OCEANIC

XTC-100™

owner's guide
RESPONSIBLE COMPUTER DIVING

- Always Plan Each Dive
- Always Limit Your Dive to the Level of Your Training and Experience
- Always Make Your Deepest Dive First
- Always Make The Deepest Part of Every Dive First
- Check Your Computer Often During the Dive
- Do A Safety Stop on Every Dive
- Allow Adequate Surface Interval Between Each Dive
- Allow Adequate Surface Interval Between Each Day of Diving (12 Hours or Until Your Computer Clears)

Read And Understand This Owner's Guide Thoroughly Before Using the XTC-100.
Pay special attention to items marked with this Warning symbol.

WARNINGs:

• The XTC-100 is intended for use by recreational divers who have successfully completed a nationally recognized course in scuba diving, and diving with enriched nitrogen-oxygen (nitrox) mixtures.
• It is intended only for no decompression diving, NOT intentional decompression diving.
• It must not be used by untrained persons who may not have knowledge of the potential risks and hazards of scuba diving, and diving with enriched nitrogen-oxygen (nitrox) mixtures.
• You must obtain scuba certification, and certification in diving with enriched nitrogen-oxygen (nitrox) mixtures before using the XTC-100 if you have not already done so.
• It is NOT for use by military and commercial divers.
• It should NOT be utilized for any competitive, or repetitive square wave or decompression diving, as it is intended solely for recreational use and no decompression multilevel diving.
• As with all underwater life support equipment, improper use or misuse of this product can cause serious injury or death.
• Never participate in sharing or swapping of a dive computer.
• Conduct your dives in such a manner so as to insure that you continuously check the computer's proper function.
• Read and understand this owner’s guide completely before diving with the XTC-100.
• If you do not fully understand how to use this dive computer, or if you have any questions, you should seek instruction in its use from your authorized Oceanic dealer before you utilize this product.
LIMITED TWO-YEAR WARRANTY

Oceanic guarantees, to the original purchaser only, that the XTC-100 will be free of defects in materials and/or craftsmanship under normal recreational multilevel scuba use for two years from date of purchase, provided proper care and annual service are performed as described within this owner’s guide. Should your XTC-100 prove to be defective for any reason (other than those listed in the limitations section below) it will be repaired or replaced (at Oceanic’s discretion) free of charge excluding shipping and handling charges.

This warranty will be considered void if the XTC-100 was purchased from anyone other than an Authorized Oceanic Dealer, and/or if the registration card is not filled out completely at the time of purchase and mailed to Oceanic within 30 days of purchase, and/or if the annual inspection is not done according to this owner’s guide. This warranty is non-transferrable and applies to the original purchaser only. All correspondence concerning this warranty must be accompanied by a copy of the original sales receipt and a copy of the owner’s portion of the warranty registration card including the annual inspection record.

Once each year you must return the XTC-100 to an Authorized Oceanic Dealer within 30 days of the original purchase date anniversary to keep the two year limited warranty in force. Annual inspection includes verification of depth accuracy and proper general function. Labor charges for the annual inspection are not covered by the warranty. You must provide a copy of the original sales receipt and a copy of the owner’s portion of the warranty registration card including the annual service record to obtain warranty service.

Statement of Limitations - General:
Warranty does not cover damage from accident, abuse, battery leakage, tampering, lack of proper care and maintenance and/or proper annual servicing, or improper use of the XTC-100. Modifications or repair by anyone other than an Oceanic Sales & Service Center authorized to service the XTC-100 will void the warranty. Oceanic will not be responsible for recovery or replacement of the product in the event of loss or theft. Oceanic, its distributors, and retailers make no warranties, either expressed or implied, with respect to this product or its owner’s guide except those stated in the preceding paragraphs. In consideration of the sale of the XTC-100 to you, you agree and understand that in no event will Oceanic, its distributors or retailers, be held liable for any personal injuries resulting from its operation, or for any other damages whether direct, indirect, incidental, or consequential even if Oceanic is advised of such damages. Warranty does not extend to plastic gauge face, o-rings, batteries, or damage due to accident, abuse, modification, or tampering.

Some states do not allow the exclusion or limitation of implied warranties or liabilities for incidental or consequential damages, so the above limitation may not apply to you.
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XTC-100 Owner's Guide, Doc. No. 12-2029
© 2002 Design 1997
2002 Davis Street
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TRADEMARK NOTICE
Oceanic, the Oceanic logo, XTC-100, the XTC-100 logo, Oceanglo, Graphic Diver Interface, Tissue Loading Bar Graph, Pre Dive Planning Sequence, Variable Ascent Rate Indicator, Set Point, Control Console, and OceanLog are all registered and unregistered trademarks of Oceanic. All rights are reserved.

PATENT NOTICE
U.S. Patents have been issued, or applied for, to protect the following design features: Graphic Diver Interface, Pre Dive Planning Sequence, Dive Time Remaining, Depth Alarm Set Point, Data Sensing and Processing Device (U.S. Patent no. 4,882,678), Tissue Loading Bar Graph (U.S. Patent no. 4,882,687), and Variable Ascent Rate Indicator Bar Graph (U.S. Patent no. 5,156,055).

DECOMPRESSION MODEL
The programs within the XTC-100 simulate the absorption of nitrogen into the body by using a mathematical model. This model is merely a way to apply a limited set of data to a large range of experiences. The XTC-100 dive computer model is based upon the latest research and experiments in decompression theory. Still, using the XTC-100, just as using the U.S. Navy (or other) No Decompression Tables, is no guarantee of avoiding decompression sickness, i.e. “the bends.” Every diver’s physiology is different, and can even vary from day to day. No machine can predict how your body will react to a particular dive profile.
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FEATURES and DISPLAYS
INTRODUCTION

Welcome to Oceanic and thank you for choosing the XTC-100!

Your XTC-100 presents the information that you need before, during, and after your air (or nitrox) dives using Oceanic's intuitive combination of easy to read displays and unique identification icons. Tissue loading of nitrogen, accumulation of oxygen, and ascent rate are presented as segmented bar graphs alongside color coded reference indicators that bring quick focus to these important status displays.

As you progress through this instructional guide, you will become familiar with all of the unique functions and features available and see examples of the displays that you could expect to see in the various operational modes. Although it will require an initial investment of time to become acquainted with the various icons and bar graphs of the Graphic Diver Interface, you'll soon agree that the XTC-100 is easy to understand and use.

The XTC-100 has a wide array of features described in detail throughout the pages that follow. Due to the importance that they be understood thoroughly prior to using the XTC-100, information will be expanded upon and some refreshed as you proceed. Relax and read through the complete guide.
It is extremely important that you:

- Read this owner's guide in sequence and understand it completely before attempting to use the XTC-100.
- Check the XTC-100 frequently during your dive.
- You must also be a trained diver, certified by a recognized training agency in Scuba diving.
- Prior to using the oxygen related features of the XTC-100, you must also be trained and certified for diving with enriched nitrogen-oxygen (nitrox) mixtures by a recognized training agency.

Remember that the rules you learned in your basic scuba certification course still apply to the diving you will do while using a dive computer - some will become even more important. Technology is no substitute for common sense, and a dive computer only provides the person using it with data, not the knowledge to use it.

⚠️ WARNING: Inspect your XTC-100 prior to every dive, checking for any signs of the entrance of moisture, damage to the button membranes, or damage to the LCD display. If these or other signs of damage are found, return the unit to an Authorized Oceanic Dealer. DO NOT attempt to use it until it has received factory service.
INTERACTIVE CONTROL CONSOLE

The XTC-100 is a unique dive computer with interactive controls that allow you to select various display options and access specific information when you choose to see it. The Interactive Control Console consists of the **Advance** (Upper) button and **Select** (Lower) button (Fig. 1).

The control buttons can be pressed repeatedly, releasing upon hearing a beep, or held in to scroll and continue as you set or access different display modes.

On the surface, before diving, you can perform the following operations using the Control Console:

- Activate the display module
- Select units of measure - English or Metric
- Set depth alarm warning level Set Point™
- Set the current date & time
- Access the Log mode - to view data from your 12 most recent dives.
- Access the External Access mode - to download (copy) dive data from the XTC-100 to a unique PC log/profile program (OceanLog™).
- Set percentage of oxygen (FO2) for a nitrox mix being used.

During a dive, the Select (Lower) button is used to activate the Oceanglo™ backlight and the Advance (Upper) button is used to view temperature.
INFORMATIONAL DISPLAYS

Operational modes and status information are visually represented numerically and/or graphically and can be understood at a glance with the aide of universal icons (Fig. 2) that identify and bring quick focus to the displays. Also, segmented bar graphs will show how close you are to critical limits. In critical situations, an audible alarm sounds to alert you to check the display data.

Each XTC-100 numeric and graphic display represents a unique piece of information. It is imperative that you understand the formats, ranges, and values of the information represented to avoid any possible misunderstanding that could result in error.

△ NOTE: Throughout this owner's guide reference is made to the term 'breathing gas'. The rational being that the XTC-100 can be used for 'air' dives or 'nitrox' dives. For clarity these terms are defined as -

Breathing Gas - the gaseous mixture breathed during a dive.
Air - a breathing gas that contains approximately 21% oxygen and 79% nitrogen (nature's common nitrogen-oxygen mixture).
Nitrox - a nitrogen-oxygen breathing gas that contains a higher fraction of oxygen (22 to 50%) than air.
UNIVERSAL GRAPHIC DIVER INTERFACE

Three bar graphs referred to as the Universal Graphic Diver Interface appear around the perimeter of the XTC-100 screen (Fig. 3). These segmented bar graphs are located next to green, yellow, and red color coded portions of the peripheral decal that denote normal, caution, and danger zones, respectively.

When underwater, you can quickly focus on the bar graphs to make sure that they are in the green. You can quickly verify that you're not getting too close to the no decompression limit or the limit for oxygen accumulation, or ascending too fast.

Tissue Loading Bar Graph

The Tissue Loading Bar Graph (TLBG) represents nitrogen loading (Fig. 4), showing your relative no decompression or decompression status. As your depth and elapsed dive time increase, segments will add to the graph beginning in the lower left portion of the screen. As you ascend to shallower depths, this bar graph will begin to recede, indicating that additional no decompression time is allowed for multilevel diving.

The Tissue Loading Bar Graph monitors 12 different nitrogen compartments simultaneously and displays the one that is in control of your dive. It is divided into a green No Decompression zone (NO DECO), a yellow Caution zone (C.Z.), and a red Decompression zone (DECO). The bar graph gives a visual
representation of just how close you are to the no decompression limit with a yellow Caution (C.Z.) Zone.

This Caution Zone portion of the bar graph allows you to make a decision regarding safety stop duration or necessity. While you cannot provide a guarantee against the occurrence of decompression sickness, you may choose your own personal zone of caution based upon age, physique, excessive weight, etc., to reduce the statistical risk.

The Tissue Loading Bar Graph assists you with managing decompression by filling a large red 'ceiling stop required' segment. Decompression is explained in detail in the Handling the Extremes section.

