Naval Diving and Salvage Training Center

FORMULA BOOK

IAW U.S. Navy Diving Manual

PREPARED BY
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Changes

DATE REVISED	REASON	INITIALS
13 Jul 10	CFR dated 20 Jun 10	AMT
21 Mar 11	Updated Time Fuse Burn	FPC

Table of Contents

Surface Supplied Floodable Volumes

			TOTAL
FARCC	I/L 136 cu ft	O/L 65 cu ft	201 cu ft
SNDL chamber	I/L 123 cu ft	O/L 69 cu ft	192 cu ft
RCF 5000	I/L 162 cu ft	O/L 61 cu ft	223 cu ft
RCF6500	I/L 440 cu ft	O/L 144 cu ft	584 cu ft
TRCS	I/L 45 cu ft	O/L 45.5 cu ft	90.5 cu ft
Army aluminum chamber	I/L 192 cu ft	O/L 37 cu ft	229 cu ft
Steel chamber	I/L 285 cu ft	O/L 140 cu ft	425 cu ft
Steel chamber (T-ARS 50)	I/L 134 cu ft	O/L 68 cu ft	202 cu ft
Scuba tank alum. 100	.470 cu ft		
Scuba tank alum. 80	.399 cu ft		
Scuba tank alum. 63	.319 cu ft		
Scuba tank alum. 50	..281 cu ft		
Scuba tank steel 120	.526 cu ft		
Scuba tank steel 100	.445 cu ft		
Scuba tank steel 72	.420 cu ft		
O2 bottle (K) 1800	1.64 cu ft		
O2 bottle (J) 3500	1.568 cu ft		
O2 cylinder (E) (2015 psi)	.163 cu ft		
O2 cylinder (D) (2015 psi)	.099 cu ft		
FADS III – ASRA Flask	3.15 cu ft		
MK3 (LWDS) - Flask	.935 cu ft		
SDASS – DASS Flask	3.15 cu ft		
SDASS – VTA Tank	8 cu ft		
Mini VTA	4 cu ft		
OSF Complex Volumes			
• Wet chamber	7100 cu ft		
• ‘A’ and ‘E’ chambers	440 cu ft (each)		
• ‘B’ and ‘D’ chambers	620 cu ft (each)		
• ‘C’ chamber	540 cu ft		
• Trunk	330 cu ft		
• Service Lock (5 locks)	3.7 cu ft (each)		
OSF Complex Total			3300 cu ft
OSF Gas Flask (2400 psi) (8 @ 2400 psi)	78.7 cu ft ea		

Conversion Formulas

Depth (fsw) to ATA : $\frac{\text{(Depth + 33)}}{33} = \text{ATA}$ (Carry two decimal places)

ATA to Depth (fsw) : (ATA -1) X 33 = Depth (Round up to the next whole number)

PSIG to ATA : $\frac{\text{(PSIG + 14.7)}}{14.7} = \text{ATA}$ (Carry two decimal places)

ATA to PSIG: (ATA - 1) X 14.7 = PSIG (Round up to the next whole number)

Depth (fsw) to PSIG: Depth x .445 = PSIG (Round up to the next whole number)

PSIG to Depth (fsw): $\frac{\text{PSIG}}{.445} = \text{Depth}$ (Round up to the next whole number)

PP of gas ATA x % gas = PP in ATA (Carry two decimal places)

SEV = $\frac{\text{PP@ depth (in ATA) x 100\%}}{\text{1 ATA}}$ (Carry two decimal places)

CO_2 SEV = $\frac{1.5}{\text{ATA}}$ (x 100 = CO_2 %) (Carry two decimal places)

PSIG to PSIA: PSIG + 14.7 = PSIA (Round up to next whole number)

Percentage to decimal: move decimal 2 places left or divide by 100

Decimal to percent: move decimal 2 places right or multiply by 100

Decimal to minutes or seconds: decimal x 60 = minutes of seconds

Minutes or seconds to decimal: $\frac{\text{minutes or seconds}}{60} = \text{decimal}$

PP in ATA to PP in mmHg: ATA X 760

PP in mmHg to PP in ATA: mmHg divided by 760

Percent to ppm: Move decimal 4 places right or multiply by 10,000

PPM to percent: Move decimal 4 places left or divide by 10,000

AIR/O2 Trading Ratio at that stop $\frac{\text{Total Air Stop time}}{\text{Total O2 Stop time}} = \text{Air/O2 Trading Ratio}$

AIR/O2 Period Conversion $\frac{\text{O2 Time Remaining x 1.1}}{:30} = \text{Chamber O2 Periods}$ (Round up to next whole minute)

SCF to ACF: $\frac{\text{scf}}{\text{ata}} = \text{acf}$ (Carry two decimal places)

ACF to SCF: ata x acf = scf (Carry two decimal places)

Fahrenheit to Celsius: $\frac{5(F – 32)}{9} = C$ (Carry one decimal places)

Celsius to Fahrenheit: $(\frac{9}{5} \text{ X } C) + 32 = F$ (Carry one decimal place)

Fahrenheit to Absolute: F + 460 = Degrees Rankine

Celsius to Absolute: C + 273 = Degrees Kelvin

Divers Breathing Requirements (ACFM)

System	Descent / Bottom	Ascent/Decompression Stops	Heavy Work / Free Flow Vent
MK-21	1.4 ACFM	.75	6 ACFM / 8 ACFM
KM 37	1.4 ACFM	.75	6 ACFM / 8 ACFM
MK-20	1.4 ACFM		
SCUBA	1.4 ACFM		
O_2 BIBS	.3 ACFM		.3 ACFM

Surface Supplied Diving Formulas

<u>Minimum Manifold Requirements (MMP):</u>

A) MK-20 / MK-21 / KM-37

1) 60 FSW or shallower
   (D x .445) + 90 = MMP (round up to next whole number)

2) 61 FSW to 130 fsw
   (D x .445) + 135 = MMP (round up to next whole number)

3) 130 fsw or deeper
   (D x .445) + 165 = MMP (round up to next whole number

Surface Supplied Diving Formulas (Continued)

Compressors:

A) Rating: Capacity in SCFM and delivery of pressure in PSIG

B) Output: PSIG after charging – PSIG before charging =

$$\frac{\text{PSIG charged}}{14.7} = \text{ATM}$$

ATM x N x FV = SCF (round down to next whole number)
N = number of flasks
FV = floodable volume of flasks (cu ft)

$$\frac{\text{SCF charged}}{T} = \text{SCF output}$$

T = Actual time to charge in minutes

C) Compressor percent efficiency:

$$\frac{\text{Compressor SCFM output}}{\text{Compressor SCFM rating}} \times 100 = \text{Percent efficiency}$$

(Round down to next whole number)

D) Flow requirements:

ATA x ACFM x N = SCFM required (round up to next whole number)

ACFM - average consumption rate
N - number of divers including standby

E) Compressor depth limit: Note: add output of all compressors used to get total SCFM
(Use the shallower output of steps 1 and 2)

1) SCFM output:

$$\frac{\text{Total SCFM} \times 33}{\text{ACFM} \times N} - 33 = \text{Depth Limit}$$

Total SCFM - Output of compressor (s)
ACFM - Average consumption rate
N - Number of divers including standby

2) Pressure rating:

60 fsw or shallower

$$\frac{\text{PSIG} - 90}{.445} = \text{Depth Limit}$$

(round down to next whole number)

Surface Supplied Diving Formulas (Continued)

61 fsw to 130 fsw

$$\frac{\text{PSIG} - 135}{.445} = \text{Depth Limit}$$

(round down to next whole number)

130 fsw or deeper

$$\frac{\text{PSIG} - 165}{.445} = \text{Depth Limit}$$

(round down to next whole number)

PSIG = rated delivery pressure of compressor

F) Time to charge:

$$\frac{\text{SCF deficit}}{\text{SCFM compressor output}} = \text{Time to charge} \quad \text{(minutes)}$$

(Round up to next whole number)

Duration of SCUBA Air Supply

There are three steps in calculating how long a diver's air supply will last:

1. Calculate the diver's consumption rate:

$$C = \frac{D + 33}{33} \times \text{RMV}$$

Where : C = Diver's consumption rate, standard cubic feet per minute (scfm)
D = Depth, fsw
RMV = Diver's Respiratory Minute Volume, actual cubic feet per minute (acfm)

Duration of SCUBA Air Supply (Continued)

2. Calculate the available air capacity provided by the cylinders. The air capacity must be expressed as the capacity that will actually be available to the diver, rather than as a total capacity of the cylinder. The formula for calculating the available air capacity is:

$$V_a = \frac{P_C - P_m}{14.7} \times FV \times N$$

Where: P_c = Measured cylinder pressure, psig
P_m = Minimum pressure of cylinder, psig
FV = Floodable Volume (scf)
N = Number of cylinders
V_a = Capacity available

3. Calculate the duration of the available capacity (in minutes) by using this formula:

$$\text{Duration} = \frac{V_a}{C}$$

Where:
V_a = Capacity available, scf
C = Consumption rate, scfm

Air / Oxygen / Mixed Gas in Storage

ATA x FV x N = total SCF in storage (round down to the next whole number)

ATA - PSIG in flasks
FV - Floodable volume in flasks in cu ft
N - Number of flasks

Air / Oxygen / Mixed Gas Available for Use

$$\left(\frac{P_f - (P_{mf} + MMP)}{14.7} \right) \text{ x FV x N = SCF available for use (round down to next whole number)}$$

P_f - Flask pressure (psig)
P_{mf} - Minimum flask pressure (200 psig air, 100 psig O_2
FV - Floodable volume in flasks in cu ft
N - Number of flasks

Note: If calculating air available for use for chamber operations where NO surface supplied diving is involved, DO NOT USE MMP. Use P_{mf} or regulator setting, whichever is higher.

Note: If calculating O2 available for use for chamber operations, DO NOT USE MMP. Use P_{mf} + O2 regulator setting.

EGS Pressure Calculation

Minimum EGS pressure calculation example

(1) Planning calculations for minimum EGS pressure prior to any dive. Must be figured to divers first stop.
(2) Example:
  (a) The Dive Supervisor needs to estimate how long it will take the divers to return to the stage and leave bottom for a 185 fsw stage depth. The divers are going to pick up an object about 15 feet from the stage; the estimated time to return will be 3 minutes.

(i) Estimated time of return to stage on a 185/10 Sur “D” O2

$$\frac{(185 + 33)}{33} \text{ x 1.4 x 3 min = 27.72 scf}$$

(ii) Average Depth for ascent to first stop

$$\frac{(185 + 20)}{2} = 102.5'$$

$$\frac{(102.5 + 33)}{33} \text{ x .75 x 6 min Time To First Stop = 18.45 SCF}$$

EGS Pressure Calculation (Continued)

(iii) Formula used to figure the minimum amount of air in PSI needed to start this dive.

27.72 SCF Return to Stage
+18.45 SCF Ascent to First Stop
46.17 Total Air to First Stop

$$\frac{\text{(Total Air Required)}}{\text{FV of EGS}} \times 14.7 = (\text{Depth First stop} \times .445 + \text{Reg setting})$$

$$\frac{(46.17)}{.399} \times 14.7 + (20' \times .445 + 135) = \mathbf{1844.9\ Minimum\ PSI}$$

.399 Floodable volume for 80 cuft bottle

Equivalent Air Depth Calculations

$$EAD = \frac{(1 < O2\%)\ (D + 33)}{.79} \quad -33 \qquad \text{or} \qquad \frac{ppN2}{ATA \mid N2\ \%}$$

EAD = equivalent depth on air (fsw)
D = diving depth mixture (fsw)
O2 % = oxygen concentration in breathing medium (percentage decimal)

Surfaced Supplied Air / Mixed Gas Requirements

Calculations are based on 1.4 ACFM for descent and bottom phase, .75 ACFM for ascent and decompression phase, and .3 ACFM for BIBS. ***Include standby in the number of divers for all phases of the dive.***

A) Descent and Bottom phase:

Bottom depth in ATA's x ACFM x N x T = SCF required (carry two decimal places)

ACFM - Average consumption rate
N - Number of divers including standby
T - Time in minutes

B) Ascent to first Air, HeO2, and O2 stop: (ATA's calculated for average depth)

$$\frac{\text{Depth left + depth reached}}{2} = \text{average depth}$$

ATA x ACFM x N x T = SCF required (carry two decimal places)

C) Decompression stops:

1) Shift and Vent time O_2 / HeO2 (50/50):

(stop depth in ATA x ACFM x N x T)
(carry two decimal places)

Note: - The time used for planning purposes is 3 minutes as stated in the USN Dive Manual.
- For in water O2 and HeO2 dives use 8 ACFM for each diver venting

2) All Air / O_2 / HEO_2 stops:

Stop depth in ATA x ACFM x N x T = SCF required (carry two decimal places)

Surfaced Supplied Air / Mixed Gas Requirements (Continued)

D) Total requirement for dive:

$$\frac{\text{Descent and bottom phase Ascent} \quad + \quad \text{Decompression stops}}{\text{Total SCF required (round up to next whole number)}}$$

Note: 1. Add chamber requirement if applicable
2. Secondary system must be capable of recovering divers
3. Add O_2 requirement if applicable
    a. Amount of air used/required in PSIG:

$$\left(\frac{SCF \text{ x } 14.7}{N \text{ x } FV}\right) + 220 = PSIG \text{ (Round up to next whole number)}$$

SCF = SCF required
N = Number of Flasks
FV = Floodable Volume
PSIG = Pressure required in flasks

Chamber / Air O2 Requirements

A) Chamber air requirement:

1. Air required for compression:

$$\frac{DEPTH}{33} \text{ x } FV = \text{SCF required (Carry 2 decimal places)}$$

FV = floodable volume of chamber locks (cu. ft.)

2. Ventilation requirements:

ATA x total ventilation requirement x T = SCF required (carry 2 decimal places)

On O_2: 12.5 acfm – each person on O_2 at rest, none required for tenders(s)

On AIR: 2 acfm – each person at rest, 4 acfm – each person not at rest (tenders are considered not at rest)

Chamber / Air O2 Requirements (Continued)

3. Air required for vents on ascent: (ATA figured for average depth)

$$\frac{\text{Depth left + depth reached}}{2} = \text{Average depth}$$

Average depth in ATA x vent requirement x T = SCF required
(carry two decimal places) (T = time)

<u>To Determine Total Ventilation requirement:</u>

On O_2: 12.5 ACFM for each person on O_2 at rest, none required for tender(s)
25 ACFM for each person who is not at rest

On AIR: 2 ACFM for each person at rest and 4 ACFM for each person not at rest (tenders are considered not at rest)

*These ventilation rates apply only to the number of people breathing O_2 and are used only when no BIBS dump system is installed.

4. Total air vent requirements:

compression
vents on bottom
vents at stops
<u>+vents on ascent</u>
Total SCF required (round up to next whole number)

5. Reduction in ventilation:

$$\frac{\text{SCF available}}{\text{SCF required}} \mathbf{x} \text{ total vent requirement in ACFM} = \text{New vent rate (in acfm)*}$$

*(round to the next whole number)

Chamber / Air O2 Requirements (Continued)

B) Chamber O^2 consumption:

1. Descent, bottom and stops:

   Bottom or stop depth in ATA x ACFM x N x T = SCF required (carry two decimal places)

2. Ascent:

   Average depth in ATA x ACFM x N x T = SCF required
   (carry two decimal places)

3. Total O_2 consumption:

   Descent, bottom and stops
   <u>+ Ascent</u>

   Total SCF consumed (round up to next whole number)

“T” Formulas

A “T” formula is an organizational device for expressing some mathematical concepts.

For example if:

2 times 3 = 6 then
6 divided by 2 = 3 then
6 divided by 3 = 2

This can be expressed in a “T” formula.

$$\begin{array}{c|c} \multicolumn{2}{c}{6} \\ \hline 2 & 3 \end{array}$$

Of course, we should not use a “T” formula for 2 x 3 = 6, but it is useful to organize more complicated relationships.

NOTE: Do not round numbers when performing conversions (i.e. psig to ata) within the “T” formula, wait until reaching the final answer and round the answer IAW rounding instructions on page 4.

“T” Formula for Standard Cubic Feet of Gas

$$\begin{array}{c|c} \multicolumn{2}{c}{\text{scf}} \\ \hline \text{ata} & \text{fv (cu ft)} \end{array}$$

Problem: How many cubic feet of gas are there in a flask that has a floodable volume of 78.7 cu ft, and a pressure of 2400 psi?

$$\begin{array}{c|c} \multicolumn{2}{c}{\textbf{12,927.67959 scf}} \\ \hline \dfrac{2400 + 14.7}{14.7} & 78.7 \text{ cu ft} \\ =164.2653061 \text{ ata} & \end{array}$$

ans: 12927.67 scf (carry 2 decimal places)

“T” Formula For Cubic Feet of Gas (Continued)

Problem: If 12,900.00 standard cubic feet of gas is in a 78.7 cu ft floodable volume flask, what is the resultant gauge pressure?

12,900.00 scf

163.91359 ata - 1 162.91359 atm x 14.7 **2394.829859 psig**	78.7 cu ft

ans: 2395 psig (rounded up)

Problem: One 78.7 cubic foot floodable volume flask is on the line at 2400 psig. During a diving operation the flask pressure dropped to 2234 psig. What was the amount of gas used?

2400 psig
-2234 psig
=166 psig

888.7210879 scf

166 psig / 14.7 =11.292517 atm	78.7 cu ft

aans: 888.72 scf (carry 2 decimal places

“T” Formula for Equalization

scf		+	scf		=	scf	
ata	fv1		ata	fv2		ata	fv1 + fv2

Problem: One 78.7 cubic foot floodable volume flask, charged to 1000 psi, is equalized with one 78.7 cubic foot floodable volume flask charged to 2400 psi. What is the new flask pressure?

5,432.4414 scf		+	12, 927.679 scf		=	18, 360.12 scf	
1,000 psi + 14.7 14.7 =69.02721 ata	78.7 cu ft	+	2,400 psi + 14.7 14.7 =164.26530 ata	78.7 cu ft	=	116.64625 ata - 1 115.64625 atm x 14.7 = **1,699.9998 psig**	78.7 cu ft x 2 157.4 cu ft

ans: 1,700 psig (rounded up)

“T” Formula for Final Pressure

scf			scf			scf	
ata	fv1	-	ata	fv2	=	ata	fv1

Problem: One bank of eight 78.7 cu ft flasks charged @ 2000 psig is on line. The complex (3300 cu ft) is at 180 fsw. You press down to 279 fsw. What is the final pressure in the bank?

86,289.462 scf			9,900 scf			76,389.462 scf	
2000 psig + 14.7 14.7 137.05442 ata	78.7 x 8 = 629.6 cu ft	-	279 fsw -180 fsw 99 fsw 33 = 3 ata	3,300 cu ft	=	121.33014 ata -1 120.33014 atm X 14.7 **1,768.8530 psig**	629.6 cu ft

ans: 1,769 psig (rounded up)

“T” Formula for Partial Pressure, Maximum O_2 and Cutoff Depth

PARTIAL PRESSURE IN ATA’S	
ATA	% OF GAS

Problem: What is the cutoff depth for a 25% O_2 mix maintaining a maximum partial pressure of O_2 at 1.6 ata?

1.6 ppO_2 ata	
6.4 ata -1 5.4 atm x 33 **178.2 fsw**	25% = .25

ans: 178 fsw

“T” Formula for Partial Pressure, Maximum O_2 and Cutoff Depth (Continued)

Problem: At 180 fsw, what percent gas is needed to maintain a partial pressure of 1.6 ata?

1.6 ppO_2 ata

180 fsw +33	.2478873
33	= 2**4.78873 %**
=6.45454 ata	

ans: 24.79% O_2 (rounded up)

Problem: At 180 fsw, and using 15% O_2, what is the partial pressure in ata?

.9681818 ppO_2 ata

180 fsw +33	15%
33	= .15
= 6.45454 ata	

ans: .97 ppO_2 ata (rounded up)

Problem: The ppO_2 is .97 ata, and the % of gas is 15%, what is the depth?

.97 ppO_2 ata

6.4666666 ata	15%
-1	= .15
5.4666666 atm	
x 33	
180.39999 fsw	

ans: 180.4 (rounded up)

Problem: The ppO_2 is .97 ata and the depth is 180 fsw. What is the percent of gas?

.97 ppO_2 ata

180 fsw +33	.1502816
33	= **15.02816 %**
= 6.4545454ata	

ans: 15.03% (rounded up)

General Gas Law Formula

$$\frac{P_1 \text{ x } V_1}{T_1} \qquad \frac{P_2 \text{ x } V_2}{T_2}$$

The General Gas Law can be used to predict the behavior of a given quantity of gas when any of the factors change. ***If some factors do not change in the equation ($V_1 = V_2$), they can be removed from the equation.**

Express all temperatures in absolute (degrees Rankine) by adding 460 to existing temperatures (^{o}F + 460 = ^{o}R).

Express all pressures or depths in absolute by adding 14.7 psi or 33 fsw.

P_1 – Initial Pressure (absolute)
V_1 – Initial Volume
T_1 – Initial Temperature (absolute)
P_2 – Final Pressure (absolute)
V_2 – Final Volume
T_2 – Final Temperature (absolute)

To solve for any of the individual factors:

$$P_1 = \frac{P_2\ V_2\ T_1}{T_2\ V_1} \qquad P_2 = \frac{P_1\ V_1\ T_2}{T_1\ V_2} \qquad V_1 = \frac{P_2 V_2\ T_1}{T_2\ P_1}$$

$$V_2 = \frac{P_1\ V_1\ T_2}{P_2\ T_1} \qquad T_1 = \frac{T_2\ \ P_1\ V_1}{P_2\ V_2} \qquad T_2 = \frac{P_2\ V_2\ T_1}{P_1\ V_1}$$

Problem: The complex is pressed to 220 fsw, it cools from 92^{o}F to 76^{o}F, and no gas is added or lost, what is the final depth?

$$P_2 = \frac{P_1\ V_1\ T_2}{T_1\ V_2}$$

***The volume of the complex is not going to change (Complex fv = 3300 cu ft), so remove V_1 and V_2 from the equation.**

$P_1 = \frac{220 \text{ fsw} + 33}{33} =$ 7.666666 ata

$T_2 =$ 76^{o}F + 460 = 536^{o}R

$T_1 =$ 92^{o}F + 460 = 552^{o}R

$P_2 = \frac{7.66666 \text{ x } 536}{552}$

$P_2 = \frac{4109.333332}{552} =$ 7.4444442 ata

$P_2 =$ 7.4444442 - 1 = 6.4444442 atm

$P_2 =$ 6.4444442 x 33 = **212.66665 fsw**

ans: 212 fsw

Metabolic Makeup Formula

$$\textbf{(pp}O_2\textbf{ desired - pp}O_2\textbf{ present) x 33 x } \frac{\underline{\textbf{\% of gas being added}}}{\textbf{100}} \textbf{ = ft of } O_2$$

The metabolic makeup formula is used to calculate how much oxygen addition is needed to maintain the proper partial pressure limits.

Problem: The ppO_2 is .40 ata and we wish to increase it to .45 ata, how many additional feet must we press down with 100% oxygen?

(.45 - .40) = .05

.05 x 1 x 33 = 1.65 ft of O_2

ans: 1.65 ft of O_2

To bring the ppO_2 up to .45 ata, depth in the complex must be increased 1.65 ft using pure oxygen.

Formulas Used in Diving Demolitions Operations

DEMOLITIONS

Steel Cutting

A) Structural Steel (I or H BEAMS)

$P = \frac{3}{8}A$

P = Pounds of Explosive Required

A = Area (in square inches)

B) Steel Bars, Cables and Chain

$P = A$

C) Ribbon Charge

Thickness of charge = ½ the thickness of the target
Width of charge = 3 times the thickness of the charge
Length of charge = length of desired cut

Steel Cutting (Continued)

D) Cross Fracture Charge (Saddle Charge)

Target Diameter Less Than 3”:

Thickness of charge	= 1” thick (thickness of M112 block)
Long axis of charge	= circumference of the target
Base of charge	= ½ of the long axis

Target Diameter of 3” or Greater:

Thickness of charge	= 1” thick
Long axis of charge	= circumference of the target + 6.25
Base of charge	= ½ of the long axis

NOTE: Circumference = Diameter x 3.14

E) Stress Wave Method (Diamond Charge)

Target Diameter Less Than 3”:

Thickness of charge	= 1” thick (thickness of M112 block)
Long axis of charge	= circumference of the target
Base of charge	= ½ of the long axis

Target Diameter 3” or Greater:

Thickness of charge	= 1” thick
Long axis of charge	= circumference of the target + 6.25
Base of charge	= ½ of the long axis

Timber and Pile Cutting

External Charge

$$P = \frac{D^2}{40}$$

P = Pounds of Explosives Required

D = Diameter of Timber in Inches

Internal Charge

$$P = \frac{D^2}{250}$$

P = Pounds of Explosives Required

D = Diameter of Timber in Inches

Calculation of Time Fuse Burn

1. Burn 6’ of time fuse then convert burn time (BT) into seconds.
   (BT = 4 minutes (:4 x ::60 = 240 sec).

2. Divide seconds by feet (6) = burn rate (BR) seconds per foot. (BR = 40 sec).

3. Establish safe separation time (SST) in seconds.
   (SST is 8 minutes 26 seconds = 506 sec).

4. Divide SST (506) by BR (40). This equals 12.65.

5. Number that is left of decimal is feet of time fuse needed. (12).

6. Multiply remaining (.65) by 12. (7.80).

7. The number left of the decimal is inches of time fuse needed. (7). (In addition to the 12 feet, step 5).

8. Take the number to the **right** of the decimal (.80) and multiply it by 8. This number to the **left** of the decimal is the 1/8’s of an inch of time fuse to add to the inches from step (7). (.80 x 8 = 6.4) The “.4” is discarded. So 6/8’s or 3/4’s of an inch is added to the number of inches in step 8.

9. **This results in a total time fuse length of 12 feet and 7 - 3/4 inches.**

Breaching Concrete and Masonry

External Charge

$P = R^3KC$

P = Pounds of Explosives Required
R = Breaching Radius (thickness of the target)
K = Material Factor
C = Charge Placement and Tamping Factor

Internal Charge

$P = R^3KC$

P = Pounds of Explosives Required
R = Breaching Radius (if charge is placed at center of target the radius is equal to only half the target thickness)
K = Material Factor
C = Charge Placement and Tamping Factor

NOTE: Add 10% to a calculated charge of less than 50 lbs for a single target.

NOTE: To calculate these formulas for breaching concrete and masonry, refer to values for K and C factors.

1. Calculate for amount of TNT needed.
2. Add the 10% if amount for a single target is less than 50 lbs.
3. Multiply the number of targets.
4. Divide the relative effectiveness of explosive being used.

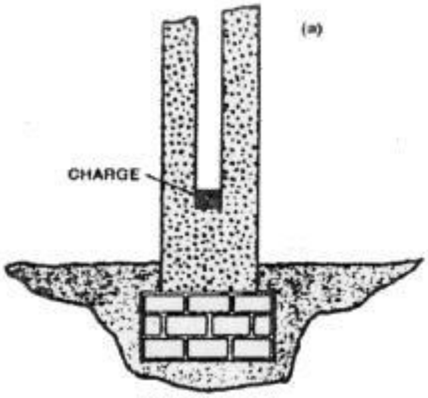
NOTE: To calculate the number of charges required to breach a wall use the following formula:

N = L / 2R (round up to the next whole number)

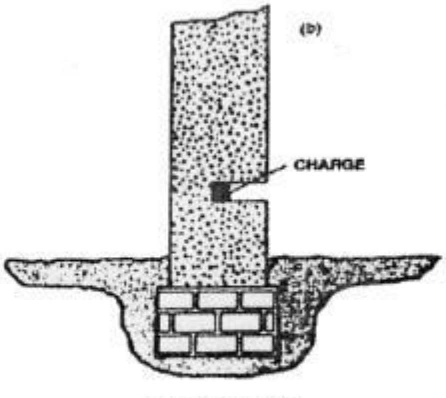
N = Number of charges required
L = Length of the wall
R = Breaching Radius (remember that if using internal charges the radius will only be $\frac{1}{2}$ the wall thickness)

Breaching Concrete and Masonry (Continued)

Value of C for the R3KC formula for an Internal Breaching Charge:

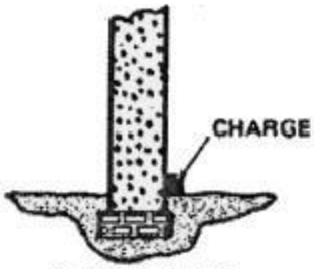


TAMPED C = 1.0

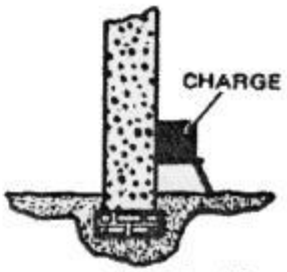


TAMPED C = 1.25

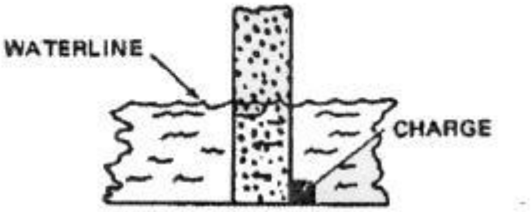
Value of C for the R3KC formula for an External Wall Breach Charge:



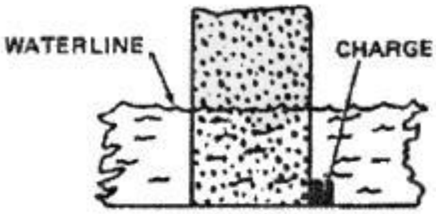
TAMPED C = 2.5
UNTAMPED C = 3.5
(e)



UNTAMPED C = 4.5
(f)



UNDERWATER C = 1
DEPTH AT WHICH CHARGE IS PLACED IS EQUAL
TO OR MORE THAN THE WALL THICKNESS



UNDERWATER C = 2
DEPTH AT WHICH CHARGE IS PLACED
IS ABOUT HALF THE WALL THICKNESS

Breaching Concrete and Masonry (Continued)

Values for Relative Effectiveness Factor (REF) (Characteristics of U.S. Military Explosives)

Explosive	**Typical Uses**	**Average Rate of Detonation (Feet Per Second)**	**Relative Effectiveness as an External Charge (TNT = 1.00)**	**Intensity of Toxic Fumes**	**Water Resistance**
Amatol	Bursting Charge	16,000 fps	1.17	Dangerous	Poor
Ammonium Nitrate	Cratering Charge and Composition Explosives	8,900 fps	0.42	Dangerous	None
Black Powder	Time Blasting Fuse	1300 fps	0.55	Dangerous	None
CH-6	Demolition Charge Booster Charge	28,000 fps	1.50	Dangerous	Excellent
Composition A-3	Booster Charge and Bursting Charge	26,500 fps	1.35	Dangerous	Good
Composition A-5	Booster Charge	29, 300 fps	1.40	Dangerous	Excellent
Composition B	Bursting Charge	25, 600 fps	1.35	Dangerous	Excellent
Composition C-3	Demolition Charge	25, 000 fps	1.26	Dangerous	Good
Composition C-4	Demolition Charge	26, 400 fps	1.34	Slight	Excellent
DXN-1	Primary Charge	21, 600 fps	1.50	Dangerous	Good
H-6	Demolition Charge	24, 300 fps	1.35	Dangerous	Excellent
HBX-1	Demolition Charge	24, 600 fps	1.33	Dangerous	Excellent
	Demolition Charge	24, 700 fps	1.11	Dangerous	Excellent
	Demolition Charge	30, 000 fps	1.50	Dangerous	Excellent
Military Dynamite	Demolition Charge	20, 000 fps	0.92	Dangerous	Fair
Octol - 70/25	Demolition Charge	27, 500 fps	1.16	Dangerous	Excellent
Octol - 70/30	Demolition Charge	26, 400 fps	1.15	Dangerous	Excellent
PBX	See NAVSEA SW010-AG-ORD-010				
Pentolite 50/50	Booster Charge and Bursting Charge	24, 400 fps	1.26	Dangerous	Excellent
PETN	Detonation Cord, Blasting Cap and Demolition Charge	27, 200 fps	1.66	Slight	Excellent
RDX	Blasting Caps, Composition Explosives	27, 400 fps	1.60	Dangerous	Excellent
Tetryl	Booster Charge and Composition Explosives	23, 300 fps	1.25	Dangerous	Excellent
Tetrytol 75/25	Demolition Charge	23, 000 fps	1.20	Dangerous	Excellent
TNT	Demolition Charge and Composition Explosives	22, 600 fps	1.00	Dangerous	Excellent
Sheet Explosive M118	Cutting Charge	24, 000 fps	1.14	Dangerous	Excellent
Shaped Charges	Cutting Charge	25, 600 fps	1.17	Dangerous	Excellent

Breaching Concrete and Masonry (Continued)

Values of K for the R^3KC Formula

Material	R	K
Ordinary Earth	All values	0.05
Poor masonry, shale and hardpan, good timber and earth construction	All values	0.225
Good masonry, ordinary concrete and rock	Less than 3 ft	0.35
	3 to 5 ft	0.275
	5 to 7 ft	0.25
	More than 7 ft	0.225
Dense concrete and first class masonry	Less than 3 ft	0.45
	3 to 5 ft	0.375
	5 to 7 ft	0.325
	More than 7 ft	0.275
Reinforced concrete (concrete only, Will not cut reinforcing steel)	Less than 3 ft	0.70
	3 to 5 ft	0.55
	5 to 7 ft	0.50
	More than 7 ft	0.425

Rigging Formulas

C = Circumference
BS = Breaking Strength
SWL or SWC = Safe Working Load/Capacity
SF = Safety Factor
D = Diameter

Breaking strength of manila line: $C^2 \times 900 = BS$

Breaking strength of nylon line: $C^2 \times 2400 = BS$

Safe working load for line: $\frac{BS}{SF} = SWL$

SWL of a shackle: $3 \times D^2 \times 1$ ton = SWL (tons)

SWL of a hook: $2/3 \times D^2 \times 1$ ton = SWL

Safe working load for wire rope: $D^2 \times 8 = SWL$ (tons)

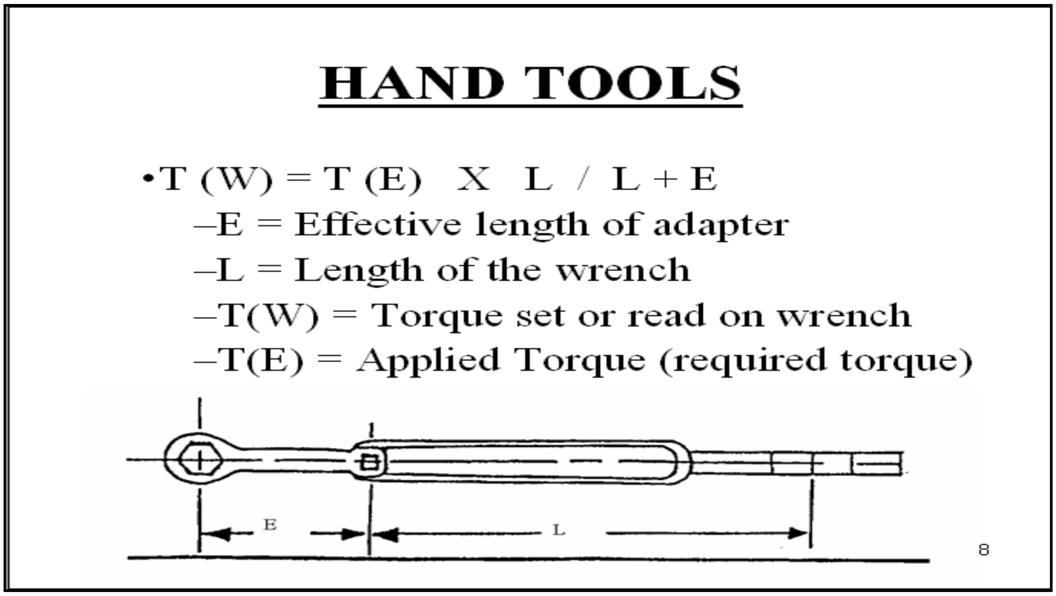
CLIPS: # of wire rope clips needed
3 x D + 1 = # of clips

Spacing between wire rope clips
6 x D = spacing (inches)

SEIZINGS: # of seizings for wire rope
3 x D = # of seizings (minimum of 3)

Spacing of seizings for wire rope
2 x D = spacing (inches)

Width of seizings for wire rope
1 to 1.5 x D = width (inches)



HAND TOOLS

- T (W) = T (E) X L / L + E
  - –E = Effective length of adapter
  - –L = Length of the wrench
  - –T(W) = Torque set or read on wrench
  - –T(E) = Applied Torque (required torque)

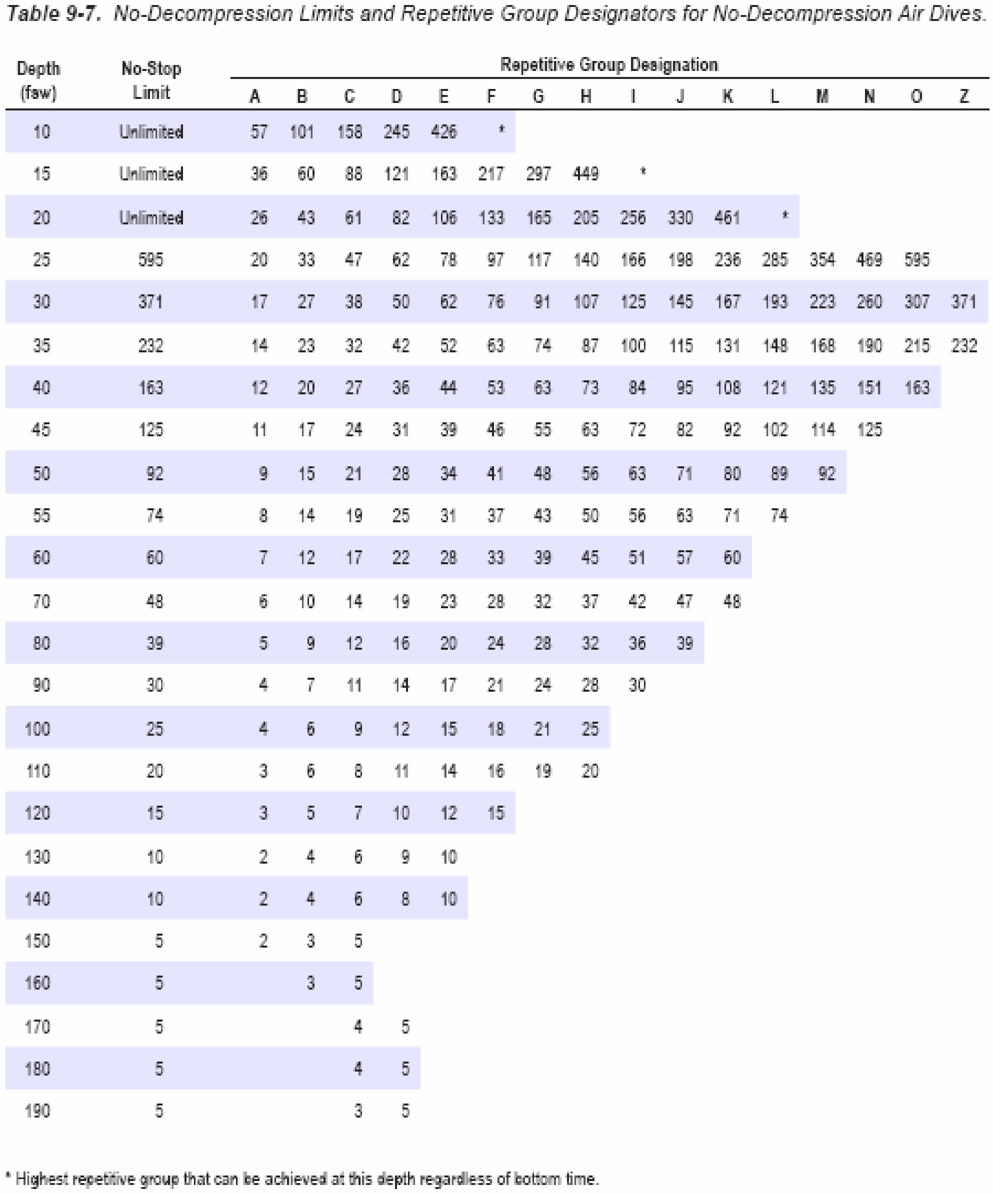


Table 9-7. No-Decompression Limits and Repetitive Group Designators for No-Decompression Air Dives.

