

# **DECOMPRESSION TABLES**

# OVERVIEW

- ☉ GIVEN TABLES 7-3, 7-4, 7-5 AND A DIVE SCENERIO, SELECT THE CORRECT AIR DECOMPRESSION TABLE AND PROVIDE THE CORRECT REPETITIVE GROUP DESIGNATION, WITH NO MORE THAN TWO INSTRUCTOR ASSISTS.

# DECOMPRESSION TABLES

- ☯ Nitrogen absorption is depth and time dependent
- ☯ Tables control partial pressure gradient from tissues to blood and lungs
- ☯ Decompression is staged (stair-stepped)
- ☯ Tables are about 95% protective for DCS
- ☯ 5 different tables for air diving (O<sub>2</sub> Deco permitted)
  - ☺ Will cover: No D and Repet Group; STD Air; RNT
  - ☺ Won't cover: Sur D O<sub>2</sub>; Sur D Air (Sur D = Surface Deco)

# DECOMPRESSION TABLES

## ☯ Terms

### ☺ Descent Time:

- ☹ LS to RB (rounded up to next whole minute)

### ☺ Bottom Time:

- ☹ LS to LB (rounded up to next whole minute)

### ☺ Decompression Table:

- ☹ A structured set of decompression schedules

### ☺ Decompression Schedule:

- ☹ A specific decompression procedure

L: Leave  
S: Surface  
R: Reach  
B: Bottom

# DECOMPRESSION TABLES

## ☯ Terms (con't)

### 😊 Decompression Stop:

- ☹ Specific depth and time on a schedule

## ☯ Depth

😊 deepest: pneumofathometer reading

😊 maximum: pneumofathometer corrected

😊 stage: used to compute distance and travel time

# DECOMPRESSION TABLES

## ☯ Terms (con't)

### 😊 No D limits:

- ☹ Max time at a depth for which no decompression is required

### 😊 Repetitive dive (Repet):

- ☹ Any dive within 12 hours of a previous dive

### 😊 Repetitive group designation:

- ☹ A letter related to residual N<sub>2</sub> after a dive

### 😊 Residual N<sub>2</sub>:

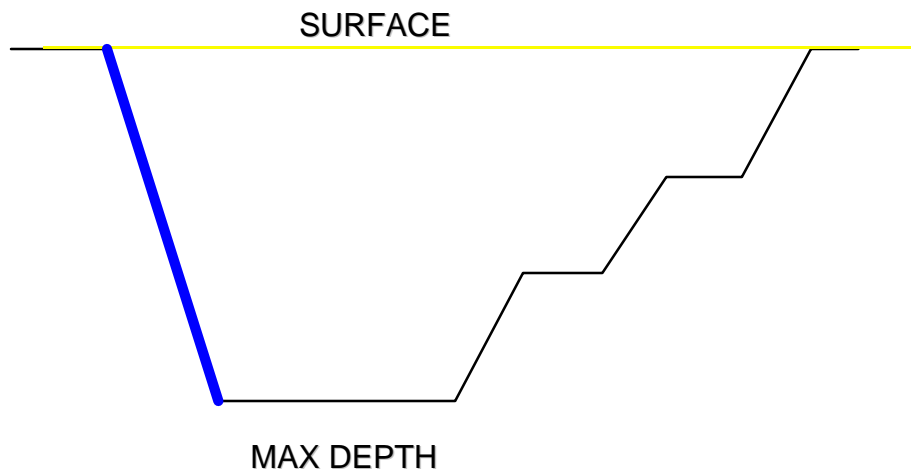
- ☹ Excess nitrogen remaining in a diver's tissues after surfacing

# DECOMPRESSION TABLES

## ☯ Terms (con't)

- ☺ Residual nitrogen time (RNT):
  - ☹ Time which must be added to the BT of a repet dive
- ☺ Equivalent single dive bottom time (ESDT):
  - ☹ Sum of RNT and planned Bottom Time (BT)
- ☺ Single repetitive dive:
  - ☹ Dive based on ESDT
- ☺ Surface interval (SI):
  - ☹ Time between dives (RS to LS)
- ☺ Single dive:
- ☺ A dive  $> 12$  hours from previous dive

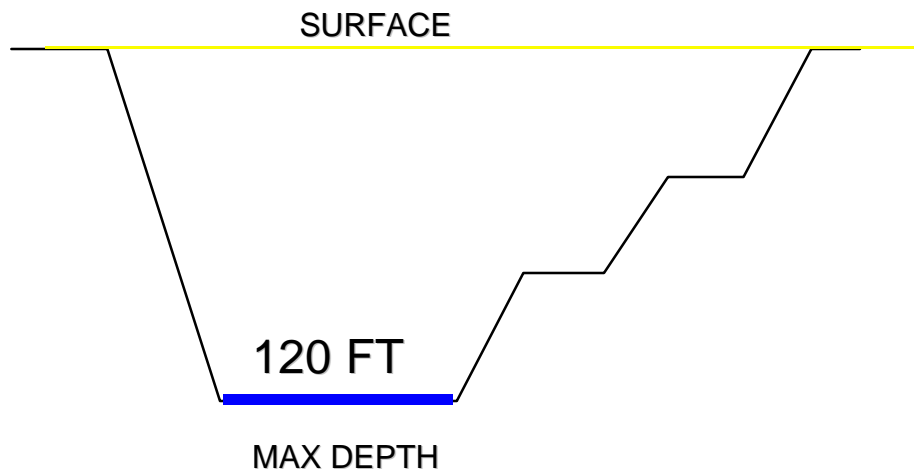
# DESCENT TIME



- ☉ The elapsed time required to attain maximum depth. Elapsed time from leaving surface pressure until maximum pressure is reached.

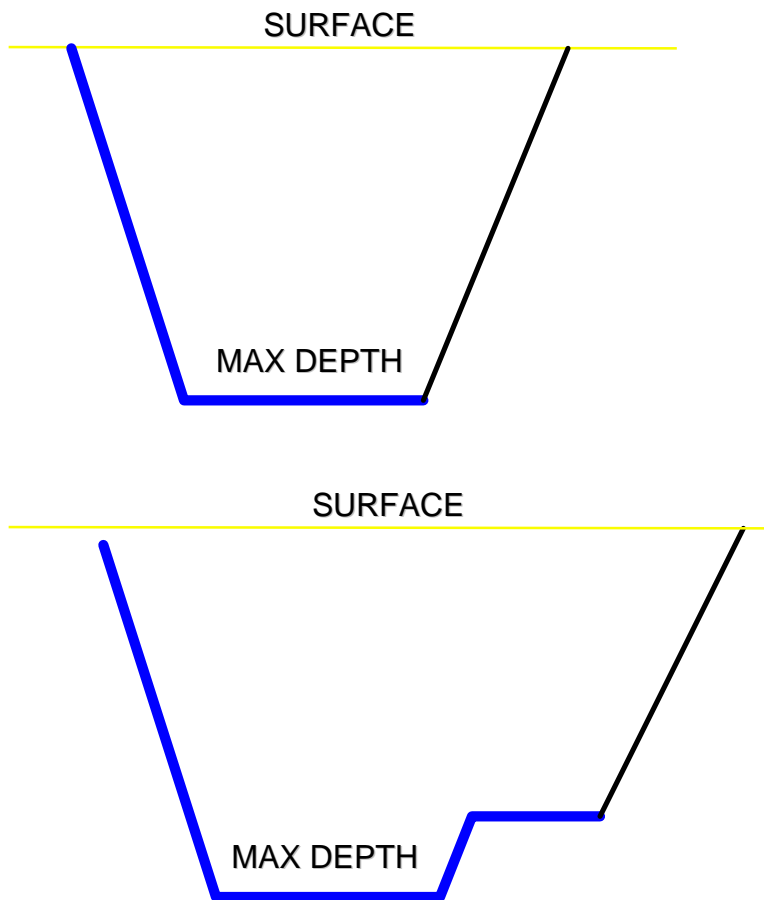


# BOTTOM OR DEPTH



- ☯ The maximum depth attained during the dive, measured in feet of sea water.

