in place and are checked
- ensure that work permits and dive permits are in place and signed by the people in charge before launching any operation;
- ensure that the dive is started only when authorized, and that people on board the vessel (or the facility) is aware that diving is starting;
- ensure that the procedures are always followed;
- ensure that proper records of the diving operations are maintained;
- report any incident to the relevant persons in charge.

3.2.10 - Dive technician (*Note that the elements indicated below are also displayed in "Maintenance of the diving system".)*

The correct functioning of the equipment is essential to the well-being of the divers and other members of the dive team. For this reason, the services of dive technicians are essential.
Also, it is an obligation of the contractor to ensure that such personnel are correctly trained and have the required level of

competence for the equipment and in the operations they are conducting.

IMCA C 003 says that a dive technician should possess detailed knowledge of one or more of the following: Electrical, electronic, mechanical or hydraulic engineering. This knowledge should be obtained through academic education or experience and qualification in a military environment. Note that some diving schools such as Interdive http://www.interdive.co.uk/ or the National Hyperbaric Center (NHC) https://www.jfdglobal.com/training propose a dive technician module.

Also, a lot of IOGP members request the dive technician to be certified by an agreed training establishment. In addition, some IOGP members ask that the technicians have gauge calibration and high-pressure regulator maintenance certificate in addition of their mechanical and/or electrical qualification. These clients also require that at least one technician is in possession of a helmet maintenance certificate or equivalent.

However, these requirements which aim is to be sure that the technician is appropriately trained do not fully take into account the complexity of modern systems. For this reason, it is important to keep in mind that the level of training required and the level of competence for an individual will depend upon the complexity and range of equipment he/she is to work on, and that many last generation diving systems that are fully computerized require specific competencies that were not asked in the past. For these reasons, the owners of the last generation diving systems should ensure that the technicians are familiar with the design and computer programming procedures of the system they work on in addition to its particular mechanical and electronic designs.

Also, the level of the technicians working on a system must be classified according to their competencies and degrees of experience. To answer to this problem, the last IMCA guidance D 001 “Dive technician - Competence and training” give the following classification and recommendations:

- New entrants to the industry should be considered as trainees until they are considered sufficiently experienced to work without supervision. Also, they should hold a certificate of qualification from a recognized organization or have completed a recognized apprenticeship in one or several following topics.
    - Electronics or telecommunications
    - Mechanical engineering
    - Hydraulic engineering
    - Electrical engineering
    - Marine engineering
    - Motor vehicle engineering
    - Aviation technician (any discipline)
    - Agricultural machinery maintenance and repair
    - Plumbing
    - Shipbuilding
- Based on the skills and the previous experience of the person, a training programme should be in place. IMCA says that this training can be shared between periods on the job and periods in various training establishments. This training plan should be part of the competence assurance and assessment scheme of the company.
- A confirmed dive technician is a person who has demonstrated sufficient experience and competence to work without supervision. IMCA says that it implies that this person has been assessed by his/her employer. He/she should be qualified for one or several topics listed above

IMCA D 001 says that a senior dive technician is expected to have the knowledge of the equipment he/she is in charge of and demonstrate problem-solving and diagnostic abilities. That includes certification, testing, maintenance requirements, and permit to work and other administrative routine procedures.

The dive technician must:

- Ensure that the diving system is working correctly and is suitable for the planned operations
- Maintain the system, and make sure that the certifications are up to date through the Planned maintenance system
- Report any equipment faults
- Know the routine and emergency procedures;
- Report any potential hazards, near misses or accidents.
- Take reasonable care for his own safety and that of other persons who may be affected by his acts or omissions at work;
- Where he/she does not have any other additional role and if he/she is employed by the diving contractor the technician may also be used in non-specialist functions, e.g. winch operator, where competent to do so.

Note that it is recommended to select dive technicians with complementary skills to cover all the technical aspects of the diving system. Also, one technician should be a senior technician

Discontinuities in the maintenance of these complex pieces of machinery may result in breakdowns and catastrophic events. For this reason, it is recommended to organize for the same senior technicians to be in charge of a system. If it is decided to assign them to other tasks, the persons who replace them should be sufficiently competent to take over.

3.2.11 - Divers

- IMCA 14 says that divers are responsible for undertaking duties as required by the diving supervisor and should:

- Inform the diving supervisor if there is any medical or other reason why they cannot dive;

- Ensure that their personal diving equipment is working correctly and is suitable for the dive;
- Ensure that they fully understand the dive plan and are competent to carry out the planned task;
- Know the routine and emergency procedures;
- Report any medical problems or symptoms that they experience during or after the dive;
- Report any equipment faults, other potential hazards, near misses or accidents;
- Check and put away personal diving equipment after use;
- Keep their logbooks up to date and presenting them for signing by the diving supervisor after each dive
- Know the routine and emergency procedures;
- Report any potential hazards, near misses or accidents.
- Take reasonable care for his own safety and that of other persons who may be affected by his acts or omissions at work;
- Where he/she does not have any other additional role and if he/she is employed by the diving contractor the technician may also be used in non-specialist functions, e.g. winch operator, where competent to do so.

