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Recreational

Dive Planner

Instructions for Use

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Note: Because people differ in their susceptibility to decompression sickness, no decompression table can guarantee that decompression sickness will never occur even though you dive within the table limits.

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Section One

Using the Recreational Dive Planner Table

The purpose of the Recreational Dive Planner is to make all dives no decompression dives. Proper planning assures that all dives, single or repetitive, are within the no decompression limits by controlling the length of the dive, the depth of the dive, and the surface interval between dives.

Use of the Recreational Dive Planner requires having and using an accurate depth gauge, an underwater timer, a slate and pencil and the planner itself. You need to know the depth of each dive so you can determine the maximum time allowed, or you must limit your depth to a specific planned maximum depth.

Always consult the Recreational Dive Planner before each dive to be sure you know your no decompression limit. Note the time on an underwater slate and carry it with you and also note the no decompression limit for the next deeper depth, in case you accidentally exceed your depth limit. Remember that your deepest dive is always first, and each successive dive is to an equal or shallower depth than the preceding dive. If your time limits are short, consider making a shallower dive to permit more time.

As shown, the Recreational Dive Planner Table is actually three tables linked together. Each of the three tables provides information for planning dives within accepted nitrogen levels.

Section One

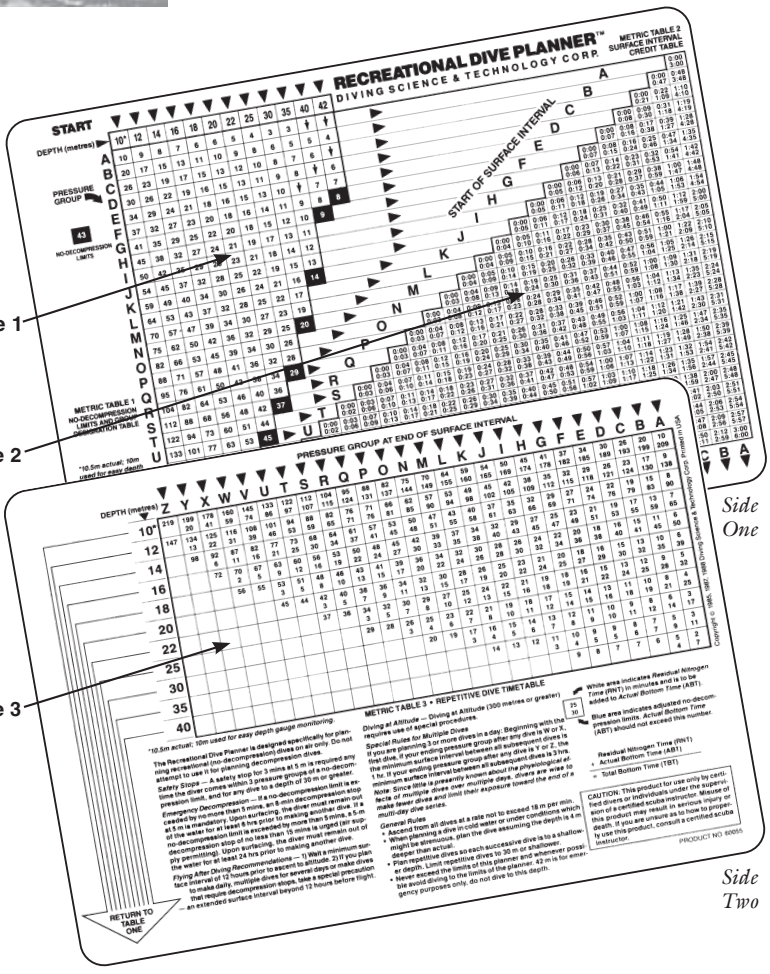


Table 1

Table 2

Table 3

Side One

Side Two

The RDP is actually three tables linked together.

Section One

General Rules for Using the Recreational Dive Planner

The Recreational Dive Planner comes in two different forms, the Table version and The Wheel. Regardless of which version you use, there are several general rules you must follow. Apply the following rules anytime you use either version of the Recreational Dive Planner.

1. *Bottom time* is the total time in minutes from the beginning of descent until the beginning of final ascent to the surface or safety stop.
2. Any dive planned to 10 metres or less should be calculated as a dive to 10 metres.
3. Use the exact or next greater depth shown for the depths of all dives.
4. Use the exact or next greater time shown for the times of all dives.
5. Slowly ascend from all dives at a rate that does not exceed 18 metres per minute. Slower is acceptable and encouraged. Be a S.A.F.E. Diver — Slowly Ascend From Every Dive.
6. Always be conservative and avoid using the maximum limits provided.
7. When planning a dive in cold water, or under conditions that may be strenuous, plan the dive assuming the depth is 4 metres deeper than actual.
8. Plan repetitive dives so each successive dive is to a shallower depth. Never follow a dive with a deeper dive. Always plan your deepest dive first.

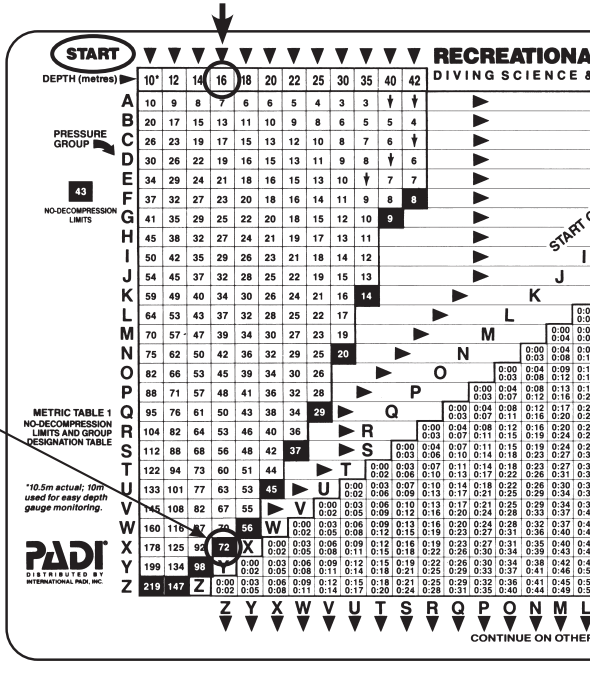
9. Limit all repetitive dives to 30 metres or shallower.
10. Limit your maximum depth to your training and experience level. As an Open Water Diver, limit your dives to a maximum depth of 18 metres. Divers with greater training and experience should generally limit themselves to a maximum depth of 30 metres. Divers with Deep Diver training and a reasonable objective may dive as deep as 40 metres. All dives should be planned as no decompression dives and no dive should ever exceed the maximum depth limitation for recreational scuba — 40 metres. Decompression diving is beyond the parameters of the Recreational Dive Planner.
11. Never exceed the limits of the Recreational Dive Planner and whenever possible avoid diving to the limits of the planner. 42 metres is for emergency purposes only, do not dive to this depth.
12. A safety stop for 3 to 5 minutes at 5 metres is recommended at the end of all dives. A safety stop for 3 minutes at 5 metres is *required* anytime you come within three pressure groups of a no decompression limit, and for any dive to a depth of 30 metres or deeper.

