

ASW/Strike Warfare Chair Edition

Captain's Call

This is my first opportunity to communicate to the Fleet since relieving RDML Lotring at Submarine Learning Center (SLC) in August 2006.

Fleet modernization and sustainment is a high priority in the Submarine Force. The pace of modernization creates a healthy challenge for executing the right training, at the right time, for the right Sailors.

To maintain the proper alignment of training resources with modern equipment the Submarine Learning Center plans to synchronize tactics, technology and training with Modernization Training Teams that are growing out of the Type Commanders current Tactical System Development and Integration Teams (TSDIT). The Modernization Training Teams (MTT) charter, in addition to conducting employment training with the Submarine crew, is to refresh Schoolhouse training and provide vertical knowledge transfer

back into the Apprentice and Journeyman courses at our Schoolhouses.

We have the right people ready to train your crew as well as contemporary training equipment at each of the Schoolhouses to enhance your crew's learning experience. Submarine Multi-Mission Team Trainer (SMMTT), Common Operational Advanced Employment Trainer (COAET), SPAN, Damage Control, Fire-fighting and the VESUB are some examples of the training equipment available to enhance teaching Sailors how to fight their ships.

Submarine Learning Center was established by Commander, Submarine Forces in 2003 to plan, program, budget and execute individual and fleet training for Undersea Warfare Enterprise mission readiness. The SLC develops, assigns, and coordinates future undersea warfare training and education solutions and allocates resources to execute undersea warfare training at Commander Submarine Force's fleet concentration areas.

There are seven Schoolhouses to support your operational training needs and monitor the Fleet's

overall training health. You have only to ask any one of the Schoolhouses and they will work with you to provide the best quality training. The Schoolhouses use TRE, ORSE INSURV, and STATS reports to report Fleet readiness and identify weak areas that a training solution can resolve and fix. Lessons learned are spread out between the schools to ensure the correct training solution is identified and given at the correct time.

Submarine On Board Training was pioneered by the Submarine Force to transfer knowledge from the shore-based experts to Sailors at sea long before distance learning and the Integrated Learning Environment came into the consciousness of the larger Navy training pro-

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grammers. This valuable knowledge transfer technique is now modifying the vast amount of training content to the Distance Learning and Integrated Learning Environment technical delivery standards.

The vast array of catalog products cover many subjects such as basic submarine qualifications, watch qualifications, individual equipment maintenance and skills assessment simulators.

All SOBT videos are being replaced by updated versions offered on CD. The original computer management instruction (CMI) products are currently being updated to a different electronic delivery system that is compatible to the Navy E-learning system. SOBT is dedicated in making the products work on every LAN system, and I have a LCDR on ready alert to address and fix any issue that is identified.

I have recently visited ALBUQUERQUE and ANNAPOLIS to gain a better insight into the challenges we have with training applications we deliver via SOBT products. There are healthy challenges for me to address to ensure the right people have easy access to the content placed on board the ships. As a short-term fix, I have placed the SOBT Director on alert to launch and help your LAN administrators provide the right technical solutions to your difficulties. The longer-term corrective actions will be to provide the right technical resources such that your access to the tremendous training material is made easier.

Training may be hard and good training harder, but it's worth ten-fold over poor training.

Commanding Officer
Submarine Learning Center



SS Strike Warfare Communications and Planning

DODUSNSLCSOBT_05101

This product was distributed in January 2007. This product contains an excellent description of strike warfare and related communications. It provides those unfamiliar with strike a solid foundation in the various aspects of submarine strike warfare. The course is divided into three main topics: communications, planning, and lessons learned. The communications topic covers a broad spectrum of information, including guidance publications and messages, required reports, common circuits, line reports, overlays, and even an introduction to TTWCS and post launch controls. The planning topic begins with a look at what's needed for deployment and then moves on to a detailed description of the strike timeline and the events that occur pre-strike, during the strike, and post-strike. The course ends with an overview of strike lessons learned. This product will be a great resource for FTs, ETs and junior officers in qualifications as well as continuing training for members of the strike party.

STRIKE

Flex Targeting and Advanced Strike Training

Last year, the first submarine was deployed with the latest and most capable land attack missile, the Block IV Tactical Tomahawk. The two-way communications capability of the Block IV along with its ability to be redirected in-flight, has added a new dimension to strike warfare. No longer can the ship relax after the successful launch of a salvo, they must continue to monitor the status of each Block IV missile and be ready

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to transmit orders to the missile at anytime. The radio room is also more involved than ever as new communication networks exist to support these features.