Depth (fsw)	No-Stop Limit	Repetitive Group Designation															
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Z
10	Unlimited	57	101	158	245	426	*										
15	Unlimited	36	60	88	121	163	217	297	449	*							
20	Unlimited	26	43	61	82	106	133	165	205	256	330	461	*				
25	595	20	33	47	62	78	97	117	140	166	198	236	285	354	469	595	
30	371	17	27	38	50	62	76	91	107	125	145	167	193	223	260	307	371
35	232	14	23	32	42	52	63	74	87	100	115	131	148	168	190	215	232
40	163	12	20	27	36	44	53	63	73	84	95	108	121	135	151	163	
45	125	11	17	24	31	39	46	55	63	72	82	92	102	114	125		
50	92	9	15	21	28	34	41	48	56	63	71	80	89	92			
55	74	8	14	19	25	31	37	43	50	56	63	71	74				
60	60	7	12	17	22	28	33	39	45	51	57	60					
70	48	6	10	14	19	23	28	32	37	42	47	48					
80	39	5	9	12	16	20	24	28	32	36	39						
90	30	4	7	11	14	17	21	24	28	30							
100	25	4	6	9	12	15	18	21	25								
110	20	3	6	8	11	14	16	19	20								
120	15	3	5	7	10	12	15										
130	10	2	4	6	9	10											
140	10	2	4	6	8	10											
150	5	2	3	5													
160	5		3	5													
170	5			4	5												
180	5			4	5												
190	5			3	5												

* Highest repetitive group that can be achieved at this depth regardless of bottom time.

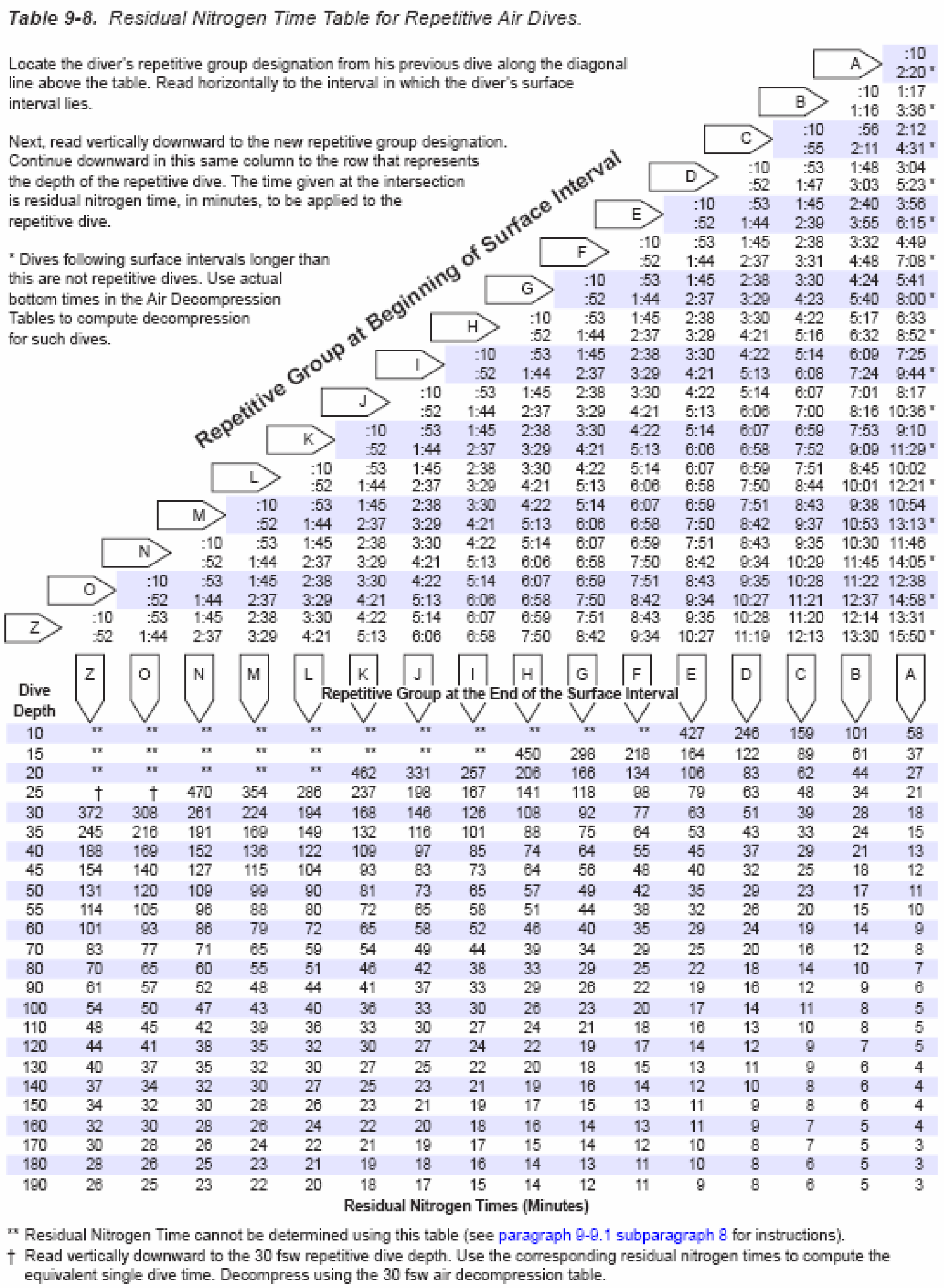


Table 9-8. Residual Nitrogen Time Table for Repetitive Air Dives.

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 that 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 longer than this are not repetitive dives. Use actual bottom times in the Air Decompression Tables to compute decompression for such dives.

Repetitive Group at Beginning of Surface Interval

	Z	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
A																:10 2:20 *
B															:10 1:16	1:17 3:36 *
C														:10 :55	:56 2:11	2:12 4:31 *
D													:10 :52	:53 1:47	1:48 3:03	3:04 5:23 *
E												:10 :52	:53 1:44	1:45 2:39	2:40 3:55	3:56 6:15 *
F											:10 :52	:53 1:44	1:45 2:37	2:38 3:31	3:32 4:48	4:49 7:08 *
G										:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:23	4:24 5:40	5:41 8:00 *
H									:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:16	5:17 6:32	6:33 8:52 *
I								:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:08	6:09 7:24	7:25 9:44 *
J							:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 7:00	7:01 8:16	8:17 10:36 *
K						:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:52	7:53 9:09	9:10 11:29 *
L					:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:44	8:45 10:01	10:02 12:21 *
M				:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:42	8:43 9:37	9:38 10:53	10:54 13:13 *
N			:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:42	8:43 9:34	9:35 10:29	10:30 11:45	11:46 14:05 *
O		:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:42	8:43 9:34	9:35 10:27	10:28 11:21	11:22 12:37	12:38 14:58 *
Z	:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:42	8:43 9:34	9:35 10:27	10:28 11:19	11:20 12:13	12:14 13:30	13:31 15:50 *

Repetitive Group at the End of the Surface Interval

Dive Depth	Z	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
10	**	**	**	**	**	**	**	**	**	**	**	427	246	159	101	58
15	**	**	**	**	**	**	**	**	450	298	218	164	122	89	61	37
20	**	**	**	**	**	462	331	257	206	166	134	106	83	62	44	27
25	†	†	470	354	286	237	198	167	141	118	98	79	63	48	34	21
30	372	308	261	224	194	168	146	126	108	92	77	63	51	39	28	18
35	245	216	191	169	149	132	116	101	88	75	64	53	43	33	24	15
40	188	169	152	136	122	109	97	85	74	64	55	45	37	29	21	13
45	154	140	127	115	104	93	83	73	64	56	48	40	32	25	18	12
50	131	120	109	99	90	81	73	65	57	49	42	35	29	23	17	11
55	114	105	96	88	80	72	65	58	51	44	38	32	26	20	15	10
60	101	93	86	79	72	65	58	52	46	40	35	29	24	19	14	9
70	83	77	71	65	59	54	49	44	39	34	29	25	20	16	12	8
80	70	65	60	55	51	46	42	38	33	29	25	22	18	14	10	7
90	61	57	52	48	44	41	37	33	29	26	22	19	16	12	9	6
100	54	50	47	43	40	36	33	30	26	23	20	17	14	11	8	5
110	48	45	42	39	36	33	30	27	24	21	18	16	13	10	8	5
120	44	41	38	35	32	30	27	24	22	19	17	14	12	9	7	5
130	40	37	35	32	30	27	25	22	20	18	15	13	11	9	6	4
140	37	34	32	30	27	25	23	21	19	16	14	12	10	8	6	4
150	34	32	30	28	26	23	21	19	17	15	13	11	9	8	6	4
160	32	30	28	26	24	22	20	18	16	14	13	11	9	7	5	4
170	30	28	26	24	22	21	19	17	15	14	12	10	8	7	5	3
180	28	26	25	23	21	19	18	16	14	13	11	10	8	6	5	3
190	26	25	23	22	20	18	17	15	14	12	11	9	8	6	5	3

Residual Nitrogen Times (Minutes)

** Residual Nitrogen Time cannot be determined using this table (see paragraph 9-9.1 subparagraph 8 for instructions).

† Read vertically downward to the 30 fsw repetitive dive depth. Use the corresponding residual nitrogen times to compute the equivalent single dive time. Decompress using the 30 fsw air decompression table.

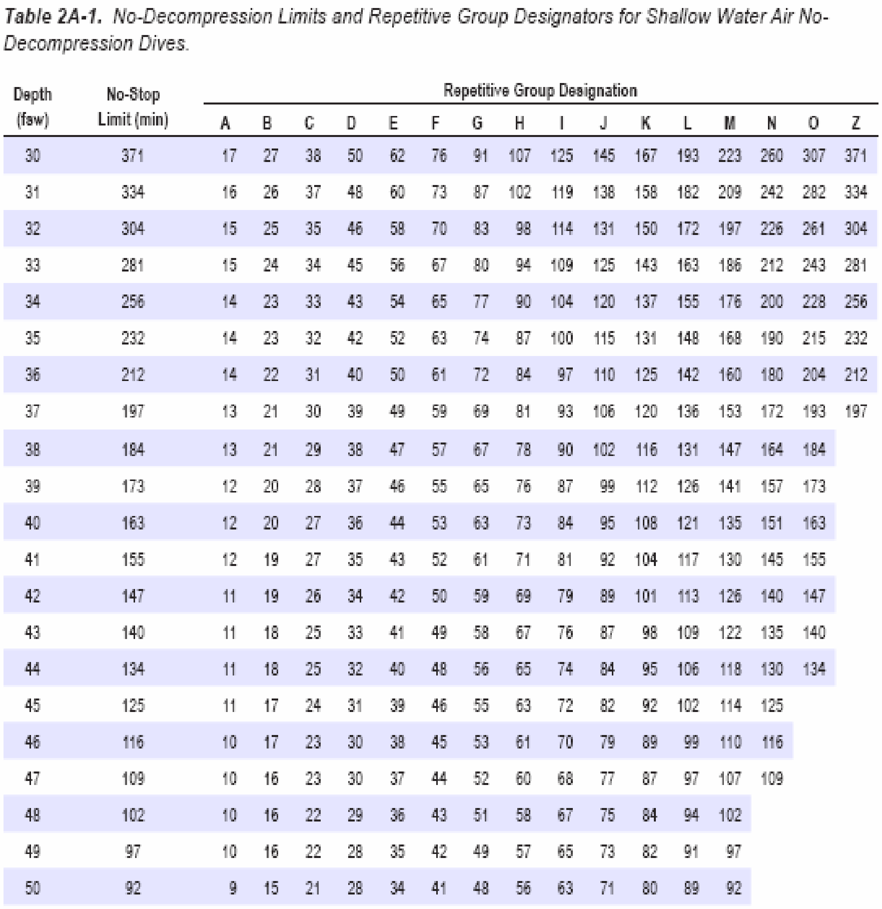


Table 2A-1. *No-Decompression Limits and Repetitive Group Designators for Shallow Water Air No-Decompression Dives.*

Depth (fsw)	No-Stop Limit (min)	Repetitive Group Designation															
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Z
30	371	17	27	38	50	62	76	91	107	125	145	167	193	223	260	307	371
31	334	16	26	37	48	60	73	87	102	119	138	158	182	209	242	282	334
32	304	15	25	35	46	58	70	83	98	114	131	150	172	197	226	261	304
33	281	15	24	34	45	56	67	80	94	109	125	143	163	186	212	243	281
34	256	14	23	33	43	54	65	77	90	104	120	137	155	176	200	228	256
35	232	14	23	32	42	52	63	74	87	100	115	131	148	168	190	215	232
36	212	14	22	31	40	50	61	72	84	97	110	125	142	160	180	204	212
37	197	13	21	30	39	49	59	69	81	93	106	120	136	153	172	193	197
38	184	13	21	29	38	47	57	67	78	90	102	116	131	147	164	184	
39	173	12	20	28	37	46	55	65	76	87	99	112	126	141	157	173	
40	163	12	20	27	36	44	53	63	73	84	95	108	121	135	151	163	
41	155	12	19	27	35	43	52	61	71	81	92	104	117	130	145	155	
42	147	11	19	26	34	42	50	59	69	79	89	101	113	126	140	147	
43	140	11	18	25	33	41	49	58	67	76	87	98	109	122	135	140	
44	134	11	18	25	32	40	48	56	65	74	84	95	106	118	130	134	
45	125	11	17	24	31	39	46	55	63	72	82	92	102	114	125		
46	116	10	17	23	30	38	45	53	61	70	79	89	99	110	116		
47	109	10	16	23	30	37	44	52	60	68	77	87	97	107	109		
48	102	10	16	22	29	36	43	51	58	67	75	84	94	102			
49	97	10	16	22	28	35	42	49	57	65	73	82	91	97			
50	92	9	15	21	28	34	41	48	56	63	71	80	89	92			

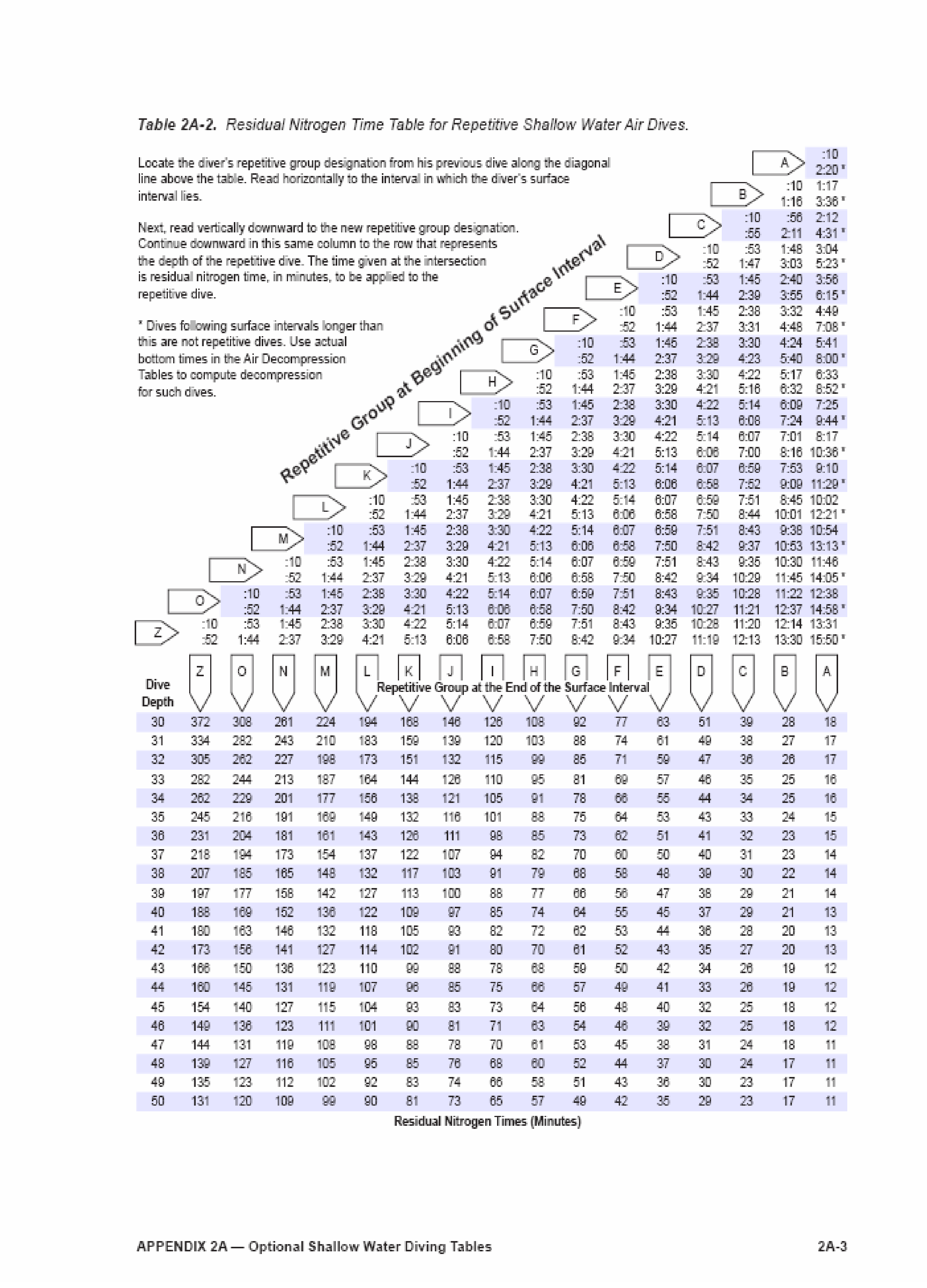


Table 2A-2. Residual Nitrogen Time Table for Repetitive Shallow Water Air Dives.

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 that 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 longer than this are not repetitive dives. Use actual bottom times in the Air Decompression Tables to compute decompression for such dives.

Repetitive Group at Beginning of Surface Interval

A																:10 2:20 *
B															:10 1:16	1:17 3:36 *
C														:10 :55	:56 2:11	2:12 4:31 *
D													:10 :52	:53 1:47	1:48 3:03	3:04 5:23 *
E												:10 :52	:53 1:44	1:45 2:39	2:40 3:55	3:56 6:15 *
F											:10 :52	:53 1:44	1:45 2:37	2:38 3:31	3:32 4:48	4:49 7:08 *
G										:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:23	4:24 5:40	5:41 8:00 *
H									:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:16	5:17 6:32	6:33 8:52 *
I								:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:08	6:09 7:24	7:25 9:44 *
J							:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 7:00	7:01 8:16	8:17 10:36 *
K						:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:52	7:53 9:09	9:10 11:29 *
L					:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:44	8:45 10:01	10:02 12:21 *
M				:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:42	8:43 9:37	9:38 10:53	10:54 13:13 *
N			:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:42	8:43 9:34	9:35 10:29	10:30 11:45	11:46 14:05 *
O		:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:42	8:43 9:34	9:35 10:27	10:28 11:21	11:22 12:37	12:38 14:58 *
Z	:10 :52	:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:42	8:43 9:34	9:35 10:27	10:28 11:19	11:20 12:13	12:14 13:30	13:31 15:50 *

Repetitive Group at the End of the Surface Interval

Dive Depth	Z	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
30	372	308	261	224	194	168	146	126	108	92	77	63	51	39	28	18
31	334	282	243	210	183	159	139	120	103	88	74	61	49	38	27	17
32	305	262	227	198	173	151	132	115	99	85	71	59	47	36	26	17
33	282	244	213	187	164	144	126	110	95	81	69	57	46	35	25	16
34	262	229	201	177	156	138	121	105	91	78	66	55	44	34	25	16
35	245	216	191	169	149	132	116	101	88	75	64	53	43	33	24	15
36	231	204	181	161	143	126	111	98	85	73	62	51	41	32	23	15
37	218	194	173	154	137	122	107	94	82	70	60	50	40	31	23	14
38	207	185	165	148	132	117	103	91	79	68	58	48	39	30	22	14
39	197	177	158	142	127	113	100	88	77	66	56	47	38	29	21	14
40	188	169	152	136	122	109	97	85	74	64	55	45	37	29	21	13
41	180	163	146	132	118	105	93	82	72	62	53	44	36	28	20	13
42	173	156	141	127	114	102	91	80	70	61	52	43	35	27	20	13
43	166	150	136	123	110	99	88	78	68	59	50	42	34	26	19	12
44	160	145	131	119	107	96	85	75	66	57	49	41	33	26	19	12
45	154	140	127	115	104	93	83	73	64	56	48	40	32	25	18	12
46	149	136	123	111	101	90	81	71	63	54	46	39	32	25	18	12
47	144	131	119	108	98	88	78	70	61	53	45	38	31	24	18	11
48	139	127	116	105	95	85	76	68	60	52	44	37	30	24	17	11
49	135	123	112	102	92	83	74	66	58	51	43	36	30	23	17	11
50	131	120	109	99	90	81	73	65	57	49	42	35	29	23	17	11

Residual Nitrogen Times (Minutes)

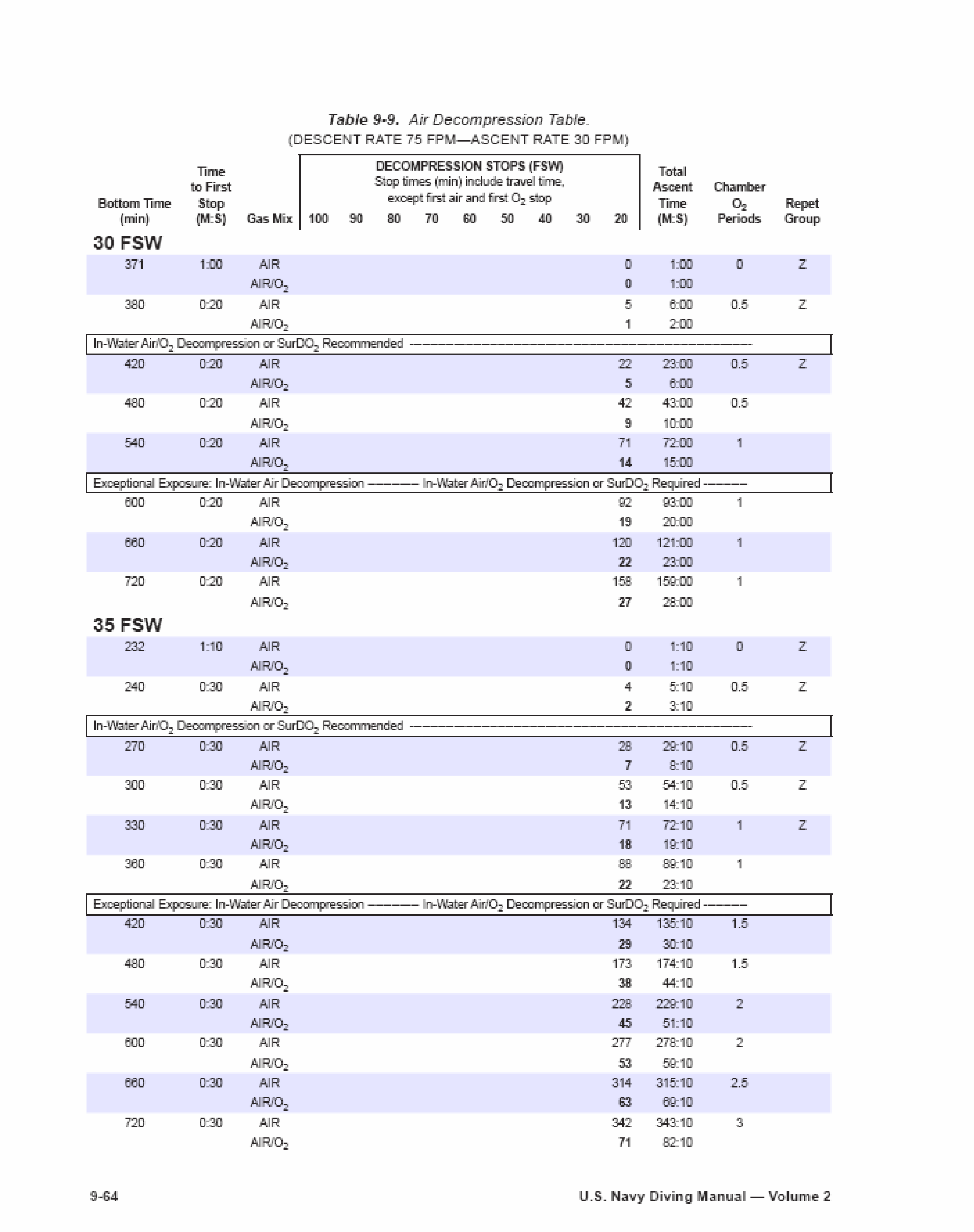


Table 9-9. Air Decompression Table.

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
30 FSW														
371	1:00	AIR									0	1:00	0	Z
		AIR/O_2									**0**	1:00		
380	0:20	AIR									5	6:00	0.5	Z
		AIR/O_2									**1**	2:00		
In-Water Air/O_2 Decompression or SurDO$_2$ Recommended ————————————														
420	0:20	AIR									22	23:00	0.5	Z
		AIR/O_2									**5**	6:00		
480	0:20	AIR									42	43:00	0.5	
		AIR/O_2									**9**	10:00		
540	0:20	AIR									71	72:00	1	
		AIR/O_2									**14**	15:00		
Exceptional Exposure: In-Water Air Decompression ——— In-Water Air/O_2 Decompression or SurDO$_2$ Required ———														
600	0:20	AIR									92	93:00	1	
		AIR/O_2									**19**	20:00		
660	0:20	AIR									120	121:00	1	
		AIR/O_2									**22**	23:00		
720	0:20	AIR									158	159:00	1	
		AIR/O_2									**27**	28:00		
35 FSW														
232	1:10	AIR									0	1:10	0	Z
		AIR/O_2									**0**	1:10		
240	0:30	AIR									4	5:10	0.5	Z
		AIR/O_2									**2**	3:10		
In-Water Air/O_2 Decompression or SurDO$_2$ Recommended ————————————														
270	0:30	AIR									28	29:10	0.5	Z
		AIR/O_2									**7**	8:10		
300	0:30	AIR									53	54:10	0.5	Z
		AIR/O_2									**13**	14:10		
330	0:30	AIR									71	72:10	1	Z
		AIR/O_2									**18**	19:10		
360	0:30	AIR									88	89:10	1	
		AIR/O_2									**22**	23:10		
Exceptional Exposure: In-Water Air Decompression ——— In-Water Air/O_2 Decompression or SurDO$_2$ Required ———														
420	0:30	AIR									134	135:10	1.5	
		AIR/O_2									**29**	30:10		
480	0:30	AIR									173	174:10	1.5	
		AIR/O_2									**38**	44:10		
540	0:30	AIR									228	229:10	2	
		AIR/O_2									**45**	51:10		
600	0:30	AIR									277	278:10	2	
		AIR/O_2									**53**	59:10		
660	0:30	AIR									314	315:10	2.5	
		AIR/O_2									**63**	69:10		
720	0:30	AIR									342	343:10	3	
		AIR/O_2									**71**	82:10		

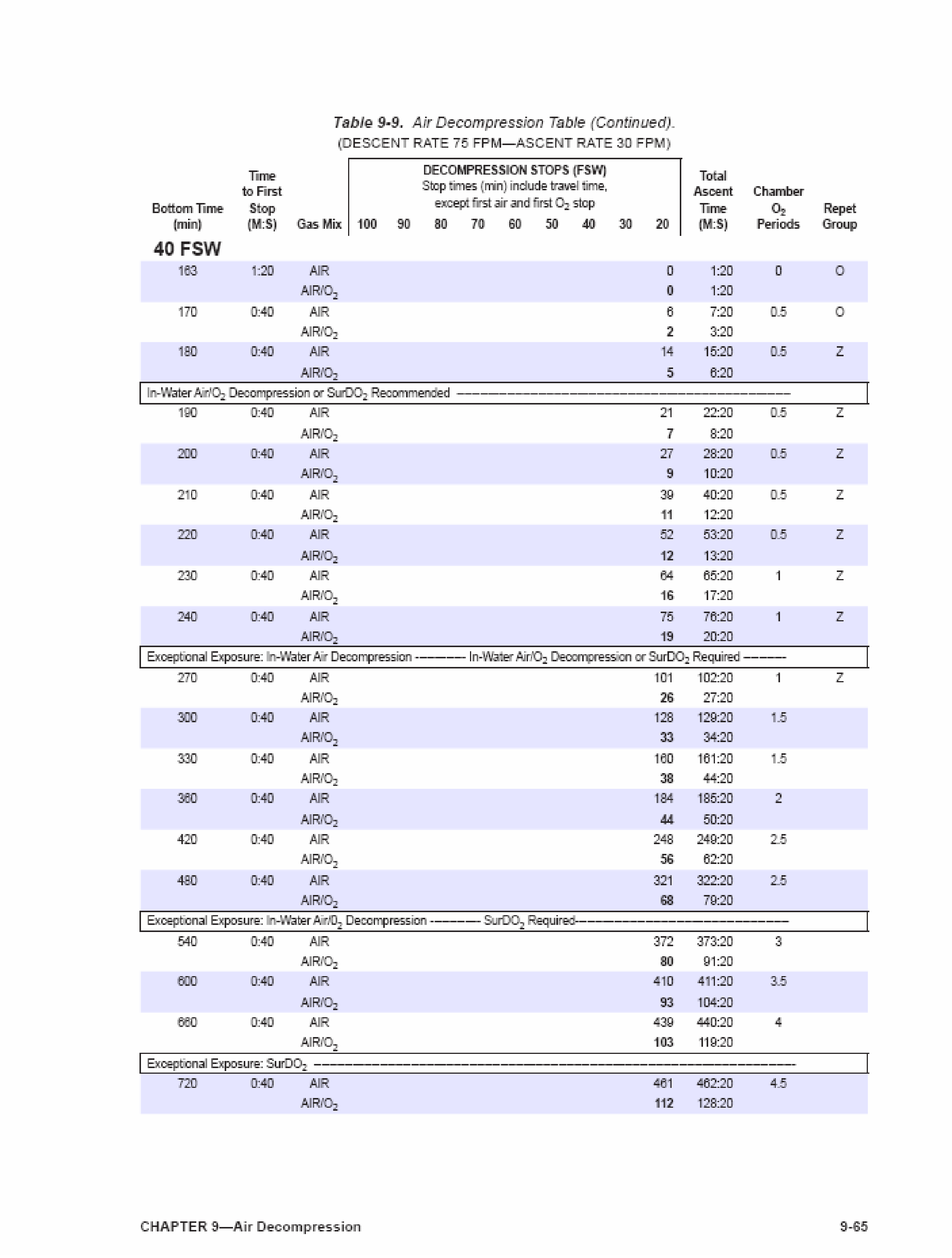


Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
40 FSW														
163	1:20	AIR									0	1:20	0	O
		AIR/O_2									**0**	1:20		
170	0:40	AIR									6	7:20	0.5	O
		AIR/O_2									**2**	3:20		
180	0:40	AIR									14	15:20	0.5	Z
		AIR/O_2									**5**	6:20		
In-Water Air/O_2 Decompression or SurDO_2 Recommended														
190	0:40	AIR									21	22:20	0.5	Z
		AIR/O_2									**7**	8:20		
200	0:40	AIR									27	28:20	0.5	Z
		AIR/O_2									**9**	10:20		
210	0:40	AIR									39	40:20	0.5	Z
		AIR/O_2									**11**	12:20		
220	0:40	AIR									52	53:20	0.5	Z
		AIR/O_2									**12**	13:20		
230	0:40	AIR									64	65:20	1	Z
		AIR/O_2									**16**	17:20		
240	0:40	AIR									75	76:20	1	Z
		AIR/O_2									**19**	20:20		
Exceptional Exposure: In-Water Air Decompression ——— In-Water Air/O_2 Decompression or SurDO_2 Required														
270	0:40	AIR									101	102:20	1	Z
		AIR/O_2									**26**	27:20		
300	0:40	AIR									128	129:20	1.5	
		AIR/O_2									**33**	34:20		
330	0:40	AIR									160	161:20	1.5	
		AIR/O_2									**38**	44:20		
360	0:40	AIR									184	185:20	2	
		AIR/O_2									**44**	50:20		
420	0:40	AIR									248	249:20	2.5	
		AIR/O_2									**56**	62:20		
480	0:40	AIR									321	322:20	2.5	
		AIR/O_2									**68**	79:20		
Exceptional Exposure: In-Water Air/0_2 Decompression ——— SurDO_2 Required														
540	0:40	AIR									372	373:20	3	
		AIR/O_2									**80**	91:20		
600	0:40	AIR									410	411:20	3.5	
		AIR/O_2									**93**	104:20		
660	0:40	AIR									439	440:20	4	
		AIR/O_2									**103**	119:20		
Exceptional Exposure: SurDO_2														
720	0:40	AIR									461	462:20	4.5	
		AIR/O_2									**112**	128:20		

CHAPTER 9—Air Decompression 9-65

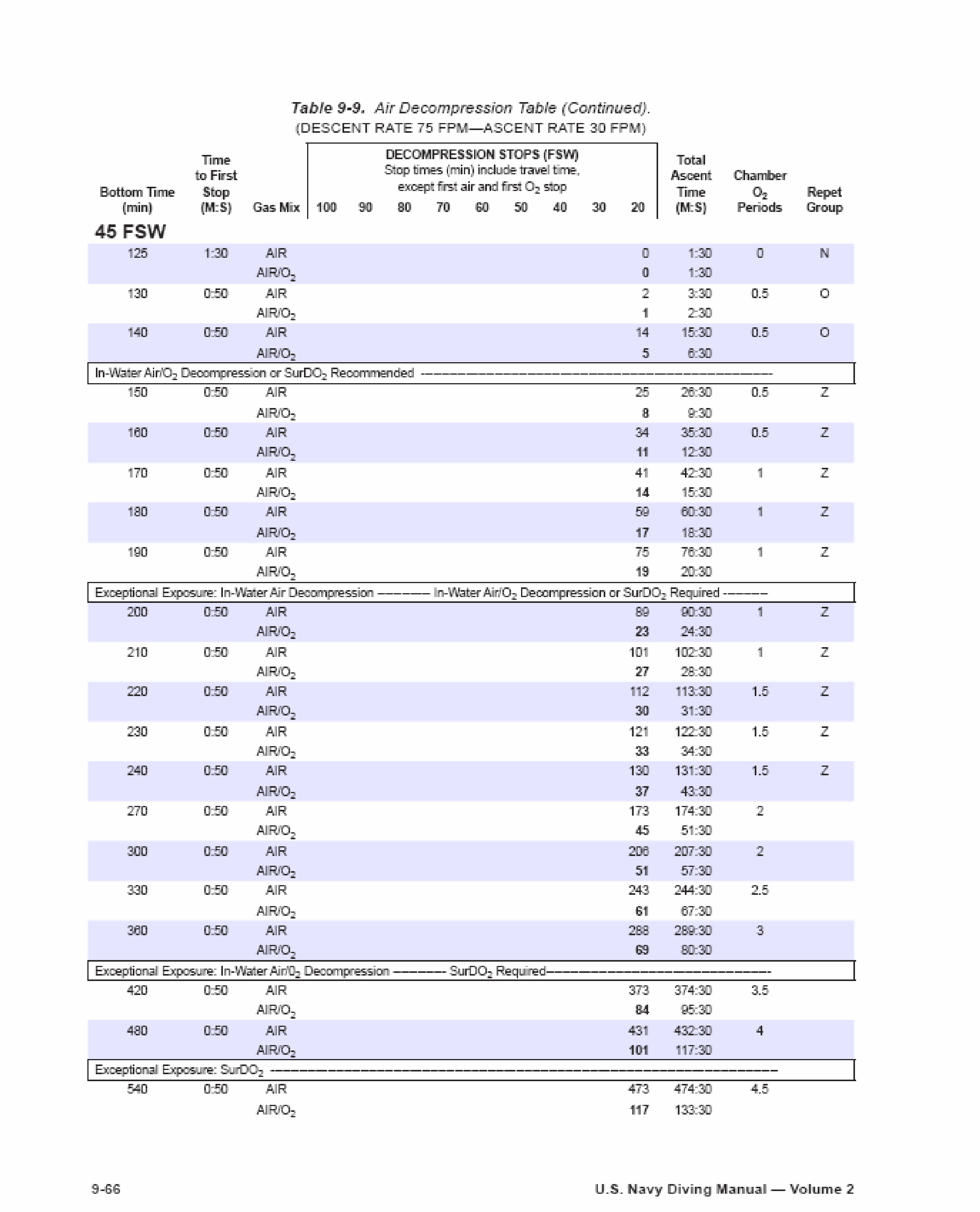


Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
45 FSW														
125	1:30	AIR									0	1:30	0	N
		AIR/O_2									**0**	1:30		
130	0:50	AIR									2	3:30	0.5	O
		AIR/O_2									**1**	2:30		
140	0:50	AIR									14	15:30	0.5	O
		AIR/O_2									**5**	6:30		
In-Water Air/O_2 Decompression or SurDO_2 Recommended --														
150	0:50	AIR									25	26:30	0.5	Z
		AIR/O_2									**8**	9:30		
160	0:50	AIR									34	35:30	0.5	Z
		AIR/O_2									**11**	12:30		
170	0:50	AIR									41	42:30	1	Z
		AIR/O_2									**14**	15:30		
180	0:50	AIR									59	60:30	1	Z
		AIR/O_2									**17**	18:30		
190	0:50	AIR									75	76:30	1	Z
		AIR/O_2									**19**	20:30		
Exceptional Exposure: In-Water Air Decompression ------- In-Water Air/O_2 Decompression or SurDO_2 Required -------														
200	0:50	AIR									89	90:30	1	Z
		AIR/O_2									**23**	24:30		
210	0:50	AIR									101	102:30	1	Z
		AIR/O_2									**27**	28:30		
220	0:50	AIR									112	113:30	1.5	Z
		AIR/O_2									**30**	31:30		
230	0:50	AIR									121	122:30	1.5	Z
		AIR/O_2									**33**	34:30		
240	0:50	AIR									130	131:30	1.5	Z
		AIR/O_2									**37**	43:30		
270	0:50	AIR									173	174:30	2	
		AIR/O_2									**45**	51:30		
300	0:50	AIR									206	207:30	2	
		AIR/O_2									**51**	57:30		
330	0:50	AIR									243	244:30	2.5	
		AIR/O_2									**61**	67:30		
360	0:50	AIR									288	289:30	3	
		AIR/O_2									**69**	80:30		
Exceptional Exposure: In-Water Air/0_2 Decompression -------- SurDO_2 Required----------------------------------														
420	0:50	AIR									373	374:30	3.5	
		AIR/O_2									**84**	95:30		
480	0:50	AIR									431	432:30	4	
		AIR/O_2									**101**	117:30		
Exceptional Exposure: SurDO_2 --														
540	0:50	AIR									473	474:30	4.5	
		AIR/O_2									**117**	133:30		

Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
50 FSW														
92	1:40	AIR									0	1:40	0	M
		AIR/O_2									**0**	1:40		
95	1:00	AIR									2	3:40	0.5	M
		AIR/O_2									**1**	2:40		
100	1:00	AIR									4	5:40	0.5	N
		AIR/O_2									**2**	3:40		
110	1:00	AIR									8	9:40	0.5	O
		AIR/O_2									**4**	5:40		
In-Water Air/O_2 Decompression or SurDO_2 Recommended ————————														
120	1:00	AIR									21	22:40	0.5	O
		AIR/O_2									**7**	8:40		
130	1:00	AIR									34	35:40	0.5	Z
		AIR/O_2									**12**	13:40		
140	1:00	AIR									45	46:40	1	Z
		AIR/O_2									**16**	17:40		
150	1:00	AIR									56	57:40	1	Z
		AIR/O_2									**19**	20:40		
160	1:00	AIR									78	79:40	1	Z
		AIR/O_2									**23**	24:40		
Exceptional Exposure: In-Water Air Decompression ——— In-Water Air/O_2 Decompression or SurDO_2 Required ———														
170	1:00	AIR									96	97:40	1	Z
		AIR/O_2									**26**	27:40		
180	1:00	AIR									111	112:40	1.5	Z
		AIR/O_2									**30**	31:40		
190	1:00	AIR									125	126:40	1.5	Z
		AIR/O_2									**35**	36:40		
200	1:00	AIR									136	137:40	1.5	Z
		AIR/O_2									**39**	45:40		
210	1:00	AIR									147	148:40	2	
		AIR/O_2									**43**	49:40		
220	1:00	AIR									166	167:40	2	
		AIR/O_2									**47**	53:40		
230	1:00	AIR									183	184:40	2	
		AIR/O_2									**50**	56:40		
240	1:00	AIR									198	199:40	2	
		AIR/O_2									**53**	59:40		
270	1:00	AIR									236	237:40	2.5	
		AIR/O_2									**62**	68:40		
300	1:00	AIR									285	286:40	3	
		AIR/O_2									**74**	85:40		
Exceptional Exposure: In-Water Air/O_2 Decompression ——— SurDO_2 Required————————														
330	1:00	AIR									345	346:40	3.5	
		AIR/O_2									**83**	94:40		
360	1:00	AIR									393	394:40	3.5	
		AIR/O_2									**92**	103:40		
Exceptional Exposure: SurDO_2 ————————————														
420	1:00	AIR									464	465:40	4.5	
		AIR/O_2									**113**	129:40		

Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
55 FSW														
74	1:50	AIR									0	1:50	0	L
		AIR/O_2									**0**	1:50		
75	1:10	AIR									1	2:50	0.5	L
		AIR/O_2									**1**	2:50		
80	1:10	AIR									4	5:50	0.5	M
		AIR/O_2									**2**	3:50		
90	1:10	AIR									10	11:50	0.5	N
		AIR/O_2									**5**	6:50		
In-Water Air/O_2 Decompression or SurDO_2 Recommended ————————														
100	1:10	AIR									17	18:50	0.5	O
		AIR/O_2									**8**	9:50		
110	1:10	AIR									34	35:50	0.5	O
		AIR/O_2									**12**	13:50		
120	1:10	AIR									48	49:50	1	Z
		AIR/O_2									**17**	18:50		
130	1:10	AIR									59	60:50	1	Z
		AIR/O_2									**22**	23:50		
140	1:10	AIR									84	85:50	1	Z
		AIR/O_2									**26**	27:50		
Exceptional Exposure: In-Water Air Decompression ——— In-Water Air/O_2 Decompression or SurDO_2 Required ———														
150	1:10	AIR									105	106:50	1.5	Z
		AIR/O_2									**30**	31:50		
160	1:10	AIR									123	124:50	1.5	Z
		AIR/O_2									**34**	35:50		
170	1:10	AIR									138	139:50	1.5	Z
		AIR/O_2									**40**	46:50		
180	1:10	AIR									151	152:50	2	Z
		AIR/O_2									**45**	51:50		
190	1:10	AIR									169	170:50	2	
		AIR/O_2									**50**	56:50		
200	1:10	AIR									190	191:50	2	
		AIR/O_2									**54**	60:50		
210	1:10	AIR									208	209:50	2.5	
		AIR/O_2									**58**	64:50		
220	1:10	AIR									224	225:50	2.5	
		AIR/O_2									**62**	68:50		
230	1:10	AIR									239	240:50	2.5	
		AIR/O_2									**66**	77:50		
240	1:10	AIR									254	255:50	3	
		AIR/O_2									**69**	80:50		
Exceptional Exposure: In-Water Air/0$_2$ Decompression ——— SurDO_2 Required———————														
270	1:10	AIR									313	314:50	3.5	
		AIR/O_2									**83**	94:50		
300	1:10	AIR									380	381:50	3.5	
		AIR/O_2									**94**	105:50		
330	1:10	AIR									432	433:50	4	
		AIR/O_2									**106**	122:50		
Exceptional Exposure: SurDO_2 ————————————														
360	1:10	AIR									474	475:50	4.5	
		AIR/O_2									**118**	134:50		

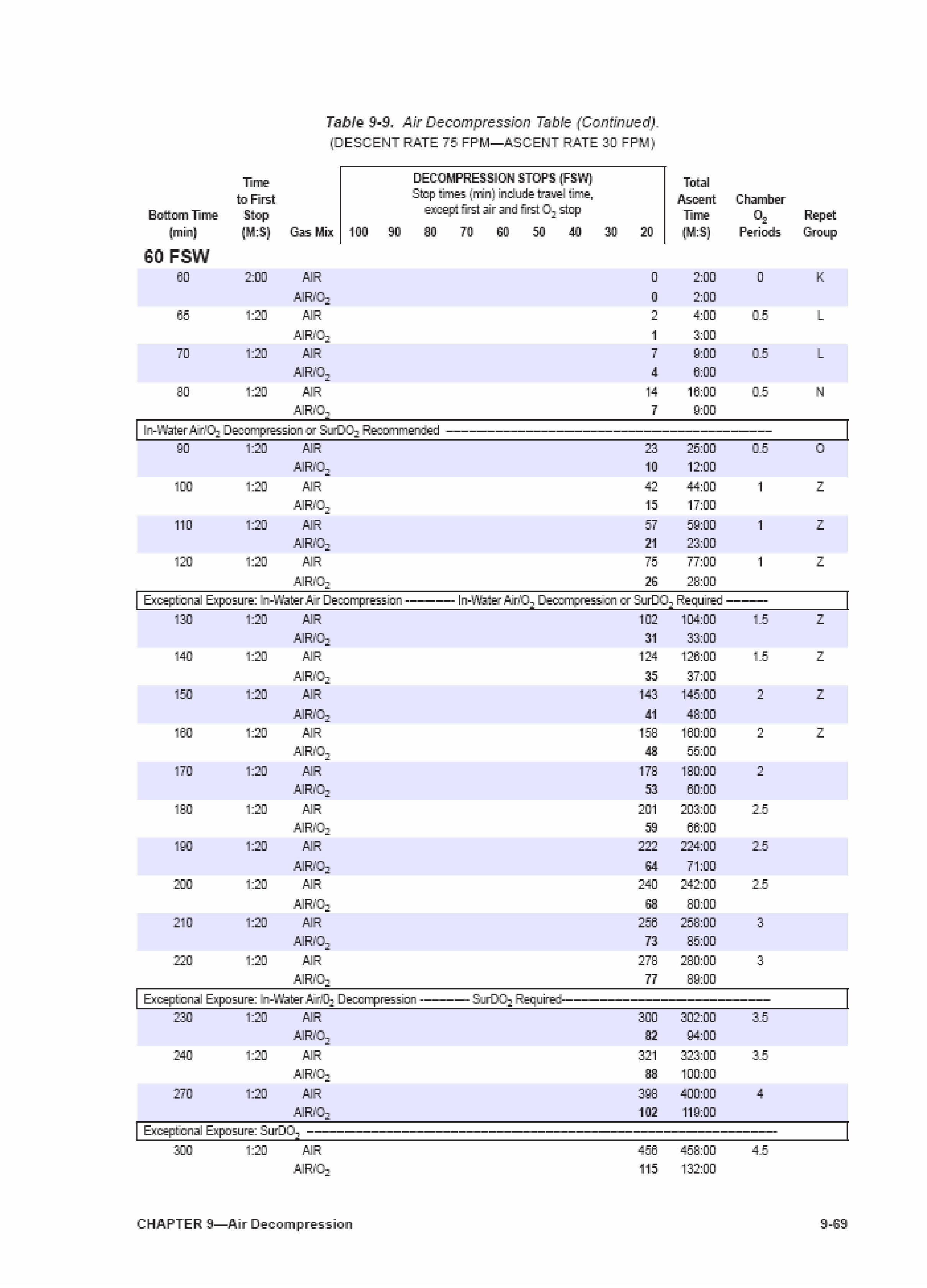


Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop 100	90	80	70	60	50	40	30	20	Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
60 FSW														
60	2:00	AIR									0	2:00	0	K
		AIR/O_2									**0**	2:00		
65	1:20	AIR									2	4:00	0.5	L
		AIR/O_2									**1**	3:00		
70	1:20	AIR									7	9:00	0.5	L
		AIR/O_2									**4**	6:00		
80	1:20	AIR									14	16:00	0.5	N
		AIR/O_2									**7**	9:00		
In-Water Air/O_2 Decompression or SurDO_2 Recommended														
90	1:20	AIR									23	25:00	0.5	O
		AIR/O_2									**10**	12:00		
100	1:20	AIR									42	44:00	1	Z
		AIR/O_2									**15**	17:00		
110	1:20	AIR									57	59:00	1	Z
		AIR/O_2									**21**	23:00		
120	1:20	AIR									75	77:00	1	Z
		AIR/O_2									**26**	28:00		
Exceptional Exposure: In-Water Air Decompression -------- In-Water Air/O_2 Decompression or SurDO_2 Required ------														
130	1:20	AIR									102	104:00	1.5	Z
		AIR/O_2									**31**	33:00		
140	1:20	AIR									124	126:00	1.5	Z
		AIR/O_2									**35**	37:00		
150	1:20	AIR									143	145:00	2	Z
		AIR/O_2									**41**	48:00		
160	1:20	AIR									158	160:00	2	Z
		AIR/O_2									**48**	55:00		
170	1:20	AIR									178	180:00	2	
		AIR/O_2									**53**	60:00		
180	1:20	AIR									201	203:00	2.5	
		AIR/O_2									**59**	66:00		
190	1:20	AIR									222	224:00	2.5	
		AIR/O_2									**64**	71:00		
200	1:20	AIR									240	242:00	2.5	
		AIR/O_2									**68**	80:00		
210	1:20	AIR									256	258:00	3	
		AIR/O_2									**73**	85:00		
220	1:20	AIR									278	280:00	3	
		AIR/O_2									**77**	89:00		
Exceptional Exposure: In-Water Air/0_2 Decompression -------- SurDO_2 Required------------------------------														
230	1:20	AIR									300	302:00	3.5	
		AIR/O_2									**82**	94:00		
240	1:20	AIR									321	323:00	3.5	
		AIR/O_2									**88**	100:00		
270	1:20	AIR									398	400:00	4	
		AIR/O_2									**102**	119:00		
Exceptional Exposure: SurDO_2 --														
300	1:20	AIR									456	458:00	4.5	
		AIR/O_2									**115**	132:00		

Table 9-9. *Air Decompression Table (Continued).*

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
70 FSW														
48	2:20	AIR									0	2:20	0	K
		AIR/O_2									0	2:20		
50	1:40	AIR									2	4:20	0.5	K
		AIR/O_2									1	3:20		
55	1:40	AIR									9	11:20	0.5	L
		AIR/O_2									5	7:20		
60	1:40	AIR									14	16:20	0.5	M
		AIR/O_2									8	10:20		
In-Water Air/O_2 Decompression or SurDO_2 Recommended ————————————————————														
70	1:40	AIR									24	26:20	0.5	N
		AIR/O_2									13	15:20		
80	1:40	AIR									44	46:20	1	O
		AIR/O_2									17	19:20		
90	1:40	AIR									64	66:20	1	Z
		AIR/O_2									24	26:20		
100	1:40	AIR									88	90:20	1.5	Z
		AIR/O_2									31	33:20		
Exceptional Exposure: In-Water Air Decompression ——— In-Water Air/O_2 Decompression or SurDO_2 Required ———														
110	1:40	AIR									120	122:20	1.5	Z
		AIR/O_2									38	45:20		
120	1:40	AIR									145	147:20	2	Z
		AIR/O_2									44	51:20		
130	1:40	AIR									167	169:20	2	Z
		AIR/O_2									51	58:20		
140	1:40	AIR									189	191:20	2.5	
		AIR/O_2									59	66:20		
150	1:40	AIR									219	221:20	2.5	
		AIR/O_2									66	78:20		
160	1:20	AIR								1	244	247:00	3	
		AIR/O_2								1	72	85:00		
Exceptional Exposure: In-Water Air/0_2 Decompression ——— SurDO_2 Required———————————														
170	1:20	AIR								2	265	269:00	3	
		AIR/O_2								1	78	91:00		
180	1:20	AIR								4	289	295:00	3.5	
		AIR/O_2								2	83	97:00		
190	1:20	AIR								5	316	323:00	3.5	
		AIR/O_2								3	88	103:00		
200	1:20	AIR								9	345	356:00	4	
		AIR/O_2								5	93	115:00		
210	1:20	AIR								13	378	393:00	4	
		AIR/O_2								7	98	122:00		
Exceptional Exposure: SurDO_2 ————————————————————————														
240	1:20	AIR								25	454	481:00	5	
		AIR/O_2								13	110	140:00		

Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
80 FSW														
39	2:40	AIR									0	2:40	0	J
		AIR/O_2									**0**	2:40		
40	2:00	AIR									1	3:40	0.5	J
		AIR/O_2									**1**	3:40		
45	2:00	AIR									10	12:40	0.5	K
		AIR/O_2									**5**	7:40		
In-Water Air/O_2 Decompression or SurDO$_2$ Recommended --														
50	2:00	AIR									17	19:40	0.5	M
		AIR/O_2									**9**	11:40		
55	2:00	AIR									24	26:40	0.5	M
		AIR/O_2									**13**	15:40		
60	2:00	AIR									30	32:40	1	N
		AIR/O_2									**16**	18:40		
70	2:00	AIR									54	56:40	1	O
		AIR/O_2									**22**	24:40		
80	2:00	AIR									77	79:40	1.5	Z
		AIR/O_2									**30**	32:40		
Exceptional Exposure: In-Water Air Decompression -------- In-Water Air/O_2 Decompression or SurDO$_2$ Required -------														
90	2:00	AIR									114	116:40	1.5	Z
		AIR/O_2									**39**	46:40		
100	1:40	AIR								1	147	150:20	2	Z
		AIR/O_2								**1**	**46**	54:20		
110	1:40	AIR								6	171	179:20	2	Z
		AIR/O_2								**3**	**51**	61:20		
120	1:40	AIR								10	200	212:20	2.5	
		AIR/O_2								**5**	**59**	71:20		
130	1:40	AIR								14	232	248:20	3	
		AIR/O_2								**7**	**67**	86:20		
Exceptional Exposure: In-Water Air/0$_2$ Decompression -------- SurDO$_2$ Required-------------------------------														
140	1:40	AIR								17	258	277:20	3.5	
		AIR/O_2								**9**	**73**	94:20		
150	1:40	AIR								19	285	306:20	3.5	
		AIR/O_2								**10**	**80**	102:20		
160	1:40	AIR								21	318	341:20	4	
		AIR/O_2								**11**	**86**	114:20		
170	1:40	AIR								27	354	383:20	4	
		AIR/O_2								**14**	**90**	121:20		
Exceptional Exposure: SurDO$_2$ ---														
180	1:40	AIR								33	391	426:20	4.5	
		AIR/O_2								**17**	**96**	130:20		
210	1:40	AIR								50	474	526:20	5	
		AIR/O_2								**26**	**110**	158:20		

Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
90 FSW														
30	3:00	AIR									0	3:00	0	I
		AIR/O_2									**0**	3:00		
35	2:20	AIR									4	7:00	0.5	J
		AIR/O_2									**2**	5:00		
40	2:20	AIR									14	17:00	0.5	L
		AIR/O_2									**7**	10:00		
In-Water Air/O_2 Decompression or SurDO_2 Recommended ————————————————————														
45	2:20	AIR									23	26:00	0.5	M
		AIR/O_2									**12**	15:00		
50	2:20	AIR									31	34:00	1	N
		AIR/O_2									**17**	20:00		
55	2:20	AIR									39	42:00	1	O
		AIR/O_2									**21**	24:00		
60	2:20	AIR									56	59:00	1	O
		AIR/O_2									**24**	27:00		
70	2:20	AIR									83	86:00	1.5	Z
		AIR/O_2									**32**	35:00		
Exceptional Exposure: In-Water Air Decompression ——— In-Water Air/O_2 Decompression or SurDO_2 Required ———														
80	2:00	AIR								5	125	132:40	2	Z
		AIR/O_2								**3**	**40**	50:40		
90	2:00	AIR								13	158	173:40	2	Z
		AIR/O_2								**7**	**46**	60:40		
100	2:00	AIR								19	165	206:40	2.5	
		AIR/O_2								**10**	**53**	70:40		
110	2:00	AIR								25	224	251:40	3	
		AIR/O_2								**13**	**61**	86:40		
Exceptional Exposure: In-Water Air/0_2 Decompression ——— SurDO_2 Required————————————														
120	1:40	AIR							1	29	256	288:20	3.5	
		AIR/O_2							1	**15**	**70**	98:40		
130	1:40	AIR							5	28	291	326:20	3.5	
		AIR/O_2							5	**15**	**78**	110:40		
140	1:40	AIR							8	28	330	368:20	4	
		AIR/O_2							8	**15**	**86**	126:40		
Exceptional Exposure: SurDO_2 ——————————————————————————														
150	1:40	AIR							11	34	378	425:20	4.5	
		AIR/O_2							11	**17**	**94**	139:40		
160	1:40	AIR							13	40	418	473:20	4.5	
		AIR/O_2							13	**21**	**100**	151:40		
170	1:40	AIR							15	45	451	513:20	5	
		AIR/O_2							15	**23**	**106**	166:40		
180	1:40	AIR							16	51	479	548:20	5.5	
		AIR/O_2							16	**26**	**112**	176:40		
240	1:40	AIR							42	68	592	704:20	7.5	
		AIR/O_2							42	**34**	**159**	267:00		

Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
100 FSW														
25	3:20	AIR									0	3:20	0	H
		AIR/O_2									**0**	3:20		
30	2:40	AIR									3	6:20	0.5	J
		AIR/O_2									**2**	5:20		
35	2:40	AIR									15	18:20	0.5	L
		AIR/O_2									**8**	11:20		
In-Water Air/O_2 Decompression or SurDO_2 Recommended ———————————————————														
40	2:40	AIR									26	29:20	1	M
		AIR/O_2									**14**	17:20		
45	2:40	AIR									36	39:20	1	N
		AIR/O_2									**19**	22:20		
50	2:40	AIR									47	50:20	1	O
		AIR/O_2									**24**	27:20		
55	2:40	AIR									65	68:20	1.5	Z
		AIR/O_2									**28**	31:20		
60	2:40	AIR									81	84:20	1.5	Z
		AIR/O_2									**33**	35:20		
Exceptional Exposure: In-Water Air Decompression ——— In-Water Air/O_2 Decompression or SurDO_2 Required ———														
70	2:20	AIR								11	124	138:00	2	Z
		AIR/O_2								**6**	**39**	53:00		
80	2:20	AIR								21	160	184:00	2.5	Z
		AIR/O_2								**11**	**45**	64:00		
90	2:00	AIR							2	28	196	228:40	2.5	
		AIR/O_2							2	**15**	**52**	82:00		
Exceptional Exposure: In-Water Air/0_2 Decompression ——— SurDO_2 Required————————————														
100	2:00	AIR							9	28	241	280:40	3	
		AIR/O_2							9	**14**	**66**	102:00		
110	2:00	AIR							14	28	278	322:40	3.5	
		AIR/O_2							14	**15**	**75**	117:00		
120	2:00	AIR							19	28	324	373:40	4	
		AIR/O_2							19	**15**	**84**	136:00		
Exceptional Exposure: SurDO_2 —————————————————————————														
150	1:40	AIR						3	26	46	461	538:20	5	
		AIR/O_2						3	26	**24**	**108**	183:40		

Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
110 FSW														
20	3:40	AIR									0	3:40	0	H
		AIR/O_2									**0**	3:40		
25	3:00	AIR									3	6:40	0.5	I
		AIR/O_2									**2**	5:40		
30	3:00	AIR									14	17:40	0.5	K
		AIR/O_2									**7**	10:40		
In-Water Air/O_2 Decompression or SurDO_2 Recommended ———————————————————————														
35	3:00	AIR									27	30:40	1	M
		AIR/O_2									**14**	17:40		
40	3:00	AIR									39	42:40	1	N
		AIR/O_2									**20**	23:40		
45	3:00	AIR									50	53:40	1	O
		AIR/O_2									**26**	29:40		
50	3:00	AIR									71	74:40	1.5	Z
		AIR/O_2									**31**	34:40		
Exceptional Exposure: In-Water Air Decompression ——————— In-Water Air/O_2 Decompression or SurDO_2 Required ———————														
55	2:40	AIR								5	85	93:20	1.5	Z
		AIR/O_2								**3**	**33**	44:20		
60	2:40	AIR								13	111	127:20	2	Z
		AIR/O_2								**7**	**36**	51:20		
70	2:40	AIR								26	155	184:20	2.5	Z
		AIR/O_2								**13**	**43**	64:20		
80	2:20	AIR							9	28	200	240:00	2.5	
		AIR/O_2							9	**15**	**53**	90:20		
Exceptional Exposure: In-Water Air/0_2 Decompression ——————— SurDO_2 Required———————————————————														
90	2:20	AIR							17	29	248	297:00	3.5	
		AIR/O_2							17	**15**	**67**	112:20		
100	2:20	AIR							25	28	295	351:00	3.5	
		AIR/O_2							25	**15**	**78**	131:20		
110	2:00	AIR						5	26	28	353	414:40	4	
		AIR/O_2						5	26	**15**	**90**	154:00		
Exceptional Exposure: SurDO_2 ————————————————————————————————————														
120	2:00	AIR						10	26	35	413	486:40	4.5	
		AIR/O_2						10	26	**18**	**101**	173:00		
180	1:40	AIR					3	23	47	68	593	736:20	7.5	
		AIR/O_2					3	23	47	**34**	**159**	298:00		

Table 9-9. Air Decompression Table (Continued).
(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	**DECOMPRESSION STOPS (FSW)** Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
120 FSW														
15	4:00	AIR									0	4:00	0	F
		AIR/O_2									**0**	4:00		
20	3:20	AIR									2	6:00	0.5	H
		AIR/O_2									**1**	5:00		
25	3:20	AIR									8	12:00	0.5	J
		AIR/O_2									**4**	8:00		
In-Water Air/O_2 Decompression or SurDO_2 Recommended --														
30	3:20	AIR									24	28:00	0.5	L
		AIR/O_2									**13**	17:00		
35	3:20	AIR									38	42:00	1	N
		AIR/O_2									**20**	24:00		
40	3:20	AIR									51	55:00	1	O
		AIR/O_2									**27**	31:00		
45	3:20	AIR									72	76:00	1.5	Z
		AIR/O_2									**33**	37:00		
Exceptional Exposure: In-Water Air Decompression -------- In-Water Air/O_2 Decompression or SurDO_2 Required -------														
50	3:00	AIR								9	86	98:40	1.5	Z
		AIR/O_2								**5**	**33**	46:40		
55	3:00	AIR								19	116	138:40	2	Z
		AIR/O_2								**10**	**35**	53:40		
60	3:00	AIR								27	142	172:40	2	Z
		AIR/O_2								**14**	**39**	61:40		
70	2:40	AIR							12	29	189	233:20	2.5	
		AIR/O_2							12	**15**	**50**	85:40		
Exceptional Exposure: In-Water Air/0_2 Decompression -------- SurDO_2 Required------------------------------														
80	2:40	AIR							24	28	246	301:20	3	
		AIR/O_2							24	**14**	**67**	118:40		
90	2:20	AIR						7	26	28	303	367:00	3.5	
		AIR/O_2						7	26	**15**	**79**	140:20		
100	2:20	AIR						14	26	28	372	443:00	4	
		AIR/O_2						14	26	**15**	**94**	167:20		
Exceptional Exposure: SurDO_2 --														
110	2:20	AIR						21	25	38	433	520:00	5	
		AIR/O_2						21	25	**20**	**104**	188:20		
120	2:00	AIR					3	23	25	47	480	580:40	5.5	
		AIR/O_2					3	23	25	**24**	**113**	211:00		

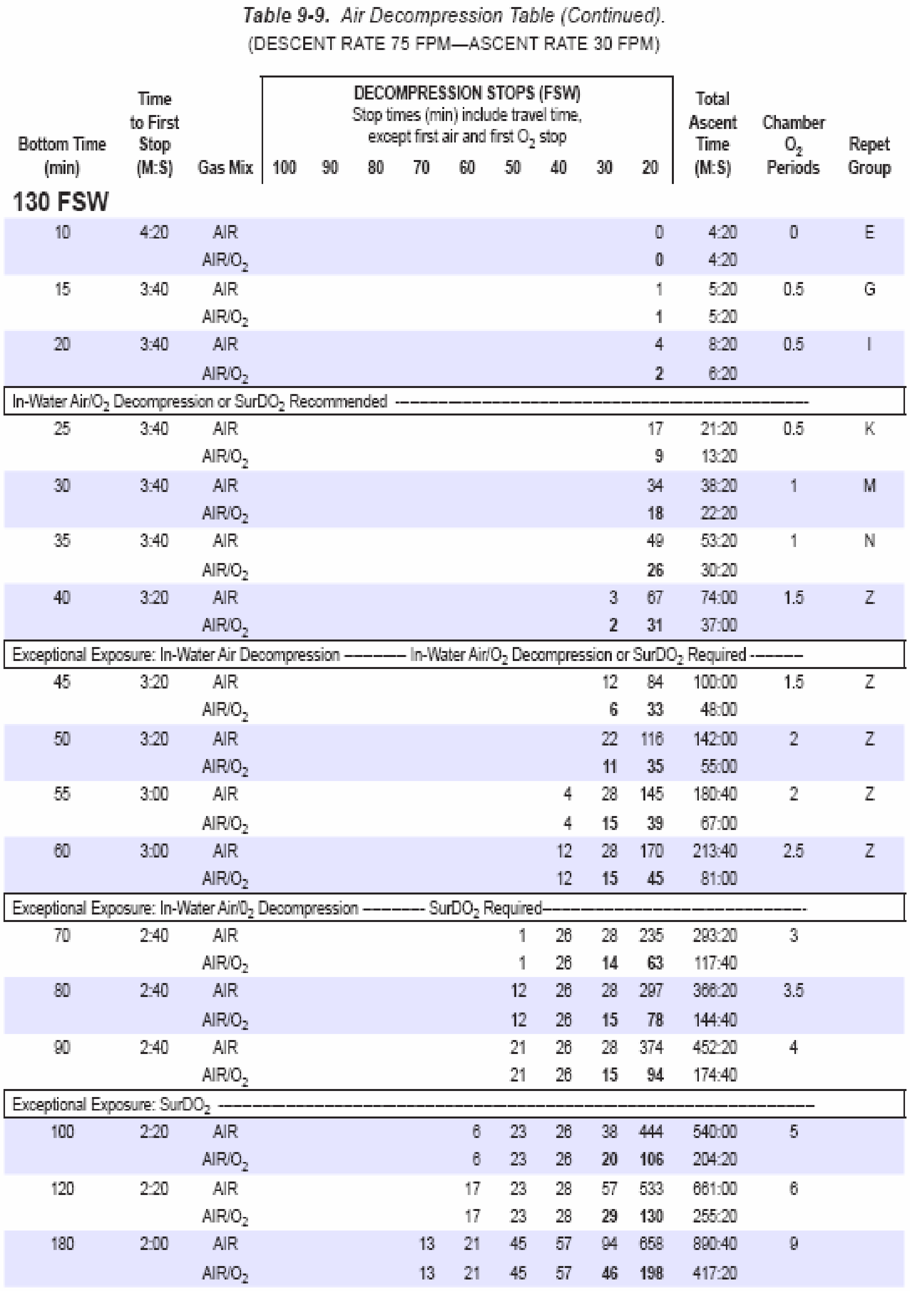


Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

			DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop											
Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	100	90	80	70	60	50	40	30	20	Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
130 FSW														
10	4:20	AIR									0	4:20	0	E
		AIR/O_2									**0**	4:20		
15	3:40	AIR									1	5:20	0.5	G
		AIR/O_2									**1**	5:20		
20	3:40	AIR									4	8:20	0.5	I
		AIR/O_2									**2**	6:20		
In-Water Air/O_2 Decompression or SurDO_2 Recommended --														
25	3:40	AIR									17	21:20	0.5	K
		AIR/O_2									**9**	13:20		
30	3:40	AIR									34	38:20	1	M
		AIR/O_2									**18**	22:20		
35	3:40	AIR									49	53:20	1	N
		AIR/O_2									**26**	30:20		
40	3:20	AIR								3	67	74:00	1.5	Z
		AIR/O_2								**2**	**31**	37:00		
Exceptional Exposure: In-Water Air Decompression -------- In-Water Air/O_2 Decompression or SurDO_2 Required -------														
45	3:20	AIR								12	84	100:00	1.5	Z
		AIR/O_2								**6**	**33**	48:00		
50	3:20	AIR								22	116	142:00	2	Z
		AIR/O_2								**11**	**35**	55:00		
55	3:00	AIR							4	28	145	180:40	2	Z
		AIR/O_2							4	**15**	**39**	67:00		
60	3:00	AIR							12	28	170	213:40	2.5	Z
		AIR/O_2							12	**15**	**45**	81:00		
Exceptional Exposure: In-Water Air/0_2 Decompression -------- SurDO_2 Required----------------------------------														
70	2:40	AIR						1	26	28	235	293:20	3	
		AIR/O_2						1	26	**14**	**63**	117:40		
80	2:40	AIR						12	26	28	297	366:20	3.5	
		AIR/O_2						12	26	**15**	**78**	144:40		
90	2:40	AIR						21	26	28	374	452:20	4	
		AIR/O_2						21	26	**15**	**94**	174:40		
Exceptional Exposure: SurDO_2 ---														
100	2:20	AIR					6	23	26	38	444	540:00	5	
		AIR/O_2					6	23	26	**20**	**106**	204:20		
120	2:20	AIR					17	23	28	57	533	661:00	6	
		AIR/O_2					17	23	28	**29**	**130**	255:20		
180	2:00	AIR				13	21	45	57	94	658	890:40	9	
		AIR/O_2				13	21	45	57	**46**	**198**	417:20		

Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
140 FSW														
10	4:40	AIR									0	4:40	0	E
		AIR/O_2									**0**	4:40		
15	4:00	AIR									2	6:40	0.5	H
		AIR/O_2									**1**	5:40		
20	4:00	AIR									7	11:40	0.5	J
		AIR/O_2									**4**	8:40		
In-Water Air/O_2 Decompression or SurDO_2 Recommended ———————————————————														
25	4:00	AIR									26	30:40	1	L
		AIR/O_2									**14**	18:40		
30	4:00	AIR									44	48:40	1	N
		AIR/O_2									**23**	27:40		
35	3:40	AIR								4	59	67:20	1.5	O
		AIR/O_2								**2**	**30**	36:20		
Exceptional Exposure: In-Water Air Decompression ——— In-Water Air/O_2 Decompression or SurDO_2 Required ———														
40	3:40	AIR								11	80	95:20	1.5	Z
		AIR/O_2								**6**	**33**	48:20		
45	3:20	AIR							3	21	113	141:00	2	Z
		AIR/O_2							3	**11**	**34**	57:20		
50	3:20	AIR							7	28	145	184:00	2	Z
		AIR/O_2							7	**14**	**40**	70:20		
55	3:20	AIR							16	28	171	219:00	2.5	Z
		AIR/O_2							16	**15**	**45**	85:20		
Exceptional Exposure: In-Water Air/0_2 Decompression ——— SurDO_2 Required———————————														
60	3:00	AIR						2	23	28	209	265:40	3	
		AIR/O_2						2	23	**15**	**55**	109:00		
70	3:00	AIR						14	25	28	276	346:40	3.5	
		AIR/O_2						14	25	**15**	**74**	142:00		
80	2:40	AIR					2	24	25	29	362	445:20	4	
		AIR/O_2					2	24	25	**15**	**91**	175:40		
Exceptional Exposure: SurDO_2 ———————————————————————————														
90	2:40	AIR					12	23	26	38	443	545:20	5	
		AIR/O_2					12	23	26	**19**	**107**	210:40		

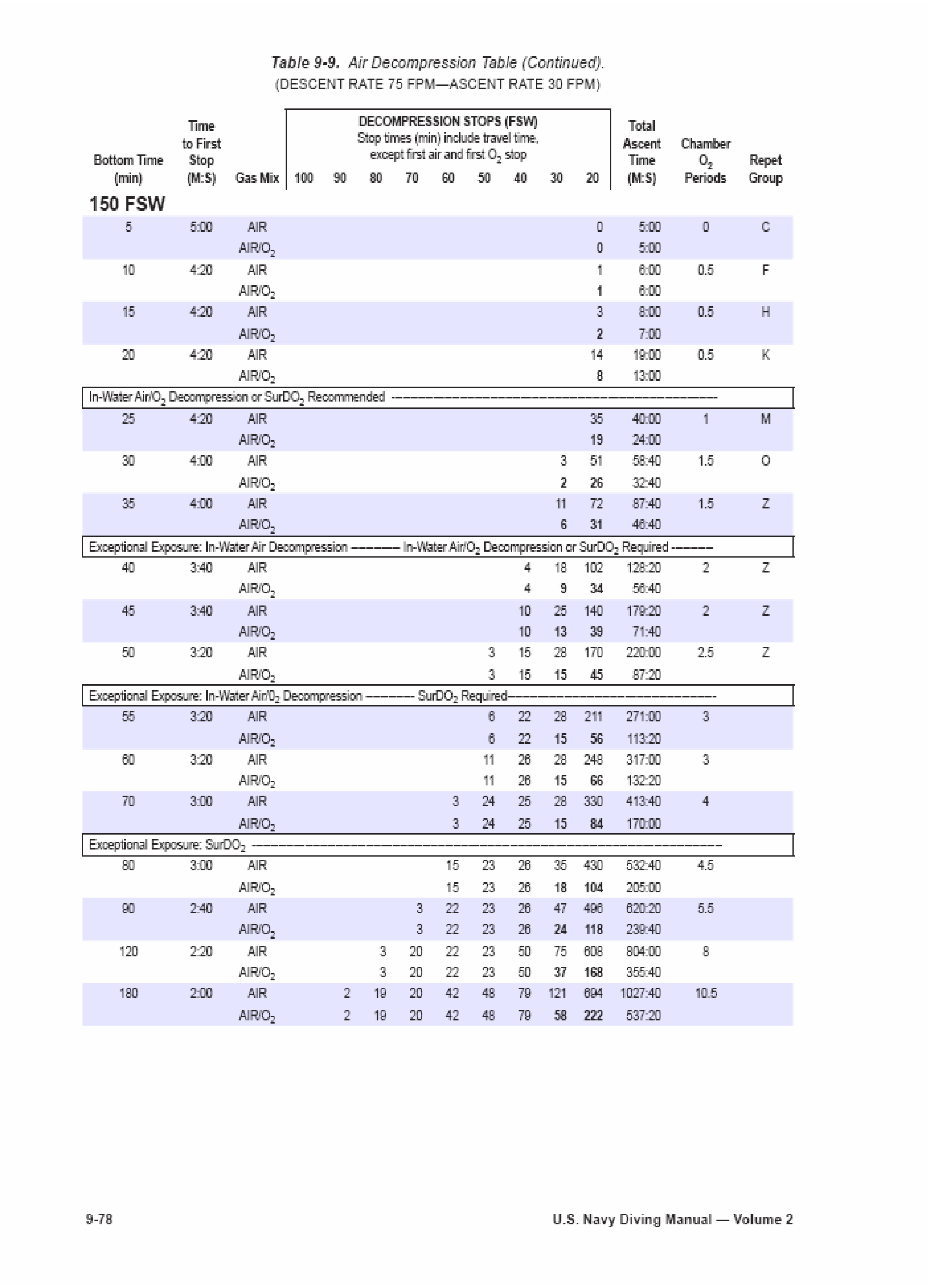


Table 9-9. Air Decompression Table (Continued).
(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
150 FSW														
5	5:00	AIR									0	5:00	0	C
		AIR/O_2									**0**	5:00		
10	4:20	AIR									1	6:00	0.5	F
		AIR/O_2									**1**	6:00		
15	4:20	AIR									3	8:00	0.5	H
		AIR/O_2									**2**	7:00		
20	4:20	AIR									14	19:00	0.5	K
		AIR/O_2									**8**	13:00		
In-Water Air/O_2 Decompression or SurDO_2 Recommended --														
25	4:20	AIR									35	40:00	1	M
		AIR/O_2									**19**	24:00		
30	4:00	AIR								3	51	58:40	1.5	O
		AIR/O_2								**2**	**26**	32:40		
35	4:00	AIR								11	72	87:40	1.5	Z
		AIR/O_2								**6**	**31**	46:40		
Exceptional Exposure: In-Water Air Decompression -------- In-Water Air/O_2 Decompression or SurDO_2 Required -------														
40	3:40	AIR							4	18	102	128:20	2	Z
		AIR/O_2							4	**9**	**34**	56:40		
45	3:40	AIR							10	25	140	179:20	2	Z
		AIR/O_2							10	**13**	**39**	71:40		
50	3:20	AIR						3	15	28	170	220:00	2.5	Z
		AIR/O_2						3	15	**15**	**45**	87:20		
Exceptional Exposure: In-Water Air/0_2 Decompression -------- SurDO_2 Required----------------------------------														
55	3:20	AIR						6	22	28	211	271:00	3	
		AIR/O_2						6	22	**15**	**56**	113:20		
60	3:20	AIR						11	26	28	248	317:00	3	
		AIR/O_2						11	26	**15**	**66**	132:20		
70	3:00	AIR					3	24	25	28	330	413:40	4	
		AIR/O_2					3	24	25	**15**	**84**	170:00		
Exceptional Exposure: SurDO_2 --														
80	3:00	AIR					15	23	26	35	430	532:40	4.5	
		AIR/O_2					15	23	26	**18**	**104**	205:00		
90	2:40	AIR				3	22	23	26	47	496	620:20	5.5	
		AIR/O_2				3	22	23	26	**24**	**118**	239:40		
120	2:20	AIR			3	20	22	23	50	75	608	804:00	8	
		AIR/O_2			3	20	22	23	50	**37**	**168**	355:40		
180	2:00	AIR		2	19	20	42	48	79	121	694	1027:40	10.5	
		AIR/O_2		2	19	20	42	48	79	**58**	**222**	537:20		

