### A: AIR DECOMPRESSION

<table>
<thead>
<tr>
<th>Depth</th>
<th>No-Decompression Bottom Times (minutes)</th>
<th>Decompression Required Bottom Times</th>
</tr>
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<tr>
<td>20'</td>
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<td>30 A 60 B 90 C 120 D 150 E 180 F 210 J 240 G 270 L</td>
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<tr>
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<td></td>
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<tr>
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<td></td>
<td>300 M</td>
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<tr>
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<td>22 A 30 B 40 C 50 D 60 E 70 F 80 G 90 H 100 I 110 J</td>
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<tr>
<td></td>
<td></td>
<td>180 K 180 L 180 M 180 N 180 O 180 P 180 Q 180 R 180 S 180 T</td>
</tr>
</tbody>
</table>

**Input Parameters:**
- Decompression in minutes
- Decompression Required in minutes

**Notes:**
- **Ascent Rate:** 50' (15m) plus or minus 10' (3m) per minute
- **No-Decompression Limits** are given for first dives
- **Decompression Stops** are taken at mid-chest level

### B: SURFACE INTERVALS

<table>
<thead>
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**Rationale:**
- Repetitive Factors (RF) given for Surface Intervals (hr:min)

### C: REPETITIVE DIVING

**Input Parameters:**
- **Depth**
- **Decompression Required**

### D: DEPTH CORRECTIONS

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</tbody>
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**Rationale:**
- Add Depth Correction to Actual Depth of Altitude Dive

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The Department of National Defence (Canada), Defence and Civil Institute of Environmental Medicine (DCIEM), and Universal DIVE Technologies, Inc. (UDT), disclaim any and all responsibilities for the use of the DCIEM Sport Diving Tables and procedures.

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**Notes:**
- **Table B for Minimum Surface Intervals**
- **Table C for Repetitive Dive No-Decompression Limits**
- **Table D for Depth Corrections** required at Altitudes above 1000' (300m)
RECREATIONAL DIVING PROCEDURES

The DCIEM Diving Tables were developed at the Defence and Civil Institute of Environmental Medicine, a research facility within the Department of National Defence. The DCIEM Tables and Procedures include the following information: No-Decompression Limits, Altitude Dives, Multi-Level Diving Procedures, and Guidelines for Flying after Diving.

TABLE A: FIRST DIVE NO-D LIMITS

Table A provides first dive No-D Limits as well as Decompression Stops for dives which exceed the No-D Limits. A No-D Limit is the maximum bottom time that can be spent at a given depth without having to conduct a Decompression Stop. (Bottom time includes both the time it takes to descend and the actual time spent at depth before the first ascent).

1. To find a No-D Limit for a given depth, select the depth and follow the numbers across to the bold vertical lines. The largest number to the left of the bold lines is the No-D Limit.
   Example: first dive No-D Limit for 60' (18m) is 50 minutes.

2. If your actual bottom time is not listed, use the next greater bottom time. Repetitive group (RG) letters appear beside the bottom times in Table A. If no RG letter appears beside your bottom time, cease diving for 34 hours. Example: 45' (13.5m) for 100 minutes.

3. The Ascent Rate is 30' (9m) plus or minus 10' (3m) per minute. This variable rate allows you to gradually reduce your rate of ascent as you reach shallower depths. For example, the proper ascent rate at depths below 90' (27m) is 30' to 60' (9m to 18m) per minute. Above 90', the ascent rate should be reduced to 40' to 50' (12m to 15m) per minute. For dives deeper than 60', a 3 minute Safety Stop at 15' (4.5m) is recommended.

4. The section to the right of the bold vertical lines is used for Decompression Dives - dives that exceed the No-D Limits. Decompression Stops must be conducted before surfacing from such dives. Stop times are given in minutes. Example: 70' (21m) for 50 minutes, Group letter is 'G', Decompression Stop is 10 minutes at 15' (4.5m).

TABLE B: SURFACE INTERVALS

The time elapsed between surfacing from a dive and beginning the descent on the following dive is called a Surface Interval. Surface Intervals are expressed in hours and/or minutes. The maximum Surface Interval is 18 hours.

Example cont'd: Residual Nitrogen Time = 10 minutes  + Actual Bottom Time = 40 minutes  Effective Bottom Time = 50 minutes

4. If the actual bottom time exceeds the No-D Limit, a Decompression Stop will be required. Stop times are given in Table A according to the depth and EBT.

Minimum Surface Intervals

Use Tables B and C to find the minimum Surface Interval for a No-D repetitive dive.

1. In Table C, select the depth and find a No-D Limit that meets or exceeds the actual bottom time. The RF required to conduct the dive is given at the top of the column.

2. In Table B, match this RF with the RG letter from the preceding dive. The minimum Surface Interval is given at the top of the column.