Section One

Table 1

When you begin planning your first dive of the day, you consult Table 1. In fact, if you're only planning to make one dive within a six hour period, Table 1 is the only table you'll need to use.

Table 1 has two purposes. It tells you the maximum amount of time you can stay at a certain depth on your first dive, and it tells you how much nitrogen



Maximum Limit

Figure 1
Table One

Section One

you have in your body after a dive. The easiest way to learn how to use Table 1 is to follow an example.

Assume you plan to dive on a reef you know lies in 15 metres of water. How long can you stay at 15 metres? Enter Table 1 along the top *depth* row labeled *Start*. Note in Figure 1 that as you follow the depth line to the right, that depth (after the 10-metre column) increases in 2 metre increments, and 15 metres does not appear.

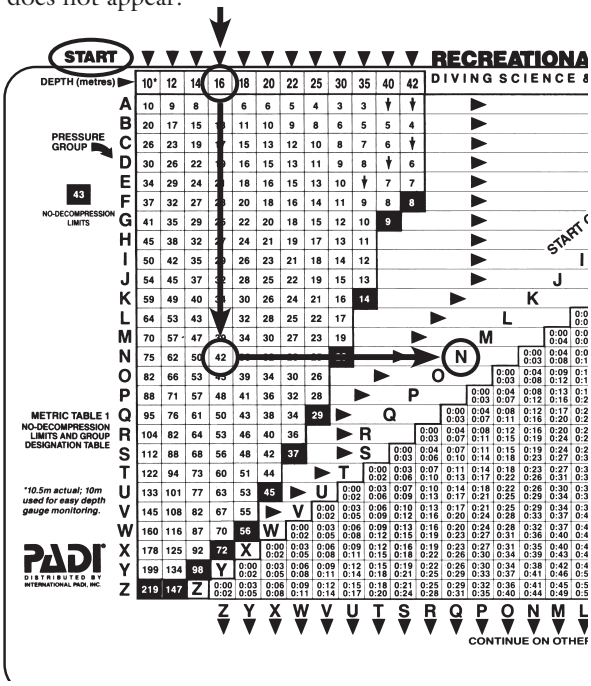


Figure 2
Using Table 1 to find your pressure group.

The Recreational Dive Planner Table 1

1. A no decompression limit is:
   ☐ a. the maximum allowable dive time for a dive to a specified depth.
   ☐ b. the maximum depth limit you can reach as a recreational diver.
2. Residual nitrogen is:
   ☐ a. the more-than-normal amount of nitrogen left in your tissues after a dive.
   ☐ b. the excess nitrogen that bubbles to cause decompression sickness.
3. A pressure group is:
   ☐ a. a letter that indicates how deep you went on the last dive.
   ☐ b. a letter that represents the amount of residual nitrogen in your body after a dive.

How did you do?
1. a 2. a 3. b

In the general rules you learned that you always use the exact or *next greater* depth, so in this example you will follow the depth row to the 16-metre column. All the numbers appearing below the depth row are in minutes. At the bottom of the 16-metre column, find the number 72 in a black box. All the times in the black boxes are maximum allowable times and referred to as *no decompression limits* (NDLs). This means the maximum time for your dive to 15 metres (rounded up to 16) is 72 minutes. (See Figure 1.)

It is unlikely that you would spend an entire dive at exactly one depth. *When using the RDP Table for the purposes of calculation, you will use the deepest depth you reach during the dive, regardless of how long you actually remain at that depth.*

If you're planning only one dive, this is all the information you need. Your dive must not exceed 72 minutes. Similarly, you will note that a dive to 18 metres has an NDL of 56 minutes, and a dive to 14 metres has an NDL of 98 minutes.

On many occasions, you'll make more than one dive. You must account for the nitrogen you absorb on the first dive when planning your next dive. The nitrogen left in your tissues after the first dive is called residual nitrogen. You use Table 1 to tell you how much residual nitrogen you have in your body.

Continuing with the previous example, assume that you remained at 15 metres for 40 of the allowable 72 minutes. Follow the 16-metre column down

until you find 40 minutes or the *next greater* time — in this case, 42 minutes. From 42 minutes, follow the horizontal row to the right to find the letter N. (See Figure 2.) This letter is your *pressure group* (PG), and represents the amount of residual nitrogen in your body after the dive. You use your pressure group when you move into Table 2. Before moving to Table 2, complete the sample problems.

SAMPLE PROBLEMS—TABLE 1

Solve these sample problems and check your answers against the answers given. Be sure your answers are correct before proceeding.

1. A dive to 13 metres for one hour yields what pressure group?

   a. Pressure group R.
   b. Pressure group Q.
   c. Pressure group S.
   d. Pressure group T.

Answer: b. Pressure group Q.
13 metres doesn't appear on Table 1, so you use the 14-metre column. Follow the 14-metre column down until you find 60 minutes (one hour). You must use 61 minutes because 60 minutes does not appear. Next move horizontally along the row until you find pressure group Q.

2. A dive to 9 metres for 70 minutes yields what pressure group?

   a. Pressure Group M.
   b. Pressure Group N.
   c. Pressure Group L.
   d. Pressure Group O.

Answer: a. Pressure group M.
9 metres does not appear on the top of Table 1, and any dive shallower than 10 metres should be planned as a 10-metre dive. Find 10 metres at the top of Table 1, move down the column until you find 70 minutes. From there move horizontally until you locate pressure group M.