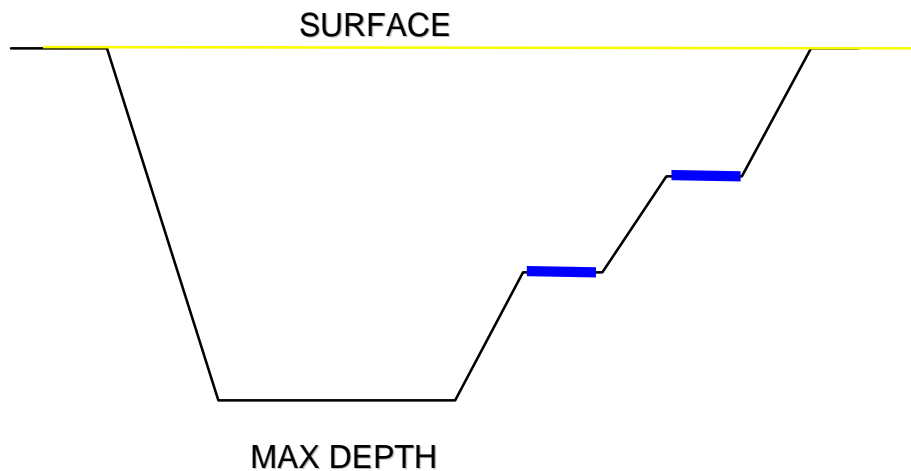
# TOTAL BOTTOM TIME (TBT)



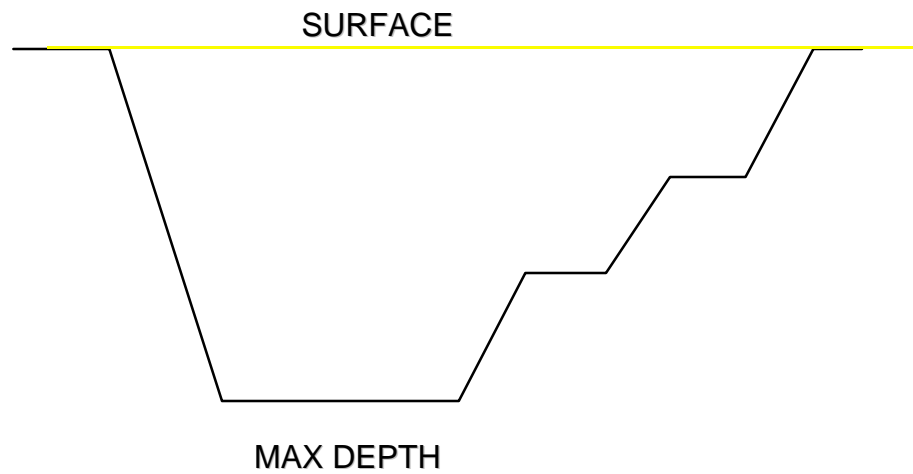
- ☯ THE ELAPSED TIME FROM LEAVING THE SURFACE UNTIL LEAVING MAXIMUM DEPTH. WHEN A DIVE TO MORE THAN ONE DEPTH IS SELECTED, THE T.B.T. SHOULD INCLUDE TIME FROM SURFACE TO LEAVING THE LAST DEPTH

# DECOMPRESSION STOP

- ☉ THE TIME SPENT AT SPECIFIED DEPTHS DURING AN ASCENT IN ORDER TO DESATURATE THE BODY TISSUES TO A SAFE LEVEL PRIOR TO REACHING SURFACE.

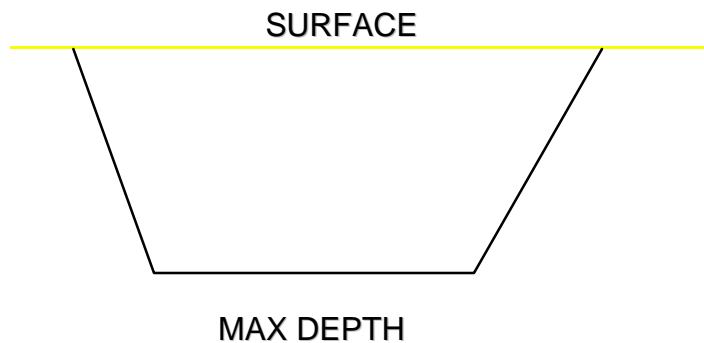


# DECOMPRESSION SCHEDULE



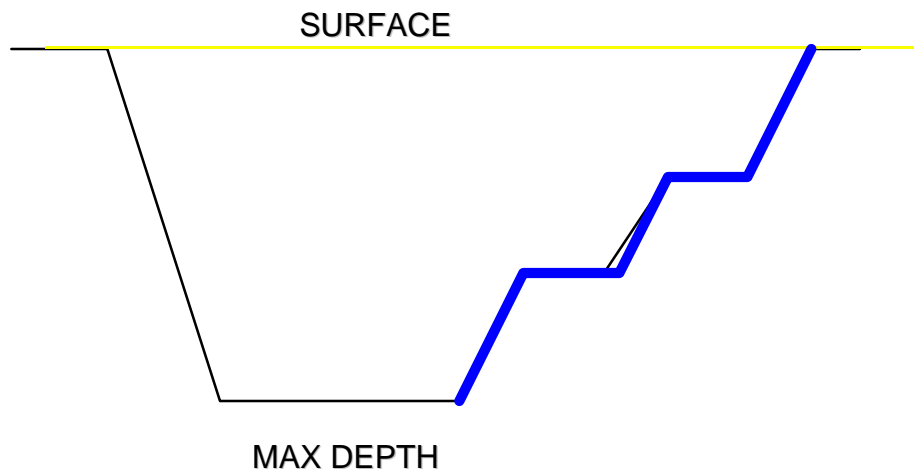
- ☉ SPECIFIC DECOMPRESSION PROCEDURE FOR A GIVEN COMBINATION OF DEPTH AND BOTTOM TIME AS LISTED IN A DECOMPRESSION TABLE;  
FEET/MINUTES

