HBOT

HBOT

- UHMS Indications
  1. Air or Gas Embolism
  2. CO poisoning
  3. Clostridial myositis and myonecrosis (Gas Gangrene)
  4. Crush injury, compartment syndrome, other acute traumatic ischemias
  5. DCS
  6. Arterial insufficiencies
  7. Severe anemia
  8. Intracranial abscess
  9. Necrotizing soft tissue infections
  10. Osteomyelitis (refractory)
  11. Delayed radiation injury (soft tissue, bony necrosis)
  12. Compromised grafts and flaps
  13. Acute thermal burn injury
  14. Idiopathic sudden sensorineural hearing loss (new Oct 2011)

- CAF Treatment Tables
  - Limits due to OxTox (decreased with air breaks)
  - If TT stopped due to CNS OxTox, allow 15 mins after sx resolved, then resume schedule at point of interruption
  - Tx repeated until resolution or plateau
  - Contraindications – almost all relative (depends on indication)
    - Largely same as diving
  - Other common treatment tables:
    - USN, Comex, Catalina, CO poisoning
    - Proprietary commercial tables

HBOT Mechanisms

- Bubble Compression (Boyle's Law)
- Hyperoxygenation (Henry's Law)
  - 10-15x increase in plasma O2
  - 2-4 x increase in O2 diffusion capacity from capillaries
- Gas Gradient – support gas washout, prevent additional uptake of inert gas during HBOT
- Antimicrobial effect
  - Inhibit clostridial alpha toxin
  - Anaerobic bacteriostasis
  - enhance antibiotic activity,
  - improve PMN fx
- Blunt ischemia-reperfusion injury
  - Attenuates PMB-endothelial interaction
  - Prevent lipid peroxidation
- Decrease edema
  - Vasoconstriction (while tissues remain hyper-oxygenated)
- Angiogenesis/Wound healing
  - Stimulate vasculogenic stem cell mobilization
  - Increase growth factor synthesis
  - Stim fibroblast proliferation
  - Angiogenesis, reversal of tissue hypoxia

Adjuncts

- NSAIDs
  - No diff in final outcome, but with tenoxicam divers needed fewer TT
  - NNT ~4-5
- Heliox
  - May decrease # of TT required
- Lidocaine may have neuroprotective effect
  - Insufficient evidence to support routine use
- Perfluorocarbons increased O_2 delivery, N_2 removal
  - Animal models only so far
- Not recommended: steroid, ASA, Heparin (unless DVT prophylaxis @24hrs)
- Other considerations
  - Hydration, food
  - Urinary catheter
  - DVT prophylaxis
  - Hospital admission
  - Specialists consults (i.e. neuro)

