



**The Bahamas  
Maritime Authority**

**THE COMMONWEALTH OF THE BAHAMAS**

**“mv Sea Spirit”**



**IMO Number 8802868  
Official Number 730911**

**Report of the investigation into the capsizing of a zodiac craft and  
passenger fatality at Fjortende, Juli-Bukta Norway on the  
17<sup>th</sup> June 2013**

*The Bahamas conducts marine safety or other investigations on ships flying the flag of the Commonwealth of the Bahamas in accordance with the obligations set forth in International Conventions to which The Bahamas is a Party. In accordance with the IMO Casualty Investigation Code, mandated by the International Convention for the Safety of Life at Sea (SOLAS) Regulation XI-1/6, investigations have the objective of preventing marine casualties and marine incidents in the future and do not seek to apportion blame or determine liability.*

*It should be noted that the Bahamas Merchant Shipping Act, Para 170 (2) requires officers of a ship involved in an accident to answer an Inspector's questions fully and truly. If the contents of a report were subsequently submitted as evidence in court proceedings relating to an accident this could offend the principle that individuals cannot be required to give evidence against themselves. The Bahamas Maritime Authority makes this report available to any interested individuals, organizations, agencies or States on the strict understanding that it will not be used as evidence in any court proceedings anywhere in the world.*

*The incident covered by this report occurred in the territorial waters of another State and involved an adventure excursion using equipment which was not part of the Convention's life-saving appliances requirements and was placed on board by the Charterer for the purpose of such adventure excursions. The Coastal state declined to carry out a Marine Safety Investigation despite its contention that such activities are regulated under its own laws.*

Date of Issue: 10<sup>th</sup> February 2014  
Bahamas Maritime Authority  
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Erratum

- 1.1 On the morning of the 17<sup>th</sup> of June 2013, whilst engaged on an Arctic expedition cruise, the passenger vessel *Sea Spirit* was lying at anchor in the bay of Fjortende, Juli-bukta (79 07.5'N 011 52'E), located within Norwegian territorial waters.
- 1.2 As part of the expedition cruise itinerary viewing tours of the land scape and surrounding areas were conducted using the ten zodiac craft that were on board the vessel. The conduct and ownership of these tours were the responsibility of the vessel charterers, Quark Expeditions, a US based tour-company specialising in polar expeditions.
- 1.3 Following the launch of these zodiac craft in preparation for the planned morning excursion, the operating crew carried out safety checks and commenced loading passengers. Sea conditions at the time were reportedly calm to moderate and were not considered to pose any undue risk to the safety of the intended operation.
- 1.4 Whilst passing close to the shore front the zodiac craft Poseidon was struck by two rolling waves in quick succession and capsized immersing all of the twelve passengers and the zodiac driver into the water. Despite the presence of personal life-saving appliances, the cold water immersion which occurred resulted in one fatality and two injuries.
- 1.5 In recognition of the emergency situation, all nearby tour craft attended to assist in the recovery of all persons from the water. A full muster of medical personnel ensued on board the *Sea Spirit* with subsequent transportation of emergency support and equipment to the shore front in order to provide the necessary medical care.
- 1.6 With the exception of the one casualty, all of the craft's occupants were returned to the *Sea Spirit* for further treatment. Tragically, despite attempts at revival by the medical team on board, the unconscious casualty was ultimately declared deceased by the medical team.
- 1.7 The two passengers who had sustained injuries during the capsizing were stabilised and discharged from the vessel to a nearby hospital by Search and Rescue helicopter for further treatment. The remainder of the craft's occupants were assessed by the medical team and considered fit to remain on board the *Sea Spirit* for the continuation of the cruise.

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2.1 The M.V *Sea Spirit* is a passenger vessel of all steel construction built to an Ice Class 1D standard and registered in the port of Nassau, Bahamas.

2.2 The vessel was constructed in 1991 in the RTCA Nuovi Cantieri Apania Ship yard in Italy and is under classification with Bureau Veritas (BV). At the time of the incident, the vessel was owned by TN Cruise KS, managed by ISP Miami and chartered to Quark Expeditions. The following principal particulars were noted:

• Official Number	-	730911
• IMO Number	-	8802868
• Length overall	-	90,36 metres
• Breadth	-	15,3 metres
• Depth	-	4,16 metres
• Gross Tonnage	-	4200 tons
• Net Tonnage	-	1263 tons
• Deadweight	-	645 tonnes
• Call Sign	-	C6PJ8

2.3 Given the externalised circumstances of this accident and its occurrence away from the vessel, reference is also given within the content of this report to the operating particulars of the vessel charterers, Quark Expeditions.

2.4 Since 1991, Quark Expeditions have specialised in expedition cruising to the Arctic and Antarctica, in ships with ice strengthened hulls or in icebreakers. The expedition team members themselves have decades of experience in these areas and understand ice conditions as well as the impact of weather on both ships and helicopters<sup>1</sup>.

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<sup>1</sup> *Extracted from [www.quarkexpeditions.com](http://www.quarkexpeditions.com)*

## Zodiac 'Poseidon' – Principal Particulars<sup>2</sup>

- 2.5 The Zodiac 'POSEIDON' is a Mark V Heavy Duty (HD) Model constructed of Black Hypalon neoprene with a Marine Plywood Transom. It is designed primarily to carry heavy loads at planing speeds.
- 2.6 The Heavy Duty (HD) Model by definition is reinforced throughout making it suitable for extreme service
- 2.7 The craft dimensions measure L 5.85m x W 2.48m with an empty weight of 250kgs.
- 2.8 The minimum safety criteria for the design and operation of the craft is described by ISO 6185



FIG 12: Zodiac «Poseidon» som havarerte i Fjortende Juli-bukta.



FIG 13: Zodiac «Poseidon» som havarerte i Fjortende Juli-bukta.

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<sup>2</sup> Extracted from: *Submarine Manufacturing & Products UKD.*

- 3.1 All times noted in this narrative are given in the style of the standard 24 hour clock without additional annotation and as local time in Svalbard, Norway (UTC +2).
- 3.2 The *Sea Spirit*, engaged on an arctic expedition cruise under charter with Quark Expeditions, arrived into Krossfjorden, Norway on the morning of the 17<sup>th</sup> of June 2013.
- 3.3 In preparation for the planned morning expedition tours, the vessel went to anchor at Fjortende, Juli-bukta, a regular calling point on the vessels planned summer itinerary.
- 3.4 By 0800, preparation was underway to launch the ten zodiac craft and four kayaks for the morning's planned excursions.
- 3.5 By 0928, the tours had commenced with passengers and expedition members safely embarked on board the zodiacs. Every occupant was dressed in warm clothing and wearing a lifejacket in accordance with the expedition operating procedures. The excursions were intended to last for approximately two hours.
- 3.6 Sea conditions at the time were reportedly calm to moderate with a long south westerly swell breaking onto the shore. The zodiac drivers had received company training and assessment in the operation and handling characteristics of their craft and did not foresee any problems with the prevailing conditions.
- 3.7 Shortly before 1055, whilst passing along the shore line, the zodiac "Poseidon" was struck by two rolling waves in short succession. The driver and passengers were thrown overboard into the water with some trapped underneath the craft itself. Deck log book entries indicated a sea temperature of six degrees Celsius.
- 3.8 Having completed the pre-departure safety checks in line with the company operating procedures, the driver had attached the engine kill cord prior to commencing the expedition. This safety measure ensured that the engine was stopped immediately once the driver had been thrown clear of the craft.
- 3.9 By 1055, all other tour boats were on scene to provide rescue assistance and a medical party muster was completed on board the *Sea Spirit*. The capsized zodiac was reported to have beached in the upturned condition with "large waves smashing into it". Weather conditions at this time were reported as being "very challenging" with "large waves dumping on shore". These conditions made it extremely difficult for the other zodiac craft to land on the beach at this time. This meant that expedition staff had to enter the water to assist the occupants of the capsized zodiac to safety.