# NO DECOMPRESSION DIVE



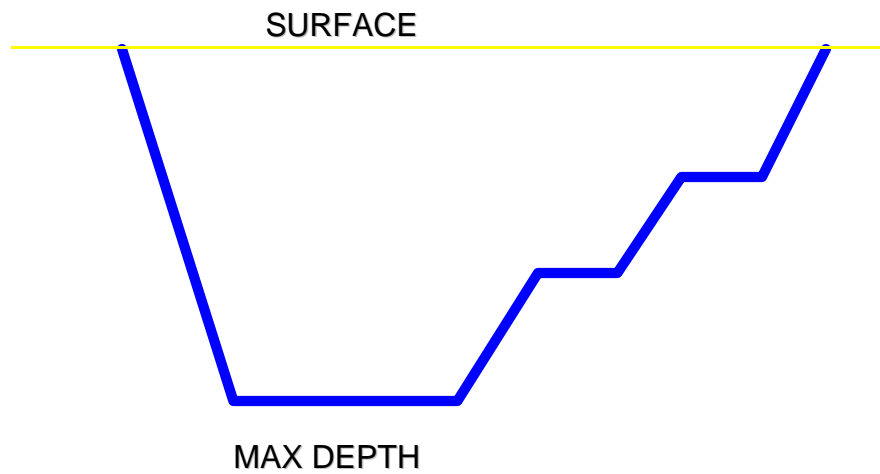
- ☯ A DIVE SCHEDULE WHICH DOES NOT REQUIRE ANY DECOMPRESSION STOPS DURING ASCENT TO SURFACE

# TOTAL DECOMPRESSION TIME (TDT)



- ☯ THE ELAPSED TIME FROM LEAVING MAXIMUM DEPTH UNTIL SURFACE IS REACHED. THE TOTAL TIME, INCLUDING DECOMPRESSION STOPS, REQUIRED TO ASCEND TO THE SURFACE

# TOTAL TIME OF DIVE (TTD)

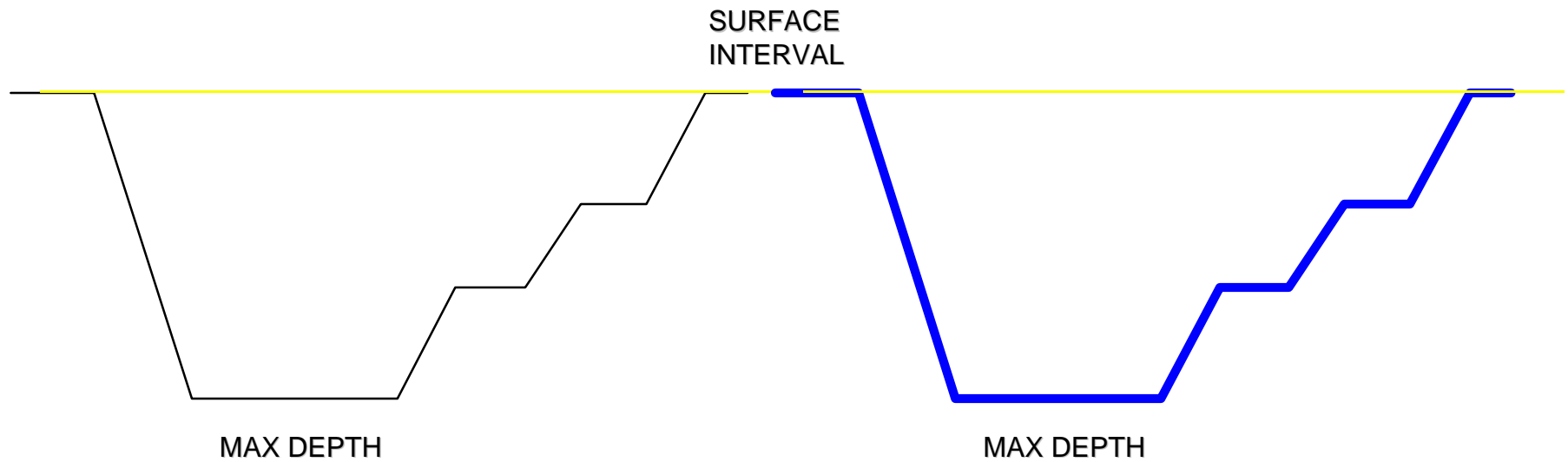


- ☉ THE ELAPSED TIME FROM LEAVING THE SURFACE TO REACHING SURFACE.

EQUALS THE  
T.B.T. + T.D.T.

# REPETITIVE DIVE

- ☯ ANY DIVE PERFORMED WITHIN 10 MINUTES TO 12 HOURS AFTER A PREVIOUS DIVE.



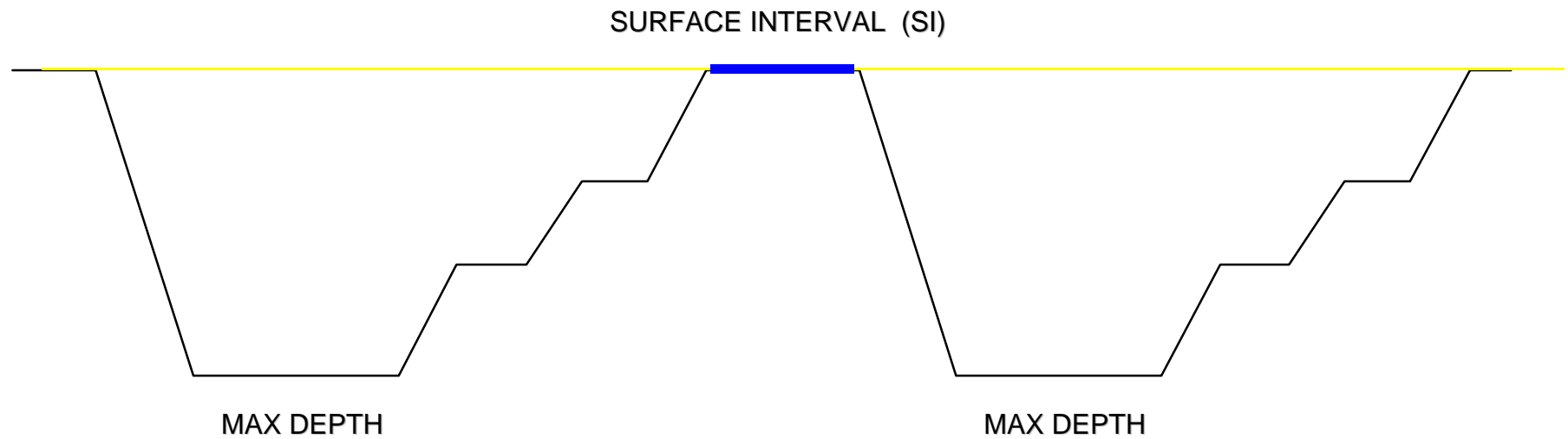


# RESIDUAL NITROGEN TIME

- REFERS TO THE EXCESS NITROGEN REMAINING IN THE BODY (GREATER THAN THE EQUILIBRIUM VALUE) AS A RESULT OF A GIVEN DIVE. IT IS EQUAL TO THE AMOUNT OF TIME AT THE *NEXT* DIVES DEPTH REQUIRED TO REACH THE LEVEL OF NITROGEN SATURATION FOUND IN THE BODYS TISSUES AT THE END OF THE SURFACE INTERVAL.