3.2.12 - Deck support personnel

The tending of the umbilicals is made from the bell by the bellman.
Deck support people are generally divers. They are responsible for undertaking duties as required by the diving supervisor. These duties are linked to the recovery and the deployment of the bell and the deployment of tools to the divers.
It may happen that some people are not divers. In this case, their competencies must be assessed and be established based on previous experiences and training. Note that only trained and qualified divers should be employed for operations such as the the connection of the bell, transfer of the divers to and from the chambers, and the check lists.

The deck support personnel must:

- Understand what is asked of them and the method of deployment of the bell. Also, they must be aware of actions that can affect the divers or lead to catastrophic events.
- Know the routine and emergency procedures and report any problem or misunderstanding.
- Take care of their own safety and the safety of others;
- Report any incident or dangerous condition;
- Ensure that the parts of equipment they are responsible for are correctly checked and maintained;
- Keep their log book updated.

3.2.13 - ROV manager

He is in charge of the management of the ROV operations and the relations with the project manager, the Offshore Construction Manager who manage the operations. Depending on the size of the diving company appointed for the project, he is in charge of the ROV department of this company or is the representative of an independent contractor. He is responsible for ensuring that:

- there are sufficient competent personnel for the project, and they are accepted by the client;
- the certificates of the ROV team are adequately updated;
- relevant equipment is supplied, and correctly certified;
- sufficient spare parts and consumables have been provided;
- the installation onboard the vessel or on the facility is safe and conform to the regulations;
- the planned maintenance system is in place and the ROV audited as required;
- the working time of the ROV team conforms to those of the regulations and in force in the company;
- the accommodations of the ROV team conform to the minimum required by ILO (international Labour Organization);
- the chain of command is in place and agreed by the client;
- the system of reporting is in place (that includes the incident reporting system);
- the ROV project plan with worksite analysis is in place and accepted by the client;
- the task plans and their risk assessments are in place and accepted by the client;
- the emergency response plan is in place and accepted by the client;
- transportation of the teams to the worksite are in place.

3.2.14 - ROV supervisor

IMCA says that ROV supervisors are responsible for the operation that they have been appointed to supervise, and they should only handover control to another suitably qualified person. Such a handover needs to be entered into the relevant operations logbook.

The rights and duties of the ROV supervisor are similar to those of the diving supervisor. However, the diving supervisor has authority over the ROV supervisor (or pilot) when dual operations are being carried out, and diving operations are underway. Also, the vessel's master has legal responsibility for the overall safety of the ship and all onboard crews.

Similarly to the diving supervisor, the ROV supervisor has authority over other personnel than the team he is in charge of, not taking into account any hierarchy, for the following cases:

- He is the only person who can order the start of an ROV dive when the work and dive permits are in place. However, the vessel master, Offshore Construction Manager (OCM), diving supervisor, client representative, and the Offshore Installation Manager if the operation is performed from a facility (the OIM is the person in charge of the facility), can order him to terminate the action underway.
- IMCA also says that the ROV supervisor can give direct orders relating to health and safety to any person taking part in the ROV operation, including client representative. For example, the supervisor may order personnel to leave the control area.

The ROV supervisor should:

- liaise with the diving superintendent, OCM, and the vessel master or the OIM;
- explain the risks, hazards and mitigations needed for safe ROV operations to people who may not have a full appreciation of such operations;
- ensure that the legal documents and proof of competencies of his team are adequately updated;
- ensure of the well being of his team and report any problem to the relevant person in charge;
- ensure that himself and his team are competent for the operations that are planned;
- ensure that his team understand the work;
- ensure that the relevant documentation for the project is in place. That includes the ROV project plan, tasks plans with the relevant risk assessments, and the Emergency Response Plan;
- review the task plans with his team and ensure that some hazardous situations have not been forgotten or under-evaluated;
- ensure that work permits and dive permits are in place and signed by the people in charge before launching any operation;
- ensure that the ROV system is adequate, properly certified, maintained, and audited;
- ensure that audible and visual communications with any personnel under their supervision are in place;
- ensure that the relevant means of communication with dive controls, the bridge, and key personnel are in place;
- update the planned maintenance system, and unsure that sufficient consumables and spare parts are present in the store.
- ensure that all relevant parties are aware that an ROV operation is going to start or continue;
- ensure that the pilot is in permanent communication with the bridge of the vessel or the control room of the Offshore Installation Manager in case of operation from a facility;
- ensure that the pilot is in permanent communication with the diving supervisor during simultaneous operations;
- ensure that the procedures are always followed;
- report any incident to the relevant persons.