Prior to a repetitive nitrox dive, if the segments of the Oxygen Accumulation Bar Graph are displayed during the Pre Dive Planning Sequence™ (PDPS), and no segments of the Tissue Loading Bar Graph are displayed, that next dive is calculated to be controlled by oxygen loading.

⚠️ WARNING: Oceanic advocates responsible diving practices consistent with your individual level of formal training and experience, and does not recommend decompression diving or diving below 130 feet (39 m).

Be a responsible diver at all times.
mation; no decompression status and oxygen accumulation status. The Dive Time Remaining display will indicate the time that is more critical for you at that particular moment (i.e.; whichever time is the least amount available of the two). The time being displayed is identified by the No Decompression Dive Time icon (Fig. 7a), or the O2 Time icon (Fig. 8a).

Knowing that you have 13 minutes of no decompression time remaining is not as critical as knowing that you only have 8 minutes of oxygen accumulation time remaining. The XTC-100 presents the dive time remaining that is considered to be of primary importance. This unique feature of select Oceanic dive computers has been granted U.S. Patent No. 4,586,136.

No Decompression Dive Time Remaining

No Decompression Dive Time Remaining is the maximum amount of time that you can stay at your present depth before entering a decompression situation. It is calculated based on the amount of nitrogen absorbed by twelve hypothetical tissue compartments. The rates each of these compartments absorb and release nitrogen is mathematically modeled and compared against a maximum allowable nitrogen level. Whichever one of the twelve is closest to this maximum level is the controlling compartment for that depth. Its resulting value will be displayed numerically (Fig. 7b) along with the No Decompression Dive icon and graphically as the Tissue Loading Bar Graph.
As you ascend from depth following a dive that has approached the no decompression limit, the Tissue Loading Bar Graph will recede as control shifts to slower compartments. This is a feature of the decompression model that is the basis for multilevel diving, one of the most important advantages the XTC-100 offers. See the Reference section for more information about tissue tracking.

The no decompression algorithm is based upon Haldane’s theory using maximum allowable nitrogen levels developed by Merrill Spencer. Repetitive diving control is based upon experiments designed and conducted by Dr. Ray Rogers and Dr. Michael Powell in 1987. Diving Science and Technology® (DSAT), a corporate affiliate of PADI®, commissioned these experiments.

**Oxygen Accumulation Time Remaining**

Oxygen accumulation (exposure) during a dive, or 24 hour period, appears graphically as the Oxygen Accumulation (O2) Bar Graph. As time remaining before reaching the oxygen exposure limit decreases, segments are added to the O2 bar graph. When the amount of time remaining before reaching the oxygen limit becomes less than the No Decompression Dive Time Remaining, calculations for the dive will be controlled by oxygen. Oxygen Time Remaining will then appear as the main numeric time display (Fig. 9a) as signified by the O₂ Time icon appearing to the right of the display.

As oxygen accumulation continues to increase, the O2 bar graph will enter the
yellow Caution Zone. High O2 Mode is explained in detail in the Handling the Extremes section.

**ALPHA/NUMERIC DISPLAYS**

**Depth Displays**

During a dive, the **Current Depth** display, located in the upper portion of the screen (Fig. 10a), indicates depths from 0 to 330 feet (99.5 meters) in 1 foot (.5 meter) increments.

The value of current depth will be displayed during all dive modes unless you descend deeper than 330 feet (99.5 meters), at which point the display will show three dashes (---) to indicate that you have gone 'out of range'. This is described in detail in the Handling the Extremes section.

A second depth display located in the center/left portion of the screen (Fig. 10b) indicates the **Maximum Depth** reached during that dive. In the event that you descend deeper than 330 feet (99.5 meters), this display will only show three dashes (---) as the maximum depth for the remainder of that dive, and as the Max Depth in the Dive Log for that dive. This is described in detail in the Handling the Extremes section.

During a Decompression Dive, the required **Ceiling Stop Depth** appears in
the center/left portion of the screen (Fig. 11a). The display toggles with the Maximum Depth once every 15 seconds while in the Decompression Mode. This is described in detail in the Handling the Extremes section.

**Time Displays**

The **Main Time** display, located in the lower portion of the screen, indicates elapsed Surface Time, theoretical Dive Time Available, Dive Time Remaining (Fig. 12a), Total Ascent Time required, or Time of Day, depending on the operating mode that the XTC-100 is in at the time.

A second time display located in the center/right portion of the screen indicates Elapsed Dive Time (Fig. 12b), or Decompression Stop Time required.

Each display is described in detail in subsequent sections of this owner's guide.

Time displays are shown in hour:minute format (i.e., 1:02 represents one hour and two minutes, not 102 minutes!). The colon that separates hours and minutes blinks once per second when the display is indicating real time such as elapsed Surface Time, Elapsed Dive Time, or Time of Day. Dive Time Available, Dive Time Remaining, Decompression Stop Time, Total Ascent Time required, or Time to Fly are calculated projections of time and use a solid (non-blinking) colon to indicate that they are counting down, rather than up.
Date, Time of Day and Temperature Displays

During a dive, Temperature is displayed for 3 seconds in place of the current Depth display (Fig. 13a) when the Advance (Upper) button is depressed.

While on the surface, Temperature will appear for 3 seconds together with the current Date and Time of Day when the Advance (Upper) button is depressed. In the English version (Fig. 14), the Month appears to the left of Day and in the Metric version, the Month appears to the right of Day.

AUDIBLE ALARM

When you are approaching dangerous situations, the XTC-100 alerts you to check the Graphic Diver Interface and numeric displays. There are four Audible Alarms.

Potential Danger – One Double Beep

During a situation that may pose potential danger, one Double Beep is emitted from the XTC-100. The situations are:

- Entry into decompression.
- Partial pressure of oxygen equal to or greater than 1.40 ATA.
Immediate Danger – continuous One Beep per Second

When the XTC-100 senses immediate danger to you, it emits One Beep per Second until one of the following situations is corrected:

- Descent deeper than the Depth Alarm Set Point.
- Ascent to a depth shallower than a required stop depth.
- Ascent rate that exceeds 60 ft/min (18 m/min).
- Partial pressure of oxygen equal to or greater than 1.60 ATA.
- Oxygen accumulation greater than the allowed per dive or 24 hour limit.

Permanent Violation – Single Long Beep

If you enter a Delayed or Immediate Violation Mode, a Single Long Beep will be emitted. This will occur if one of these Violation rules are broken:

- Depth was shallower than a required stop depth for more than 5 minutes.
- Required Decompression exceeds a 60 FT/ 18 M ceiling.

Transition – Short Beep

To indicate that a command has been accepted, the XTC-100 will emit a Short Beep whenever you use the control console, and immediately following activation and the Diagnostic Mode.
BACKLIGHT FEATURE

In addition to using a high contrast LCD for easy readability in low light conditions, the XTC-100 Oceanglo™ backlight feature evenly and easily illuminates the full display (Fig. 15). On night dives, in caves, or any other low light situation, you can illuminate the display when you wish to view it with the touch of a button.

To activate the Oceanglo™ backlight during the Dive mode, simply press the Select (Lower) control button. Oceanglo will remain illuminated as long as the button is depressed, plus 10 seconds after being released (for a maximum of 15 seconds).

Oceanic recommends that you always carry primary and backup dive lights when conducting dives that could include low light situations.

OPERATING TEMPERATURE

The XTC-100 will operate in almost any temperature diving environment in the world (Fig. 16) between 32 and 140 °F (0 and 60 °C). At extremely low temperatures, the LCD may become sluggish, but this will not affect it's accuracy. If stored or transported in extremely low temperature areas (below freezing), you should warm the module and its batteries with body heat before diving.
Even though the XTC-100 will operate in this wide range of temperatures, it is possible to damage the electronics if left exposed to direct sunlight, or in a hot confined space (like a car trunk). After the dive, cover the XTC-100 and keep it out of the sun. If inadvertently left in the direct sunlight for a long period, the LCD display may become totally black. If this occurs, immediately immerse the XTC-100 in water. The display should recover its normal appearance after a few minutes. Damage from excess heat, or cold, is not covered by the XTC-100 two year limited warranty.

SHARING THE XTC-100

⚠️ WARNING: Never participate in sharing or swapping of a dive computer. Doing so may result in injury or death.

The XTC-100 provides information based upon a diver’s personal dive profile, and therefore must not be “shared” between divers. You should never, under any circumstances, swap your computer with another unit between dives, or share your computer with another diver underwater. It is impossible for two divers to stay precisely together underwater, and your computer’s dive profile tracking of previous dives will be pertinent to you only. Nitrogen and oxygen loading of a second user may be significantly different and thus swapping dive computers could lead to inaccurate and potentially dangerous predictions of decompression and oxygen accumulation status. This rule applies to the use of all dive computers, but is especially important when using the XTC-100, due to the personal information it provides.
Fig. 17 - Graphic Interface Legend

a. Tissue Loading Bar Graph
b. Oxygen Loading Bar Graph
c. Variable Ascent Rate Indicator
d. Icon - Low Battery
e. Icon - Maximum Depth
f. Icon - Log Mode
g. Icon - Temperature
h. Icon - elapsed Dive Time
i. Icon - Deco Stop Ceiling
j. Icon - Operating Mode (detail A)
k. Symbol - O2 in Control
l. Control Button - Select
m. Control Button - Advance
n. PC Interface Sensors

Detail 'A' - Operating Mode Icons

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<th>O2 Time</th>
<th>Deco</th>
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<td>![Surface Icon]</td>
<td>![Plan Icon]</td>
<td>![No Deco Icon]</td>
<td>![O2 Time Icon]</td>
<td>![Deco Icon]</td>
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ACTIVATION
and
SETUP
ACTIVATING THE DISPLAY

⚠️ WARNING: Never activate the XTC-100 underwater. This may result in inaccurate depth and no-decompression time displays. If the unit is activated when deeper than 4 feet (1 meter) underwater, or at elevations higher than 14,000 feet (4,267 meters), it will perform a diagnostic check followed by immediate shutdown.

To activate the XTC-100, press the Select (Lower) button once and release. The XTC-100 will immediately enter Diagnostic Mode, displaying all “8’s” (Fig. 18), followed by “dashes”, and a countdown from 9 to 0. While conducting diagnostics, the display is illuminated by the Oceanglo™ backlight as the XTC-100 checks its display functions and battery voltage to ensure that everything is working correctly.

Upon activation, the XTC-100 will also check the ambient barometric pressure, and calibrate its present depth as zero. At elevations of 2,000 ft. (610 m) or higher, it will recalibrate itself to measure depth in feet of fresh water instead of feet of sea water.

If no dive is made within 2 hours after initial activation, the XTC-100 will automatically deactivate to conserve its battery power. Always check the display before entering the water.
play before entering the water to ensure that it is activated.

⚠️ **WARNING:** During activation and diagnostics, if any display or function varies from the information presented here, return the XTC-100 to your Oceanic Dealer for inspection.

**SURFACE MODE**

Surface Mode, identified by the Surface Time icon (Fig. 19a), immediately follows Diagnostic Mode after initial activation. Information displayed includes the Dive Number '0' (no dive made yet) and Surface Time with flashing colon.