- 3.10 Shortly after 1100 all occupants of the craft were reported to have been safely retrieved from the water or on the beach. The expedition doctor arrived on the beach at around 1103 and proceeded to provide medical assessment and support. A second doctor arrived on the beach very shortly after to assist in the resuscitation of the one occupant of the zodiac who was most badly affected.
- 3.11 Other expedition personnel were engaged in transferring the remainder of the occupants of the capsized zodiac back to the “Sea Spirit” and this operation was completed by 1130.
- 3.12 Meanwhile, on the beach, resuscitation efforts continued with CPR, defibrillation and other techniques, in the knowledge that any rescue assistance from land-based search and rescue was an hour away. However, despite these repeated and lengthy attempts at revival by medical staff the unconscious passenger was declared deceased by the ship’s doctor at 1227.
- 3.13 Given that shore authorities and company management had been notified in accordance with the on board SMS procedures by the ship’s Master, a Search and Rescue Helicopter with additional medical support arrived at the scene at 1310 to transport the two injured casualties along with an uninjured companion to a nearby hospital for further treatment. All other occupants of the craft were treated by the on board medical team and were considered fit to continue the voyage.

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- 4.1 During the course of the investigation, there was no evidence to suggest that the effect of fatigue, drugs or alcohol may have contributed to this accident.
- 4.2 The zodiac craft Poseidon, a MK V HD model constructed of black Hypalon fabric, was considered by the operating crew, to be fit for passenger operations. The systems that were put in place by Quark Expeditions provided for the completion of a detailed set of pre-departure safety checks for all key components prior to operation. There is no evidence to suggest therefore that this accident is attributed to craft deficiencies.
- 4.3 The training and competencies of the zodiac drivers are set out under the operational procedures of Quark Expeditions, the contents of which call for a complete training and assessment programme to be undertaken by all of the expedition staff members in each of the assigned competency modules prior to any operational involvement in passenger activities.
- 4.4 The driver of the Zodiac ‘Poseidon’ at the time of the incident was qualified by Quark in line with these procedures up to a ‘Level Three’ standard, as defined within the Quark training competencies, as having the capability to ‘*carry passengers in calm conditions*’. A Level Four competency would certify the driver to operate a zodiac carrying passengers in ‘*any weather condition*’ and is awarded to operators who have gained sufficient skill and expertise to carry out a full assessment of the sea state and weather conditions.
- 4.5 However, these operating procedures fail to define the exact limitations of what is meant by the term ‘calm conditions’ and rely on the judgement of the expedition leader and the Master in determining the calmness, or otherwise, of the conditions and the “...suitability of conditions for zodiac operations”. Reference must therefore be made to the definition of ‘calm’ within the Douglas Sea Scale, which provides a calm wave height limitation of 0.10m.
- 4.6 Given that the deck log book extracts and witness statements at the time of the incident placed the sea state between slight and moderate (1.00-1.50m respectively), it is possible that the actual sea conditions may have, at some point during the morning following the initial assessment, been outside of the Level Three standard.
- 4.7 It was not possible to confirm that the weather conditions at the time of the accident, in particular the sea state, were properly evaluated prior to undertaking the planned expedition. If the planning meeting took place then no formal record was made available to the investigation.
- 4.8 With minimal operational guidance provided by Quark Expeditions regarding how this assessment should be conducted, the onus is placed on the judgement and

experience of the operators and expedition leader in consultation with the Master to determine whether or not expedition operations should commence.

- 4.9 However, none of the statements taken during the investigation indicate any concern amongst the zodiac drivers or passengers that conditions were anything other than relatively calm when the trips began.
- 4.10 All statements are consistent in reporting that two large waves in close succession were experienced. The appearance of these waves appears to have taken everyone by surprise but it is clear that the attention of everyone on board, including the driver was directed towards the shore and wildlife.
- 4.11 It is noted that the Quark Expeditions Arctic Handbook 2013 – Zodiac Operations at section 9.6.6 “Zodiac Underway” states, inter alia, “Each Crew driver should be paired up with an English-speaking driver and for all cruises there should be an English speaking non-driving staff member in the Zodiac, if at all possible. This is crucial for safety and for interpretation.” In this case there appears to have been only a driver in the zodiac (i.e. no “non-driving staff member” was present) and, at the time of the incident, the driver’s attention was divided between pointing out wildlife and watching water depth.
- 4.12 It is also noted from one statement that when assistance was dispatched the medical personnel were unable to land on shore due to the heavy swell. This information is consistent with a hypothesis that there was a rapid increase in sea state. However, there is no objective evidence to support this and the photographic evidence in **Appendix 1** does not indicate a heavy sea state.
- 4.13 The passengers and expedition team members who were on board the zodiac at the time of the accident were dressed in line with the operational requirements of Quark Expeditions. At present, these requirements call for adequate, warm and protective clothing to be worn with a personal flotation device (PFD).
- 4.14 In a report that was commissioned by Transport Canada in 2001<sup>3</sup>, attention was drawn to the risks associated with Cold Shock following unexpected immersion in waters below 15 degrees Celsius. The detrimental effects on the human body, in particular the heart, include potentially fatal consequences even when the casualty is retrieved in good time.
- 4.15 It is acknowledged that while SOLAS immersion suits may offer the best protection against the risk of hypothermia following immersion in cold water there are safety implications, such as difficulties in embarkation and disembarkation, associated with wearing such equipment. However, it may be appropriate that any passengers who may be particularly vulnerable to cold shock are offered the use of such suits taking into account that disembarkation onto shore may not be achievable when wearing such a suit.

