NAVSEA Mini-Camps: Bringing Engineering Technical Training to the Fleet

Mr. Robert A. Scott
NSWCCD, SSES, Code 942
Philadelphia, PA
robert.a.scott4@navy.mil

Mr. Kevin Kennedy
AMSEC LLC
Virginia Beach, VA
kevin.kennedy3@hii-amsec.com

ABSTRACT

Ship's readiness is inherently linked to the readiness of systems and personnel operating, troubleshooting, and maintaining ships in the fleet. Having trained personnel with the right mix of skills and experience is critical for a ship to successfully perform its mission and to maintain a high state of operational and material readiness. Operating and maintaining today's ships in an efficient, safe, and cost-effective manner while staying within budget thresholds and optimal manning is challenging. Navy formal schools try to meet the ship's training needs, but with a wide range of equipment configurations in the fleet, there are times when an immediate Type Commander intervention is needed. Waterfront training, to include various hands-on training brought to the ship by waterfront Mini-Camp training, fills those interim training gaps. The In-Service Engineering Agent (ISEA) for a given system or equipment takes on the role as the technical trainer, and brings in-depth expertise to the waterfront with a unique combination of knowledge and experiences that span system design, acquisition and modernization, Research and Development (R&D), operation and maintenance planning, technical documentation, policy, and assessment knowledge.

In this paper, we discuss the Naval Surface Warfare Center, Carderock Division-Ship Systems Engineering Station (NSWCCD-SSES, referred to herein as SSES), Philadelphia's response to the fleet to fill skill-level challenges that arise to ensure shipboard and waterfront personnel maintain their technical understanding of the ship's systems. Making training available to sailors in their day to day work environment – onboard Navy ships – is essential for keeping skills current and ensuring fleet readiness. A Mini-Camps' primary focus is to provide tailored hands-on training utilizing actual shipboard equipment supported by classroom training. The ship becomes the classroom, and sailors get documented needs-based training tailored to the equipment and systems they operate and maintain every day. In a pilot program implemented for select systems, Mini-Camps are also being used to augment Afloat Training Group (ATG) training on ship scheduled basic phase events. Mini-Camps serve to provide input to standard training processes and programs such as formal training courses taught in Navy schoolhouses, Human Performance Readiness Reviews (HPRRs), and Navy Training System Plans (NTSPs) and provide feedback to Program Acquisition Resource Managers (PARMs), Technical Warrant Holders (TWHs), Ship Class Managers (SCMs), and both NAVSEA In-Service and Acquisition Program Offices.

ABOUT THE AUTHORS

Mr. Robert A. Scott is a Logistics Management Specialist (LMS) with the Naval Surface Warfare Center, Carderock Division-Ship Systems Engineering Station (NSWCCD-SSES) Philadelphia. Mr. Scott has 32 years of Navy experience and has managed projects working with various Navy organizations, other military services, and the Missile Defense Agency (MDA) regarding Manpower, Personnel, and Training (MP&T), Human Systems Integration (HSI), and Logistics. He has a Bachelor of Science degree in Vocational Education Studies from Southern Illinois University (SIU) and is a member of the Inter-Service/Industry, Training, Simulation, and Education conference committee for Policy, Standards, Management, and Acquisition (PSMA).

Mr. Kevin Kennedy is the Learning Standards Officer (LSO) for the Training and Media Solutions Division at AMSEC LLC, a wholly owned subsidiary of Huntington Ingalls Industries (HII). He has been with AMSEC for 22 years. He retired from the U.S. Navy as a Senior Chief Engineman and a NAVSEA-certified Diesel Engine Inspector with 22 years of service. His primary area of interest is with the analysis, design, and evaluation of training and non-training interventions that solve fleet performance (operation and maintenance) issues. He has a Master of Science degree in Instructional Systems Technology (IST) from Indiana University and a Bachelor of Science in Workforce Education and Development from Southern Illinois University.