3. A dive to 18 metres for 40 minutes yields what pressure group?

   a. Pressure Group S.
   b. Pressure Group Q.
   c. Pressure Group R.
   d. Pressure Group P.

Answer: d. Pressure group P.
Find 18 metres at the top of Table 1 and then follow the column down until you find 40 minutes. 40 does not appear, so you must use 41 minutes. Moving horizontally from 41 minutes, you find pressure group P.

Section One

Table 2

As time goes by after a dive, residual nitrogen leaves your body. You use Table 2 to determine how much residual nitrogen your body eliminates during a *surface interval* — that is, the time on the surface between two dives.

You enter Table 2 using the pressure group you found in Table 1. The numbers within the boxes in Table 2 are times expressed in hours and minutes. For example, 1:30 represents one hour and 30 minutes. Continuing the example of a 15-metre dive for 40 minutes, which yielded pressure group N, move into Table 2 horizontally from pressure group N. Assuming your surface interval has been one hour for this example, continue horizontally until you find the

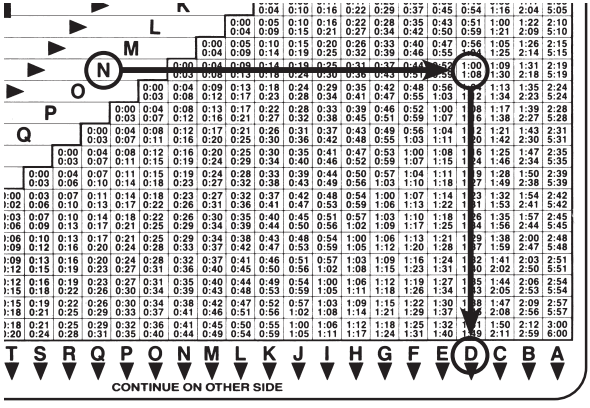


Figure 3
Using Table 2 to find your new pressure group after a surface interval.

box where one hour falls on or between the two times listed (Figure 3). In this case, the box with the time interval listed as 1:00-1:08 is the one you are looking for. Now move downward vertically to the bottom to find the new pressure group (in this example, pressure group D) (Figure 3). That means in one hour, a diver with a pressure group of N loses enough residual nitrogen to move to pressure group D. With this new pressure group, you proceed to Table 3 to plan your repetitive dive.

SAMPLE PROBLEMS—TABLE 2

Solve the following sample problems and check your answers just like you did after reading the section on Table 1. Be sure your answers are correct before proceeding.

1. After a dive, Table 1 shows you are in pressure group J. What will your new pressure group be after a 32-minute surface interval?

   a. Pressure group E.
   b. Pressure group D.
   c. Pressure group F.
   d. Pressure group H.

Answer: a. Pressure group E.
Find pressure group J along the diagonal portion of Table 2. Moving inward horizontally, you will find the time interval of 0:32 - 0:40 (32 minutes through 40 minutes). 32 minutes falls within this interval. Next, move downward from this time interval box until finding new pressure group E at the bottom of Table 2.

2. A diver in pressure group P will be in what new pressure group after a 55-minute surface interval?

   a. Pressure group E.
   b. Pressure group A.
   c. Pressure group G.
   d. Pressure group F.

Answer: d. Pressure group F.
Find pressure group P along the diagonal portion of Table 2. Following the row horizontally inward from P, you will find the time interval of 0:52 - 0:59. 55 minutes falls within this interval. Now move downward vertically from this box until you find the new pressure group F at the bottom of Table 2.

Section One

The Recreational Dive Planner Table 2

1. A surface interval:
   - ☐ a.must be longer than 12 hours.
   - ☐ b. is the time spent on the surface between two dives.

How did you do?
1. b.

SAMPLE PROBLEMS—TABLE 2 (Continued)

3. A diver in pressure group I will be in what new pressure group after a surface interval of 4 hours?

   a. Pressure group Z.
   b. Pressure group B.
   c. Pressure group A.
   d. Pressure group C.

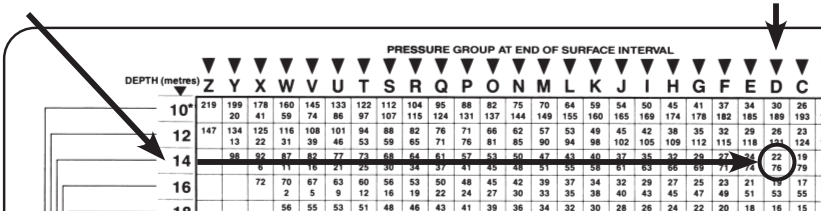
Answer: c. Pressure group A.
Find the pressure group I along the diagonal portion of Table 2 and follow the row in horizontally until you find the time interval 1:54 - 4:54. Four hours falls within this time interval. Next, move downward vertically until you find the new pressure group A at the bottom of Table 2.

Table 3

You use Table 3 to find out how much residual nitrogen, expressed in minutes, you have remaining in your body prior to entering the water for a repetitive dive. This amount is referred to as *residual nitrogen time (RNT)*. Essentially, Table 3 takes your pressure group and converts it into the time limit for your next dive.

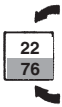
Continuing with the same example, you were in pressure group D at the bottom of Table 2 after your surface interval of one hour. Flip the Recreational

Figure 4
Using Table 3 to find your residual nitrogen time and your adjusted no decompression limit.



PRESSURE GROUP AT END OF SURFACE INTERVAL

DEPTH (metres)	Z	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E	D	C
10*	219	199	178	160	145	133	122	112	104	95	88	82	75	70	64	59	54	50	45	41	37	34	30	26
		20	41	59	74	86	97	107	115	124	131	137	144	149	155	160	165	169	174	178	182	185	189	193
12	147	134	125	116	108	101	94	88	82	76	71	66	62	57	53	49	45	42	38	35	32	29	26	23
		13	22	31	39	46	53	59	65	71	76	81	85	90	94	98	102	105	109	112	115	118	[illegible]	124
14		98	92	87	82	77	73	68	64	61	57	53	50	47	43	40	37	35	32	29	27	24	22	19
			6	11	16	21	25	30	34	37	41	45	48	51	55	58	61	63	66	69	71	74	76	79
16			72	70	67	63	60	56	53	50	48	45	42	39	37	34	32	29	27	25	23	21	19	17
				2	5	9	12	16	19	22	24	27	30	33	35	38	40	43	45	47	49	51	53	55
[illegible]				56	55	53	51	48	46	43	41	39	36	34	32	30	28	26	24	22	20	18	16	15



White area indicates Residual Nitrogen Time (RNT) in minutes, which you add to Actual Bottom Time (ABT)

Blue area indicates adjusted no decompression limit (ANDL). Actual Bottom Time (ABT) should not exceed this number.