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<sup>3</sup> Brooks, C..Dr.(2001). *Survival in Cold Water*. Prepared for Transport Canada. Survival Systems Ltd

- 4.16 The maximum number of persons which the zodiac craft is capable of carrying is documented by the manufacturer as fifteen. At the time of the incident there were a total of twelve passengers and one driver on board, within the capacity limits. With no allocated seating arrangements in place however, passengers are required to sit along the buoyancy chambers holding onto a grab line for support.
- 4.17 Given the prevailing temperatures and the presence of restrictive hand protection, it is debatable whether sufficient grip could be attained to provide proper support whilst the craft is underway and particularly if unexpected waves are encountered.
- 4.18 The investigation made efforts to discover whether there are any Regulations issued by the Coastal State that would cover these types of adventure activities. The coastal State stated that adventure excursions fall into the scope of regulations relating to the operation of vessels carrying 12 passengers or less (**Regulation 1400 - 24th November 2009 Appendix VIII**). However, after review of the English language copy of the regulations obtained from the Norwegian Maritime Authority's website the investigators question whether it is possible for zodiac craft to comply with these regulations in full. Furthermore, there appears to be no certification or licencing regime in operation by the coastal State to regulate the adventure excursions operated from passenger ships.
- 4.19 In addition, it is arguable whether the regulations that are currently in place do indeed apply to zodiac craft when undertaking excursion tours from a passenger ship given that a vessel which *'carries passengers to and from a larger vessel and which is regarded as part of the vessel's equipment,'* could be interpreted as being a 'Tender vessel' – craft which are exempted from the regulation altogether. The investigation considers that safety would be better served by improved clarity in the regulatory regime.
- 4.20 The investigation has been advised of the following decision from the Office of the Governor of Svalbard: "On the 22nd of November 2013, the District Attorney decided not to prosecute the company involved, the captain on the ship "Sea Spirit" nor the driver of the Zodiac, when [X] died after the Zodiac she was a passenger in, flipped over on the 17th of June 2013. The decision states that the accident was due to unfortunate circumstances and that the boat flipped due to a heavy wave that came suddenly and without warning." The implication of this decision is that the zodiac operation in question was carried out in accordance with any applicable local regulations.

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- 5.1 Cruising and adventure activities in the Polar Regions are becoming increasingly popular with people looking for memorable holiday experiences. However, it is the nature of adventure that some personal risk is inevitably involved. For travel operators which offer such adventure activities it is expected that risks are addressed to protect against hazard or danger arising from foreseeable conditions or events.
- 5.2 In accordance with the Quark company procedures, the operational condition of the zodiac craft that were in use on board the *Sea Spirit* was satisfactory. There was no evidence to suggest therefore, that any technical malfunction or craft deficiency on board the zodiac 'Poseidon' contributed to this accident.
- 5.3 Both the capability and competency of the operator of the zodiac 'Poseidon' were in compliance with the Quark Expedition training and competency standards for zodiac operations in calm conditions. However, given the prevailing weather conditions and reported sea state at the time of the incident, it is considered that a higher level than the driver possessed may have been necessary.
- 5.4 The absence of an English speaking non-driving staff member from the zodiac is considered to have resulted in the driver's attention being divided between providing a tour guide service to the passengers and the primary responsibility of operating the craft and monitoring the surrounding waters. It is possible that this diversion may have prevented the early recognition of the two rolling heavy waves which appeared in quick succession and capsized the craft.
- 5.5 The weather conditions at the time were reportedly calm to moderate. Given the operational limitations of the craft and its assigned operator, a more detailed assessment of the sea state would have been prudent prior to commencing the planned expedition.
- 5.6 Enhanced and regular communication between the craft operators and the bridge watch keeping officer could have ensured a more detailed assessment of the conditions both before and during the operation. This is particularly important given the clearly defined division of responsibilities between the charter crew and ship's crew that was observed during the investigation.
- 5.7 The operational working procedures that were provided by Quark Expeditions were found to be extremely comprehensive. However, it is considered that some of the content could be improved or clarified particularly with regards to training competencies and limiting weather conditions.

- 5.8 Given the additional risks that are involved with passenger operations in polar-regions, in particular those associated with cold shock immersion, further review of clothing requirements and current zodiac seating arrangements is needed for those passengers who are at greater risk.
- 5.9 The actions of the entire ships complement in effecting the prompt and safe rescue of all persons from the capsized craft ensured no further fatalities were sustained. In performing this task some of the expedition staff placed themselves at risk by entering the water, despite the heavy beaching waves and challenging conditions, to reach occupants who had made their way to the beach.
- 5.10 While the coastal State contends that adventure excursions, such as being undertaken in this case, are regulated there is no certification or verification regime in place. The investigators conclude that the situation is extremely unclear as it is unlikely that zodiac craft can comply fully with the stated regulations as found in the English version extracted from the Norwegian Maritime Authority website.

#### Post-incident actions

- a) The ship operator, International Shipping Partners has: implemented an” in-house” driver qualification checklist which perspective [sic] and designated drivers are to complete prior to commencing driver operations regardless of the qualifications they come onboard the vessel with, and requires the vessel ( bridge watch) log the pre excursion briefing that takes place between the Expedition Leader/Staff and vessel Marine crew.

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#### Recommendations for Quark Expeditions

- 6.1 Review the procedures that are currently in place for ensuring the safety of passengers who are undertaking zodiac expeditions in polar-regions, with a particular focus on clothing requirements for passengers who are considered to be at greater risk to the effects of cold shock.
- 6.2 Review the company operating procedures to remove, clarify or further expand on any potentially ambiguous terms and unspecific text.
- 6.3 Consider whether any improvements can be made to inter-departmental cooperation between the expedition team and ship's crew both prior to, and during, zodiac excursions.
- 6.4 Review the pre-excursion assessment process including more clearly defined weather and sea parameters for operation of the zodiac craft.
- 6.5 Review its operating procedures to ensure that zodiac craft are manned with at least two crew members to ensure that the driver's attention is never diverted away from operating the craft.

#### Recommendations for the Ship Operators

- 6.6 Ensure effective inter-departmental communication between the ship's crew and charter crew to ensure a harmonious and above all safe operation.
- 6.7 Ensure that bridge watch keeping officers are more involved in the decision making process for planned small craft operations. As professional mariners, their judgment and experience will prove invaluable to the charter crew and will ensure safety is paramount at all times.

#### Recommendations for AECO and IAATO

- 6.8 Review the guidelines that are currently in place for the conduct of polar expedition cruising taking into consideration the prevailing sea temperatures and potential "cold shock" effect on the human body following immersion.

## Recommendations for the coastal state

- 6.9 The coastal state should seek to conduct a review into the legislation that is currently in place for the transportation of passengers of zodiac craft in polar-regions taking into consideration the findings of this investigation (Appendix VIII).

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- VIII. Norwegian Maritime Authority: Regulation 1400 24<sup>th</sup> November 2009 concerning the operation of vessels carrying 12 passengers or less.**

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**Appendix 1: Photographs of the capsized zodiac craft 'Poseidon'**



**FIG 2.3:** Filnavn P6170728. Tatt 17.06.13 09:59 (10:59).



**FIG 2.4:** Filnavn P6170731.

## Appendix II: Location of Accident



### Appendix III: Photographs of Zodiac Craft ‘Poseidon’



FIG 12: Zodiac «Poseidon» som havarete i Fjortende Juli-bukta.



FIG 13: Zodiac «Poseidon» som havarete i Fjortende Juli-bukta.

## Appendix IV: ECDIS Screenshot Indicating Prevailing Weather Conditions

Diagram depiction of Incident Not to scale.

Date : 17<sup>th</sup> of June, 2013



## Appendix V: Quark Expeditions Arctic Handbook 2013 – Zodiac Operations

### 9.6.6 Zodiac Underway

Zodiac Cruising with Partners - All Zodiac drivers will work with partners during a cruise. Each Crew driver should be paired up with an English-speaking driver and for all cruises there should be an English speaking non-driving staff member in the Zodiac, if at all possible. This is crucial for safety and for interpretation. Please ensure that the crew driver is aware of their partner.