With new capabilities come new training challenges. Block IV post-launch training is possible in the SMMTT 2 attack center and on-board the submarine using the Tomahawk Strike Rehearsal Tool (TSRT), part of the PC-MDS software package. However, significant limitations exist as the missiles are launched from TTWCS not the fire control system. Additionally, setting up a successful strike using the TSRT takes a savvy operator and is complicated at best.

The SMMTT 3 addresses many of these limitations with built in Block IV support as well as an additional TTWCS and PC-MDS terminal, allowing the instructor to simulate both the Tasking Authority and another firing unit.

TTWCS also gives submarines the capability to plan entire missions, from point of launch to the target. Known as Launch Platform Mission Planning (LPMP), this capability exists for both Block III and Block IV missiles on BYG-1 platforms. Advanced strike scenarios now often include Block IV post-launch commands and ships must practice to master these advanced skills. The standardized scenarios available on NKO-S allow the Learning Centers to have a repeatable level of difficulty for various AOR using appropriate fleet guidance. Ask for them in your TSU request!

Strike Mission Chair Action Officer

ADCAP Post Launch Training

How does your ship train on ADCAP operation after launch? How well do your FT's and Officers know the capabilities and expected indications after the ADCAP is launched? An often overlooked training solution is APLT (ADCAP Post-Launch Trainer). APLT allows building critical skills using a laptop computer (see system requirements below) before using them in the team environment in the attack center or at sea. In conjunction with CBOT, it will emulate your fire control system.

APLT version 5.0 is now available to the fleet and it is more useful than ever. APLT uses the same algorithms as an actual ADCAP torpedo making it the best tool for answering any weapon employment questions. Version 5.0 has the newest weapons software and fire control systems available for your torpedo modeling use. This is the definitive trainer for modeling what a torpedo will do after fire.

There are many preprogrammed scenarios that come with APLT. These scenarios are an excellent method for training personnel onboard about features of the ADCAP torpedo. Instead of training by PowerPoint or just reading a page out of the employment manual, you can actually show a weapon launched on the fire control screen and conduct interactive training to one person or the whole division or wardroom.

In addition to the included scenarios, APLT allows you to make your own scenarios. Using APLT you can input environmental data, own ship data, and target data and create a real time, real world scenario to test the effectiveness of a weapon. This feature also provides the ability to teach and test for specific situations.

APLT is an underused tool that

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exists in the fleet today. It is the best and easiest source for torpedo data and training. If you want to know what your weapon will do after you shoot it, the answer is right in front of you on APLT.

APLT requires Microsoft Windows 95/NT or higher. APLT can be acquired via your squadron or by contacting the Naval Undersea Warfare Center at phone number (401)-832-4158 or their website at www.npt.nuwc.navy.mil.

NAVSUBSCOL Torpedo Lead Instructor

Common Basic Operator Trainer (CBOT)

Is CBOT part of your ship's training plan? In the continuum of knowledge, skills, and abilities, it is important to practice skills prior to conducting team training in the attack center and at sea. Officers and FT's have used CBOT at Submarine School during their initial training to supplement classroom instruction (knowledge) so they should be familiar with the functionality.

Is CBOT for you? CBOT can be used to simulate the MK 1, Block-1C, and BYG-1 fire control systems using Windows based operating systems. It was written to have an instructor station and up to 24 student stations. The instructor station is used to control each scenario and perform own ship maneuvers while the student stations can independently develop their solutions. CBOT also has functionality for Pre-Launch and Post-Launch screens for weapon control instruction/practice. Assistance in operating the system can be found at your local training center.

The newest version is CBOT Version 12.0/CBOT Version 12.0 Service Pack (SP) 2. This is also the version that is being integrated at the COAET trainer sites. Two integration and test efforts for the COAET trainer were successfully completed at NSWCCD (in April and June 06). CBOT

Version 12.X final delivery is expected at the end of September by NAVSEA engineers. The Norfolk, San Diego, Bangor, Pearl, and Kings Bay training locations all use CBOT to run their respective COAET and SPAN trainers. The minimum operating requirements are:

- Windows 2000:
- Pentium 4, 2.4 GHz or higher
- 512 MB RAM or higher

or

- Windows XP:
- Pentium 4, 3.2 GHz or higher
- 512 MB RAM or higher

Sonar Systems Project Manager

Mine Training

Is mine training part of your current training plan? How will you conduct that training if running a training minefield is not part of your scheduled operation? While running an exercise mine field is of great training value, it too has limitations. It is difficult to effectively evaluate the ship's performance. In the interim, the Submarine Learning Center is providing ships the opportunity to increase their mine warfare knowledge and skills with several training products.