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INTRODUCTION

Ship's readiness is inherently linked to the readiness of systems and the readiness of the personnel operating, troubleshooting, and maintaining those systems. To this end, it is essential for ships to have personnel with the right mix of skills and experience for a ship to successfully perform its mission. Operating and maintaining today's ships in an efficient, safe, and cost-effective manner in the face of manpower reductions, optimized manning, increased operation tempos (OPTEMPOs), and dwindling budgets, requires well-planned and integrated training solutions.

In light of current technological advances and reductions in manning levels, it is more crucial than ever that sailors be able to perform more tasks and respond quickly to a range of emergent situations. For example, as personnel costs soar, the Navy is designing future ships, such as the Littoral Combat Ship (LCS), to be more automated and manned by smaller crews. Within these crews, individual sailors need to be generalists and perform duties outside their traditional rank and rating. These sailors are required to possess broader knowledge and understanding (Sea Power, 2006); a requirement that is met through a well-organized and executed training plan. Navy formal schools try to meet the challenges, but there are times when other interventions are needed. More and more, organizations are turning to technology (e.g., Navy e-Learning) for hosting and delivering training to the fleet; allowing training to be delivered to large and diverse audiences at a very reasonable price. While technology-based training offers many significant advantages, it should only be one of many methods by which training is delivered to the end user. Ideally, the best training approach is to use a blended learning solution that combines multiple instructional strategies and methods to reach a diverse and varied student population. A blended learning solution means using a variety of learning strategies, media, or delivery methods in a course or learning event (Navy Knowledge Online (NKO), 2013), which may include Computer- and Web-based Training (CBT/WBT), instructor-led training (ILT), media-rich presentations, videos, simulations, trainers, laboratory exercises, job aids, on-the-job training (OJT), etc.

Properly trained personnel are capable of operating and maintaining systems and equipment in a safe and effective manner. Proper operation and maintenance of systems and equipment optimizes performance while minimizing premature equipment failure. Proficient sailors perform maintenance that minimizes equipment downtime, reduces rework, and contributes to controlling a ship or system's total ownership costs (TOC). However, recent trends, as indicated by Casualty Reports (CASREPs), Technical Assist Visit requests, declining Board of Inspection and Survey (INSURV) scores, Fleet and Naval Sea Systems Command Top Management and Attention (TMA) issues, and metrics from the Type Commander (TYCOM) Areas of Concern, indicate that Fleet readiness is declining. The Navy Inspector General (NAVINSGEN) Report to the Secretary of the Navy on CBT found that material readiness is declining and identified inadequate or insufficient maintenance training as a potential root cause (NAVINSGEN, 2009). The NAVINSGEN's report also found too much dependence on CBT, with insufficient on-the-job hands-on training by subject matter experts (SMEs) available to the sailor. To fill this need, waterfront training solutions can fill training gaps with ship and equipment-specific hands-on training brought to the ship. This paper will illustrate how one type of engineering technical training, the waterfront training Mini-Camp, is brought to the Fleet and developed and delivered by In-Service Engineering Agents (ISEAs) from NSWCCD-SSES. It further describes how the Mini-Camps play an important role as part of a blended learning solution that includes on-the-job hands-on training. The ISEA SME models correct practices and behaviors and monitors students to ensure they are able to replicate the correct procedures. Having the instructor SMEs who can ask and answer questions and share "sea stories" that relate to the application of a knowledge or skill helps reinforce the course content and is a proven means of providing effective, efficient and engaging instruction (Merrill et al, 2008).