Distance from Icebergs – At no time should a Zodiac be brought to within a distance that is less than 2 times the height of the iceberg or over the submerged foot of an iceberg. No passengers should be touching an iceberg unless it is smaller than the Zodiac. Driver discretion is of course necessary. Other drivers that are observed to be too close to icebergs should be verbally cautioned over the radio.

Maintain a reasonable speed with passengers. Do not make sudden turns or changes in speed. If forced to do so, advise the passengers of your manoeuvre beforehand.

Passengers should never stand up in Zodiac without driver's permission. The driver should allow only one person at a time to stand, and only when stopped or travelling at very slow speed.

Zodiac must always maintain radio and visual contact with at least one other Zodiac.

### 9.8.1 Wind Speed Guidelines

Quark does not set a wind speed maximum for Zodiac operations but instead relies upon the experience of the expedition leader and captain to determine safety and suitability of conditions for Zodiac excursions. Although there are some sheltered areas in which a landing can be attempted with higher wind speeds (i.e. Whaler's Bay); by the same token there are landing sites in which low wind speeds can make a landing dangerous, depending on the direction of wind (i.e. Baily Head or Hannah Point). Sound judgment and experience are important in ensuring that the safety and comfort of passengers are prioritized.

Landing conditions should be assessed by wind speed, size of swell at gangway, size of waves on the beach, shore-staff experience and capabilities, distance from shore, weather forecast and experience of Zodiac drivers.

Always use the kill switch chord whilst driving!

Dress for the weather. In the event of an emergency, you may be required to spend a long period of time exposed to the weather.

Be prepared!

### 9.8.5 Underway with Passengers in Inclement Weather

Whilst underway in large waves and high winds, care must be taken in order to keep the passengers (and yourself) relatively dry. Shift the passengers to the aft of the Zodiac, and keep the speed up. This will raise the bow and prevent waves from entering the boat. Try to drive either straight into, 90 degrees to, or with the waves. Crossing at an angle will soak everyone in a high wind and make for a generally unpleasant ride.

Smashing into waves at speed can injure passengers - Slow down! Keep an eye on the incoming waves and slow down when necessary in order to avoid jumping them. High speed with a light passenger load can be very uncomfortable in even medium sized waves. Keep the passenger's safety and comfort in mind.

In rough situations, keep your cool. Talk with the passengers and show that you are confident and in control of the situation.

Kill Cords – All drivers will wear kill cords at all times except upon driver's discretion when approaching shore or the gangway. This rule is not negotiable!

## **Appendix VI: Quark Expeditions Operating Procedures – Zodiac Competencies**

### **Zodiac Training and Test Modules**

All staff members on board the vessel who will be involved in shore excursions are required to demonstrate their knowledge and understanding, both theoretical and practical, of Modules 1, 2, & 3. Staff will be assessed during their first voyage on board the ship. All of the appropriate background information can be found in the *Quark Expedition Operations Manual*, found either in the ships' office or in the expedition room, along with practical demonstrations given by training staff on board the ship.

#### **Level 1: All Staff Involved in Zodiac Operations**

MODULE 1: CRANE OPERATIONS AND EQUIPMENT KNOWLEDGE

MODULE 2: ZODIAC OPERATIONS THEORY

MODULE 3: COMMUNICATIONS/RESCUE/SAFETY

#### **Level 2: Training Phase – Calm Conditions, No Passengers**

MODULE 4: DRIVING AND BRIEFINGS

MODULE 5: GANGWAY/LANDINGS/BEACHES

#### **Level 3: Calm Conditions with Passengers**

MODULE 4: DRIVING AND BRIEFINGS

MODULE 5: GANGWAY/LANDINGS/BEACHES

MODULE 6: KAYAK OPERATIONS

#### **Level 4: All Conditions**

MODULE 4: DRIVING AND BRIEFINGS

MODULE 5: GANGWAY/LANDINGS/BEACHES

MODULE 6: KAYAK OPERATIONS

#### **Level 5: Rescue Driver**

##### **LEVEL 1: ALL STAFF INVOLVED IN ZODIAC OPERATIONS**

MODULE 1: CRANE OPERATIONS AND EQUIPMENT KNOWLEDGE

Demonstrates knowledge of safety kit contents and is able to list 10 individual items found in the kit.

Demonstrates an understanding of function and stowage of zodiac accessories including: anchor, spare gas can, bow line, paddles, throw bag, tie-in lines for accessories)

Demonstrates an understanding of zodiac chamber isolation and reason for doing this

Demonstrates an ability to control passengers on Zodiac deck and keep them clear of crane operations, including knowing where to find and attach a crowd-control line.

MODULE 2: ZODIAC OPERATIONS THEORY

Demonstrates an understanding of cruising in partners and the importance of doing this at all times.

Demonstrates an understanding of need for care when driving in brash or sea ice, including slower driving speed, bumping into ice and passenger management

Demonstrates knowledge of guidelines for driving zodiacs around icebergs, especially distance away from iceberg, ice caves and arches and unstable bergs

Demonstrates an understanding of theory behind foul weather driving and how to minimize danger including bow lift up, zodiac being clear of water and flipping zodiac

Demonstrates an understanding of conditions that prohibit safe zodiac operations and an understanding of personal comfort level

Demonstrates an understanding of how to use an anchor and the importance of anchoring boats offshore in order to minimize hull damage

Is comfortable with wearing a kill cord while driving and understands the importance of this safety device

Is familiar with signs and symptoms of hypothermia and is conscious of staff responsibility to watch for these signs and symptoms.

Demonstrates an understanding of layering principles involved in dressing for weather and an understanding of the need to be prepared at all times for changing conditions.

Agrees with the philosophy that conditions that excite the driver might indeed scare the passengers

Understands the limits of stability, load capacity and durability of a zodiac

Understands that all drivers have the right to ask not to drive in conditions that they feel are outside their safety zone and that this will not be held against them by the expedition leader.

### MODULE 3: COMMUNICATIONS/RESCUE/SAFETY

Has been signed off on radio training and received practical briefing from training staff on ship

Understands correct communications procedures during emergency

Demonstrates an appreciation for sensitivity of conversations over radio and the fact that radios can be overheard by passengers near staff members as well as on the bridge

Demonstrates an ability to troubleshoot basic radio problems such as unlocking stations, changing channels, adjusting volume, tightening antenna and changing battery

Has a basic level of first aid understanding and is familiar with the location of all accessible first aid kits on the ship including bar, dining room, office, expedition room, galley and hospital.

Demonstrates a basic understanding of signs and symptoms of hypothermia and is knowledgeable in the treatment of such a condition, including the use of safety equipment in zodiacs and on shore.

Demonstrates an ability to use a throw bag in has practiced throwing it past a target in the water.

Is familiar with zodiac man-over-board procedure and demonstrates an ability to assist a passenger back into the zodiac, either by oneself or with the assistance of a fellow staff member or passenger.

Is familiar with shipboard man-over-board procedure and knows the location of emergency phones located around the ship.

Demonstrates an understanding of the leadership role that is necessary of staff members especially during an emergency and exhibits an ability to assume this role

Demonstrates an understanding of how to deal with a zodiac puncture

Demonstrates an understanding of wildlife behaviour relevant to the region being traveled

ALL ZODIAC DRIVING STAFF MUST BE SIGNED OFF BY A TRAINING STAFF MEMBER ON EACH LEVEL BEFORE DRIVING AT THAT LEVEL.