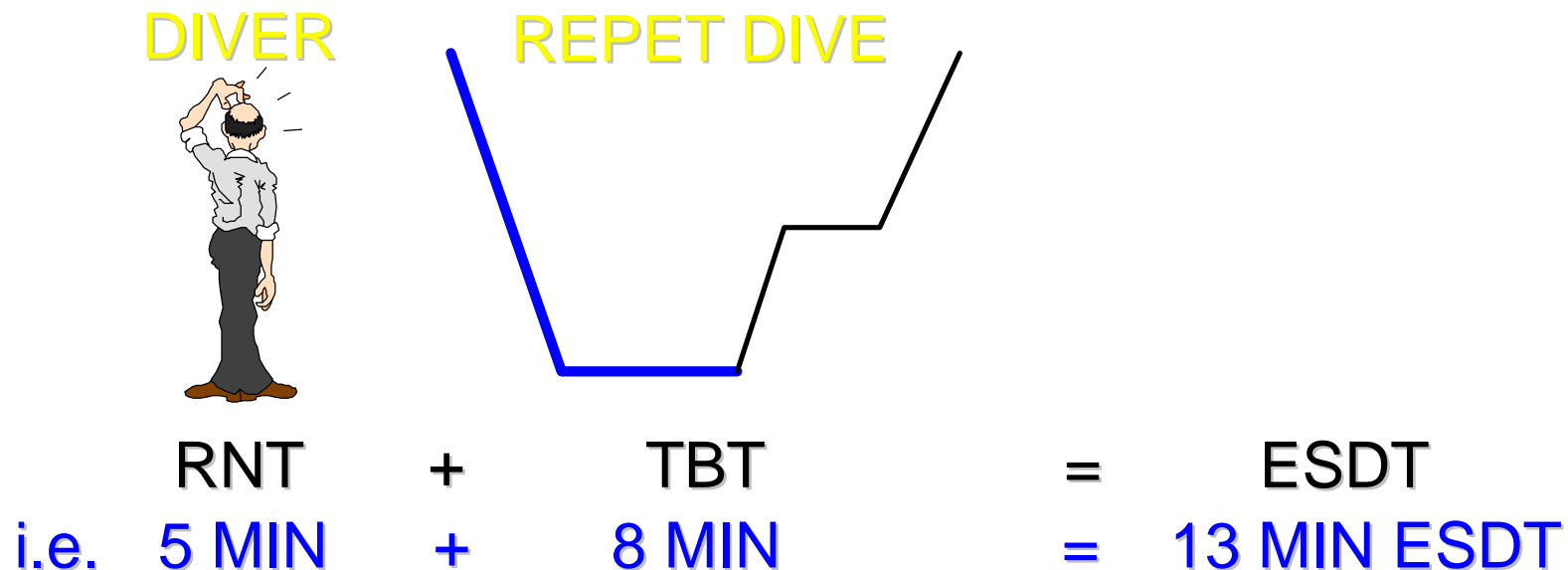
# SURFACE INTERVAL

- ☯ THE ELAPSED TIME SPENT AT THE SURFACE BETWEEN REPETITIVE DIVES.



# EQUIVALENT SINGLE DIVE (BOTTOM) TIME (ESDT)

- ☯ THE SUM OF THE RESIDUAL NITROGEN TIME (RNT) FOR A PREVIOUSLY EXPOSED DIVER AND THE ACTUAL TOTAL BOTTOM TIME (TBT) OF THE REPETITIVE DIVE.



# REPETITIVE GROUP

TABLE 7-3  
REPETITIVE-GROUP DESIGNATIONS FOR NO-DECOMPRESSION DIVES.

TABLE 7-4  
RESIDUAL NITROGEN TIMETABLE  
FOR REPETITIVE AIR DIVES

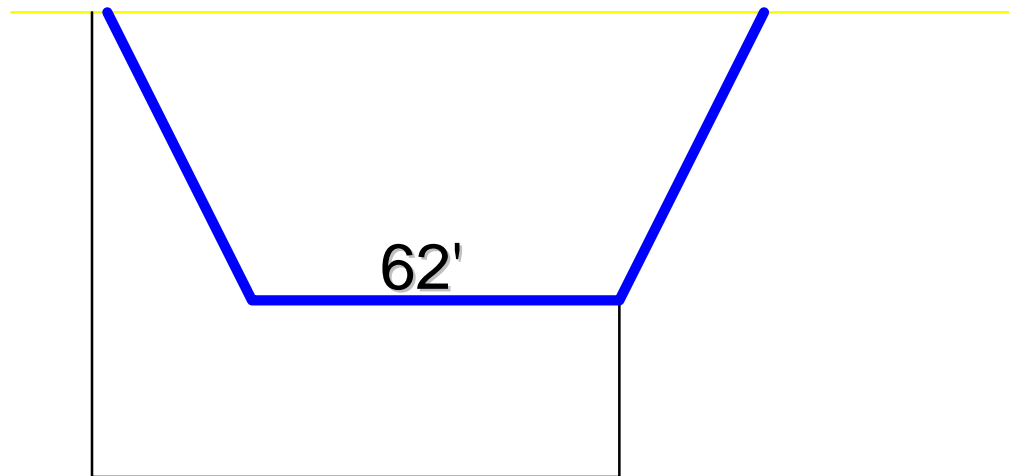
DEPTH (FEET)	10	15	20	25	30	35	40	50	60	70	80	90	100	110	120	130	140		
	60	35	25	20	5	5	--	--	--	--	--	--	--	--	--	--	--	--	A
120	70	50	35	30	15	15	10	10	5	5	5	5	5	5	5	5	5	B	0:10 2:11 12:00
210	110	75	55	45	25	25	15	15	10	10	5	5	5	5	5	5	5	C	0:10 1:39 2:50 13:00
300	160	100	75	60	40	30	25	20	15	15	10	10	10	10	10	10	10	D	0:10 1:09 2:39 5:49 13:00
	225	135	100	75	50	40	30	25	20	20	15	15	15	15	15	15	15	E	0:10 1:57 3:22 6:32 13:00
	350	180	125	95	60	50	40	30	30	25	20	20	20	20	20	20	20	F	0:10 0:45 1:29 2:28 3:58 7:06 13:00
		240	160	120	80	70	50	40	35	30	25	22	20	20	20	20	20	G	0:10 0:40 1:15 1:59 2:00 2:59 4:26 7:36 13:00
		325	195	145	100	80	60	50	40	35	30	25	25	25	25	25	25	H	0:10 0:36 1:06 1:41 1:42 2:24 3:21 4:50 8:00 13:00
		245	170	120	100	70	55	45	40									I	0:10 0:59 1:29 2:03 2:45 3:44 5:13 8:22 13:00
		315	205	140	110	80	60	50										J	0:10 0:32 0:54 1:19 1:20 1:48 2:21 3:05 4:03 5:41 8:41 13:00
			250	160	130	90												K	0:10 0:28 0:49 1:11 1:12 1:36 2:04 2:39 3:22 4:20 5:49 8:59 13:00
			310	190	150	100												L	0:10 0:26 0:45 1:04 1:05 1:26 1:50 2:20 2:54 3:37 4:36 6:03 9:13 13:00
				220	170													M	0:10 0:25 0:42 0:59 1:00 1:19 1:40 2:06 2:35 3:09 3:53 4:50 6:19 9:29 13:00
				270	200													N	0:10 0:25 0:39 0:54 1:11 1:12 1:33 1:54 2:19 2:48 3:23 4:05 5:04 6:33 9:44 13:00
				310														O	0:10 0:23 0:36 0:51 1:07 1:24 1:25 1:44 2:05 2:30 3:00 3:34 4:18 5:17 6:45 9:55 13:00

