Topside Decompression Monitor Enhancement (TA 09-05)

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NAVSEA Program Review - June 2011

Overview

- Component of Next Generation Diving System
- Provides real-time decompression guidance for surface supplied diving with oxygen decompression (surface or in-water)
- Uses the same algorithm as the Thalmann Algorithm Dive Planner (VVAL-18M)

Hardware

Consists of:

- 1 Panasonic Toughbook
- 1 Sensor cable breakout box
- 3 Umbilical cables
- 3 Honeywell pressure transducers
- 1 sensor verification box

TDM

Window

OPERATION ROSTER

Select

1: Repetitive Bench Testing;5/17/2011 3:0

Select Diver

Select All Active

Same RUC/UIC

Add Red | Add Green | Add Yellow

Remove Yellow Diver | Remove All

Red Diver

Diver Name	Fredrick, Clark
Reached Surface Time	18-May-11 10:42
Date/Time Clean	18-May-11 22:01
Repetitive Group Designator	I
Dive Start Time	18-May-11 12:15
Planned Depth	60
Residual Nitrogen Time	38
Dress	
Table	
Data Logger Type	TDM
Data Logger Version Number	1.0.5
Current Sensor Serial Number	35097

Green Diver

Diver Name	Murphy, Greg
Reached Surface Time	18-May-11 10:42
Date/Time Clean	18-May-11 21:59
Repetitive Group Designator	I
Dive Start Time	18-May-11 12:15
Planned Depth	70
Residual Nitrogen Time	32
Dress	
Table	
Data Logger Type	TDM
Data Logger Version Number	1.0.5
Current Sensor Serial Number	35098

Yellow Diver

Diver Name	MARTIN, DAVID
Reached Surface Time	18-May-11 10:42
Date/Time Clean	18-May-11 22:01
Repetitive Group Designator	I
Dive Start Time	18-May-11 12:15
Planned Depth	55
Residual Nitrogen Time	42
Dress	
Table	
Data Logger Type	TDM
Data Logger Version Number	1.0.5
Current Sensor Serial Number	35096

List of Dives

Name	DiverID	Leave Surface	Max Depth	D-Sequence	Color	Dive Time	End Presure Group
Fredrick, Clark	9001	5/18/2011 09:27:20	54	2	Red	75	I
MARTIN, DAVID	2779	5/18/2011 09:27:19	54	1	Yellow	75	I
Murphy, Greg	12345	5/18/2011 09:27:20	53	2	Green	75	I
Fredrick, Clark	9001	5/17/2011 15:03:18	45	1	Red	64	G
Murphy, Greg	12345	5/17/2011 15:03:18	45	1	Green	64	G

Close | Save All

Start Operation

Topside Decompression Monitor

Decompression Schedules

Current Time: 12:57:25

Diver	Fredrick, Clark			Murphy, Greg			MARTIN, DAVID		
Leave Bottom	Depth	Dive Time		Depth	Dive Time		Depth	Dive Time	
	33	42::08		33	42::08		33	42::08	
	Max D	no-D Time		Max D	no-D Time		Max D	no-D Time	
	58	107		58	111		58	106	
	Breathing Air			Breathing Air			Breathing Air		
	Air	IWO2D	SurD O2	Air	IWO2D	SurD O2	Air	IWO2D	SurD O2
10									
20									
30									
40									
50									
60									
TDT	1::07			1::06			1::07		
Rep Grp/ O2 Prds	L			L			L		
	Travel Rate	Water Temp	Deepest Stop	Travel Rate	Water Temp	Deepest Stop	Travel Rate	Water Temp	Deepest Stop
	0	80		0	78		0	77	

Close

Leave Bottom

Switch To Oxygen

Leave Bottom

Switch To Oxygen

Leave Bottom

Switch To Oxygen

FY 10 – 2Q FY11 Enhancements

Completed

- Support for NAVSEA request of a waiver to use decompression guidance of TDM
  - OPs, EPs, Testing (NEDU & YDT 17), & Training
- Hardware documentation
  - NEDU Technical Report 11-05 in Review