### **LEVEL 2: TRAINING PHASE – CALM CONDITIONS, NO PAX**

#### MODULE 4: DRIVING AND BRIEFINGS

Demonstrates an ability to inflate zodiacs to correct pressure using inflation hose and pressure gauge.

Has been shown the appropriate method for attaching the zodiac lifting sling to the crane and what safety checks need to be done before doing that; including checking sling attachment points, verifying that sling is clear of throttle arm, and checking that zodiac is not tied to deck

Demonstrates a familiarity with hand signals used for communication with crane operator

Demonstrates an understanding of use of boatswains chair and need for using it.

Understands the need to check below zodiac before lowering over side of ship, looking for other zodiacs, propeller wash, or ice.

Demonstrates competence in smooth water crane retrieval and hoisting on board the ship along with all necessary operations

Leaves zodiac ship-shape after landing and ready for re-inflation and instant use.

Understands engine troubleshooting procedures

Displays an ability and interest in keeping zodiac ship-shape during operation in order to maintain a high degree of professionalism and safety.

Is familiar with the responsibilities that a driver has in ensuring that zodiac is prepared for all landing operations and weather conditions and exhibits competence in verifying that all components of the checklist have been reviewed.

Demonstrates confidence in driving zodiac and an ability to improve with practice.

Understands how to lock down engine and unlock engine, as well as when it is appropriate to do so.

Demonstrates knowledge of the appropriate distance that any zodiac should be away from an iceberg (> than the height of berg) and an ability to assess this distance.

#### **MODULE 5: GANGWAY/LANDINGS/BEACHES**

Demonstrates an understanding of the importance of shallow drive (on applicable engines) and when to use it.

Safely approaches shore and beaches; maintaining precision and control throughout.

Displays an ability to assess a landing site and choose the best possible place to land a group of passengers, bearing in mind underwater obstruction, inaccessibility and wildlife (in no particular order).

Demonstrates precision and control when approaching gangway.

Demonstrates competence in controlling boat and directing sailor at gangway.

Understands the importance of notifying gangway checker of any intent to remove or return passengers from and to the ship.

Demonstrates a sensitivity of creating a wake when operating in the vicinity of the gangway or kayaks or other operations.

#### **LEVEL 3: CALM CONDITIONS WITH PASSENGERS**

##### **MODULE 4: DRIVING AND BRIEFINGS**

Understands components of zodiac man-over-board briefing given to all passengers during first two zodiac excursions.

Understands zodiac safety guidelines for passengers and is able to enforce them.

Demonstrates knowledge of components of in-zodiac pre-landing briefing and is able to present this information to passengers in the zodiac.

*Understands the importance of verifying that all passengers are wearing lifejackets and makes a point of checking them for all passengers.*

Understands the importance of always cruising with a partner zodiac.

##### **MODULE 5: GANGWAYS/LANDING/BEACHES**

s capable of using forward or reverse thrust as a tool in holding the boat against the shoreline when unloading passengers, where appropriate.

Demonstrates an understanding of the role INERTIA plays when approaching the gangway.

#### MODULE 6: KAYAK OPERATIONS

Understands the role of the safety boat driver and is able to communicate effectively with the kayak guide(s) in order to insure that the safety boat is utilized to its maximum potential.

Demonstrates an ability to hook up the kayaks to the tow line and an ability to manoeuvre

#### LEVEL 4: ALL CONDITIONS

**NOTE: Level 4 does not require the driver to learn a lot of extra duties. Instead, it relies upon the driver developing experience and skill that is second nature. Experience will develop into an ability to read sea conditions, weather conditions and an understanding of what conditions are appropriate for landings. Level 4 drivers will be resources for the expedition leader to rely on for opinions as to suitability of gangway conditions as well as safety of landing conditions. The opinions of the level 4 drivers will be respected by the expedition leader and relied upon in the decision making process if the expedition leader is not able to assess the conditions firsthand. For the above reason, assessment of level 4 skills will be subjective. The expedition leader and candidate for certification will most likely arrive at a conclusion at the same time that this person is ready to advance.**

#### MODULE 4: DRIVING AND BRIEFINGS

Understands the role of extra staff member in zodiac as ballast during rough weather and how to launch or disembark when fulfilling this role.

Understand and be able to assess sea conditions and appropriateness of conditions for planning landings.

#### MODULE 5: GANGWAYS/LANDING/BEACHES

Demonstrates an ability to safely land the zodiac in surf or rough conditions.

#### MODULE 6: KAYAK OPERATIONS

Demonstrates competence in controlling kayaks being carried aboard zodiac in rough conditions.

Demonstrates an ability to control the kayaks while approaching crane and hoisting aboard ship.

#### LEVEL 5: RESCUE DRIVER

**Achievement of level 5 certification is not necessary for all drivers and in fact only a very small percentage of drivers will reach this stage. It is not deemed necessary in order to fulfill contractual obligations.**

Certification to a level 5 standard will not be easily achieved. This level is for those drivers to whom being in a boat is second nature. At this stage, the driver has nothing to prove to anyone.

A level 5 driver is expected to carry a personal safety kit in their zodiac at all times with equipment necessary to maintain personal comfort in case of a stranding.

An even more important part of being a level 5 driver is the decision-making abilities. These cannot be taught but are developed through a combination of experience in the boats, risk management training and natural leadership skills.

In order to achieve level 5 accreditation, the driver must exhibit a thorough understanding of all modules of levels 1 – 4.

There is no formal exam for this level, accreditation will be achieved whenever the training officer deems that the driver exhibits the necessary skills.

Because of the subjective nature of the certification for level 5, confirmation of accreditation must be made by the training committee upon recommendation by the training officer and EL.

## **Appendix VII: AECO Guidelines for Expedition Cruise Operations in the Arctic**

### ***Zodiac Operations***

These guidelines come in addition to, and sometimes overlap with, the manuals and guidelines of the shipping company.

General safety

#### **Onboard equipment and condition**

- Anchor
- Paddles
- Spare fuel
- Rope for anchoring
- Pump
- Tool kit
- Fire extinguisher
- Radio
- Compass/ GPS
- First aid kit
- Flare kit and sound signalling device
- Boat must be properly inflated
- Any defects found in outboard motors, boats or associated equipment should be reported to a designated person as soon as possible.
- Boats should be clean, water pumped out and seats wiped off prior to boarding visitors.
- Capacity: Maximum seating capacity varies with the type of zodiac - refer to the zodiac manual in each ship and then do not overload boats.
- At least two zodiacs should always drive together, in case of a MOB situation. This is also the recommended guideline when there are no visitors in the zodiac. The exception is during very short shuttles.
- Life vest: Be sure that everyone onboard is wearing a life vest/personal floatation device (PDF) properly before entering the zodiac.
- Guides carrying rifles go ashore first. At new places and in terrain where it is difficult to see the surrounding area, a guide should do a reconnaissance and look out for polar bears before any passenger comes ashore.
- The dead man's string should be used according to the policy of your company.
- Technical operational procedures: The zodiac driver should always check that the zodiac is adequately maintained before operating; full and appropriate fuel container, sufficiently inflated etc.

Driver qualities

- Experience and training: All drivers should have gone through satisfactory driving practice before operating any vehicles.
- Technical skills: All guides should be acquainted with basic technical skills concerning zodiacs. This is due to the necessity of handling unforeseen situations.