Figure 3-2-2 Decompression Illness

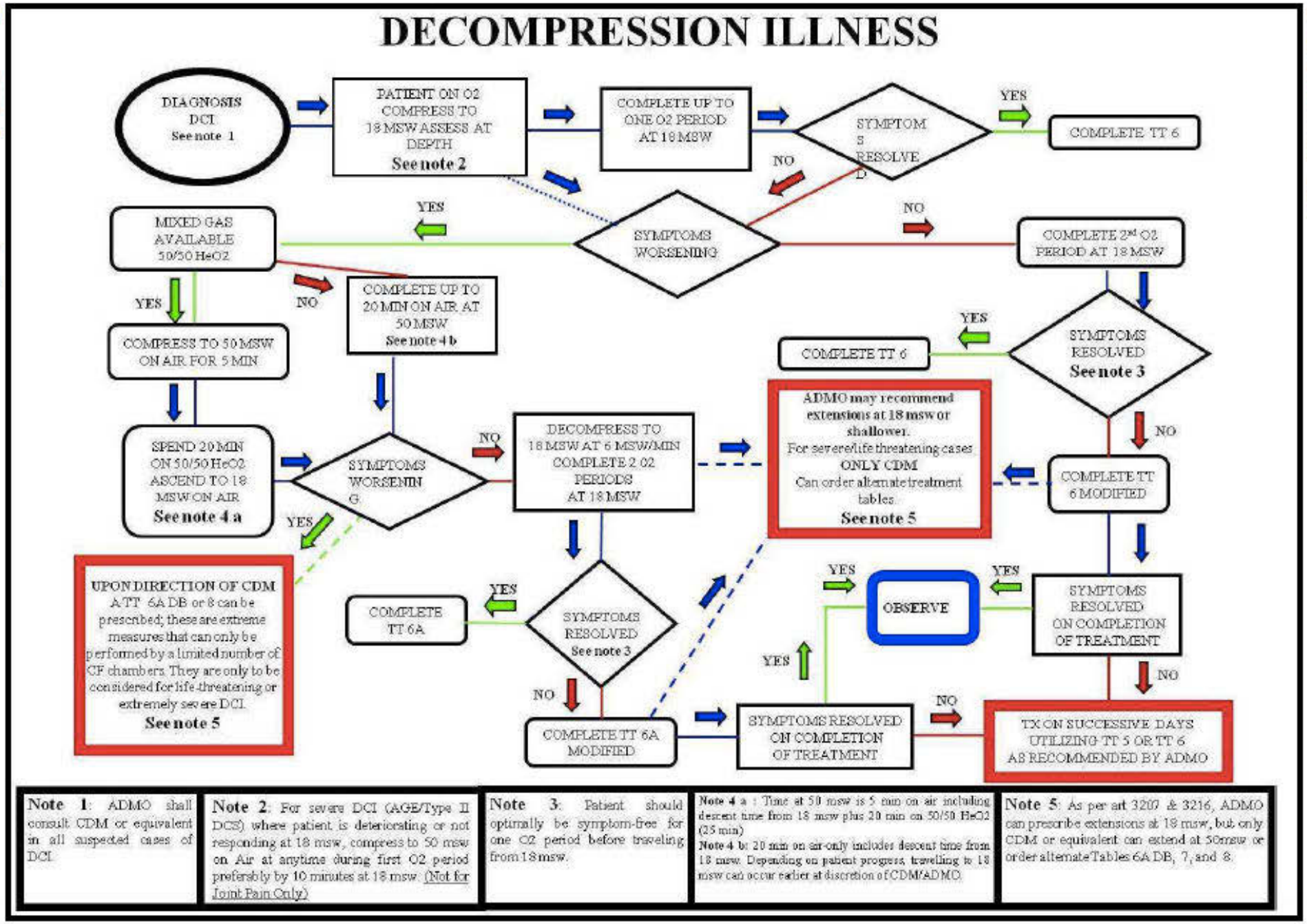

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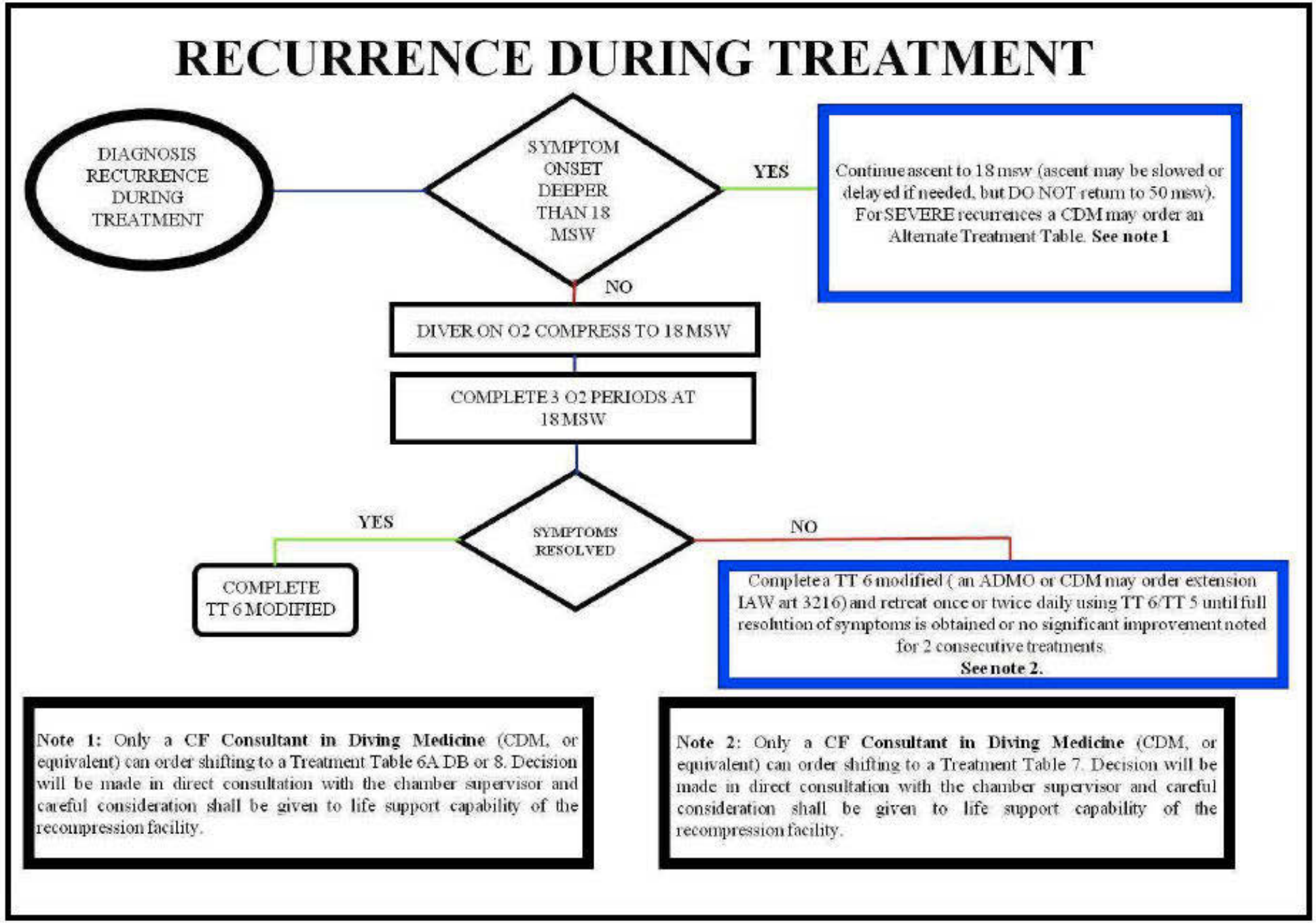
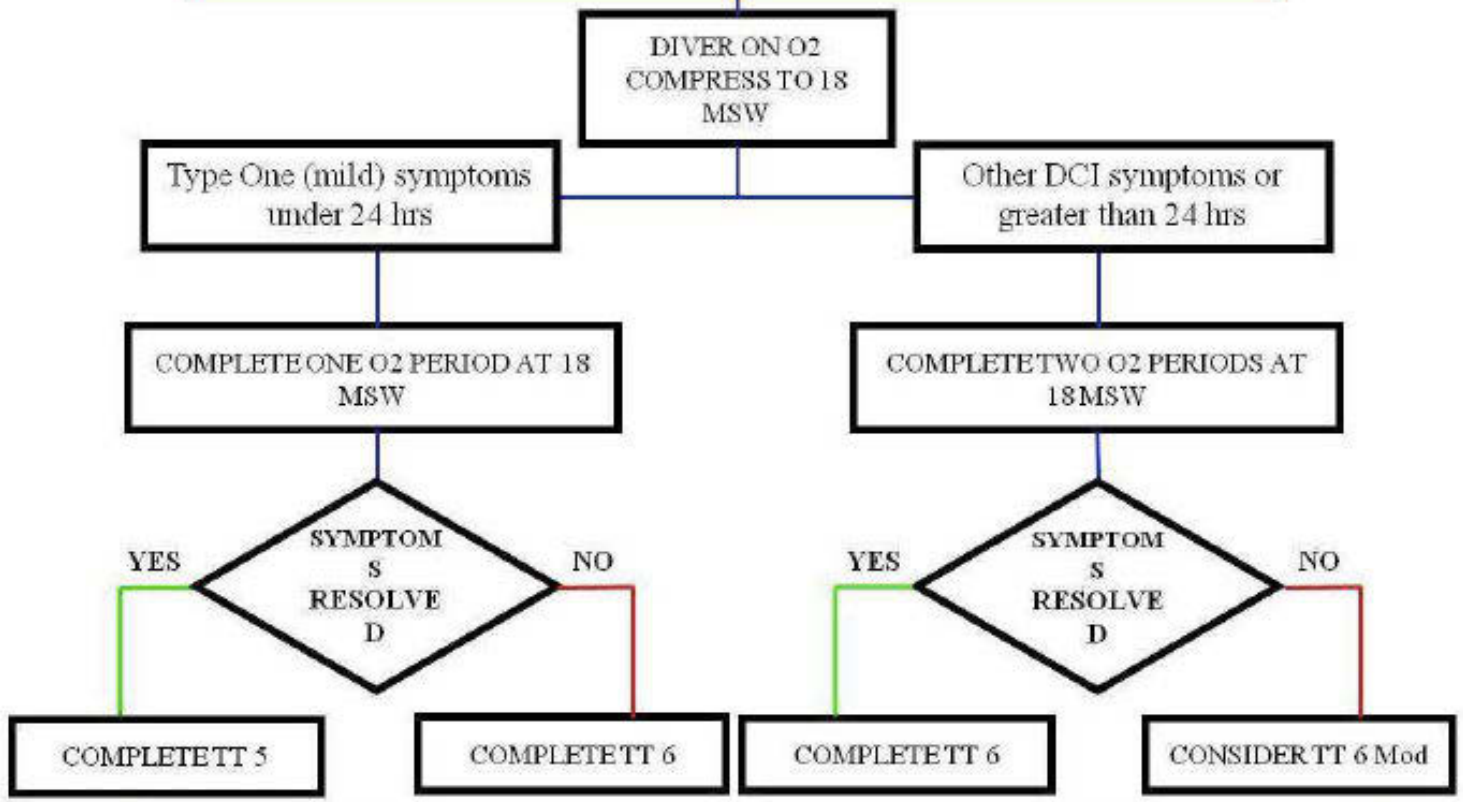
Figure 3-2-3 Recurrence During Treatment Summary