Dive Planner over and find pressure group D along the top row. Along the left side of Table 3, you find the depths for the repetitive dive. For the sake of example, assume you plan your repetitive dive to 13 metres. Again, when the actual depth does not appear on the table, you use the next greater depth, in this case, 14 metres. Locate 14 metres on the left side of Table 3 and follow the row horizontally to the right until you are under pressure group D. There you'll find two numbers: 22 in the white portion (top) of the box and 76 in the blue portion (bottom) (Figure 4).

22 is the RNT, which you use for returning to Table 1 after the repetitive dive (you'll learn more about this shortly), and 76 is the adjusted *no decompression limit.*

The adjusted no decompression limit is *the maximum amount of time you can spend at that depth for the repetitive dive.* In this example, because you are in pressure group D going to 13 metres (rounded to 14), you may stay under water no longer than 76 minutes. (Note: When you add the numbers contained in any box on Table 3, the sum is the no decompression limit in the black boxes in Table 1. The adjusted no decompression limit results from subtracting the RNT from the NDL in Table 1.)

SAMPLE PROBLEMS—TABLE 3

Solve the following sample problems and check your answers against the answers given. Be sure your answers are correct before proceeding.

1. If you are in pressure group K after your surface interval, and you are planning a dive to 18 metres, what is your adjusted no decompression limit?

a. 24 minutes. c. 29 minutes.
b. 28 minutes. d. 26 minutes.

Answer: d. 26 minutes.
On Table 3, find pressure group K along the top and the depth, 18 metres, along the left side. Follow the 18-metres row horizontally to the right until it intersects with the pressure group K column. There you find 30 in the top, white portion of the box and 26 in the bottom, blue portion. The adjusted no decompression limit is the number in the bottom, blue portion: 26 minutes.

2. After a surface interval, you are in pressure group P and planning a dive to 16 metres. What is your adjusted no decompression limit for this dive?

a. 24 minutes. c. 50 minutes.
b. 27 minutes. d. 33 minutes.

Answer: a. 24 minutes.
Locate pressure group P along the top row of Table 3. Next, find the depth, 16 metres, along the left side of Table 3. Intersect the P column and the 16-metre row to find the box containing 48 in the top, white portion and 24 in the bottom, blue portion. The adjusted no decompression limit is the bottom number: 24 minutes.

3. If you're in pressure group M after a surface interval, what is the residual nitrogen time if you're planning a repetitive dive to 18 metres?

a. 35 minutes. c. 34 minutes.
b. 22 minutes. d. 31 minutes.

Answer: c. 34 minutes.
On the top of Table 3, find pressure group M. On the left-hand side of Table 3, locate 18 metres. Intersect the 18-metre row and pressure group M column to find the box with numbers 34 in the top, white portion and 22 in the bottom, blue portion. The top number, 34 minutes, is the residual nitrogen time, or RNT.

4. Following a surface interval, you're in pressure group T. What would be your RNT for a repetitive dive planned to 16 metres?

a. 63 minutes. c. 67 minutes.
b. 17 minutes. d. 60 minutes.

Answer: d. 60 minutes.
On Table 3, find pressure group T at the top and the depth, 16 metres, on the left side. Intersect T and 16 to find the box containing 60 in the top, white portion and 12 in the bottom, blue portion. The RNT is the top number: 60 minutes.

The Recreational Dive Planner Table 3

1. Residual nitrogen time (RNT) is:
   ☐ a.the amount of residual nitrogen found in your body before you make your first dive of the day.
   ☐ b.the amount of residual nitrogen, expressed in minutes, you have remaining in your body prior to entering the water for a repetitive dive.
2. Adjusted no decompression limit is:
   ☐ a.the maximum amount of time you can spend at a specified depth on a repetitive dive.
   ☐ b.the shorter-than-normal no decompression limits you must follow until you become an experienced diver.

How did you do?
1. b 2. a.

Drawing the Dive Profile

One way you can avoid confusion and make sure you don't miss any steps when using the dive tables is to graphically represent the dive as a drawing. This is called a dive profile (Figure 5).

Notice that there's a blank space for each piece of critical information. If you leave a space blank when drawing a dive profile, you've probably overlooked an important part of using the dive tables. The profile of the example you've been using is provided in Figure 6

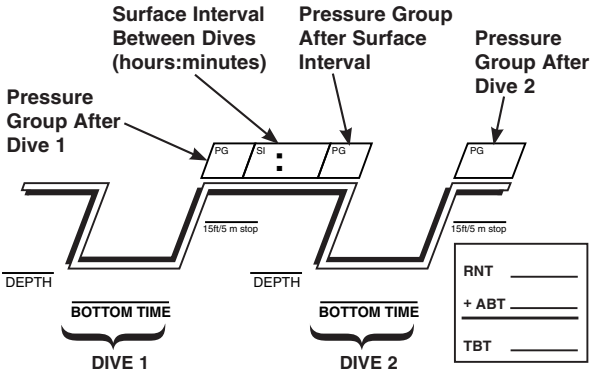


Figure 5
By drawing a dive profile when using dive tables, you can avoid confusion and skipping steps.

Drawing the Dive Profile

1. A dive profile is a:
   - ☐ a. method of calculating your bottom time.
   - ☐ b. graphic representation of a dive.

How did you do?
1. b.

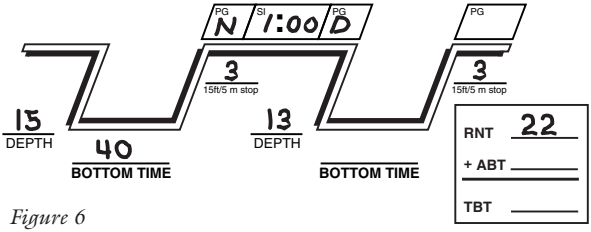


Figure 6
Example dive profile.

for your reference. It's recommended that you make a habit of drawing a dive profile when you use dive tables.