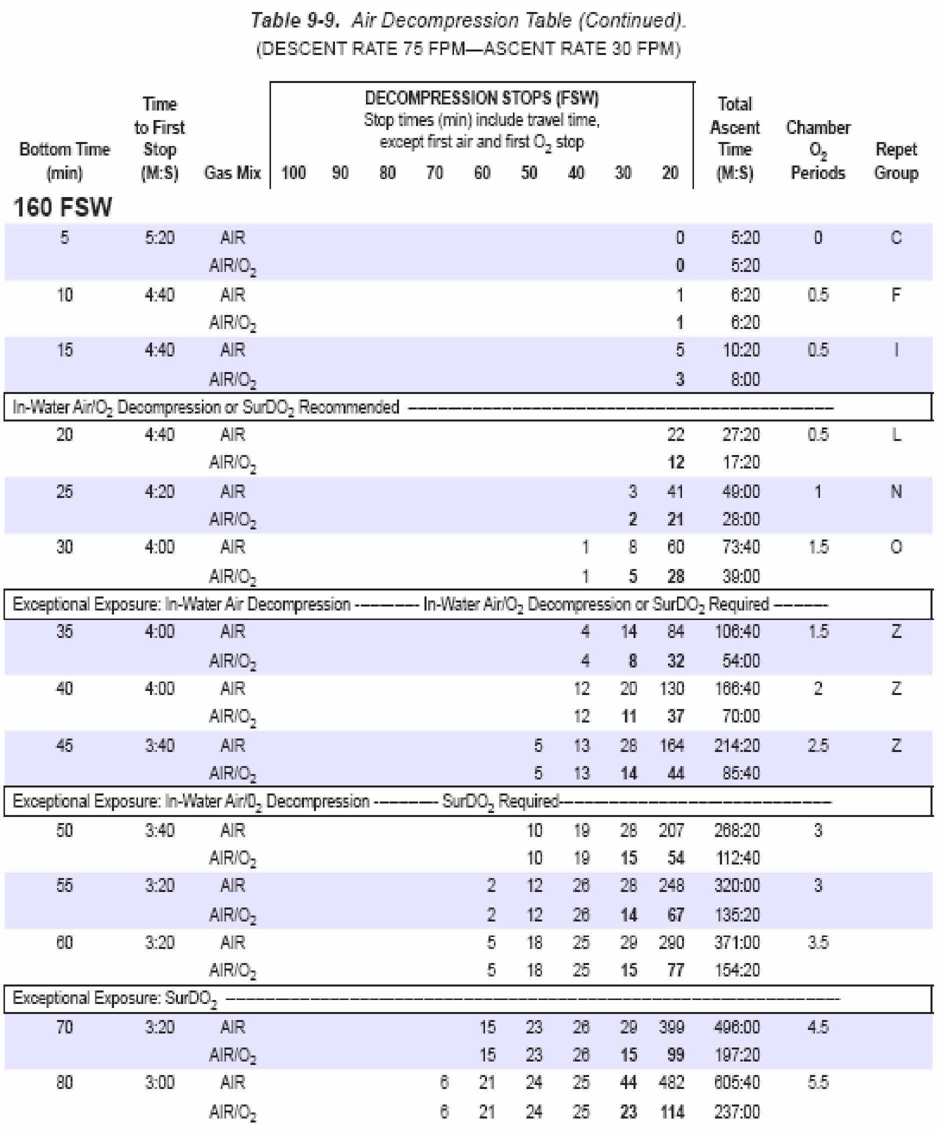


Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
160 FSW														
5	5:20	AIR									0	5:20	0	C
		AIR/O_2									**0**	5:20		
10	4:40	AIR									1	6:20	0.5	F
		AIR/O_2									**1**	6:20		
15	4:40	AIR									5	10:20	0.5	I
		AIR/O_2									**3**	8:00		
In-Water Air/O_2 Decompression or SurDO_2 Recommended --														
20	4:40	AIR									22	27:20	0.5	L
		AIR/O_2									**12**	17:20		
25	4:20	AIR								3	41	49:00	1	N
		AIR/O_2								**2**	**21**	28:00		
30	4:00	AIR							1	8	60	73:40	1.5	O
		AIR/O_2							1	**5**	**28**	39:00		
Exceptional Exposure: In-Water Air Decompression -------- In-Water Air/O_2 Decompression or SurDO_2 Required ------														
35	4:00	AIR							4	14	84	106:40	1.5	Z
		AIR/O_2							4	**8**	**32**	54:00		
40	4:00	AIR							12	20	130	166:40	2	Z
		AIR/O_2							12	**11**	**37**	70:00		
45	3:40	AIR						5	13	28	164	214:20	2.5	Z
		AIR/O_2						5	13	**14**	**44**	85:40		
Exceptional Exposure: In-Water Air/0_2 Decompression -------- SurDO_2 Required----------------------------														
50	3:40	AIR						10	19	28	207	268:20	3	
		AIR/O_2						10	19	**15**	**54**	112:40		
55	3:20	AIR					2	12	26	28	248	320:00	3	
		AIR/O_2					2	12	26	**14**	**67**	135:20		
60	3:20	AIR					5	18	25	29	290	371:00	3.5	
		AIR/O_2					5	18	25	**15**	**77**	154:20		
Exceptional Exposure: SurDO_2 --														
70	3:20	AIR					15	23	26	29	399	496:00	4.5	
		AIR/O_2					15	23	26	**15**	**99**	197:20		
80	3:00	AIR				6	21	24	25	**44**	482	605:40	5.5	
		AIR/O_2				6	21	24	25	**23**	**114**	237:00		

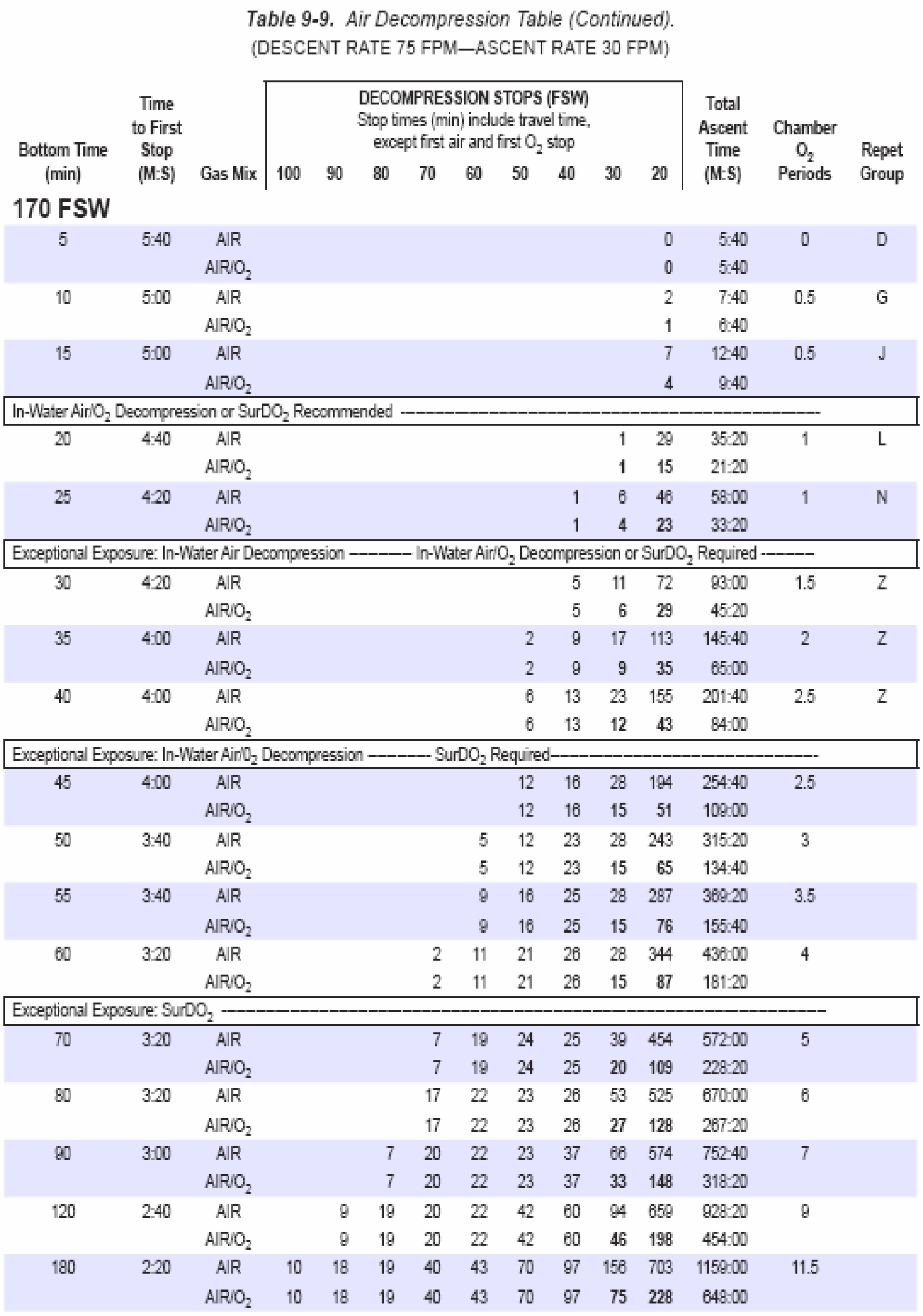


Table 9-9. *Air Decompression Table (Continued).*
(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
170 FSW														
5	5:40	AIR									0	5:40	0	D
		AIR/O_2									**0**	5:40		
10	5:00	AIR									2	7:40	0.5	G
		AIR/O_2									**1**	6:40		
15	5:00	AIR									7	12:40	0.5	J
		AIR/O_2									**4**	9:40		
In-Water Air/O_2 Decompression or SurDO_2 Recommended --														
20	4:40	AIR								1	29	35:20	1	L
		AIR/O_2								**1**	**15**	21:20		
25	4:20	AIR							1	6	46	58:00	1	N
		AIR/O_2							1	**4**	**23**	33:20		
Exceptional Exposure: In-Water Air Decompression -------- In-Water Air/O_2 Decompression or SurDO_2 Required -------														
30	4:20	AIR							5	11	72	93:00	1.5	Z
		AIR/O_2							5	**6**	**29**	45:20		
35	4:00	AIR						2	9	17	113	145:40	2	Z
		AIR/O_2						2	9	**9**	**35**	65:00		
40	4:00	AIR						6	13	23	155	201:40	2.5	Z
		AIR/O_2						6	13	**12**	**43**	84:00		
Exceptional Exposure: In-Water Air/0$_2$ Decompression -------- SurDO_2 Required-------------------------------														
45	4:00	AIR						12	16	28	194	254:40	2.5	
		AIR/O_2						12	16	**15**	**51**	109:00		
50	3:40	AIR					5	12	23	28	243	315:20	3	
		AIR/O_2					5	12	23	**15**	**65**	134:40		
55	3:40	AIR					9	16	25	28	287	369:20	3.5	
		AIR/O_2					9	16	25	**15**	**76**	155:40		
60	3:20	AIR				2	11	21	26	28	344	436:00	4	
		AIR/O_2				2	11	21	26	**15**	**87**	181:20		
Exceptional Exposure: SurDO_2 ---														
70	3:20	AIR				7	19	24	25	39	454	572:00	5	
		AIR/O_2				7	19	24	25	**20**	**109**	228:20		
80	3:20	AIR				17	22	23	26	53	525	670:00	6	
		AIR/O_2				17	22	23	26	**27**	**128**	267:20		
90	3:00	AIR			7	20	22	23	37	66	574	752:40	7	
		AIR/O_2			7	20	22	23	37	**33**	**148**	318:20		
120	2:40	AIR		9	19	20	22	42	60	94	659	928:20	9	
		AIR/O_2		9	19	20	22	42	60	**46**	**198**	454:00		
180	2:20	AIR	10	18	19	40	43	70	97	156	703	1159:00	11.5	
		AIR/O_2	10	18	19	40	43	70	97	**75**	**228**	648:00		

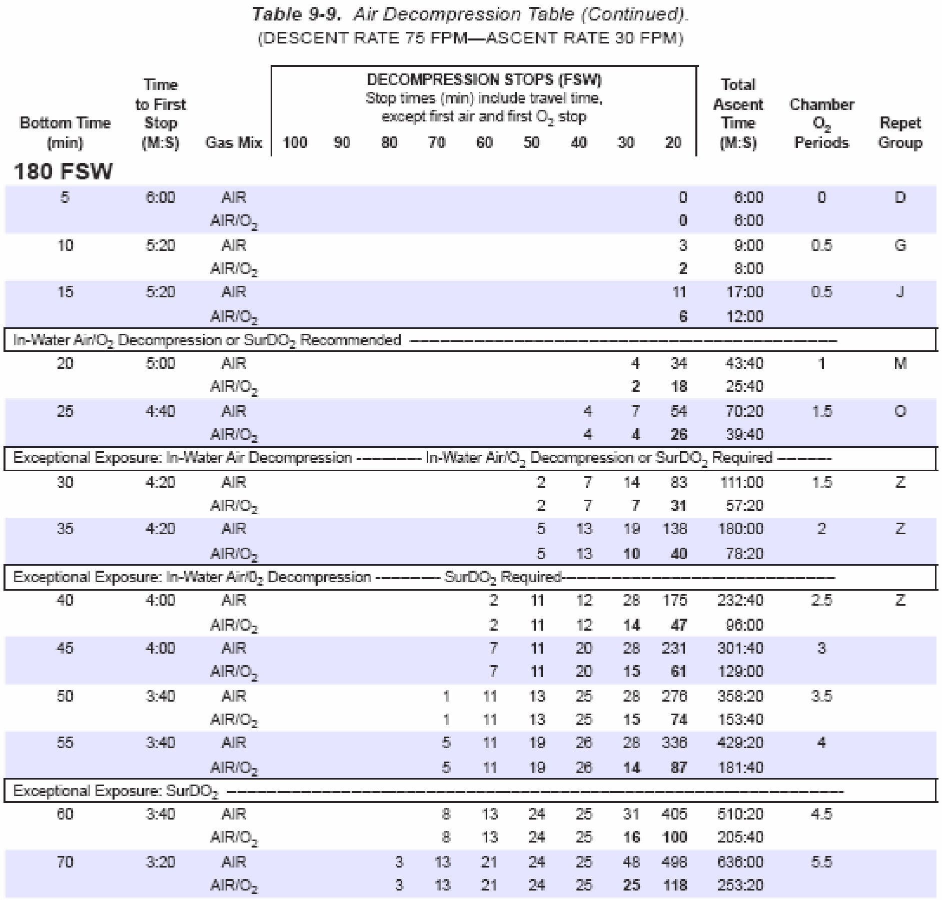


Table 9-9. Air Decompression Table (Continued).
(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop 100	90	80	70	60	50	40	30	20	Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
180 FSW														
5	6:00	AIR									0	6:00	0	D
		AIR/O_2									**0**	6:00		
10	5:20	AIR									3	9:00	0.5	G
		AIR/O_2									**2**	8:00		
15	5:20	AIR									11	17:00	0.5	J
		AIR/O_2									**6**	12:00		
In-Water Air/O_2 Decompression or SurDO_2 Recommended ——————————————————————														
20	5:00	AIR								4	34	43:40	1	M
		AIR/O_2								**2**	**18**	25:40		
25	4:40	AIR							4	7	54	70:20	1.5	O
		AIR/O_2							4	**4**	**26**	39:40		
Exceptional Exposure: In-Water Air Decompression -------- In-Water Air/O_2 Decompression or SurDO_2 Required -------														
30	4:20	AIR						2	7	14	83	111:00	1.5	Z
		AIR/O_2						2	7	**7**	**31**	57:20		
35	4:20	AIR						5	13	19	138	180:00	2	Z
		AIR/O_2						5	13	**10**	**40**	78:20		
Exceptional Exposure: In-Water Air/0_2 Decompression -------- SurDO_2 Required———————————————														
40	4:00	AIR					2	11	12	28	175	232:40	2.5	Z
		AIR/O_2					2	11	12	**14**	**47**	96:00		
45	4:00	AIR					7	11	20	28	231	301:40	3	
		AIR/O_2					7	11	20	**15**	**61**	129:00		
50	3:40	AIR				1	11	13	25	28	276	358:20	3.5	
		AIR/O_2				1	11	13	25	**15**	**74**	153:40		
55	3:40	AIR				5	11	19	26	28	336	429:20	4	
		AIR/O_2				5	11	19	26	**14**	**87**	181:40		
Exceptional Exposure: SurDO_2 ———————————————————————————————														
60	3:40	AIR				8	13	24	25	31	405	510:20	4.5	
		AIR/O_2				8	13	24	25	**16**	**100**	205:40		
70	3:20	AIR			3	13	21	24	25	48	498	636:00	5.5	
		AIR/O_2			3	13	21	24	25	**25**	**118**	253:20		

Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	**DECOMPRESSION STOPS (FSW)** Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
190 FSW														
5	6:20	AIR									0	6:20	0	D
		AIR/O_2									**0**	6:20		
10	5:40	AIR									4	10:20	0.5	H
		AIR/O_2									**2**	8:20		
In-Water Air/O_2 Decompression or SurDO_2 Recommended --														
15	5:40	AIR									17	23:20	0.5	K
		AIR/O_2									**9**	15:20		
20	5:00	AIR							1	7	37	50:40	1	N
		AIR/O_2							1	**4**	**19**	30:00		
25	4:40	AIR						2	6	9	67	89:20	1.5	Z
		AIR/O_2						2	6	**5**	**28**	46:40		
Exceptional Exposure: In-Water Air Decompression -------- In-Water Air/O_2 Decompression or SurDO_2 Required -------														
30	4:40	AIR						6	8	14	111	144:20	2	Z
		AIR/O_2						6	8	**8**	**35**	67:40		
35	4:20	AIR					3	8	13	22	160	211:00	2.5	Z
		AIR/O_2					3	8	13	**12**	**44**	90:20		
Exceptional Exposure: In-Water Air/0_2 Decompression -------- SurDO_2 Required----------------------------------														
40	4:20	AIR					7	12	14	29	210	277:00	3	
		AIR/O_2					7	12	14	**15**	**56**	119:20		
45	4:00	AIR				2	11	12	23	28	262	342:40	3.5	
		AIR/O_2				2	11	12	23	**15**	**70**	148:00		
50	4:00	AIR				7	11	16	26	28	321	413:40	4	
		AIR/O_2				7	11	16	26	**15**	**83**	178:00		
Exceptional Exposure: SurDO2 ---														
55	3:40	AIR			2	10	10	24	25	30	396	501:20	4.5	
		AIR/O_2			2	10	10	24	25	**16**	**98**	204:40		
60	3:40	AIR			5	10	16	24	25	40	454	578:20	5	
		AIR/O_2			5	10	16	24	25	**21**	**108**	233:40		
90	3:20	AIR		11	19	20	21	28	51	83	626	863:00	8.5	
		AIR/O_2		11	19	20	21	28	51	**42**	**177**	408:40		
120	3:00	AIR	15	17	19	20	37	46	79	113	691	1040:40	10.5	
		AIR/O_2	15	17	19	20	37	46	79	**55**	**219**	550:20		

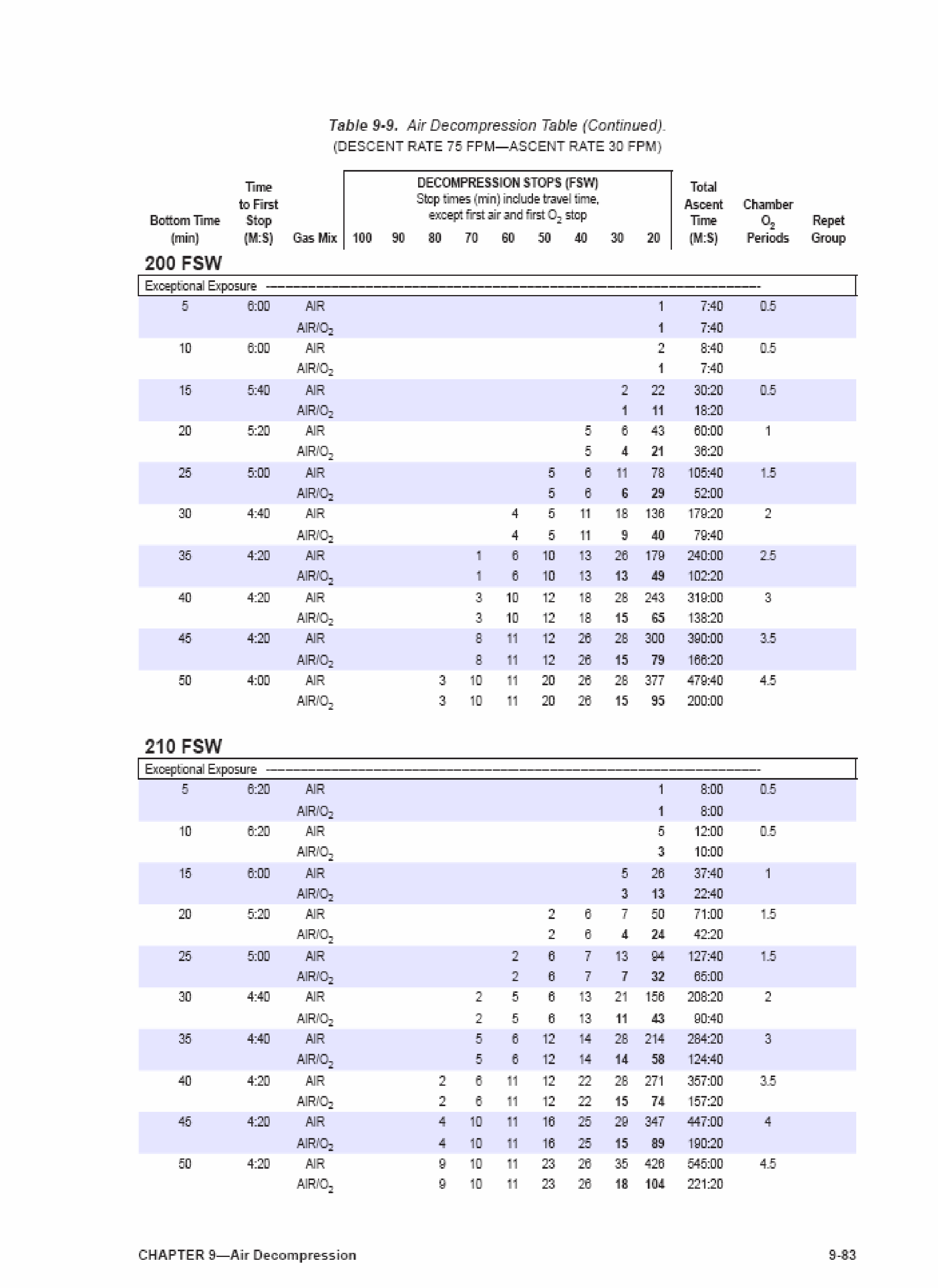


Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

200 FSW

Exceptional Exposure --

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
5	6:00	AIR									1	7:40	0.5	
		AIR/O_2									**1**	7:40		
10	6:00	AIR									2	8:40	0.5	
		AIR/O_2									**1**	7:40		
15	5:40	AIR								2	22	30:20	0.5	
		AIR/O_2								**1**	**11**	18:20		
20	5:20	AIR							5	6	43	60:00	1	
		AIR/O_2							5	**4**	**21**	36:20		
25	5:00	AIR						5	6	11	78	105:40	1.5	
		AIR/O_2						5	6	**6**	**29**	52:00		
30	4:40	AIR					4	5	11	18	136	179:20	2	
		AIR/O_2					4	5	11	**9**	**40**	79:40		
35	4:20	AIR				1	6	10	13	26	179	240:00	2.5	
		AIR/O_2				1	6	10	13	**13**	**49**	102:20		
40	4:20	AIR				3	10	12	18	28	243	319:00	3	
		AIR/O_2				3	10	12	18	**15**	**65**	138:20		
45	4:20	AIR				8	11	12	26	28	300	390:00	3.5	
		AIR/O_2				8	11	12	26	**15**	**79**	166:20		
50	4:00	AIR			3	10	11	20	26	28	377	479:40	4.5	
		AIR/O_2			3	10	11	20	26	**15**	**95**	200:00		

210 FSW

Exceptional Exposure --

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
5	6:20	AIR									1	8:00	0.5	
		AIR/O_2									**1**	8:00		
10	6:20	AIR									5	12:00	0.5	
		AIR/O_2									**3**	10:00		
15	6:00	AIR								5	26	37:40	1	
		AIR/O_2								**3**	**13**	22:40		
20	5:20	AIR						2	6	7	50	71:00	1.5	
		AIR/O_2						2	6	**4**	**24**	42:20		
25	5:00	AIR					2	6	7	13	94	127:40	1.5	
		AIR/O_2					2	6	7	**7**	**32**	65:00		
30	4:40	AIR				2	5	6	13	21	156	208:20	2	
		AIR/O_2				2	5	6	13	**11**	**43**	90:40		
35	4:40	AIR				5	6	12	14	28	214	284:20	3	
		AIR/O_2				5	6	12	14	**14**	**58**	124:40		
40	4:20	AIR			2	6	11	12	22	28	271	357:00	3.5	
		AIR/O_2			2	6	11	12	22	**15**	**74**	157:20		
45	4:20	AIR			4	10	11	16	25	29	347	447:00	4	
		AIR/O_2			4	10	11	16	25	**15**	**89**	190:20		
50	4:20	AIR			9	10	11	23	26	35	426	545:00	4.5	
		AIR/O_2			9	10	11	23	26	**18**	**104**	221:20		

Table 9-9. Air Decompression Table (Continued).

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	Gas Mix	DECOMPRESSION STOPS (FSW) Stop times (min) include travel time, except first air and first O_2 stop									Total Ascent Time (M:S)	Chamber O_2 Periods	Repet Group
			100	90	80	70	60	50	40	30	20			
220 FSW														
Exceptional Exposure														
5	6:40	AIR									2	9:20	0.5	
		AIR/O_2									**1**	8:20		
10	6:40	AIR									8	15:20	0.5	
		AIR/O_2									**4**	11:20		
15	6:00	AIR							1	7	30	44:40	1	
		AIR/O_2							1	**4**	**15**	27:00		
20	5:40	AIR						5	6	7	63	87:20	1.5	
		AIR/O_2						5	6	**4**	**27**	48:40		
25	5:20	AIR					5	6	8	14	119	158:00	2	
		AIR/O_2					5	6	8	**7**	**38**	75:20		
30	5:00	AIR				5	5	8	13	24	174	234:40	2.5	
		AIR/O_2				5	5	8	13	**13**	**47**	102:00		
35	4:40	AIR			3	5	9	11	18	28	244	323:20	3	
		AIR/O_2			3	5	9	11	18	**15**	**66**	142:40		
40	4:20	AIR		1	4	9	11	11	26	28	312	407:00	4	
		AIR/O_2		1	4	9	11	11	26	**15**	**82**	179:20		
250 FSW														
Exceptional Exposure														
5	7:40	AIR									3	11:20	0.5	
		AIR/O_2									**2**	10:20		
10	7:20	AIR								2	15	25:00	0.5	
		AIR/O_2								**1**	**8**	17:00		
15	6:40	AIR						3	7	7	41	65:20	1	
		AIR/O_2						3	7	**4**	**21**	42:40		
20	6:00	AIR				2	6	5	7	12	106	144:40	2	
		AIR/O_2				2	6	5	7	**6**	**35**	73:00		
25	5:40	AIR			4	5	5	7	13	24	175	239:20	2.5	
		AIR/O_2			4	5	5	7	13	**13**	**47**	105:40		
30	5:20	AIR		4	4	5	9	11	20	28	257	344:00	3.5	
		AIR/O_2		4	4	5	9	11	20	**14**	**70**	153:20		
35	5:00	AIR	2	5	4	10	11	14	25	29	347	452:40	4	
		AIR/O_2	2	5	4	10	11	14	25	**15**	**89**	196:00		
300 FSW														
Exceptional Exposure														
5	9:20	AIR									6	16:00	0.5	
		AIR/O_2									**3**	13:00		
10	8:20	AIR						2	5	7	32	55:00	1	
		AIR/O_2						2	5	**4**	**16**	36:20		
15	7:20	AIR			1	4	5	6	6	10	102	142:00	1.5	
		AIR/O_2			1	4	5	6	6	**5**	**35**	75:20		
20	6:40	AIR	1	4	5	5	5	6	14	28	196	271:20	2.5	
		AIR/O_2	1	4	5	5	5	6	14	**15**	**52**	124:40		
25	6:40	AIR	7	4	5	5	10	12	25	29	305	409:00	3.5	
		AIR/O_2	7	4	5	5	10	12	25	**15**	**80**	180:20		

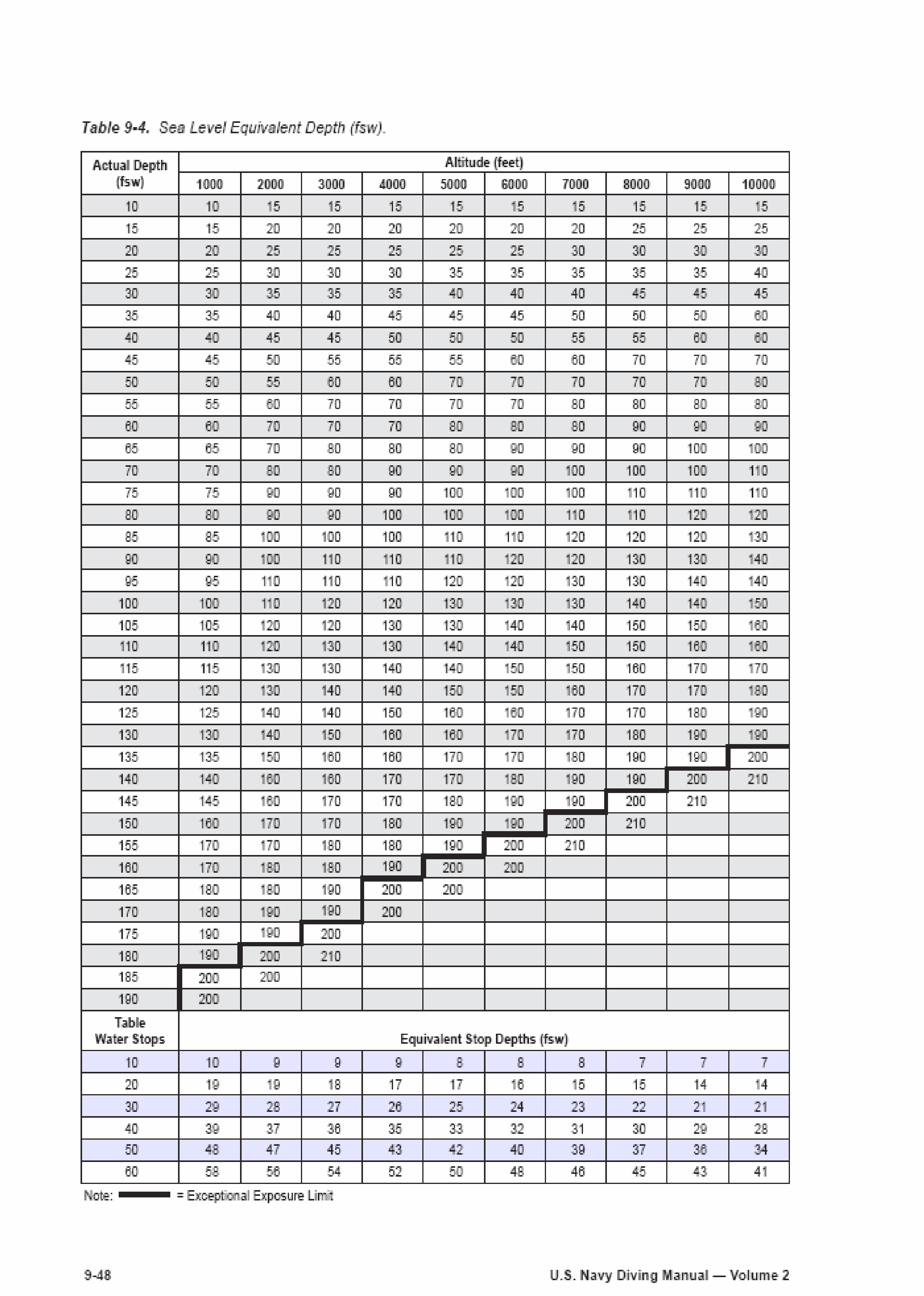


Table 9-4. Sea Level Equivalent Depth (fsw).

Actual Depth (fsw)	Altitude (feet)									
	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
10	10	15	15	15	15	15	15	15	15	15
15	15	20	20	20	20	20	20	25	25	25
20	20	25	25	25	25	25	30	30	30	30
25	25	30	30	30	35	35	35	35	35	40
30	30	35	35	35	40	40	40	45	45	45
35	35	40	40	45	45	45	50	50	50	60
40	40	45	45	50	50	50	55	55	60	60
45	45	50	55	55	55	60	60	70	70	70
50	50	55	60	60	70	70	70	70	70	80
55	55	60	70	70	70	70	80	80	80	80
60	60	70	70	70	80	80	80	90	90	90
65	65	70	80	80	80	90	90	90	100	100
70	70	80	80	90	90	90	100	100	100	110
75	75	90	90	90	100	100	100	110	110	110
80	80	90	90	100	100	100	110	110	120	120
85	85	100	100	100	110	110	120	120	120	130
90	90	100	110	110	110	120	120	130	130	140
95	95	110	110	110	120	120	130	130	140	140
100	100	110	120	120	130	130	130	140	140	150
105	105	120	120	130	130	140	140	150	150	160
110	110	120	130	130	140	140	150	150	160	160
115	115	130	130	140	140	150	150	160	170	170
120	120	130	140	140	150	150	160	170	170	180
125	125	140	140	150	160	160	170	170	180	190
130	130	140	150	160	160	170	170	180	190	190
135	135	150	160	160	170	170	180	190	190	200
140	140	160	160	170	170	180	190	190	200	210
145	145	160	170	170	180	190	190	200	210	
150	160	170	170	180	190	190	200	210		
155	170	170	180	180	190	200	210			
160	170	180	180	190	200	200				
165	180	180	190	200	200					
170	180	190	190	200						
175	190	190	200							
180	190	200	210							
185	200	200								
190	200									
Table Water Stops	Equivalent Stop Depths (fsw)									
10	10	9	9	9	8	8	8	7	7	7
20	19	19	18	17	17	16	15	15	14	14
30	29	28	27	26	25	24	23	22	21	21
40	39	37	36	35	33	32	31	30	29	28
50	48	47	45	43	42	40	39	37	36	34
60	58	56	54	52	50	48	46	45	43	41

Note: ▬ = Exceptional Exposure Limit

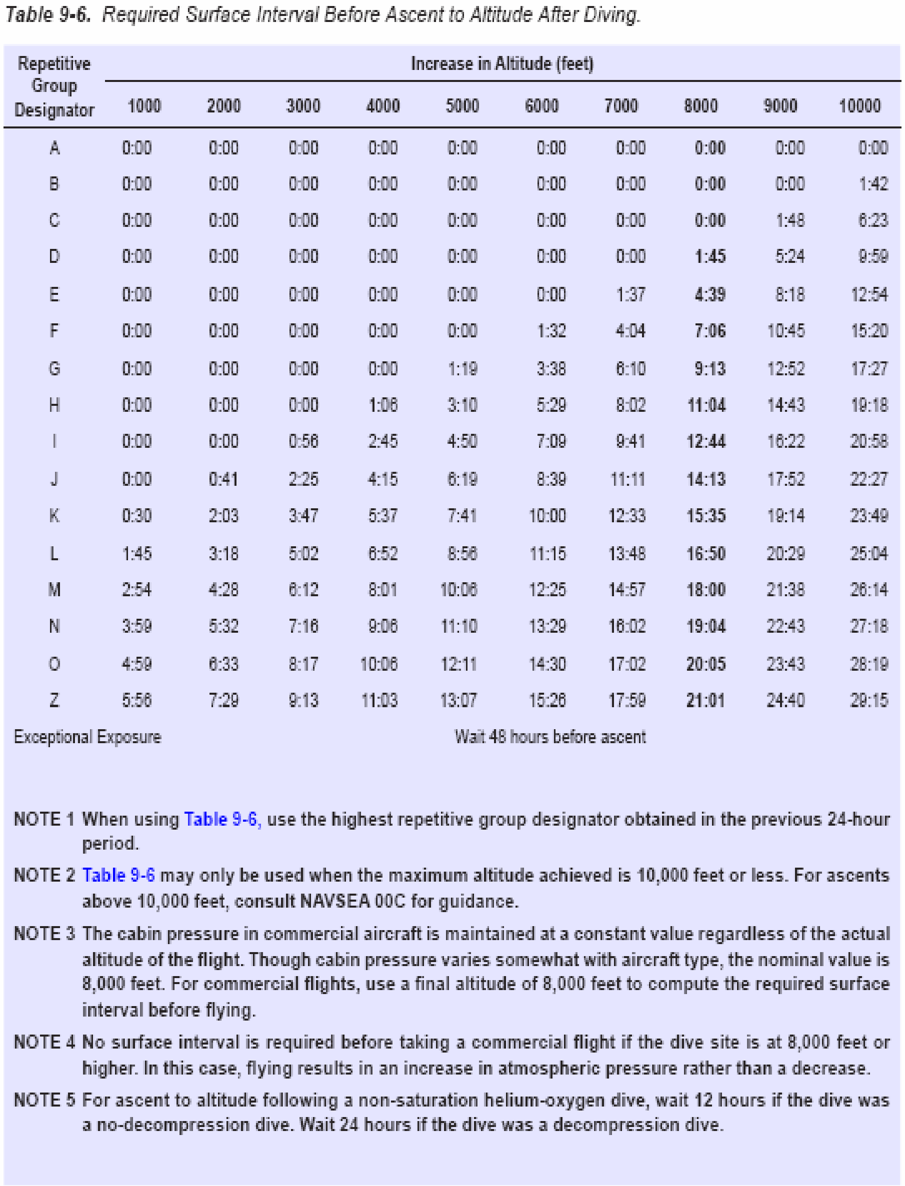


Table 9-6. Required Surface Interval Before Ascent to Altitude After Diving.

Repetitive Group Designator	Increase in Altitude (feet)									
	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
A	0:00	0:00	0:00	0:00	0:00	0:00	0:00	**0:00**	0:00	0:00
B	0:00	0:00	0:00	0:00	0:00	0:00	0:00	**0:00**	0:00	1:42
C	0:00	0:00	0:00	0:00	0:00	0:00	0:00	**0:00**	1:48	6:23
D	0:00	0:00	0:00	0:00	0:00	0:00	0:00	**1:45**	5:24	9:59
E	0:00	0:00	0:00	0:00	0:00	0:00	1:37	**4:39**	8:18	12:54
F	0:00	0:00	0:00	0:00	0:00	1:32	4:04	**7:06**	10:45	15:20
G	0:00	0:00	0:00	0:00	1:19	3:38	6:10	**9:13**	12:52	17:27
H	0:00	0:00	0:00	1:06	3:10	5:29	8:02	**11:04**	14:43	19:18
I	0:00	0:00	0:56	2:45	4:50	7:09	9:41	**12:44**	16:22	20:58
J	0:00	0:41	2:25	4:15	6:19	8:39	11:11	**14:13**	17:52	22:27
K	0:30	2:03	3:47	5:37	7:41	10:00	12:33	**15:35**	19:14	23:49
L	1:45	3:18	5:02	6:52	8:56	11:15	13:48	**16:50**	20:29	25:04
M	2:54	4:28	6:12	8:01	10:06	12:25	14:57	**18:00**	21:38	26:14
N	3:59	5:32	7:16	9:06	11:10	13:29	16:02	**19:04**	22:43	27:18
O	4:59	6:33	8:17	10:06	12:11	14:30	17:02	**20:05**	23:43	28:19
Z	5:56	7:29	9:13	11:03	13:07	15:26	17:59	**21:01**	24:40	29:15
Exceptional Exposure	Wait 48 hours before ascent									

NOTE 1 When using Table 9-6, use the highest repetitive group designator obtained in the previous 24-hour period.

NOTE 2 Table 9-6 may only be used when the maximum altitude achieved is 10,000 feet or less. For ascents above 10,000 feet, consult NAVSEA 00C for guidance.

NOTE 3 The cabin pressure in commercial aircraft is maintained at a constant value regardless of the actual altitude of the flight. Though cabin pressure varies somewhat with aircraft type, the nominal value is 8,000 feet. For commercial flights, use a final altitude of 8,000 feet to compute the required surface interval before flying.

NOTE 4 No surface interval is required before taking a commercial flight if the dive site is at 8,000 feet or higher. In this case, flying results in an increase in atmospheric pressure rather than a decrease.

NOTE 5 For ascent to altitude following a non-saturation helium-oxygen dive, wait 12 hours if the dive was a no-decompression dive. Wait 24 hours if the dive was a decompression dive.

