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# SCUBA DIVING IN ANTARCTICA

*We shall not cease from exploration - And at end of all our exploring -  
Will be to arrive where we started - And know the place for the first time.*  
T.S. Elliott (from Four Quartets)

Welcome to our recreational diving expedition to Antarctica. Most divers dream of finding and exploring new dive sites and visiting places that no one has ever dived before. This is what diving in Antarctica is all about and will continue to be for many years to come. The place is gigantic, unspoiled and totally undiscovered by divers. The number of divers able to visit Antarctica will always be limited due to the short season and the continent's remoteness.

Although we have a well planned itinerary, it is very likely that final destinations will be different than expected. If you are used to fixed itineraries and definite destinations this may not be the voyage for you. Moving ice may cause us to end up hundreds of kilometres from our intended destination. But we can promise you an exciting adventure that breaks new ground.

Fascinating experiences in the world of ice - glaciers, gigantic icebergs and spectacular icewalls characterise a scuba diving voyage to Antarctica. Seals, whales and colonies of thousands of penguins will almost overwhelm you. No two days are alike - surprises and unforgettable experiences await you.

On board the ship our secret weapons, large Zodiacs with powerful outboard motors, transport us comfortably to our intended destinations, be they dive locations, shore visits or iceberg cruises.

During this Aurora Expeditions voyage, we plan to offer experienced dry suit divers at least one dive per day while we are around the Antarctic coastline, so there'll be plenty of time to join the rest of our group for other activities. We don't cater for no-limit diving because we believe Antarctica has so much more to offer. This voyage will certainly be a unique experience.

We expect the dives to vary from shallow shore diving to offshore diving from Zodiacs, diving around icebergs and ice floes. The combination of sunlight, sea water and the often extraordinary formations of ice create an overwhelming, ever changing colour spectrum, with a fantastic variety of shades and brilliance. Snorkelling or diving along an iceberg is truly inspiring: you will never forget the indescribably beautiful colours.

The Antarctic Peninsula has a fascinating variety of marine life, such as beautiful sea stars, some with dozens of arms, sea spiders, giant sea lice, nudibranch, jellyfish, colourful sponges, soft corals, anemones, sea urchins, unusual fish and of course krill. We also hope to meet penguins and seals underwater and maybe even whales.

## **Divemaster/Dive-Guide**

Our Divemaster on board the Polar Pioneer is Henrik Lovendahl. An assistant dive guide may accompany him and we have a marine biologist on board. If you have any questions with regards to the required equipment or the diving procedures, please contact Aurora Expeditions who can put you in touch with Henrik.

## **Medical Facilities**

Onboard we have a medical doctor and a clinic equipped to treat most minor illnesses and injuries, and has basic resuscitation facilities. There is no recompression chamber on the ship and should one be required evacuation back to South America may need to be arranged.

## **Safety First!!**

Scuba diving in Antarctica is no more dangerous than normal scuba diving as long as you stick to one basic but very important rule: **Safety First.**

We do not have access to a recompression chamber in Antarctica therefore we cannot accept risky ventures from any of our divers and all dives are limited to a maximum depth of 20 meters/66 feet. Diving under fixed sea-ice is not permitted, unless assessed as safe by the divemaster. You are asked to remain with the group at all times and to adhere to all normal Standard Safe Diving Practices. We cannot emphasise enough the importance of following the Divemaster's safety rules at all times, and of sticking to the dive plan. Divers who find it difficult to follow basic rules are kindly asked to stay at home!

We'll start our diving with an easy "check-out" dive so all divers can acclimatise to the cold water and to the special Antarctic diving conditions. Before every dive there will be a detailed briefing and general diving procedures will be discussed with the group at the beginning of the trip. The Polar Pioneer has a very large aft deck that is perfect for preparation of equipment for our dives.

### **Certification Requirements**

All divers must be a trained, certified scuba divers with proof of certification beyond entry level, i.e. Advanced Diver certification or equivalent rating, issued by a recognised scuba training organisation. In addition to this it is extremely important that adequate training and experience is gained in dry suit diving, and in the use of other new and unfamiliar equipment to be used in Antarctica. To ensure your safety and enjoyment and to avoid any unnecessary problems on the trip, recent diving experience *and proof of a minimum of 20 logged dives using a dry suit are required* prior to joining the Aurora Expeditions voyage.