3.2.15 - Other members of the ROV team

IMCA says that ROV personnel need to act in a responsible manner according to their position in the ROV team. For this reason, they should:

- understand and apply the procedures of the company they work for;
- ensure that their certificates of competency are adequately updated;
- actively participate in the toolbox talks, ensure they understand the work and that they are able to do it. Also, give their point of view regarding the safety procedures in place;
- follow the instruction of the ROV supervisor;
- report any aspect of the job that is unsafe, and stop the job if necessary;
- report any incident to the ROV supervisor;
- actively participate in the maintenance of the ROV and report of every defect found;
- ensure that all internal communications of the team are in place and are working satisfactory;
- ensure that all external communications of the team are in place and are working satisfactory.

3.2.16 - External personnel

These personnel can be involved in a project when the company is using subcontractors for tasks requiring specific skills, or when working on a project as subcontractor. These personnel should:

- Ensure that their activity does not conflict with the diving operations
- When they act as subcontractors: Ensure that they fully understand what is asked to them
- Provide what is asked to the team and work in symbiosis with it
- Report any problem or misunderstanding
- Know the routine and emergency procedures on the dive station
- Take care of their own safety and the safety of others

3.3 - To summarize

The minimum manning level depends on the task to be performed, and the diving system to be used. Sufficient personnel must be present to provide support functions to the dive team at all times, and particularly during the most critical situations. Thus, additional deck support personnel and other management or associated technical supports are often necessary. For this reason, it is essential to ensure and demonstrate that all the key points have been covered and that the team will be able to face any foreseen or unforeseen situation. That should be done through the study of emergency scenarios using risk assessment procedures.

As already said previously, it is not a wise idea to plan for a very minimum team. It is thus more advisable to plan for sufficient people to be sure that any position can be quickly fulfilled. It is also essential to discuss such points with the client and ensure that he agrees with the team's composition.

4 - Documentation and certifications

The superintendent and the supervisors must be able to solve any problem linked to diving or working procedures and to comply with good practices, rules, laws, and also wishes from the client. For this reason, there must be valid soft and hard copies of relevant company manuals and procedures immediately available or displayed on walls of the dive control and strategic points.

4.1 - Manuals

4.1.1 - Company organization & working procedures manual

There are many things to take into account to prepare the working procedures of the divers, and the team must have relevant information to develop aspects of the project other than diving procedures, but directly impacts them. For this reason, there should be:

- A document that describes the quality management system of the company.
- A manual that describes the health and safety system of the company.
- A document that describes the tools used by the divers and the procedures to minimize the hazards arising from these tools.
- A manual that describes the best practices of rigging and lifting.
- A document that describes the surface support and the elements to take into account to make sure of the hygiene onboard during the diving operations.
- A document that describes the elements to be in place for an efficient and safe mobilization and demobilization.
- A document that explains the forms used to manage the company and the procedures for reporting.

4.1.2 - Diving manuals

Of course, the surface supplied diving manual of the company must be available. Note that this manual should provide standard and emergency procedures.

Also, the company may use saturation diving procedures where surface-supplied divers are to be used in case of bell rescue. For this reason, the relevant surface-orientated diving procedures to rescue the closed bell should be available with a description of the saturation bell.

4.1.3 - ROV *(remotely operated vehicle)* procedures manual

ROVs are commonly used in conjunction with divers. For this reason, the ROV manual with procedures to work in the vicinity of divers should be onboard. The bell rescue procedures must be included in the ROV manual.

4.2 - Audit diving system

It is essential to ensure that the diving system is in perfect condition. For this reason, the system must be regularly examined and maintained.

Note that this topic is explained in point 4.5.2 “Organize an audit based on IMCA Diving Equipment Systems Inspection Guidance Notes (DESIGN)”. As a reminder, note the following:

IMCA says that the saturation diving system should be audited by a qualified auditor.

For permanent installations that are part of the boat, this audit must be performed every year. For mobile systems installed onboard rented surface supports, the inspection must be done at the mobilization and every year. Note that a lot of clients require that such inspections are carried out by an independent organization.

Please, remember that the IMCA DESIGN documents to be used for surface supplied diving operations depend on the diving operations performed and so the system to be used:

- D 023 surface orientated air and Nitrox diving
- *D 037* surface supplied mixed gas diving systems
- D 040 mobile/portable surface supplied systems *(scuba replacements)*

In addition, the following documents should be available for the audit:

- The classification certificate (or certified copy) of the diving system issued by a classification society member of IACS (international association of classification societies). The classification of surface supplied diving systems is optional with most organizations. However, it is mandatory with a lot of clients, particularly the members of the International Association of Oil & Gas Producers (IOGP).
- The periodic maintenance system and records (indicating what is maintained, by whom, when, and the date of the next inspection/function test).
- The emergency procedures of the diving system with the FMEA. Note that it is said that a risk assessment can be used as FMEA with air diving systems. However, FMEA are in fact risk assessments.