If battery voltage is below the level sufficient for a day’s operation, the Battery icon will be displayed, flashing (Fig. 20a). Below 15% of rated voltage, all graphic displays will shut off except the Battery icon that will flash 16 final times prior to shutdown of the XTC-100. See the Care & Maintenance Section for more information regarding Low Battery.

⚠️ **WARNING:** If a Low Battery condition is indicated following diagnostics, Oceanic strongly recommends that you DO NOT dive until the batteries are replaced.
ENTERING SETTINGS

Before going diving, enter the settings to be used for each of your dives (units of measure, time, date, and depth alarm value). FO2 is a 'pre dive' setting that must be entered before 'each' nitrox dive. Setting the FO2 value for the nitrox mix being used is described in the Pre Dive and Dive Mode section.

The Select (Lower) button is used to move through the available settings, and the Advance (Upper) button is used to enter the setting that is shown on the screen.

⚠️ NOTE: If the XTC-100 is left unattended for five minutes while in the Set Mode, it will automatically revert to Surface Mode.

To access the Set Mode depress and hold the Advance (Upper) button for 4 seconds while in the Surface Mode.

SET UNITS OF MEASURE

Your XTC-100 has been factory set for imperial units of measure, FT and °F (Fig. 21). To change display values to metric units of measure (M and °C):

- after accessing the Set Mode (as described above)
- depress the Select (Lower) button to toggle between Imperial and metric.
• depress the Advance (Upper) button once to access the Time of Day setting.

SET TIME OF DAY

Your XTC-100 has been factory set for 12:00 AM. To change to the current Time (Fig. 22), after setting Units:

• depress and hold the Select (Lower) button until the correct hour appears.
• depress the Advance (Upper) button once.
• depress and hold the Select (Lower) button until the correct minute appears.
• depress the Advance (Upper) button once.
• depress the Select (Lower) button to change A (am) to P (pm), or -
• depress the Advance (Upper) button once to access the Date setting.

SET DATE

Your XTC-100 has been factory set for January 1, 1997. To change to the current Date (Fig. 23), after setting Time:

• depress and hold the Select (Lower) button until the correct year appears.
• depress the Advance (Upper) button once.
• depress and hold the Select (Lower) button until the correct month appears.
• depress the Advance (Upper) button once.
• depress and hold the Select (Lower) button until the correct day appears.
- depress the Advance (Upper) button once to access the Depth Alarm setting.

**SET DEPTH ALARM**

Your XTC-100 Depth Alarm has been factory set for 320 FT. The Alarm value may be set for depths ranging from 30 to 320 feet (9 to 97.5 meters), in 10 foot (3 & 3.5 meter) increments. To change to your desired maximum depth alarm value (Fig. 24), after setting Date:

- depress and hold the Select (Lower) button until the desired Maximum Depth alarm Set Point value appears.
- depress the Advance (Upper) button once to return to the Surface Mode.

**Depth Alarm Operation**

The setting that you choose for the Depth Alarm does not change the displayed limits of no-decompression dive time remaining. When the Depth Alarm is activated by reaching or exceeding your preset maximum depth, the audible alarm will sound once per second until you ascend above the Set Point value.

If you set the Depth Alarm for a depth that is deeper than the no-decompression or decompression limits for that dive, you will be alerted that you have exceeded those limits before the Depth Alarm is activated.
PRE DIVE and DIVE MODES
OPERATIONAL MODES

The Diagnostic, Surface, and Set Modes were explained in the previous section, Activation & Setup. This section describes other modes that the XTC-100 operates in before and during a dive.

FO2 MODE

⚠️ WARNING: The percentage of oxygen (FO2) in the nitrox mix being used must be set 'before each' nitrox dive.

The XTC-100 can be used either as an Air computer or as a Nitrox computer. After activation, it will operate as an Air computer without displaying information associated with oxygen calculations, unless it is set for a percentage of oxygen (FO2) other than Air (numerical value between 21 and 50%).

FO2 Set for Air

If you are using 'Air' as your breathing gas, you can verify that 'Air' is the FO2 value by observing the FO2 screen that appears after Surface Mode (Fig. 25).

When set with an FO2 value of 'Air', the XTC-100 will perform calculations the same as if FO2 were set for 21% oxygen, internally accounting for oxygen load-
ing for any subsequent Nitrox dives. However, oxygen related displays, warnings, and the O2 bar graph will not appear on the display for that dive (Fig. 26), or subsequent dives, unless FO2 is set for a numerical value (21 to 50%).

Setting FO2 for a Nitrox Dive

You can program the XTC-100 for nitrogen-oxygen (nitrox) mixtures of 21% to 50% oxygen (O2) before each nitrox dive. If FO2 is set at a value of 21%, the unit will remain set as a '21% nitrox computer' for subsequent nitrox dives until FO2 is set to a higher value, or until it automatically turns off and is reactivated. Once FO2 is set to a value 'greater than 21%' to match the nitrox mix being used for that nitrox dive, the FO2 value displayed during the FO2 Mode that appears 10 minutes after that dive will be 50% (Fig. 27).

FO2 must be reset for each repetitive nitrox dive, or the value will automatically be 50 and the dives will be calculated based on 50% O2 for oxygen calculations and 21% O2 (79% nitrogen) for nitrogen calculations. Note that if you surface for greater than 10 minutes during a dive, a subsequent decent will be considered a new dive and the FO2 value must be reentered.

Once a dive is made with the XTC-100 set as a nitrox computer (FO2 set for a numerical value), the unit cannot be programmed to operate as an 'Air' computer until 24 hours after the last dive. 'Air' will not be displayed as an option in the FO2 Mode. However, you can set FO2 for 21% for use with air.
WARNING: This procedure must be performed prior to each and every nitrox dive, even if the percentage of oxygen in the nitrox mixtures used remains the same.

To set (enter) a numerical value for the percentage of oxygen (FO2) in your nitrox mix:

- depress and hold the Select (Lower) button when the FO2 Mode screen appears after Surface Mode.
- the percentage displayed will advance 1 (%) per second from 21 to 50 (%), then display 'Air' again.
- when the proper value of FO2 is displayed, release the Select (Lower) button.

When FO2 is set for a value other than Air, the XTC-100 will advance to the PO2 display (Fig. 28) that shows the Maximum Depth that can be achieved with an oxygen partial pressure of 1.60 ATA for the FO2 value set. If FO2 is set for Air, the PO2 display will not appear.

- The XTC-100 then advances to a Plan Mode referred to as the Pre Dive Planning Sequence™.
PRE DIVE PLANNING SEQUENCE™

Oceanic strongly recommends that you review the Pre Dive Planning Sequence (PDPS) prior to every dive to help you plan your dive as required to avoid exceeding no decompression or oxygen exposure limits. This is especially important for repetitive dives, when the Pre Dive Planning Sequence (Fig. 29) will indicate for you the no decompression bottom times that are available to you on your next dive, based on any residual nitrogen or oxygen accumulation (whichever is in control) following your last dive and surface interval.

⚠️ WARNING: The Pre Dive Planning Sequence predicts only no decompression times for subsequent dives. Depending on cylinder size, breathing gas consumption, and oxygen accumulation you may have less time available than indicated because of breathing gas quantity or other limitations.

When on the surface, the XTC-100 displays the Surface Mode for several seconds, then the FO2 screen, then the PO2 screen, then it scrolls through the Pre Dive Planning Sequence, displaying a sequence of depths from 30 to 160 feet (9 to 48 meters) in 10 foot (3 meter) increments. With each depth display, you will see either 'predicted' no decompression limits based upon your previous dive profiles (if calculated to be nitrogen controlled), or 'predicted' oxygen tolerance limits based upon either a single dive oxygen dose or your 24 hour
accumulation of oxygen (if calculated to be oxygen controlled).

No decompression times are only displayed for depths where there is at least 3 minutes of dive time available at the depth, taking into account a descent rate of 120 feet (36 meters) per minute. Depths greater than the maximum depth that can be achieved with a partial pressure of oxygen (PO2) of 1.60 ATA will not be displayed.

After scrolling once through depth and dive times available, the XTC-100 will automatically return to the Surface Mode, then show the FO2 screen, the PO2 Max Depth screen, and repeat the Pre Dive Planning Sequence. This repetitive sequence of displays will continue for the first 12 hours after surfacing from a dive. The no decompression limits for a 'clean' dive (no dives in the previous 12 hours) are provided in the Reference section.

Prior to a Repetitive Nitrox Dive

If the segments of the Tissue Loading Bar Graph are displayed during the Pre Dive Planning Sequence (Fig 30), that next dive is calculated to be controlled by nitrogen loading.

If the segments of the O2 bar graph are displayed (Fig. 31), that next dive is calculated to be controlled by oxygen loading.
The XTC-100 will store oxygen accumulation for up to 12 dives conducted during a 24 hour period. In the event that the maximum limit for oxygen loading has been exceeded for that day (24 hour period), all of the segments of the O2 bar graph will be displayed (Fig. 32). Depth and Time displays will not appear until the O2 bar graph recedes into the green (normal) zone (i.e., your daily oxygen dosage decreases an amount equivalent to the amount accumulated during the latest dive completed).

⚠️ WARNING: The XTC-100 must be manually activated and be in an operating mode prior to start of a dive. The unit will not activate automatically by immersion in water. Also, FO2 must be set prior to commencing each nitrox dive.

NO DECOMPRESSION DIVE MODE

The XTC-100 will enter the No Decompression Dive Mode (Fig. 33) when you descend deeper than 5 feet (1.5 meters). Information displayed includes Current Depth, Elapsed Dive Time (and Elapsed Dive Time icon), Dive Time Remaining (and No Decompression Dive Mode icon), and Maximum Depth for that dive (and Max Depth icon). The Graphic Diver Interface is also active, displaying nitrogen loading (Tissue Loading Bar Graph), ascent rate (Variable Ascent Rate Indicator), and oxygen loading (O2 bar graph) if FO2 was set for a value other than 'Air'.

Fig. 32 - O2 Limit Exceeded

Fig. 33 - No Decompression Dive Mode
To activate the Oceanglo™ backlight during a dive, press the Select (Lower) button. The display will be illuminated as long as the button is depressed plus 10 seconds after it is released.

To display water Temperature during a dive, momentarily press the Advance (Upper) button. Temperature will be displayed in place of current depth for 3 seconds (Fig. 34).

As your depth and elapsed dive time increase, the Tissue Loading Bar Graph will fill with segments (green toward red) to represent the absorption of nitrogen, and if FO2 was set for a value other than Air, the O2 bar graph will fill with segments (green toward red) to represent oxygen accumulation for that dive or 24 hour period, whichever amount is greater. Segments of the Variable Ascent Rate Indicator bar graph fill (and recede) as your ascent rate increases (and decreases) throughout the dive.

⚠️ WARNING: Every effort should be made to keep each of the bar graphs in the green throughout your dives to reduce your risk of exposure to decompression sickness and oxygen toxicity.

Be a - RESPONSIBLE DIVER at all times.
DECOMPRESSION DIVE MODE

The XTC-100 provides information that will help you avoid, or if necessary, manage emergency decompression.

The Decompression Dive Mode activates when the Tissue Loading Bar Graph enters the red zone (Fig. 35a).

