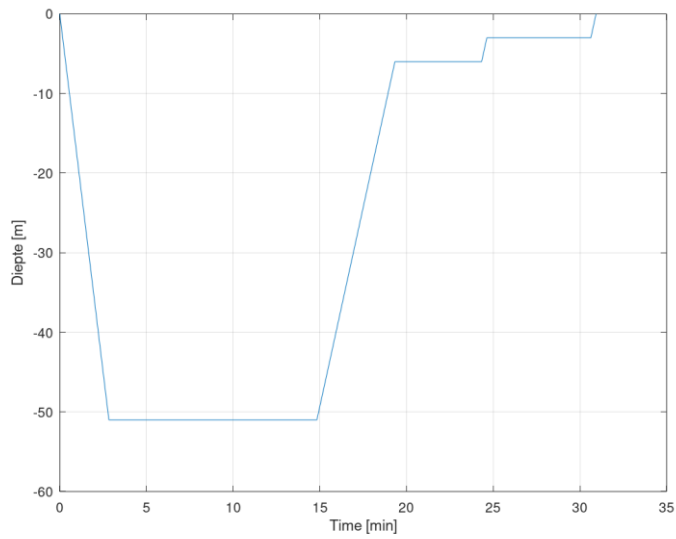


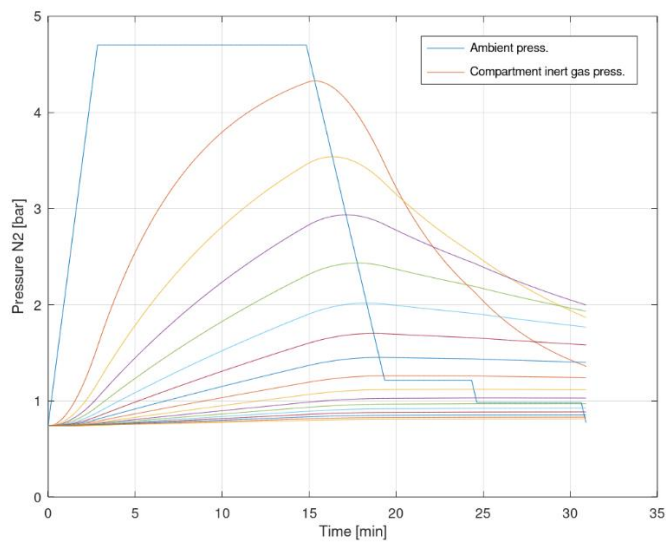
Heinrich Weikamp e2sec-table (calculate every 2 seconds, with table with pre-integration values)

N2= 79%, O2 = 21% (air)

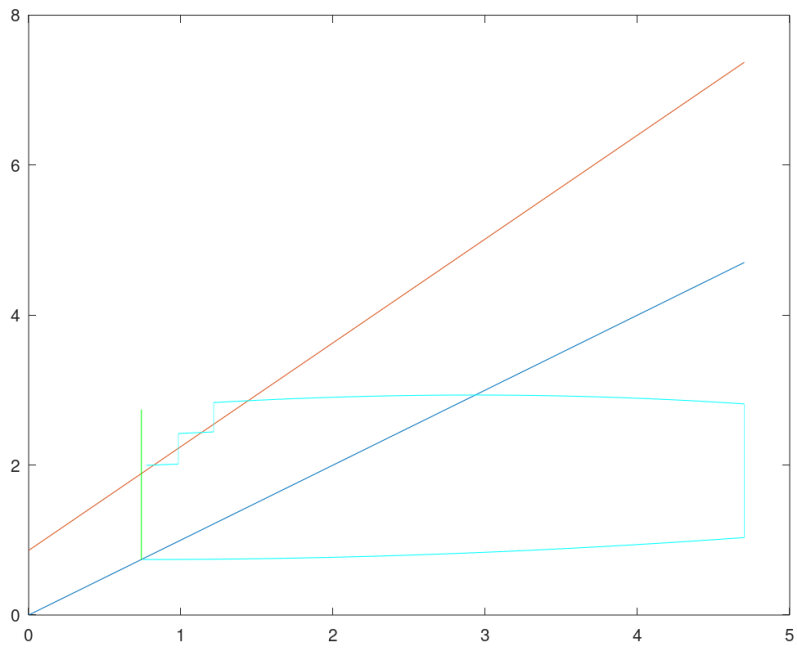


% depth [m], time [min]