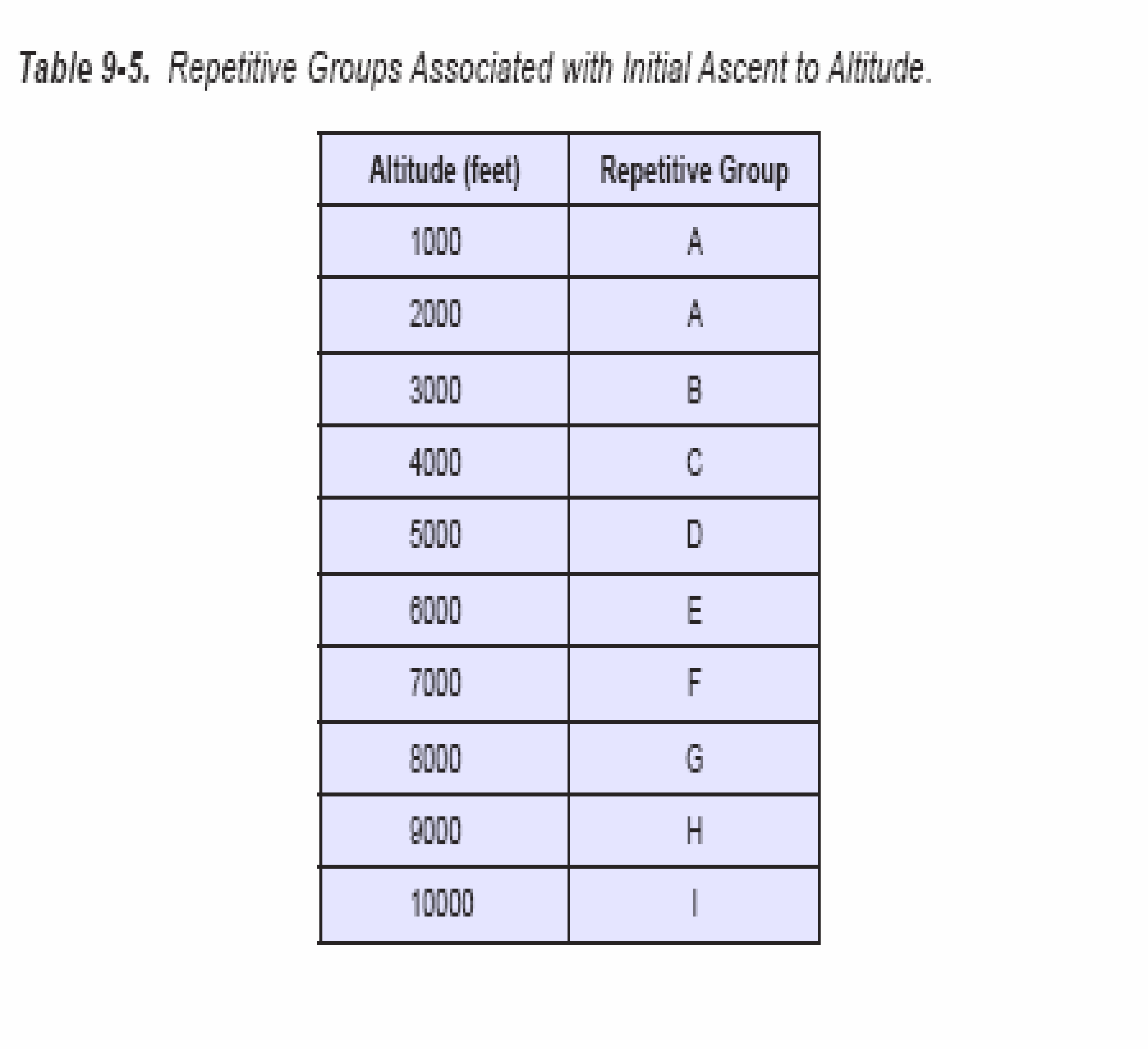


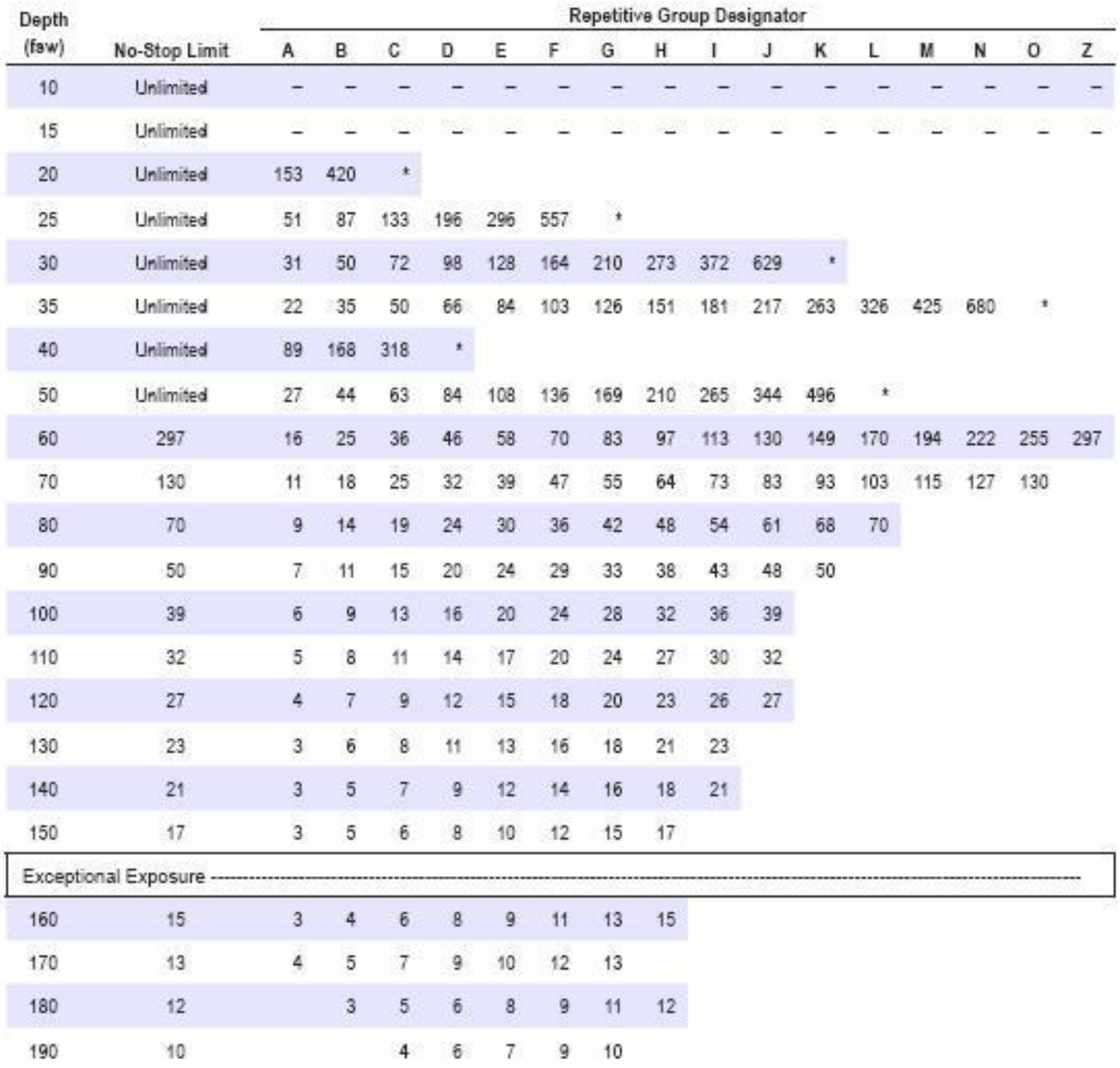
Table 9-5. Repetitive Groups Associated with Initial Ascent to Altitude.

Altitude (feet)	Repetitive Group
1000	A
2000	A
3000	B
4000	C
5000	D
6000	E
7000	F
8000	G
9000	H
10000	I

DECOMPRESSION CHARTS USED IN MK 16 DIVING OPERATIONS

MK 16 TABLES

Table 18-9. No Decompression Limits and Repetitive Group Designators for MK 16 MOD 1 N_2O_2 Dives.



Depth (fsw)	No-Stop Limit	Repetitive Group Designator															
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Z
10	Unlimited	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
15	Unlimited	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
20	Unlimited	153	420	*													
25	Unlimited	51	87	133	196	296	557	*									
30	Unlimited	31	50	72	98	128	164	210	273	372	629	*					
35	Unlimited	22	35	50	66	84	103	126	151	181	217	263	326	425	680	*	
40	Unlimited	89	168	318	*												
50	Unlimited	27	44	63	84	108	136	169	210	265	344	496	*				
60	297	16	25	36	46	58	70	83	97	113	130	149	170	194	222	255	297
70	130	11	18	25	32	39	47	55	64	73	83	93	103	115	127	130	
80	70	9	14	19	24	30	36	42	48	54	61	68	70				
90	50	7	11	15	20	24	29	33	38	43	48	50					
100	39	6	9	13	16	20	24	28	32	36	39						
110	32	5	8	11	14	17	20	24	27	30	32						
120	27	4	7	9	12	15	18	20	23	26	27						
130	23	3	6	8	11	13	16	18	21	23							
140	21	3	5	7	9	12	14	16	18	21							
150	17	3	5	6	8	10	12	15	17								
Exceptional Exposure ----------																	
160	15	3	4	6	8	9	11	13	15								
170	13	4	5	7	9	10	12	13									
180	12		3	5	6	8	9	11	12								
190	10			4	6	7	9	10									

– Diver does not acquire a repetitive group designator during dives to these depths.

* Highest repetitive group that can be achieved at this depth regardless of bottom time.

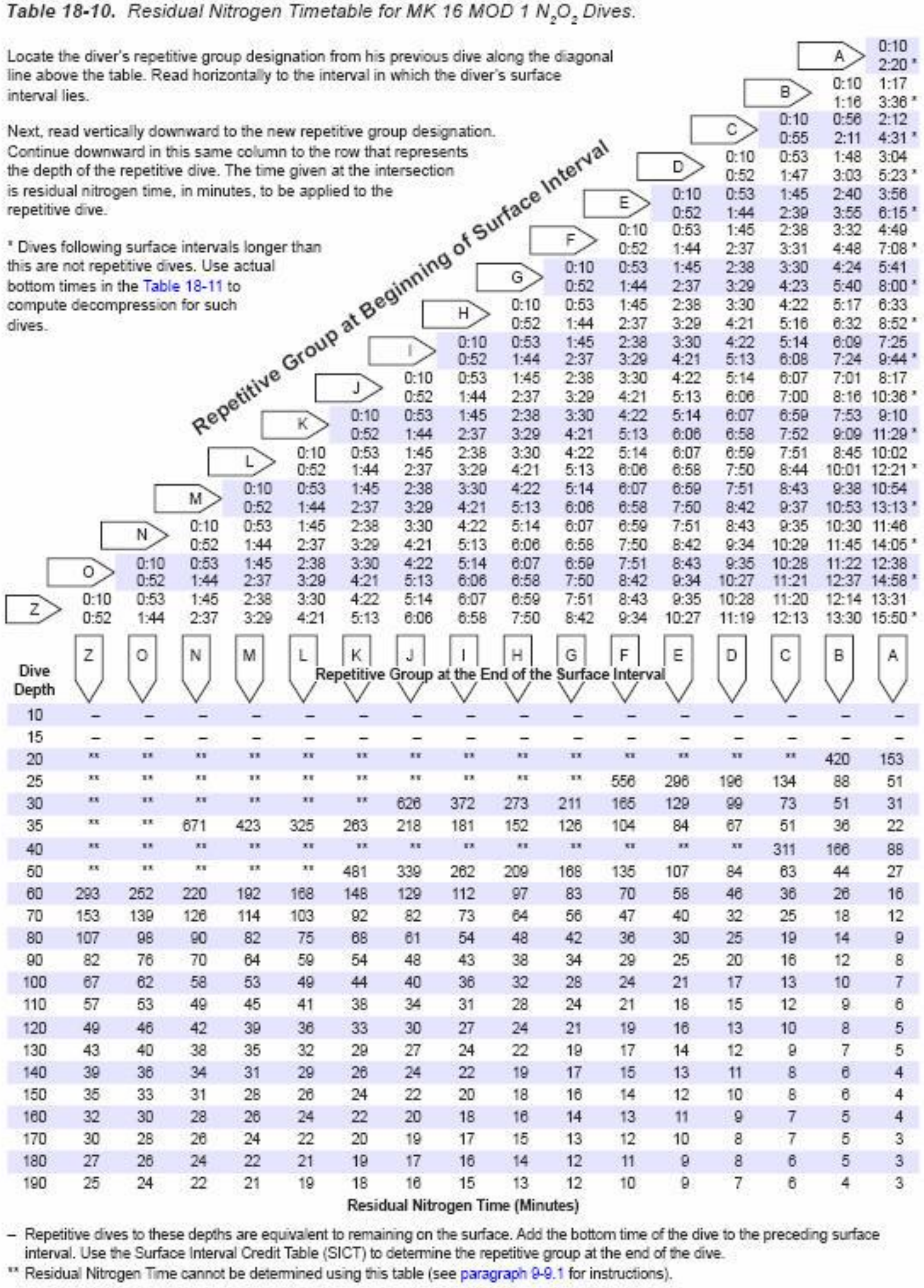


Table 18-10. *Residual Nitrogen Timetable for MK 16 MOD 1 N_2O_2 Dives.*

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 that 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 longer than this are not repetitive dives. Use actual bottom times in the Table 18-11 to compute decompression for such dives.

Repetitive Group at Beginning of Surface Interval

	Z	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
A																0:10 2:20 *
B															0:10 1:16	1:17 3:36 *
C														0:10 0:55	0:56 2:11	2:12 4:31 *
D													0:10 0:52	0:53 1:47	1:48 3:03	3:04 5:23 *
E												0:10 0:52	0:53 1:44	1:45 2:39	2:40 3:55	3:56 6:15 *
F											0:10 0:52	0:53 1:44	1:45 2:37	2:38 3:31	3:32 4:48	4:49 7:08 *
G										0:10 0:52	0:53 1:44	1:45 2:37	2:38 3:29	3:30 4:23	4:24 5:40	5:41 8:00 *
H									0:10 0:52	0:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:16	5:17 6:32	6:33 8:52 *
I								0:10 0:52	0:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:08	6:09 7:24	7:25 9:44 *
J							0:10 0:52	0:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 7:00	7:01 8:16	8:17 10:36 *
K						0:10 0:52	0:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:52	7:53 9:09	9:10 11:29 *
L					0:10 0:52	0:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:44	8:45 10:01	10:02 12:21 *
M				0:10 0:52	0:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:42	8:43 9:37	9:38 10:53	10:54 13:13 *
N			0:10 0:52	0:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:42	8:43 9:34	9:35 10:29	10:30 11:45	11:46 14:05 *
O		0:10 0:52	0:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:42	8:43 9:34	9:35 10:27	10:28 11:21	11:22 12:37	12:38 14:58 *
Z	0:10 0:52	0:53 1:44	1:45 2:37	2:38 3:29	3:30 4:21	4:22 5:13	5:14 6:06	6:07 6:58	6:59 7:50	7:51 8:42	8:43 9:34	9:35 10:27	10:28 11:19	11:20 12:13	12:14 13:30	13:31 15:50 *

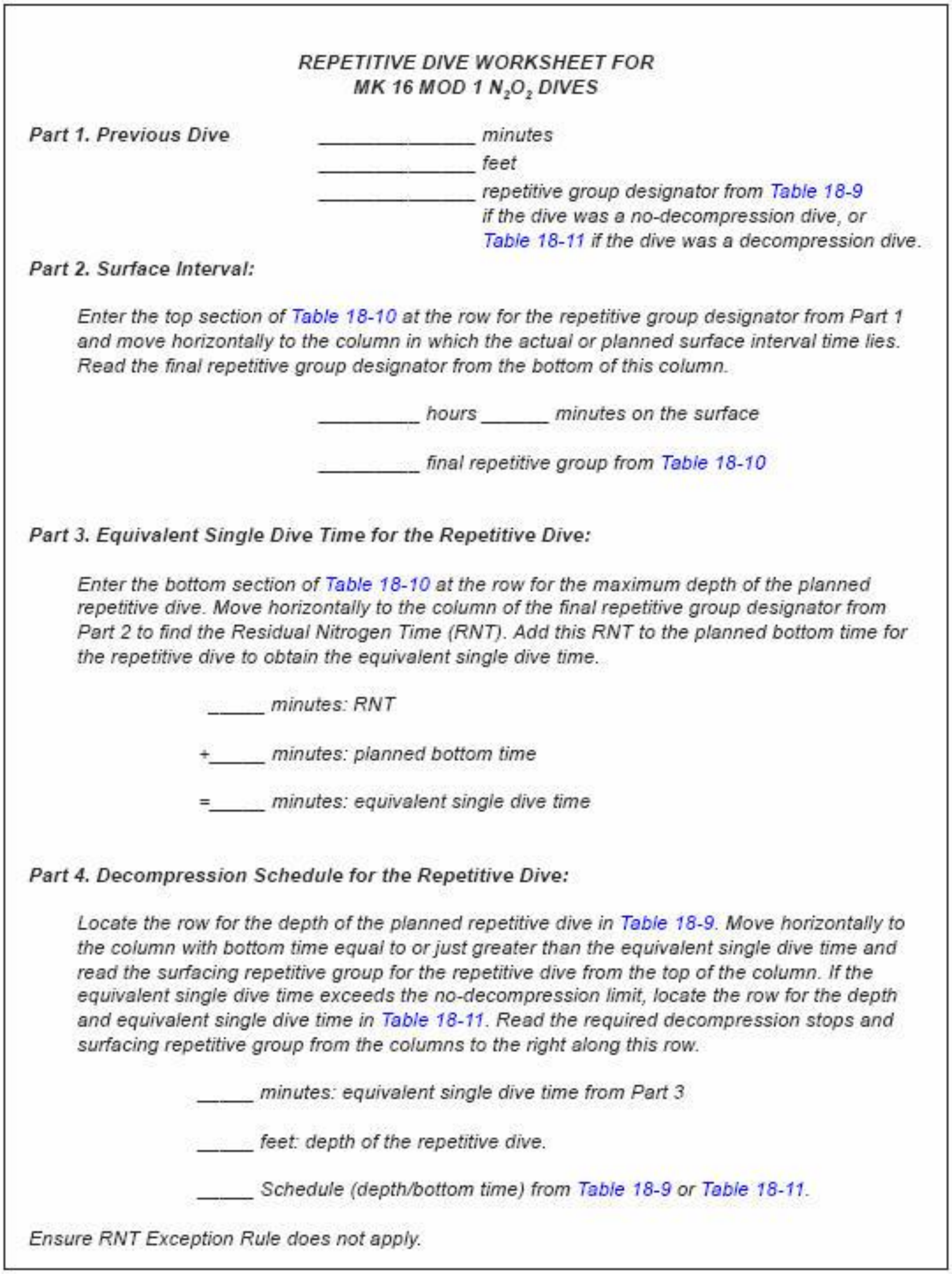
Repetitive Group at the End of the Surface Interval

Dive Depth	Z	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
20	**	**	**	**	**	**	**	**	**	**	**	**	**	**	420	153
25	**	**	**	**	**	**	**	**	**	**	556	296	196	134	88	51
30	**	**	**	**	**	**	626	372	273	211	165	129	99	73	51	31
35	**	**	671	423	325	263	218	181	152	126	104	84	67	51	36	22
40	**	**	**	**	**	**	**	**	**	**	**	**	**	311	166	88
50	**	**	**	**	**	481	339	262	209	168	135	107	84	63	44	27
60	293	252	220	192	168	148	129	112	97	83	70	58	46	36	26	16
70	153	139	126	114	103	92	82	73	64	56	47	40	32	25	18	12
80	107	98	90	82	75	68	61	54	48	42	36	30	25	19	14	9
90	82	76	70	64	59	54	48	43	38	34	29	25	20	16	12	8
100	67	62	58	53	49	44	40	36	32	28	24	21	17	13	10	7
110	57	53	49	45	41	38	34	31	28	24	21	18	15	12	9	6
120	49	46	42	39	36	33	30	27	24	21	19	16	13	10	8	5
130	43	40	38	35	32	29	27	24	22	19	17	14	12	9	7	5
140	39	36	34	31	29	26	24	22	19	17	15	13	11	8	6	4
150	35	33	31	28	26	24	22	20	18	16	14	12	10	8	6	4
160	32	30	28	26	24	22	20	18	16	14	13	11	9	7	5	4
170	30	28	26	24	22	20	19	17	15	13	12	10	8	7	5	3
180	27	26	24	22	21	19	17	16	14	12	11	9	8	6	5	3
190	25	24	22	21	19	18	16	15	13	12	10	9	7	6	4	3

Residual Nitrogen Time (Minutes)

– Repetitive dives to these depths are equivalent to remaining on the surface. Add the bottom time of the dive to the preceding surface interval. Use the Surface Interval Credit Table (SICT) to determine the repetitive group at the end of the dive.

** Residual Nitrogen Time cannot be determined using this table (see paragraph 9-9.1 for instructions).



REPETITIVE DIVE WORKSHEET FOR
MK 16 MOD 1 N_2O_2 DIVES

Part 1. Previous Dive

______________ minutes

______________ feet

______________ repetitive group designator from Table 18-9 if the dive was a no-decompression dive, or Table 18-11 if the dive was a decompression dive.

Part 2. Surface Interval:

Enter the top section of Table 18-10 at the row for the repetitive group designator from Part 1 and move horizontally to the column in which the actual or planned surface interval time lies. Read the final repetitive group designator from the bottom of this column.

_________ hours ______ minutes on the surface

_________ final repetitive group from Table 18-10

Part 3. Equivalent Single Dive Time for the Repetitive Dive:

Enter the bottom section of Table 18-10 at the row for the maximum depth of the planned repetitive dive. Move horizontally to the column of the final repetitive group designator from Part 2 to find the Residual Nitrogen Time (RNT). Add this RNT to the planned bottom time for the repetitive dive to obtain the equivalent single dive time.

_____ minutes: RNT

+_____ minutes: planned bottom time

=_____ minutes: equivalent single dive time

Part 4. Decompression Schedule for the Repetitive Dive:

Locate the row for the depth of the planned repetitive dive in Table 18-9. Move horizontally to the column with bottom time equal to or just greater than the equivalent single dive time and read the surfacing repetitive group for the repetitive dive from the top of the column. If the equivalent single dive time exceeds the no-decompression limit, locate the row for the depth and equivalent single dive time in Table 18-11. Read the required decompression stops and surfacing repetitive group from the columns to the right along this row.

_____ minutes: equivalent single dive time from Part 3

_____ feet: depth of the repetitive dive.

_____ Schedule (depth/bottom time) from Table 18-9 or Table 18-11.

Ensure RNT Exception Rule does not apply.

Figure 18-5. Repetitive Dive Worksheet for MK 16 MOD 1 N_20_2.

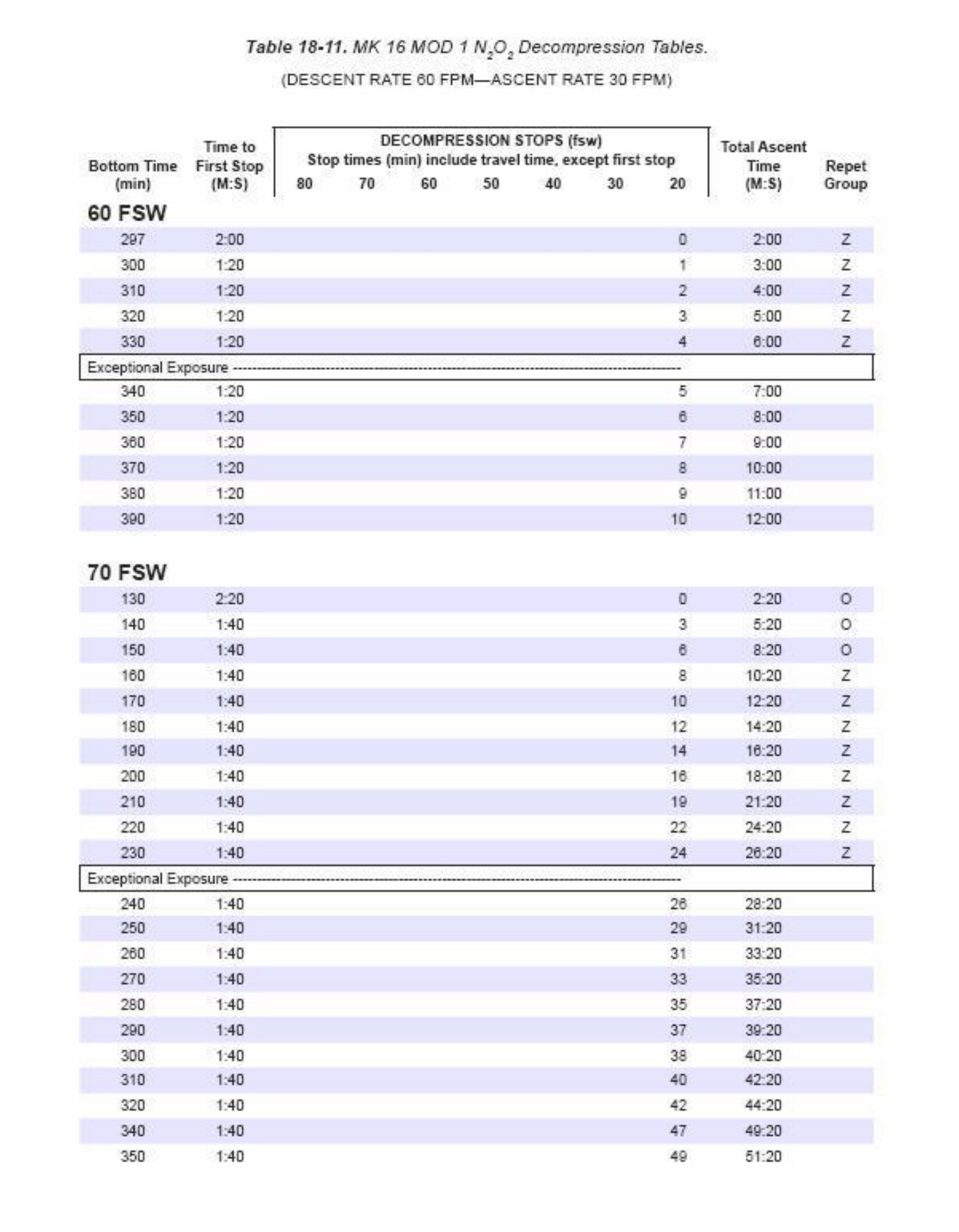


Table 18-11. *MK 16 MOD 1 N_2O_2 Decompression Tables.*

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop							Total Ascent Time (M:S)	Repet Group
		80	70	60	50	40	30	20		
60 FSW										
297	2:00							0	2:00	Z
300	1:20							1	3:00	Z
310	1:20							2	4:00	Z
320	1:20							3	5:00	Z
330	1:20							4	6:00	Z
Exceptional Exposure ----------										
340	1:20							5	7:00	
350	1:20							6	8:00	
360	1:20							7	9:00	
370	1:20							8	10:00	
380	1:20							9	11:00	
390	1:20							10	12:00	
70 FSW										
130	2:20							0	2:20	O
140	1:40							3	5:20	O
150	1:40							6	8:20	O
160	1:40							8	10:20	Z
170	1:40							10	12:20	Z
180	1:40							12	14:20	Z
190	1:40							14	16:20	Z
200	1:40							16	18:20	Z
210	1:40							19	21:20	Z
220	1:40							22	24:20	Z
230	1:40							24	26:20	Z
Exceptional Exposure ----------										
240	1:40							26	28:20	
250	1:40							29	31:20	
260	1:40							31	33:20	
270	1:40							33	35:20	
280	1:40							35	37:20	
290	1:40							37	39:20	
300	1:40							38	40:20	
310	1:40							40	42:20	
320	1:40							42	44:20	
340	1:40							47	49:20	
350	1:40							49	51:20	

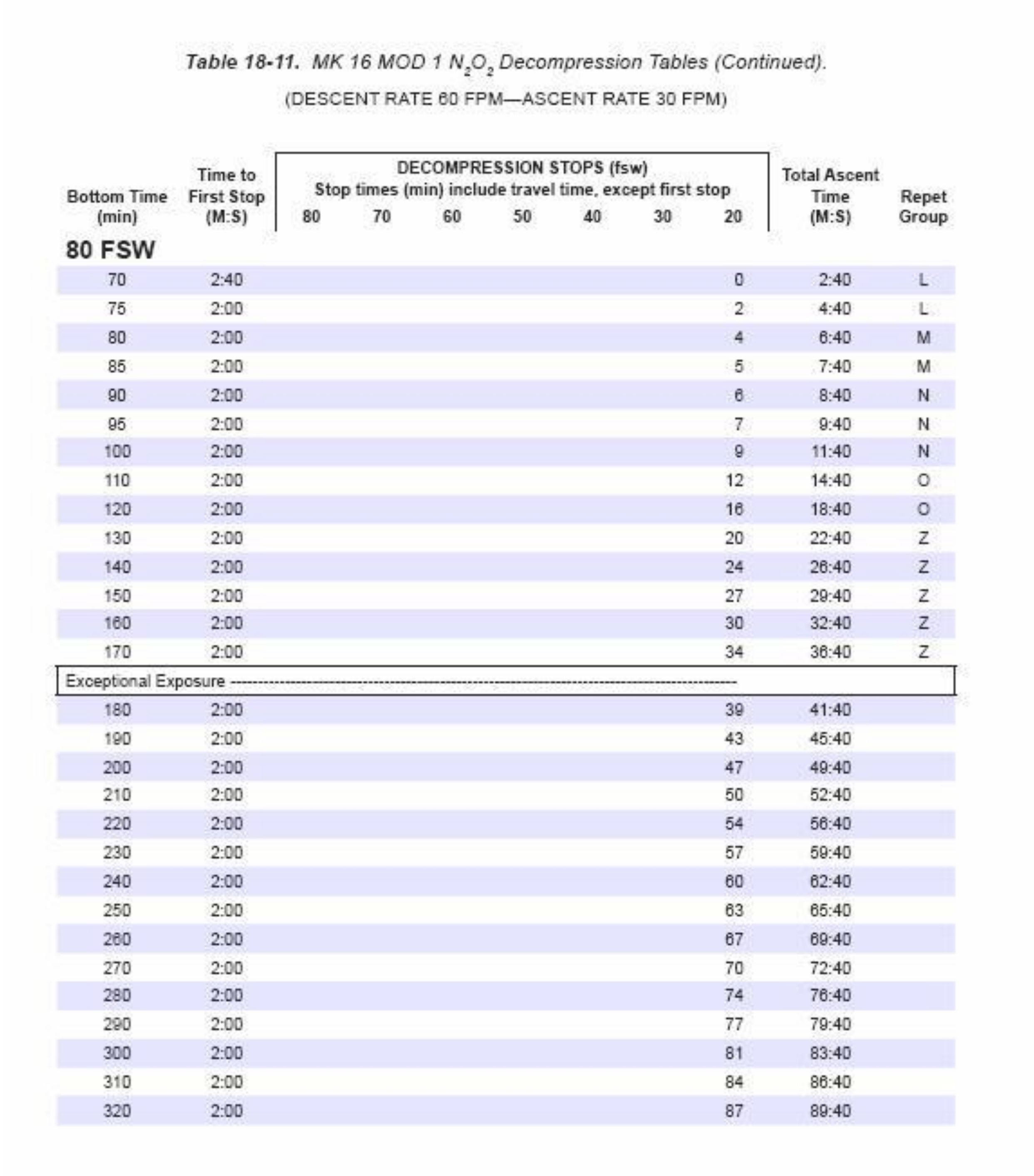


Table 18-11. *MK 16 MOD 1 N_2O_2 Decompression Tables (Continued).*

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop							Total Ascent Time (M:S)	Repet Group
		80	70	60	50	40	30	20		
80 FSW										
70	2:40							0	2:40	L
75	2:00							2	4:40	L
80	2:00							4	6:40	M
85	2:00							5	7:40	M
90	2:00							6	8:40	N
95	2:00							7	9:40	N
100	2:00							9	11:40	N
110	2:00							12	14:40	O
120	2:00							16	18:40	O
130	2:00							20	22:40	Z
140	2:00							24	26:40	Z
150	2:00							27	29:40	Z
160	2:00							30	32:40	Z
170	2:00							34	36:40	Z
Exceptional Exposure ----------										
180	2:00							39	41:40	
190	2:00							43	45:40	
200	2:00							47	49:40	
210	2:00							50	52:40	
220	2:00							54	56:40	
230	2:00							57	59:40	
240	2:00							60	62:40	
250	2:00							63	65:40	
260	2:00							67	69:40	
270	2:00							70	72:40	
280	2:00							74	76:40	
290	2:00							77	79:40	
300	2:00							81	83:40	
310	2:00							84	86:40	
320	2:00							87	89:40	

Table 18-11. MK 16 MOD 1 N_2O_2 Decompression Tables (Continued).

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop 80	70	60	50	40	30	20	Total Ascent Time (M:S)	Repet Group
90 FSW										
50	3:00							0	3:00	K
55	2:20							3	6:00	K
60	2:20							6	9:00	L
65	2:20							8	11:00	L
70	2:20							11	14:00	M
75	2:20							13	16:00	M
80	2:20							14	17:00	N
85	2:20							16	19:00	N
90	2:20							18	21:00	O
95	2:20							21	24:00	O
100	2:20							24	27:00	O
110	2:20							30	33:00	O
120	2:20							35	38:00	Z
130	2:20							40	43:00	Z
Exceptional Exposure ----------										
140	2:20							45	48:00	
150	2:20							51	54:00	
160	2:20							57	60:00	
170	2:00						1	62	65:40	
180	2:00						2	66	70:40	
190	2:00						2	71	75:40	
100 FSW										
39	3:20							0	3:20	J
40	2:40							1	4:20	J
45	2:40							5	8:20	K
50	2:40							9	12:20	L
55	2:40							12	15:20	L
60	2:40							15	18:20	M
65	2:40							18	21:20	M
70	2:40							21	24:20	N
75	2:40							23	26:20	N
80	2:40							26	29:20	O
85	2:40							30	33:20	O
90	2:40							34	37:20	O
95	2:20						1	37	41:00	O
100	2:20						3	39	45:00	O
Exceptional Exposure ----------										
110	2:20						6	43	52:00	
120	2:20						8	47	58:00	

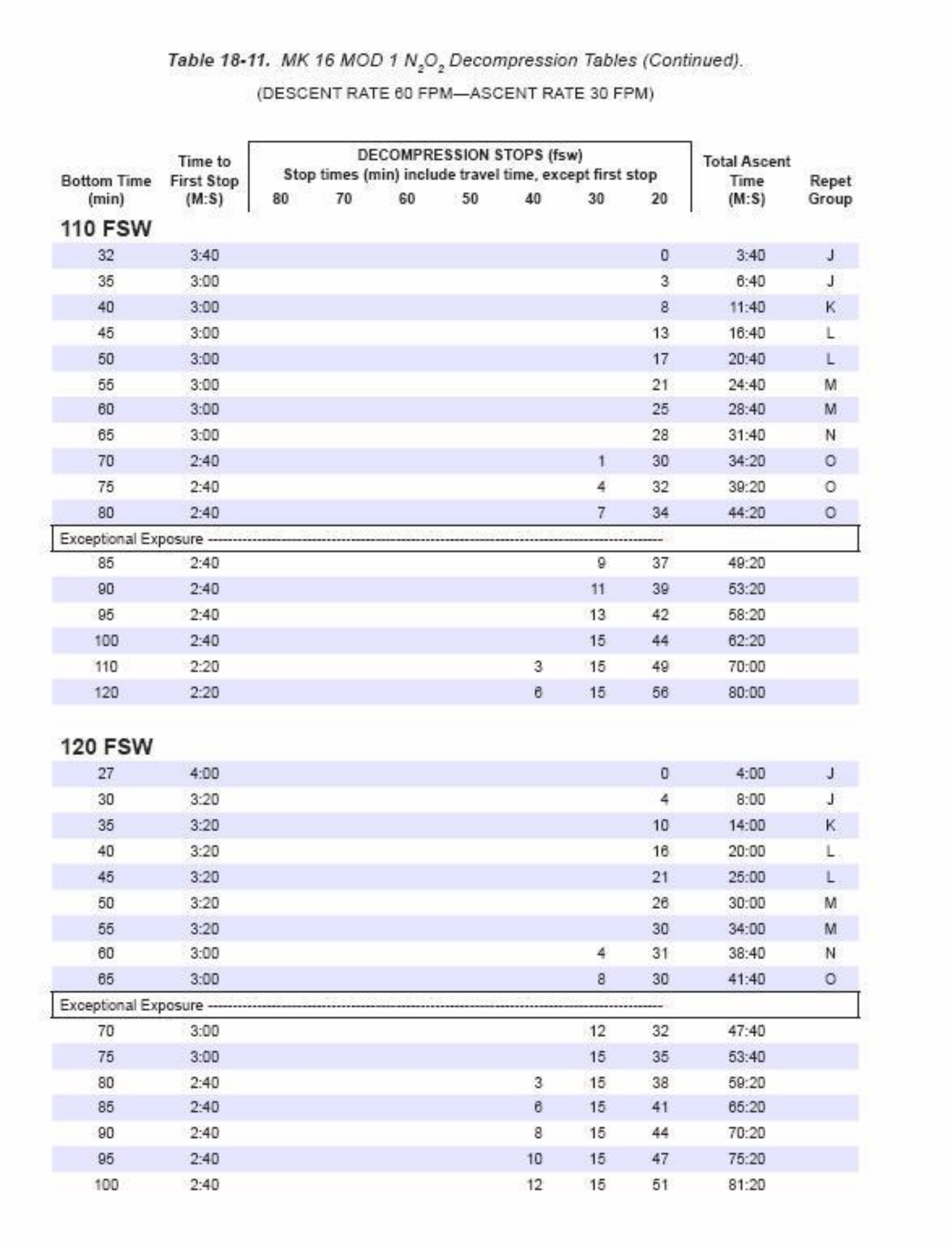


Table 18-11. *MK 16 MOD 1 N_2O_2 Decompression Tables (Continued).*

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop							Total Ascent Time (M:S)	Repet Group
		80	70	60	50	40	30	20		
110 FSW										
32	3:40							0	3:40	J
35	3:00							3	6:40	J
40	3:00							8	11:40	K
45	3:00							13	16:40	L
50	3:00							17	20:40	L
55	3:00							21	24:40	M
60	3:00							25	28:40	M
65	3:00							28	31:40	N
70	2:40						1	30	34:20	O
75	2:40						4	32	39:20	O
80	2:40						7	34	44:20	O
Exceptional Exposure --										
85	2:40						9	37	49:20	
90	2:40						11	39	53:20	
95	2:40						13	42	58:20	
100	2:40						15	44	62:20	
110	2:20					3	15	49	70:00	
120	2:20					6	15	56	80:00	
120 FSW										
27	4:00							0	4:00	J
30	3:20							4	8:00	J
35	3:20							10	14:00	K
40	3:20							16	20:00	L
45	3:20							21	25:00	L
50	3:20							26	30:00	M
55	3:20							30	34:00	M
60	3:00						4	31	38:40	N
65	3:00						8	30	41:40	O
Exceptional Exposure --										
70	3:00						12	32	47:40	
75	3:00						15	35	53:40	
80	2:40					3	15	38	59:20	
85	2:40					6	15	41	65:20	
90	2:40					8	15	44	70:20	
95	2:40					10	15	47	75:20	
100	2:40					12	15	51	81:20	

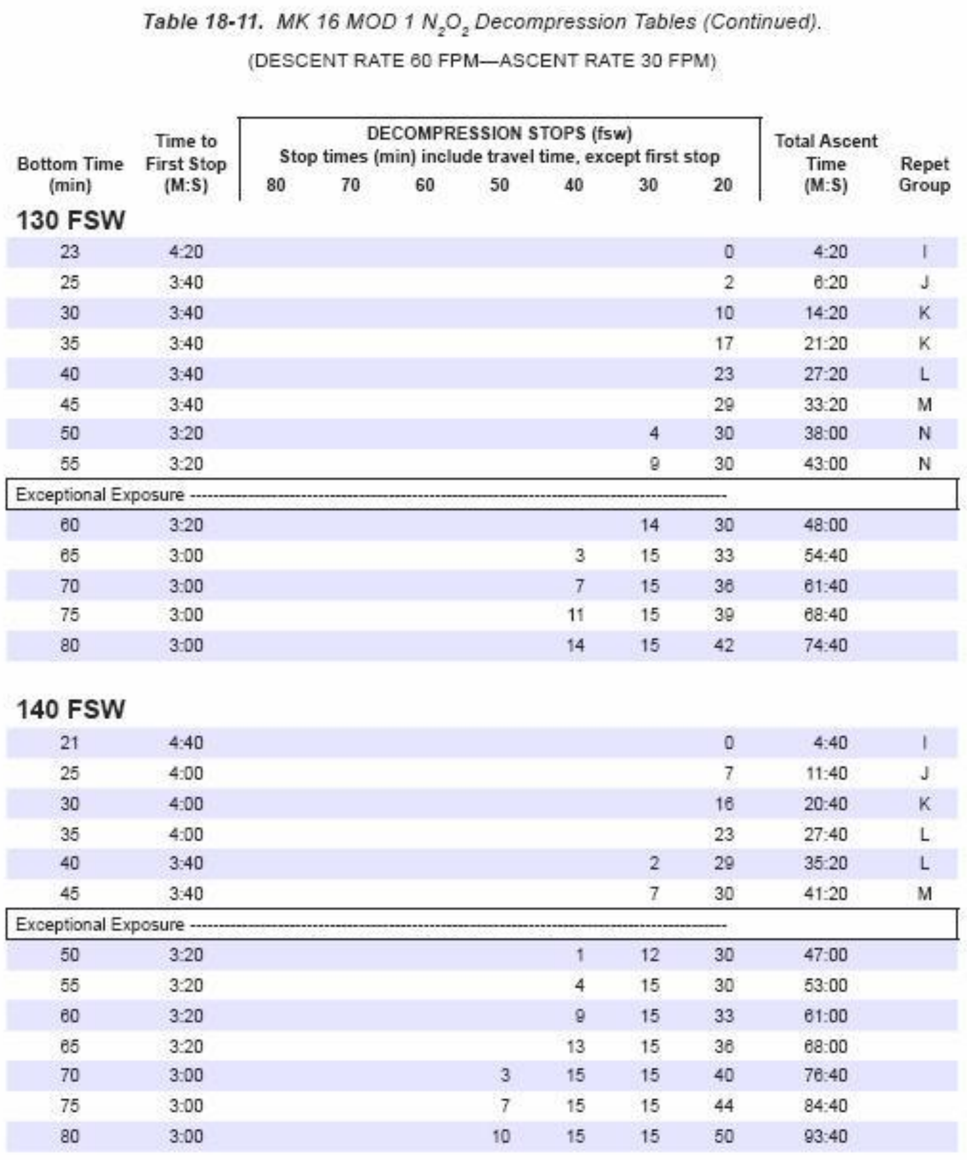


Table 18-11. MK 16 MOD 1 N_2O_2 Decompression Tables (Continued).