VIOLATION MODES

The XTC-100 enters Violation Modes when it is unable to predict an ascent procedure.

GAUGE MODE

If the XTC-100 enters a Permanent Violation Mode, it will not display information relating to nitrogen or oxygen loading for the remainder of that dive or for subsequent dives conducted during the 24 hour period after surfacing.

⚠️ NOTE: Decompression Dive Mode, Violation Modes, and Gauge Mode are described in the Handling the Extremes section.

Fig. 35 - Entering Into Decompression Mode
ASCENDING TO THE SURFACE

While ascending to shallower depths, the segments that have filled up the Tissue Loading Bar Graph will begin to recede (Fig. 36), offering a graphic representation of your multilevel diving capability.

If you entered Decompression Mode, you must not complete your ascent until the Tissue Loading Bar Graph is at least inside the yellow Caution Zone.

If you have not entered Decompression Mode, a safety stop made between 15-20 feet (5-6.5 meters) is strongly recommended as a standard procedure before completing your ascent.

You should make every effort to complete all of your ascents with the Tissue Loading Bar Graph inside of the green zone.

While you cannot provide a guarantee against the occurrence of decompression sickness, you may choose your own personal zone of caution based upon your individual age, physique, excessive weight, training, experience, etc. to reduce the statistical risk.

The Variable Ascent Rate Indicator™ shows how fast you are ascending. When you exceed the maximum recommended ascent rate of 60 feet per minute (18 meters per minute), the bar graph will enter the red (Too Fast)
zone (Fig. 37). You will be alerted by all segments of the bar graph flashing and by an audible alarm. The warnings will stop when your ascent rate is slowed.

**ALTITUDE DIVING**

The mathematical model within the XTC-100 accounts for the reduced No Decompression dive time available at higher elevations based on NOAA (National Oceanic and Atmospheric Administration) guidelines. When diving in high altitude lakes or rivers from 2,000 to 14,000 feet (610 to 4,268 meters), the XTC-100 will adjust automatically, providing corrected depth and reduced No Decompression and Oxygen Exposure times.

Also, when above 2,000 feet (610 meters), depth calibration is automatically changed to read in feet of freshwater rather than feet of seawater. The XTC-100 will not activate above 14,000 feet (4,268 meters).

More about altitude diving is presented in the Reference section.

⚠ **NOTE:** If activated above 14,000 feet (4,268 meters), the XTC-100 will perform a diagnostic check followed by immediate shutdown.
WARNING: Until it has shut itself off, you must not use the XTC-100 at a different altitude than the altitude where it was originally activated. Doing so will result in an error equal to the difference in barometric pressure, and possibly a false dive mode with erroneous data.

Be a - RESPONSIBLE DIVER at all times.
POST DIVE SURFACE MODE

When you ascend to 3 feet (1 meter) or shallower, the XTC-100 will enter Surface Mode (Fig. 38) and begin counting your surface interval.

TRANSITION PERIOD

The first 10 minutes is, in affect, a transition period during which time:

- The Surface Mode icon will appear (flashing).
- The 'number' of that dive appears in the upper portion of the screen.
- The main time display starts counting Surface Interval (colon flashing).
- The Tissue Loading Bar Graph indicates current nitrogen loading.
- The O2 bar graph will indicate current oxygen loading, if that was a nitrox dive (FO2 set for a numeric value).

If you descend during the 10 minute transition period, time underwater will be considered a continuation of that dive. The time at the surface (if less than 10 minutes) will not be added asElapsed Dive Time.

During the 10 minute transition period, the Log Mode is accessible by depressing the Select (Lower) button and will display that dive’s data, however, the data will not be stored in the unit’s memory until the 10 minute transition period is completed. Date, Time, and air Temperature (Fig. 39) can be viewed for
3 seconds by depressing the Advance (Upper) button.

Once 10 minutes have elapsed, the **Surface Mode** icon and Surface Interval time display colon will stop flashing (Fig. 40) indicating that the dive and transition period are completed, and a subsequent descent will be considered a new dive. Other information will continue to be displayed as described above and you will have full access to other modes.

**TIME TO FLY**

The Time To Fly counter begins counting down 10 minutes after the last dive has ended (after the 10 minute transition period) to assist you with deciding when enough surface time has elapsed to fly (or travel to higher elevations). It appears for several seconds after the Surface Mode (prior to the FO2 Mode, PO2 Mode, and Pre Dive Planning Sequence) displaying the word 'FLY' with a countdown (Fig. 41) that starts at 23:50 (hr:min) and counts down to 12:00 (hr:min).

⚠ **WARNING:** During the final 12 hours, the XTC-100 is in a countdown mode only. A descent below 5 feet (1.5 meters) will automatically place the unit into Dive Mode.

Twelve hours after the last dive, the Surface Mode, FO2 Mode, PO2 Mode, and Pre Dive Planning Sequence will no longer be displayed, and the **Fly Mode**
will be displayed continuously, giving a final 12 hour countdown from 11:59 to 0:00 (Fig. 42).

After a surface interval of 12 hours, you may choose to fly (or travel to higher elevations), provided that your dive profile(s) did not enter decompression. If your diving involved decompression or a repetitive, multi day profile, it is strongly recommended that you wait a full 24 hours after your last dive to add a greater degree of protection.

As you should be aware from your own training, the longer you wait to fly (or travel to higher elevations) after diving, the more you will reduce your exposure to decompression sickness.

More About Flying After Diving and DAN's guidelines is presented in the Reference section.

**FO2 MODE**

If the XTC-100 was set for FO2 of 'Air' or 21% prior to the dive, it will stay set for 'Air' or 21%, respectively, unless you reset it to a higher numeric value prior to the next dive. If it was set for a numeric value of FO2 greater than 21% (22 to 50%) prior to the dive, the FO2 value displayed after the dive will be 50% (Fig. 43) and subsequent dives will be calculated based on 50% oxygen for oxygen calculations and 21% oxygen (79% nitrogen) for nitrogen calcula-
tions, unless you set FO2 for another value.

Remember!! You must set the FO2 to match the specific nitrox mix for each nitrox dive, even if the percentage of oxygen in the mix is the same as the previous.

PO2 MAX DEPTH DISPLAY

If FO2 was set for a value other than 'Air' (a numerical value), the XTC-100 will advance to the PO2 Display screen (Fig. 44) that shows the Maximum Depth that can be achieved with an oxygen partial pressure of 1.60 ATA for the FO2 value set. If FO2 was set for 'Air', the PO2 screen will not appear. The XTC-100 then advances to the Pre Dive Planning Sequence.

PRE DIVE PLANNING SEQUENCE™

The Pre Dive Planning Sequence will now show 'adjusted' No Decompression Limits based on residual nitrogen calculated to be remaining from the previous dives. Calculated dive times and the maximum allowed depth displayed will increase as the real time surface interval increases after completion of a dive. The Pre Dive Planning Sequence will only scroll to the maximum depth allowed by the nitrogen or oxygen limit, whichever is in control. The respective bar graph will be displayed to indicate which is in control.
DIVE LOG MODE

Information from your 12 latest dives is stored in the log for viewing, giving you the opportunity to record data in your log book before it is eventually overwritten by subsequent data.

After 12 dives are accumulated, each subsequent dive will overwrite the oldest dive that exists in the log (i.e., the XTC-100 will add the most recent dive while deleting the oldest). Dive log information will not be lost when batteries are removed from the XTC-100. Factory service will delete the log information.

Dives are displayed in a reverse sequence that starts with the dive most recently recorded back to the oldest of the 12 dives stored. Thus, your most recent dive will always be the first shown in the sequence. Each dive has three log screens. The first displays the date and time started, the second displays Nitrogen related data, and the third displays Oxygen related data. If FO2 was set for 'Air' for that dive, the O2 screen will only display 'FO2' and 'Air'.

To access the Dive Log Mode and the first screen of the most recent dive:

- depress the Select (Lower) button once. The first screen (Fig. 45) will appear displaying the Log Mode icon, and the Date and Time of Day that the dive started.
To view the second screen (Nitrogen Log) for that dive:

- depress the Advance (Upper) button once. The Nitrogen Log screen (Fig. 46) will display:
  - Log Mode icon
  - Dive number (if you did 2 dives that day, 2 would appear first)
  - Maximum Depth reached for the dive (and icon)
  - Elapsed Dive Time (and icon)
  - Surface Interval prior to that dive (and icon).
  - Variable Ascent Rate Indicator - showing the maximum ascent rate at any time during the dive.
  - Tissue Loading Bar Graph - showing tissue nitrogen loading at the end of the dive. It will also flash the segment representing the maximum nitrogen loading that occurred during the dive.

To view the third screen (Oxygen Log) for that dive:

- depress the Advance (Upper) button once. The Oxygen Log screen (Fig. 47) will display:
  - Log Mode icon
  - FO2 value - set for that dive (and 'FO2' symbol)
  - Maximum PO2 level - reached during that dive (and 'PO2' symbol)
  - O2 bar graph - showing oxygen loading at the time you surfaced.
• press the Select (Lower) button once to view the previous dive's log.

To exit Log Mode and return to the Surface Mode, press the Select (Lower) button repeatedly to proceed through the remaining recorded dives.

EXTERNAL ACCESS MODE (EA)

Using special infrared linking hardware and a unique PC software program, data from your dives can be downloaded (copied) from your XTC-100 into an IBM compatible personal computer program running on a Windows® 3.x or Windows® 95 operating system. Instructions for performing the interface and download are provided with the hardware and software package that is available separately at your Authorized Oceanic Dealer. Ask for OceanLog™ for XTC-100. The OceanLog™ program provides dive profile data and nitrogen and oxygen loading throughout the dive.

The External Access Mode (Fig. 48) is entered by depressing both control buttons simultaneously for 4 seconds. The letters EA appear, flashing. As described in the User Manual for the OceanLog package, this is when the download operation commences. When the download connection is made, all segments of the LCD will appear on the display. If you are not downloading data to the PC program, the XTC-100 will revert to the Surface Mode after 45 seconds.
HANDLING THE EXTREMES
EMERGENCY DECOMPRESSION

There are few legitimate excuses for making unplanned Decompression dives, and the consequences of this type of diving can be severe. Decompression diving requires special training and support. The XTC-100 is intended for use by recreational divers not engaged in intentional decompression diving. Decompression features are provided only for emergency situations. By entering decompression, you automatically impose a "ceiling" above you which you cannot immediately ascend beyond, denying you free access to the surface.

Professional military and commercial divers plan ahead for this situation by ensuring that they have complete surface support, including a redundant breathing gas supply for emergencies. They also navigate very carefully throughout their dive to ensure that they begin and complete their ascent while maintaining contact with a rope or a line to the surface. This is necessary for making a well controlled ascent. The XTC-100 is not intended for use by military or commercial divers.

By making an unplanned Decompression dive without the necessary preparation and training, you will have placed yourself in an unnecessarily dangerous situation. Consider also, that one mistake can quickly be compounded by several others.
The XTC-100 is a sophisticated instrument designed with capabilities that go beyond the range of recreational diving with compressed air. It should not be considered, however, that these built-in capabilities provide any implied approval or consent from Oceanic for individuals to exceed the defined limits of recreational dive profiles, as agreed on by all internationally recognized training agencies.