Planning Multiple Repetitive Dives

If you only plan to make two dives — the first dive and one repetitive dive — then you've already learned what you need to know. If you want to make more than two dives, though, there's just one more step you need to learn: How to get your new pressure

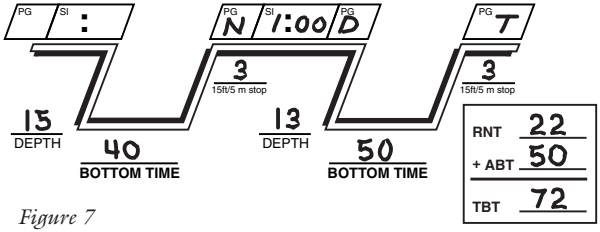


Figure 7
At the end of the dive profile, remember to add your residual nitrogen time (RNT) to your actual bottom (ABT) time to get your total bottom time (TBT).

group at the end of a repetitive dive.

You find your pressure group by using the RNT you found on Table 3 and the bottom time of your repetitive dive, on Table 1. Continuing with the previous example, suppose you stayed under water 50 minutes of the 76 adjusted no decompression limit on the repetitive dive to 13 (rounded to 14) metres. Because this is the time you actually spent under water, it is called actual bottom time (ABT).

During the actual bottom time of the repetitive dive, your body absorbed more nitrogen, but you also had residual nitrogen left from the first dive. To determine the pressure group for all the nitrogen in your body, add the Residual Nitrogen Time (RNT) to the Actual Bottom Time (ABT) to give you Total Bottom Time (TBT). In the example, you get 22 (RNT) + 50 (ABT) = 72 (TBT). (Figure 7)

Now all you have to do is use the total bottom time and the depth of the repetitive dive in Table 1 to find your new pressure group, just like you did at the end of the first dive. In the example, find 72 minutes in the 14-metre column. It doesn't appear, so you round up to 73 minutes, then move horizontally to find the new pressure group, T. (Figure 8) You can now enter Table 2 with a new surface interval and proceed in the same sequence as before.

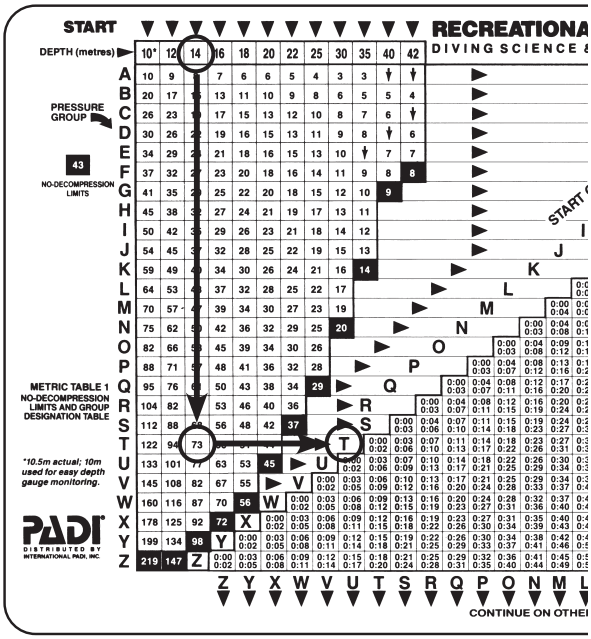
At the end of a repetitive dive, always remember that to get back to Table 1 and find your new pressure group, you must add the residual nitrogen time

Planning Multiple Repetitive Dives

1. Actual bottom time (ABT) is:
   - ☐ a. the amount of time you actually spent under water during a dive.
   - ☐ b. the amount of time you actually spent under water added to the residual nitrogen time from your previous dive.
2. Total bottom time (TBT) is:
   - ☐ a. the amount of time you actually spent under water during a dive.
   - ☐ b. the amount of time you actually spent under water added to the residual nitrogen time from your previous dive.

How did you do?
1. a 2. b.

to your actual bottom time to find your total bottom time. Forgetting to add RNT and ABT to get TBT is a common error made by divers learning to calculate



R esidual Nitrogen Time (RNT)
A ctual Bottom Time (ABT)
T otal Bottom Time (TBT)

Figure 8
Use the total bottom time (TBT) to get your new pressure group after a repetitive dive.

multiple repetitive dives. You may find it helpful to use this memory device: "Always find the RAT."

Special Rules for Multiple Repetitive Dives

There are some special rules that apply when you plan to make 3 or more dives (the first and 2 repetitive) in a series of multiple repetitive dives. Making more than 3 dives in a series is common during diving vacations to a resort area or on a liveaboard dive boat.

If you're planning three or more dives, beginning with the first dive of the day, if your ending pressure group is W or X, the minimum surface interval between all subsequent dives is 1 hour. If your ending pressure group after any dive is Y or Z, the minimum surface interval between all subsequent dives is 3 hours.

Don't forget that you plan a repetitive dive to the same or a lesser depth than the dive preceding. Make your deepest dive of the series first, and make progressively shallower dives as the series continues. Limit all repetitive dives to 30 metres or shallower.

Note: Since little is presently known about the physiological effects of multiple dives over multiple days, you are wise to make fewer dives and limit your exposure toward the end of a multi-day dive series.

SAMPLE PROBLEMS—PLANNING MULTIPLE REPETITIVE DIVES

Solve the following sample problems and check your answers against those given. Make sure your answers are correct before proceeding.

Indicate the final pressure group upon surfacing after the following series of dives. To avoid confusion, practice drawing the dive profile as you work the problems.

1. First dive: 15m/40 mins; surface interval: 1:00. Second dive: 12m/60 mins.

   a. Pressure group R.
   b. Pressure group P.
   c. Pressure group S.
   d. Pressure group T.

