



## **COMBINED COURSE MANUAL**

### ***TDI Advanced Nitrox + Decompression Procedures + Advanced Wreck Diver***

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## 1. INTRODUCTION

This combined training program integrates three TDI courses into one structured and progressive curriculum:

- TDI Advanced Nitrox Diver
- TDI Decompression Procedures Diver
- TDI Advanced Wreck Diver

The objective of this program is to develop competent technical divers capable of:

- Using enriched air nitrox and oxygen mixtures
- Planning and executing staged decompression dives
- Conducting advanced wreck dives including penetration

All training must strictly follow TDI Standards and Procedures.

## 2. PREREQUISITES

Students must meet the highest prerequisite requirements of all combined courses:

- Minimum age: 18
- Certification:
- Advanced Diver (or equivalent)
- Nitrox Diver (or equivalent)
- Wreck Diver or Cavern Diver (for Advanced Wreck)
- Minimum logged dives:
- 50 dives recommended (due to wreck requirements)

Students must demonstrate:

- Good buoyancy control
- Situational awareness
- Comfort in open water diving environments

## 3. COURSE STRUCTURE

Total required dives:

- Advanced Nitrox + Decompression Procedures: 6 dives
- Advanced Wreck: 6 dives
- Credit allowed: 2 wreck dives

👉 Total required dives: 10

Recommended schedule:

- 5 days
- 2 dives per day

Minimum classroom or e-learning time:

- 6–8 hours (minimum standard requirement, extended as needed)

## 4. DEPTH LIMITS

Training dives must not exceed:

- 40 meters (Advanced Nitrox limit)
- 45 meters (Decompression Procedures limit)

👉 Operational maximum for this program: 45 meters

At least:

- 2 dives must exceed 30 meters (Decompression Procedures requirement)

## 5. EQUIPMENT REQUIREMENTS

Each student must use a fully redundant technical diving configuration.

### Minimum equipment:

#### Core Equipment

- Primary cylinder(s) (twinset or equivalent)
- Stage/decompression cylinders (as required)
- Two regulators per cylinder
- Submersible pressure gauges
- Dive computer (multi-gas capable)
- Depth and timing backup

#### Safety Equipment

- SMB / lift bag with reel
- Line cutting devices (minimum two)
- Backup mask
- Underwater slate

#### Wreck Equipment

- Primary light + backup light
- Primary reel + safety spool
- Long hose regulator configuration

#### Gas Equipment

- Oxygen analyzer
- Proper gas labeling

## 6. THEORY (COMBINED)

### 6.1 Physics

- Pressure and volume relationships
- Gas behavior under pressure
- Effects of depth on breathing gas

### 6.2 Physiology

- Oxygen toxicity (CNS / OTU)
- Hypoxia
- Nitrogen narcosis
- Gas absorption and elimination
- Carbon dioxide toxicity
- Stress and task loading

### 6.3 Decompression Theory

- Bubble formation
- No-decompression vs decompression diving
- Decompression models and concepts
- Safety stops vs mandatory stops

### 6.4 Gas Planning

- Best mix calculations
- Maximum operating depth (MOD)
- Gas consumption planning
- Oxygen exposure limits

### 6.5 Equipment Concepts

- Redundancy systems
- Stage/deco cylinder setup
- Gas switching procedures
- Reel and line systems

### 6.6 Wreck Diving Theory

- Overhead environment risks:
- Entanglement
- Disorientation
- Silt-out
- Guideline usage
- Penetration planning
- Emergency procedures

## **7. DIVE PLANNING**

Each dive must include:

- Gas planning (bottom + deco)
- Oxygen exposure calculation
- Nitrogen exposure limits
- Run time planning
- Contingency planning

Emergency scenarios must be considered:

- Lost gas
- Lost line
- Missed decompression
- Equipment failure

## **8. STANDARD PROCEDURES**

### 8.1 Pre-Dive

All dives must follow the START procedure:

- S-Drill (OOA + bubble check)
- Team check
- Air matching
- Route planning
- Tables / schedule

### 8.2 In-Water

Students must demonstrate:

- Neutral buoyancy
- Proper trim and propulsion
- Team awareness and communication
- Controlled ascent and descent

### 8.3 Gas Management

- Accurate gas tracking
- Safe gas switching procedures
- Verification with team

### 8.4 Decompression Procedures

- Controlled ascent rates
- Proper execution of stops
- Monitoring decompression status

### 8.5 Wreck Procedures

- Guideline deployment
- Continuous reference to line
- Controlled penetration and exit
- Zero visibility procedures

## 9. SKILL DEVELOPMENT

Students must demonstrate proficiency in:

### Core Skills

- Buoyancy and trim
- Team communication
- Air sharing (donor/receiver)

### Technical Skills

- Gas switching
- Stage handling
- Lift bag deployment

### Decompression Skills

- Maintaining stop depth
- Following run time
- Emergency deco procedures

### Wreck Skills

- Line laying and following
- Lost line drills
- Lost buddy drills
- Light failure procedures

## 10. DIVE PROGRAM

### Day 1 – Fundamentals + Nitrox

Dive 1: **dosen't need to be a deco dive!**

- Buoyancy / trim
- Equipment familiarization
- Nitrox analysis

Dive 2: **dosen't need to be a deco dive!**

- Gas planning
- Basic drills
- Team procedures

### Day 2 – Nitrox + Intro Deco

Dive 3:

- Stage cylinder use
- Gas switching

Dive 4:

- Introduction to decompression
- Controlled ascent

### **Day 3 – Decompression Procedures**

Dive 5 (>30m):

- Planned decompression dive
- Gas switching

Dive 6 (>30m):

- Full decompression profile
- Problem solving

### **Day 4 – Wreck Diving**

Dive 7:

- Guideline deployment
- Basic penetration

Dive 8:

- Lost line / zero visibility
- Exit procedures

### **Day 5 – Advanced Wreck + Integration**

Dive 9:

- Advanced penetration
- Gas management

Dive 10:

- Full scenario dive
- Combined skills execution

## **11. EMERGENCY PROCEDURES**

Students must demonstrate correct response to:

- Gas loss
- Free flow regulator
- Lost line
- Lost buddy
- Decompression emergency
- Equipment malfunction

## **12. GRADUATION REQUIREMENTS**

To successfully complete the program, students must:

- Complete all required dives
- Pass written examinations for all courses
- Demonstrate all required skills
- Show sound judgment and safe diving practices

## **13. CERTIFICATION**

Upon **successful completion**, students may receive following certifications:

- TDI Advanced Nitrox Diver • TDI Decompression Procedures Diver • TDI Advanced Wreck Diver

# Operational Boat Plan for Mixed Technical and Recreational Dive Days

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## 1. Objective

The purpose of this boat plan is to safely combine:

- Technical training dives (Advanced Nitrox / Decompression / Wreck)
- Recreational dives for non-technical divers

The structure ensures:

- Adequate surface intervals for technical divers
- Efficient use of boat time
- Safe separation of dive profiles and objectives

## 2. General Concept

Technical dives are conducted at the primary deep site (e.g. wreck), while recreational dives are conducted at a secondary, shallower site.

The boat alternates between these locations to:

- Allow sufficient surface interval for technical divers
- Maintain continuous activity for recreational divers

### 3. Dive Sequence Overview

#### Step 1 – Transit to Primary Site (1.5 hours) 8:15 am

- Boat departs and travels to the primary technical dive site
- Full briefing conducted during transit

#### Step 2 – Technical Dive 1 (Primary Site)

- Technical team conducts first dive
- Dive runtime based on training objectives (**not fixed to but max.60 minutes**)
- All decompression procedures must be executed according to plan

**Recreational divers performing the recreational Wreck dive. (not fixed to but max.60 minutes)**

#### Step 3 – Transit to Secondary Site ( max. 40 min)

- Boat relocates to a secondary dive site (e.g. reef)
- Transit time contributes to surface interval for technical divers

#### Step 4 – Recreational Dive

- Recreational divers conduct their dive (**not fixed to but max.60 minutes**)
- Technical divers remain on board, hydrate, monitor recovery, and prepare for next dive

#### Step 5 – Transit Back to Primary Site ( max. 40 min)

- Boat returns to the primary technical dive site
- Surface interval for technical divers is now extended to approximately 2–2.5 hours

#### Step 6 – Technical Dive 2 (Primary Site)

- Second technical dive is conducted (**not fixed to but max.60 minutes**)
- Dive profile may include:
- Decompression procedures
- Wreck penetration
- Gas switching
- Scenario-based training

#### Step 7 – Return to Base (1.5 hours) (estimated total travel time 8 hours) 4:30 pm

- Boat returns to the dive center
- Post-dive procedures and debriefing conducted

## 4. Surface Interval Management

The surface interval for technical divers is created by:

- Transit time between sites
- Recreational dive duration
- Preparation time before the second dive

### Estimated surface interval:

👉 Approximately 2 to 2.5 hours

This duration is considered appropriate for:

- Recovery from the first dive
- Preparation for a second technical dive
- Safe repetitive dive planning within training limits

## 5. Key Operational Considerations

### 5.1 Dive Separation

- Technical and recreational dives must remain operationally separate
- No mixing of dive profiles or objectives

### 5.2 Gas Management

- All gases must be:
- Clearly labeled
- Analyzed before use
- Verified before each dive
- Adequate reserves must be available for:
- Primary dive
- Decompression
- Contingencies

### 5.3 Equipment Handling

- Technical equipment must be:
- Properly staged and secured
- Easily accessible during preparation
- Special attention required for:
- Stage/decompression cylinders
- Reels and lift bags
- Light systems

### 5.4 Dive Timing

- Dive runtimes are based on:
- Training requirements
- Gas planning
- Environmental conditions

- The commonly used 60-minute runtime serves as an operational guideline, not a fixed requirement

### 5.5 Safety Management

- Clear procedures must be established for:
- Entry and exit
- Diver tracking
- Emergency response
- The instructor must ensure:
- Continuous supervision of technical students
- Proper execution of all planned procedures

### 6. Advantages of This Boat Plan

- Efficient combination of different diver levels
- Optimized surface interval for technical diving
- Reduced operational downtime
- Improved overall dive day structure

### 7. Limitations

This boat plan depends on:

- Weather and sea conditions
- Travel time between sites
- Group size and experience level

**The instructor may modify the plan as required to maintain safety and compliance with training standards.**