Decompression diving should therefore be strictly avoided. The XTC-100 is designed to help you by providing a complete representation of how close you are to entering decompression. In the event that you do inadvertently enter decompression, as indicated by the large red segment of the Tissue Loading Bar Graph (Fig. 49), the XTC-100 can provide you with limited information to help you ascend to the surface.

Oceanic strongly recommends that you avoid entering decompression, and reminds you that decompression diving requires special training.

The XTC-100 cannot provide you with a backup breathing gas supply for emergencies or the ascent line you will need, and decompression diving greatly increases your risk of decompression sickness.
WARNING: Existing data for making planned decompression dives is extremely limited, and virtually nonexistent for repetitive decompression diving. You must therefore avoid decompression diving and allow a surface interval of at least 24 hours before reentering the water in the event a dive requiring emergency decompression is made.

If you’re not careful, it is possible to enter decompression rapidly, whether at deep depths or during repetitive dives.

Upon entering decompression, you must immediately change the focus of your dive to getting safely back to the surface. Upon seeing the Tissue Loading Bar Graph enter the red decompression (DECO) zone, you should immediately begin a safe controlled ascent, 60 feet (18 meters) per minute or slower, to a depth slightly deeper than or equal to the required ceiling stop depth indicated (Fig. 50a) and decompress for the time indicated (Fig. 50b).

If you continue the dive at a depth more than a few feet (1 meter) deeper than the required ceiling stop depth, your exposure to decompression sickness will increase, and you will risk entering violation mode and losing the information needed to ascend properly.

Fig. 50 - Decompression Stop
TISSUE LOADING BAR GRAPH CAUTION ZONE (C.Z.)

Your dive training taught you not to get too close to the No Decompression Limits. The yellow Caution Zone (C.Z.) of the Tissue Loading Bar Graph (Fig. 51) offers you a convenient way to consistently monitor how close you are coming to the No Decompression Limit. Oceanic suggests always leaving the water with the Tissue Loading Bar Graph in the green No Decompression (NO DECO) zone.

⚠️ WARNING: Never exit the water with the Tissue Loading Bar Graph in the red decompression (DECO) zone. Doing so greatly increases the risk of decompression sickness, and may result in injury or death.

Body metabolism varies from person to person, and even from day to day. If you are feeling slightly less than 100%, or you are in less than perfect physical shape, use the yellow Caution (C.Z.) Zone as a visual reference to place a wider margin of protection between you and the No Decompression Limit.

Fig. 51 - Approaching No Decompression Limit
DECOMPRESSION DIVE MODE

The XTC-100 will help you to avoid and manage decompression.

⚠️ WARNING: Oceanic recommends the application of responsible diving practices and does not recommend decompression diving, or diving deeper than 130 feet (39 m), as these practices will greatly increase your risk of decompression sickness.

Decompression Dive Mode (Fig. 52) activates when the theoretical no decompression time/depth limits are exceeded causing the Tissue Loading Bar Graph to pass the yellow caution (C.Z.) zone and enter the red decompression (DECO) zone. Also, the audible alarm will emit a double beep to alert you.

Information displayed includes current Depth, current decompression ceiling Stop Depth and Time (and ceiling stop icon), and Total Ascent Time that includes stop times required at all ceilings and vertical ascent time calculated at 60 feet (18 meters) per minute. The ceiling bar of the Decompression Mode icon will flash continuously. The O2 bar graph (if a nitrox dive) and Variable Ascent Rate Indicator will continue to represent their respective information.

Once every 15 seconds an Alternate Display will appear for 3 seconds (Fig. 53). Maximum Depth (and icon) and Elapsed Dive Time (and icon) will replace required Stop Depth/Time.
The amount of decompression credit time that you receive is dependent on depth, with slightly less credit given the deeper you are. Still, you must never ascend shallower than your decompression ceiling. Doing so will greatly increase your risk of decompression sickness, and place the XTC-100 into a Conditional Violation Mode described later. When coping with surge and swells, it may be difficult to stay at an exact depth. You should stay slightly deeper (Fig. 54a) than the required stop depth indicated until the next shallower stop depth appears. Then, you can ascend to, but not shallower than, that indicated ceiling stop depth.

Once you have performed the required decompression, the XTC-100 will switch to the No Decompression Dive Mode, allowing additional time underwater. Though more time is theoretically available, it is strongly recommended that you spend the remainder of the dive continuing to decompress at, or slightly deeper than, 10 feet (3 meters). This will let the Tissue Loading Bar Graph recede further into the yellow caution (C.Z.) zone or green no decompression (NO DECO) zone, helping you reduce your tissue nitrogen loading as much as possible.

⚠️ WARNING: If you exceed certain limits, the XTC-100 will not be able to tell you how to get safely back to the surface. These situations exceed tested limits and can result in loss of some XTC-100 functions for 24 hours after the dive in which a violation occurred.
VIOLATION MODES

The Violation Modes that the XTC-100 can enter, depending on the situation, are termed Conditional, Delayed, and Immediate. Gauge Mode and Permanent Violation Mode are continuations of these Violation Modes. It is important to understand each different Violation Mode and how to carry out emergency procedures in the event you enter one.

CONDITIONAL VIOLATION MODE

The XTC-100 will alert you to the possibility of losing decompression management abilities by entering the Conditional Violation Mode. If properly handled, the Conditional Violation Mode can assist you in getting back to the surface and allow continued use of the XTC-100.

The XTC-100 will enter the Conditional Violation Mode if you ascend shallower (Fig. 55a) than the required decompression ceiling indicated by the Required Stop Depth displayed. A momentary rise above the ceiling, such as with a surge or swell, could cause this to happen. Therefore you should stay slightly deeper than the exact ceiling stop depth, watching the XTC-100 closely when managing decompression. The audible alarm will beep once per second and the Total Ascent Time display will flash until you descend below the required decompression ceiling stop depth.
If you descend below the required decompression ceiling before 5 minutes have elapsed, the XTC-100 will continue to function as if no violation had occurred. In this case, no off-gassing credit will be given, and for each minute above the ceiling 1½ minutes of penalty time is added to decompression stop time.

The added penalty decompression time will have to be 'worked off' first, before obtaining off-gassing credit. Once the penalty time is worked-off, and off-gassing credit begins, required decompression stop depths and time will decrease toward zero and the Tissue Loading Bar Graph will recede into the caution (C.Z.) zone. Upon entry into the caution (C.Z.) zone, the XTC-100 will revert to the No Decompression Dive Mode.

If you stay above (shallower than) the required ceiling stop depth for more than 5 minutes, the Tissue Loading bar Graph segments and Total Ascent Time will flash and the XTC-100 will enter the Delayed Violation Mode.

**DELAYED VIOLATION MODE**

Three conditions will cause the XTC-100 to enter the Delayed Violation Mode:

1. You remain above the required Decompression Ceiling Stop Depth for more than 5 minutes (Fig. 56).
As previously described, you would then need to follow the ceiling stop depths and times toward the surface as the Tissue Loading Bar Graph recedes into the caution (C.Z.) zone. Upon reaching zero Total Ascent Time Remaining, you should continue decompressing until the bar graph segments are well inside of the **green** no decompression (NO DECO) zone.

The audible alarm will beep once per second until you descend below the required ceiling stop depth.

2. **Your necessary decompression requires a ceiling stop depth between 60 feet (18 meters) and 70 feet (21 meters).**

In this situation the Audible Alarm will emit One Long Beep and the Tissue Loading Bar Graph will flash (Fig. 57). Total Ascent Time needed to get back to the surface will still be displayed numerically in the Main Time display.

To get back to the surface, you must safely ascend to just deeper than 60 feet (18 meters) staying as close to 60 feet (18 meters) as possible without causing the Total Ascent Time display to flash. After waiting until the required ceiling stop depth display indicates 50 FT/15 M, you can ascend to, but no shallower than 50 feet (15 meters) and continue decompressing. As the required ceiling stop depth display indicates 40 FT/12 M, 30 ft/9 M, 20 FT/6 M, and then 10 FT/3 M, you can ascend to, but no shallower than the required ceiling stop depth indicated.
After Total Ascent Time reaches zero and the Tissue Loading Bar Graph recedes into the yellow caution (C.Z.) zone, you can surface. However, to add a greater margin of protection, Oceanic strongly recommends that you wait until the segments of the Tissue Loading Bar Graph are well within the ‘green’ no decompression (NO DECO) zone, unless a low tank pressure condition requires you to surface.


△ NOTE: Oceanic reminds you that the XTC-100 is intended for no decompression diving at depths within 130 feet (39 meters). Expanded capabilities of the XTC-100 are provided as safety features to assist you with emergency situations.

Upon descending deeper than 330 feet (99.5 meters), the Tissue Loading Bar Graph will flash and the Current Depth and Maximum Depth displays will only indicate 3 dashes (Fig. 58) until ascent is made to a depth shallower than 330 feet (99.5 meters), at which time the Current Depth display will be restored. Max Depth will continue to display 3 dashes. Exceeding the maximum operating depth is described in more detail on page 58 of this section.

Five minutes after reaching the surface from a dive in which a Delayed Violation occurred, the XTC-100 will enter an Immediate Violation Mode and revert to Gauge Mode for 24 hours.
IMMEDIATE VIOLATION MODE

WARNING: The XTC-100 enters Immediate Violation Mode when a situation totally exceeds its capacity to predict an ascent procedure. These dives represent gross excursions into decompression that are beyond the boundaries and spirit of the XTC-100 design. If you are following these dive profiles, Oceanic advises you not use an XTC-100 dive computer.

Immediate Violation Mode occurs when a Decompression Stop depth much greater than 60FT (18M) is required. This situation would be preceded by entering the Delayed Violation Mode previously described.

The XTC-100 cannot accurately calculate decompression times for stop depths much greater than 60FT (18M) and offers no indication of how much time spent underwater would result in the need for greater than a 60 FT (18 M) decompression stop depth.

If a ceiling much greater than 60FT (18M) is required, an Immediate Violation Mode (Fig. 59) will be entered, and you will be alerted by a Single Long Beep of the audible alarm. This situation would be preceded by entering Delayed Violation Mode, previously described. The XTC-100 would then operate with limited functions (Current Depth, Max Depth, and Elapsed Dive Time) in Gauge Mode during the remainder of that dive and for 24 hours after surfacing.
GAUGE MODE

The XTC-100 will operate with limited functions in Gauge Mode during the 24 hours after a dive in which a Permanent Violation occurred. Underwater, the Gauge Mode is a continuation of the Immediate Violation Mode that turns the XTC-100 into a digital instrument without any decompression or oxygen monitoring functions. Dive Time Remaining will not be displayed and the Tissue Loading Bar Graph and O2 Bar Graph will flash as a warning of this condition (Fig. 60).

After surfacing, Gauge Mode (Fig. 61) does not provide the FO2, Pre Dive Planning Sequence, or Time to Fly features. The countdown timer that appears 10 minutes after the dive at 23:50 (hr:min) does not represent Time to Fly. It is only provided to inform you of the time remaining before normal XTC-100 operation can resume with full features and functions.

