Open Water Diver RDP Handout

What is a Recreational Dive Planner?

A Recreational Dive Planner is a dive table and planning program designed for the recreational scuba diver. Recreational Dive Planners are based on dive computers, tables, and algorithms originally developed by Sheck Exley of Santa Rosa CA and the Recreational Scuba Training Council (RSTC).
Recreational Dive Planners use the Recreational Dive Planning Algorithm (RDPA) for planning single depth recreational dive profiles. Recreational Dive Planners are primarily used by divers who plan and dive their own open water scuba dives.

Recreational Dive Planners may or may not be hand held devices that display a diver's depth, time and depth of the dive. They can be a slate to take underwater or an electronic calculator, even a program to install on your laptop.

Recreational Dive Planner's use four parameters to create an equivalent single depth "no decompression" recreational dive profile - Sea Level Air Depth / Wet Suit Factor (1 minute), Water Temperature, Active Time and Recreational Dive Multiplier.

Recreational Dive Planner's only plan "no decompression" dives - Recreational Dive Planner's do not plan decompression dives using the Recreational Dive Planning Algorithm (RDPA).

For divers interested in Decompression diving, you will need to get quite some experience first, be a certified Nitrox diver, and step into the technical side of diving with the PADI Tech-Rec programs. At that point, you will use different algorithms and different dive planning tools, and your dive computer will need to be able to support different gas blends and complex calculations. We never stress enough times how important it is not to fall into decompression during recreational dives: monitor your computer constantly during your dive.

Why is calculating TBT important?
TBT or "time below the surface" is critical information for a Recreational Dive Planner to provide you with an equivalent single depth recreational dive profile. Recreational Dive Planners use four parameters to create an equivalent single depth "no decompression" recreational dive profile - Sea Level Air Depth / Wet Suit Factor (1 minute), Water Temperature, Active Time and Recreational Dive Multiplier.

Why Recreational Dive Planners are based on Dive Computers, Tables and Algorithms

Dive computers and Recreational Dive Planner's use the Recreational Dive Planning Algorithm (RDPA) for planning single depth recreational dive profiles. Recreational Dive Planner's provide a similar method of displaying recreational dive profiles as Recreational Diving Tables do - Recreational Dive Planner's provide equivalent single depth recreational dive profiles.

What is actual bottom time? ABT

ABT is the term Recreational Dive Planners use for actual bottom time. Recreational Dive Planner's display ABT as minutes.

What is total bottom time? TBT?

TBT is the term Recreational Dive Planners use for total bottom time. It is translated in minutes as well.
The difference between ABT and TBT is very simple: ABT represents the amount of time spent underwater, from the moment we submerge to the moment we begin our ascent. The TBT instead is the total of ABT + residual nitrogen time, which is essential for the correct calculation of nitrogen absorption in repetitive dives.

Why Recreational Dive Planners only plan no decompression dives

As explained before, the Recreational Dive Planner is an instrument that we can use or recreational dives only, up to 40 meters or 120 feet, and with absolutely NO decompression time. For deco dives, we will need proper training, different gas blends, and a totally different planner. Choosing to go in decompression during a recreational dive and with little to no knowledge of decompression dives may result in a fatality.

Here are a few practice questions to get used to using the RDP table. You should learn how to use all the information on the table, and not rely entirely on your dive computer, as it might break or malfunction.

Knowing how to plan and execute a dive with the help of the RDP might help you solve problems underwater. Practice the use of your RDP from time to time!

Answer each of the following questions in a separate sheet, give a reply and talk through your reasoning. Give ongoing pressure groups at the start and end of each dive, surface intervals and bottom times.

Questions:

1. Your first dive of the day is at a depth of 23 meters for 28 minutes. What is your minimum surface interval to do a second dive at a depth of 15 meters for 40 minutes?

2. You are diving another day. Your first dive of the day is at a depth of 17 meters for 45 minutes. What is your minimum surface interval to do a second dive at the same depth for 45 minutes again?

3. You are diving another day. You dive at a depth of 15m dive for 60 minutes. How long till you can fly according to the RDP rules?

Answers:

1. The minimum surface interval between these dives is 28 minutes.

Take the RDP and start on Table 1. Cross the first depth, 23 meters (25) with 28 minutes. You end up in pressure group P. Now go to table 3. Find 15 meters (16) and look for 40 in the first available blue case. Go up and you will see you need to be in group J to do this dive. Now switch back to Table 2. For a diver in group P, it takes a minimum of 28 minutes to reach the nitrogen level of group J.

3. The minimum surface interval between these dives is 1 hour and 47 minutes.

Take the RDP and start on Table 1. Cross the first depth, 7 meters (18) with 45 minutes. You end up in pressure group R. Now go to table 3. Find 17 meters (18 again) and look for 45 in the first available blue case. Go up and you will see you need to be in group B to do this dive. Now switch back to Table 2. For a diver in group R, it takes a minimum of 01:47 to reach the nitrogen level of group B.

4. Refer to your RDP, on the B side. You can read the paragraph **Flying after diving recommendations** for no decompression dives. A minimum pre-flight surface interval of 12 hours is suggested after single dives, while a minimum of 18 hours is suggested in case of repetitive or multi-day dives.