### **Ice and Weather**

Please note that the itinerary in Antarctica is always weather and ice dependent. Ice isn't static but is always in motion and pack ice movement often forces us to change our sailing schedule. It is also possible that certain bays or fjords are closed because of ice. In this case we will alter our itinerary accordingly. When changing the itinerary, we can assure you that the Captain, Expedition Leader and Divemaster will provide a program that corresponds with the character of our expedition. The main problem is that there are so many great places to visit it's hard to know which are the best at the time!

These diving voyages are true expeditions. Each dive will be a surprising event and we will be exploring new and never-before-dived places. Each dive site will vary according to conditions and accessibility, but will surely offer a unique and exiting experience.

## **TIPS FOR ANTARCTIC SCUBA DIVERS**

Diving is an equipment intensive activity. Diving in Antarctica requires an extensive amount of additional equipment because of the cold weather and water, and a higher level of diving experience because of the remote location involved. Diving is no fun if you are cold and uncomfortable. Divers in cold water may have a higher air consumption rate, expend more energy, and can become more fatigued. Cold water also decreases a diver's ability to perform complex tasks that require manual dexterity. It is therefore extremely important that, prior to coming on the trip, you have acquired all the appropriate equipment needed for diving in Antarctica, and that adequate training and experience is gained in the use of new and unfamiliar equipment. In order to avoid any unnecessary problems you will have to complete several dives with all the equipment you intend to use in Antarctica, prior to joining this Aurora Expeditions voyage. Keep your equipment configurations simple, easy to operate and ensure it has been serviced recently. We can't just drop in to the local dive shop for a repair or pick up a broken or misplaced piece of gear.

### **Staying Warm - Dry Suit**

The only adequate protection from thermal exposure in Antarctica where the water may be as cold as  $-1.8^{\circ}\text{C}/28^{\circ}\text{F}$ , is a dry suit. The type of dry suit you use is not important so long as it fits you and you are comfortable using it. Neoprene dry suits have the benefit of having good stretch and extra insulation. Shell suits provide no extra insulation but are lighter and dry more quickly. Shell suits

serve only to keep the diver dry and require extra layers of thermal undergarments to be worn under the suit. Bring a small dry suit repair kit.

### Insulating Undergarments

The function of the undergarments is to trap air against your body to be warmed. The colder the water, the more (or thicker) layers of undergarments are required. It is recommended that you wear two or three layers, depending on your suit. As the first layer you should wear a set of polypropylene liners. This type of material helps wick any moisture away from the body. As the second layer you should wear thick insulating material, such as fleece, synthetic pile, thinsulate or similar. The one piece jump suit style is the most common and comfortable configuration of dive wear and is available in a variety of thicknesses depending on your dry suit, your susceptibility to cold and the water temperature.

### Dry Suit Accessories

If a hood is not attached to your dry suit you will need to bring one. A 5 or 7mm neoprene hood with face and neck seal is recommended. Doubling up 2 hoods may also work well for some people.

Regular 5 or 7 mm neoprene semidry mitts may be worn with any dry suit and are relatively easy to use. Three finger mitts are much warmer than five finger gloves and are the preferred option by most ice divers (5 finger gloves are not recommended).

Special dry gloves that seal against rings on the arm of the dry suit are available. To prevent glove squeeze, and to promote warmth, short pieces of surgical tubing or straws can be inserted under the wrist seals to provide a conduit for air to exchange from the suit to the gloves. This type of glove requires additional practice to use, as they can flood or come off your hand if not used correctly.

## DIVING EQUIPMENT

### Regulators

Normal regulators will not function in sub-freezing water as both the first and second stage will freeze. You are required to bring two sets of regulators (2 x 1<sup>st</sup> & 2 x 2<sup>nd</sup> stages), suitable for extreme cold-water/ice diving. Some regulators can be fitted with an environmental seal kit, others come environmentally sealed from the manufacturer.

To avoid regulator malfunction, regulators must be cared for properly before, during and after diving. Regulators should be kept dry and warm before the dive; store them in your cabin. Avoid breathing from the regulator before submersion, except to briefly ensure it is functioning, but when doing so, exhale after removing the regulator from your mouth so as to avoid freezing up the second stage with moisture from the exhaled breath.