REPETITIVE DIVE DEPTHS	NEW GROUP DESIGNATION														
	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
40	241	213	187	161	138	116	01	87	73	61	49	37	25	1	7
50	160	142	124	111	99	87	76	68	56	47	38	29	21	1	6
60	117	107	97	88	79	70	61	52	44	36	30	24	17	1	5
70	96	87	80	72	64	57	50	43	37	31	26	20	15		4
80	80	73	68	61	54	48	43	38	32	28	23	18	13		4
90	70	64	58	53	47	43	38	33	28	24	20	16	11		3
100	62	57	52	48	43	38	34	30	26	22	18	14	10		3
110	55	51	47	42	38	34	31	27	24	20	16	13	10		3
120	50	46	43	39	35	32	28	25	21	18	14	11	8		3
130	44	40	38	35	31	28	25	22	19	16	13	10	7		3
140	40	38	36	32	29	26	23	20	18	15	12	9	7		2
150	38	35	32	30	27	24	22	19	17	14	12	9	7		2
160	36	33	31	28	26	23	20	18	16	13	11	9	7		2
170	34	31	29	26	24	22	19	17	15	13	10	8	7		2
180	31	29	27	25	22	20	18	16	14	12	10	8	7		2
190	30	28	26	24	21	19	17	15	13	11	10	8	7		2

THE REPETITIVE GROUP DESIGNATION LETTER FOR A PARTICULAR DIVE REPRESENTS THE AMOUNT OF EXCESS NITROGEN REMAINING IN THE BODY TISSUES DURING THE 12 HR PERIOD FOLLOWING THE DIVE.

# NO-DECO EXAMPLE

The Dive Profile



TBT = :25

DEPTH	TOTAL BOTTOM TIME	Decompression Stops					REPET GROUP
		50	40	30	20	10	
60	60					0	*
	70					2	K
	80					7	L
	100					14	M
	120					26	N
	140					39	O
	160					48	Z
	180					56	Z
	200				1	69	Z
70	50					0	*
	60					8	K
	70					14	L
	80					18	M
	90					23	N
	100					33	N
	110				2	41	O
	120				4	47	O
	130				6	52	O
	140				8	56	Z
150				9	61	Z	
160				13	72	Z	
170				19	79	Z	

\*See REPET Group Table 7-3

# Table 7-5: Standard Air Decompression Table

DEPTH	TOTAL BOTTOM TIME	Deco Stops			REPET GROUP
		30	20	10	
40	200	0			*
	210	2			N
	230	7			N
	250	11			O
	270	15			O
	300	19			Z
50	100	0			*
	110	3			L
	120	5			M
	140	10			M
	160	21			N
	180	29			O
	200	35			O
	220	40			Z
240	47			Z	

DEPTH	TOTAL BOTTOM TIME	Deco Stops			REPET GROUP
		30	20	10	
60	60	0			*
	70	2			K
	80	7			L
	100	14			M
	120	26			N
	140	39			O
	160	48			Z
	180	56			Z
70	200	1	69	Z	
	50	0			*
	60	8			K
	70	14			L
	80	18			M
	90	23			N
	100	33			N
	110	2	41	O	
	120	4	47	O	
	130	6	52	O	
	140	8	56	Z	
	150	9	61	Z	
	160	13	72	Z	
	170	19	79	Z	

DEPTH	TOTAL BOTTOM TIME	Deco Stops			REPET GROUP
		30	20	10	
80	40	0			*
	50	10			K
	60	17			L
	70	23			M
	80	2	31	N	
	90	7	39	N	
	100	11	46	O	
	110	13	53	O	
	120	17	56	Z	
	130	19	63	Z	
	140	26	69	Z	
90	150	32	77	Z	
	30	0			*
	40	7			J
	50	18			L
	60	25			M
	70	7	30	N	
	80	13	40	N	
	90	18	48	O	
	100	21	54	Z	
	110	24	61	Z	
	120	32	68	Z	
	130	5	36	74	Z

**EXCEPTIONAL  
EXPOSURES  
NOT SHOWN**

# Table 7-5: Standard Air Decompression Table

DEPTH H	TOTAL BOTTOM TIME	Deco Stops			REPET GROUP
		30	20	10	
1 0 0	25			0	*
	30			3	I
	40			15	K
	50		2	24	L
	60		9	28	N
	70		17	39	O
	80		23	48	O
	90	3	23	57	Z
	100	7	23	66	Z
	110	10	34	72	Z
120	12	41	78	Z	
1 1 0	20			0	*
	25			3	H
	30			7	J
	40		2	21	L
	50		8	26	M
	60		18	36	N
	70	1	23	48	O
	80	7	23	57	Z
	90	12	30	64	Z
	100	15	37	72	Z

DEPTH H	TOTAL BOTTOM TIME	Deco Stops			REPET GROUP
		30	20	10	
1 2 0	15			0	*
	20			2	H
	25			6	I
	30			14	J
	40		5	25	L
	50		15	31	N
	60	2	22	45	O
	70	9	23	55	O
	80	15	27	63	Z
	90	19	37	74	Z
100	23	45	80	Z	
1 3 0	10			0	*
	15			1	F
	20			4	H
	25			10	J
	30		3	18	M
	40		10	25	N
	50	3	21	37	O
	60	9	23	52	Z
	70	16	24	61	Z

DEPTH H	TOTAL BOTTOM TIME	Decompression Stops					REPET GROUP
		50	40	30	20	10	
1 4 0	10					0	*
	15					2	G
	20					6	I
	25				2	14	J
	30				5	21	K
	40			2	16	26	N
	50			6	24	44	O
	60			16	23	56	Z
	70		4	19	32	68	Z
	80		10	23	41	79	Z
1 5 0	5					0	C
	10					1	E
	15					3	G
	20				2	7	H
	25				4	17	K
	30				8	24	L
	40			5	19	33	N
	50			12	23	51	O
	60		3	19	26	62	Z
	70		11	19	39	75	Z
80	1	17	19	50	84	Z	

**EXCEPTIONAL EXPOSURES NOT SHOWN**

# Table 7-5: Standard Air Decompression Table

DEPTH	TOTAL BOTTOM TIME	Decompression Stops					REPET GROUP
		50	40	30	20	10	
160	5					0	D
	10					1	F
	15				1	4	H
	20				3	11	J
	25				7	20	K
	30			2	11	25	M
	40			7	23	39	N
	50		2	16	23	55	Z
	60		9	19	33	69	Z
170	5					0	D
	10					2	F
	15				2	5	H
	20				4	15	J
	25			2	7	23	L
	30			4	13	26	M
	40		1	10	23	45	O
	50		5	18	23	61	Z
	60	2	15	22	37	74	Z

DEPTH	TOTAL BOTTOM TIME	Decompression Stops					REPET GROUP	
		50	40	30	20	10		
180	5					0	D	
	10					3	F	
	15				3	6	I	
	20				1	5	17	K
	25				3	10	24	L
	30				6	17	27	N
	40			3	14	23	50	O
	50		2	9	19	30	65	Z
	60		5	16	19	44	81	Z
190	5					0	D	
	10				1	3	G	
	15				4	7	I	
	20				2	6	20	K
	25				5	11	25	M
	30			1	8	19	32	N
	40			8	14	23	55	O