Example: 1st Dive was RF 'F' (2.5m) for 23 minutes, RG 'B'; Repeative Dive will be RF 'F' (2.5m) for 45 minutes. RF 'L' allows a No-D Limit of 41 minutes (Table C), Group 'B' becomes RF 'L' after a Surface Interval of 1 hr (Table B).

Repetitive Dives and Multi-Diving

1. The RG letter for each repetitive dive must be greater than that of the preceding dive. Otherwise, add one letter to the RG taken from the preceding dive and use the higher letter. Example: 1st dive 'C', 2nd dive 'D', 3rd dive 'D', 3rd dive RG becomes 'E'.

2. After three days of repetitive diving, a day off from using scuba is recommended.

TABLE D: DEPTH CORRECTIONS FOR ALTITUDE DIVES

Any dive conducted at an altitude greater than 999 feet above sea level is an Altitude Dive. Depth Corrections are necessary when diving at altitude because the reduced atmospheric pressure makes the altitude dive equivalent to a much deeper dive at sea level. Table D is used to convert the actual depth at altitude to an Effective Depth which corresponds with the depth figures intended for use at sea level.

1. Match your RG letter with the Surface Interval to find your repetitive factor - a residual nitrogen indicator for the following dive. 2.0 is the highest repetitive factor (RF).

2. As the Surface Interval increases, the repetitive factor decreases. Any dive conducted when the RF is greater than 1.0 is a Repetitive Dive. If your RF is 1.0, use the first dive No-D Limits. If your RF is greater than 1.0, use the repetitive dive No-D Limits (Table C).

3. Before conducting a repetitive dive, allow enough Surface Interval time to elapse for a repetitive factor (RF) to appear in Table B. If an emergency forces you to dive before a RF appears, apply the following guidelines:
   a. For dives to the SAME DEPTH: add the bottom times together and use the total time to determine your RG letter and decompression status.
   b. For dives to DIFFERENT DEPTHS: take the RF letter from your 1st dive and find the same group letter at the second depth. Begin the 2nd dive at or if you had already spent the bottom time listed beside that Group letter. Example: RG 'F', 2nd dive to 50' (15m). Bottom time given for 'F' at 10 to 60 minutes.

TABLE C: REPETITIVE DIVE NO-D LIMITS

The No-D Limits for repetitive dives are given in Table C. The maximum depth of a repetitive dive must not exceed that of the preceding dive. A maximum depth of 90' (27m) is recommended for a second dive. For a third dive, a maximum depth of 50' (15m) is recommended.

1. To find the No-D Limit, match your RF with the depth of the repetitive dive.

   Example: RF 1.4 at 10' (3m), No-D Limit is 45 minutes.

2. On a repetitive dive, actual bottom time is added to residual nitrogen time. Find the residual nitrogen time (RNT) by subtracting the repetitive dive No-D Limit from the first dive No-D Limit for the same depth.

   Example: 50' (15m) Depth with RF 1.4
   First Dive No-D Limit = 75 minutes
   Residual Nitrogen Time = 45 minutes
   Actual Bottom Time = 20 minutes
   Add RNT to DBT = 50 minutes
   No-D Limit = 20 minutes

3. Add the actual bottom time to the RNT. The total of actual bottom plus RNT is the Effective Bottom Time (EBT). In this example, adding 40 minutes of actual bottom time to the RNT results in an EBT of 70 minutes at 50' (15m) and RG 'G'.

TABLE D: DEPTH CORRECTIONS FOR ALTITUDE DIVES

Any dive conducted at an altitude greater than 999 feet above sea level is an Altitude Dive. Depth Corrections are necessary when diving at altitude because the reduced atmospheric pressure makes the altitude dive equivalent to a much deeper dive at sea level. Table D is used to convert the actual depth at altitude to an Effective Depth which corresponds with the depth figures intended for use at sea level.

1. Match your RG letter with the Surface Interval to find your repetitive factor - a residual nitrogen indicator for the following dive. 2.0 is the highest repetitive factor (RF).

2. As the Surface Interval increases, the repetitive factor decreases. Any dive conducted when the RF is greater than 1.0 is a Repetitive Dive. If your RF is 1.0, use the first dive No-D Limits. If your RF is greater than 1.0, use the repetitive dive No-D Limits (Table C).

3. Before conducting a repetitive dive, allow enough Surface Interval time to elapse for a repetitive factor (RF) to appear in Table B. If an emergency forces you to dive before a RF appears, apply the following guidelines:
   a. For dives to the SAME DEPTH: add the bottom times together and use the total time to determine your RG letter and decompression status.
   b. For dives to DIFFERENT DEPTHS: take the RF letter from your 1st dive and find the same group letter at the second depth. Begin the 2nd dive at or if you had already spent the bottom time listed beside that Group letter. Example: RG 'F', 2nd dive to 50' (15m). Bottom time given for 'F' at 10 to 60 minutes.