RECURRENCE AFTER TREATMENT

Supervisor/ADMO can initiate re-treatment.
Any symptom that occurs within 7 days after a treatment for DCI must be regarded as a possible recurrence.
In all cases a CDM shall be consulted and decision not to re-treat shall only be made by a CDM or equivalent.



NOTE: Retreat once or twice daily using TT 6/TT 5 until full resolution of symptoms is obtained or no significant improvement is noted for 2 consecutive treatments.

Figure 3-2-4 Recurrence After Treatment

Treatment Table Summary

Table	Indications
5	Type 1 DCS only if sx completely resolved during transport to RCC Recurrence Type 1 Sx (complete resolved after 1x O_2 period at 18msw) Omitted-D, uncontrolled ascent/blow-up – for Asx if omitted D ≤30 mins)
6	DCS, AGE responding to initial 18msw RCC Omitted D, uncontrolled ascent/blow-up: Asx individual with ≥ 30 mins
6 Mod	Extension of TT6, if patient remains sx by end of 2^{nd} O_2 period at 18msw
6A	Severe AGE/DCS deteriorating or not responding at 18msw, resolving @50msw
6A Mod	Extension of TT6A, if patient remains sx by end of 2^{nd} O_2 period @18msw
7	Heroic measure, used in extreme cases
8	Deteriorating severe AGE/DCS sx @50msw, recurrence of severe AGE/DCS during deco from 50msw-18msw etc.

