

EXTENDED RANGE DIVE PLANNING SHEET

[illegible]

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 (N₂) 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 24 meters. In the SSI Extended Range Trimix program, the maximum narcotic depth allowed is 35 meters.

When you calculate the nitrogen content with O₂ as non-narcotic, your answer will give a value for N₂ only.

If you use O₂ as narcotic, your answer will give a value for both O₂ and N₂.

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 43 msw, using a ppO₂ of 1.4 and an END (Equivalent Narcotic Depth) of 24 meters.

Step 1:

$$1.4 / 5.3 \text{ bar (43 msw)} = 0.26 \text{ or } 26\% \text{ O}_2$$

Step 2.A - O₂ as Narcotic:

$$3.4 \text{ bar (24 msw)} / 5.3 \text{ bar (43 msw)} = 0.64 \text{ or } 64\% \text{ (O}_2 \text{ and N}_2\text{)}$$

Step 2.B - O₂ as Non-Narcotic

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

$$0.64 * 0.79 = 0.50 \text{ or } 50\% \text{ (N}_2\text{)}$$

Step 3.A:

$$100\% - 64\% \text{ (O}_2 \text{ and N}_2\text{)} = 36\% \text{ (He)}$$

Step 3.B:

$$100\% - \{26\% \text{ (O}_2\text{)} + 50\% \text{ (N}_2\text{)}\} = 24\% \text{ (He)}$$

Trimix A: TMX 26/36 (O₂ narcotic)

Trimix B: TMX 26/24 (O₂ non-narcotic)

OTU CALCULATION TABLE

ppO ₂ (BAR)	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

Meters	% O ₂
18	49
21	44
24	41
27	37
30	34
33	32
36	30
39	28
42	26
45	25
48	23

Formulas

$$\text{BAR} = (\text{Depth in msw}/10) + 1$$

$$\text{ppO}_2 = \text{FO}_2 * \text{BAR}$$

$$\text{FO}_2 = \text{ppO}_2 / \text{BAR}$$

SAC Rate:

$$\frac{(\text{BARB} - \text{BARE}) * \text{C} / \text{P}}{\text{Minutes}}$$

B = Beginning Pressure

E = Ending Pressure

C = Cylinder Capacity (in liters)

P = Pressure at Depth (BAR)