During the dive breathe normally – deeply and slowly - and avoid heavy breathing and rapid inflation of the BCD or dry suit. If during the dive your primary regulator freezes up and causes a free flow, you should switch to your back-up regulator, turn off the valve to the primary regulator to stop the free flow, abort the dive and return to the surface.

#### *Tips on keeping water out of your regulator:*

- Always open the cylinder valve briefly before mounting the regulator, to blow out any moisture from the orifice.
- When purging the regulator for removal, hold the second stage lower than the first stage so that water cannot drip back to the first stage after pressure has dropped.
- Remove the regulator carefully, so as not to allow ice or water to fall onto the filter of the regulator.
- Dry the dust cap thoroughly before attaching it to the regulator.
- The dust cap must fit snugly before rinsing the regulator.
- Do not press the purge button while rinsing the regulator.
- Shake excess water from the second stage before hanging the regulator to dry.

### Face Mask

The type of mask you are using is not critical, we recommend using a standard mask and regulator. You may use a full face mask if you prefer, but keep an extra face mask handy in case your regulator free flows. It is best to avoid spitting into the mask for defogging, as this can freeze onto the inside of the mask. Commercial defogging agents work well for cold-water/ice diving. Straps can also become brittle in cold weather, there for it is highly recommended that you bring a spare strap and a spare mask.

### Weights

Aurora Expeditions will supply all lead weight for the trip (square ingot style). You must supply a webbing type or *large pocket* type belt with quick release buckle, or another type of quick release weight system. Prior to coming on the trip, it is important that you become familiar with all the equipment you will be using in Antarctica. This requires that you complete several dives with all the equipment you will be using. This will also allow you to fine-tune your buoyancy and trim characteristics. Make a note of how much weight you will need when diving with all the equipment to be used in Antarctica.

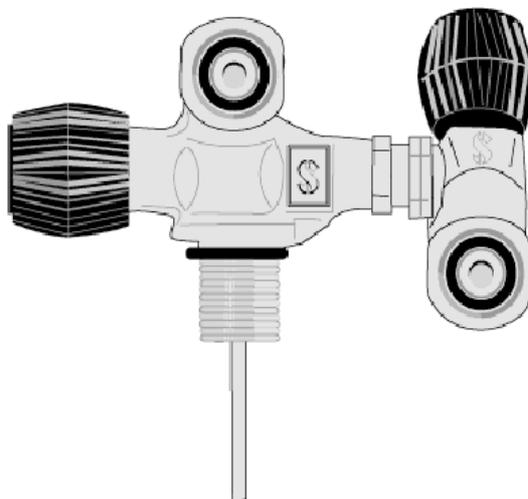
### Instruments, Gauges and Computers

You must have minimum one analog tank pressure indicator. Some electronic instruments will not function well in sub-freezing temperatures. Liquid crystal displays may be slow to display and batteries will also run low sooner.

### Tank and Valves

The tanks we are using are 12L steel tanks, filled to 200bar/3000psi. They are fitted with an "H" valve configuration, with DIN or Yoke adaptable connections. This will allow for the attachment of a primary and a secondary backup regulator, which allows for either regulator to be independently isolated if there is a malfunction or a free flow from a freeze-up.

H – Valve



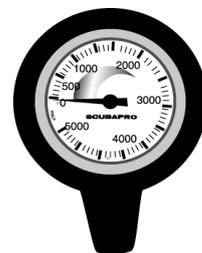
### Pre/Post-dive wear

It is important to bring good sunglasses, a warm hat and some warm wind and water proof gloves to wear before, and especially after the dive. You may also wish to bring a waterproof jacket to keep the cold wind off your wet dry suit. Please refer to the clothing list included in Aurora Expeditions pre-departure kit for additional information.

## REQUIRED EQUIPMENT

The following is a list of equipment you will need to bring.