In Progress

- Support for NAVSEA waiver extension
- Database recovery and management functions
- Dive Planner launching
- SurDO_2 tracking

FY 11 – FY 12

- Integrate two version of TDM software into “Version 1”
  - version modified by contractor to providing upgrades
  - version modified to provide reliable function for field trial
- Priority is Transitioning “Version 1” of TDM to Fleet
- Update hardware of 4th prototype to match already updated systems
- Field test modifications to TDM

Transition To Fleet

- Finalize TDM Version 1
  - Finalize and Debug required features (1QFY12)
    - Launching Dive Planner
    - $SurDO_2$ dive tracking
    - Database backup and recovery
    - Sensor communication overrides
  - User manuals
  - VV&A documentation (3QFY12)

Problems / Concerns

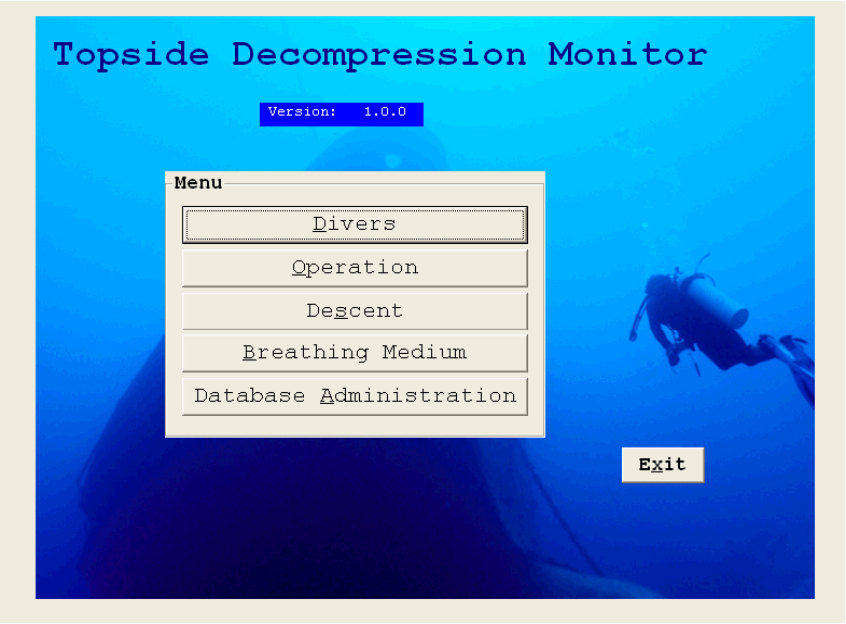
- DIACAP or Embedded IT Certification of TDM laptops need to be secured by NAVSEA for systems fielded outside of NEDU control
  - NEDU will support application
- “Version 1” needs to be transitioned to end users to verify the TDMs utility

Topside Decompression Monitor Enhancement

Background: The U. S. Navy Supervisor of Diving (00CM) is developing a Next Generation Dive System (NGDS) for surface supplied air diving to enhance the deployment capability, safety, and efficiency of U. S. Navy surface supplied air diving operations. Current methods prescribe diver decompression schedules based on depth and bottom time round-up conventions when using decompression tables. The TDM will monitor and record the actual depth-time profiles of up to three divers, and prescribe individual decompression schedules in real-time according to these profiles.

Work Effort Benefits: Navy developed prototype TDMs ready for commercialization complete with VV&A documentation package.

Status: ON GOING



Objectives:
The existing TDM systems will be updated with an enhanced user interface and expanded capabilities. These updates will permit archiving of recorded dive data in secure databases. System Verification, Validation, and Accreditation (VV&A) requirements will be met to support production and deployment of the systems for Fleet use.

Deliverable(s):
4 prototype TDM system
Users Guide
VV&A documentation

Goals/Milestones:

FY10-2QFY11 Completed
- Updated data base to allow for unit level operations
- Field tested unit-level TDM system in conjunction with the Operational Dive Data Collection program
- Generated Preliminary Operating Procedures

FY11 & FY12 Goals
- Complete and Field test “Version 1” of TDM system
- Finalize Operating Procedures
- Generate Users Manual
- Produce VV&A Documentation

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