## Driving procedures

- Go slowly (not faster than 5 knots) when near birds or animals, or when the sea-floor conditions are unknown.
- Avoid sudden or repeated changes in direction, speed or changing gears when close to marine mammals or swimming birds.
- Non-driving rules for crew/staff without passengers: Zodiacs should only be driven by crew /staff without passengers if necessary and according to the same rules that are defined in these guidelines.
- Shallows / stones: Before operating, search for information about the sailing conditions in the actual area. Do a reconnaissance without passengers if necessary.

## Ice conditions

- Allow for the actual ice condition.
- Fjord Ice: Newly formed fjord ice has sharp edges that might rip a hole in your zodiac.
- Drift Ice: Investigate the ice drift before the zodiac operation. Drift ice will move due to sea currents. You might suddenly be enclosed when sailing in drift ice.

## Glacier fronts

Glaciers fronts may calve, causing flood waves. Keep your distance! Never approach closer than 200 meters from the glacier front. At some glacier fronts even this may be too close, especially in narrow fjords, shallow fjords and fjords with high cliffs – use good judgment.

- All glaciers may calve, even if the probability of a glacier calving may differ. E.g. the probability of the Bråsvell glacier calving is much smaller than the Monaco glacier, but still the Bråsvellglacier may calve.
- All zodiacs must keep an appropriate distance (including a buffer zone) away in order to handle a possible calving.
- Avoid being trapped by islands close to the glacier front if a calving should occur.
- Factors that might affect the probability of a calving:
  - Glacier front height.
  - Gradient of the glacier.
  - The speed of the glacier front.
  - Degree of fracturing in the glacier front.
  - Sea and current dynamics under the glacier front.
  - Fjord width, sea depth and topography as high cliffs

## Icebergs

- Potentially unstable: All icebergs can suddenly flip over, causing flood waves. Keep your distance! Icebergs are continuously under the influence of waves, tides, currents and temperature, and therefore potentially unstable. Remember that 90% of the berg is under water.
- Sudden flipping might cause huge waves, or parts of the iceberg might come to the surface at unexpected places.
- Never approach an iceberg too closely.
- Details: See Glacier fronts.

## Cliffs

Stones falling from cliffs, ravines with sand/stones and the breaking up of ice are hazardous. For these reasons, do not drive Zodiacs close to cliffs

## Impacts on the environment

Fauna in water, in drift ice, on ice floes and ashore: See the guidelines for wildlife viewing and polar bear safety.

Pollution: Zodiacs and zodiac driving represent a potential pollution risk through fuel leakage, use of low quality fuel or untrimmed or old model engines. Noise pollution is also an issue. Members of AECO should always strive to reduce such pollution potentials as much as possible in their operations.

## Passenger handling procedures and instructions

Passengers boarding, and disembarking procedures from/to ship and to/from the shoreline:

- Mandatory Zodiac briefing prior to the first excursion.
- Describe the boarding procedure.
- Demonstrate the proper procedure for donning the lifejacket to be worn in the Zodiacs.
- Boarding procedure:
- Sailors grip: One passenger enters and leaves the zodiac at a time. Use sailors grip and step on the inflatable side of the zodiac.
- The visitor takes a seat at the designated place.
- Life vest: Be sure that all passengers have their life vests on properly.

## Passenger clothing/equipment

- Inform passengers about appropriate clothing for the conditions they will be encountering at the first information meeting in a general sense and before every landing specifically.
  - Recommended clothing: Windproof suit, hat, gloves, scarf and suitable footwear.
  - Recommended equipment: Backpack with some spare clothing is recommended as well as camera-protection against water splash.

## Passenger behaviour on board

- Remain seated: Passengers shall always remain seated unless embarking or disembarking from the boat, or unless the boat is stopped and permission is obtained from the operator. There should never be more than 1 passenger standing at the time while entering or embarking.
- Secure equipment and belongings to avoid losing items overboard.

## Adaptation to weather and sea conditions

Balance the boat according to the weight of the passengers

## Appendix VIII: Norwegian Maritime Authority: Regulation 1400 - 24<sup>th</sup> November 2009.

### Regulation of 24 November 2009 No. 1400 concerning the operation of vessels carrying 12 passengers or less, etc.

Laid down by the Norwegian Maritime Authority on 24 November 2009 pursuant to the Act of 16 February 2007 No. 9 relating to Ship Safety and Security, sections 2, 3, 4, 5, 6, 7, 8, 9, 11, 15, 16, 21, 27 and 42, cf. Formal Delegation of 16 February 2007 No. 171 and Formal Delegation of 31 May 2007 No. 590 from the Ministry of Trade and Industry. Amended by Regulations of 7 June 2010 No. 1080, 2 January 2012 No. 40, 22 February 2012 No. 175, 13 July 2012 No. 743.

#### Chapter 1 General provisions

##### § 1

##### *Scope of application*

(1) This Regulation shall apply to companies operating vessels certified to carry 12 passengers or less in Norwegian territorial waters, and on rivers and lakes. This Regulation shall also apply on Svalbard and Jan Mayen.

(2) This Regulation does not apply to:

- a) vessels engaged in regular service;
- b) vessels used for organized medical service and ambulance service;
- c) vessels used for transportation to and from schools;
- d) vessels carrying a smaller number of passengers than one person for each 25 gross tonnage unit;
- e) vessels which are rented out without master or instructor;
- f) tender vessels;
- g) standby vessels when they are used for emergency services;
- h) vessels that are not used for commercial purposes.

Amended by Regulation of 7 June 2010 No. 1080 (in force on 1 January 2011), 13 July 2012 No. 743.

##### § 2

##### *Definitions*

For the purpose of this Regulation, the following definitions shall apply:

- a) *Standby vessel*: A vessel with duties associated with the management of dangerous situations and casualties in the petroleum sector and which are employed on unit guard duty.
- b) *Regulation concerning qualification requirements*: Regulations of 22 December 2011 No. 1523 concerning qualifications and certificates for seafarers.
- c) *Regulation concerning the production and the placing on the market of recreational craft*: Regulation of 20 December 2004 No. 1820 concerning the production and the placing on the market of recreational craft, etc.
- d) *Regulation concerning medical supplies on ships*: Regulation of 9 March 2001 No. 439 concerning medical supplies on ships.
- e) *Place of refuge*: Landing place for the crew where land-based assistance can be made available, and where the crew and passengers can take shelter from unfavourable weather conditions.
- f) *Passenger*: Every person on board other than

- 1) the master and the members of the crew.
  - 2) Other persons employed in any capacity on board a ship on the business of that ship and who are part of the ship's permanent emergency organization.
  - 3) a child under one year of age.
- g) *Regular service*: A series of crossings operated so as to serve traffic between the same two or more ports,  
or a series of voyages from and to the same port without intermediate calls
- 1) according to a published timetable, or
  - 2) with crossings so regular and frequent that they constitute a recognizable systematic series.
- h) *SOLAS Convention*: International Convention for the Safety of Life at Sea, 1974.
- i) *Tender vessel*: A vessel carrying passengers to and from a larger vessel and which is regarded as part of the vessel's equipment.