- Dry Suit
- Thermal undergarments
- Semidry or dry mitts or gloves
- Hood
- Two masks (spare strap)
- Fins (spare strap)
- Snorkel
- BCD with low pressure inflator
- Two sets of environmentally protected regulators (2 x 1<sup>st</sup> and 2 x 2<sup>nd</sup> stages), suitable for extreme cold-water/ice diving
- Two analog cylinder pressure indicators
- Submersible depth indicator
- Submersible timing device
- Under-water compass
- Quick release weight belt or weight retaining system
- Whistle or other audible surface signalling device
- Highly visible surface positioning signalling device with line
- Knife or cutting tool
- Small dive light
- Dive tables
- Dive computer (optional but recommended)
- Mesh style bag for personal dive equipment (mask, snorkel, fins)
- Dry bag to keep personal belongings dry while in Zodiac
- Log book & certification card
- Small personal spare parts/repair/tool kit including spare fin and mask straps, spare mask, regulator mouthpiece and any other spare parts unique to your equipment



**SCUBA DIVING BOOKING FORM**

To plan our expedition properly we need an indication of your diving experience. You should be an experienced dry suit diver with proof of a minimum of 20 dry suit dives and hold at least an Advanced Diver certification or equivalent.

Please fill in the form below and send it to us as soon as possible.

Voyage name and date \_\_\_\_\_

First name \_\_\_\_\_ Last name \_\_\_\_\_

Address \_\_\_\_\_

Date of Birth \_\_\_\_\_ Sex M / F \_\_\_\_\_

Level of training / certification \_\_\_\_\_  
(Minimum Advanced Diver certification or equivalent)

Training / certification organisation \_\_\_\_\_  
(Please include photocopy of your certification cards)

Date & place of certification \_\_\_\_\_

Total number / hours of dives \_\_\_\_\_

Dry suit diving experience \_\_\_\_\_  
(Minimum of 20 logged dives in a dry suit required)

Cold water / ice diving experience \_\_\_\_\_

Description of most recent diving history including dry suit / cold water diving experience:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## STANDARD SAFE DIVING PRACTICES

This is a statement in which you are informed of the established safe diving practices for skin and scuba diving. These practices have been compiled to reinforce what you have learned and are intended to increase your comfort and safety in diving. Your signature on this statement is required as proof that you are aware of these safe diving practices. Read the statement prior to signing it.

I, \_\_\_\_\_, understand that as a certified diver I should:

1. Maintain good mental and physical fitness for diving. Avoid being under the influence of alcohol or dangerous drugs when diving. Keep proficient in diving skills, striving to increase them through continuing education and reviewing them in controlled conditions after inactivity.
2. Recognise that additional training and experience is recommended for participation in specialty diving activities, in other geographic locations and after periods of inactivity.
3. Become familiar with my dive sites and obtain formal diving orientation from a knowledgeable, source. If diving conditions are worse than those in which I am experienced, postpone diving or consider advice on an alternate site with better conditions. Engage only in diving activities that are consistent with my training and experience.
4. Use complete, well maintained, reliable equipment with which I am familiar; and inspect it for correct fit and function prior to each dive. Deny use of my equipment to uncertified divers. Always have a buoyancy control device and submersible pressure gauge when scuba diving. Recognize the desirability of an alternate air source and a low-pressure buoyancy control inflation system.
5. Listen carefully to dive briefings and directions, and respect the advice of those supervising my diving activities.
6. Adhere to the buddy system throughout every dive. Plan dives, including communications, procedures for reuniting in case of separation, and emergency procedures, with my buddy.
7. Be proficient in dive table usage. Make all dives no-decompression dives and allow a margin of safety. Have means to monitor depth and time under water. Limit maximum depth to my level of training and experience. Slowly Ascend From Every Dive, at a rate of not more than 18 meters/60 feet per minute. Make a safety stop at 5m/15ft for three minutes or longer.
8. Maintain proper buoyancy. Adjust weighting at the surface for neutral buoyancy with no air in the buoyancy control device. Maintain neutral buoyancy while under water. Be buoyant for surface swimming and resting. Have weights clear for easy removal, and establish buoyancy when in distress while diving.
9. Breathe properly for diving. Never breath-hold or skip breathe when breathing compressed air (scuba diving), and avoid excessive hyperventilation when breath-hold diving (snorkelling). Avoid overexertion while under the water and dive within my limitations.
10. Use a boat, float, or other surface support station whenever feasible.
11. Know and obey local diving laws and regulations. The Dive Master on my voyage is the best source of information for participating in safe diving practices in this area.

