

From: Barend de Lange (barenddelange@hetnet.nl)
To: Diving community interested in decompression
Date: August 2010
Subject: Comparison of different deco-algorithms in 21-30m zone with Nitrox 32%

Introduction:

In the Netherlands, most North sea wreck dives and shore sea dives are done in the 21-30m range.

Looking at the different tables and (min) deco ratio's there are some differences. The purpose of this document is to compare the output of different used algorithms with some example dives. Some of the dives are in a recreational way not realistic because of the needed amount of gas.

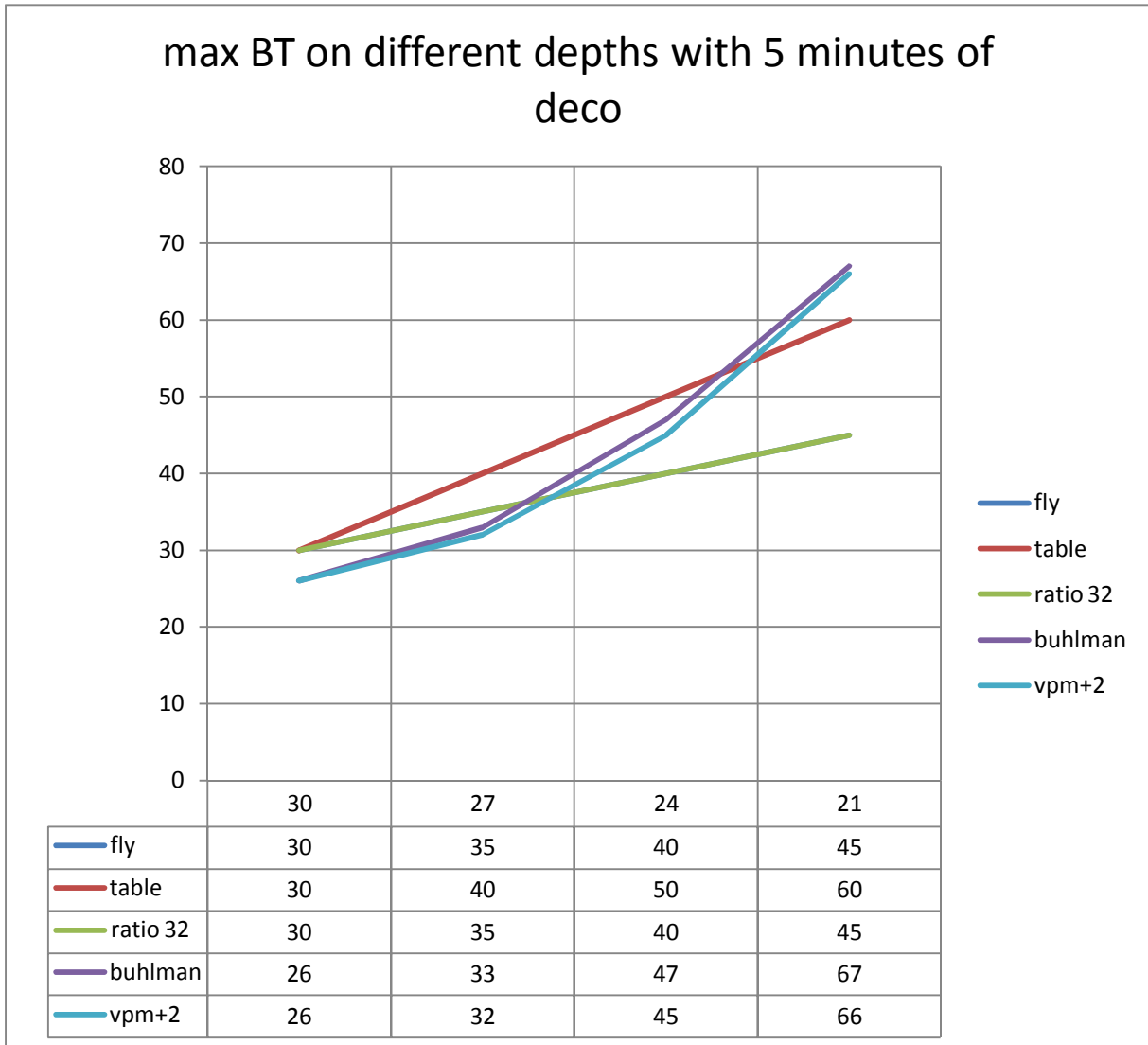
****** DISCLAIMER ****** *This document is written to compare these decompression "algorithms" not to use them as a guideline for planning deco or non deco dives. Use proper education for this purpose.*

"Tested" methods and global mechanism:

Name	Mechanism	Deco	extra deco
Minimum decompression on the fly	set point @21m max 45 minutes every +3meter -5 minutes -3m +5 minutes	5 minutes (1min @ 15 12 9 6 3	
GUE REC table	Table (linear mix of Buhlman and VPM)	5 minutes (1min @ 15 12 9 6 3	
Ratio deco 32%	set point @30m max 30 minutes every +3m -5 minutes every -3m +5 minutes (works in 32-21m range)	5 minutes (1min @ 15 12 9 6 3	+1 minutes = +1 minute deco extra on 6 meters **
Buhlman 20/85	complex	calculated	calculated
VPM+2	complex	calculated	calculated

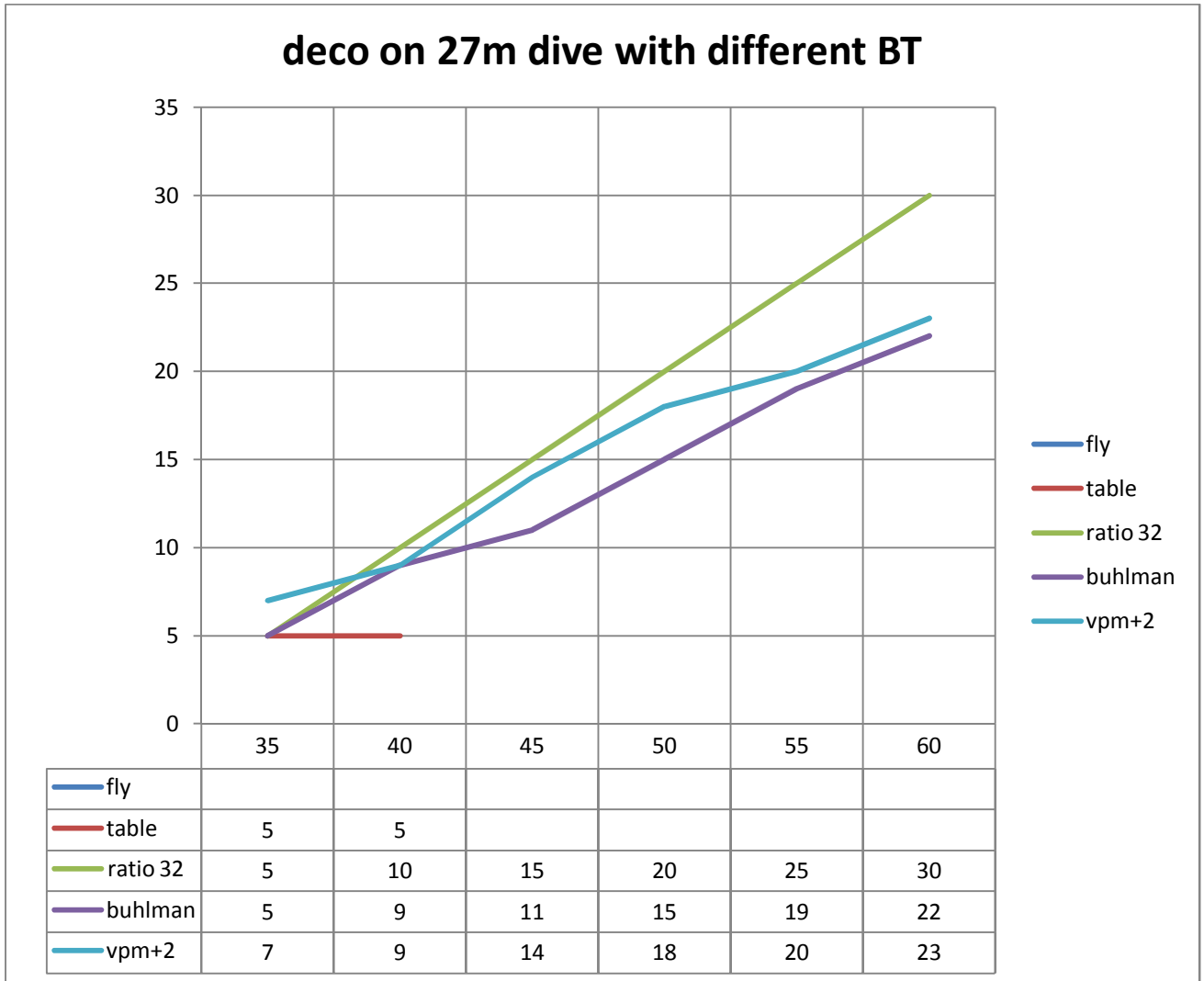
** with a lot of deco split it on the 6 and 3 meter stops

Example I; maximum bottom time on different depth with 5 minutes of deco; 5 minutes of deco is a minimum amount of deco used by GUE rec table and the GUE minimum deco on the fly. Buhlman and VPM values are generated by adding BT till the 5 minutes border is reached.



