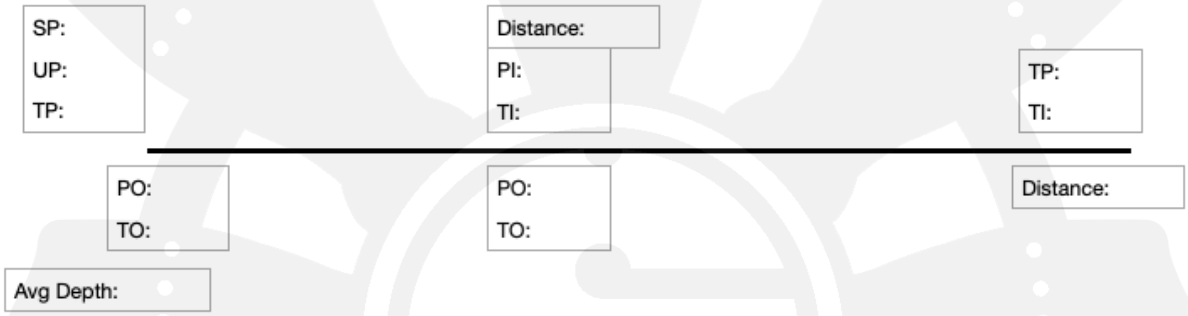
SIMPLE GAS PLANNING

Plan for a single diver in a team of two with a single waypoint as a reference along the way
Comparing thirds to including a safety margin for a team of two

Use the gas planning worksheet

Depth	Interval
2 ATA	
3 ATA	
4 ATA	

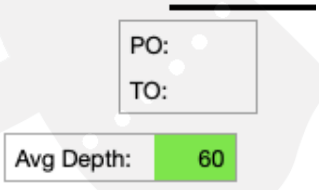
KEY			
SP	Start Pressure	PI	Pressure In
UP	Usable Pressure	PO	Pressure Out
TP	Turn Pressure	TI	Time In
		TO	Time Out



Populate Intervals chart for reference from where it should be written down in wetnotes

Also populate anticipated Average Depth

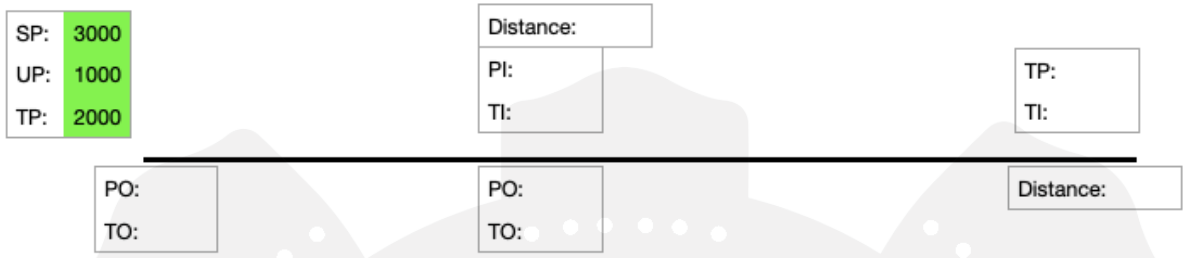
Depth	Interval
2 ATA	100
3 ATA	150
4 ATA	200



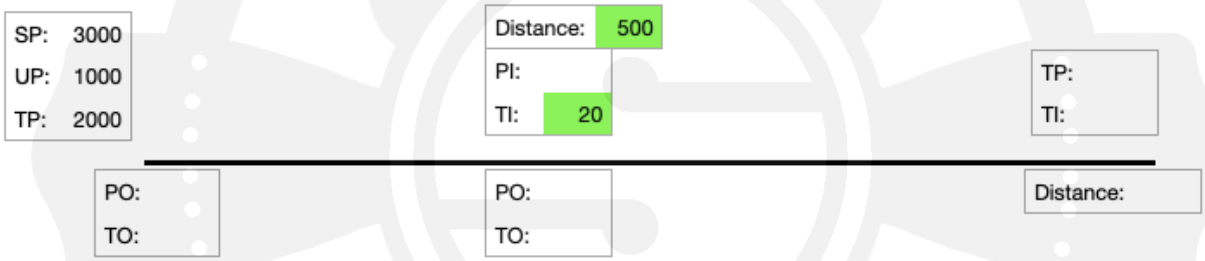
At an average of 60’ an interval of 150psi/5 minutes will be assumed for the rest of the example