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop							Total Ascent Time (M:S)	Repet Group
		80	70	60	50	40	30	20		
130 FSW										
23	4:20							0	4:20	I
25	3:40							2	6:20	J
30	3:40							10	14:20	K
35	3:40							17	21:20	K
40	3:40							23	27:20	L
45	3:40							29	33:20	M
50	3:20						4	30	38:00	N
55	3:20						9	30	43:00	N
Exceptional Exposure										
60	3:20						14	30	48:00	
65	3:00					3	15	33	54:40	
70	3:00					7	15	36	61:40	
75	3:00					11	15	39	68:40	
80	3:00					14	15	42	74:40	
140 FSW										
21	4:40							0	4:40	I
25	4:00							7	11:40	J
30	4:00							16	20:40	K
35	4:00							23	27:40	L
40	3:40						2	29	35:20	L
45	3:40						7	30	41:20	M
Exceptional Exposure										
50	3:20					1	12	30	47:00	
55	3:20					4	15	30	53:00	
60	3:20					9	15	33	61:00	
65	3:20					13	15	36	68:00	
70	3:00				3	15	15	40	76:40	
75	3:00				7	15	15	44	84:40	
80	3:00				10	15	15	50	93:40	

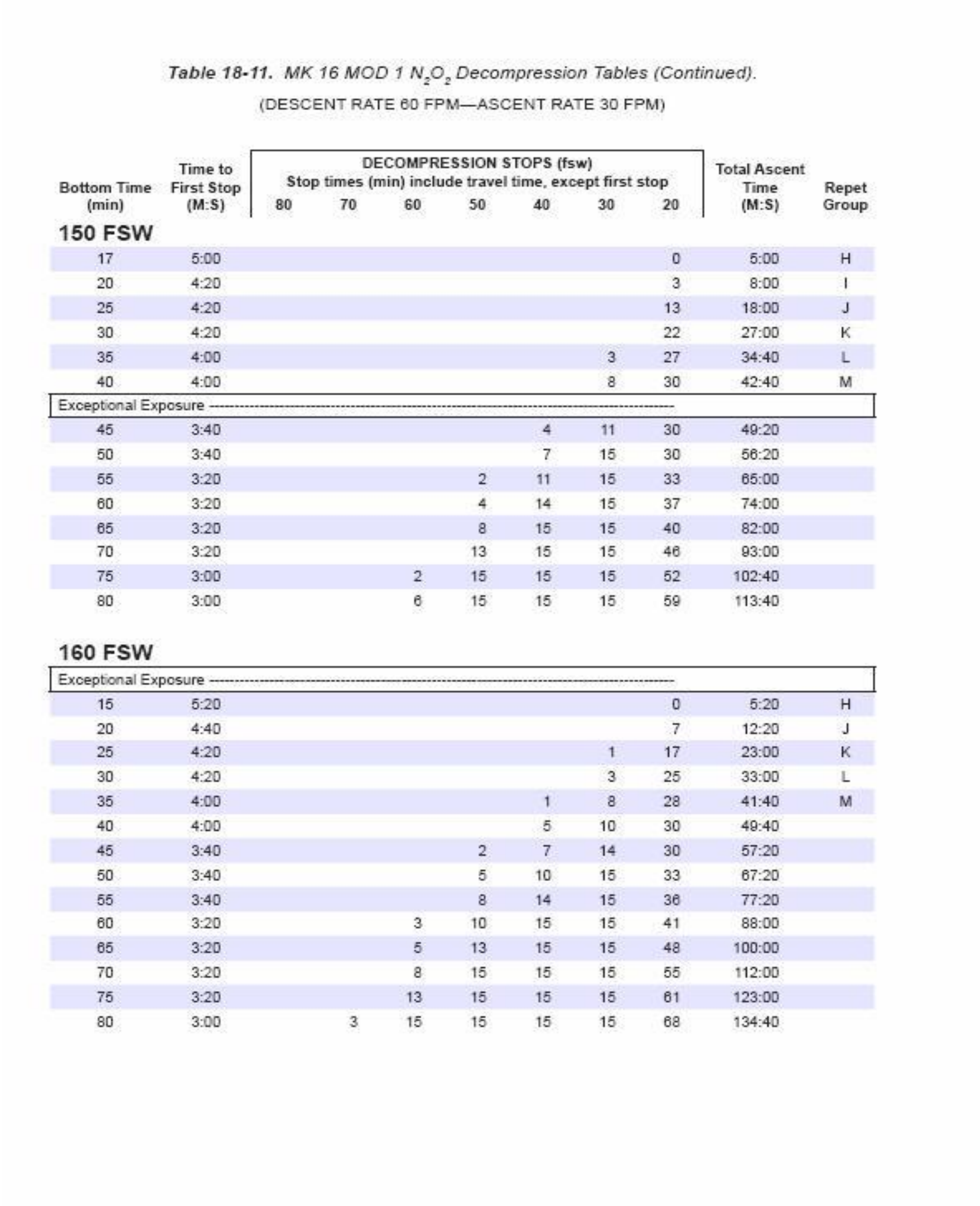


Table 18-11. MK 16 MOD 1 N_2O_2 Decompression Tables (Continued).

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop							Total Ascent Time (M:S)	Repet Group
		80	70	60	50	40	30	20		
150 FSW										
17	5:00							0	5:00	H
20	4:20							3	8:00	I
25	4:20							13	18:00	J
30	4:20							22	27:00	K
35	4:00						3	27	34:40	L
40	4:00						8	30	42:40	M
Exceptional Exposure --										
45	3:40					4	11	30	49:20	
50	3:40					7	15	30	56:20	
55	3:20				2	11	15	33	65:00	
60	3:20				4	14	15	37	74:00	
65	3:20				8	15	15	40	82:00	
70	3:20				13	15	15	46	93:00	
75	3:00			2	15	15	15	52	102:40	
80	3:00			6	15	15	15	59	113:40	
160 FSW										
Exceptional Exposure --										
15	5:20							0	5:20	H
20	4:40							7	12:20	J
25	4:20						1	17	23:00	K
30	4:20						3	25	33:00	L
35	4:00					1	8	28	41:40	M
40	4:00					5	10	30	49:40	
45	3:40				2	7	14	30	57:20	
50	3:40				5	10	15	33	67:20	
55	3:40				8	14	15	36	77:20	
60	3:20			3	10	15	15	41	88:00	
65	3:20			5	13	15	15	48	100:00	
70	3:20			8	15	15	15	55	112:00	
75	3:20			13	15	15	15	61	123:00	
80	3:00		3	15	15	15	15	68	134:40	

Table 18-11. MK 16 MOD 1 N_2O_2 Decompression Tables (Continued).

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

170 FSW

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop							Total Ascent Time (M:S)	Repet Group
		80	70	60	50	40	30	20		
Exceptional Exposure ----------										
13	5:40							0	5:40	H
15	5:00							2	7:40	I
20	5:00							12	17:40	J
25	4:40						3	20	28:20	K
30	4:20					3	5	26	39:00	L
35	4:00				1	5	8	30	48:40	
40	4:00				4	7	12	30	57:40	
45	4:00				8	8	15	32	67:40	
50	3:40			4	7	13	15	36	79:20	
55	3:40			7	9	15	15	41	91:20	
60	3:20		2	7	14	15	15	48	105:00	

180 FSW

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop							Total Ascent Time (M:S)	Repet Group
		80	70	60	50	40	30	20		
Exceptional Exposure ----------										
12	6:00							0	6:00	H
15	5:20							4	10:00	I
20	5:00						2	14	21:40	K
25	4:40					3	3	23	34:20	L
30	4:20				2	4	7	27	45:00	
35	4:00			1	3	8	9	30	55:40	
40	4:00			2	7	8	14	30	65:40	
45	4:00			6	7	11	15	35	78:40	
50	3:40		2	8	8	15	15	40	92:20	
55	3:40		5	8	12	15	15	49	108:20	
60	3:20	1	7	9	15	15	15	57	123:00	

190 FSW

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop							Total Ascent Time (M:S)	Repet Group
		80	70	60	50	40	30	20		
Exceptional Exposure ----------										
10	6:20							0	6:20	G
15	5:40							6	12:20	J
20	5:00					1	4	16	26:40	K
25	4:40				2	4	4	24	39:20	L
30	4:20			2	3	5	8	29	52:00	
35	4:20			4	5	8	11	30	63:00	
40	4:00		2	5	8	8	15	34	76:40	
45	4:00		4	8	7	14	15	39	91:40	
50	3:40	1	7	8	11	15	15	47	108:20	
55	3:40	4	8	8	15	15	15	56	125:20	
60	3:40	7	7	13	15	15	15	65	141:20	

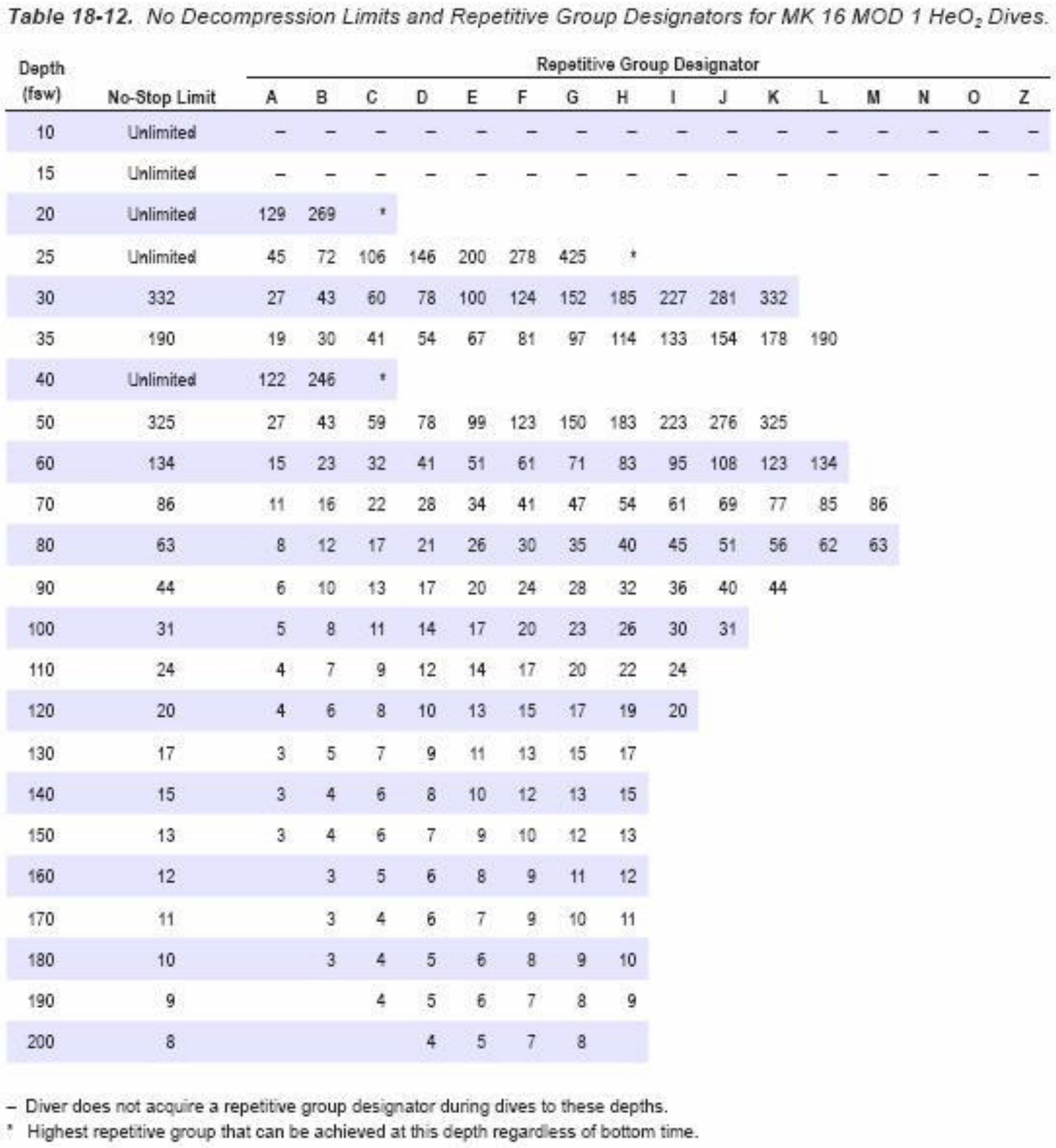


Table 18-12. No Decompression Limits and Repetitive Group Designators for MK 16 MOD 1 HeO_2 Dives.

Depth (fsw)	No-Stop Limit	Repetitive Group Designator															
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Z
10	Unlimited	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
15	Unlimited	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
20	Unlimited	129	269	*													
25	Unlimited	45	72	106	146	200	278	425	*								
30	332	27	43	60	78	100	124	152	185	227	281	332					
35	190	19	30	41	54	67	81	97	114	133	154	178	190				
40	Unlimited	122	246	*													
50	325	27	43	59	78	99	123	150	183	223	276	325					
60	134	15	23	32	41	51	61	71	83	95	108	123	134				
70	86	11	16	22	28	34	41	47	54	61	69	77	85	86			
80	63	8	12	17	21	26	30	35	40	45	51	56	62	63			
90	44	6	10	13	17	20	24	28	32	36	40	44					
100	31	5	8	11	14	17	20	23	26	30	31						
110	24	4	7	9	12	14	17	20	22	24							
120	20	4	6	8	10	13	15	17	19	20							
130	17	3	5	7	9	11	13	15	17								
140	15	3	4	6	8	10	12	13	15								
150	13	3	4	6	7	9	10	12	13								
160	12		3	5	6	8	9	11	12								
170	11		3	4	6	7	9	10	11								
180	10		3	4	5	6	8	9	10								
190	9			4	5	6	7	8	9								
200	8				4	5	7	8									

– Diver does not acquire a repetitive group designator during dives to these depths.

* Highest repetitive group that can be achieved at this depth regardless of bottom time.

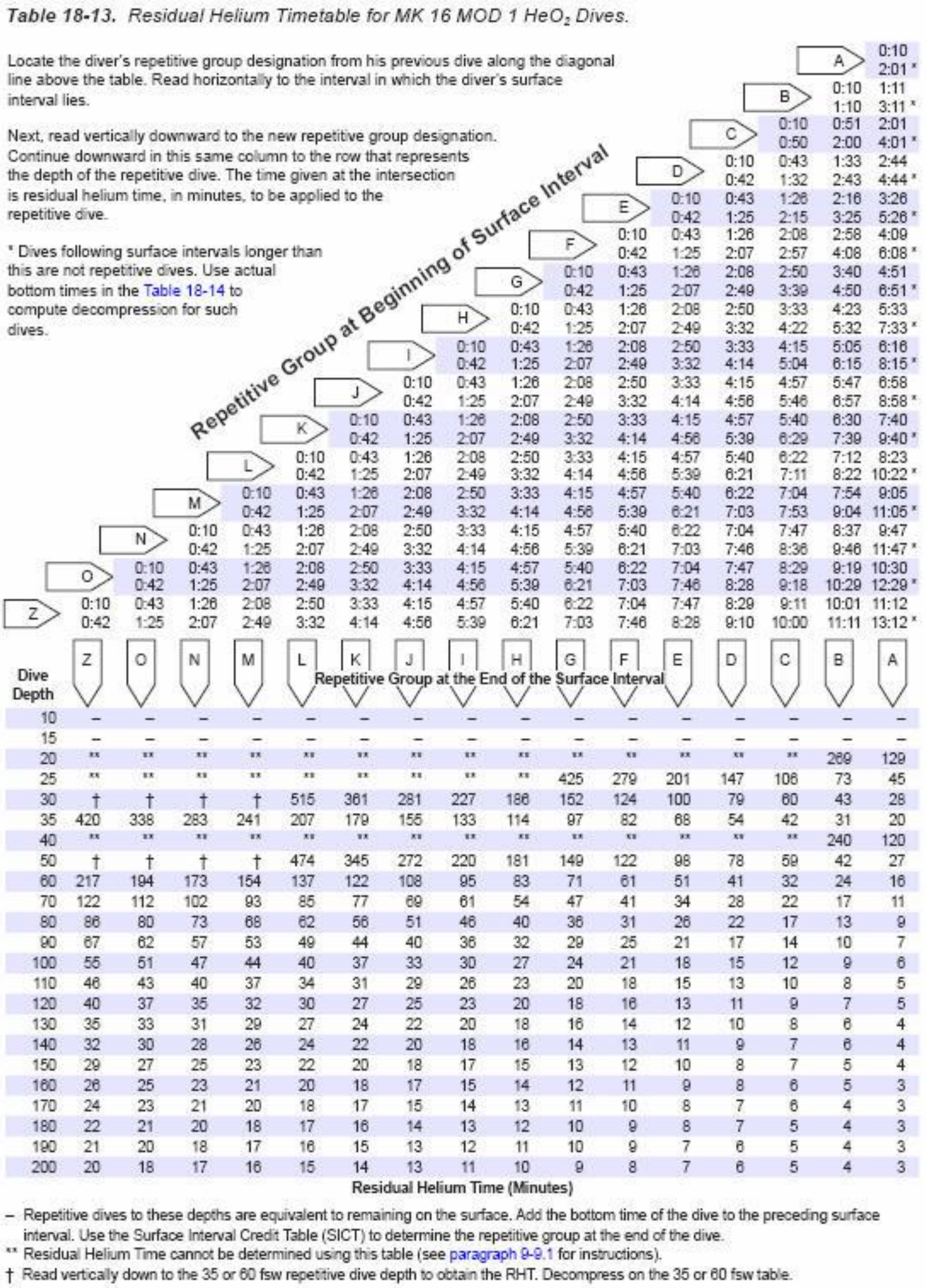


Table 18-13. Residual Helium Timetable for MK 16 MOD 1 HeO_2 Dives.

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 that represents the depth of the repetitive dive. The time given at the intersection is residual helium time, in minutes, to be applied to the repetitive dive.

* Dives following surface intervals longer than this are not repetitive dives. Use actual bottom times in the Table 18-14 to compute decompression for such dives.

Repetitive Group at Beginning of Surface Interval	Z	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
A																0:10 2:01 *
B															0:10 1:10	1:11 3:11 *
C														0:10 0:50	0:51 2:00	2:01 4:01 *
D													0:10 0:42	0:43 1:32	1:33 2:43	2:44 4:44 *
E												0:10 0:42	0:43 1:25	1:26 2:15	2:16 3:25	3:26 5:26 *
F											0:10 0:42	0:43 1:25	1:26 2:07	2:08 2:57	2:58 4:08	4:09 6:08 *
G										0:10 0:42	0:43 1:25	1:26 2:07	2:08 2:49	2:50 3:39	3:40 4:50	4:51 6:51 *
H									0:10 0:42	0:43 1:25	1:26 2:07	2:08 2:49	2:50 3:32	3:33 4:22	4:23 5:32	5:33 7:33 *
I								0:10 0:42	0:43 1:25	1:26 2:07	2:08 2:49	2:50 3:32	3:33 4:14	4:15 5:04	5:05 6:15	6:16 8:15 *
J							0:10 0:42	0:43 1:25	1:26 2:07	2:08 2:49	2:50 3:32	3:33 4:14	4:15 4:56	4:57 5:46	5:47 6:57	6:58 8:58 *
K						0:10 0:42	0:43 1:25	1:26 2:07	2:08 2:49	2:50 3:32	3:33 4:14	4:15 4:56	4:57 5:39	5:40 6:29	6:30 7:39	7:40 9:40 *
L					0:10 0:42	0:43 1:25	1:26 2:07	2:08 2:49	2:50 3:32	3:33 4:14	4:15 4:56	4:57 5:39	5:40 6:21	6:22 7:11	7:12 8:22	8:23 10:22 *
M				0:10 0:42	0:43 1:25	1:26 2:07	2:08 2:49	2:50 3:32	3:33 4:14	4:15 4:56	4:57 5:39	5:40 6:21	6:22 7:03	7:04 7:53	7:54 9:04	9:05 11:05 *
N			0:10 0:42	0:43 1:25	1:26 2:07	2:08 2:49	2:50 3:32	3:33 4:14	4:15 4:56	4:57 5:39	5:40 6:21	6:22 7:03	7:04 7:46	7:47 8:36	8:37 9:46	9:47 11:47 *
O		0:10 0:42	0:43 1:25	1:26 2:07	2:08 2:49	2:50 3:32	3:33 4:14	4:15 4:56	4:57 5:39	5:40 6:21	6:22 7:03	7:04 7:46	7:47 8:28	8:29 9:18	9:19 10:29	10:30 12:29 *
Z	0:10 0:42	0:43 1:25	1:26 2:07	2:08 2:49	2:50 3:32	3:33 4:14	4:15 4:56	4:57 5:39	5:40 6:21	6:22 7:03	7:04 7:46	7:47 8:28	8:29 9:10	9:11 10:00	10:01 11:11	11:12 13:12 *

Repetitive Group at the End of the Surface Interval

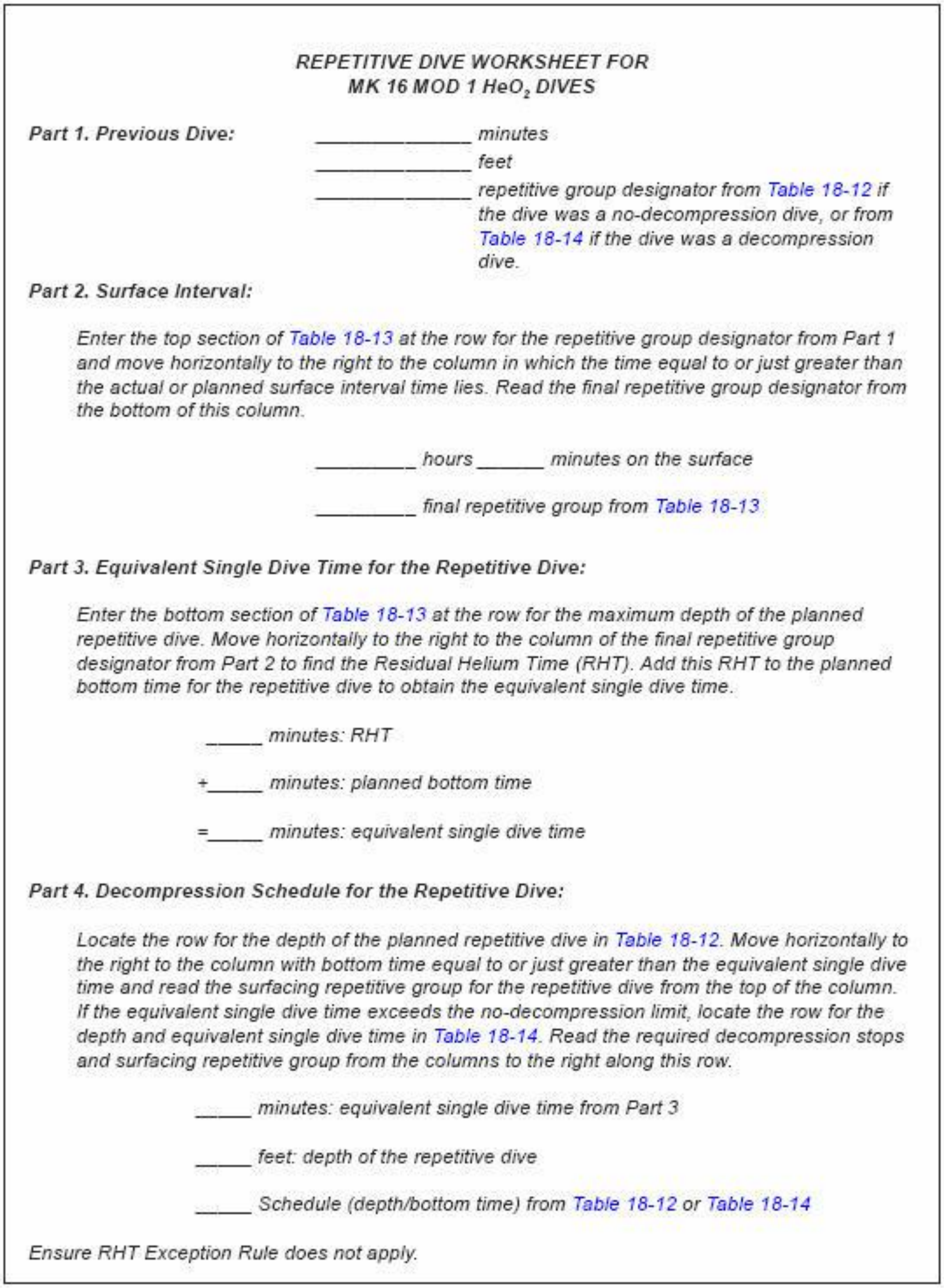
Dive Depth	Z	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
20	**	**	**	**	**	**	**	**	**	**	**	**	**	**	269	129
25	**	**	**	**	**	**	**	**	**	425	279	201	147	106	73	45
30	†	†	†	†	515	361	281	227	186	152	124	100	79	60	43	28
35	420	338	283	241	207	179	155	133	114	97	82	68	54	42	31	20
40	**	**	**	**	**	**	**	**	**	**	**	**	**	**	240	120
50	†	†	†	†	474	345	272	220	181	149	122	98	78	59	42	27
60	217	194	173	154	137	122	108	95	83	71	61	51	41	32	24	16
70	122	112	102	93	85	77	69	61	54	47	41	34	28	22	17	11
80	86	80	73	68	62	56	51	46	40	36	31	26	22	17	13	9
90	67	62	57	53	49	44	40	36	32	29	25	21	17	14	10	7
100	55	51	47	44	40	37	33	30	27	24	21	18	15	12	9	6
110	46	43	40	37	34	31	29	26	23	20	18	15	13	10	8	5
120	40	37	35	32	30	27	25	23	20	18	16	13	11	9	7	5
130	35	33	31	29	27	24	22	20	18	16	14	12	10	8	6	4
140	32	30	28	26	24	22	20	18	16	14	13	11	9	7	6	4
150	29	27	25	23	22	20	18	17	15	13	12	10	8	7	5	4
160	26	25	23	21	20	18	17	15	14	12	11	9	8	6	5	3
170	24	23	21	20	18	17	15	14	13	11	10	8	7	6	4	3
180	22	21	20	18	17	16	14	13	12	10	9	8	7	5	4	3
190	21	20	18	17	16	15	13	12	11	10	9	7	6	5	4	3
200	20	18	17	16	15	14	13	11	10	9	8	7	6	5	4	3

Residual Helium Time (Minutes)

– Repetitive dives to these depths are equivalent to remaining on the surface. Add the bottom time of the dive to the preceding surface interval. Use the Surface Interval Credit Table (SICT) to determine the repetitive group at the end of the dive.

** Residual Helium Time cannot be determined using this table (see paragraph 9-9.1 for instructions).

† Read vertically down to the 35 or 60 fsw repetitive dive depth to obtain the RHT. Decompress on the 35 or 60 fsw table.



REPETITIVE DIVE WORKSHEET FOR
MK 16 MOD 1 HeO_2 DIVES

Part 1. Previous Dive:

_______________ *minutes*

_______________ *feet*

_______________ *repetitive group designator from Table 18-12 if the dive was a no-decompression dive, or from Table 18-14 if the dive was a decompression dive.*

Part 2. Surface Interval:

Enter the top section of Table 18-13 at the row for the repetitive group designator from Part 1 and move horizontally to the right to the column in which the time equal to or just greater than the actual or planned surface interval time lies. Read the final repetitive group designator from the bottom of this column.

_________ *hours* ______ *minutes on the surface*

_________ *final repetitive group from Table 18-13*

Part 3. Equivalent Single Dive Time for the Repetitive Dive:

Enter the bottom section of Table 18-13 at the row for the maximum depth of the planned repetitive dive. Move horizontally to the right to the column of the final repetitive group designator from Part 2 to find the Residual Helium Time (RHT). Add this RHT to the planned bottom time for the repetitive dive to obtain the equivalent single dive time.

_____ *minutes: RHT*

+_____ *minutes: planned bottom time*

=_____ *minutes: equivalent single dive time*

Part 4. Decompression Schedule for the Repetitive Dive:

Locate the row for the depth of the planned repetitive dive in Table 18-12. Move horizontally to the right to the column with bottom time equal to or just greater than the equivalent single dive time and read the surfacing repetitive group for the repetitive dive from the top of the column. If the equivalent single dive time exceeds the no-decompression limit, locate the row for the depth and equivalent single dive time in Table 18-14. Read the required decompression stops and surfacing repetitive group from the columns to the right along this row.

_____ *minutes: equivalent single dive time from Part 3*

_____ *feet: depth of the repetitive dive*

_____ *Schedule (depth/bottom time) from Table 18-12 or Table 18-14*

Ensure RHT Exception Rule does not apply.

Figure 18-6. Repetitive Dive Worksheet for MK 16 MOD 1 HeO_2 Dives.

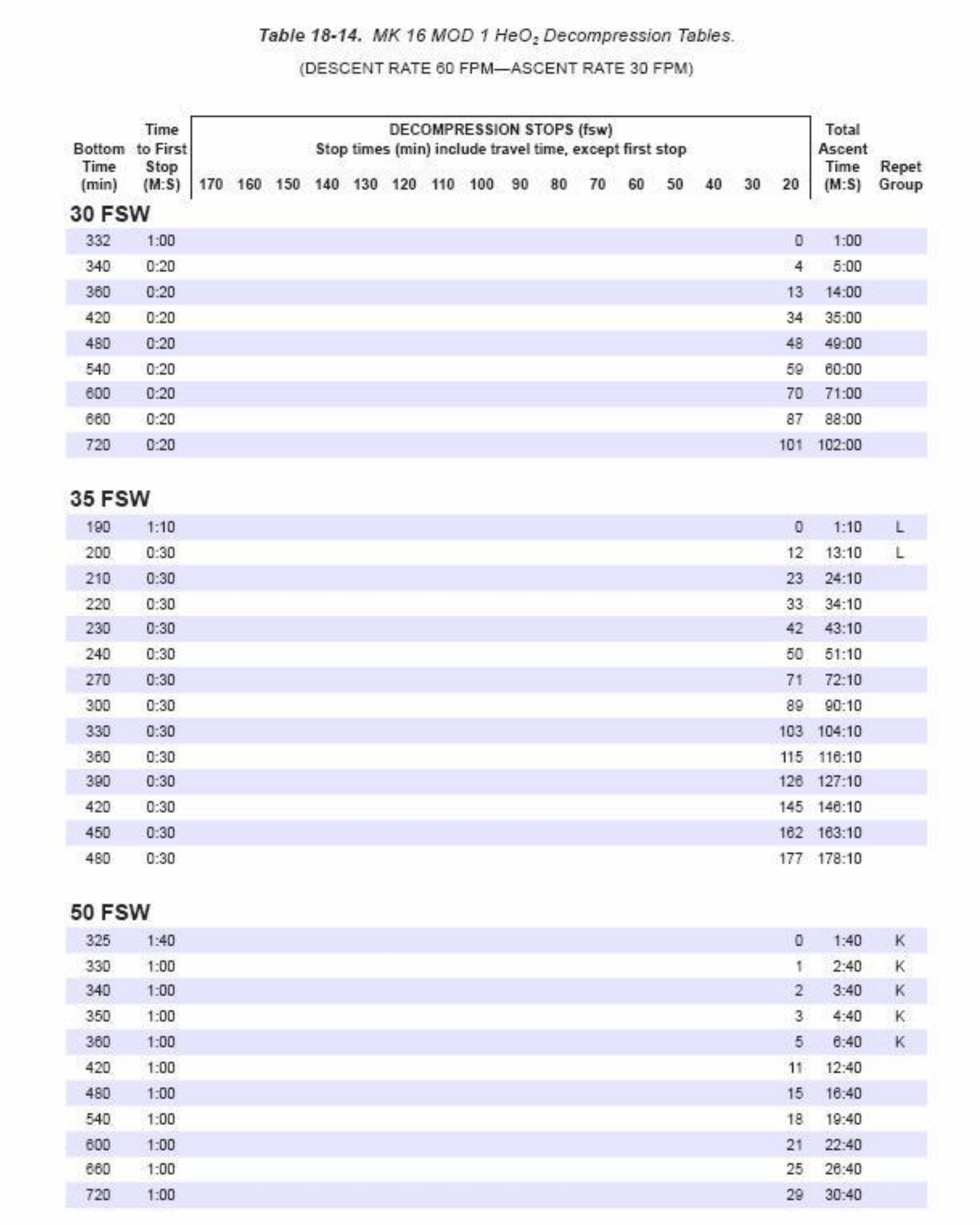


Table 18-14. MK 16 MOD 1 HeO_2 Decompression Tables.

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop																Total Ascent Time (M:S)	Repet Group
		170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20		
30 FSW																			
332	1:00																0	1:00	
340	0:20																4	5:00	
360	0:20																13	14:00	
420	0:20																34	35:00	
480	0:20																48	49:00	
540	0:20																59	60:00	
600	0:20																70	71:00	
660	0:20																87	88:00	
720	0:20																101	102:00	
35 FSW																			
190	1:10																0	1:10	L
200	0:30																12	13:10	L
210	0:30																23	24:10	
220	0:30																33	34:10	
230	0:30																42	43:10	
240	0:30																50	51:10	
270	0:30																71	72:10	
300	0:30																89	90:10	
330	0:30																103	104:10	
360	0:30																115	116:10	
390	0:30																126	127:10	
420	0:30																145	146:10	
450	0:30																162	163:10	
480	0:30																177	178:10	
50 FSW																			
325	1:40																0	1:40	K
330	1:00																1	2:40	K
340	1:00																2	3:40	K
350	1:00																3	4:40	K
360	1:00																5	6:40	K
420	1:00																11	12:40	
480	1:00																15	16:40	
540	1:00																18	19:40	
600	1:00																21	22:40	
660	1:00																25	26:40	
720	1:00																29	30:40	

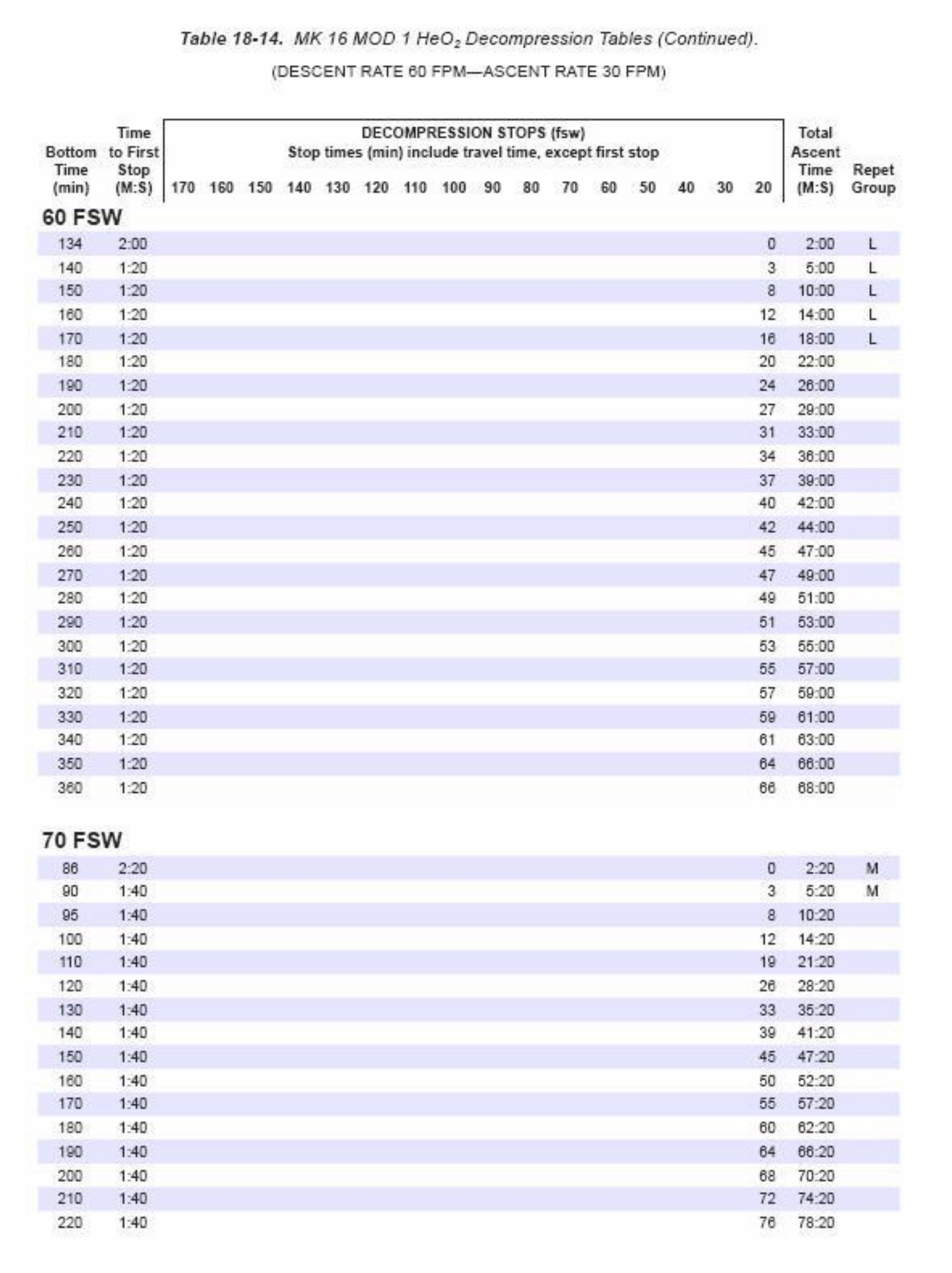


Table 18-14. MK 16 MOD 1 HeO$_2$ Decompression Tables (Continued).

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

60 FSW

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop																Total Ascent Time (M:S)	Repet Group
		170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20		
134	2:00																0	2:00	L
140	1:20																3	5:00	L
150	1:20																8	10:00	L
160	1:20																12	14:00	L
170	1:20																16	18:00	L
180	1:20																20	22:00	
190	1:20																24	26:00	
200	1:20																27	29:00	
210	1:20																31	33:00	
220	1:20																34	36:00	
230	1:20																37	39:00	
240	1:20																40	42:00	
250	1:20																42	44:00	
260	1:20																45	47:00	
270	1:20																47	49:00	
280	1:20																49	51:00	
290	1:20																51	53:00	
300	1:20																53	55:00	
310	1:20																55	57:00	
320	1:20																57	59:00	
330	1:20																59	61:00	
340	1:20																61	63:00	
350	1:20																64	66:00	
360	1:20																66	68:00	

70 FSW

86	2:20																0	2:20	M
90	1:40																3	5:20	M
95	1:40																8	10:20	
100	1:40																12	14:20	
110	1:40																19	21:20	
120	1:40																26	28:20	
130	1:40																33	35:20	
140	1:40																39	41:20	
150	1:40																45	47:20	
160	1:40																50	52:20	
170	1:40																55	57:20	
180	1:40																60	62:20	
190	1:40																64	66:20	
200	1:40																68	70:20	
210	1:40																72	74:20	
220	1:40																76	78:20	

Table 18-14. MK 16 MOD 1 HeO$_2$ Decompression Tables (Continued).