Answer: c. Pressure group S.
After the first dive to 15 metres for 40 minutes, your pressure group from Table 1 would be N (remember to use 16-metre column since 15 metre does not exist and use 42, since 40 minutes is not found on the table). On Table 2, begin at N and move horizontally to find the surface interval box that includes 60 minutes (1 hour) — that box is 1:00 - 1:08, making D your new pressure group. On Table 3, intersect D and 12 metres (the depth of the second dive) to 26 over 121. Add the top number, 26 minutes of residual nitrogen time to your actual bottom time of 60 minutes for a total bottom time of 86 minutes. Return to Table 1 and locate the 12-metre column, then follow it down until you find your total bottom time of 86 minutes (round up to 88). From there, move horizontally to locate your new pressure group, S.

2. First dive: 18m/30 mins; surface interval: 30 mins. Second dive: 15m/30 mins.

   a. Pressure group R.
   b. Pressure group P.
   c. Pressure group S.
   d. Pressure group T.

Answer: a. Pressure group R.
After the first dive to 18 metres for 30 minutes, your pressure group is K on Table 1. On Table 2, follow horizontally from K to the surface interval box that includes 30 minutes: the 0:30 - 0:37 box. Move down vertically from there to find your new pressure group, F. On Table 3, intersect F and 15 metres (round up to 16 metres, the depth of your second dive) to find the box containing 23 over 49. Add the 23 minutes of RNT to your 30-minute ABT (the time of your second dive) to get a TBT of 53 minutes. Return to Table 1 and locate the 16-metre column. Follow it down until you find 53 minutes, then proceed horizontally right to locate your new pressure group, R.

3. First dive: 17m/50 mins; surface interval: 24 mins. Second dive: 16m/30 mins.

   a. Pressure group W.
   b. Pressure group T.
   c. Pressure group X.
   d. Pressure group U.

Answer: c. Pressure group X.
After the first dive to 17 metres (must use 18) for 50 minutes (must use 51), your pressure group from Table 1 is T. On Table 2, begin at T and move in horizontally until you locate the box 24 minutes falls within, the 0:23 - 0:26 box. Move down vertically to find a new pressure group of N. On Table 3, intersect N and 16 metres to find an RNT of 42 (top number) and an adjusted no decompression limit of 30 (bottom number). Add the 42 minutes RNT to your 30-minute ABT for a TBT of 72 minutes. Return to Table 1 and locate 16 metres at the top. Proceed down the column until you find 72 minutes, then proceed horizontally to find your new pressure group X. Because you are in Group X, you must wait at least an hour between all subsequent repetitive dives.

Special Rules for Multiple Repetitive Dives

1. If you are planning three or more dives in one day and your ending pressure group after the second dive is a Y, you should wait a minimum of __ hour(s) between all subsequent dives.
   ☐ a. 1 ☐ b. 3

How did you do?
1. b.

Section Two

Finding A Minimum Surface Interval

So far, you've learned to use the table version of the Recreational Dive Planner to plan your first dive, your surface interval and your second dive. Although you'll probably plan a lot of dives that way, there may also be times when you want to plan the times and the depths of both dives first, and then calculate the least amount of time (the minimum surface interval) to wait after the first dive to make the second dive. This

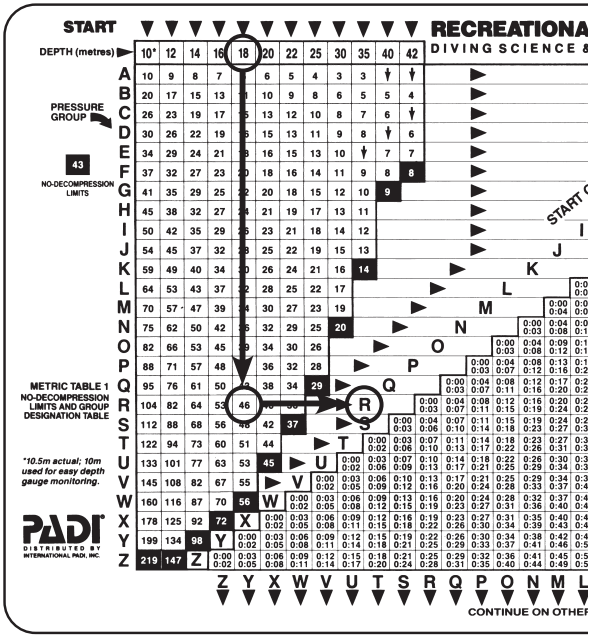


Figure 9
Your first step in determining your minimum surface interval is to use Table 1 to find your pressure group after the first planned dive. After 45 minutes at 18 metres, you are in pressure group R.

is a common planning technique on half-day boat trips, for example. By working through an example, you can get a clear idea of how to determine a minimum surface interval.

Suppose you're planning two dives — the first to 18 metres for 45 minutes, the second to 14 metres for one hour. How long does your surface interval need to be to be able to make the second no decompression dive? Since you're looking for a minimum surface in-

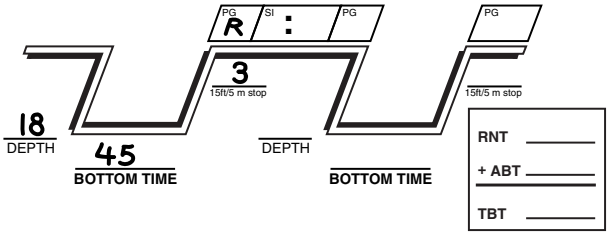


Figure 10
Put your first dive and pressure group on the dive profile.

terval, you'll actually work the tables from both ends to find the answer in Table 2.

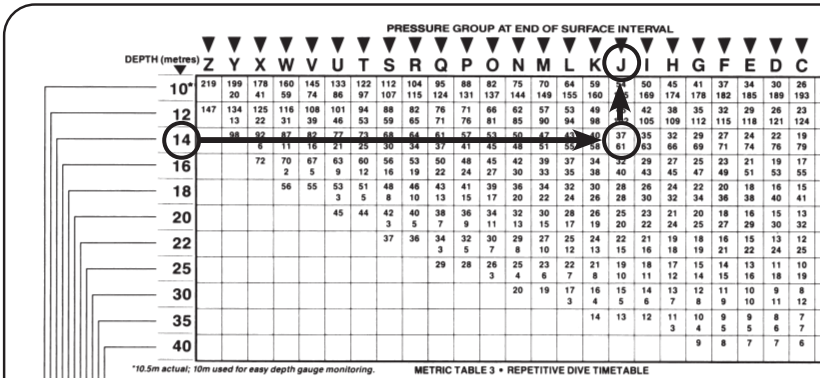
Begin by finding your pressure group at the end of the first dive. On Table 1 in the 18-metre column, you find that at the end of a 45-minute dive, you will be in pressure group R (Figure 9). Record pressure group R on your dive profile (Figure 10).