Amended by Regulations of 7 June 2010 No. 1080 (in force on 1 January 2011), 2 January 2012 No. 40, 22 February 2012 No. 175, 13 July 2012 No. 743.

### § 3 *Exemptions*

The Norwegian Maritime Authority may, in individual cases and upon written application, grant exemptions from the requirements of these regulations. There must be special reasons that make such exemptions necessary and it must be justifiable in terms of safety. Exemptions are only granted where they do not contravene international agreements to which Norway has acceded.

## Chapter 2 Requirements for safety management system, etc.

### § 4 *Safety Management System*

(1) The company shall establish a safety management system where compliance with the requirements for each vessel in this Regulation is documented. The company and the master of the vessel shall, to ensure safe operation, comply with their duties pursuant to the Ship Safety and Security Act, this Regulation and other Regulations applicable to the ship laid down pursuant to the Ship Safety and Security Act.

(2) The safety management system shall as a minimum include the following:

- a) A description of the organization.
- b) A description of the area of operation.
- c) A description of risk factors for the crew and passengers, and plans and measures to reduce such risks.
- d) A system for the registration of mishaps and a description of corrective measures to prevent repetition of such mishaps.
- e) A system for the planning of operations, including obtaining necessary information.
- f) A description of the vessel(s), including technical specifications and equipment.
- g) Maintenance procedures.
- h) An emergency preparedness plan, including drill routines.

(3) The safety management system shall be submitted to the Norwegian Maritime Authority upon request.

(4) The safety management system shall be established not later than the entry into force of this Regulation.

(5) The company shall conduct an annual internal audit of the safety management system and internal procedures in accordance with the report form provided by the Norwegian Maritime Authority. The Norwegian Maritime Authority may at any time require that documentation showing that such internal audit is carried out is presented.

Amended by Regulation of 7 June 2010 No. 1080 (in force on 1 January 2011).

## § 5 *Safety briefing*

(1) The company shall ensure that passengers are given a safety briefing immediately before departure. The briefing shall be adapted to the purpose of the trip, and shall as a minimum include the following:

- a) Use of life-saving appliances.
- b) Use of safety equipment.
- c) The essential actions passengers must take in an emergency.
- d) Special situations that can be expected during the trip.

(2) Pregnant women, as well as persons with back, neck or pelvic injuries or similar health problems shall be informed about the risk associated with vessels operating at speeds of 20 knots or more.

## Operating limitations

## § 6 *Operating limitations in all areas except Svalbard and Jan Mayen*

Vessels constructed without a superstructure that provides protection against the weather for all passengers and which operate at a speed of 20 knots, are subject to the following operating limitations:

- a) Year-round operation is permitted in trade area 3 and lesser trade.
- b) During the period from 15 April to 15 September operation is permitted in all trade areas within the limit of territorial waters.
- c) In trade area 3 and above, the distance to the place of refuge shall not exceed 5 nautical miles, unless an accompanying vessel which can carry all the passengers on board the vessels that are being followed are within the same distance.
- d) Operations shall only be carried out in daylight and under good conditions of visibility.
- e) The vessel can not carry passengers under the age of 14, unless each such passenger is accompanied by an adult

## § 7 *Operating limitations on Svalbard*

(1) Vessels constructed with a superstructure that provides protection against the weather for all passengers may only operate in territorial waters near Svalbard during the period from 1 May to 30 October.

(2) Vessels constructed without a superstructure that provides protection against the weather for all passengers may only operate in territorial waters near Svalbard during the period from 1 May to 30 September. For such vessels, the following operating limitations shall also apply:

- a) For operations outside Isfjorden, the distance to the nearest land shall not exceed 5 nautical miles, unless accompanying vessels which can carry all the passengers on board the vessels that are being followed are within the same distance.
- b) Operations shall only be carried out under good conditions of visibility.
- c) The vessel cannot carry passengers under the age of 14, unless each such passenger is accompanied by an adult
- d) Operations can only be carried out in the following areas:
  - i. Isfjorden, delimited westwards by a straight line between the positions N 78° 11,833', E 12° 58,750' (Daudmannsodden) and N 78° 03.066', E° 13 33.066' (Revleodden).
  - ii. Kongsfjorden, Krossfjorden, Lilliehöökfjorden, Möllerfjorden and the northern part of Forlandsundet. The area is delimited westwards by a straight line between the positions N 79° 06,850', E° 11 10,283' (Kapp Mitra) and N° 78 53,766', E° 10 27,750' (Fuglehuken) and southwards by a straight line between the positions N° 78 43,667', E° 11 11,250' (Murraypynten) and N° 78 43,417', E° 11 26,167' (Sarstangen).
  - iii. Bellsund, Van Keulenfjorden and Van Mijenfjorden. The area is delimited westwards by a straight line between the positions N° 77 43,217', E° 13 56,583' (Kapp Martin) and N° 77 34,583', E° 14 14,083' (Kapp Lyell).

(3) Upon recommendation from the district governor of Svalbard, the Norwegian Maritime Authority may extend the time period for operations specified in the first and second paragraphs if this is considered justifiable in terms of safety.

Added by Regulation of 13 July 2012 No. 743.

## § 8

### *Operating limitations on Jan Mayen*

(Shall be decided later)

### Design and equipment

## § 9

### *Requirements for design category*

(1) The vessel shall at least be designed and constructed to withstand wind force and wave height as specified for its category with regard to stability, buoyancy and other relevant basic re-quirements set out in Annex 1 to the Regulation concerning the production and the placing on the market of recreational craft.

(2) Vessels that meet equivalent or more stringent requirements for technical safety than the requirements of the first paragraph must be able to document this.

## § 10

### *Radiocommunications and radio installations*

(1) During operation, the vessel shall at all times be capable:

- a) transmitting ship-to-shore distress alerts by at least two separate and independent means,
- b) of receiving shore-to-ship distress alerts,
- c) of transmitting and receiving ship-to-ship distress alerts,
- d) of transmitting and receiving distress and rescue communications,
- e) of receiving maritime safety information,

f) of transmitting and receiving bridge-to-bridge communications.

(2) The requirements of the first paragraph shall be met by means of radio installations as described in the table below:

Equipment		Trade areas					Notes
		1 and less	2	3	4	Small coasting and Svalbard	
a)	VHF radio equipment with DSC and watch (VHF/DSC), connected to the vessel's navigation	1	1	1	1	1	1
b)	NAVTEX receiver	-	-	-	1	1	6
c)	Free-float satellite EPIRB	-	-	-	1	1	2
d)	Radar transponder (Radar SART) or AIS transponder SART)	-	-	-	1	1	4
e)	Two-way VHF telephone (hand-VHF)	1	1	1	1	1	5

**NOTES:**

**NOTE 1:**

"VHF/DSC shall normally be capable of being operated from the vessel's main energy. In the event of faults in the main source of energy, the VHF/DSC shall of being operated from a reserve source of energy placed in the upper part of  
 "The reserve source of energy shall have a capacity of at least 6 hours.  
 "Vessels without a superstructure, and which may attain a speed of 20 knots or have a headset with a microphone that can be connected to the VHF

**NOTE 2:**

"The free-float satellite EPIRB shall be installed so that it will have the greatest possible chance of floating up to the surface and transmit a distress alert, without risk of being caught by obstructions such as railings, etc., if the vessel should sink.