PERMANENT VIOLATION

Entering the Immediate Violation Mode, then Gauge Mode, will result in loss of all XTC-100 decompression and oxygen monitoring functions for 24 hours after that dive. This condition is considered a Permanent Violation.
EXCEEDING MAXIMUM OPERATING DEPTH

Although the XTC-100 will withstand the pressures found at 330 feet (99.5 meters), the depth that you can still use all of its features could be much shallower.

⚠️ WARNING: The maximum recommended sport diving depth limit is 130 feet (39 meters). Any deeper dive should be avoided. Special training, equipment, and support are necessary for this type of diving. Oceanic does not advocate diving to depths below 130 feet (39 meters), the basis for which is purely theoretical.

The maximum depth the XTC-100 will display all of its features is 330 feet (99.5 meters). Upon exceeding 330 feet (99.5 meters), the Tissue Loading Bar Graph will flash, and the Depth and Maximum Depth displays will only indicate three dashes “---” signifying that you are 'out of range' (Fig. 62). The numeric display for Current Depth will not reappear until you ascend shallower than 330 feet (99.5 meters). You will also enter the Delayed Violation Mode. For the remainder of that dive, and in the log for that dive, only three dashes will be displayed as the value for Maximum Depth.

Fig. 62 - Out of Range (depth >330 ft/99.5 m)
OXYGEN EXPOSURE

There are few legitimate excuses for exceeding the maximum limits for exposure to oxygen, and the consequences of CNS (Central Nervous System) oxygen toxicity can be severe, resulting in Gran Mal convulsions and drowning. Diving with enriched nitrogen-oxygen (nitrox) mixtures requires special training and certification.

⚠️ WARNING: The oxygen features of the XTC-100 are intended for use only by recreational divers trained for nitrox diving by an instructor certified by a recognized training agency to teach diving with nitrox. The XTC-100 is not intended for use by military or commercial divers.

By making a nitrox dive without the necessary training, preparation, and equipment, you will have placed yourself in an unnecessarily dangerous situation. The XTC-100 is a sophisticated instrument designed with capabilities that go beyond the range of recreational diving with compressed air. It should not be considered, however, that these built-in capabilities provide any implied approval or consent from Oceanic for individuals to exceed the defined limits of oxygen exposure, as agreed on by all internationally recognized nitrox training agencies. Nitrox diving should therefore be strictly controlled.

Be a RESPONSIBLE DIVER at all times.
PARTIAL PRESSURE OF OXYGEN

As depth increases during the dive, the partial pressure of oxygen increases. As you approach the depth limit for the FO2 value set before the dive, the XTC-100 will alert you and display the PO2 level while you reduce oxygen partial pressure according to your training.

High PO2 Dive Mode

The XTC-100 enters the High PO2 Dive Mode when partial pressure of oxygen becomes equal to or greater than 1.40 ATA. The audible alarm will emit a double beep, and the current PO2 value and the symbol 'PO2' will appear in the center portion of the display in place of Max Depth and Elapsed Dive Time (Fig. 63). They will remain on display until partial pressure of oxygen decreases below a value of 1.40 ATA.

If partial pressure of oxygen continues to increase, the value of PO2 displayed will increase from 1.40 toward a value of 5.00 ATA in increments of .01 ATA. When PO2 reaches the maximum allowed limit of 1.60 ATA, the audible alarm continuously emits one beep per second, and the large red segment of the O2 bar graph, the PO2 value, and PO2 symbol will flash continuously as a warning (Fig. 64) until the level of PO2 decreases below 1.60 ATA.

In the event that you enter High PO2 Dive Mode, you must immediately focus
on reducing the partial pressure of oxygen by slowly ascending to a shallower depth at a safe rate in accordance with your nitrox training. If you continue the dive at your current depth, or descend deeper, your exposure to CNS oxygen toxicity will increase.

OXYGEN ACCUMULATION

It is also important that you understand that conducting repetitive dives using enriched nitrogen-oxygen (nitrox) mixtures can lead to oxygen buildup, reducing oxygen tolerance while increasing the risk of pulmonary oxygen toxicity. The O2 bar graph (Fig. 65) provides a visual representation of oxygen accumulation for either that dive or 24 hour period, whichever is greater.

Oceanic strongly recommends that you avoid exceeding oxygen exposure limits, and reminds you that nitrox diving requires special training and understanding of the effects of oxygen toxicity.

⚠️ WARNING: In the event that you exceed the maximum per dive allowable oxygen exposure (dose), it is recommended that you allow a surface interval of at least 2 hours before reentering the water. If you exceed the maximum 24 hour period allowable oxygen exposure (dose), you must allow a surface interval of at least 24 hours before reentering the water.
HIGH OXYGEN ACCUMULATION

Your nitrox dive training taught you not to get too close to the oxygen tolerance limits. The O2 Bar Graph provides you with a convenient graphic representation of your oxygen accumulation, displaying either oxygen accumulated during that dive or during your repetitive dives conducted during that 24 hour period, whichever of the two is greater at that time.

As your accumulation increases, the segments will fill the O2 Bar Graph. When it enters the yellow caution (C.Z.) zone (Fig. 66), the audible alarm will emit a double beep as a warning. If accumulation exceeds the limit of oxygen tolerance (Oxygen Dive Time Remaining is 0:00), the audible alarm will emit a continuous one beep per second, and the O2 Bar Graph will enter the red danger zone and the full bar graph will flash as a warning (Fig. 67).

You must immediately focus on making a safe controlled ascent to the surface to prevent further exposure. As your accumulation (dose) decreases during your surface interval, the O2 bar graph will gradually recede into the yellow caution (C.Z.) zone and green (normal) zone. Oceanic suggests always keeping the O2 Bar Graph in the green zone.

WARNING: DO NOT allow the O2 Bar Graph to enter the (Danger) zone. Doing so greatly increases the risk of gen toxicity, and may result in serious injury or death.
Body metabolism varies from person to person, and even from day to day. If you are feeling less than 100%, or you are in less than perfect physical shape, use the caution (C.Z.) zone as a visual reference to place a wider margin of protection between you and the limits of oxygen tolerance.

UNEXPECTED LOSS OF DISPLAYED INFORMATION

While No Decompression diving, if you find that any major piece of equipment is not functioning correctly, you must abort the dive immediately and surface slowly in a controlled manner. If your XTC-100 stops working for any reason, it is important that you have anticipated this possibility and are prepared for it. This is an important reason to avoid pushing the No Decompression and Oxygen Tolerance Limits, and a critical reason to avoid entering decompression.

Regardless of your diving habits, Oceanic advises you to dive with additional backup instrumentation that can provide the data necessary to properly surface if and when your primary instruments fail.

As with any other piece of equipment, unforeseen things can happen. By preparing ahead of time, you can spare yourself a great deal of frustration and disappointment. If you dive in situations where your trip would be ruined or your safety would be jeopardized by losing the use of your
XTC-100, an analog or digital backup system or use of standard air (or nitrox) tables is highly recommended.

A FINAL WORD OF CAUTION

Although the XTC-100 represents the latest in user friendly dive computer technology, it cannot force you to understand how to use it. Before diving with the XTC-100, be sure you thoroughly understand its functions and displays. Contact your local Authorized Oceanic Dealer if you have a question. Above all remember, technology is not a replacement for training, experience, and common sense!

Be a Responsible Diver at all times!!
CARE AND CLEANING

The XTC-100 is a sensitive electronic instrument. Although it has been designed to withstand the rigors of diving, it still must be handled carefully to protect from shock, excessive heat, chemical attack, and tampering.

The XTC-100 housing is made of an impact resistant resin that is extremely shock resistant but is susceptible to chemical attack and scratches. If the transparent face becomes scratched, Oceanic can replace it, although small scratches will naturally disappear underwater.

For even more convenience and additional protection against scratches, place a transparent Oceanic Instrument Lens Protector on the gauge face. These and other special accessories can be purchased from your Authorized Oceanic Dealer for the XTC-100 and for many other instruments.

⚠️ CAUTION: Never spray aerosols of any kind on, or near, the XTC-100. The propellants may chemically attack the plastic.

BEFORE THE DIVE

Be careful not to place the XTC-100 in an unsupervised, unprotected location where it might be damaged. Many dive computers (and dive trips) are ruined...
due to carelessly tossed weight belts or cylinders. Keep your XTC-100 protected from undue shock.

AFTER THE DIVE

Soak and rinse the XTC-100 in fresh water following each dive, and check the low pressure sensor guard cap to ensure that it is free of any debris or obstructions. If possible, use lukewarm water to dissolve any salt crystals. Salt deposits can also be dissolved using a slightly acidic vinegar/water bath. After removal from a fresh water bath, place the XTC-100 under gently running water and towel dry before storing. Transport your XTC-100 cool, dry, and protected.

⚠️ WARNING: Never, under any circumstances, poke any object through any slots or holes of the XTC-100. Doing so may damage the depth sensor, possibly resulting in erroneous depth and/or dive time remaining displays.

ANNUAL INSPECTIONS AND SERVICE

Your XTC-100 should be inspected annually by an Authorized Oceanic Dealer who will perform a factory prescribed function check and inspection for damage or wear. To keep the 2 year limited warranty in effect, this inspection must be completed one year after purchase (+/- 30 days). Oceanic recom-
mends that you continue to have this inspection performed every year to ensure your XTC-100 is working properly. A convenient service record is provided in the back of this owner's guide. This should be signed by the service technician after each annual inspection or factory service. The costs of annual inspections are not covered under the terms of the 2 year limited warranty.

⚠️ WARNING: If you are in doubt about the accuracy of your XTC-100 depth readings, DO NOT attempt to dive with it until it has been inspected by Oceanic Customer Service.

It is possible to damage the XTC-100 depth sensor if it is not pressure tested properly. Please take heed of the following warning:

⚠️ WARNING: Never pressure test the XTC-100 in an air environment. Doing so may damage the depth sensor; possibly resulting in erroneous depth or time readings.

HOW TO OBTAIN SERVICE

Take your XTC-100 to an Authorized Oceanic Dealer.

To return your XTC-100 to Oceanic Customer Service:

• Package it using a protective cushioning material.
• Include a legible note stating specific reason for return, your name, ad-
dress, daytime phone number, serial number, and a copy of your original sales receipt. (Authorized Oceanic Dealers should use an Oceanic Product Return Form).

- Send prepaid and insured to the nearest Oceanic service facility.
- If you have any questions regarding XTC-100 service, call Oceanic Customer Service at (510) 562-0500, 8 to 5 PST.

⚠️ NOTE: Be sure to record all dives in the Log. Dive log data will be erased whenever your XTC-100 receives factory service.

**BATTERY LIFE**

The XTC-100 battery consumption rate varies throughout periods of operation, which begin upon activation and continue for 24 hours after surfacing from a dive. The exact number of dives, or hours of operation, that you will obtain with a battery is subject to variables such as, the number of dives conducted during an operational period, and the manufacturer, model and age of the battery actually used.

Tests and calculations indicate that a new Tadiran® lithium battery will maintain unit operation for approximately 100 dives or one year, whichever comes first. Yearly replacement is recommended.
NOTE: The disposable battery supplied with the XTC-100 dive computer is not covered by the XTC-100 limited 2 year warranty.