Next, find the greatest pressure group that will allow you to make your second dive (14 metres for one hour). To find this pressure group, flip to Table 3

and find 14 metres on the left side. Follow the 14-metre row inward, from left to right, until you find the first adjusted no decompression limit (number in blue) that permits a dive of at least 60 minutes (one hour). You will find the number 61 in blue — the first adjusted no decompression limit that is 60 minutes or greater. Now, move up the column from 61 minutes. You should find pressure group J at the top of the column (Figure 11). You now know that to make a 60-minute dive to 14 metres, you must be at least a pressure group J diver after your surface interval. List this pressure group on your dive profile (Figure 12).

Now use Table 2 to find out how long of a surface interval it will take for you to change from pres-

Figure 11
Next, go to Table 3, find 14 metres on the left and move to the right until you find the first adjusted no decompression limit that permits a dive of at least 60 minutes. Follow the column upward to find pressure group J.



PRESSURE GROUP AT END OF SURFACE INTERVAL

DEPTH (metres)	Z	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E	D	C
10*	219	199 20	178 41	160 59	145 74	133 86	122 97	112 107	104 115	95 124	88 131	82 137	75 144	70 149	64 155	59 160	[illegible]	50 169	45 174	41 178	37 182	34 185	30 189	26 193
12	147	134 13	125 22	116 31	108 39	101 46	94 53	88 59	82 65	76 71	71 76	66 81	62 85	57 90	53 94	49 98	[illegible]	42 105	38 109	35 112	32 115	29 118	26 121	23 124
14		98	92 6	87 11	82 16	77 21	73 25	68 30	64 34	61 37	57 41	53 45	50 48	47 51	43 55	40 58	37 61	35 63	32 66	29 69	27 71	24 74	22 76	19 79
16			72	70 2	67 5	63 9	60 12	56 16	53 19	50 22	48 24	45 27	42 30	39 33	37 35	34 38	32 40	29 43	27 45	25 47	23 49	21 51	19 53	17 55
18				56	55	53 3	51 5	48 8	46 10	43 13	41 15	39 17	36 20	34 22	32 24	30 26	28 28	26 30	24 32	22 34	20 36	18 38	16 40	15 41
20						45	44	42 3	40 5	38 7	36 9	34 11	32 13	30 15	28 17	26 19	25 20	23 22	21 24	20 25	18 27	16 29	15 30	13 32
22								37	36	34 3	32 5	30 7	29 8	27 10	25 12	24 13	22 15	21 16	19 18	18 19	16 21	15 22	13 24	12 25
25										29	28	26 3	25 4	23 6	22 7	21 8	19 10	18 11	17 12	15 14	14 15	13 16	11 18	10 19
30													20	19	17 3	16 4	15 5	14 6	13 7	12 8	11 9	10 10	9 11	8 12
35																14	13	12	11 3	10 4	9 5	9 5	8 6	7 7
40																				9	8	7	7	6

*10.5m actual; 10m used for easy depth gauge monitoring.

METRIC TABLE 3 • REPETITIVE DIVE TIMETABLE

sure group R (at the end of your first dive) to pressure group J (at the beginning of your second dive). Find pressure group R along the diagonal slope of Table 2 and pressure group J along the bottom. Move in from pressure group R and up from pressure group J until you find the box where they intersect. There you find 0:35 - 0:40 (Figure 13). Since you're looking for the minimum surface interval, your answer is 0:35. You

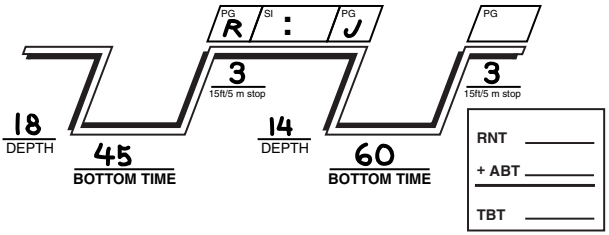
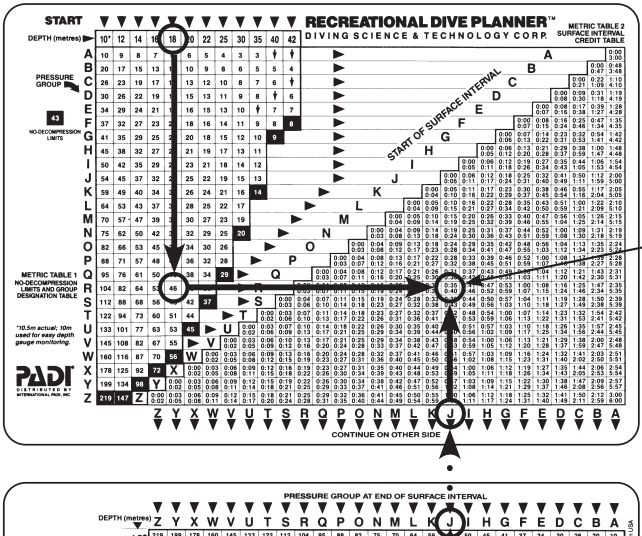


Figure 12
Your dive profile should now look like this.

must wait at least 35 minutes between the two dives that you planned in this example.

Note that you've found the answer for dives planned to the limits. For conservation, in actually making the dives, dive for shorter times and/or allow a longer surface interval so you remain well within RDP limits.