- As already discussed, heave compensators are not commonly used with wet bells and baskets. Nevertheless, the operational and maintenance procedures should be part of the documentation if it is the case.
- A plan showing where the gas and the electrical supplies are situated must be displayed on strategic walls
- A notice of use must be displayed on compressors, generators LARS, winches…
- A board with the records of the contents and pressure of each cylinder or quad. These records must be updated daily when the system is in use.

4.3 - Power supplies and machines not covered by the IMCA documents

The IMCA documents D 023, D 037, & D 040 focus on the diving system they describe only. Machines like industrial compressors, generators, electrical panels, welding machines, hydraulic power packs, and others which may be used by the team are not covered by this audit. For this reason, for each external machine used by the team there must be:

- A certificate of conformity. Note that this certificate must indicate that the machine is approved for offshore work in the oil & gas industry. Meaning that the machines using thermal engines must be diesel, have a spark arrestor, and accessible emergency shut down devices. Also, the electrical equipment must be equipped with a suitable trip devices such as earth leakage protectors sufficiently fast and sensitive to protect from electrical shocks.
- Certificates of conformities and audits of the elements used with these machines such as industrial air hoses, hydraulic hoses, electrical cabling, and other associated elements.
- Records of maintenance and audits

Warning:
Clients are often rigorous regarding the conformity of the machines working on their fields, and they often use their company auditors to check the real condition of the devices before entering the 500 m. These technicians do not hesitate to reject any machine that does not conform to their requirements.

4.4 - Small tools & lifting devices

The small tools and lifting devices used in water and on deck must have a certificate of conformity from the manufacturer plus records of maintenance and audits. The categories concerned are (but not limited to):

- Impact wrenches, drillers
- Tensioners
- Welding and burning guns
- Grinders, hydraulic saws
- Jaw winches (Tirfors), lever hoist, chain blocks
- Lifting slings (soft or wires), shackles, carabineers
- Electrical tools used on deck (grinder, drillers, cutters, portable lights, electrical extension wires…)
- Underwater inspection tools (CP meter, UT meter, ACFM, etc.)

4.5 - Safety

- The safety policy of the company must be displayed on strategic walls.
- HSE manuals covering the points not covered by the diving and working manuals must be available
- The emergency response plan must be available. The charts and lists and means of contact of the diving medical specialists must be included on this document and displayed on the walls.
- The radio channels and the cabins /office phone numbers must be displayed near the phone and/or intercoms.
- If the vessel operates on DP then a diagram of all thrusters and other obstructions must be displayed in the dive control. There must also be a diagram of the maximum permitted lengths of divers umbilical for each depth for the specific dive station position(s) onboard. These diagrams must be near the supervisor.
- The maximum ranges allowed by the bail out must be displayed. The diagram must also be close to the supervisor. In addition, the colour code of the umbilical must be displayed near the supervisor.
- A drawing showing the underwater hazards and down lines must be displayed.
- Some clients require that a copy of the company's insurance certificate is displayed.
- There must be a system to display the dive permit and the work permit on the wall.
- Virgin accident reporting forms must be available.
- Virgin work permit (hot and cold) and dive permit forms.

4.6 - Vessel

The conformity of the vessel is the responsibility of the master and the vessel owner.

The vessel must have been audited according to IMCA M 149 by a recognised marine specialist. The following certificates are indicated to be on board and updated:

- International Tonnage Certificate (1969)
- International Load Line Certificate
- International Load Line Certificate Exemption
- Cargo Ship Safety Construction Certificate
- Intact stability booklet
- Cargo Ship Safety Equipment Certificate
- Cargo Ship Safety Radio Certificate
- Cargo Ship Safety Radio Exemption Certificate
- Damage control booklets
- Minimum Safe Manning Document
- Cargo securing manual
- International Oil Pollution Prevention Certificate
- Offshore support vessel Certificate of Fitness (for hazardous and noxious liquids); or International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (INLS Certificate)
- Document of Compliance with the special requirements for ships carrying Dangerous Goods
- Dangerous Goods Manifest or Stowage plan
- Garbage management plan and garbage record book
- Diving Systems Safety Certificate (this document is the resolution A.536 from the International Maritime Organisation.)
- Dynamically Supported Craft Construction and Equipment Certificate
- Oil Record Book
- Shipboard Oil Pollution Emergency Plan
- Shipboard Marine Pollution Emergency Plan
- International Air Pollution Prevention Certificate
- Safety Management Certificate
- Document of Compliance (copy)
- Noise Survey Report
- Continuous Synopsis Record
- International Ship Security Certificate (copy)
- Ship Security Plan (not for examination – content secure to vessel)
- Cabotage – if applicable
- Anti-fouling/TBT Free – if applicable
- MARPOL IV/V/VI – if applicable
- Ship Sanitation Certificate – Derat
- Ballast Water Management Plan
- P&I *(Protection and indemnity insurance, commonly known as P&I insurance, is a form of marine insurance provided by a P&I club, that provides cover for its members.)*
- H&M Insurance certificate *(Marine insurance covers the loss or damage of ships, cargo, terminals, and any transport or cargo by which property is transferred, acquired, or held between the points of origin and final destination.)*
- Employer liability insurance
- Locally applicable additional certificates