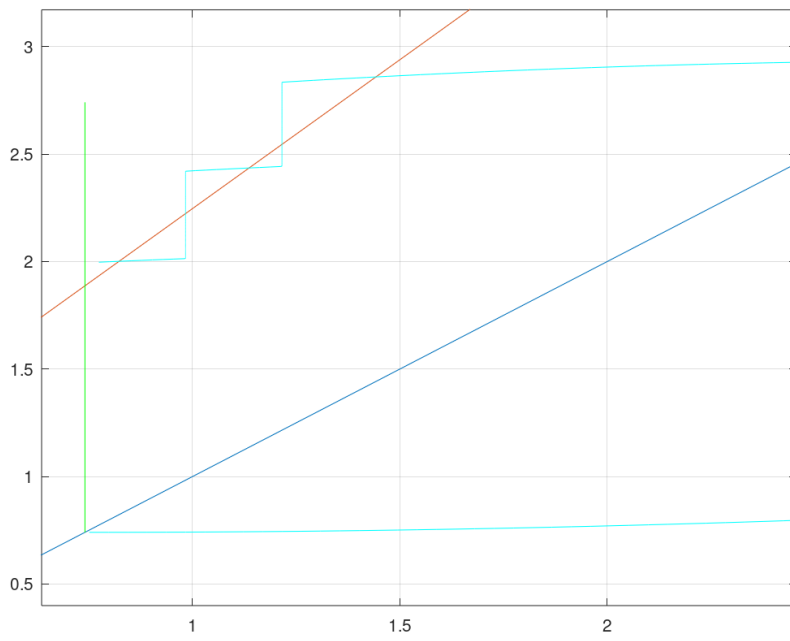
```
Profile = [ 0.00000 0.00000
51.00000 2.83300
51.00000 14.83000
6.00000 19.33000
6.00000 24.33000
3.00000 24.63000
3.00000 30.63000
0.00000 30.93000];
```

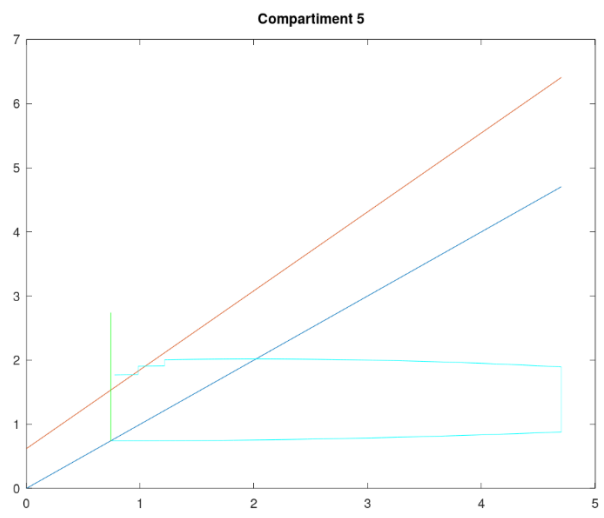
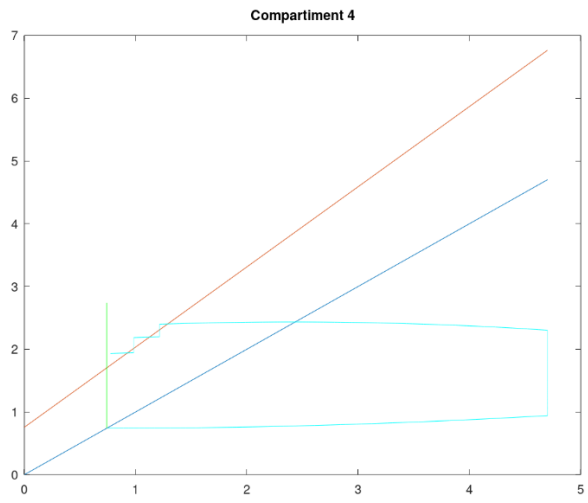


Compartment 3



Compartment 3





Determine the pressures in all tissues when just arriving at 6 meter and at 3 meter, also determine the maximum pressure according to Buhlmann.