Mine Warfare, like other mission areas, is made up of a combination of skills. For basic knowledge and background of mines and mine field penetrating tactics, Submarine Mine Warfare is an interactive SObT product which allows presents the basics in an easy to understand format. It also provides guidance on watch section setup and sensor employment.

For ship control, many training sites now have

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improved bottom contour simulations in the Ships Control Trainers (SCT) allowing for fly by altitude training with bottom interaction. This improvement will allow boats to gain and maintain those skills required for mine field penetration. Check with your local training center for this training upgrade.

In addition to the SCT upgrades, the new Submarine Multi-Mission Team Trainer (SMMTT-3) also provides improved training capability. Crews can run mine detection scenarios and hone their track determination tactics. Also, operators can utilize the trainer to focus on mine recognition, clutter vice mine determination and underwater mapping. SMMTT-3 is currently only available at training facilities in Bangor, Norfolk and Pearl Harbor, but Groton comes on line this fall and other sites follow to ensure this training opportunity is accessible to all boats.

Most mine field scenarios are conducted in exercise minefields for sensor development and evaluation. Rarely are boats provided the opportunity to use exercise minefields solely for proficiency. SLC training products can help prepare crews to conduct these exercises and actual real world scenarios.

MCM Mission Chair Action Officer

SMMTT V3 - Real World Simulation

The new Submarine Multi Mission Team Trainer (SMMTT V3) is a significant step forward in shore based training. This new trainer will have the latest build fire control and sonar software, which combined the latest in simulation technology, will provide a real world simulation for today's submarine crew.

APB 04 Sonar software is provided in the initial install which allows fleet units to train while employing multiple towed arrays and High Fre-

quency active. These new additions give the school house the capability of conducting Mine-field Penetration/Avoidance and advanced High Frequency Active training. Additionally, the trainer features a full suite for training in the Tactical Use of the Ocean Environment. This includes a full STDA capability that uses real world MODAS data. The Fire Control System is APB 05, and features enhanced training for Tomahawk to include TTWCS, and improved ADCAP simulation. Finally, the trainer provides full featured navigation training using VMS 7.1 for electronic navigation.

One of the most significant improvements is in the Periscope Simulation. The new program (PSIM) models the curvature of the earth and takes into account many environmental parameters. Moreover, the scope of contacts that can be simulated has been drastically increased, as well as the physical modeling of these contacts and overall resolution has been improved. The realism of sea state, weather, contacts, own ship masts and antennas, etc. dramatically improves the potential training value for the operators.

Finally, once training is complete, the trainer has a fully separate replay room (some with stadium seating) to accommodate the entire attack center party and training staff. Full replay capabilities and screen captures can be done throughout the training and be used to provide immediate feedback during the replay.

The SMMTT V3 trainer represents a significant improvement in the fidelity of the training provided to pipeline and waterfront units. The robustness and flexibility will ensure that all individuals passing through the school house will have dynamic and challenging real world scenarios to prepare them for operations throughout the world.

NAVSUBSCOL Operations Officer



Tactical ASW Training on NKO-S

Accessibility to NKO-S has allowed the submarine ASW training community to get more information to the fleet than ever before. It has also allowed us to place all of the training in a centralized location. The problem is that many submariners do not know that this wealth of information is available online. Everyone currently is able to access all lectures given during SOBC, SOAC and Pre Deployment Training. In addition a series of approved ASW scenarios exists for responsive training specifically tailored for a given AOR.

The simplest way to access the site is to log on to NKO-S at www.nko.smil.mil and click on NKO Library. The community is Submarine Learning with the following directory structure, SLC Learning Sites / Naval Submarine School, Groton / N-3; Advanced Training and Readiness / N33B – Tactics and then select the desired course. Lectures are available covering all major NWP's including Approach and Attack, Submarine Tracking, Evasion, and Periscope Employment.

Knowing where to find the training is only half the battle though. With limited training time, a ship can ensure the best possible use of their time in the attack center by selecting an appropriate approved standardized scenario and conducting some preliminary training before the attack center time. Standardized scenarios allow the boat to prepare and train prior to arrival. It also does not matter if you are in Groton or Pearl Harbor, the standardized scenario ensures more uniformity between learning centers. Successful training is ensured with a good request and focused goals in TSU that the learning center can use to tailor your training.

Other interesting places to look on NKO-S for

ASW related training include the DEVRON12, SCC, and SUB ASW folders. If you are having problems finding things on the SIPRNET in general use INTELINK GOOGLE at www.ismc.sgov.gov.