Normal Dive

Starting with a full set of AL80s we can populate the SP: 3000
UP is 1/3 = 1000
TP is remainder = 200

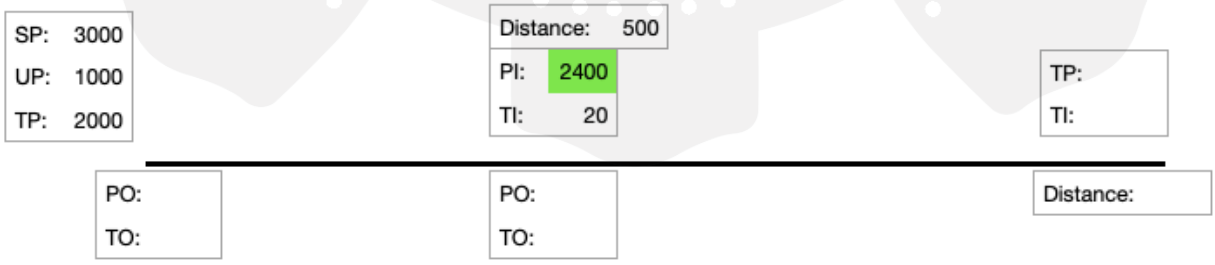


20 minutes into our dive we notice an interesting waypoint
Swimming at 30fpm we can calculate our penetration distance to be 500'
20 X 30 = 500



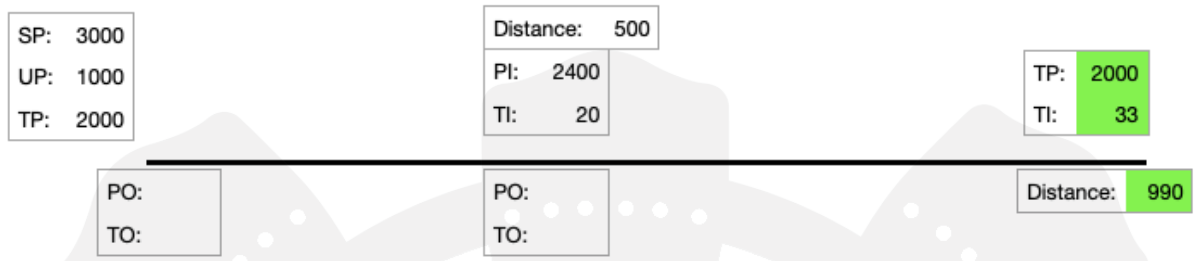
It is unsurprising that the gauge reads 2400psi
20 minutes is 4 five-minute intervals; at 60 feet our interval is 150
4 X 150 = 600
3000 - 600 = 2400

Backreferencing we know, from this point, we can exit in 20 minutes using 600psi



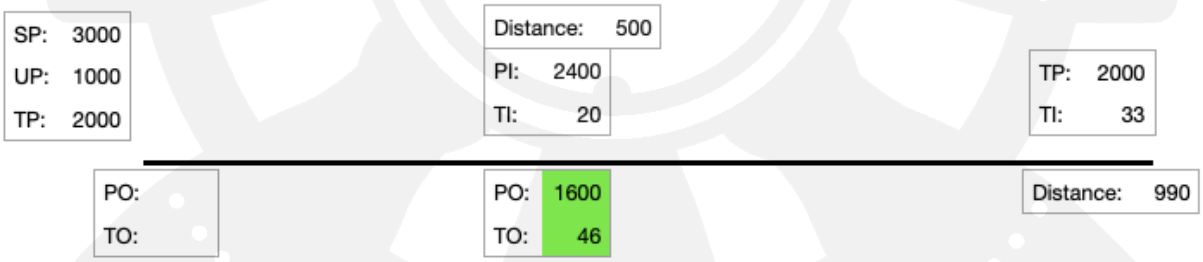
With an interval of 150 we can anticipate that we will hit our TP of 2000psi at about minute 33
UP/interval X 5 = TI
1000/150 X5 = TI
6.6 X 5 = 33.33

From this we can also anticipate a penetration distance of 990 feet
33 minutes X 30fpm = 990’