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop																Total Ascent Time (M:S)	Repet Group
		170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20		
80 FSW																			
63	2:40																0	2:40	M
65	2:00																2	4:40	M
70	2:00																8	10:40	
75	2:00																14	16:40	
80	2:00																19	21:40	
85	2:00																24	26:40	
90	2:00																29	31:40	
95	2:00																34	36:40	
100	2:00																39	41:40	
110	2:00																48	50:40	
120	2:00																56	58:40	
130	2:00																63	65:40	
140	2:00																70	72:40	
150	2:00																76	78:40	
160	2:00																82	84:40	
170	2:00																88	90:40	
180	2:00																93	95:40	
190	2:00																98	100:40	
90 FSW																			
44	3:00																0	3:00	K
45	2:20																1	4:00	K
50	2:20																2	5:00	L
55	2:20																7	10:00	M
60	2:20																15	18:00	
65	2:20																22	25:00	
70	2:20																29	32:00	
75	2:20																35	38:00	
80	2:20																41	44:00	
85	2:20																47	50:00	
90	2:20																53	56:00	
95	2:20																58	61:00	
100	2:20																63	66:00	
110	2:20																73	76:00	
120	2:20																82	85:00	
130	2:20																90	93:00	
140	2:20																97	100:00	
150	2:20																105	108:00	
160	2:20																112	115:00	

***Table 18-14.** MK 16 MOD 1 HeO$_2$ Decompression Tables (Continued).*

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop																Total Ascent Time (M:S)	Repet Group
		170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20		
100 FSW																			
31	3:20																0	3:20	J
35	2:40																2	5:20	K
40	2:40																4	7:20	L
45	2:40																6	9:20	M
50	2:40																16	19:20	
55	2:40																24	27:20	
60	2:40																33	36:20	
65	2:40																41	44:20	
70	2:40																48	51:20	
75	2:40																55	58:20	
80	2:40																62	65:20	
85	2:40																68	71:20	
90	2:40																74	77:20	
95	2:40																80	83:20	
100	2:40																85	88:20	
110	2:40																96	99:20	
120	2:40																105	108:20	
130	2:20															1	114	118:00	
140	2:20															1	124	128:00	
110 FSW																			
24	3:40																0	3:40	I
25	3:00																1	4:40	I
30	3:00																4	7:40	J
35	3:00																7	10:40	L
40	3:00																10	13:40	M
45	3:00																21	24:40	
50	3:00																31	34:40	
55	3:00																40	43:40	
60	2:40															1	49	53:20	
65	2:40															2	57	62:20	
70	2:40															3	64	70:20	
75	2:40															4	71	78:20	
80	2:40															5	77	85:20	
85	2:40															5	84	92:20	
90	2:40															6	89	98:20	
95	2:40															6	95	104:20	
100	2:40															6	101	110:20	
110	2:40															7	112	122:20	
EXCEPTIONAL EXPOSURE ----------																			
120	2:40															7	123	133:20	
130	2:40															7	136	146:20	
140	2:20														1	7	149	160:00	

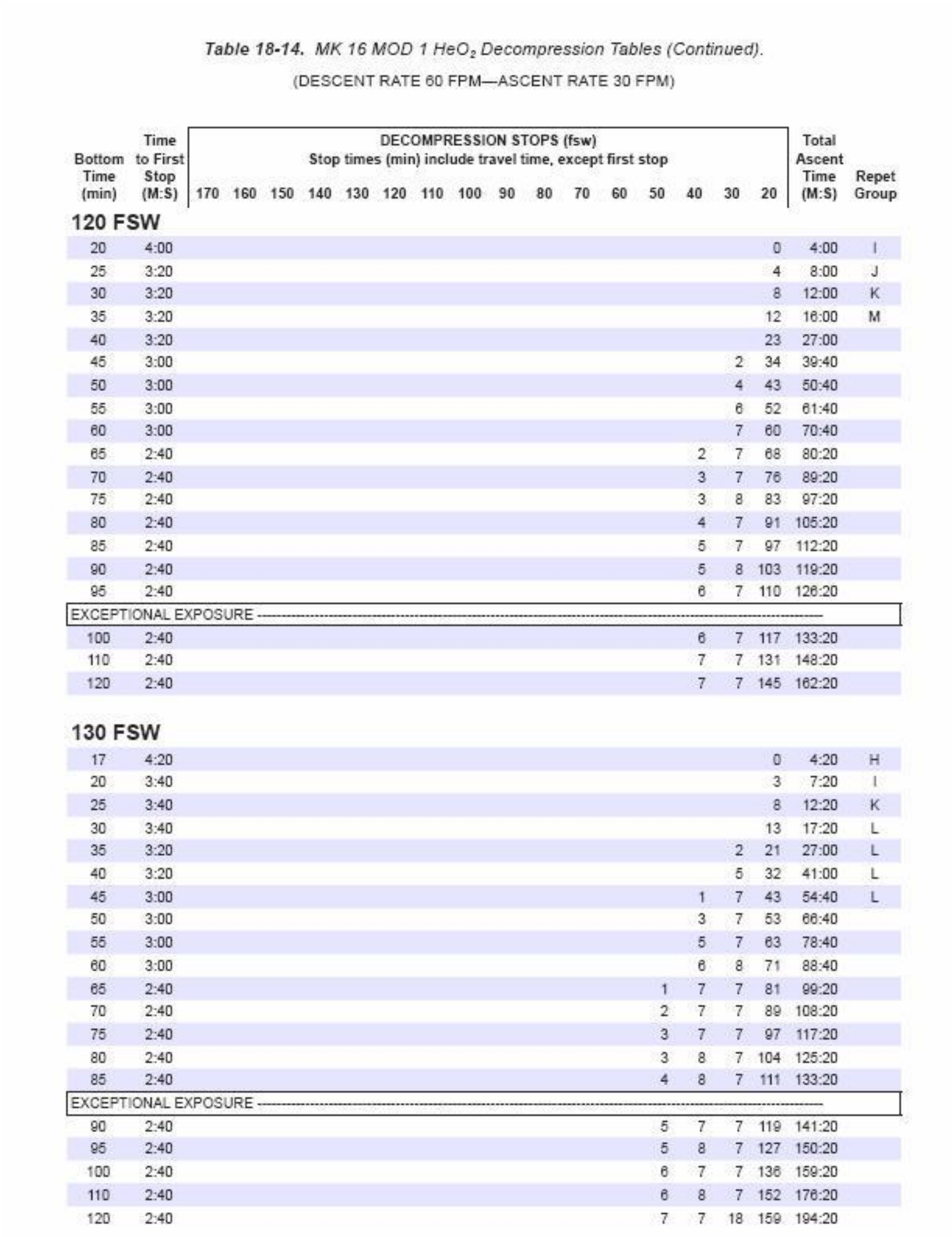


Table 18-14. *MK 16 MOD 1 HeO_2 Decompression Tables (Continued).*

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop																Total Ascent Time (M:S)	Repet Group
		170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20		
120 FSW																			
20	4:00																0	4:00	I
25	3:20																4	8:00	J
30	3:20																8	12:00	K
35	3:20																12	16:00	M
40	3:20																23	27:00	
45	3:00															2	34	39:40	
50	3:00															4	43	50:40	
55	3:00															6	52	61:40	
60	3:00															7	60	70:40	
65	2:40														2	7	68	80:20	
70	2:40														3	7	76	89:20	
75	2:40														3	8	83	97:20	
80	2:40														4	7	91	105:20	
85	2:40														5	7	97	112:20	
90	2:40														5	8	103	119:20	
95	2:40														6	7	110	126:20	
EXCEPTIONAL EXPOSURE																			
100	2:40														6	7	117	133:20	
110	2:40														7	7	131	148:20	
120	2:40														7	7	145	162:20	
130 FSW																			
17	4:20																0	4:20	H
20	3:40																3	7:20	I
25	3:40																8	12:20	K
30	3:40																13	17:20	L
35	3:20															2	21	27:00	L
40	3:20															5	32	41:00	L
45	3:00														1	7	43	54:40	L
50	3:00														3	7	53	66:40	
55	3:00														5	7	63	78:40	
60	3:00														6	8	71	88:40	
65	2:40													1	7	7	81	99:20	
70	2:40													2	7	7	89	108:20	
75	2:40													3	7	7	97	117:20	
80	2:40													3	8	7	104	125:20	
85	2:40													4	8	7	111	133:20	
EXCEPTIONAL EXPOSURE																			
90	2:40													5	7	7	119	141:20	
95	2:40													5	8	7	127	150:20	
100	2:40													6	7	7	136	159:20	
110	2:40													6	8	7	152	176:20	
120	2:40													7	7	18	159	194:20	

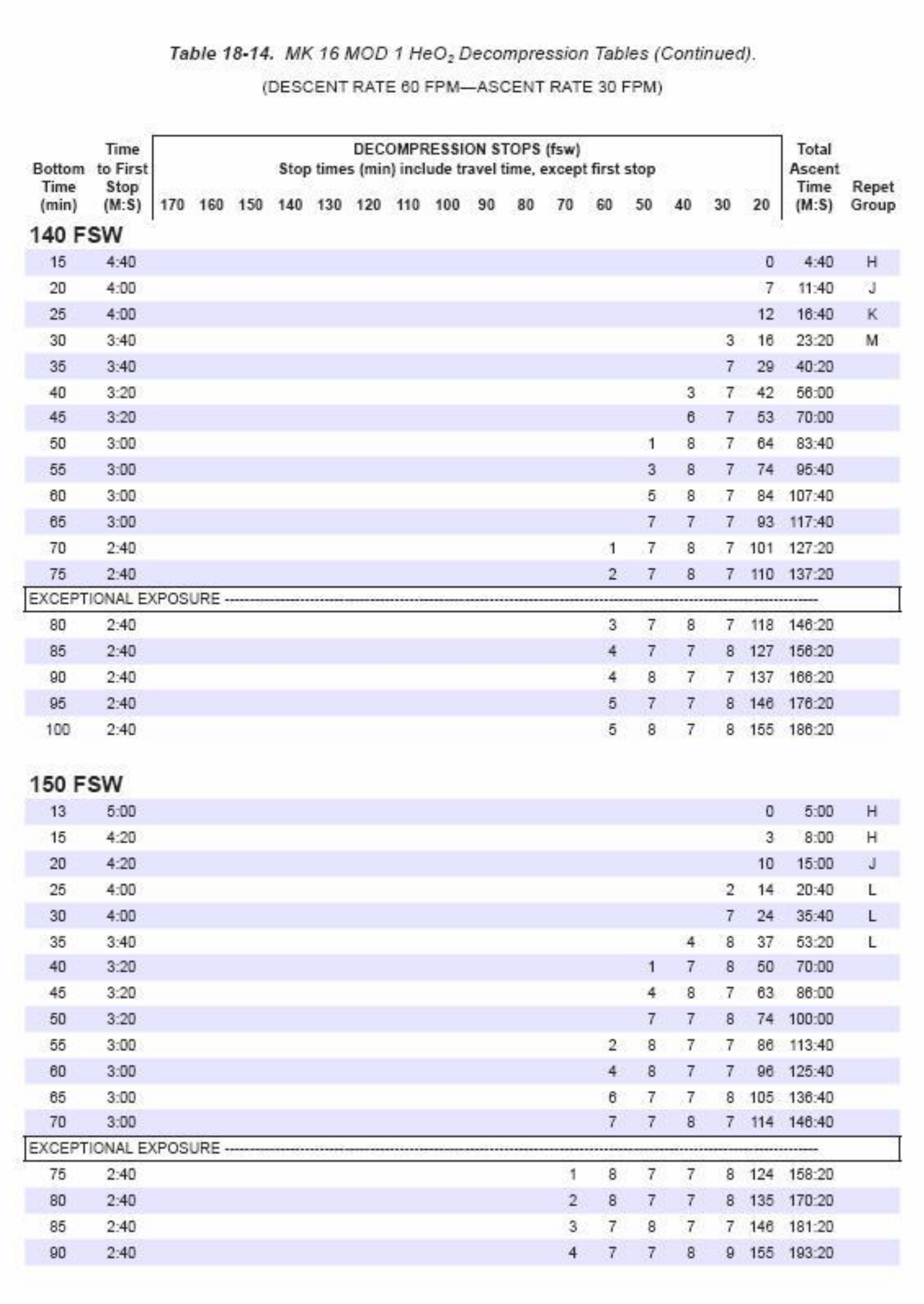


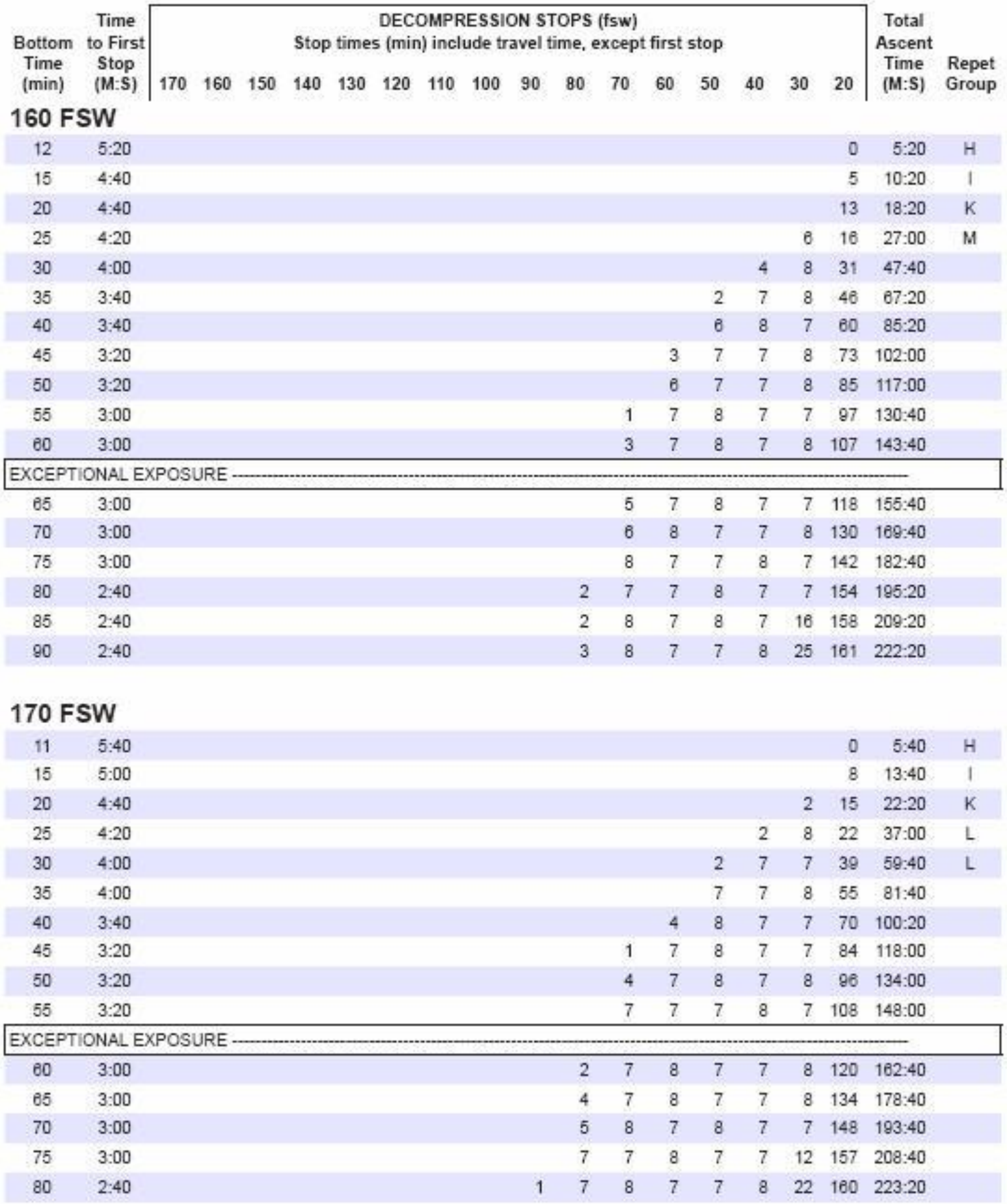
Table 18-14. *MK 16 MOD 1 HeO$_2$ Decompression Tables (Continued).*

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop																Total Ascent Time (M:S)	Repet Group
		170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20		
140 FSW																			
15	4:40																0	4:40	H
20	4:00																7	11:40	J
25	4:00																12	16:40	K
30	3:40															3	16	23:20	M
35	3:40															7	29	40:20	
40	3:20														3	7	42	56:00	
45	3:20														6	7	53	70:00	
50	3:00													1	8	7	64	83:40	
55	3:00													3	8	7	74	95:40	
60	3:00													5	8	7	84	107:40	
65	3:00													7	7	7	93	117:40	
70	2:40												1	7	8	7	101	127:20	
75	2:40												2	7	8	7	110	137:20	
EXCEPTIONAL EXPOSURE ----------																			
80	2:40												3	7	8	7	118	146:20	
85	2:40												4	7	7	8	127	156:20	
90	2:40												4	8	7	7	137	166:20	
95	2:40												5	7	7	8	146	176:20	
100	2:40												5	8	7	8	155	186:20	
150 FSW																			
13	5:00																0	5:00	H
15	4:20																3	8:00	H
20	4:20																10	15:00	J
25	4:00															2	14	20:40	L
30	4:00															7	24	35:40	L
35	3:40														4	8	37	53:20	L
40	3:20													1	7	8	50	70:00	
45	3:20													4	8	7	63	86:00	
50	3:20													7	7	8	74	100:00	
55	3:00												2	8	7	7	86	113:40	
60	3:00												4	8	7	7	96	125:40	
65	3:00												6	7	7	8	105	136:40	
70	3:00												7	7	8	7	114	146:40	
EXCEPTIONAL EXPOSURE ----------																			
75	2:40											1	8	7	7	8	124	158:20	
80	2:40											2	8	7	7	8	135	170:20	
85	2:40											3	7	8	7	7	146	181:20	
90	2:40											4	7	7	8	9	155	193:20	

Table 18-14. MK 16 MOD 1 HeO_2 Decompression Tables (Continued).

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)



Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop																Total Ascent Time (M:S)	Repet Group
		170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20		
160 FSW																			
12	5:20																0	5:20	H
15	4:40																5	10:20	I
20	4:40																13	18:20	K
25	4:20															6	16	27:00	M
30	4:00														4	8	31	47:40	
35	3:40													2	7	8	46	67:20	
40	3:40													6	8	7	60	85:20	
45	3:20												3	7	7	8	73	102:00	
50	3:20												6	7	7	8	85	117:00	
55	3:00											1	7	8	7	7	97	130:40	
60	3:00											3	7	8	7	8	107	143:40	
EXCEPTIONAL EXPOSURE ----------																			
65	3:00											5	7	8	7	7	118	155:40	
70	3:00											6	8	7	7	8	130	169:40	
75	3:00											8	7	7	8	7	142	182:40	
80	2:40										2	7	7	8	7	7	154	195:20	
85	2:40										2	8	7	8	7	16	158	209:20	
90	2:40										3	8	7	7	8	25	161	222:20	
170 FSW																			
11	5:40																0	5:40	H
15	5:00																8	13:40	I
20	4:40															2	15	22:20	K
25	4:20														2	8	22	37:00	L
30	4:00													2	7	7	39	59:40	L
35	4:00													7	7	8	55	81:40	
40	3:40												4	8	7	7	70	100:20	
45	3:20											1	7	8	7	7	84	118:00	
50	3:20											4	7	8	7	8	96	134:00	
55	3:20											7	7	7	8	7	108	148:00	
EXCEPTIONAL EXPOSURE ----------																			
60	3:00										2	7	8	7	7	8	120	162:40	
65	3:00										4	7	8	7	7	8	134	178:40	
70	3:00										5	8	7	8	7	7	148	193:40	
75	3:00										7	7	8	7	7	12	157	208:40	
80	2:40									1	7	8	7	7	8	22	160	223:20	

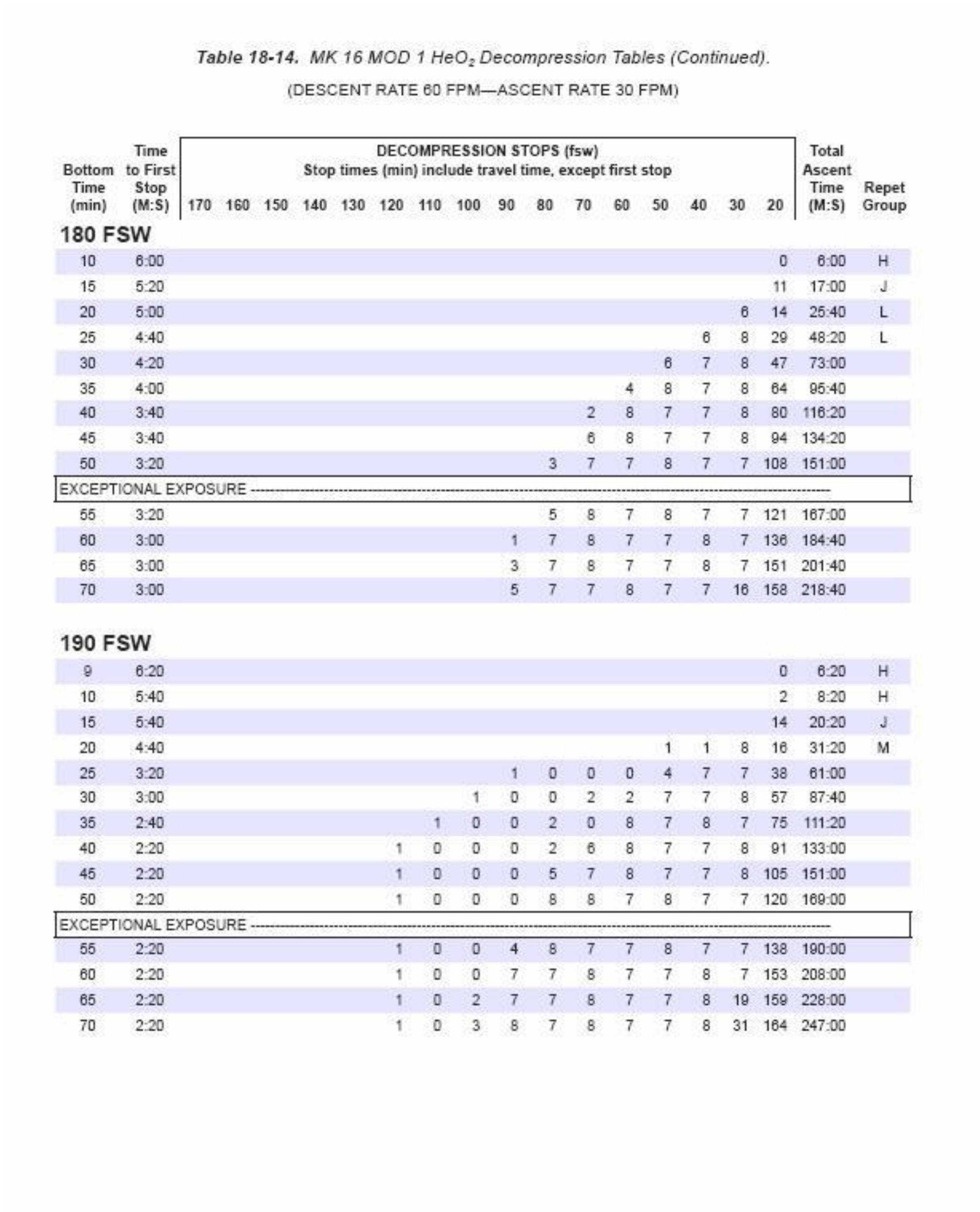


Table 18-14. MK 16 MOD 1 HeO$_2$ Decompression Tables (Continued).

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop																Total Ascent Time (M:S)	Repet Group
		170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20		
180 FSW																			
10	6:00																0	6:00	H
15	5:20																11	17:00	J
20	5:00															6	14	25:40	L
25	4:40														6	8	29	48:20	L
30	4:20													6	7	8	47	73:00	
35	4:00												4	8	7	8	64	95:40	
40	3:40											2	8	7	7	8	80	116:20	
45	3:40											6	8	7	7	8	94	134:20	
50	3:20										3	7	7	8	7	7	108	151:00	
EXCEPTIONAL EXPOSURE ----------																			
55	3:20										5	8	7	8	7	7	121	167:00	
60	3:00									1	7	8	7	7	8	7	136	184:40	
65	3:00									3	7	8	7	7	8	7	151	201:40	
70	3:00									5	7	7	8	7	7	16	158	218:40	
190 FSW																			
9	6:20																0	6:20	H
10	5:40																2	8:20	H
15	5:40																14	20:20	J
20	4:40													1	1	8	16	31:20	M
25	3:20									1	0	0	0	4	7	7	38	61:00	
30	3:00								1	0	0	2	2	7	7	8	57	87:40	
35	2:40							1	0	0	2	0	8	7	8	7	75	111:20	
40	2:20						1	0	0	0	2	6	8	7	7	8	91	133:00	
45	2:20						1	0	0	0	5	7	8	7	7	8	105	151:00	
50	2:20						1	0	0	0	8	8	7	8	7	7	120	169:00	
EXCEPTIONAL EXPOSURE ----------																			
55	2:20						1	0	0	4	8	7	7	8	7	7	138	190:00	
60	2:20						1	0	0	7	7	8	7	7	8	7	153	208:00	
65	2:20						1	0	2	7	7	8	7	7	8	19	159	228:00	
70	2:20						1	0	3	8	7	8	7	7	8	31	164	247:00	

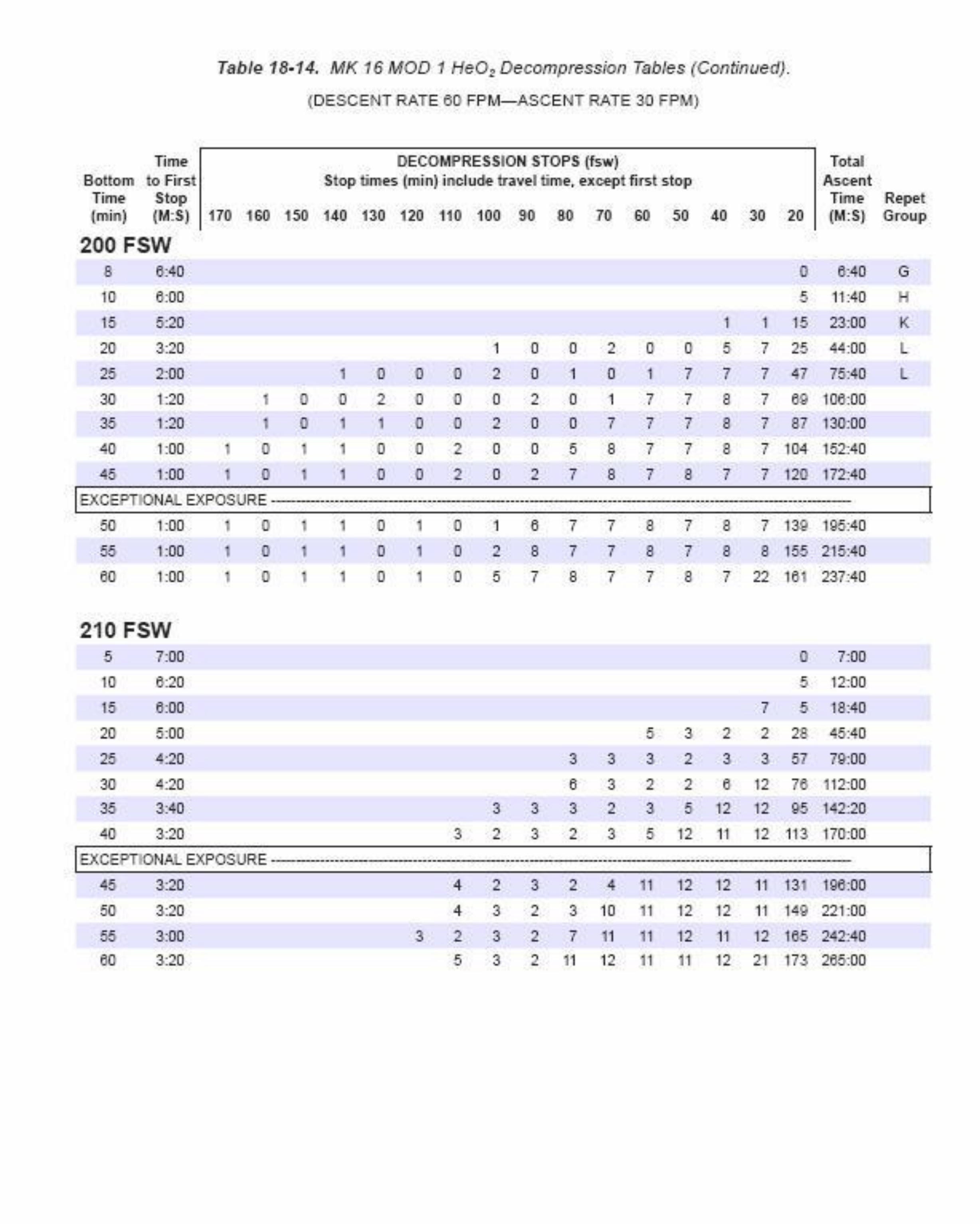


Table 18-14. MK 16 MOD 1 HeO$_2$ Decompression Tables (Continued).

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop																Total Ascent Time (M:S)	Repet Group
		170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20		
200 FSW																			
8	6:40																0	6:40	G
10	6:00																5	11:40	H
15	5:20														1	1	15	23:00	K
20	3:20								1	0	0	2	0	0	5	7	25	44:00	L
25	2:00				1	0	0	0	2	0	1	0	1	7	7	7	47	75:40	L
30	1:20		1	0	0	2	0	0	0	2	0	1	7	7	8	7	69	106:00	
35	1:20		1	0	1	1	0	0	2	0	0	7	7	7	8	7	87	130:00	
40	1:00	1	0	1	1	0	0	2	0	0	5	8	7	7	8	7	104	152:40	
45	1:00	1	0	1	1	0	0	2	0	2	7	8	7	8	7	7	120	172:40	
EXCEPTIONAL EXPOSURE ----------																			
50	1:00	1	0	1	1	0	1	0	1	6	7	7	8	7	8	7	139	195:40	
55	1:00	1	0	1	1	0	1	0	2	8	7	7	8	7	8	8	155	215:40	
60	1:00	1	0	1	1	0	1	0	5	7	8	7	7	8	7	22	161	237:40	
210 FSW																			
5	7:00																0	7:00	
10	6:20																5	12:00	
15	6:00															7	5	18:40	
20	5:00												5	3	2	2	28	45:40	
25	4:20										3	3	3	2	3	3	57	79:00	
30	4:20										6	3	2	2	6	12	76	112:00	
35	3:40								3	3	3	2	3	5	12	12	95	142:20	
40	3:20							3	2	3	2	3	5	12	11	12	113	170:00	
EXCEPTIONAL EXPOSURE ----------																			
45	3:20							4	2	3	2	4	11	12	12	11	131	196:00	
50	3:20							4	3	2	3	10	11	12	12	11	149	221:00	
55	3:00						3	2	3	2	7	11	11	12	11	12	165	242:40	
60	3:20							5	3	2	11	12	11	11	12	21	173	265:00	

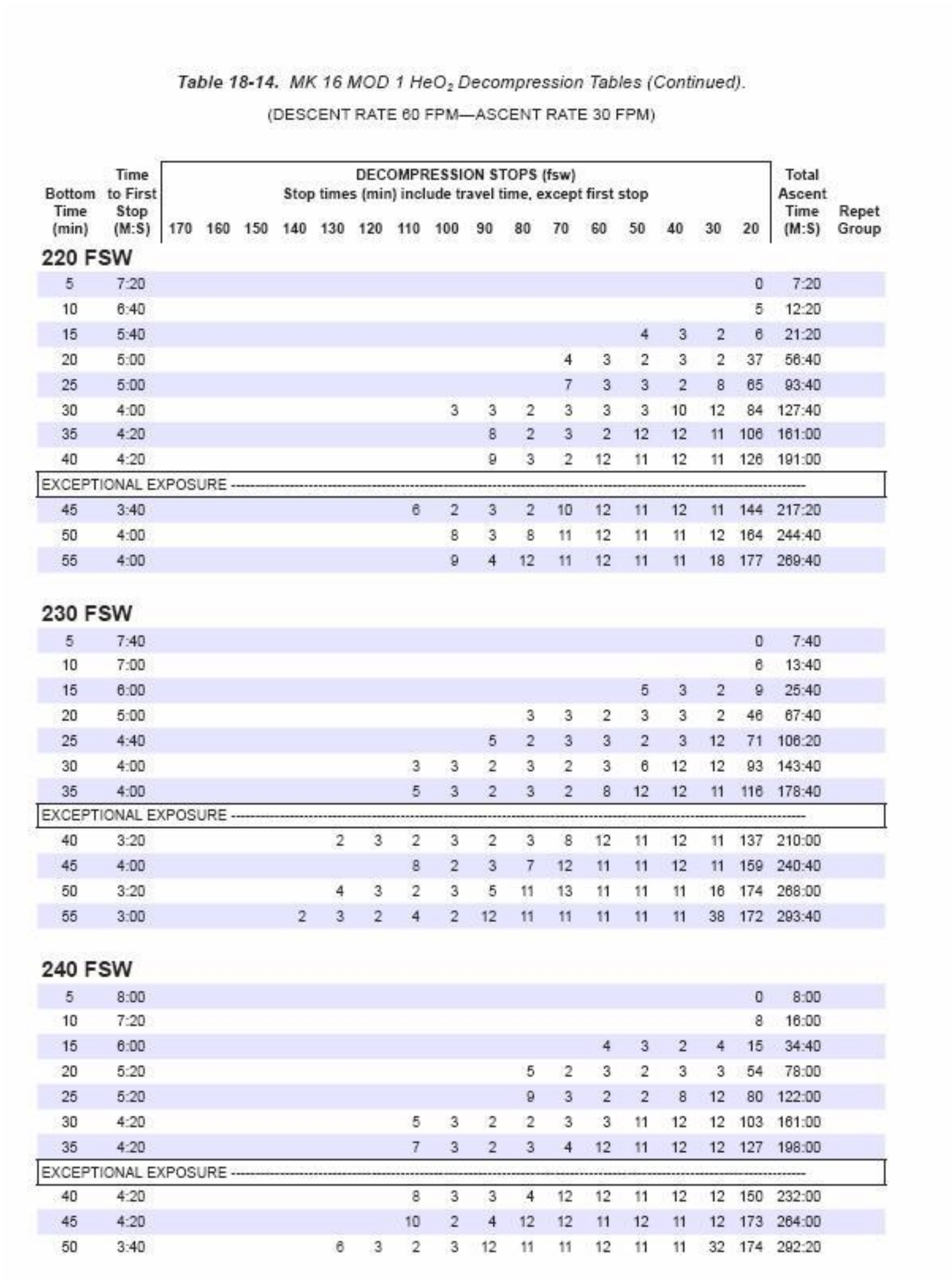


Table 18-14. MK 16 MOD 1 HeO_2 Decompression Tables (Continued).

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop																Total Ascent Time (M:S)	Repet Group
		170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20		
220 FSW																			
5	7:20																0	7:20	
10	6:40																5	12:20	
15	5:40													4	3	2	6	21:20	
20	5:00											4	3	2	3	2	37	56:40	
25	5:00											7	3	3	2	8	65	93:40	
30	4:00								3	3	2	3	3	3	10	12	84	127:40	
35	4:20									8	2	3	2	12	12	11	106	161:00	
40	4:20									9	3	2	12	11	12	11	126	191:00	
EXCEPTIONAL EXPOSURE ----------																			
45	3:40							6	2	3	2	10	12	11	12	11	144	217:20	
50	4:00								8	3	8	11	12	11	11	12	164	244:40	
55	4:00								9	4	12	11	12	11	11	18	177	269:40	
230 FSW																			
5	7:40																0	7:40	
10	7:00																6	13:40	
15	6:00													5	3	2	9	25:40	
20	5:00										3	3	2	3	3	2	46	67:40	
25	4:40									5	2	3	3	2	3	12	71	106:20	
30	4:00							3	3	2	3	2	3	6	12	12	93	143:40	
35	4:00							5	3	2	3	2	8	12	12	11	116	178:40	
EXCEPTIONAL EXPOSURE ----------																			
40	3:20					2	3	2	3	2	3	8	12	11	12	11	137	210:00	
45	4:00							8	2	3	7	12	11	11	12	11	159	240:40	
50	3:20					4	3	2	3	5	11	13	11	11	11	16	174	268:00	
55	3:00				2	3	2	4	2	12	11	11	11	11	11	38	172	293:40	
240 FSW																			
5	8:00																0	8:00	
10	7:20																8	16:00	
15	6:00												4	3	2	4	15	34:40	
20	5:20										5	2	3	2	3	3	54	78:00	
25	5:20										9	3	2	2	8	12	80	122:00	
30	4:20							5	3	2	2	3	3	11	12	12	103	161:00	
35	4:20							7	3	2	3	4	12	11	12	12	127	198:00	
EXCEPTIONAL EXPOSURE ----------																			
40	4:20							8	3	3	4	12	12	11	12	12	150	232:00	
45	4:20							10	2	4	12	12	11	12	11	12	173	264:00	
50	3:40					6	3	2	3	12	11	11	12	11	11	32	174	292:20	

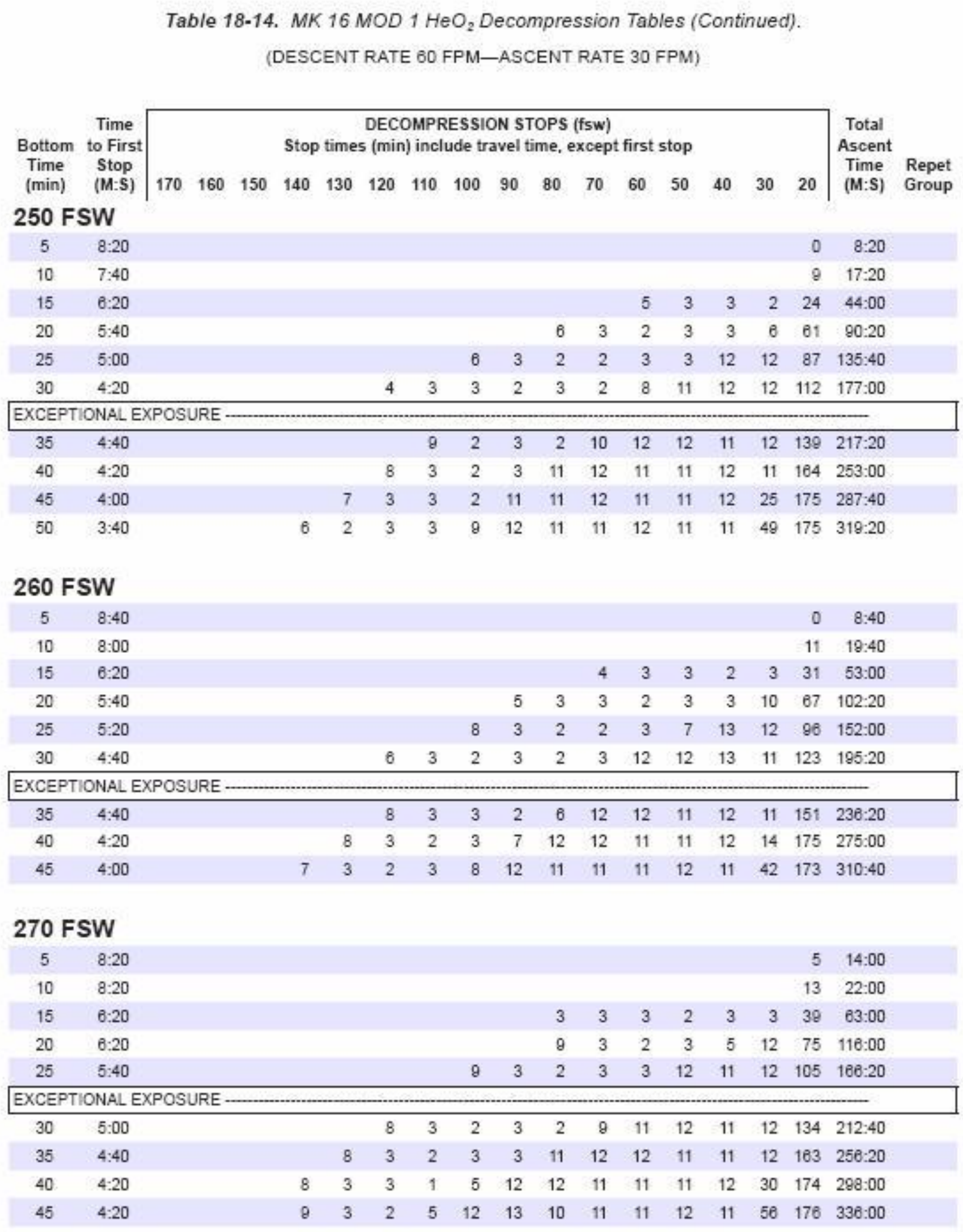


Table 18-14. MK 16 MOD 1 HeO$_2$ Decompression Tables (Continued).