I have read the above statement. I understand the importance and purposes of these established practices. I recognise they are for my own safety and well being, and that failure to adhere to them can place me in jeopardy when diving.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date (D/M/Y)



## CERTIFIED DIVERS RELEASE FORM

This is a release of your rights to sue Aurora Expeditions and its employees, agents and assigns for personal injuries or wrongful death that may occur during the forthcoming dive activity as a result of inherent risks associated with Scuba Diving/Snorkelling or as a result of negligence.

Named Diver: \_\_\_\_\_

PLEASE INITIAL EACH OF THE FOLLOWING SECTIONS

- \_\_\_\_\_ 1. I acknowledge that I am a certified diver trained in safe diving practices. I am aware that I will be diving with a buddy, and it will be our responsibility to plan our dive allowing for our diving limitations and the prevailing weather and water conditions. I will not hold Aurora Expeditions or any of its employees responsible for failure to safely plan my dive.
- \_\_\_\_\_ 2. I understand there are inherent risks and dangers associated with SCUBA diving, including but not limited to risks associated with equipment failure, perils of the sea, acts of fellow divers and surface craft. I specifically assume such risks.
- \_\_\_\_\_ 3. I affirm that I am in good mental and physical fitness for diving and that I will not dive under the influence of alcohol, nor under the influence of any drugs contradictory to diving. If I am taking medication, I affirm that I have seen a physician and have approval to dive under the influence of the medication/drugs.
- \_\_\_\_\_ 4. I will inspect all of my equipment and any equipment rented from Aurora Expeditions prior to the activity and will notify the dive staff if any of my equipment is not working properly. I will not hold Aurora Expeditions or any of its employees responsible for my failure to inspect my equipment before diving. I will check the air in my cylinders prior to diving and I will not hold Aurora Expeditions or its employees responsible in case of bad air in the cylinder.
- \_\_\_\_\_ 5. If I become distressed on the surface, I will immediately drop my weight belt and inflate my BCD for flotation assistance.
- \_\_\_\_\_ 6. I understand that sea and ice conditions may change while we are en route to the dive site, while underwater diving or anytime during the dive trip, and that this is a function of the environment. I will not hold Aurora Expeditions or any of its employees responsible for conditions that are out of their control.
- \_\_\_\_\_ 7. I acknowledge that Aurora Expeditions is providing transportation only from the ship to a location for me to pursue my underwater activities, and that the Captain and the Dive Master or other agents or assigns, while assisting on board the vessel or the dinghy, are not providing instruction, protection from perils of the sea or SCUBA diving/snorkelling and are not responsible for my safety while I am in the water.
- \_\_\_\_\_ 8. I am aware that there is **no recompression chamber on board** and that it will be my sole responsibility and risk in case of an emergency in which I should need a recompression chamber.
- \_\_\_\_\_ 9. I understand that even though I follow all of all the appropriate safe diving practices, there is still some risk of me sustaining decompression sickness, embolism or other hyperbaric injuries and I expressly assume the risk of said injuries.
- \_\_\_\_\_ 10. I understand that SCUBA diving is a physically strenuous activity, that I will be exerting myself during this diving excursion, and that if I am injured as a result of a heart attack, panic, hyperventilation etc. that I expressly assume the risk of said injuries and that I will not hold Aurora Expeditions or its employees responsible for these injuries.
- \_\_\_\_\_ 11. I fully understand and I am aware that the vessel has limited medical facilities and that in the event of illness or injury, appropriate medical care might need to be summoned by radio and that the treatment may be delayed until I can be transported to a proper medical care facility.
- \_\_\_\_\_ 12. Aurora Expeditions has made no representation to me, implied or otherwise, that it or its crew will perform safe rescues or render first aid. In the event I show signs of distress or call for aid, I would like assistance and will not hold Aurora Expeditions, its employees or fellow divers responsible for their action in attempting the performance of rescue or first aid.
- \_\_\_\_\_ 13. It is the intention of Aurora Expeditions by this instrument, to exempt and release Aurora Expeditions and all related entities from all liability whatsoever for personal injury, property damage and wrongful death caused by negligence. I have fully informed myself of the contents of this information and release by reading it before I signed it on behalf of my heirs or myself.

Signature Of Diver: \_\_\_\_\_

Date D/M/Y: \_\_\_\_\_