LOW BATTERY CONDITION

You will be alerted to a Low Battery condition by a flashing Battery icon located above the Main Time display (Fig. 68a). The XTC-100 will only activate if there is enough battery power to complete one full day of diving. Consider too that remaining battery life can be suddenly shortened by a change in temperature.

Oceanic strongly advises that you replace the battery and DO NOT attempt to dive with the XTC-100 when the Battery icon remains on display, and that you replace the battery with new prior to any multi-day dive trip that will include a profile of repetitive dives, such as multiple days on a liveaboard vessel.

WARNING: Nitrogen and Oxygen calculations will be erased when the batteries are replaced between repetitive dives. A date and time settings will have to be reset.
BATTERY REMOVAL

⚠️ WARNING: The following procedure must be closely adhered to. Damage due to improper battery replacement is not covered by the XTC-100 limited 2 year warranty.

Examine the case back to find the battery hatch (Fig. 69):
- Note: The battery compartment should only be opened in a dry and clean environment. Use care to prevent the entrance of moisture or dust.
- Remove the four screws that secure the battery hatch to the housing.
- Lift the hatch up and out of the housing.
- Remove the battery hatch o-ring and inspect it for any signs of deterioration or deformity. DO NOT use tools to remove the o-ring.
- O-ring replacement is highly recommended to ensure proper sealing.
- Closely check the battery hatch and the housing for any signs of damage which might impair proper sealing. If found, return your XTC-100 to your Authorized Oceanic Dealer, and DO NOT attempt to use it until it has received factory service.
- Closely examine the inside of the battery compartment for any signs of corrosion indicating entrance of moisture into the unit. If found, return your XTC-100 to an Authorized Oceanic Dealer, and DO NOT use it until it has received service.
INSPECTION

- Activate the XTC-100 and watch carefully as it performs a full diagnostic and battery check, and enters Surface Mode, followed by the FO2 screen and Pre Dive Planning Sequence.
- Observe the LCD display to ensure it is consistently clear and sharp in contrast throughout the screen. If there are any portions of the display missing or appearing dim, return your XTC-100 to an Authorized Oceanic Dealer to receive factory service.

SUMMARY

Care and maintenance is simple and easy, and with a small investment of your time you will keep your XTC-100 in top condition for many years of diving enjoyment.
REFERENCE
MORE ABOUT FLYING AFTER DIVING

In 1990 the Undersea and Hyperbaric Medical Society (UHMS) published a set of guidelines aimed at minimizing the possibility of decompression sickness due to flying too soon after diving. The UHMS suggests* divers using standard air cylinders and exhibiting no symptoms of decompression sickness wait 24 hours after their last dive to fly in aircraft with cabin pressures up to 8,000 feet (2,440 meters).

* excerpted from “The UHMS Flying After Diving Workshop”

The two exceptions to this recommendation are:
- If a diver had less than 2 hours total accumulated dive time in the last 48 hours, then a 12 hour surface interval before flying is recommended.
- Following any dive that required a decompression stop, flying should be delayed for at least 24 hours, and if possible, for 48 hours.

Since the 1990 UHMS guidelines were introduced, data from the Diver’s Alert Network (DAN) was introduced that resulted in DAN’s position** that “A minimum surface interval of only 12 hours would be required in order to be reasonably assured a diver will remain symptom free upon ascent to altitude in a commercial jet airliner (altitude up to 8,000 feet/2,440 meters). Divers who plan to make daily, multiple dives for several days, or make dives that require decompression stops, should take special precautions and wait for an extended surface interval beyond 12 hours before flight”.

** excerpted from “DAN’s Current Position on Recreational Flying After Diving”
Both the UHMS and DAN agree that “There can never be a flying after diving rule that is guaranteed to prevent decompression sickness completely. Rather, there can be a guideline that represents the best estimate for a conservative . . . surface interval for the vast majority of divers. There will always be an occasional diver whose physiological makeup or special diving circumstances will result in the bends”.

To reduce the risk of developing decompression sickness after a single no decompression dive, current guidelines suggest waiting 12 hours prior to exposure to atmospheric pressures equivalent to 1,000 feet (330 meters) above sea level, or greater. When repetitive dives are conducted during the same day, or period of days, it is suggested that the interval be increased to a minimum of 24 hours. **Note that land travel to higher elevations after diving must also be considered as an exposure to altitude.**

**MORE ABOUT ALTITUDE DIVING**

⚠️ **WARNING:** Diving at high altitude requires special knowledge of the variations imposed upon divers, their activities, and their equipment by the decrease in atmospheric pressures. Oceanic recommends completion of a specialized Altitude training course by a recognized training agency prior to diving in high altitude lakes or rivers.
Atmospheric pressure decreases as altitude increases above sea level. Weather systems and ambient temperature also affect barometric pressures. Consequently, depth reading instruments that do not compensate for the decrease in pressure indicate depth readings shallower than the depth they are actually at.

The XTC-100 automatically compensates for decreased ambient pressure when activated at high altitudes up to 14,000 feet (4,267 meters). Its program contains a high altitude algorithm that reduces no decompression and oxygen exposure limits to add a larger zone of caution.

Whenever the XTC-100 is manually activated at altitudes higher than 2,000 feet (610 meters), it will automatically recalibrate itself to measure depth in feet of fresh water rather than feet of sea water. Therefore, when returning to lower altitudes, diving should not be conducted until the XTC-100 automatically clears of any residual nitrogen and oxygen loading and resets to operate at the new altitude.

⚠️ WARNING: Altitude compensation provided by the XTC-100 takes place when the unit is activated. DO NOT dive at any different altitude until the XTC-100 shuts off. It will recalibrate automatically when reactivated at the new altitude.
MORE ABOUT NITROX DIVING

WARNING: Diving with enriched nitrogen-oxygen (nitrox) mixtures requires special knowledge of the variations imposed upon divers, their activities, and their equipment by the increased percentage of oxygen. Oceanic recommends completion of a specialized Nitrox training course by a recognized training agency prior to diving with any enriched nitrogen-oxygen (nitrox) mixtures.

Both central nervous system (CNS) oxygen toxicity and pulmonary oxygen toxicity were taken into consideration when the current maximum limits (Fig. 72) for exposure to oxygen were published by NOAA in the October 1991 NOAA Diving Manual. Although CNS oxygen toxicity is considered the primary constraint for higher levels of PO2, there are circumstances in which pulmonary oxygen toxicity can limit exposures.

CNS oxygen toxicity is not considered likely at PO2 levels below 1.30 ATA. It is however related to diver's work level. Performing strenuous tasks could cause the symptoms of oxygen poisoning to occur at PO2 levels lower than they normally would appear during casual recreational diving.

The nitrox features of the XTC-100 are intended for use only by recreational divers trained for nitrox diving by an instructor certified
by a recognized training agency to teach diving with nitrox. The XTC-100 is not intended for use by military or commercial divers.

WARNING: In the event that you exceed the maximum limit of per dive allowable oxygen exposure (dose), it is recommended that you allow a surface interval of at least 2 hours before reentering the water. If you exceed the maximum limit of 24 hour period allowable oxygen exposure (dose), you should allow a surface interval of at least 24 hours before reentering the water.

MULTIPLE TISSUE TRACKING

The XTC-100 tracks twelve tissue compartments with halftimes ranging from 5 to 480 minutes. The Tissue Loading Bar Graph always displays the controlling compartment that is the only one important at that time. Think of the Tissue Loading Bar Graph as twelve separate transparent displays laid on top of one another (Fig. 73). The tissue compartment that has filled up fastest is the only one the viewer can see from the top.

At any particular point, one tissue compartment may be absorbing nitrogen, while another that was previously higher may be off-gassing. Figure 74 illustrates the point at which one compartment “hands over” control to another
Display Seen by the Diver

No. of Segments  | Tissue Half-Time
---|---
13 | 20
12 | 40
11 | 80
10 | 120
9  | 160
etc. | etc.

Fig. 73 - Think of the 12 tissues as overlaid clear displays showing only the maximum bar graph reading reached.

Display Seen by the Diver

No. of Segments  | Tissue Half-Time
---|---
12 | 20
12 | 40

Fig. 74 - As one tissue recedes, another increases with the maximum reading being the only one displayed.
compartment at a different depth. This feature of the Decompression Model is the basis of multilevel diving, one of the most important contributions the XTC-100 offers you. Take advantage of this feature and make all of your dives multilevel dives.

**NO DECOMPRESSION LIMITS**

Note how the No Decompression Limits for the XTC-100 are contrasted with the U.S. Navy limits (Fig. 75). For most depths, the XTC-100 provides somewhat less no decompression times than the U.S. Navy Tables. However, while the No Decompression Limits may be less, you will receive greatly increased allowable bottom times as you take advantage of the multilevel dive capabilities offered by the XTC-100. Notice also that the XTC-100 Pre Dive Planning Sequence does not scroll past 160 feet (48 meters).

**REPEATED DECOMPRESSION DIVING**

The decompression model used by the XTC-100 is based on the no decompression multilevel repetitive dive schedules successfully tested by Dr. Ray Rogers and Dr. Michael Powell. These tests did not include repetitive dives deeper than 90 feet (27 meters) or compression dives. Due to the present unavailability of stat
data, XTC-100 decompression predictions are based on U.S. Navy theory. Therefore, pay special attention to the following warnings.

⚠️ WARNING: Oceanic advocates responsible diving practices and does not recommend decompression diving, or diving below 130 feet (39 meters). The decompression capabilities of the XTC-100 are intended strictly for emergency use. Decompression diving is inherently hazardous and greatly increases your risk of decompression sickness - even when performed according to the computer's calculations. In the event that you must make an emergency decompression dive, you must not make another dive for at least 24 hours.

⚠️ WARNING: Using the XTC-100, just as using the U.S. Navy (or other) No Decompression Tables, is no guarantee of avoiding decompression sickness, i.e. "the bends."