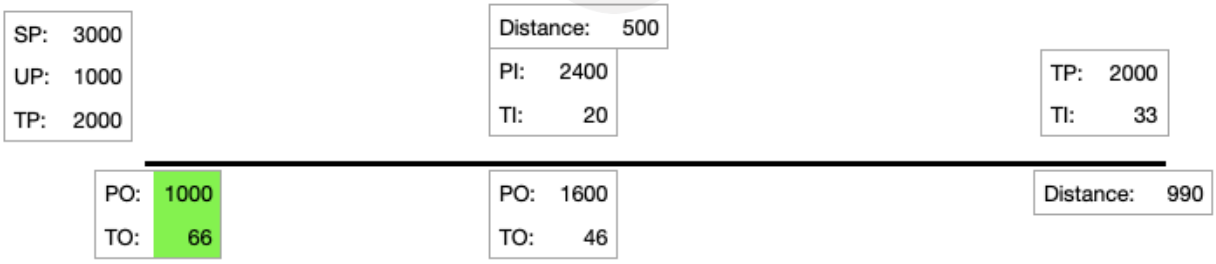
Both divers in the team hit turn pressure at the same time and thumb the dive.

Assuming all things being equal it should take 13 minutes to return to our waypoint
At minute 46 we can anticipate the gauge to read ~1600
~45 minutes / 5 minute intervals X interval = pressure used
45/5 X 150 = 1400
3000 - 1400 = 1600
OR
Additional time / 5 minute intervals X interval = pressure used
~15 minutes / 5 X 150 = 450
2000 - 450 = 1550



As we noted before, from this point the swim should take 20 minutes and require 600psi

It stands to reason using 1000psi in, it should take 1000psi to come out
And that a 33 minute swim in, creates a 33 minute swim out

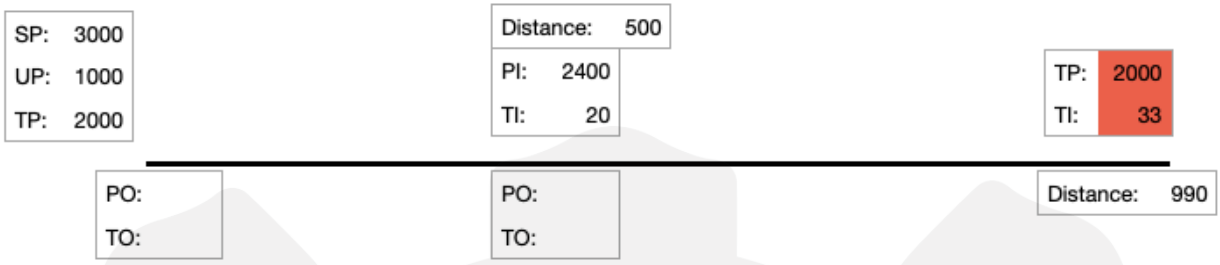


And everyone is home safe with plenty of gas in their tanks.

But what if it all goes wrong?

OOG Emergency

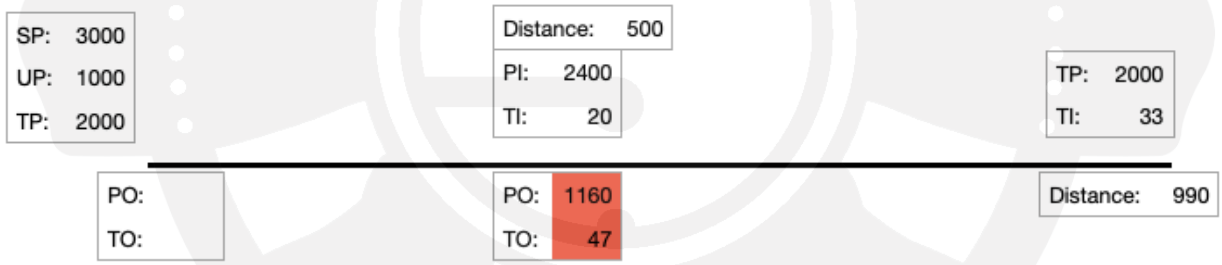
Returning to the maximum point of penetration….
Our diver's teammate has a catastrophic gas loss and an air share is required to return.