**EXCEPTIONAL EXPOSURES NOT SHOWN**



# USAF TABLE 7-2

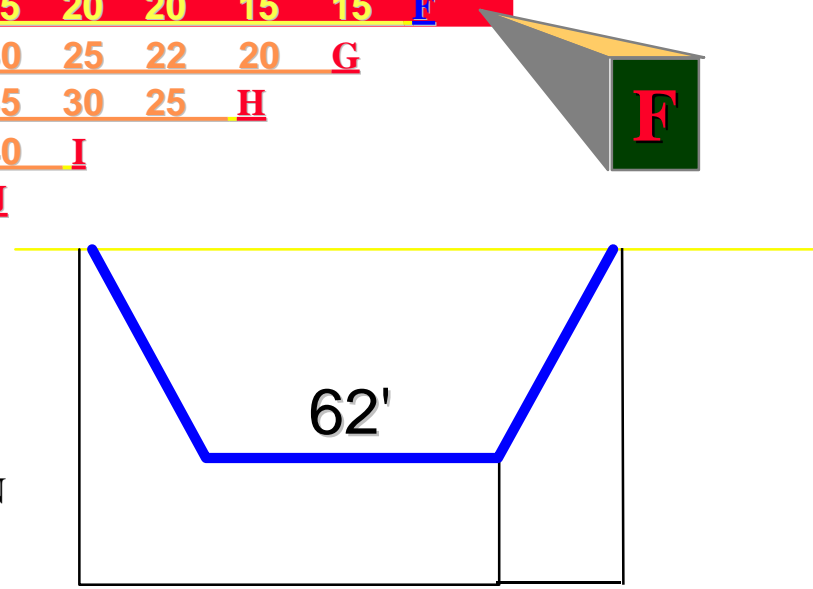
## Historical Note

- ☯ Developed 1964 - Bending Chamber Techs
  - 😊 Bruce Bassett - Brooks AFB Hyperbarics
  - 😊 Derived from US Navy Standard Air Deco Tables
    - ☹ Add 5 min to your total bottom time
    - ☹ Add 1 foot to your actual depth
    - ☹ Use next Shallower depth to find RNT (Table 7-4)
    - ☹ O<sub>2</sub> used at Deco Stops < 40 FSW (added in ~1974)
- ☯ Replaced in 1998 - “NOBENDEM”
  - 😊 Benton Zwart - Brooks AFB Hyperbarics
  - 😊 10 tissue compartment spreadsheet calculator (Excel)
    - ☹ Real-time Haldanian model calculations with safety factors

# TABLE 7-3

10	15	20	25	30	35	40	50	60	70	80	90	100	110	120	130	140	
60	35	25	20	15	5	5	--	--	--	--	--	--	--	--	--	--	<b>A</b>
120	70	50	35	30	15	15	10	10	5	5	5	5	--	--	--	--	<b>B</b>
210	110	75	55	45	25	25	15	15	10	10	10	7	5	5	5	5	<b>C</b>
300	160	100	75	60	40	30	25	20	15	15	12	10	10	10	8	7	<b>D</b>
225	135	100	75	50	40	30	25	20	20	15	15	13	12	10	10		<b>E</b>
350	180	125	95	60	50	40	30	30	25	20	20	15	15	15	15		<b>F</b>
240	160	120	80	70	50	40	35	35	30	25	22	20	20				<b>G</b>
325	195	145	100	80	60	50	40	40	35	30	25						<b>H</b>
245	170	120	100	70	55	45	40	40									<b>I</b>
315	205	140	110	80	60	50											<b>J</b>
250	160	130	90														<b>K</b>
310	190	150	100														<b>L</b>
220	170																<b>M</b>
270	200																<b>N</b>
310																	<b>O</b>

**TABLE 7-3**  
 USE THE ACTUAL OR NEXT GREATER DEPTH THAN THE DEPTH OF DIVE, FOLLOW THE ROW DOWN TO THE ACTUAL OR NEXT GREATER THAN ACTUAL TOTAL BOTTOM TIME , THEN FOLLOW THAT ROW TO THE RIGHT FOR THE REPET GROUP DESIGNATION



$$TTD = :25 + :01 = :26$$

(TBT)+(TDT)

TABLE 7-3  
REPETITIVE-GROUP DESIGNATIONS FOR NO-DECOMPRESSION DIVES.

TABLE 7-4  
RESIDUAL NITROGEN TIMETABLE  
FOR REPETITIVE AIR DIVES

DEPTH (FEET)	10	15	20	25	30	35	40	50	60	70	80	90	100	110	120	130	140	
TOTAL	60	35	25	20	15	5	5	--	--	--	--	--	--	--	--	--	--	A
	120	70	50	35	30	15	15	10	10	5	5	5	5	--	--	--	--	B
	210	110	75	55	45	25	25	15	15	10	10	10	7	5	5	5	5	C
	300	160	100	75	60	40	30	25	20	15	15	12	10	10	10	8	7	D
BOTTOM	225	135	100	75	50	40	30	25	20	15	15	15	13	12	10	10	10	E
	350	180	125	95	60	50	40	30	30	25	20	20	15	15	15	15	15	F
	240	160	120	80	70	50	40	35	30	25	22	20	20	20	20	20	20	G
	325	195	145	100	80	60	50	40	35	30	25	25	25	25	25	25	25	H
TIME	245	170	120	100	70	55	45	40	40	35	30	25	25	25	25	25	25	I
	315	205	140	110	80	60	50	50	45	40	35	30	25	25	25	25	25	J
TBT	250	160	130	90	90	90	90	90	90	90	90	90	90	90	90	90	90	K
	310	190	150	100	100	100	100	100	100	100	100	100	100	100	100	100	100	L
	220	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	M
	270	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	N
	310	310	310	310	310	310	310	310	310	310	310	310	310	310	310	310	310	O

NOTES:

TABLE 7-3

USE THE ACTUAL OR NEXT GREATER DEPTH THAN THE DEPTH OF DIVE, FOLLOW THE ROW DOWN TO THE ACTUAL OR NEXT GREATER THAN ACTUAL TOTAL BOTTOM TIME, THEN FOLLOW THAT ROW TO THE RIGHT FOR THE REPET GROUP DESIGNATION

TABLE 7-4 (Updated per NEDU Report 13-83)

READ ACROSS, HORIZONTALLY TO SURFACE INTERVAL, READ DOWNWARD TO THE NEW GROUP DESIGNATION, CONTINUE DOWNWARD TO THE REPETITIVE DIVE DEPTH. THE NUMBER AT THE INTERSECTION IS THE RNT

IF THE SURFACE INTERVAL IS LESS THAN 10 MIN. USE THE TBT OF THE PREVIOUS DIVE FOR THE RNT

USE EXACT DEPTH, ROUND DEEPER TO NEAREST DEPTH IF EXACT DEPTH NOT LISTED (if exact depth is 63 round deeper to 70)