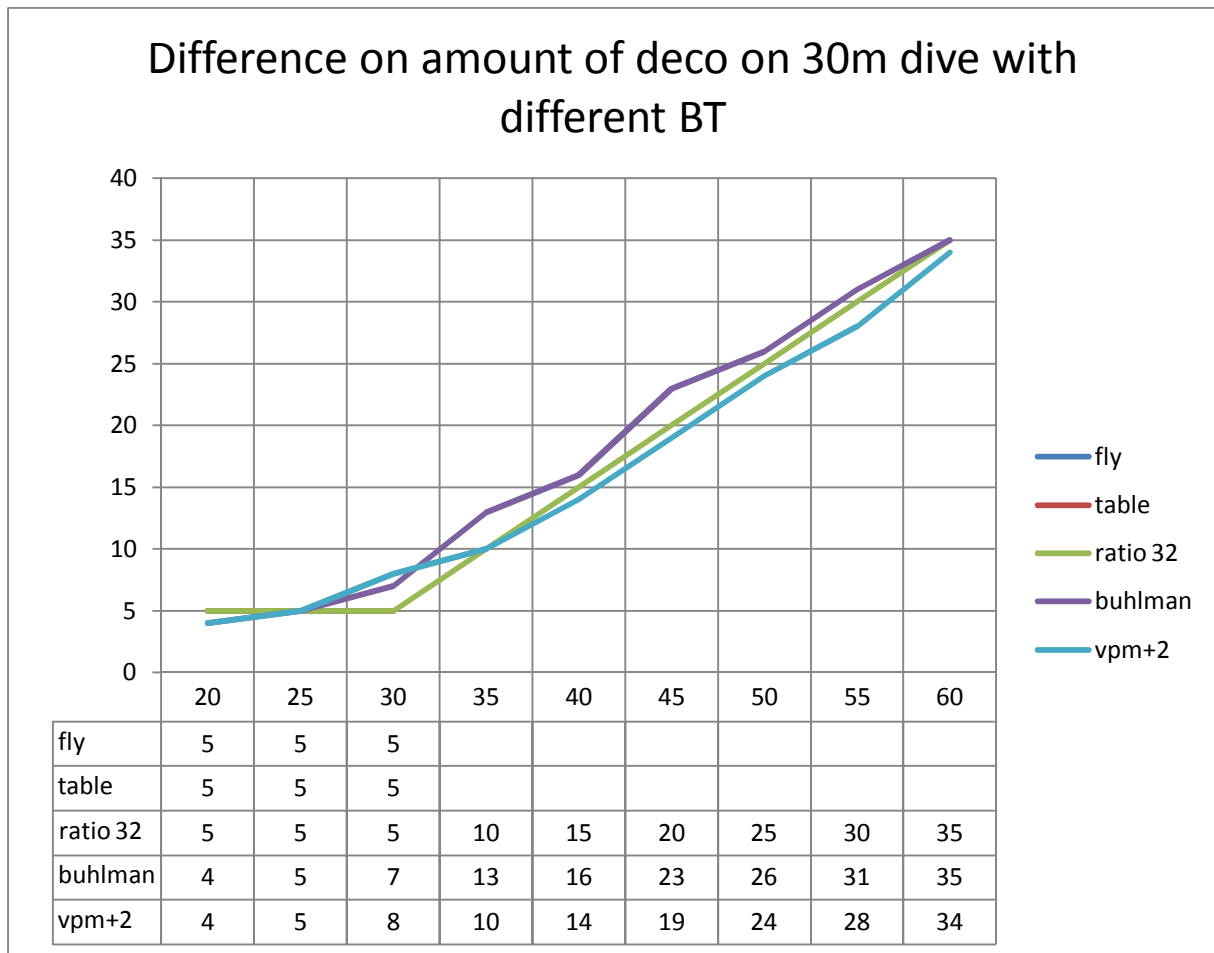
Analyses; In the deep section; Buhlman and VPM are rather conservative, in the shallow dive section Buhlman and VPM are more aggressive, the GUE table fits best for this spectrum.

Example II dive to 27m with different bottom times and calculated amount of deco:



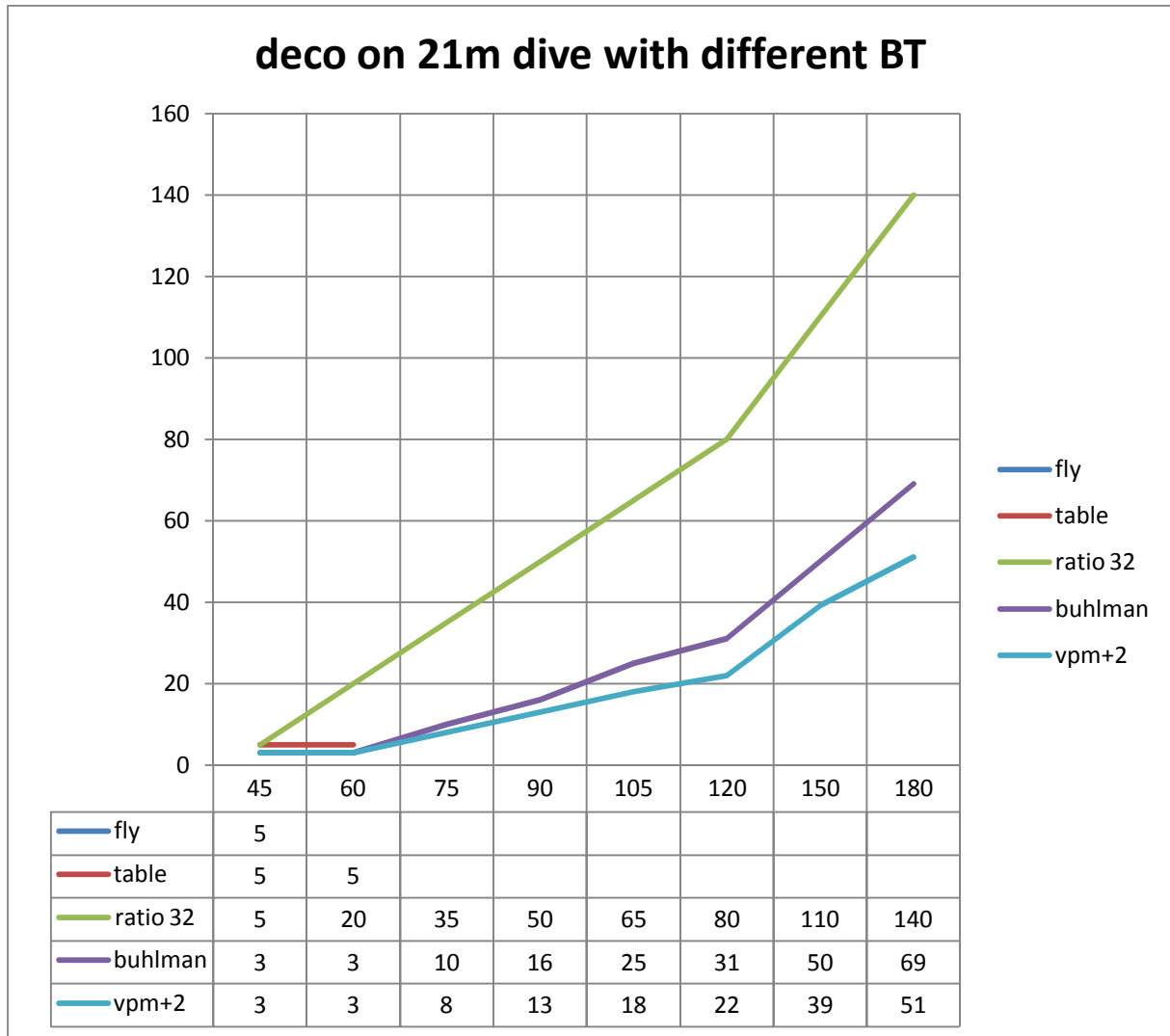
Analyses; Ratio deco 32% very conservative when used on the higher numbers; VPM bit higher on 35 minutes. GUE table and deco on the fly are not useable because it does not allow deco-time.

Example III dive to 30m with different bottom times and calculated amount of deco:



Analyses, the fit of the 32% ratio for this graph is perfect. GUE table and deco on the fly are not useable because it does not allow deco-time.

Example III dive to 21m with EAN32 and no deco gas.



Ratio 32% deco was not invented for this purpose; that's for sure. Buhlmann and VPM are different, VPM is much more aggressive (more than 20%).

Extra; adding 100% Oxygen @6 meters decreases the amount of deco from the VPM calculated 180 minutes dive @21 meter to 19 minutes of deco.

general conclusions from these calculations:

Buhlman and VPM do almost the same, the differences are minutes and never more than 10% (except the silly 21 meter dives).

Ratio 32; bit to conservative on maximum no-deco bottom time in the 21 and 24m zone; good fit in the (+ deco) 27m & 30m range dives.

GUE table; aggressive on the maximum no-deco time 10-20% compared with VPM / Buhlman

Minimum deco on the fly; same as ratio 32 only no possibility to add deco time. Conservative on 21 and 24 m depths with no-deco.

References and methods of calculation:**GUE Table and minimum deco on the fly:**

Beginning with the end in Mind the fundamentals of recreational diving

VPM & Buhlmann calculations

I phone with Baltic decompression (<http://www.balticdeco planner.com>)

Ratio 32% deco

can't find exact source anymore; from a link @ direxplorers to a different English dive forum.