In addition:

- If the vessel is a DP vessel, it must conform to the guidance IMCA M 103 “the design and Operation of dynamically positioned vessels”, and the vessel crew must be trained according to the guidance IMCA M 117 “the training and experience of key DP personnel” and the circular International Maritime Organisation (IMO) 738/rev 1 “guidelines for dynamic positioning system (DP) operator training”.
- The certificate of class of the boat is usually required.
- Some clients request the vessel to be recorded in the Offshore Vessel Inspection Database (OVID) from the Oil Companies International Forum (OCIMF)
- Documents regulations/standards of the country of operation

4.7 - Check lists & Logs

- Pre-dive diving system check lists.
- Dive logs updated.
- Virgin diving log sheets.
- Operational log book (reporting).
- Virgin reporting forms.
- Virgin accident reporting forms.
- Virgin forms from the client if required.

4.8 - Project working procedures

- Task plans:

The task plans are normally built in 7 parts
1) Presentation
2) Description of the task
3) Risk assessment
4) Preparation of the task
5) Dive plan
6) Management of changes
7) Post dive / next task

- Virgin Risk assessment and management of change forms

4.9 - Diving team personnel certificates

It is the duty of the person representing the company to make sure that all the certificates are valid originals before the beginning of the diving operations. (Passports and ID cards are everyone's documents and not indicated). Depending on whether the contractor is affiliated to IMCA, ADCI, or not affiliated to a professional association, the certificates accepted may change. As an example IMCA accepts several national diving certificates ADCI does not and vice versa.

Important note:
The client representative usually requests the certificates at mobilization and any crew change. These documents must be restituted to the proprietors immediately after the examination.

4.9.1 - Teams following IMCA & IOGP guidelines

- Offshore manager & project engineer:
  - Letter of appointment
  - Basic Offshore survival approved OPITO with HUET modules
  - Basic H2S training
  - Offshore medical certificate
  - Proof of qualification / log book
- Diving superintendent:
  - Letter of appointment
  - Log book
  - Diving supervisor certificate agreed by IMCA:
    - IMCA Air Diving Supervisor
    - ADAS offshore air diving supervisor issued after the 01/07/07 (Australia and NZ)
    - DCBC air diving supervisor issued after the 10/04/07 (Canada)
  - Basic Offshore survival approved OPITO with HUET modules
  - Basic H2S training
  - Offshore medical certificate / or better, diving medical certificate
- Air diving supervisors (rescue team):
  - Letter of appointment
  - Log book
  - Air supervisor certificate agreed by IMCA:
    - IMCA Air Diving Supervisor
    - ADAS offshore air diving supervisor issued after the 01/07/07 (Australia and NZ)
    - DCBC air diving supervisor issued after the 10/04/07 (Canada)

- Basic Offshore survival approved OPITO with HUET modules
- Basic H2S training
- Offshore medical certificate / or better, diving medical certificate

- Trainee air diving supervisors: *(Note that trainee supervisors may also work as divers)*
  - Letter of appointment
  - Log book
  - Trainee air or bell diving supervisor course certificate agreed by IMCA:
    - IMCA bell or air diving supervisor certification scheme
    - ADAS (Australia and NZ) offshore air or bell diving supervisor certification scheme.
    - DCBC (Canada) air or bell diving supervisor certification scheme.