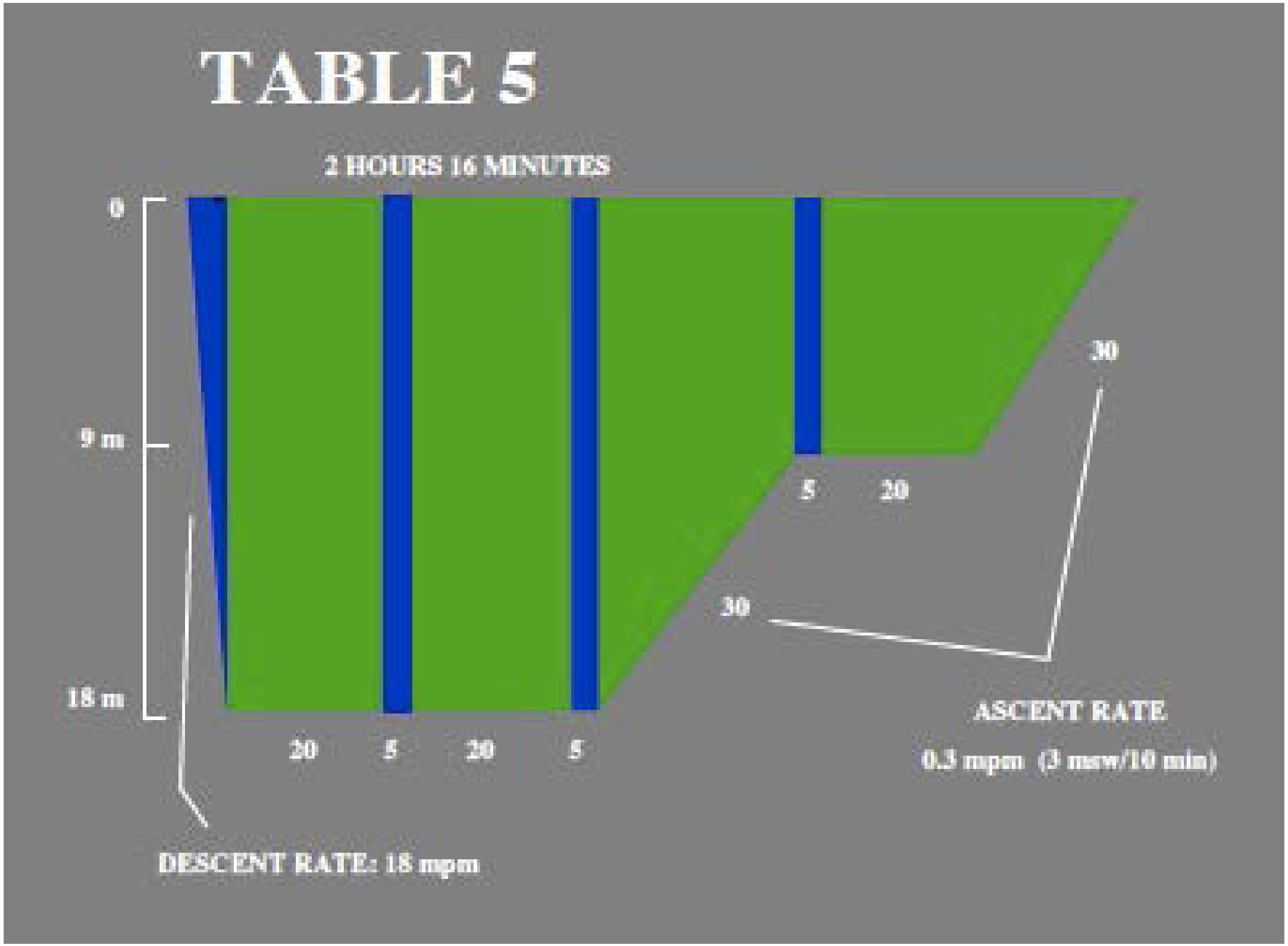


TABLE 5
2 HOURS 16 MINUTES
0
9 m
18 m
20
5
20
5
5
20
30
30
ASCENT RATE
0.3 mpm (3 msw/10 min)
DESCENT RATE: 18 mpm

