

# INDIES TRADER MARINE ADVENTURES INC.

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## SAFETY POLICY FOR DIVING AT BIKINI ATOLL

As Indies Trader Marine Adventures enters its 9<sup>th</sup> (2018) season of diving at Bikini Atoll in the Marshall Islands, we feel that it is necessary to re-visit and reiterate our safety policies regarding dive operations.

Incidence of decompression illness (DCI) continues to be our foremost concern, as, obviously, any occurrence is one too many and we continue to see a couple of cases per year. We are fortunate to have had a number of prominent hyperbaric physicians and general MDs come diving with us, and the fact that they approve of our diving operations suggests that while we are following established protocols, perhaps the protocols need to be re-written to some extent to suit the unique conditions encountered while diving at Bikini Atoll.

Some of the factors that may contribute to a higher incidence of DCI are:

- Many of our divers have travelled from halfway around the world. They may be very tired, jet-lagged, dehydrated, and may possibly have picked up a virus during their air travel. There is also a 220-mile sea voyage to Bikini Atoll, during which seasickness may contribute to fatigue and dehydration.
- The climate in the Marshall Islands can be very hot, with very strong sunlight. It is easy to get dehydrated and overheated, leading to an elevated risk of heatstroke or DCI.
- The wrecks at Bikini Atoll are lying in depths of over 50 meters. While these depths are accessible to the average technical diver, their accessibility tends to lead to longer run times and large decompression obligations.
- Multi-day deep, decompression diving has a cumulative effect in terms of nitrogen loading and general physical well being. We feel that this effect is not well understood and is not accurately weighted in common decompression algorithms.
- There is a very real and direct correlation between alcohol abuse and incidence of DCI.
- We have noticed a higher incidence of DCI among closed circuit rebreather divers than open circuit divers. We feel that the algorithms currently in use perhaps give too much weight to the advantages of constant, higher PO<sub>2</sub>. Rebreather divers tend also to have longer dive run times, resulting in higher inert gas loading. An additional level of conservatism should be incorporated into rebreather diving.

With these contributing factors in mind, we have arrived at the following restrictions:

1. Divers over 70 years of age will not be offered diving at Bikini Atoll.
2. Divers are required to report any symptoms of un-wellness to a dive supervisor or medical doctor if one is on board. A determination of fitness to dive will be made by dive supervisors and doctors, and will be binding.
3. Divers will make every effort to remain hydrated and sheltered from exposure, and will avoid strenuous exertion, particularly post-diving.
4. A few drinks in the evening should not affect diving. Gross intoxication or noticeable hangover will result in diving being denied for 24 hours.
5. Dive computers with variable gradient factors must be used. We have found that a GF of 30/ 70 or 30/75 will result in an acceptable decompression schedule. In no case should a GF more aggressive than 30/75 be used at Bikini Atoll. V-Planner may be used provided that the decompression profile is at least as conservative as GF 30/75. Back-up tables should be calculated using the same algorithm and settings as computers. Ratio deco may not be used as the primary means of calculating decompression profiles.
6. All divers will add at least an extra 10 minutes to their decompression schedule sub 3 meters and at high PO<sub>2</sub>.
7. All divers will take one dive off at around mid- trip, or alternatively there will be a scheduled shallow, no decompression dive.
8. All divers will employ manifolded double tanks, independent twins, or a rebreather with an alternate bailout system. As all dives at Bikini Atoll are decompression dives, there is a "glass ceiling", and every diver must have a redundant breathing system. Single tank diving is therefore not allowed.
9. Divers using manifolded doubles should use a buoyancy wing of at least 40 lbs. lift capacity and preferably employing double bladders. Should the diver choose not to employ a double bladder wing he must carry an easily deployed lift bag of sufficient capacity.

10. Divers will dive in buddy pairs or groups only. A diver must abort the dive should he find himself alone.
11. Pain- only DCI will normally be treated with oxygen therapy in the decompression chamber if strait oxygen therapy is inconclusive, bed rest and perhaps drug therapy or intra-venous hydration. A diver may be able to return to diving 24 hours after full resolution.
12. Type 2 DCI will be treated as per the recommendations of any doctors present or alternatively per directions of the diver's insurance carrier. Presence of type-2 DCI symptoms will prevent the diver from returning to diving for the duration of the trip.
13. Divers must have attained certification to at least "Advanced Nitrox and Deco Procedures " or equivalent. It is strongly recommended that divers should have completed a multi-day, decompression diving trip before coming to Bikini Atoll. We have found that some divers cannot tolerate decompression diving, and given the remote location of our operations, this is not the place to discover that you cannot tolerate an intensive schedule of decompression diving.
14. While it is difficult to impose an absolute limit on dive run times, divers must limit themselves to reasonable profiles that they have successfully used before. There is a tendency to push limits at Bikini Atoll, and dive supervisors will not hesitate to impose limits on an individual basis should they observe risky behavior.

Of course this list only enumerates conditions specific to diving at Bikini Atoll. All standard diving safety protocols apply, as does everything you learned in your training.

We at Indies Trader Marine Adventures believe that these restrictions are not unduly onerous and should result in enjoyable, trouble- free diving.

Name of Diver : \_\_\_\_\_

Signature of Diver : \_\_\_\_\_

Date : \_\_\_\_\_