RDP Questions

Question 1. Use the RDP to plan this dive: your first dive is at 16 meters for 44 minutes. You wait on the surface 30 minutes and want to do a second dive at 13 meters. How long can your second dive last, at a maximum?

a. 35 minutes
b. 23 minutes
c. 63 minutes
d. I don't have enough information to answer this question

Question 2. You plan 2 dives for the day. The first one is at 18 meters for 50 minutes. The second one is at 15 meters for 26 minutes. To be able to respect this dive planning, what is your minimum surface interval between dives?

a. 45 minutes
b. 18 minutes
c. 22 minutes
d. I don't have enough information to answer this question

Question 3. You did a first dive at 18 meters for 53 minutes. After a 48 minutes surface interval, you dive again at 17 meters. During the dive, you realize your bottom time is 30 minutes. What should you do now?

a. Go to the surface immediately and contact the nearest recompression chamber.
b. Ascend to 5meters and stay there for at least 8 minutes before emerging. Do not dive for at least 6 hours.
c. Ascend immediately to 5 meters, do your 3 minutes safety stop and go to surface. Do not dive for at least 2 hours.
d. Ascend immediately to 3 meters and stay there as long as possible, until you run out of air. Do not dive for at least 48 hours.

Question 4. A group of Advanced Open Water Divers plans to do 3 dives today. The 1st dive is 30 meters for 17 minutes followed by a 60 minutes surface interval. The 2nd dive is 24 meters for 16 minutes followed by a 30 minutes surface interval. The 3rd dive is at 18 meters – what would be the maximum allowable bottom time for the 3rd dive?

a. 21 minutes
b. 25 minutes
c. 22 minutes
d. 18 minutes

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Question 5. Another group of Advanced Open Water divers is on a liveaboard on a shipwreck diving itinerary. The first shipwreck is at a depth of 28 meters. They will dive for 18 minutes, return to the surface, and dive a second shipwreck after 45 minutes. The second dive is at 23 meters, and they plan on diving it for 16 minutes. What is their final pressure group?

a. Pressure group D
b. Pressure group P
c. Pressure group J
d. Pressure group Q

Question 6. You and your dive group go ice diving. You plan a dive at a depth of 14 meters for 27 minutes. Considering that both water and air temperature are near to freezing, how should you plan your dive?

a. 14 meters for 27 minutes
b. 18 meters for 31 minutes
c. 18 meters for 27 minutes
d. 14 meters for 31 minutes

Answers

Answer 1: C 63 minutes
First of all, calculate your pressure group at the end of the first dive: 16 meters, scroll down to 44 minutes: you are in group O. After 30 minutes surface break (move to the right and find the interval) you find yourself in group I. Now flip the slate and look at the B side. Cross the desired depth for your second dive (13 meters, go to 14 meters – always go to the next number if you can't find yours) with the pressure group you have when you start the dive (I). The number in the blue box is your allowed bottom time: 63 minutes.

Answer 2: B 18 minutes
Calculate the first dive: 50' at 18 meters = group T. Now, go to the B side f your RDP. Say you want to go to 15meters (which becomes 16) and look for a maximum allowed bottom time of 26 minutes: with 27, you will need to be in group O to execute this dive. Now the question is, what is the minimum surface interval for me a dive in pressure group T, to end up in O and be able to do this second dive as planned? Go back to the first side of the slate and move to Table 2. Start with T, end up in O, and you will see that the interval is 0:18 to 0:22. Hence, 18 minutes is the minimum surface interval for a T diver to become O.

Answer 3: B Ascend to 5meters and stay there for at least 8 minutes before emerging. Do not dive for at least 6 hours. The answer to this question combines the use of the RDP calculation and the knowledge of the rules on it. Calculate your dive: 18 meters, 53 minutes = pressure group U. After 48 minutes on the surface, you are in group J. You can see from the B side (Table 3) that you can dive a maximum of 28 minutes at 18 meters. This means that when you realize you have spent 30 minutes there, you spent 2 extra minutes: the rules say that if you exceed your limits for no

longer than 5 minutes, you should ascend to 5 meters, stay there for at least 8 minutes before emerging, and avoid diving for at least 6 hours.

Answer 4: C 22 minutes
Dive 1: 30 meters – 17 minutes: Table 1 shows you end up in group L. Go to table 2, and you will see 1:00 hour on the surface leads you to group C. Now switch to table 3 and you will see that if you are C and want to dive to 24 meters, 16 minutes is an acceptable bottom time, but you will need to add the RNT of 10 minutes. This means 16 + 10 = 26. Go back to table 1 and find 24 meters and 26 minutes: you are in group O. After 30 minutes on the surface (Table 2) you are in group I. If at that point you want to do a 3rd dive, go back to table 3 and find group I, and the desired depth of 20 meters. The blue case will show the maximum bottom time: it is 22 minutes.

Answer 5: B. Pressure group P.
Dive 1: 28 meters – 15 minutes: Pressure group J. After 45 minutes J becomes D. Table 3 for repetitive dives: A diver with pressure group D can dive at 23 meters max 18minutes. That means we can do the dive as planned, for 16 minutes. Adding the 11 minutes of RNT, we switch back to Table 1 and calculate a dive at 23 meters for (16+11) 27 minutes. Our final pressure group is P.
Refer to: RDP/eRDPML Instructions for Use booklet.

Answer 6: C 18 meters for 27 minutes
Remember the rule that says that when you are diving in strenuous condition or at a very low temperature, you should add 4 meters to your planning to ensure you are calculating a higher nitrogen absorption.
Refer to: your RDP Table, B side. RDP/eRDPML Instructions for Use booklet.