TABLE 6

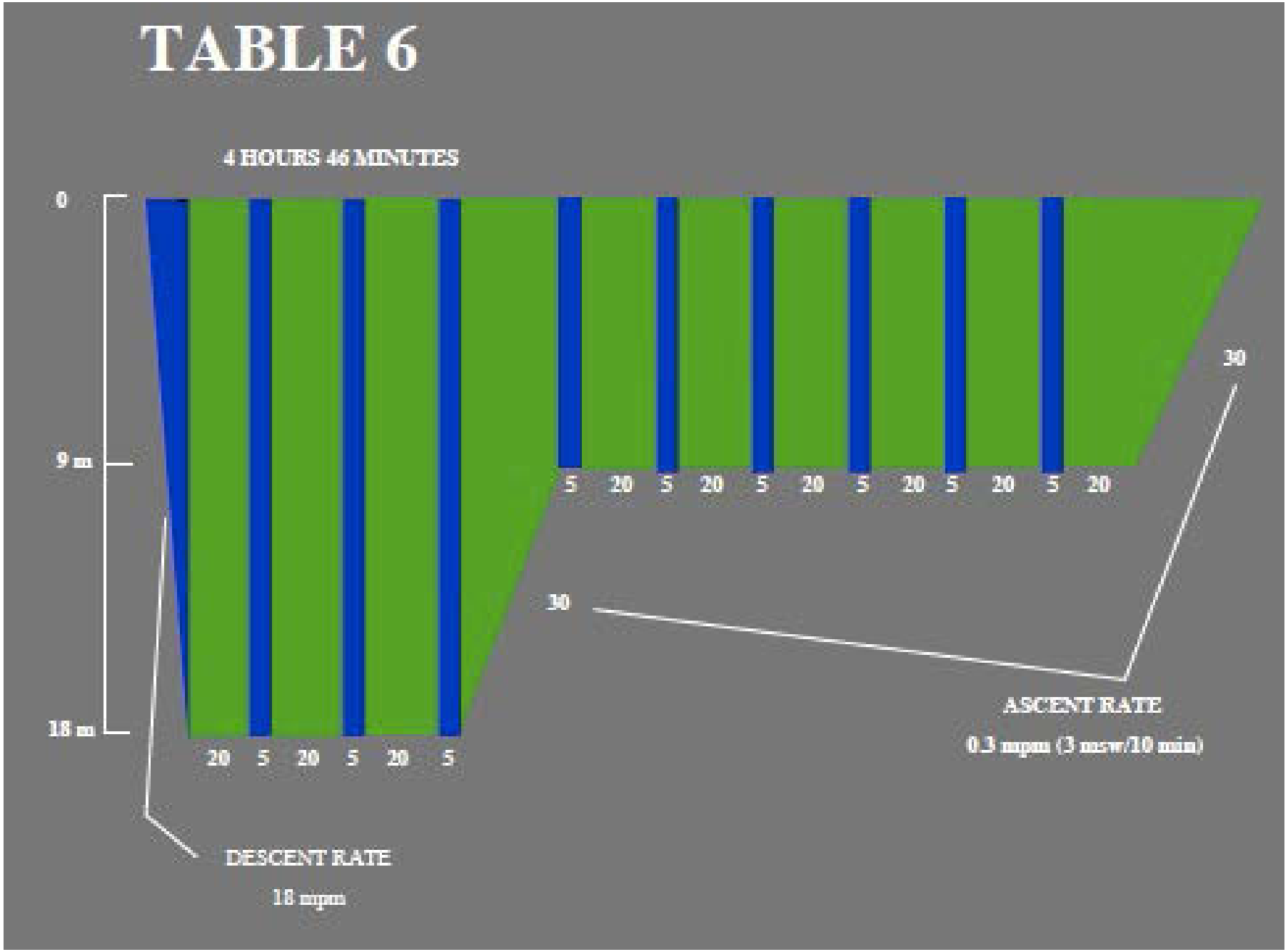
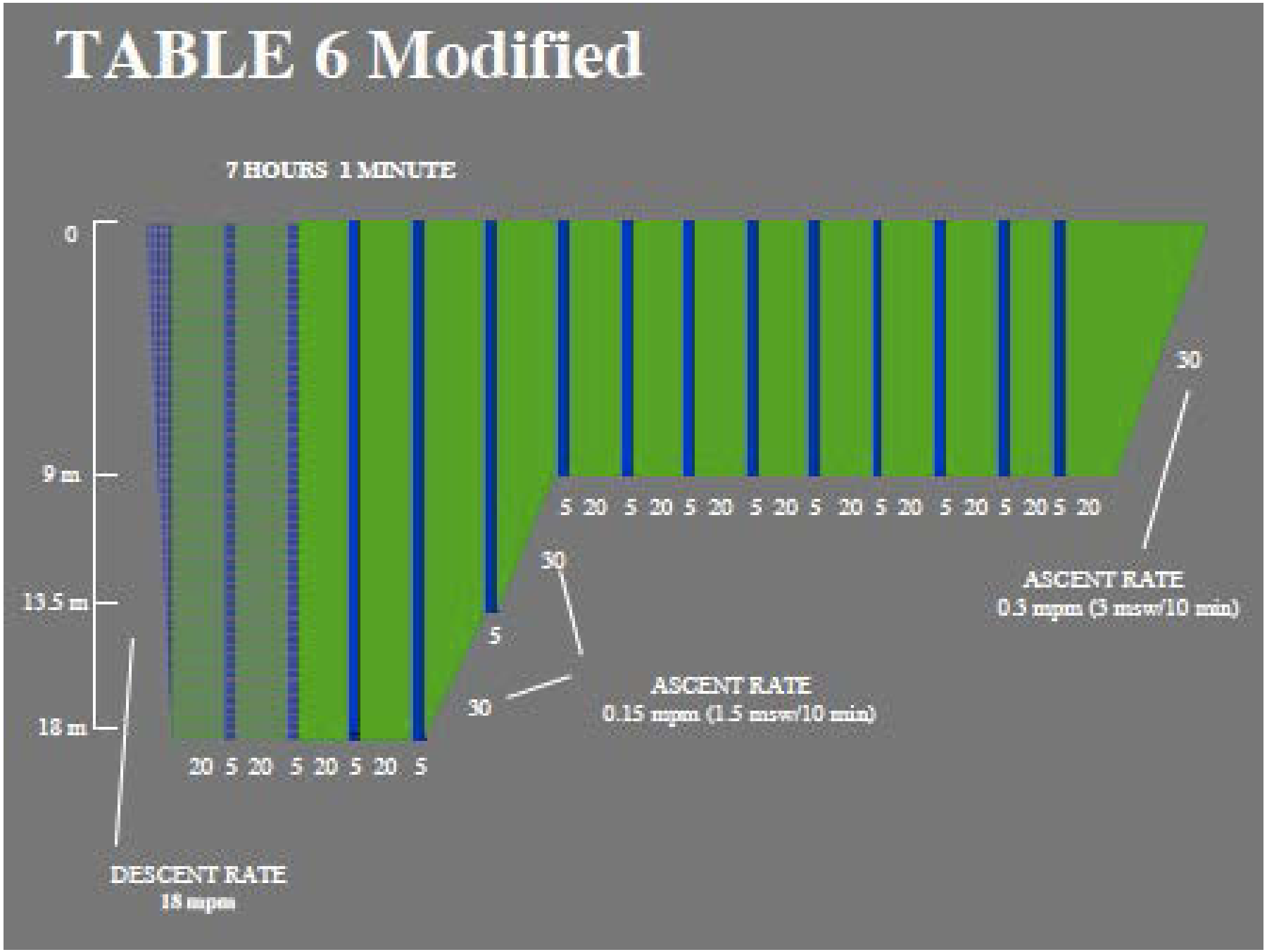

4 HOURS 46 MINUTES
0
9 m
18 m
20 5 20 5 20 5
5 20 5 20 5 20 5 20 5 20 5 20
30
30
DESCENT RATE
18 mpm
ASCENT RATE
0.3 mpm (3 msw/10 min)