NEW GROUP DESIGNATION

REPETITIVE DIVE DEPTHS

	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
40	241	213	187	161	138	116	101	87	73	61	49	37	25	17	7
50	160	142	124	111	99	87	76	68	56	47	38	29	21	13	6
60	117	107	97	88	79	70	61	52	44	36	30	24	17	11	5
70	96	87	80	72	64	57	50	43	37	31	26	20	15	9	4
80	80	73	68	61	54	48	43	38	32	28	23	18	13	8	4
90	70	64	58	53	47	43	38	33	28	24	20	16	11	7	3
100	62	57	52	48	43	38	34	30	26	22	18	14	10	7	3
110	55	51	47	42	38	34	31	27	24	20	16	13	10	6	3
120	50	46	43	39	35	32	28	25	21	18	15	12	9	6	3
130	44	40	38	35	31	28	25	22	19	16	13	11	8	6	3
140	40	38	36	32	29	26	23	20	18	15	12	10	7	5	2
150	38	35	32	30	27	24	22	19	17	14	12	9	7	5	2
160	36	33	31	28	26	23	20	18	16	13	11	9	6	4	2
170	34	31	29	26	24	22	19	17	15	13	10	8	6	4	2
180	31	29	27	25	22	20	18	16	14	12	10	8	6	4	2
190	30	28	26	24	21	19	17	15	13	11	10	8	6	4	2

# DECOMPRESSION TABLES

## ☯ No Decompression Limits

- ☺ do not apply shallower than 35 fsw
- ☺ residual nitrogen is always a consideration

## ☯ Schedule selection

- ☺ all dives are “square” dives
- ☺ always select equal or greater depth
- ☺ always select equal or greater bottom time
- ☺ use longer schedule for cold and stress

# No-Decompression Limits and Repetitive Group Designation Tables

Depth (ft/m)	No-D Limits (min)	Group Designation															
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
10	3.0	60	120	210	300												
15	4.6	35	70	110	160	225	350										
20	6.1	25	50	75	100	135	180	240	325								
25	7.6	20	35	55	75	100	125	160	195	245	315						
30	9.1	15	30	45	60	75	95	120	145	170	205	250	310				
35	10.7	310	5	15	25	40	50	60	80	100	120	140	160	190	220	270	310
40	12.2	200	5	15	25	30	40	50	70	80	100	110	130	150	170	200	
50	15.2	100		10	15	25	30	40	50	60	70	80	90	100			
60	18.2	60		10	15	20	25	30	40	50	55	60					
70	21.3	50		5	10	15	20	30	35	40	45	50					
80	24.4	40		5	10	15	20	25	30	35	40						
90	27.4	30		5	10	12	15	20	25	30							
100	30.5	25		5	7	10	15	20	22	25							
110	33.5	20			5	10	13	15	20								
120	36.6	15			5	10	12	15									
130	39.6	10			5	8	10										
140	42.7	10			5	7	10										
150	45.7	5			5												
160	48.8	5				5											
170	51.8	5				5											
180	54.8	5				5											
190	59.9	5				5											

Times Listed Are  
Total Bottom Times!

# DECOMPRESSION TABLES

## ☯ General Use of Decompression Tables

- ☺ only a USAF Hyperbaric Specialist or Navy DMO can recommend deviation from the standard decompression tables

## ☯ Rules of Ascent

- ☺ 30 fpm (minor variation acceptable)
- ☺ delay of up to one minute permitted
- ☺ stop time starts at stop depth

# DECOMPRESSION TABLES

## ☯ Variations in Rate of Ascent

- ☺ delays over 1 min ( $> 50$  fsw) are added to BT
- ☺ delays over 1 min ( $< 50$  fsw) are added to first decompression stop
- ☺ any rate faster than 30 fpm must STOP
- ☺ rule-of-thumb in SCUBA is ascend with bubbles

# DECOMPRESSION TABLES

## ☯ US Navy Standard Air Decompression Tables

- 😊 exceptional exposures in red
  - ☹ (Navy CO needs CNO approval of plan)
- 😊 repet dives not permitted after exceptional exposure
- 😊 standard dives all list repetitive groups
- 😊 reminder: ESDT is used to decompress from repet dive



Table 7-5 U.S. Navy Standard Air Decompression Table.

Depth feet/meters	Bottom time (min)	Time first stop (min:sec)	Decompression stops (feet/meters)					Total decompression time (min:sec)	Repetitive group	
			50	40	30	20	10			
60 18.2	60		15.2	12.1	9.1	6.0	3.0	0	1:00	*
	70	1:40						2	3:00	K
	80	1:40						7	8:00	L
	100	1:40						14	15:00	M
	120	1:40						26	27:00	N
	140	1:40						39	40:00	O
	160	1:40						48	49:00	Z
	180	1:40						56	57:00	Z
	200	1:20					1	69	71:00	Z
	240	1:20					2	79	82:00	**
	360	1:20					20	119	140:00	**
	480	1:20					44	148	193:00	**
720	1:20					78	187	266:00	**	

\* See No Decompression Table (7-3) for repetitive groups

\*\* Repetitive dives may not follow exceptional exposure dives

Table 7-5 U.S. Navy Standard Air Decompression Table.

Depth feet/meters	Bottom time (min)	Time first stop (min:sec)	Decompression stops (feet/meters)					Total decompression time (min:sec)	Repetitive group	
			50	40	30	20	10			
90 28.7	30		15.2	12.1	9.1	6.0	3.0	0	1:30	*
	40	2:20						7	8:30	J
	50	2:40						18	19:30	L
	60	2:40						25	26:30	M
	70	2:20				7	30		38:30	N
	80	2:20				13	40		54:30	N
	90	2:20				18	48		67:30	O
	100	2:20				21	54		76:30	Z
	110	2:20				24	61		86:30	Z
	120	2:20				32	68		101:30	Z
130	2:00			5	36	74		116:30	Z	

\* See No Decompression Table (7-3) for repetitive groups

\*\* Repetitive dives may not follow exceptional exposure dives

# REPETITIVE DIVE EXAMPLE

- ☯ A SCUBA diver leaves surface at 1017 leaves the bottom at 1100 reporting a max depth of 52 fsw. This diver is scheduled to make a dive to 75 fsw in 4 hours. What is the maximum, no-deco bottom time for the second (repet) dive?

Table 7-3 No-Decompression Limits and Repetitive Group Designation Table for No-Decompression Air Dives

Depth (feet/ m)	No-D Limits (min)	Group Designation															
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
10	3.0	60	120	210	300												
15	4.6	35	70	110	160	225	350										
20	6.1	25	50	75	100	135	180	240	315								
25	7.6	20	35	55	75	100	125	160	185	245	315						
30	9.1	15	30	45	60	75	95	120	145	170	205	250	310				
35	10.7	310	5	15	25	40	50	60	80	100	120	140	160	190	220	270	310
40	12.2	200	5	15	25	30	40	50	70	80	100	110	130	150	170	200	
50	15.2	100		10	15	25	30	40	50	60	70	80	90	100			
60	18.2	60		10	15	20	25	30	40	50	55	60					
70	21.3	50		5	10	15	20	30	35	40	45	50					
80	24.4	40		5	10	15	20	25	30	35	40						
90	27.4	30		5	10	12	15	20	25	30							
100	30.5	25		5	7	10	15	20	22	25							
110	33.5	20			5	10	13	15	20								
120	39.6	10			5	10	12	15									
130	39.6	10			5	8	10										
140	42.7	10			5	7	10										
150	45.7	5			5												
160	48.8	5				5											
170	51.8	5					5										
180	54.8	5						5									
190	59.0	5							5								

Times Listed Are  
Total Bottom Times!