If both divers have an absolutely matched RMV, it took each 1000 psi (50cf) to get in
It will take 100cf (2000psi) to get out

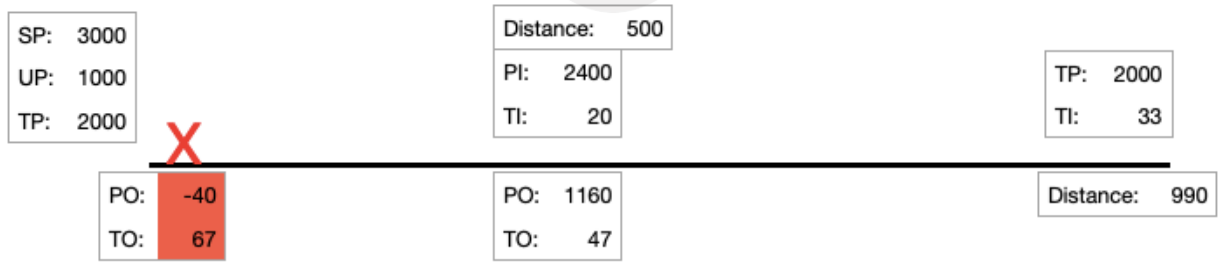
Let's assume our divers are well-practiced in air-sharing and it takes only 1 minute to get the problem sorted and for our divers to get underway…

We get back to the waypoint at minute 47 (1 minute to gas-share then 13 minute swim)
14 minutes / 5 minute intervals X doubled interval for two divers = gas used
14/5 X 300 = 840
2000 - 840 = 1160



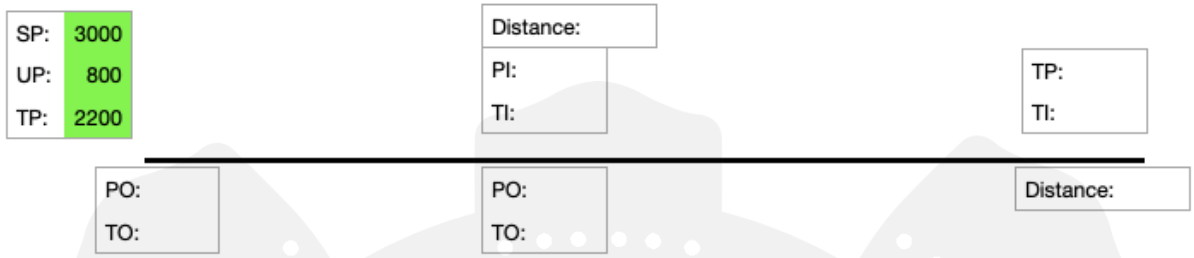
Another 20 minutes would find our divers back on the surface at minute 67
However…
34 minute exit / 5 minute intervals X doubled interval for two divers = gas used
34/5 X 300 = 2040
Our divers would need an extra 40psi to gas share all the way home

Meaning they should both drown and die right about at the red X, within sight of the surface



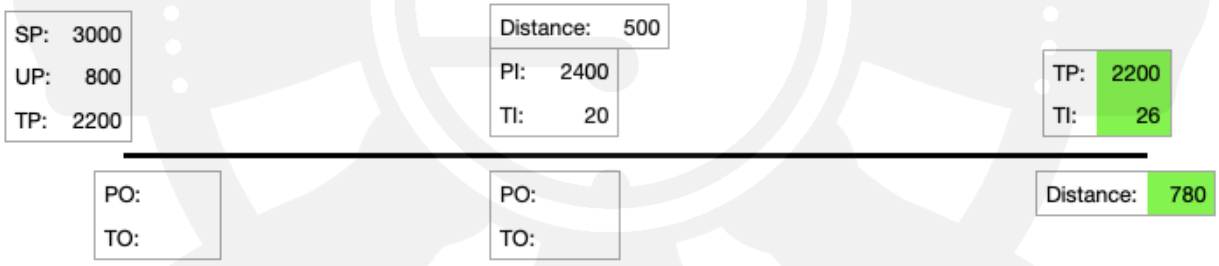
With Safety Margin

Instead of a team of two planning to go all the way to thirds our team backs off by 200psi
1000psi usable pressure becomes 800psi usable

