EXTENDED RANGE DIVE PLANNING SHEET

DEPTH	DIVE TIME (A)	RUN TIME	GAS MIX	ATA	SAC	CUFT REQUIRED	PPO$_2$	NOAA SINGLE DIVE LIMIT (B)	% OF SINGLE DIVE LIMIT (A/B*100)	NOAA DAILY DIVE LIMIT (C)	% OF DAILY DIVE LIMIT (A/C*100)	OTU/MIN	OTU TOTAL

GAS	CUFT	x	WORK FACTOR	x	1.5	=	TOTAL REQUIRED	% SINGLE LIMIT		% DAILY LIMIT		TOTAL OTUS	
		x		x		=							
		x		x		=							
		x		x		=							
		x		x		=							
		x		x		=							
		x		x		=							

Calculating Best Mix Trimix

Step 1: Calculate the oxygen (O2) content of the trimix blend using the same process used for nitrox.

Step 2: Calculate the nitrogen (N_2) content. First, decide whether you will use O2 as narcotic or non-narcotic. Second, decide what narcotic depth you will use. Try to get a mix that allows you to feel as though you were at a relatively shallow depth on air.

As discussed earlier, the signs and symptoms of narcosis can be seen from 79 feet. In the SSI Extended Range Trimix program, the maximum narcotic depth allowed is 115 feet.

When you calculate the nitrogen content with O2 as non-narcotic, your answer will give a value for N_2 only.

If you use O2 as narcotic, your answer will give a value for both O2 and N_2.

Step 3: Calculate helium (He) content by subtracting the gases in Steps 1 and 2 from 100%.

Label the trimix blend by listing the value for oxygen first, then helium. Nitrogen is the balance of the mix, so it is rarely recorded.

Example Calculation

Plan a dive to 141 fsw, using a ppO_2 of 1.4 and an END (Equivalent Narcotic Depth) of 79 feet.

Step 1:

1.4 / 5.3 ata (141 fsw) = 0.26 or 26% O2

Step 2.A - O2 as Narcotic:

3.4 ata (79 fsw) / 5.3 ata (141 fsw) = 0.64 or 64% (O2 and N_2)

Step 2.B - O2 as Non-Narcotic

Multiply answer from Step 2.A by .79 to calculate nitrogen percentage.

0.64 * 0.79 = 0.50 or 50% (N_2)

Step 3.A:

100% - 64% (O2 and N_2) = 36% (He)

Step 3.B:

100% - {26% (O2) + 50% (N_2)} = 24% (He)

Trimix A: TMX 26/36 (O2 narcotic)

Trimix B: TMX 26/24 (O2 non-narcotic)

OTU CALCULATION TABLE

ppO_2 (ATA)	OTU per Minute
.5	0
.6	0.27
.7	0.47
.8	0.65
.9	0.83
1.0	1.0
1.1	1.16
1.2	1.32
1.3	1.48
1.4	1.63
1.5	1.78
1.6	1.92
1.7	2.07
1.8	2.21
1.9	2.35
2	2.49

NOAA CNS LIMITS (MIN.)

ppO_2	Single	24-Hour
0.6	720	720
0.7	570	570
0.8	450	450
0.9	360	360
1.0	300	300
1.1	240	270
1.2	210	240
1.3	180	210
1.4	150	180
1.5	120	180
1.6	45	150

OPTIMIZED NITROX

Feet	% O_2
60	49
69	44
79	41
89	37
99	34
108	32
118	30
128	28
138	26
148	25
157	23

Formulas

$ATA = Depth/33$

$ppO_2 = FO_2 * ATA$

$FO_2 = ppO_2 / ATA$

SAC RATE:

(PSIs - PSIe) / D / T

Respiratory Minute Volume (RMV)

RMV = SAC * CF

S = Starting Pressure

E - Ending Pressure

D = Depth in ATA

T = Time of Swim (in minutes)

CF = Conversion Factor (cylinder volume/cuft)