Having just returned from the ASW Improvement Program Conference, I am more aware fleet Navy ASW. The ASW Global Concept of Operations (located in the SUB ASW folder) recently has been published and clearly illustrates the overall plan for future ASW. This would make for good wardroom training.

In addition, new SOBT products are under development for Junior Officer ASW training and more updates to SUBSKILLSNET continue to be released, allowing for high fidelity custom training scenarios.

On Board Training With the AN/BQQ-10 Sonar System

The AN/BQQ-10 sonar system provides excellent in-port and at-sea Undersea Warfare (USW) training with use of the On Board Training (OBT) capability which can be used to inject contact data to all BQQ-10 processed arrays (with the exception of the hull array). While many ships are employing the OBT capability as part of their in-port and at-sea training regimens, many ships are not receiving optimal benefit from its use. Some lessons learned on the implementation of this training tool are summarized below.

Much like the shore based training facilities, OBT uses ocean models for simulation of contact signature and acoustic propagation. Actual in-situ environmental data is not used. Ocean simulations are labeled 1-16 (#9 is not used). Ocean models are summarized in Table 1. (See next page)



Table 1 - BQQ-10 On Board Training Ocean Profiles

Bottom Depth (ft)	Sound Speed Profile Description	Ocean
300	Positive	15
500	Negative	6
700	Isovelocity	1
800	Negative	13
3100	Isovelocity	16
5000	Sound Channel at 1000FT	3
9600	Sound Channel at 480FT	11
10000	Surface Duct with layer at 160FT over a Sound Channel at 4200FT	5
10000	Surface Duct with layer at 360FT over a Sound Channel at 1600FT	10
10000	Isovelocity	12
10000	Positive	14
13000	Surface Duct with layer at 1000FT over a Sound Channel at 3000FT	8
14000	Sound Channel at 400FT	7
15000	Isovelocity to 1600FT then Positive	2
15000	Surface Duct with layer at 360FT over a Sound Channel at 3500FT	4



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Choosing an ocean model that approximates either your current operating area (if at sea) or the LAT/LONG selected (if in port) is imperative for two primary reasons:

1) Sonar Tactical Decision Aid (STDA) predictions of arrival path and propagation loss, etc may not be correct. For example, if the model ocean does not support bottom bounce propagation, the bottom bounce "information" will never be displayed on the sensor displays regardless of what is predicted by STDA.

2) BQQ-10 and fire control bottom bounce range calculations and TMA algorithms rely upon the bottom depth for their calculations. BQQ-10 uses STDA to supply bottom depth, which is extracted from either current sounding information or the STDA environmental database based on the LAT/LONG. For example, while conducting OBT in port, by selecting ocean 10 (10,000FT bottom depth) and multiple arrival paths but using a LAT/LONG with a bottom depth of 6,000 FT all ranging tools in BQQ-10 and BYG-1 fire control solutions will not match the OBT target range, and many solutions will not "stack" at all.

In order to optimize the utility of the OBT and minimize problems described above, employ the following recommendations:

- Training in-port: Select a LAT/LONG that closely represents the ocean model environment that you intend to train on.
- Training at-sea: Select an ocean model that comes close to matching at-sea conditions (in particular- water depth).
- Always select multiple arrival paths.

OBT training should not be limited to use during battle stations and drills. An effective training program will utilize this training tool during every

watch. Additionally, when used in conjunction with SUBSKILLSNET, the training utility expands into the SUW and ISR missions.

NAVSUBSCOL Modernization Training Team

SOBT Catalog News

SOBT has been rapidly adding new and updated courseware to our catalog. At this time we have 594 products. Two hundred eighty two products were delivered to the Fleet – 51 new courses and 231 updated and revised courses.

Our Submarine Basic Qualification CDs are an excellent tool for your sailors to complete their qual cards. Easy to use and understand, our products can be used for individual or group based training. You can use all or part of the information in the CDs to enhance or highlight specific training to your crew.

You can view the complete catalog, and choose your courseware, or use the keyword search. You can search by boat type, (SSGN, SSN 21 e.g.) or by system (BSY-1 e.g.), or by a specific word. The shopping cart function allows for easy ordering—as soon as you click on the Submit button the order arrives at the admin office via email. One caveat—only 100 products can be ordered at one time.

The next phase of our catalog overhaul is the 8mm video series. All of the SOBT videos have been pulled from our catalog and should be removed from your inventory. SOBT plans to convert these videos into computer based instruction, again updating and revising the content.

If there is a topic or subject that you would like SOBT to develop, please use the POC information on the last page of this newsletter to contact our project managers directly. Your input steers the direction for future SOBT development.



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