    Important: *The trainee supervisors are allowed to act only under the supervision of an appointed diving supervisor.*
  - Basic Offshore survival approved OPITO with HUET modules
  - Basic H2S training
  - Offshore medical certificate / or better, diving medical certificate

- Air divers: (employed in the rescue team)
  - Log book
  - Air diving certificate agreed by IMCA :
    - Australian Diver Accreditation Scheme Part 3
    - Brazilian Curso de Especialização em Mergulho para Praças
    - Brazilian Curso Especial de Escafandria para Officiais
    - Brazilian Curso Básico de Mergulho Raso Profissional (Brazilian certificates to be supported by a Brazilian Navy stamped divers logbook)
    - Canadian Category 1 Diver
    - Canadian Surface Supplied Mixed Gas Diver to 70 m
    - Canadian Unrestricted Surface Supplied Diver to 50 m
    - French Class 2 Mention A
    - India - Commercial Surface Supply Course, Kochi (post September 2002)
    - Netherlands Part 1 - Surface Dependent Diver (issued up to 2002)
    - Netherlands Certificaat Duikarbeid Categorie B
    - New Zealand Construction Diver Part 3
    - Norwegian NPD surface diver
    - South African Class II
    - TSA or MSC Basic Air Diving
    - UK HSE Surface Supplied Diving Top-Up
    - UK HSE Part I
    - UK Transitional Part I (issued 01/07-31/12/1981)
    - ADCI Surface-Supplied Air Diver - International endorsement (since 01/08/18)
    - ADCI Surface-Supplied Mixed Gas Diver (HeO2) - International endorsement (since 01/08/18)
  - Basic Offshore survival approved OPITO with HUET modules + Basic H2S training
  - First aid training certificate

- Diver medics:
  In addition to the diver's certificates, the diver medics must hold:
  - A valid IMCA diver medic certificate
  - A letter of appointment

- Inspection divers (NDT):
  In addition to the diver's certificates , the inspection divers must hold:
  - Cswip certificates 3.1 or 3.2 are commonly required. However, the required certificates depends on the client and the rules in force in the country where the project is planned to take place. As a result, technicians from other systems like ASTM International (American Society for Testing and Materials) or the members of the European Federation for Non-Destructive Testing (EFNDT) can be imposed..
  - Log book inspection diver.

- Lead divers:
  - A letter of appointment is requested with most of the clients.

- Senior dive technician:
  - Letter of appointment
  - Diving technician logbook

- Valid training/competence certificate, or documentary proof of qualification(s) or military service qualification (ref IMCA C 03) . Notice that most of the clients request a technician holding a valid training/competence certificate.
- Hat technician certificate is requested by most of the OGP members
- Basic Offshore survival approved OPITO with HUET modules
- Basic H2S training
- Offshore medical certificate

- Dive technician:
  - Diving technician logbook
  - Valid training/competence certificate (NHC; KB ass or other recognised establishment) or Documentary proof of qualification(s) or Military service qualification (ref IMCA C 03) . Notice that most of the clients request a technician holding a valid training/competence certificate.
  - Hat technician certificate is requested by most of the OGP members
  - Basic Offshore survival approved OPITO with HUET modules
  - Basic H2S training
  - Offshore medical certificate
- Tender:
  - Basic Offshore survival approved OPITO with HUET modules
  - Basic H2S training
  - A tender is considered as an apprentice diver and must hold a diving medical certificate (refer to “divers”)
  - Offshore medical certificate
  - A Proof of competency / log book or ADCI Entry Level Diver/Tender - “International endorsement” (since 08/2018)
- ROV superintendent:
  - Basic Offshore survival approved OPITO with HUET modules
  - Basic H2S training
  - Offshore medical certificate
  - ROV Supervisor or ROV Tooling Supervisor competence
  - Log book (180 days’ offshore experience as ROV Supervisor)
- ROV supervisor:
  - Basic Offshore survival approved OPITO with HUET modules
  - Basic H2S training
  - Offshore medical certificate
  - ROV Supervisor competence
  - Log book
- ROV tooling supervisor:
  - Basic Offshore survival approved OPITO with HUET modules
  - Basic H2S training
  - Offshore medical certificate
  - ROV tooling Supervisor competence
  - Log book
- ROV senior pilot/technician:
  - Basic Offshore survival approved OPITO with HUET modules
  - Basic H2S training
  - Offshore medical certificate
  - ROV senior pilot/technician competence
  - Log book
- ROV senior tooling technician:
  - Basic Offshore survival approved OPITO with HUET modules
  - Basic H2S training
  - Offshore medical certificate
  - ROV senior tooling technician competence
  - Log book
- ROV pilot/technician grade 1:
  - Basic Offshore survival approved OPITO with HUET modules

- Basic H2S training
- Offshore medical certificate
- ROV pilot/technician grade 1 competence
- Log book

- ROV tooling technician grade 1:
  - Basic Offshore survival approved OPITO with HUET modules
  - Basic H2S training
  - Offshore medical certificate
  - ROV tooling technician grade 1 competence
  - Log book
- ROV pilot/technician grade 2:
  - Basic Offshore survival approved OPITO with HUET modules
  - Basic H2S training
  - Offshore medical certificate
  - ROV pilot/technician grade 2 competence
  - Log book
- ROV tooling technician grade 2:
  - Basic Offshore survival approved OPITO with HUET modules
  - Basic H2S training
  - Offshore medical certificate
  - ROV tooling technician grade 2 competence
  - Log book