Heinrich Weikamp computer allows this profile (as does Subsurface with GF 100/100) where partial N2-pressure is higher than maximum allowed values for several compartments.

	just arrive @ 6 meter		(time = 19.33 min)	
	pamb	N2-pressure	Buhlmann line	problem
1	1.2156000	3.4622700	3.6670000	FALSE
2	1.2156000	3.2640300	2.8661000	TRUE
3	1.2156000	2.8338300	2.5450000	TRUE
4	1.2156000	2.3990100	2.3096000	TRUE
5	1.2156000	2.0069000	2.1159000	FALSE
6	1.2156000	1.6991400	1.9456000	FALSE
7	1.2156000	1.4519800	1.8393000	FALSE
8	1.2156000	1.2607800	1.7643000	FALSE
9	1.2156000	1.1175900	1.7120000	FALSE
10	1.2156000	1.0264800	1.6681000	FALSE
11	1.2156000	0.9660600	1.6339000	FALSE
12	1.2156000	0.9183800	1.5992000	FALSE
13	1.2156000	0.8807500	1.5662000	FALSE
14	1.2156000	0.8507100	1.5347000	FALSE
15	1.2156000	0.8271300	1.5140000	FALSE
16	1.2156000	0.8086300	1.4920000	FALSE

	just arrive @ 3 meter		(time=24.633 min)	
	pamb	N2-pressure	Buhlmann line	problem
1	0.98315	2.10693	3.2067	FALSE
2	0.98315	2.50702	2.5093	FALSE
3	0.98315	2.42	2.2231	TRUE
4	0.98315	2.18468	2.0126	TRUE
5	0.98315	1.90542	1.8299	TRUE
6	0.98315	1.65434	1.67	FALSE
7	0.98315	1.43611	1.572	FALSE
8	0.98315	1.25838	1.5034	FALSE
9	0.98315	1.12063	1.4563	FALSE
10	0.98315	1.03103	1.4161	FALSE
11	0.98315	0.9708	1.3845	FALSE
12	0.98315	0.92282	1.3521	FALSE
13	0.98315	0.88468	1.3209	FALSE
14	0.98315	0.85407	1.2911	FALSE
15	0.98315	0.82994	1.2719	FALSE
16	0.98315	0.81095	1.2512	FALSE