CONCLUSION

The XTC-100 is an informational tool whose entire worth depends on understanding all of its features and functions, and using it correctly. Learn how to use it and use it wisely. Have fun with the XTC-100, and thank you for being a responsible diver!
SPECIFICATIONS

NO DECOMPRESSION MODEL

Basis:
• Modified Haldanean Algorithm
• 12 tissue compartments

Data Base:
• Diving Science and Technology (DSAT) - Rogers/Powell

Performance:
• Tissue compartment halftimes (in mins.) Spencer's "M" values
  5, 10, 20, 40, 80, 120, 160, 200, 240, 320, 400, 480
• Reciprocal subsurface elimination
• 60 minute surface credit control for compartments faster than 60 minutes
• Tissue compartments tracked up to 24 hours after last dive

Decompression Capabilities:
• Decompression stop ceilings at 10, 20, 30, 40, 50, & 60 feet
  (3, 6, 9, 12, 15, & 18 meters)

Altitude Algorithm:
• Based on NOAA tables

Oxygen Tolerance Limits:
• Based on NOAA tables

OPERATIONAL MODES

• Activation/Diagnostic
• Surface
• FO2 Set Point
• PO2 Max Depth
• Pre Dive Planning Sequence
• Set -
  • Unit (imperial / metric)
  • Time (hour, minute, am/pm)
  • Date (month, day, year)
  • Depth Alarm Set Point
• No Decompression Dive
• Decompression Dive
• Alternate Decompression Dive
• Violation (conditional, delayed, & immediate)
• Gauge
• High PO2 Level
• High Oxygen Accumulation
• Temperature (underwater)
• Temperature/Date/Time (surface)
• Dive Log (nitrogen & oxygen)
• Time to Fly
• EA (External Access)
SPECIFICATIONS (continued)

DISPLAY RANGE/RESOLUTION

Numeric Displays:
- Dive Number
  - Range: 0 - 9
- Depth
  - Range: 0 - 330 ft (0 - 99.5 m)
- Maximum Depth
  - Range: 330 ft (99.5 m)
- FO2 Set Point
  - Range: 21 - 50 %
- PO2 Value
  - Range: 1.40 - 5.00 ATA
- Dive Time Remaining
  - Range: 0 - 9 hr. 59 min.
- Total Ascent Time
  - Range: 0 - 9 hr. 59 min.
- Decompression Stop Time
  - Range: 0 - 99 min.
- Elapsed Dive Time
  - Range: 0 - 1 hr. 59 min.
- Surface Time
  - Range: 0 - 11 hr. 59 min.
- Dive Log Surface Interval
  - Range: 0 - 11 hr. 59 min.
- Time to Fly
  - Range: 23 hr. 50 min. - 0°
  - Resolution: 1 min.
  - (*) starting 10 min. after the dive

Variable Ascent Rate Indicator (VARI):
- Normal zone (green) segments: 0
  - feet/min.: 0 - 20
  - meters/min.: 0 - 6
- Caution zone (yellow) segments: 1
  - feet/min.: 21 - 30
  - meters/min.: 6.5 - 9
- Too Fast zone (red flashing) segments: 5
  - feet/min.: 61 +
  - meters/min.: 18.5 +

Special Displays:
- Diagnostic Display
  - Occurrence: Activation
- Out of Range
  - Occurrence: >330 feet (>99.5 meters)
- Gauge Mode Countdown Timer
  - Occurrence: 12 - 24 hours (after violation)

OPERATIONAL PERFORMANCE

Function:
- Depth: ± 1% of full scale
- Timers: 1 second per day

Dive Counter:
- Displays Dives #1 - #9, then '0' for #10 (continues #1 to #9)
- Resets to Dive #1, upon diving (after a 12 hour surface time)

Dive Log Mode:
- Stores 12 most recent dives in memory for viewing
- After 12 dives, adds 13th dive in memory and deletes the first dive
- Each nitrox dive displays a Nitrogen & Oxygen Log screen
SPECIFICATIONS (continued)

OPERATIONAL PERFORMANCE (continued)

Altitude:
• Operational from sea level to 14,000 feet (4,267 meters) elevation
• Recalibration of depth readings from 'feet of sea water' to 'feet of fresh water' when higher than 2,000 feet (610 meters) elevation

Power
• Batteries 1 - 3.6 v, 1/2AA TADIRAN® Lithium, model TL-2150
• Shelf life Up to 10 years
• Replacement User replaceable (annual recommended)
• Life expectancy 100 dives, or 1 year, whichever comes first

Activation
• Manual (push button) - cannot be activated by water immersion
• Cannot be activated deeper than 4 feet (1.5 m)
• Cannot be activated at elevations higher than 14,000 feet (4,267 m)
• Needed before first dive, and after a 12 hour surface interval.
• Automatically shuts off if no dive is made within 120 minutes after initial activation. Reactivation required.
• Cannot be shut off manually.

Setting FO2
• Automatically set for 'Air' upon activation
• Remains set for Air unless an FO2 value is set
• Nitrox set points from 21 to 50 %
• If set for 21%, remains set for 21% until changed
• If set for > 21%, reverts to 50% 10 minutes after the dive
• Must be set to match the nitrox mix 'before' each nitrox dive

ACCESSORIES

Optional items available from your Authorized Oceanic Dealer:
• Battery Kit - includes 1 battery, 1 o-ring, silicon grease
• Lens Protector - adheres to lens face, prevents scratches
• OceanLog™ for XTC-100 - PC Download Package (hardware and software program)
RESPONSIBLE COMPUTER DIVING

Since the advent of dive computers, it is a common mistake to assume that the old traditional rules of diving no longer apply, but the truth is just the opposite. Before you dive using your XTC-100, keep these basic rules in mind:

- **Plan each dive, and dive your plan** - Your computer was not designed to make decisions for you, only to provide you with the information you need to make responsible decisions for yourself. This begins with a dive plan that will help you avoid a low air or decompression situation.
- **Do not plan any dive that exceeds your training or experience level.**
- **Inspect your computer before every dive** - If it shows any signs of damage or abnormal function, DO NOT dive with it until it has received factory service.
- **Make your deepest dive first** - When making repetitive dives, it is imperative to ensure that each consecutive dive is shallower than the one before. This will allow your body's slower tissues to continue out-gassing nitrogen.
- **Make the deepest part of your dive first, and gradually work your way to the surface using a “staircase” profile** - The ability to perform multilevel diving is one of the most important contributions of a dive computer, and you should take advantage of it. It will increase your bottom time and at the same time decrease your risk of decompression sickness.
- **Ascend slowly by following an ascent line whenever possible, or by ascending diagonally toward the surface** - Watch the Variable Ascent Rate Indicator closely while you ascend, and keep it in the green zone as much as possible.
- **Make a safety stop at 15-20 feet (4.5-6 m) at the end of every dive** - A safety stop of as little as 5 minutes has been shown to have a dramatic effect on the bubble formation in divers. **It's important. Don't forget it.**
GLOSSARY

The following are diving terms to become familiar with. Some apply specifically to the XTC-100.

Air Dive - A dive conducted using air (approximately 21% oxygen & 79% nitrogen) as the breathing gas.
Algorithm - A step-by-step mathematical formula designed to accomplish a particular result (i.e. Dive Time Remaining in the XTC-100).
Altitude Dive - A dive made at an elevation above sea level (2,000+ ft. / 610+ m.) where a different set of no decompression tables is used.
Ascent Rate - The speed that a diver ascends toward the surface.
Audible Alarm - A computer emitted tone that alerts the diver to potential danger.
C.Z. - Abbreviation for Caution Zone.
Caution Zone - The yellow sections of the Tissue Loading Bar Graph and O2 bar graph that gives a visual warning of a diver’s proximity to respective decompression or oxygen tolerance limits.
Ceiling - See decompression ceiling.
Clean Dive - A dive preceded by 24 hours of no diving activity.
CNS - Abbreviation for the Central Nervous System of the body.
Competitive Dive - A dive conducted for profit or prize.
Compartment - A term applied to the hypothetical modeling of nitrogen absorption in the tissues (more accurate than the term “tissue” because dive computer models have no direct relation to human tissues).
DCS - Abbreviation for decompression sickness, i.e., “the bends”.
DECO - Abbreviation for Decompression.
GLOSSARY (continued)

**Decompression Ceiling** - The shallowest depth a diver may reach upon ascent without risking decompression sickness.

**Decompression Stop** - The depth(s) at which a diver must pause during ascent to allow absorbed nitrogen to escape naturally from the tissues.

**Depth Sensor** - an electro-mechanical device that converts water pressure into an electrical signal, that is converted to a visual depth display.

**Diagnostic Mode** - The first display seen on dive computers after initial activation during which time a self-check for internal faults is performed.

**Display** - A visual readout of information.

**Dive Log Mode** - A computer display of previous dive information.

**Dive Time Remaining** - A display of the time before a diver must surface based on no-decompression status, or oxygen accumulation status.

**Elapsed Dive Time** - The total time spent underwater during a dive between 5 feet (1.5 meters) on initial descent to 3 feet (1 meter) on final ascent.

**FO2** - The fraction (percent / 100) of oxygen (O2) in the breathing gas mixture.

**Graphic Diver Interface** - A feature of Oceanic dive computers. Easily understandable color coded bar graphs that indicate diver status; green = normal, yellow = caution, red = danger.

**Icon** - a small pictorial representation of an operational mode

**LCD** - Abbreviation for liquid crystal display, an easily viewed low voltage display usually found on dive computers

**Maximum Depth** - The deepest depth attained during a dive.

**Mode** - A specific set of functions in a dive computer.
**Multiplexing Display** - A display on an instrument that alternates to show different information relating to separate events.

**Multi-level Dive** - A type of dive profile where the diver spends various times at different depths (opposite of a "Square Wave" dive profile).

**Nitrox** - A nitrogen-oxygen breathing gas mixture that contains a higher fraction of oxygen than air.

**Nitrox Dive** - A dive conducted using nitrox (22 to 50 % O2) as the breathing gas.

**No Deco** - Abbreviation for No Decompression.

**No Deco Time Remaining** - The amount of dive time remaining based on no-decompression status.

**No Decompression** - Any part of a dive where the diver can surface without requiring a decompression stop.

**O2 Bar Graph** - A visual representation of oxygen accumulation on a dive computer display.

**Oceanglo™** - An Oceanic name for an instrument backlight feature.

**OceanLog™** - An Oceanic name for a PC interface hardware/software package.


**Out of Range** - The point at which a dive computer can no longer supply correct dive information.

**Oxygen Tolerance** - Dose or exposure to the physiological affects of elevated levels of oxygen.

**Oxygen Toxicity** - The adverse physiological affects of exposure to elevated levels of oxygen.

**Partial Pressure** - The proportion of the total pressure contributed by a single gas in a mixture of gases.

**PDPS** - Abbreviation for Pre Dive Planning Sequence

**PO2** - Partial pressure of oxygen. The proportion of total pressure of a gas mixture contributed by oxygen.

**Pre Dive Planning Sequence** - A display of available dive times at 10 foot. (3 meter) intervals from 30 to 160 feet. (9 to 48 meters) used when dive planning.
Repetitive Dive - Any dive that takes place within 12 hours of a previous dive.
Safety Stop - A depth at which a diver may choose, but is not required, to pause during ascent to allow absorbed nitrogen to escape naturally from the tissues.
Square Wave Dive - A type of dive profile where the entire dive is spent at one depth between descent and ascent.
Tissue - See Compartmen.t.
Tissue Compartmen.t - See Compartmen.t.
Tissue Loading Bar Graph™ - A graphic display of simulated nitrogen absorption on Oceanic dive computers.
TLBG - Abbreviation for Tissue Loading Bar Graph.
Transducer - An electro-mechanical device in a dive computer that acts as a depth or pressure sensor.
Transition Period - The first 10 minutes of surface time after ascending above 3 feet (1 meter) from a dive.
VARI - Abbreviation for Variable Ascent Rate Indicator.
Variable Ascent Rate Indicator™ - A display on the XTC-100 that shows ascent rate as a bar graph alongside a color-coded indicator (part of the Graphic Diver Interface).
XTC-100 SERVICE RECORD

Serial Number ____________

Date of purchase ____________

Purchased from ____________

Below to be filled in by an Authorized Oceanic Dealer:

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<th>Date</th>
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