4.9.2 - New IMCA supervisor certification scheme *(source: IMCA D 07/19)*

IMCA information note D 07/19 says: *"Nowadays, industries operating in high risk environments (including the offshore marine sector) require their safety critical personnel to undertake some form of Continuing Professional Development (CPD) in order to prevent skill-fade and keep staff up-to-date with current recognised good practice. The time has now come for IMCA to provide its certified diving supervisors with a user-friendly but effective CPD scheme intended to renew and revalidate their knowledge and skills".*

4.9.2.1 - Description

- Delivery:
  The IMCA diving supervisor Continuing Professional Development (CPD) scheme is delivered on an annual rolling programme through the use of a dedicated application. The app will be accessible either through IOS or Android mobile phone platforms or through standard laptop or desktop PCs. Participants will be able to work through the app at home, on the move or while offshore.

- Content:
  Each year of CPD material is made up of 4 Units that are issued quarterly, and each unit will consists of 6 Modules:
  - 1 Core Module aimed at both air diving and bell diving supervisors. The module contains details of new IMCA Safety Flashes and recent relevant IMCA Diving Information Notes;
  - 4 Modules focused on refreshing and updating supervisors' knowledge of the IMCA Diving Division's current information and guidelines;
  - 1 Saturation Module; differentiated from the other Modules to apply to Bell Diving supervisors only.

- Assessment Requirements:
  Questions will be included in each Unit to test the understanding of participants, and users are unable to progress to the next module until they have successfully completed the previous one by answering all the assessment questions correctly.

- Certificate of Currency
  Candidates are required to complete all four units within the year, upon which they receive a certificate of currency containing a QR code that can be used for verification purposes. This certificate demonstrates they have completed the annual CPD programme and it remains valid for the following calendar year.
  The scheme currently is only open to qualified IMCA diving supervisors and to qualified diving supervisors from the Australian Diver Accreditation Scheme (ADAS) and the Diver Certification Board of Canada (DCBC).
  Persons joining the scheme part way through the year will be required to complete ALL the Units for that year to receive the certificate of currency valid for the following calendar year.

4.9.2.2 - IMCA's Claimed Benefits of the Diving Supervisor Continuing Professional Development (CPD) Programme

IMCA says that Diving Supervisors are able to demonstrate that they participate in a credible and effective Continuing Professional Development (CPD) programme that refreshes their knowledge and skills and keeps them up-to-date with industry events and current guidelines.
The IMCA Diving Supervisor CPD programme is delivered in a straightforward user-friendly but effective format.
In addition, IMCA will be able to identify all its currently active diving supervisors and be able to contact them, should the need arise, on issues of importance.
The programme should help reinforce the standing of IMCA Diving Supervisor qualifications throughout the industry.

4.9.3 - Teams following ADCI guidelines

Clients will have the same requirements as with IMCA members with ADCI members regarding:

- Letters of appointment
- Log books
- Basic Offshore survival approved OPITO with HUET modules
- Basic H2S training
- Offshore medical certificate or diving medical certificate for the divers

Regarding diving certificates, ADCI does not publish the schemes they recognize, but they do recognize the same certifications schemes that IMCA recognizes. As a result, IMCA recognized certificates are accepted for surface orientated diving but not for saturation. For this reason, a saturation project made with an ADCI contractor, should employ diving teams with the following certificates:

- Saturation diving team
  - Bell saturation supervisor ADCI
  - Life Support Technician ADCI
  - Assistant Life Support Technician
  - Saturation technician ADCI
  - Bell/sat diver ADCI
- Surface diving rescue team
  Note that the selection of the team depends on the depth of intervention.
  - Air supervisor ADCI
  - Nitrox supervisor
  - Mixed gas supervisor ADCI
  - Air diver ADCI
  - Air diver agreed IMCA
  - Mixed gas diver ADCI
  - Tender ADCI
- The ROV Team should be in the procession of recognized proof of competence.

4.10 - Important point - Diving and offshore fitness medical certificates

4.10.1 - Topside personnel

Offshore topside personnel must be in possession of a valid “certificate of medical fitness for work offshore”, which should be carried out in accordance with requirements identical than those issued by Oil & Gas U.K (OGUK). These requirements can be found at the address http://www.oilandgasuk.co.uk.
The validity of a topside medical certificate is two years regardless of age with most of the clients. However, some clients request this certificate to be renewed every year and limit the operations offshore to a maximum age. These clients may also request some medical tests not asked by others.