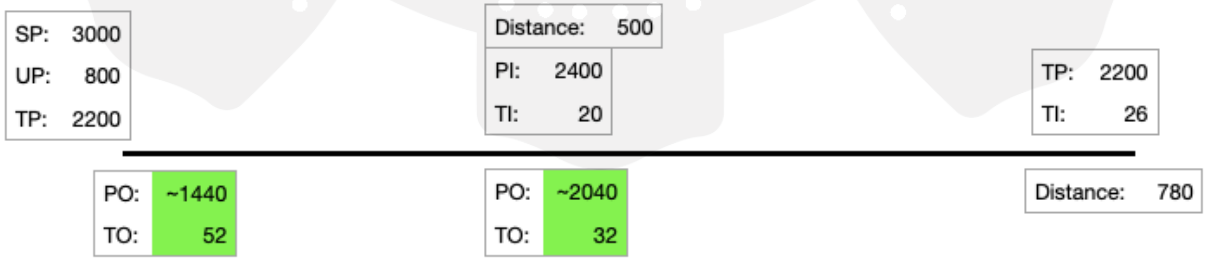


The team reaches the same waypoint in the same time; the turn pressure and time are changed
With 800psi useable we can anticipate a turn time of 26 minutes
UP/interval X 5 = TI
800/150 X5 = TI
5.3 X 5 = 26.66

Therefore a penetration distance of 780 feet
26 feet X 30fpm = 780'



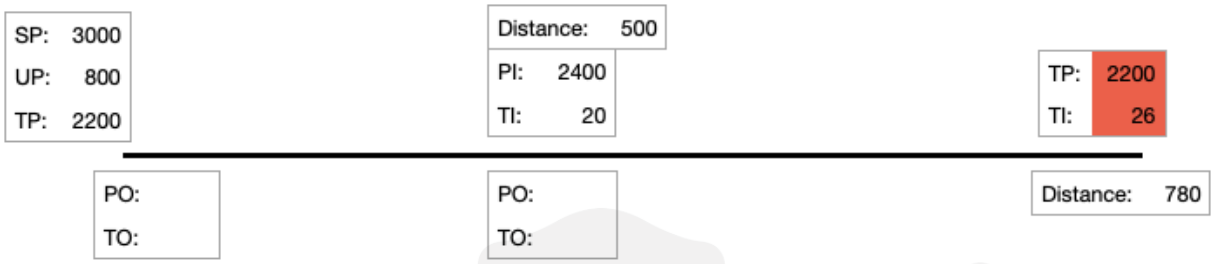
By the time we reach our waypoint and exit we should see the following times and pressures



Going to true thirds our divers made it to 990' of penetration and had a 66 minute dive

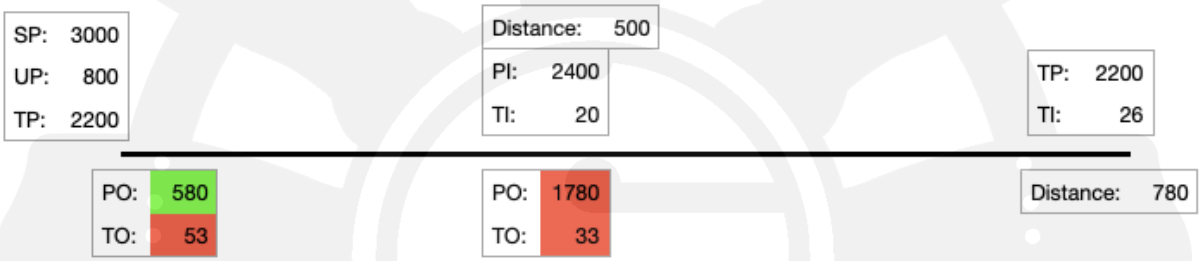
Let's see why we should sacrifice the 200' of cave and the 14 minutes of bottom time

Returning to maximum penetration our teammate suffers a catastrophic gas loss requiring a gas share to exit



Our divers with perfectly matched RMVs each used 800psi (40cf) to penetrate
Sharing gas they will require 80cf (1600psi) to return safely

Even adding in a full minute to gas share the rest of our dive will look as such



1 minute gas share plus 6 minute swim puts us back at the waypoint at minute 33
Additional 20 minute swim puts us back on the surface at minute 53

Sharing gas back to the waypoint for 7 minutes from max penetration
7 minutes / 5 minute intervals X double interval for two divers = gas used
7/5 X 300 = 420

Another 20 minute swim from the waypoint
20/5 X 300 = 1200

Despite the hassle of having to swim for 27 minutes and almost 800 feet our divers still surface with 580psi in their shared tanks.

Whereupon they can pack up, go to lunch, laugh about how someone needs to take better care of their gear, and then go home to their families.

And THAT is why it's worth foregoing a few extra minutes of dive time and a couple hundred feet more wet rocks.