TABLE C: REPETITIVE DIVE NO-D LIMITS

The No-D Limits for repetitive dives are given in Table C. The maximum depth of a repetitive dive must not exceed that of the preceding dive. A maximum depth of 90' (27m) is recommended for a second dive. For a third dive, a maximum depth of 50' (15m) is recommended.

1. To find the No-D Limit, match your RF with the depth of the repetitive dive.

   Example: RF 1.4 at 10' (3m), No-D Limit is 45 minutes.

2. On a repetitive dive, actual bottom time is added to residual nitrogen time. Find the residual nitrogen time (RNT) by subtracting the repetitive dive No-D Limit from the first dive No-D Limit for the same depth.

   Example: 50' (15m) Depth with RF 1.4
   First Dive No-D Limit = 75 minutes
   Residual Nitrogen Time = 45 minutes
   Actual Bottom Time = 20 minutes
   Add RNT to DBT = 50 minutes
   No-D Limit = 20 minutes

3. Add the actual bottom time to the RNT. The total of actual bottom plus RNT is the Effective Bottom Time (EBT). In this example, adding 40 minutes of actual bottom time to the RNT results in an EBT of 70 minutes at 50' (15m) and RG 'G'.

Flying after Diving

1. 12 hours is the minimum time required before flying after a No-D first dive. However, your RF must be 1.0 before you fly. Example: Group 'E' requires 15 hours (Table B).

2. Allow at least 24 hours to elapse before flying after any dive other than a No-D first dive.

The following procedures for multi-level diving are designed for advanced divers.

Multi-level STEP SYSTEM for the DCIEM Tables

A Multi-level dive is a dive during which bottom time is accumulated at two or more depths.
1. Conduct the DEEPEST PART of the dive FIRST. Ascend to progressively shallower depths.

Between each of the Steps in the dive profile, the minimum range of ascent is 20' (6m). For example, if the maximum depth is 85', Step 1 should be at 65' (19.5m). Step 2 would have to be at 70' (21m) or less. From depths exceeding 100' (30m), the minimum range of ascent is 10' (3m). No more than 4 Steps should be included in the dive profile.

2. STAY WITHIN the NO-DECOMPRESSION LIMITS.

If a No-D limit is exceeded as any Step, terminate the dive and proceed to the Decompression Step(s) specified in Table A.

3. FINISH in SHALLOW water. Immediatley before surfacing, spend at least 5 minutes in the depth range between 20' (6m) and 10' (3m). Add this time to the total bottom time (EBT).

4. Allow for a Surface Interval of at least one hour before the following dive.

First Dive Procedures

In Table A, find the RG letter for the first Step according to the depth and actual bottom time.

Example - Step 1: 90' (27m) for 15 minutes, Rep. Group for Step 1 is 'C'.

After 15 minutes at 90' (27m), the divers are in Group 'C'.

The equivalent time for 'C' at the 2nd depth (50') is 30 minutes. The actual bottom time is added to the equivalent time. The Effective Bottom Time must not exceed the No-D Limit.

Step 2: 50' (15m) for 20 minutes. (No-D Limit is 75 minutes)

Equivalent time for 'C' = 30 minutes
Actual bottom time = 20 minutes
Effective Bottom Time = 50 minutes RG 'E'

At Step 2, the EBT must not exceed the 50' (15m) No-D Limit of 75 minutes. The divers spend 10 minutes at 50' (15m). Adding the actual bottom time to the equivalent time results in an Effective Bottom Time of 50 minutes at 50' and Rep. Group 'E'.

For Step 1 of a second dive, the actual bottom time must not exceed the No-D Limit in Table C.

Example: After a 2 hour Surface Interval, Group 'F' (from 1st dive) becomes RF 1.4

Step 1: 50' (15m) for 15 minutes, (No-D Limit is 45 minutes)

The residual nitrogen time is determined by subtracting the repetitive dive No-D Limit from the first dive No-D Limit. The first dive No-D Limit for 50' (15m) is 75 minutes. Subtracting 45 minutes from 75 minutes leaves a residual nitrogen time (RNT) of 30 minutes.

Adding 35 minutes of actual bottom time to 30 minutes of RNT results in an Effective Bottom Time of 65 minutes at 50' (15m) and Rep. Group 'G'.

Residual Nitrogen Time = 30 minutes
Actual bottom time = 35 minutes
Effective Bottom Time = 65 minutes RG 'G'

SECOND DIVE

At Step 3, the equivalent time for Group 'H' is 150 minutes. Adding 10 minutes of actual bottom time results in an EBT of 158 minutes and a final RG letter of 'F'.

Second Dive Procedures

The Step System also allows the second dive to be a multi-level dive. The second dive should be shallower than the first dive. A short dive may be conducted, but not as a multi-level dive.

On a 1st dive, actual bottom time is used at Step 1 because the divers are free of residual nitrogen. On a 2nd dive, the RG letter for Step 1 is based on Effective Bottom Time because of residual nitrogen remaining from the first dive.