	pamb	N2-pressure	Buhlmann line	supersat	supersat lim	lim + 0.05
1	0.98315	2.10693	3.2067	0.505399	1.02	1.07
2	0.98315	2.50702	2.5093	0.998506	1.04	1.09
3	0.98315	2.42	2.2231	1.158797	1.06	1.11
4	0.98315	2.18468	2.0126	1.167157	1.08	1.13
5	0.98315	1.90542	1.8299	1.089188	1.1	1.15
6	0.98315	1.65434	1.67	0.9772	1.12	1.17
7	0.98315	1.43611	1.572	0.769228	1.14	1.19
8	0.98315	1.25838	1.5034	0.529034	1.16	1.21
9	0.98315	1.12063	1.4563	0.290563	1.18	1.23
10	0.98315	1.03103	1.4161	0.11059	1.2	1.25
11	0.98315	0.9708	1.3845		1.22	1.27
12	0.98315	0.92282	1.3521		1.24	1.29
13	0.98315	0.88468	1.3209		1.26	1.31
14	0.98315	0.85407	1.2911		1.28	1.33
15	0.98315	0.82994	1.2719		1.3	1.35
16	0.98315	0.81095	1.2512		1.32	1.37

```

% Heinrich weikamp
%https://bitbucket.org/heinrichsweikamp/hwos_code/src/default/src/p2_deco.c
% Heinrichs computer berekent elke 2 seconde waarden (of 6, of 10, tijdens runtime 2 )

% Dit komt uit heinrich weikamp :
https://bitbucket.org/heinrichsweikamp/hwos_code/src/default/src/p2_deco.c
% Data ZH-L16C, from Buhlmann Tauchmedizin 2002, option 1a (4mn)
D = [1 4 1.2599 0.5050 1.51 1.7424 0.4245
2 8 1.0000 0.6514 3.02 1.3830 0.5747
3 12.5 0.8618 0.7222 4.72 1.1919 0.6527
4 18.5 0.7562 0.7825 6.99 1.0458 0.7223
5 27 0.6200 0.8126 10.21 0.9220 0.7582
6 38.3 0.5043 0.8434 14.48 0.8205 0.7957
7 54.3 0.4410 0.8693 20.53 0.7305 0.8279
8 77 0.4000 0.8910 29.11 0.6502 0.8553
9 109 0.3750 0.9092 41.2 0.5950 0.8757
10 146 0.3500 0.9222 55.19 0.5545 0.8903
11 187 0.3295 0.9319 70.69 0.5333 0.8997
12 239 0.3065 0.9403 90.34 0.5189 0.9073
13 305 0.2835 0.9477 115.29 0.5181 0.9122
14 390 0.2610 0.9544 147.42 0.5176 0.9171
15 498 0.2480 0.9602 188.24 0.5172 0.9217
16 635 0.2327 0.9653 240.03 0.5119 0.9267];

% Integration constants for 2 seconds,
% result of 1 - 2^(-(2sec/60sec / HT))
% ---- N2 ----- He -----
% e2sec = 1 - 2.^(-(2/60 ./ D(:,2)));
e2sec = [
5.75958E-03, 1.51848E-02
2.88395E-03, 7.62144E-03
1.84669E-03, 4.88315E-03
1.24813E-03, 3.29997E-03
8.55371E-04, 2.26041E-03
6.03079E-04, 1.59437E-03
4.25414E-04, 1.12479E-03
3.00019E-04, 7.93395E-04
2.11949E-04, 5.60641E-04
1.58240E-04, 4.18555E-04
1.23548E-04, 3.26795E-04
9.66686E-05, 2.55722E-04
7.57509E-05, 2.00387E-04
5.92416E-05, 1.56716E-04
4.63943E-05, 1.22734E-04
3.63850E-05, 9.62538E-05];

BAR_TO_METER = 10.19716;

profiel= [0 0
51 2.833
51 2.83+12
6 2.83+12+4.5
6 2.83+12+4.5+5
3 2.83+12+4.5+5+0.3
3 2.83+12+4.5+5+0.3+6
0 2.83+12+4.5+5+0.3+6+0.3];

figure;plot(profiel(:,2),-profiel(:,1)); grid;xlabel('Time [min]'); ylabel('Diepte [m]');

dt = 1/60 * 2; % [min], dus stap 1/60 * 2 = 2 seconde

time = 0:dt:profiel(end,2); % [min]
diepte = interp1 (profiel(:,2), profiel(:,1), time);

ppWater = 0.06270; % from heinrich weikamp computer (Buhlmann says 0.063)
psurf = 1.013; % [bar]
% Keuze compartiment 4
frac = 0.79; % Stikstof

%pamb = frac* (diepte/10 + 1) ; % [bar] partiele ambient druk van stikstof
pamb = frac* ( (diepte/BAR_TO_METER + psurf) - ppWater); % [bar] partiele ambient druk van stikstof
compensatie waterdamp vlgs. Buhlmann

p = zeros(16, length(time));
%p(1:end,1) = 1 * frac; % [bar] verzadigd op omgevingsdruk op 0 meters
p(1:end,1) = (1 - ppWater)* frac; % [bar] verzadigd op omgevingsdruk op 0 meters

for j=1:16
for i=2:length(p)
%p(j,i) = -log(2)/D(j,2)*(p(j,i-1)-pamb(i-1))*dt + p(j,i-1);
p(j,i) = -(p(j,i-1)-pamb(i-1))*e2sec(j,1) + p(j,i-1);
end
end

figure;plot(time,pamb,time,p); xlabel('Time [min]'); ylabel('Pressure N2 [bar]'); grid; legend('Ambient
press.','Compartment inert gas press.');
```

```
c=3;
figure;plot([0 max(pamb)], [0 max(pamb)], [0 max(pamb)], [D(c,3) D(c,3)+max(pamb)/D(c,4)]); hold all;
plot(pamb,p(c,:), 'c');plot([p(1) p(1)], [p(1) p(1)+2], 'g')
title('Compartment 3');
%%
c=4;
figure;plot([0 max(pamb)], [0 max(pamb)], [0 max(pamb)], [D(c,3) D(c,3)+max(pamb)/D(c,4)]); hold all;
plot(pamb,p(c,:), 'c');plot([p(1) p(1)], [p(1) p(1)+2], 'g')
title('Compartment 4');
%%
c=5;
figure;plot([0 max(pamb)], [0 max(pamb)], [0 max(pamb)], [D(c,3) D(c,3)+max(pamb)/D(c,4)]); hold all;
plot(pamb,p(c,:), 'c');plot([p(1) p(1)], [p(1) p(1)+2], 'g')
title('Compartment 5');
```