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop																Total Ascent Time (M:S)	Repet Group
		170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20		
250 FSW																			
5	8:20																0	8:20	
10	7:40																9	17:20	
15	6:20												5	3	3	2	24	44:00	
20	5:40										6	3	2	3	3	6	61	90:20	
25	5:00								6	3	2	2	3	3	12	12	87	135:40	
30	4:20						4	3	3	2	3	2	8	11	12	12	112	177:00	
EXCEPTIONAL EXPOSURE ----------																			
35	4:40							9	2	3	2	10	12	12	11	12	139	217:20	
40	4:20						8	3	2	3	11	12	11	11	12	11	164	253:00	
45	4:00					7	3	3	2	11	11	12	11	11	12	25	175	287:40	
50	3:40				6	2	3	3	9	12	11	11	12	11	11	49	175	319:20	
260 FSW																			
5	8:40																0	8:40	
10	8:00																11	19:40	
15	6:20											4	3	3	2	3	31	53:00	
20	5:40									5	3	3	2	3	3	10	67	102:20	
25	5:20								8	3	2	2	3	7	13	12	96	152:00	
30	4:40						6	3	2	3	2	3	12	12	13	11	123	195:20	
EXCEPTIONAL EXPOSURE ----------																			
35	4:40						8	3	3	2	6	12	12	11	12	11	151	236:20	
40	4:20					8	3	2	3	7	12	12	11	11	12	14	175	275:00	
45	4:00				7	3	2	3	8	12	11	11	11	12	11	42	173	310:40	
270 FSW																			
5	8:20																5	14:00	
10	8:20																13	22:00	
15	6:20										3	3	3	2	3	3	39	63:00	
20	6:20										9	3	2	3	5	12	75	116:00	
25	5:40								9	3	2	3	3	12	11	12	105	166:20	
EXCEPTIONAL EXPOSURE ----------																			
30	5:00						8	3	2	3	2	9	11	12	11	12	134	212:40	
35	4:40					8	3	2	3	3	11	12	12	11	11	12	163	256:20	
40	4:20				8	3	3	1	5	12	12	11	11	11	12	30	174	298:00	
45	4:20				9	3	2	5	12	13	10	11	11	12	11	56	176	336:00	

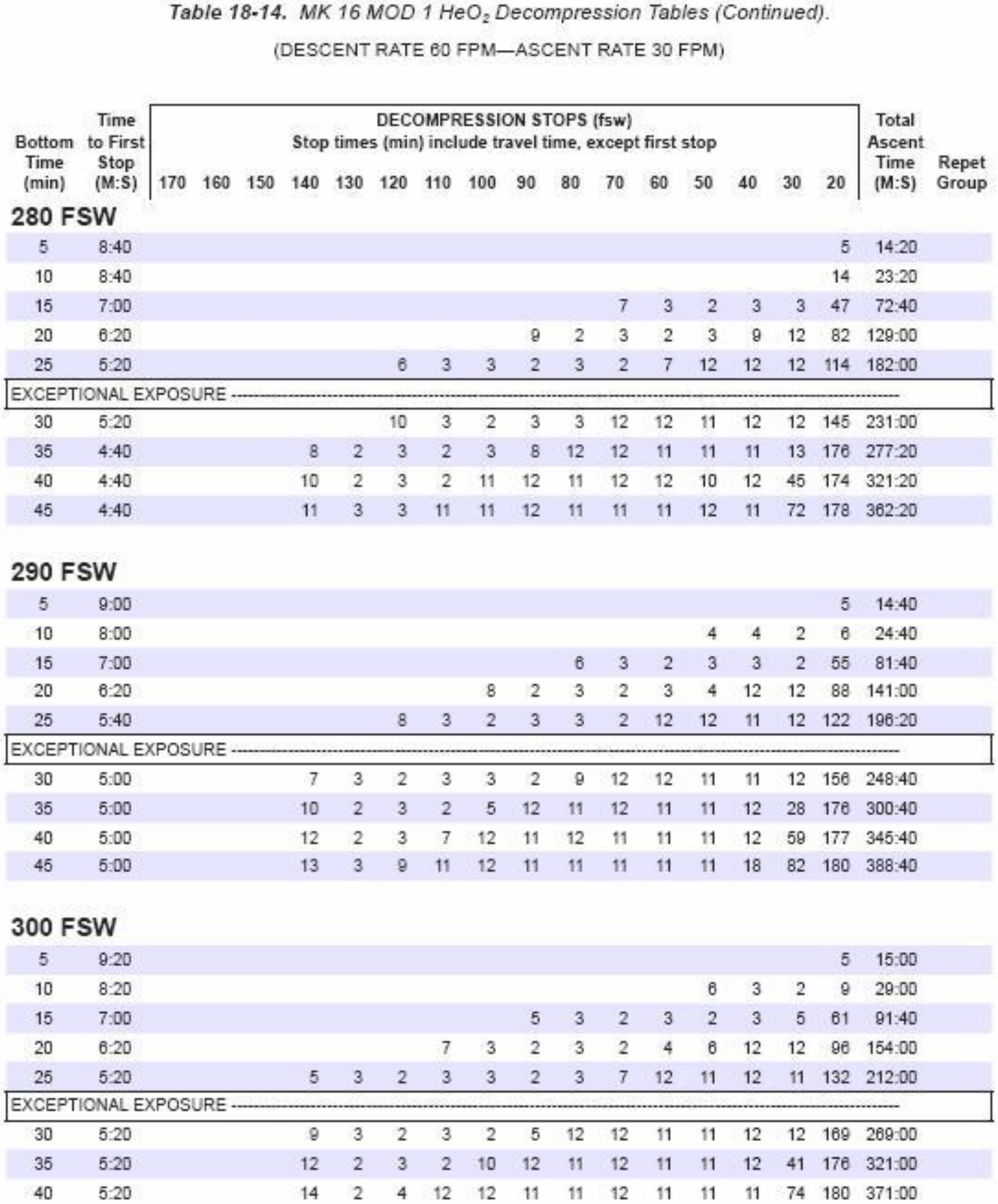


Table 18-14. MK 16 MOD 1 HeO_2 Decompression Tables (Continued).

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop																Total Ascent Time (M:S)	Repet Group
		170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20		
280 FSW																			
5	8:40																5	14:20	
10	8:40																14	23:20	
15	7:00											7	3	2	3	3	47	72:40	
20	6:20									9	2	3	2	3	9	12	82	129:00	
25	5:20						6	3	3	2	3	2	7	12	12	12	114	182:00	
EXCEPTIONAL EXPOSURE --																			
30	5:20						10	3	2	3	3	12	12	11	12	12	145	231:00	
35	4:40				8	2	3	2	3	8	12	12	11	11	11	13	176	277:20	
40	4:40				10	2	3	2	11	12	11	12	12	10	12	45	174	321:20	
45	4:40				11	3	3	11	11	12	11	11	11	12	11	72	178	362:20	
290 FSW																			
5	9:00																5	14:40	
10	8:00													4	4	2	6	24:40	
15	7:00										6	3	2	3	3	2	55	81:40	
20	6:20								8	2	3	2	3	4	12	12	88	141:00	
25	5:40						8	3	2	3	3	2	12	12	11	12	122	196:20	
EXCEPTIONAL EXPOSURE --																			
30	5:00				7	3	2	3	3	2	9	12	12	11	11	12	156	248:40	
35	5:00				10	2	3	2	5	12	11	12	11	11	12	28	176	300:40	
40	5:00				12	2	3	7	12	11	12	11	11	11	12	59	177	345:40	
45	5:00				13	3	9	11	12	11	11	11	11	11	18	82	180	388:40	
300 FSW																			
5	9:20																5	15:00	
10	8:20													6	3	2	9	29:00	
15	7:00									5	3	2	3	2	3	5	61	91:40	
20	6:20							7	3	2	3	2	4	6	12	12	96	154:00	
25	5:20				5	3	2	3	3	2	3	7	12	11	12	11	132	212:00	
EXCEPTIONAL EXPOSURE --																			
30	5:20				9	3	2	3	2	5	12	12	11	11	12	12	169	269:00	
35	5:20				12	2	3	2	10	12	11	12	11	11	12	41	176	321:00	
40	5:20				14	2	4	12	12	11	11	12	11	11	11	74	180	371:00	

Table 18-14. MK 16 MOD 1 HeO_2 Decompression Tables (Continued).

(DESCENT RATE 60 FPM—ASCENT RATE 30 FPM)

Bottom Time (min)	Time to First Stop (M:S)	DECOMPRESSION STOPS (fsw) Stop times (min) include travel time, except first stop																Total Ascent Time (M:S)	Repet Group
		170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20		
310 FSW																			
EXCEPTIONAL EXPOSURE ----------																			
10	8:20												5	2	3	3	14	36:00	
15	7:20									6	3	3	2	3	2	9	66	102:00	
20	6:20						6	3	2	3	2	3	3	12	11	12	103	167:00	
25	6:00					9	3	2	3	3	2	12	11	12	12	11	142	228:40	
30	5:40				11	3	2	2	3	10	12	11	11	12	12	17	176	288:20	
35	5:40				14	2	3	6	12	11	12	11	11	11	12	55	178	344:20	
40	5:40				16	2	10	12	11	12	11	11	11	11	19	83	182	397:20	
320 FSW																			
EXCEPTIONAL EXPOSURE ----------																			
10	8:20											4	2	3	3	2	21	44:00	
15	7:40									8	3	2	3	2	3	12	71	112:20	
20	6:20					6	2	3	2	3	2	4	5	12	12	12	111	181:00	
25	6:20					11	3	2	2	3	7	12	11	12	11	12	153	246:00	
30	6:00				13	2	3	2	6	12	11	12	11	11	12	30	177	308:40	
35	6:00				15	3	3	11	12	11	12	11	11	11	12	68	182	368:40	
40	6:00				18	7	11	12	11	11	11	12	11	11	35	83	185	424:40	

DECOMPRESSION CHARTS USED IN SURFACE SUPPLIED HELIUM-OXYGEN DIVING OPERATIONS

HEO2 TABLES

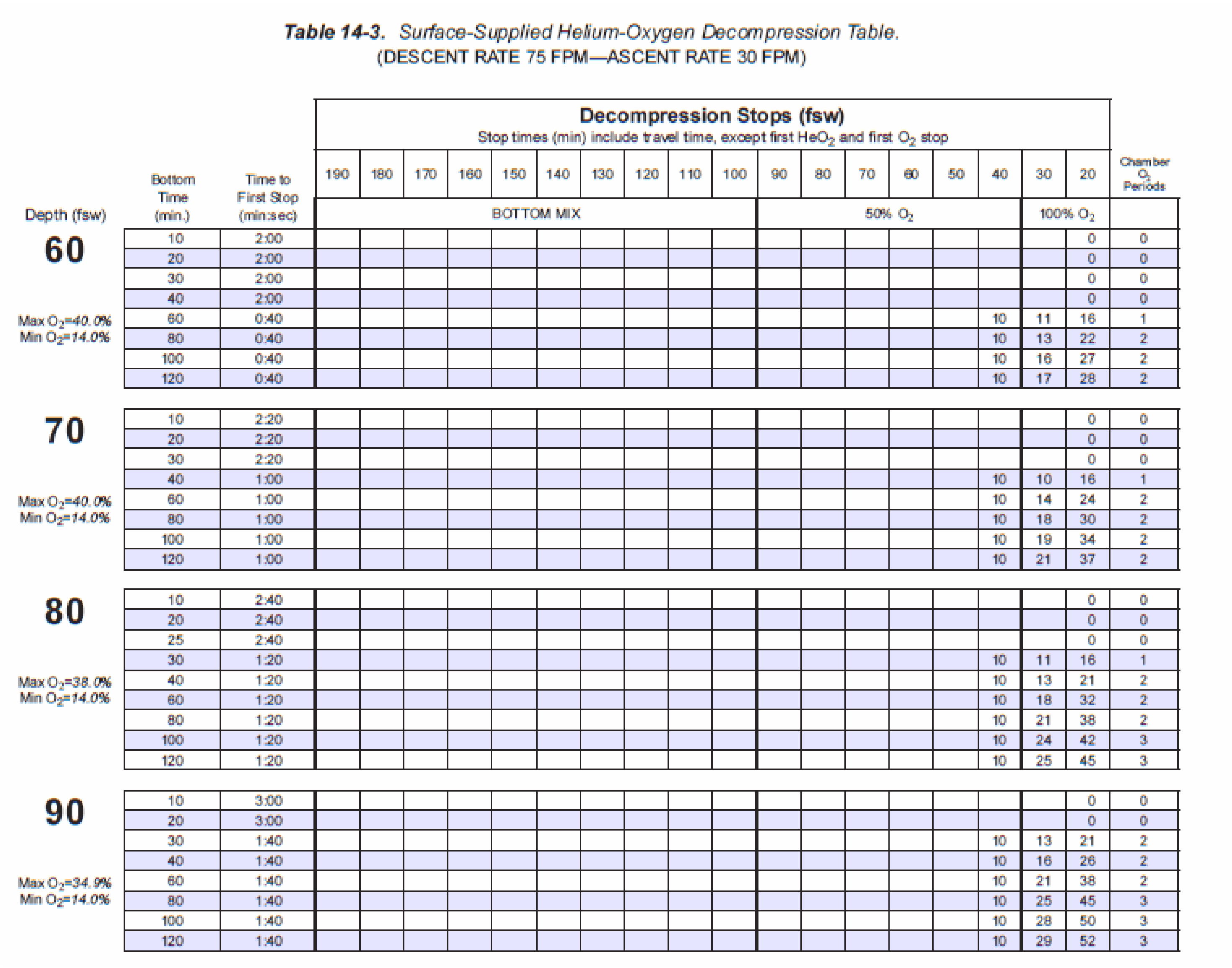


Table 14-3. *Surface-Supplied Helium-Oxygen Decompression Table.*
(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Depth (fsw)	Bottom Time (min.)	Time to First Stop (min:sec)	Decompression Stops (fsw) Stop times (min) include travel time, except first HeO_2 and first O_2 stop																		Chamber O_2 Periods
			190	180	170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20	
			BOTTOM MIX										50% O_2						100% O_2		
60	10	2:00																		0	0
	20	2:00																		0	0
	30	2:00																		0	0
	40	2:00																		0	0
Max O_2=40.0%	60	0:40																10	11	16	1
Min O_2=14.0%	80	0:40																10	13	22	2
	100	0:40																10	16	27	2
	120	0:40																10	17	28	2
70	10	2:20																		0	0
	20	2:20																		0	0
	30	2:20																		0	0
	40	1:00																10	10	16	1
Max O_2=40.0%	60	1:00																10	14	24	2
Min O_2=14.0%	80	1:00																10	18	30	2
	100	1:00																10	19	34	2
	120	1:00																10	21	37	2
80	10	2:40																		0	0
	20	2:40																		0	0
	25	2:40																		0	0
	30	1:20																10	11	16	1
Max O_2=38.0%	40	1:20																10	13	21	2
Min O_2=14.0%	60	1:20																10	18	32	2
	80	1:20																10	21	38	2
	100	1:20																10	24	42	3
	120	1:20																10	25	45	3
90	10	3:00																		0	0
	20	3:00																		0	0
	30	1:40																10	13	21	2
	40	1:40																10	16	26	2
Max O_2=34.9%	60	1:40																10	21	38	2
Min O_2=14.0%	80	1:40																10	25	45	3
	100	1:40																10	28	50	3
	120	1:40																10	29	52	3

Table 14-3. *Surface-Supplied Helium-Oxygen Decompression Table (Continued).*
(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Depth (fsw)	Bottom Time (min.)	Time to First Stop (min:sec)	Decompression Stops (fsw) Stop times (min) include travel time, except first HeO_2 and first O_2 stop																		Chamber O_2 Periods
			190	180	170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20	
			BOTTOM MIX										50% O_2						100% O_2		
100	10	3:20																		0	0
	15	3:20																		0	0
	20	2:00																10	11	17	1
	30	2:00																10	15	24	2
Max O_2=32.3%	40	2:00																10	18	32	2
Min O_2=14.0%	60	2:00																10	25	44	3
	80	2:00																10	28	52	3
	100	2:00																10	31	56	3
	120	2:00																10	32	58	3
110	10	2:20																10	8	11	1
	20	2:20																10	12	20	1
	30	2:20																10	17	28	2
	40	2:20																10	20	36	2
Max O_2=30.0%	60	2:20																10	27	49	3
Min O_2=14.0%	80	2:20																10	31	58	3
	100	2:20																10	33	62	4
	Exceptional Exposure																				
	120	2:20																10	35	64	4
120	10	2:40																10	9	13	1
	20	2:40																10	14	23	2
	30	2:40																10	19	33	2
	40	2:40																10	23	42	3
Max O_2=28.0%	60	2:40																10	30	55	3
Min O_2=14.0%	80	2:40																10	34	63	4
	100	2:40																10	36	66	4
	Exceptional Exposure																				
	120	2:40															10	10	35	65	4
130	10	2:40															10	10	6	8	1
	20	2:40															10	10	12	19	1
	30	2:40															10	10	18	30	2
	40	2:20														7	10	10	22	40	3
Max O_2=26.3%	60	2:20														7	10	10	29	52	3
Min O_2=14.0%	80	2:20														7	10	10	33	60	3
	Exceptional Exposure																				
	100	2:20														7	10	10	35	64	4
	120	2:20														7	11	11	35	66	4

Table 14-3. *Surface-Supplied Helium-Oxygen Decompression Table (Continued).*
(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

			Decompression Stops (fsw) Stop times (min) include travel time, except first HeO_2 and first O_2 stop																		
Depth (fsw)	Bottom Time (min.)	Time to First Stop (min:sec)	190	180	170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20	Chamber O_2 Periods
			BOTTOM MIX										50% O_2						100% O_2		
140	10	3:00															10	10	6	8	1
	20	3:00															10	10	12	19	1
	30	3:00															10	10	18	30	2
	40	2:40														7	10	10	22	40	2
Max O_2=24.8%	60	2:40														7	10	10	29	52	3
Min O_2=14.0%	80	2:40														7	10	10	33	60	3
	Exceptional Exposure																				
	100	2:40														7	10	10	35	64	4
	120	2:40														7	11	11	35	66	4
150	10	3:20															10	10	7	8	1
	20	3:00														7	10	10	14	22	2
	30	3:00														7	10	10	19	34	2
	40	3:00														7	10	10	24	44	3
Max O_2=23.4%	60	3:00														7	10	10	31	56	3
Min O_2=14.0%	80	3:00														7	10	10	35	64	4
	Exceptional Exposure																				
	100	3:00														7	13	13	36	66	4
	120	3:00														9	16	16	36	66	5
160	10	3:20														7	10	10	8	10	1
	20	3:20														7	10	10	15	24	2
	30	3:20														7	10	10	21	37	2
	40	3:20														7	10	10	26	47	3
Max O_2=22.2%	60	3:00													7	6	10	10	30	56	3
Min O_2=14.0%	**Exceptional Exposure**																				
	80	3:00													7	9	10	10	35	66	4
	100	3:00													7	13	14	14	35	66	5
	120	3:00													7	17	17	17	36	66	5
170	10	3:20													7	0	10	10	8	12	1
	20	3:20													7	0	10	10	16	28	2
	30	3:20													7	1	10	10	23	42	3
	40	3:20													7	4	10	10	28	52	3
Max O_2=21.1%	60	3:20													7	10	10	10	33	62	4
Min O_2=14.0%	**Exceptional Exposure**																				
	80	3:20													9	14	14	14	35	66	4
	100	3:00												7	5	18	18	18	36	66	5
	120	3:00												7	9	21	21	21	36	66	5

Table 14-3. *Surface-Supplied Helium-Oxygen Decompression Table (Continued).*

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Depth (fsw)	Bottom Time (min.)	Time to First Stop (min:sec)	Decompression Stops (fsw) Stop times (min) include travel time, except first HeO_2 and first O_2 stop																		Chamber O_2 Periods
			190	180	170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20	
			BOTTOM MIX										50% O_2						100% O_2		
180	10	3:40													7	0	10	10	9	14	1
	20	3:40													7	0	10	10	17	30	2
	30	3:40													7	4	10	10	25	45	3
	40	3:20												7	0	8	10	10	30	54	3
Max O_2=20.1% Min O_2=14.0%	60	3:20												7	5	11	11	11	35	64	4
	Exceptional Exposure																				
	80	3:20												7	9	15	15	15	36	66	4
	100	3:20												7	13	19	19	19	36	66	5
	120	3:20												7	17	23	23	23	36	66	6
190	10	4:00													7	0	10	10	10	15	1
	20	3:40												7	0	2	10	10	19	34	2
	30	3:40												7	0	7	10	10	26	46	3
	40	3:40												7	4	9	10	10	31	56	3
	Exceptional Exposure																				
Max O_2=19.2% Min O_2=14.0%	60	3:40												7	9	13	13	13	34	62	4
	80	3:20											7	3	13	18	18	18	36	66	5
	100	3:20											7	6	16	21	21	21	36	66	6
	120	3:20											7	8	20	23	23	23	36	66	7
200	10	4:00												7	0	0	10	10	11	17	1
	20	4:00												7	0	4	10	10	20	36	2
	30	3:40											7	0	3	7	10	10	27	50	3
	40	3:40											7	0	7	10	10	10	31	58	3
	Exceptional Exposure																				
Max O_2=18.4% Min O_2=14.0%	60	3:40											7	4	10	14	14	14	35	66	4
	80	3:40											7	8	14	18	18	18	36	66	5
	100	3:40											7	12	17	23	23	23	36	66	6
	120	3:40											8	15	21	23	23	23	36	66	7
210	10	4:20												7	0	0	10	10	12	19	1
	20	4:00											7	0	1	6	10	10	22	38	2
	30	4:00											7	0	6	7	10	10	29	53	3
	40	4:00											7	3	9	10	10	10	33	60	3
	Exceptional Exposure																				
Max O_2=17.7% Min O_2=10.0%	60	3:40										7	0	9	11	17	17	17	35	66	5
	80	3:40										7	3	11	15	20	20	20	36	66	6
	100	3:40										7	6	14	19	23	23	23	36	66	7
	120	3:40										7	8	18	23	23	23	23	36	66	7

Table 14-3. *Surface-Supplied Helium-Oxygen Decompression Table (Continued).*
(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Depth (fsw)	Bottom Time (min.)	Time to First Stop (min:sec)	Decompression Stops (fsw) Stop times (min) include travel time, except first HeO_2 and first O_2 stop																		Chamber O_2 Periods
			190	180	170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20	
			BOTTOM MIX										50% O_2						100% O_2		
220	10	4:40												7	0	2	10	10	13	20	1
	20	4:20											7	0	3	7	10	10	23	41	3
	30	4:20											7	2	6	9	10	10	30	54	3
	40	4:00										7	0	6	9	11	11	11	34	62	4
	Exceptional Exposure ----------																				
Max O_2=17.0% Min O_2=10.0%	60	4:00										7	4	9	12	18	18	18	36	66	5
	80	4:00										7	8	12	17	21	21	21	36	66	6
	100	4:00										7	12	15	20	23	23	23	36	66	7
	120	4:00										8	14	19	23	23	23	23	36	66	8
230	10	4:40											7	0	0	3	10	10	14	22	2
	20	4:20										7	0	3	4	7	10	10	24	44	3
	30	4:20										7	0	5	7	10	10	10	31	57	3
	40	4:00									7	0	3	7	9	13	13	13	34	64	4
	Exceptional Exposure ----------																				
Max O_2=16.3% Min O_2=10.0%	60	4:00									7	0	8	10	14	18	18	18	36	66	6
	80	4:00									7	3	10	14	18	23	23	23	36	66	7
	100	4:00									7	6	12	17	23	23	23	23	36	66	8
	120	4:00									7	7	16	19	23	23	23	23	36	66	8
240	10	4:40										7	0	0	3	4	10	10	14	24	2
	20	4:40										7	0	3	5	7	10	10	25	46	3
	30	4:20									7	0	3	6	7	10	10	10	32	58	3
	40	4:20									7	0	5	8	9	14	14	14	35	64	4
	Exceptional Exposure ----------																				
Max O_2=15.7% Min O_2=10.0%	60	4:20									7	4	8	11	14	19	19	19	36	66	6
	80	4:20									7	7	11	16	18	23	23	23	36	66	7
	100	4:20									7	10	14	19	23	23	23	23	36	66	8
	120	4:00								7	3	12	17	19	23	23	23	23	36	66	8
250	10	5:00										7	0	0	3	4	10	10	15	25	2
	20	4:40									7	0	0	3	7	7	10	10	26	47	3
	30	4:40									7	0	4	6	8	10	10	10	32	60	4
	40	4:40									7	2	5	9	9	14	14	14	35	64	4
	Exceptional Exposure ----------																				
Max O_2=15.2% Min O_2=10.0%	60	4:20								7	0	7	9	12	16	21	21	21	36	66	6
	80	4:20								7	3	9	13	15	21	23	23	23	36	66	7
	100	4:20								7	6	11	14	19	23	23	23	23	36	66	8
	120	4:20								7	8	13	19	20	23	23	23	23	36	66	8

Table 14-3. *Surface-Supplied Helium-Oxygen Decompression Table (Continued).*
(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Depth (fsw)	Bottom Time (min.)	Time to First Stop (min:sec)	Decompression Stops (fsw) Stop times (min) include travel time, except first HeO_2 and first O_2 stop																		Chamber O_2 Periods
			190	180	170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20	
			BOTTOM MIX										50% O_2						100% O_2		
260	10	5:00									7	0	0	0	4	4	10	10	16	27	2
	20	5:00									7	0	3	4	6	7	10	10	27	50	3
	30	4:40								7	0	2	5	6	9	10	10	10	33	62	4
	40	4:40								7	0	3	8	9	10	15	15	15	35	64	5
	Exceptional Exposure																				
Max O_2=14.6%	60	4:40								7	3	7	10	14	16	21	21	21	36	66	6
Min O_2=10.0%	80	4:40								7	6	10	13	17	23	23	23	23	36	66	7
	100	4:20							7	2	9	13	16	20	23	23	23	23	36	66	8
	120	4:20							7	4	11	14	19	20	23	23	23	23	36	66	8
270	10	5:20									7	0	0	3	3	4	10	10	17	28	2
	20	5:00								7	0	0	3	6	6	8	10	10	29	52	3
	30	5:00								7	0	3	6	6	9	13	13	13	34	62	4
	Exceptional Exposure																				
	40	5:00							7	0	2	5	8	8	12	16	16	16	35	66	5
Max O_2=14.2%	60	4:40							7	0	6	8	10	14	19	23	23	23	36	66	6
Min O_2=10.0%	80	4:40							7	3	8	11	14	17	23	23	23	23	36	66	7
	100	4:40							7	5	11	13	16	20	23	23	23	23	36	66	8
	120	4:40							7	8	12	16	19	20	23	23	23	23	36	66	8
280	10	5:40									7	0	0	3	3	4	10	10	18	31	2
	20	5:20								7	0	0	4	6	7	7	10	10	30	54	3
	30	5:00							7	0	1	5	5	9	9	12	12	12	35	64	4
	Exceptional Exposure																				
	40	5:00							7	0	4	6	8	9	12	17	17	17	35	66	5
Max O_2=13.7%	60	5:00							7	4	6	8	12	15	18	23	23	23	36	66	7
Min O_2=10.0%	80	4:40						7	0	7	9	11	15	17	23	23	23	23	36	66	8
	100	4:40						7	2	9	11	15	17	20	23	23	23	23	36	66	8
	120	4:40						7	4	11	13	16	19	20	23	23	23	23	36	66	8
290	10	5:40								7	0	0	0	4	3	4	10	10	19	33	2
	20	5:20							7	0	0	2	6	6	6	9	10	10	30	56	3
	30	5:20							7	0	2	5	5	9	9	14	14	14	34	63	5
	Exceptional Exposure																				
	40	5:20							7	0	5	7	8	11	13	17	17	17	35	66	5
Max O_2=13.3%	60	5:00						7	0	6	7	9	12	15	20	23	23	23	36	66	7
Min O_2=10.0%	80	5:00						7	2	8	10	12	16	19	23	23	23	23	36	66	8
	100	5:00						7	5	10	12	15	19	20	23	23	23	23	36	66	8
	120	5:00						7	8	11	16	17	19	20	23	23	23	23	36	66	8

Table 14-3. *Surface-Supplied Helium-Oxygen Decompression Table (Continued).*
(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

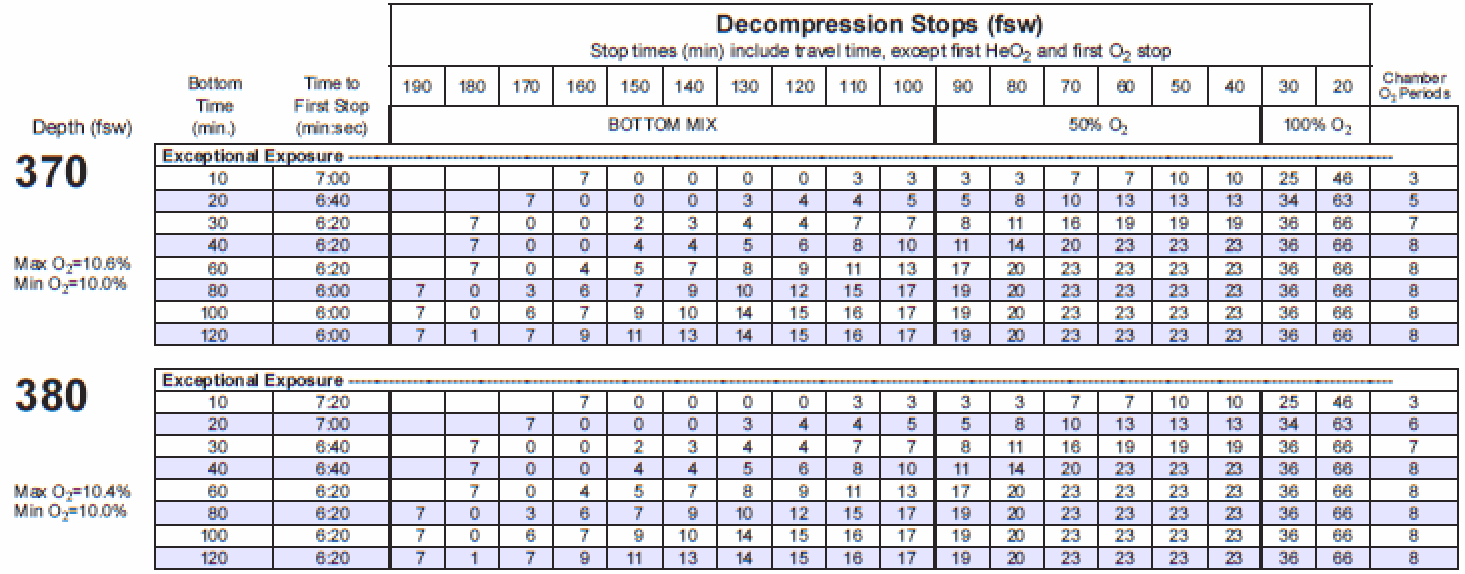
Depth (fsw)	Bottom Time (min.)	Time to First Stop (min:sec)	Decompression Stops (fsw) Stop times (min) include travel time, except first HeO_2 and first O_2 stop																		Chamber O_2 Periods
			190	180	170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20	
			BOTTOM MIX										50% O_2						100% O_2		
300	10	6:00								7	0	0	0	4	3	4	10	10	19	33	2
	20	5:40							7	0	0	2	6	6	6	9	10	10	30	56	3
	30	5:40							7	0	2	5	5	9	9	14	14	14	34	63	5
	Exceptional Exposure																				
	40	5:40							7	0	5	7	8	11	13	17	17	17	35	66	6
Max O_2=12.9% Min O_2=10.0%	60	5:20						7	0	6	7	9	12	15	20	23	23	23	36	66	7
	80	5:20						7	2	8	10	12	16	19	23	23	23	23	36	66	8
	100	5:20						7	5	10	12	15	19	20	23	23	23	23	36	66	8
	120	5:20						7	8	11	16	17	19	20	23	23	23	23	36	66	8
310	**Exceptional Exposure**																				
	10	6:00							7	0	0	0	3	3	3	7	10	10	21	36	2
	20	5:40						7	0	0	2	4	5	6	7	10	10	10	31	57	4
	30	5:40						7	0	2	4	5	7	8	11	15	15	15	35	66	5
	40	5:20					7	0	1	4	6	7	8	12	15	19	19	19	36	66	7
Max O_2=12.5% Min O_2=10.0%	60	5:20					7	0	5	6	9	11	13	17	20	23	23	23	36	66	8
	80	5:20					7	3	7	9	11	13	17	20	23	23	23	23	36	66	8
	100	5:20					7	5	9	11	13	17	19	20	23	23	23	23	36	66	8
	120	5:20					7	7	12	13	16	17	19	20	23	23	23	23	36	66	8
320	**Exceptional Exposure**																				
	10	6:20							7	0	0	0	4	3	3	7	10	10	21	38	2
	20	6:00						7	0	0	3	5	5	6	8	10	10	10	32	59	4
	30	5:40					7	0	0	4	4	6	7	9	11	17	17	17	35	66	5
	40	4:40					7	0	4	4	6	7	9	12	16	20	20	20	36	66	6
Max O_2=12.2% Min O_2=10.0%	60	5:20				7	0	2	6	8	9	11	14	17	23	23	23	23	36	66	8
	80	5:20				7	0	6	8	8	13	14	19	20	23	23	23	23	36	66	8
	100	5:20				7	2	7	10	13	16	17	19	20	23	23	23	23	36	66	8
	120	5:20				7	4	9	12	13	16	17	19	20	23	23	23	23	36	66	8
330	**Exceptional Exposure**																				
	10	6:20						7	0	0	0	2	3	3	4	7	10	10	22	40	2
	20	6:00					7	0	0	2	3	4	6	5	10	10	10	10	33	60	4
	30	6:00					7	0	1	4	5	6	8	8	13	17	17	17	35	66	6
Max O_2=11.8% Min O_2=10.0%	40	5:40				7	0	1	4	5	7	7	10	12	17	22	22	22	36	66	7
	60	5:40				7	0	5	6	8	9	11	15	20	23	23	23	23	36	66	8
	80	5:40				7	2	7	8	10	13	15	19	20	23	23	23	23	36	66	8
	100	5:40				7	5	9	9	13	16	17	19	20	23	23	23	23	36	66	8
	120	5:20			7	1	7	10	13	15	16	17	19	20	23	23	23	23	36	66	8

Table 14-3. *Surface-Supplied Helium-Oxygen Decompression Table (Continued).*

(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)

Depth (fsw)	Bottom Time (min.)	Time to First Stop (min:sec)	**Decompression Stops (fsw)** Stop times (min) include travel time, except first HeO_2 and first O_2 stop																		Chamber O_2 Periods
			190	180	170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20	
			BOTTOM MIX										50% O_2						100% O_2		
340	**Exceptional Exposure**																				
	10	6:40						7	0	0	0	3	3	3	4	7	10	10	23	41	3
	20	6:20					7	0	0	2	4	5	7	8	9	10	10	10	33	60	5
	30	6:00				7	0	0	3	5	5	6	8	9	13	18	18	18	35	66	6
	40	6:00				7	0	2	4	6	7	8	10	13	16	22	22	22	36	66	7
Max O_2=11.5% Min O_2=10.0%	60	5:40			7	0	3	5	6	9	10	13	16	18	21	23	23	23	36	66	8
	80	5:40			7	0	7	7	8	11	13	15	19	20	23	23	23	23	36	66	8
	100	5:40			7	2	8	8	12	13	16	17	19	20	23	23	23	23	36	66	8
	120	5:40			7	4	9	11	13	15	16	17	19	20	23	23	23	23	36	66	8
350	**Exceptional Exposure**																				
	10	6:40					7	0	0	0	2	2	3	3	5	7	10	10	24	43	3
	20	6:20				7	0	0	0	4	4	5	5	7	9	13	13	13	33	63	5
	30	6:20				7	0	1	4	4	5	7	8	11	13	18	18	18	36	66	6
	40	6:00			7	0	1	3	5	6	7	8	11	14	17	23	23	23	36	66	7
Max O_2=11.2% Min O_2=10.0%	60	6:00			7	0	5	5	8	8	11	12	16	19	23	23	23	23	36	66	8
	80	6:00			7	2	7	7	10	11	13	17	19	20	23	23	23	23	36	66	8
	100	5:40		7	0	6	8	9	11	15	16	17	19	20	23	23	23	23	36	66	8
	120	5:40		7	1	7	9	12	14	15	16	17	19	20	23	23	23	23	36	66	8
360	**Exceptional Exposure**																				
	10	7:00					7	0	0	0	2	2	3	3	7	7	10	10	25	44	3
	20	6:40				7	0	0	2	3	4	5	5	8	10	13	13	13	34	63	5
	30	6:20			7	0	0	3	3	5	6	7	8	11	13	19	19	19	36	66	7
	40	6:20			7	0	2	4	5	7	7	9	10	14	20	23	23	23	36	66	8
Max O_2=10.9% Min O_2=10.0%	60	6:20			7	2	5	6	7	9	11	14	16	19	23	23	23	23	36	66	8
	80	6:00		7	0	6	6	8	11	12	14	16	19	20	23	23	23	23	36	66	8
	100	6:00		7	2	7	8	11	13	13	16	17	19	20	23	23	23	23	36	66	8
	120	6:00		7	4	8	10	12	14	15	16	17	19	20	23	23	23	23	36	66	8

Table 14-3. *Surface-Supplied Helium-Oxygen Decompression Table (Continued).*
(DESCENT RATE 75 FPM—ASCENT RATE 30 FPM)



			Decompression Stops (fsw) Stop times (min) include travel time, except first HeO_2 and first O_2 stop																		
	Bottom Time (min.)	Time to First Stop (min:sec)	190	180	170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	20	Chamber O_2 Periods
Depth (fsw)			BOTTOM MIX										50% O_2						100% O_2		
370	**Exceptional Exposure**																				
	10	7:00				7	0	0	0	0	3	3	3	3	7	7	10	10	25	46	3
	20	6:40			7	0	0	0	3	4	4	5	5	8	10	13	13	13	34	63	5
	30	6:20		7	0	0	2	3	4	4	7	7	8	11	16	19	19	19	36	66	7
	40	6:20		7	0	0	4	4	5	6	8	10	11	14	20	23	23	23	36	66	8
Max O_2=10.6%	60	6:20		7	0	4	5	7	8	9	11	13	17	20	23	23	23	23	36	66	8
Min O_2=10.0%	80	6:00	7	0	3	6	7	9	10	12	15	17	19	20	23	23	23	23	36	66	8
	100	6:00	7	0	6	7	9	10	14	15	16	17	19	20	23	23	23	23	36	66	8
	120	6:00	7	1	7	9	11	13	14	15	16	17	19	20	23	23	23	23	36	66	8
380	**Exceptional Exposure**																				
	10	7:20				7	0	0	0	0	3	3	3	3	7	7	10	10	25	46	3
	20	7:00			7	0	0	0	3	4	4	5	5	8	10	13	13	13	34	63	6
	30	6:40		7	0	0	2	3	4	4	7	7	8	11	16	19	19	19	36	66	7
	40	6:40		7	0	0	4	4	5	6	8	10	11	14	20	23	23	23	36	66	8
Max O_2=10.4%	60	6:20		7	0	4	5	7	8	9	11	13	17	20	23	23	23	23	36	66	8
Min O_2=10.0%	80	6:20	7	0	3	6	7	9	10	12	15	17	19	20	23	23	23	23	36	66	8
	100	6:20	7	0	6	7	9	10	14	15	16	17	19	20	23	23	23	23	36	66	8
	120	6:20	7	1	7	9	11	13	14	15	16	17	19	20	23	23	23	23	36	66	8