"On vessels constructed without a superstructure and on other vessels which are of such construction that it in all probability will not sink deep enough for a free-float satellite EPIRB to be released and float up to the surface, and where the superstructure is constructed in such a way that manual activation can hardly take place, a manual satellite EPIRB may replace a free-float satellite EPIRB.

**NOTE 4:**

"The radar-SART/AIS-SART shall be located near the steering position, so that it can easily be activated and brought to a survival craft.

NOTE 5:

"The requirement shall only apply when there is a requirement for life-raft(s).  
"The vessel shall be fitted with one two-way portable VHF telephone per life-raft necessary to evacuate the total number of persons the vessel carries.  
"Two-way portable VHF telephones shall have sufficient battery capacity for the whole journey. In addition, a sealed spare battery shall be available.

NOTE 6:

"The NAVTEX receiver shall be capable of receiving signals at both 490 and 518 kHz. "The requirement for a NAVTEX receiver may be deviated from provided that it can be documented that navigational and weather reports

(3) Vessels covered by this Regulation shall have a radio safety certificate issued by an approved radio inspection company.

(4) The radio safety certificate is issued after a satisfactory radio test for a period of maximum 5 years.

(5) The radio equipment shall undergo one periodical radio test during the certificate's period, if the radio safety certificate is issued for a period exceeding 3 years.

(6) The radio installations shall be CE marked or comply with the Regulations of 29 December 1998 No. 1455 concerning marine equipment (the Marine Equipment Regulations).

Amended by Regulation of 7 June 2010 No. 1080 (in force on 1 January 2011), 13 July 2012 No. 743.

§ 11

*Electrical installations*

(1) The vessel's electrical installations shall at all times comply with the requirements of Annex 1 to the Regulation concerning the production and the placing on the market of recreational craft.

(2) The electrical installations shall at all times comply with requirements for electrical installations set in Regulations issued by the Directorate for Civil Protection and Emergency Planning.

§ 12

*Navigational equipment*

(1) The vessel shall be fitted with a compass. The compass shall be fixed and suit the vessel's speed and movement characteristics.

(2) The vessel shall be fitted with a set of masthead lights, stern lights and side lights.

(3) The view from the steering position shall satisfy EN ISO 11591.

(4) Necessary and updated charts and nautical publications etc. for the area of operation shall be kept on board.

Life-saving appliances

§ 13

*Life-saving appliances*

(1) All vessels shall at least have the following life-saving appliances on board:

- a) Life-raft with sufficient capacity to accommodate all persons on board, which at least is in accordance with ISO 9650-1.
- b) Suitable CE marked floatation equipment for all persons on board. Children shall have access to suitable CE marked floatation equipment appropriate to their size.
- c) A lifebuoy with a light.

- d) A floating quoit attached to a floating line of at least 30 metres.
- e) Three parachute flares and 3 hand flares.
- f) A rescue basket or similar device that makes it possible pick up a person from the water

(2) First paragraph (a) to (c) shall not apply to:

- a. vessels where all the persons on board are wearing suitable CE marked one-piece floatation suits which alone or in combination with other CE marked floatation equipment provide a buoyancy of at least 150 N. Passengers who are to dive may during the voyage wear diving suits which alone or in combination with other CE marked floatation equipment provide a buoyancy of at least 150 N.
- b. vessels of less than 15 metres in overall length which operate at a speed of less than 10 knots in trade area 2 and lesser trade during the period from 15 April to 15 September when all persons on board are wearing suitable CE marked floatation equipment with a buoyancy of at least 50 N.

(3) Floatation equipment required by this section, including one-piece floatation suits, shall at least be in accordance with ISO EN 393, ISO EN 395, ISO EN 396, ISO 12402-3, ISO 12402-4 or ISO 12402-5. One-piece floatation suits shall in addition provide Class D thermal protection in accordance with ISO 15027.

Amended by Regulations of 7 June 2010 No. 1080 (in force on 1 January 2011), 22 February 2012 No. 175.

#### § 14

##### *Stowing of life-saving appliances*

(1) Life-raft(s) shall be stowed in accordance with the instructions from the manufacturer and secured to the ship during launching and embarkation.

(2) The floatation equipment shall be stowed at a suitable place which is visible and clearly marked and well ventilated.

Amended by Regulation of 22 February 2012 No. 175.

#### § 15

##### *Maintenance of life-saving appliances*

(1) As long as the vessel is operational, all life-saving appliances shall comply with rules and regulations and be ready for immediate use.

(2) The inspection of life-saving appliances shall be carried out in accordance with the relevant guidelines prepared by the Norwegian Maritime Authority.

(3) Instructions for maintenance of life-saving appliances shall be in accordance with SOLAS Chapter III.

(4) Maintenance shall be carried out by qualified and certified personnel in accordance with SOLAS Chapter III.

(5) Equipment shall, as far as practicable, be function tested after maintenance.

#### § 16

##### *First-aid equipment*

The vessel shall be equipped with the necessary first-aid equipment which as a minimum shall include medical equipment in accordance with the requirements for vessel category C in Appendix 2 to the Regulation concerning medical supplies on ships

§ 17

*Accommodation and Safety of Persons*

Permanent seats and standing places shall be arranged for all persons on board, providing a firm handhold. Seats and any back rests shall be properly secured in the vessel.

Chapter 6  
Training and manning

§ 18

*Qualification requirements*

(1) The master shall hold a certificate appropriate for the size of the vessel, minimum DSL - Master's Certificate for Pleasure Craft or Master Fisherman Class C, health certificate for workers on ships and basic safety training in accordance with the Regulations concerning qualification requirements. Masters of vessels on lakes and rivers during the period from 15 April to 15 September may have partial safety training in accordance with the above-mentioned Regulations instead of basic safety training.

(2) The master shall as a minimum hold a Restricted Operator's Certificate (ROC), but may hold a Short Range Certificate (SRC) if the vessel only operates in trade area 4 or lesser trade.

If the vessel has the required radio installations for sea area A2 or greater areas, at least one Radio Operator shall hold the General Operator's certificate (GOC).

Amended by Regulation of 7 June 2010 No. 1080 (in force on 1 January 2011).

§ 19

*Manning*

During all operations, the master shall pay close attention to the danger of anyone falling over board. When performing water sports that include towing, the vessel shall be manned with at least 1 person who at all times shall be able to pay attention to the passengers and those who are being towed. The person concerned shall immediately notify the master of the vessel if any of these persons fall over board.

Amended by Regulation of 7 June 2010 No. 1080 (in force on 1 January 2011).

Chapter 7  
Concluding provisions

§ 20

*Entry into force*

(1) This regulation enters into force on 1 January 2011. For Svalbard this regulation enters into force on 1 January 2013. For Jan Mayen this regulation shall enter into force from the date decided by the Ministry.

(2) As from the same date, §§ 9 second and third paragraphs, 43, 44 and 45 of the Regulations of 15 June 1987 No. 506 concerning Survey for the Issue of Certificates to Passenger Ships, Cargo Ships and Lighters, and concerning other Surveys, etc, are repealed.

Amended by Regulation of 13 July 2012 No. 743.

## Erratum

Change to paragraph 4.5 line 2 where “calm waters” in the report issued 9<sup>th</sup> December 2013 is replaced by “calm conditions”