## Table 7-4. Residual Nitrogen Timetable for Repetitive Air Dives

Locate the diver's repetitive group designation from his previous dive along the diagonal line above the table. Read horizontally to the interval in which the diver's surface interval lies.

Next read vertically downward to the new repetitive group designation. Continue downward in this same column to the row which represents the depth of the repetitive dive. The time given at the intersection is residual nitrogen time, in minutes, to be applied to the repetitive dive.

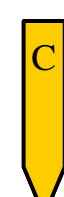
\* Dives following surface intervals of more than 12 hours are not repetitive dives. Use actual bottom times in the Standard Air Decompression Tables to compute decompression for such dives.

\*\* If no Residual Nitrogen Time is given, then the repetitive group does not change.

Changes based on NEDU Report 13-83

													A		0:10															
													B		0:10	3:21	12:00*													
													C		0:10	1:40	4:50	12:00*												
													D		0:10	1:10	2:39	5:49												
													E		0:10	0:55	1:58	3:25	6:35	12:00*										
													F		0:10	0:46	1:30	2:29	3:58	7:06										
													G		0:10	0:41	1:16	2:00	2:59	4:26	7:36									
													H		0:10	0:37	1:07	1:42	2:24	3:21	4:50	8:00								
													I		0:10	0:34	1:00	1:30	2:03	2:45	3:44	5:13	8:22							
													J		0:10	0:32	0:55	1:20	1:48	2:21	3:05	4:03	5:41	8:51						
													K		0:10	0:29	0:50	1:12	1:36	2:04	2:39	3:22	4:20	5:49	8:59					
													L		0:10	0:27	0:46	1:05	1:26	1:50	2:20	2:54	3:37	4:36	6:03	9:13				
													M		0:10	0:26	0:43	1:00	1:19	1:40	2:06	2:35	3:09	3:53	4:50	6:19	9:29			
													N		0:10	0:25	0:40	0:55	1:12	1:31	1:54	2:19	2:48	3:23	4:05	5:04	6:33	9:44		
													O		0:10	0:24	0:37	0:52	1:08	1:25	1:44	2:05	2:30	3:00	3:34	4:18	5:17	6:45	9:55	
													Z		0:10	0:23	0:36	0:51	1:07	1:24	1:43	2:04	2:29	2:59	3:33	4:17	5:16	6:44	9:54	12:00*
													Z		0:10	0:23	0:35	0:49	1:03	1:19	1:37	1:56	2:18	2:43	3:11	3:46	4:30	5:28	6:57	10:06
													Z		0:22	0:34	0:48	1:02	1:18	1:36	1:55	2:17	2:42	3:10	3:45	4:29	5:27	6:56	10:05	12:00*
													Z												C					
													Z												B					
													Z												A					
													Z												NEW GROUP DESIGNATION					

Repetitive group at the beginning of the surface interval



Repetitive Dive Depth Feet/meters	Z	O	N	M	L	NEW GROUP DESIGNATION						F	E	D	C	B	A	
10 3.0	**	**	**	**	**	**	**	**	**	**	**	**	**	**	279	159	88	39
20 6.1	**	**	**	**	**	**	**	**		399	279	208	159	120	88	62	39	18
30 9.1	**	**	469	349	279	229	199	159	132	109	88	70	54	39	25	12		
40 12.2	257	241	213	187	161	138	116	101	87	73	61	49	37	25	17	7		
50 15.2	169	160	142	124	111	99	87	76	66	56	47	38	29	21	13	6		
60 18.2	122	117	107	97	88	79	70	61	52	44	36	30	24	17	11	5		
70 21.3	100	96	87	80	72	64	57	50	43	37	31	26	20	15	9	4		
80 24.4	84	80	73	68	61	54	48	43	38	32	28	23	18	13	8	4		
90 27.4	73	70	64	58	53	47	43	38	33	29	24	20	16	11	7	3		
100 30.5	64	62	57	52	48	43	38	34	30	26	22	18	14	10	7	3		
110 33.5	57	55	51	47	42	38	34	31	27	24	20	16	13	10	6	3		
120 36.6	52	50	46	43	39	35	32	28	25	21	18	15	12	9	6	3		
130 39.6	46	44	40	38	35	31	28	25	22	19	16	13	11	8	6	3		
140 42.7	42	40	38	35	32	29	26	23	20	18	15	12	10	7	5	2		
150 45.7	40	38	35	32	30	27	24	22	19	17	14	12	9	7	5	2		
160 48.8	37	36	33	31	28	26	23	20	18	16	13	11	9	6	4	2		
170 51.8	35	34	31	29	26	24	22	19	17	15	12	10	8	6	4	2		
180 54.8	32	31	29	27	25	22	20	18	16	14	11	10	8	6	4	2		
190 59.9	31	30	28	26	24	21	19	17	15	13	10	10	8	6	4	2		

Residual Nitrogen Times (Minutes)

Table 7-3 No-Decompression Limits and Repetitive Group Designation Table for No-Decompression Air Dives

Depth (feet/ m)	No-D Limits (min)	Group Designation															
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
10	3.0	60	120	210	300												
15	4.6	35	70	110	160	225	350										
20	6.1	25	50	75	100	135	180	240	325								
25	7.6	20	35	55	75	100	125	160	195	245	315						
30	9.1	15	30	45	60	75	95	120	145	170	205	250	310				
35	10.7	310	5	15	25	40	50	60	80	100	120	140	160	190	220	270	310
40	12.2	200	5	15	25	30	40	50	70	80	100	110	130	150	170	200	
50	15.2	100		10	15	25	30	40	50	60	70	80	90	100			
60	18.2	60		10	15	20	25	30	40	50	55	60					
70	21.3	50		5	10	15	20	30	35	40	45	50					
80	24.4	40		5	10	15	20	25	30	35	40						
90	27.4	30		5	10	12	15	20	25	30							
100	30.5	25		5	7	10	15	20	22	25							
110	33.5	20			5	10	13	15	20								
120	39.6	10			5	10	12	15									
130	39.6	10			5	8	10										
140	42.7	10			5	7	10										
150	45.7	5			5												
160	48.8	5			5												
170	51.8	5			5												
180	54.8	5			5												
190	58.0	5			5												

Times Listed Are  
Total Bottom Times!

# Solution

- ☯ Total Time of Dive #1 = 43 minutes
- ☯ Table 7-3: 60 FSW / 50 min => “H” repet group
- ☯ Table 7-4: H repet after 4:00 => “C” Diver
- ☯ Table 7-4: C diver to 80 FSW => 13 Min RNT
- ☯ Table 7-3: Max No-Deco TBT at 80 FSW = 40 Min
- ☯ Dive #2 ESDT = 40 Min = RNT + TBT(#2)
- ☯ Dive #2 Max Bottom Time = 40 - 13 = 27 Min



# DECOMPRESSION TABLES

## ☯ RNT Exception Rule

- ☺ when repetitive dive is made to same or greater depth
  - ☹ (poor dive planning)
- ☺ RNT determined may be longer than BT of previous dive
- ☺ usually only occurs when first dive is shallow and brief
- ☺ solution is to add BT of first dive to get ESDT

# QUESTIONS