Section Two



Minimum Surface Interval

35
40

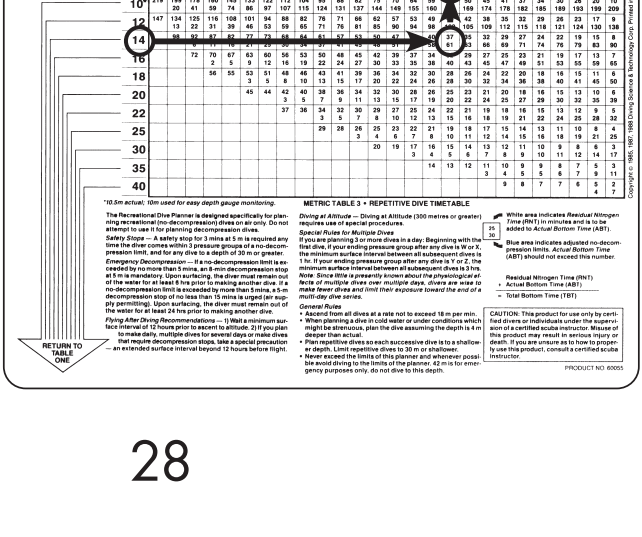


Figure 13
Finally, use Table 2 to determine how long it takes to go from pressure group R (found on Table 1 as the ending pressure group from the first dive) to pressure group J (found on Table 3 as the pressure group necessary to make the second dive). The shortest time shown is 0:35.

Section Two

SAMPLE PROBLEMS—FIND YOUR MINIMUM SURFACE INTERVAL

Find the minimum surface intervals required to complete the series of dives in the sample problems below, then check your answers against the answers given. Be sure your answers are correct before proceeding. Remember, drawing the dive profiles helps you avoid confusion.

1. First dive: 18 metres/40 mins. Second dive: 18 metres/40 mins. The minimum surface interval is:

a. 1:42 c. 1:12
b. 1:08 d. 1:20

Answer: b. 1:08.
Start with Table 1. After a dive to 18 metres for 40 minutes (40 minutes is not listed, so you must use 41), your pressure group is P. Next go to Table 3. Find 18 metres on the left side and follow the row horizontally to the right until you find the first adjusted no decompression limit (number in the bottom, blue portion of the box) that is 40 minutes or greater. The number you find is 40. Follow the column up to find pressure group D. Turn to Table 2 and find where pressure group P on the diagonal intersects with pressure group D on the bottom. In that box, 1:08 - 1:16, 1 hour and 8 minutes is the minimum surface interval needed to make the two dives safely.

2. First dive: 16 metres/60 mins. Second dive: 14 metres/70 mins. The minimum surface interval is:

a. 0:14 c. 1:07
b. 0:07 d. 0:32

Answer: c. 1:07.
Start on Table 1. Under 16 metres find 60 minutes, which puts you in pressure group T. Now turn to Table 3. Find the 14-metre row starting on the left side and follow it to the right until you find the first adjusted no decompression limit on the bottom (blue portion of the box) that is 70 minutes or greater. The number you find is 71. Come up the column vertically until you find the pressure group F. Turn to Table 2 and find where pressure groups T and F intersect by following T from the diagonal slope horizontally and F from the bottom vertically. The interval you find is 1:07 - 0:13. One hour and seventeen minutes is the minimum surface interval required to make these two dives safely.

SAMPLE PROBLEMS—FIND YOUR MINIMUM SURFACE INTERVAL

3. First dive: 18 metres/50 mins. Second dive: 14 metres/60 mins. The minimum surface interval is:

a. 0:42 c. 1:18
b. 1:34 d. 1:34

Answer a. 0:42.
Start on Table 1 and find 50 minutes in the 18-metre column (50 is not there, so you must use 51 minutes). This puts you in pressure group T. Go to Table 3 and find 14 metres on the left side. Follow the 14-metre row horizontally from left to right until you find the first adjusted no decompression limit (the number in the bottom, blue portion of the box) that is 60 minutes or greater. You find 61 minutes and follow the column up vertically to find pressure group J. On Table 2, find pressure group T on the diagonal and pressure group J at the bottom and find the surface interval where they intersect. At the intersection you find 1):42 - 0:47, so 42 minutes is the minimum surface interval needed to make the two dives safely.

Section Three

Dive Tables Definitions Review

You've learned the following terms in the discussions on dive computers and in learning to use the RDP. This list provides a convenient and quick reference and review.

Actual Bottom Time (ABT) — In repetitive diving, the total time actually spent under water (in minutes) from the beginning of descent until leaving the bottom for a direct continuous ascent to the surface or safety stop.

Adjusted No Decompression Limit — The time limit for a repetitive dive that accounts for residual nitrogen. Found on Table 3 of the RDP Table. Actual Bottom Time should never exceed the adjusted no decompression limit.

Ascent Rate — The proper speed for ascending, which is no faster than 18 metres per minute. A rate slower is acceptable, and appropriate.

Bottom Time — The time from the beginning of descent until the beginning of a direct, continuous ascent to the surface or safety stop.

Decompression Diving — Diving that requires planning stops during ascent to avoid decompression sickness. In recreational diving (no decompression diving), a decompression stop is considered an emergency procedure only, and is never an intentional part of the dive plan.

Dive Profile — A drawing of your dive plan, used to avoid confusion and omissions when using the dive tables.

Multilevel Diving — Planning profiles that credit you for slower nitrogen absorption when you ascend to a shallower depth. This provides more no-stop dive time. The Wheel version of the Recreational Dive Planner can be used for multilevel diving.

No Decompression Limit (NDL) — The maximum time that can be spent at a depth before decompression stops are required. Also called "no-stop time."

No-Stop Dive — A dive made within no decompression limits because you don't have any required emergency decompression stops.

Pressure Group — A letter used on the Recreational Dive Planner to designate the amount of theoretical residual nitrogen in your body.

Repetitive Dive — A dive that follows another while there's still a significant amount of residual nitrogen in your body. Using the Recreational Dive Planner, this is a dive made within six hours of a previous dive.

Residual Nitrogen — The higher-than-normal amount of nitrogen remaining in your body after a dive.

Residual Nitrogen Time (RNT) — An amount of nitrogen, expressed in minutes (found on Table 3 by using a pressure group letter) for a specific depth, that you add to the actual bottom time of a dive to account for residual nitrogen from a previous dive.

Safety Stop — A stop made between 3 and 6 metres — usually 5 metres for three or more minutes at the end of a dive for additional safety. The safety stop is recommended after all dives (air supply and other considerations allowing), and required on those to 30 metres or greater, and those coming within three pressure groups of the no decompression limit.

Surface Interval (SI) — The amount of time spent on the surface between two dives. It is usually recorded in hours:minutes (e.g. 3:25 — 3 hours, 25 minutes).

Total Bottom Time (TBT) — The sum of Residual Nitrogen Time and Actual Bottom Time after a repetitive dive, used on Table 1 to determine the pressure group.

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