TABLE 6 Modified



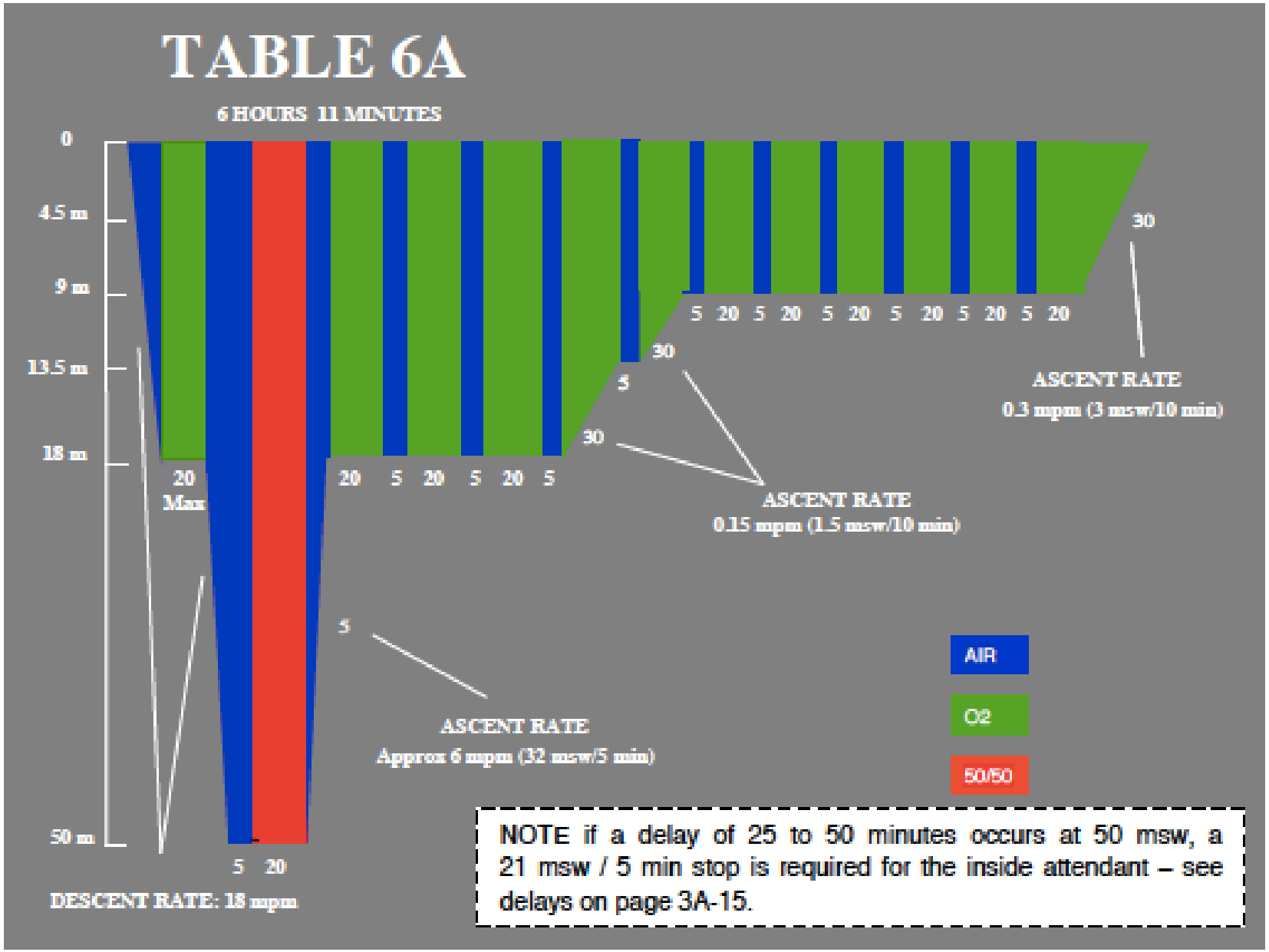


TABLE 6A
6 HOURS 11 MINUTES
0
4.5 m
9 m
13.5 m
18 m
50 m
20
Max
20 5 20 5 20 5
30
5
30
5 20 5 20 5 20 5 20 5 20 5 20
30
ASCENT RATE
0.3 mpm (3 msw/10 min)
ASCENT RATE
0.15 mpm (1.5 msw/10 min)
5
ASCENT RATE
Approx 6 mpm (32 msw/5 min)
5 20
DESCENT RATE: 18 mpm
AIR
O2
50/50
NOTE if a delay of 25 to 50 minutes occurs at 50 msw, a 21 msw / 5 min stop is required for the inside attendant – see delays on page 3A-15.