4.10.2 - Diving personnel

To allow a diver to dive, IMCA and clients request valid certificates of “medical fitness to dive” issued by suitable doctors. These certificates are valid for one year. The guideline IMCA D 061 *“Health, Fitness and Medical Issues in Diving Operations”* addresses certain problematic diver health, fitness and medical issues. In complement to this guidance, the information note IMCA D 20/01 gives information of how the practitioner should be selected, the organizations providing courses in diving medicine, and how the medical examination should be performed. The diving superintendent must ensure that all the certificates of medical fitness to dive are valid and conform with IMCA D 20/01.

ADCI (Association of Diving Contractors International) also provide guidelines for “Diving personnel medical and training requirements” page 23 of the document “International consensus standards for commercial diving and underwater operations” that can be downloaded for free on the website of this association

Depending on the country where the diver is based, finding a recognized diving medical specialist is not always easy. The following documents or Internet links can be used to solve this problem.

- List published by IMCA:
  Several initiatives have been made by IMCA diving contractors of several regions to mutually recognize some doctors able to perform suitable medical examination of divers. These lists have been published as information notes by IMCA as follows:

  IMCA D 07/09 Asia-Pacific initiative has been withdrawn from IMCA website. However the list updated in 2017 is available through the link above. This list indicates doctors in the following countries.

  Australia and New Zealand
  Indonesia
  Malaysia
  Philippines
  Singapore
  Thailand

  IMCA D 11/09 Italy initiative, gives the list of doctors in Italy.

  IMCA D 05/12 Middle East and India initiative, gives the list of doctors in the following countries:

  Azerbaijan
  Egypt
  Georgia
  India
  Oman
  Qatar
  Saudi Arabia
  United Arab Emirates

- Doctors agreed by HSE UK:
  The list can be found at this address: https://www.hse.gov.uk/diving/amedsapproval.htm
- Doctors in Canada :
  The list is available at this address: http://www.divercertification.com/English/PhysiciansList.html
- Doctors in USA:
  UHMS (undersea & hyperbaric medical society): Note that the 2012 "NOAA/UHMS Physicians' Training in Diving Medicine" course has been formally approved for 5 years by the Diving Medical Advisory Committee (DMAC) and the European Diving Technology Committee (EDTC) as a DMAC/EDTC med Level IId course. A list of doctors is available at: http://membership.uhms.org/
- Doctors in Australia:
  The south Pacific Underwater Medicine Society (SPUMS) provides a list of diving doctors and contacts forms.
- Doctors in France:
  Navy - Hopital d'instruction des armees Sainte Anne 83800 Toulon - . Tel 04 83 16 20 14 / Mail: chefferie@sainteanne.org. & Centre hospitalier universitaire la Cavale Blanche Brest
- Doctors in Norway:
  Helse Bergen Haukeland universitetssjukehus (Department of diving medicine) in Bergen.
- Doctors in Sweden:
  Navy and Department of Hyperbaric Medicine, Sahlgrenska University Hospital Gothenburg. Mail: ylva.karlsson@ltblekinge.se.
- Doctors in Denmark:
  Medical examinations for divers:
  https://www.dma.dk/SikkerhedTilSoes/Erhvervsdykning/Laegeundersoegelse/Sider/default.aspx.
- Netherlands:
  Royal Netherlands Navy's Diving Medical Centre (DMC)
- South Africa:
  Diving medicine: http://www.airseamed.co.za/Diving-Medicine
  Southern African Undersea and Hyperbaric Medical Association (SAUHMA). http://www.sauhma.org/
- Doctors in other countries:
  - Most Navies use divers that are usually followed by competent doctors. For this reason Navy hospitals can be be consulted.
  - OXYNET is a website of information resources on hyperbaric oxygen therapy and diving medicine for medical professionals, scientist and healthcare providers. This website published a list of hyperbaric medical facilities managed by competent diving medical specialists at this address: http://www.oxynet.org/03HBOCenters/centres.php
  - The Asia Hyperbaric and Diving Medical Association (AHDMA) groups more than 120 diving medical specialists from Asia Pacific. This association can be contacted through its website: https://ahdma.org
  - http://www.midlandsdivingchamber.co.uk/index.php?id=contact&page=11&region=9 This website groups chambers in Argentina, Brazil, Chile, Equator, Peru.

4.10.3 - Important points

In case of suspicious certificate of “medical fitness”, the person should not be authorized to work and a new medical examination should be organised with a recognized practitioner.

Some clients have their own medical system, and do not consider the medical certificates provided by the contractors as valid. They may require a medical examination of fitness to work to be performed through their systems. Nevertheless, it must be remembered that the certificates of medical fitness issued by these clients authorize the personnel to work on the premises and offshore facilities of these clients only. These certificates will not be considered valid to work with other clients. For example, Total does not recognise the diving medical certificates issued by other petroleum companies, but the certificates issued by competent practitioners indicated in the lists above.