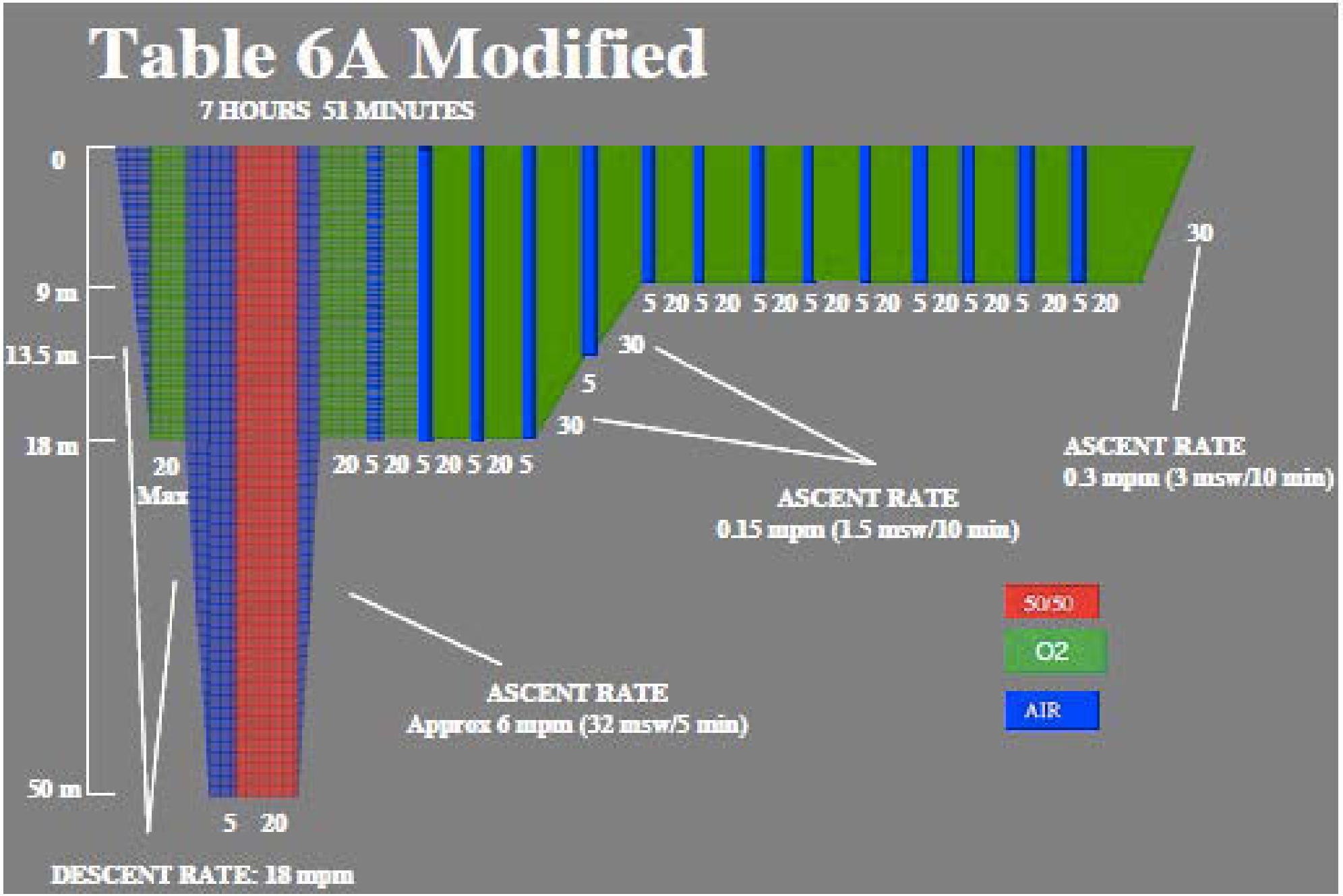


Table 6A Modified
7 HOURS 51 MINUTES
0
9 m
13.5 m
18 m
50 m
20
Max
20 5 20 5 20 5 20 5
30
5
30
5 20 5 20 5 20 5 20 5 20 5 20 5 20 5 20
30
5 20
DESCENT RATE: 18 mpm
ASCENT RATE
Approx 6 mpm (32 msw/5 min)
ASCENT RATE
0.15 mpm (1.5 msw/10 min)
ASCENT RATE
0.3 mpm (3 msw/10 min)
50/50
O2
AIR

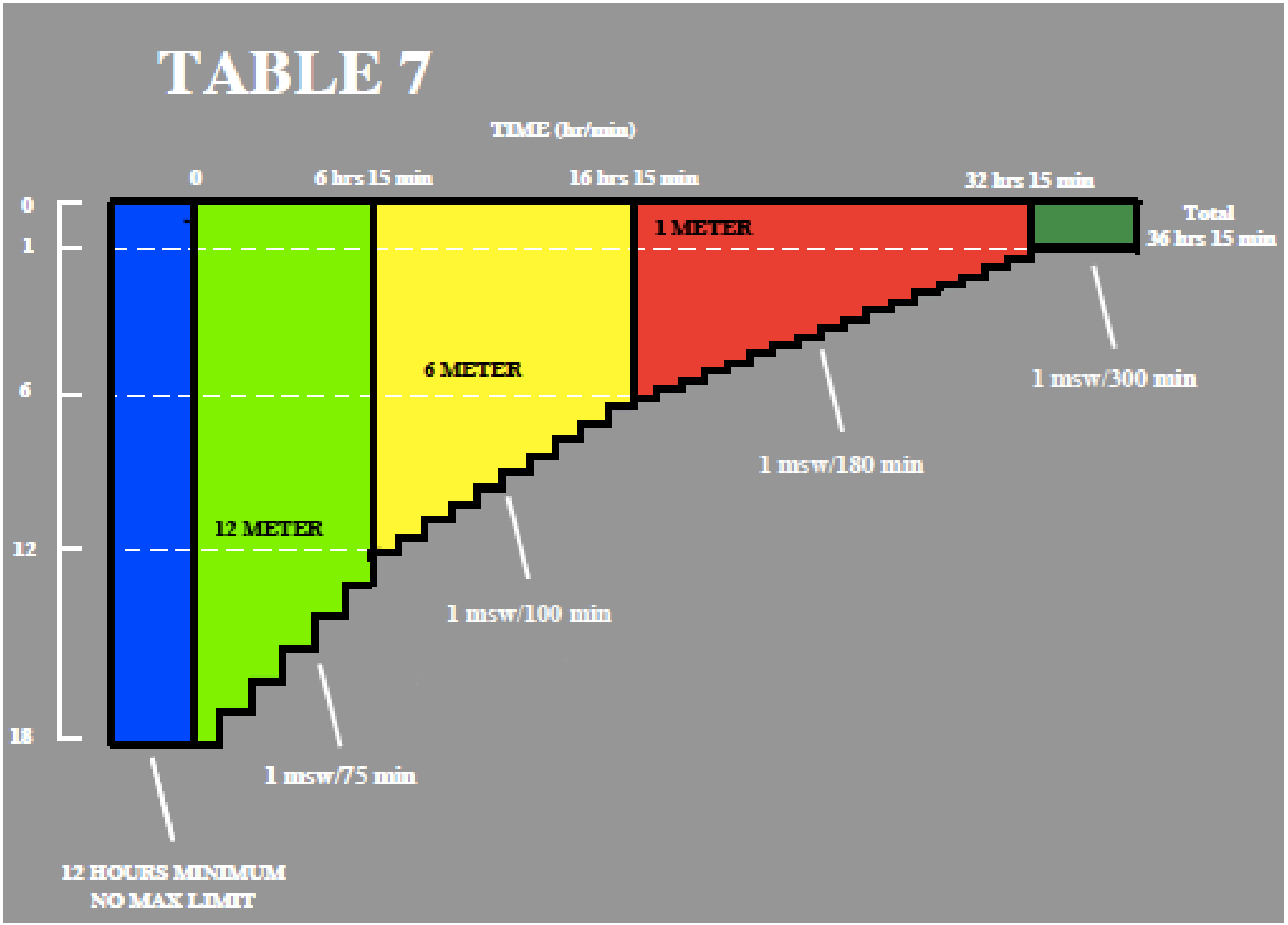


TABLE 7
TIME (hr/min)
0
6 hrs 15 min
16 hrs 15 min
32 hrs 15 min
0
1
6
12
18
1 METER
6 METER
12 METER
Total
36 hrs 15 min
1 msw/300 min
1 msw/180 min
1 msw/100 min
1 msw/75 min
12 HOURS MINIMUM
NO MAX LIMIT

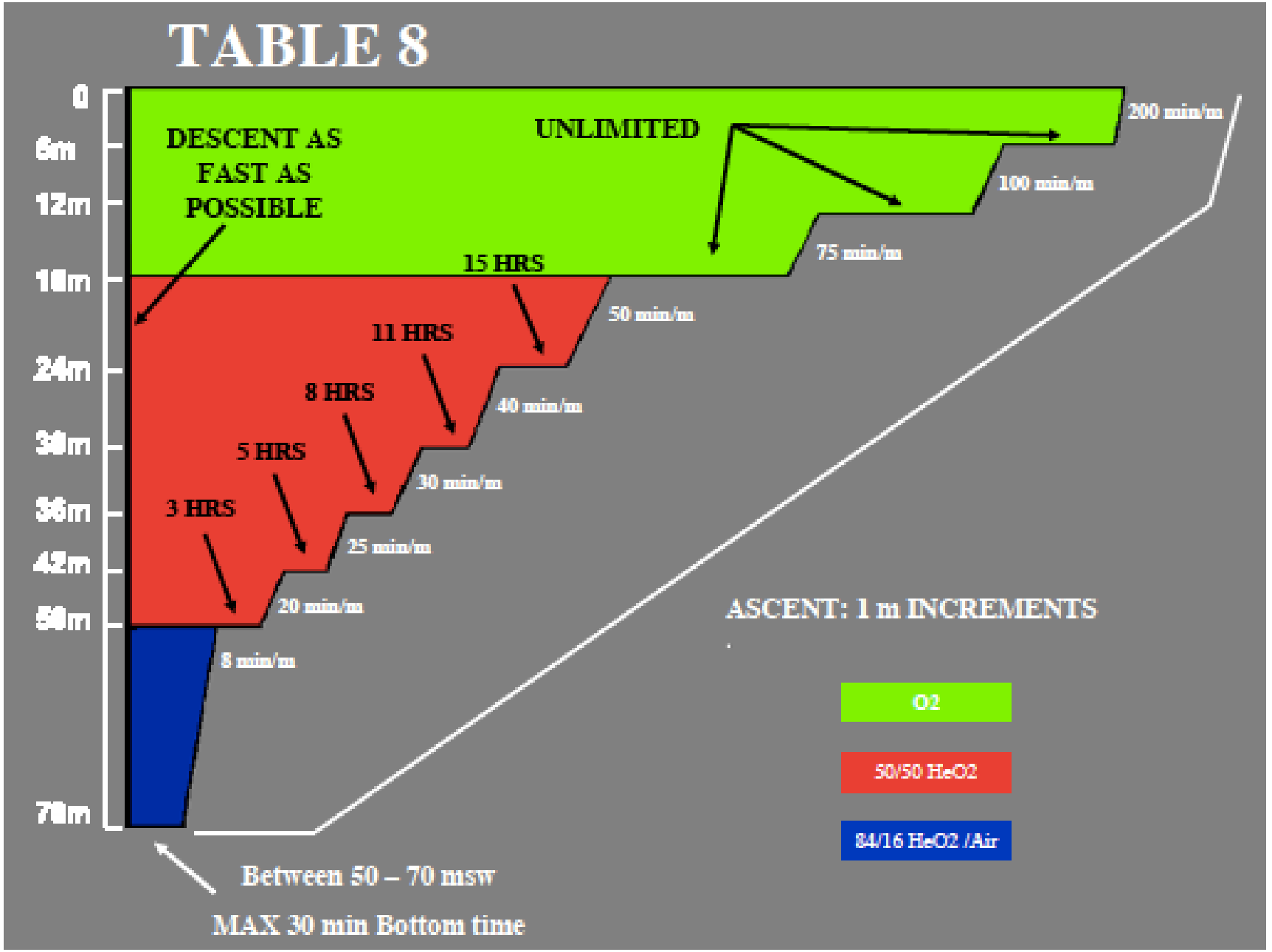


TABLE 8
0
6m
12m
18m
24m
30m
36m
42m
48m
70m
DESCENT AS FAST AS POSSIBLE
UNLIMITED
200 min/m
100 min/m
75 min/m
15 HRS
50 min/m
11 HRS
40 min/m
8 HRS
30 min/m
5 HRS
25 min/m
3 HRS
20 min/m
8 min/m
ASCENT: 1 m INCREMENTS
O2
50/50 HeO2
84/16 HeO2 /Air
Between 50 – 70 msw
MAX 30 min Bottom time