THE PROBLEM

Over the past ten years there has been a trend to select and use technology-based training solutions (e.g., CBT and WBT) as the primary method (often the only method) to train fleet personnel. This has been done in conjunction with abandoning or neglecting many of the tried and proven methods that have been used successfully since World War II, which is when many tenants of hands-on military training began (Gagne, 1962). Since the advent of the Navy's Revolution in Training (RIT), there was an illusion that technology-based training solutions, (using laptop and notebook computers, tablets, mobile devices, cell phones, simulators, gaming and other high-tech electronic tools), are superior and more efficient than many of the tried and true instruction methods which can be traced back to the guilds of the middle ages, when crafts were handed down from master to apprentice.

There is no doubt that there are many advantages to be gained by leveraging technology to deliver training. Technologies like CBT and WBT – whether on a personal computer (PC), streamed from the World Wide Web, in a trainer in an immersive environment, or by a mobile device – are great training tools that many younger students are particularly adept at using. But these methods can, and often do, lack many essential characteristics needed to provide all the facets of valid and effective training; characteristics like student to instructor interaction, SME modeling, hands-on application, immediate feedback from an instructor, peer-to-peer interaction, etc. A side-by-side comparison of the advantages and disadvantages of CBT/WBT and the NAVSEA Mini-Camp and other forms of Waterfront training is provided in Table 1. This table is not meant to be all-inclusive, nor would all of the advantages and disadvantages be agreed upon by all training professionals. What is needed today is a holistic solution that blends the best of all learning modalities into a blended learning solution (See Figure 1).

Table 1. Advantages and Disadvantages of CBT/WBT and NAVSEA Mini-Camps/Waterfront Training

Computer- and Web-Based Training (CBT/WBT)	NAVSEA Mini-Camp Training / Waterfront Training
Advantages	**Advantages**
• Can be used to reach large and diverse audiences	• Accomplished on ship using actual ship's equipment
• Can be used to reach audiences that are geographically spread out	• Tailored, based on documented fleet problem areas, to meet the needs of the Navy, the organization, and the student
• Cost per student can be very cost effective when training large audiences	• Capable of providing high levels of student-instructor interaction
• Can be taken on the student's schedule	• Instructor SME can model the correct performance
• The student determines the pace	• Student can observe and repeat desired performance under supervision
• Can be offered as facilitated or independent study, synchronous or asynchronous	• Student can ask questions and receive immediate feedback
• Student's may be able to choose to take the training just-in-time	• Instructor can monitor for proper performance and immediately stop/correct improper performance and provide immediate feedback

Computer- and Web-Based Training (CBT/WBT)	**NAVSEA Mini-Camp Training / Waterfront Training**
• Can be advantageous when training dangerous or hazardous tasks	• Focus can be hands-on with classroom only as-needed as a support element
• Can be advantageous for training systems/equipment that are costly to procure and repair	• Instructor can foster and encourage motivation
• Can be beneficial when training highly complex and difficult to understand systems	• Offers good peer-to-peer interaction and peer-to-peer teaching opportunities
• Potentially good method for teaching infrequent tasks	• Good method for teaching new systems/equipment
• Can be used as reach-back and/or refresher training	• Can be scheduled as just-in-time training
• Some students find technology-based environments less threatening / safer	• Some students prefer instructor-led/instructor-facilitated training
• Many students are comfortable with and like the freedom and choices available when using CBT/WBT	• Some students learn better using instructor-led/instructor-facilitated training
	• Can be used to promote team building
	• Learning reinforcement, retention and transference can be effectively encouraged and measured
Disadvantages	**Disadvantages**
• Can be selected for the wrong reason (e.g., because technology-based training is the latest fad)	• Requires significant time and resources to reach large audiences
• Not all students are equally computer savvy	• Requires considerable amount of logistics to align and schedule instructor(s), students, and ship(s)
• Some students do not like or learn using CBT/WBT	• Requires instructor SMEs who are capable and available when the students and equipment are available
• Poorly designed training can be ineffective and/or harmful	• Sailor workloads may time available to accomplish training

Computer- and Web-Based Training (CBT/WBT)	NAVSEA Mini-Camp Training / Waterfront Training
• Little or no student to instructor/SME engagement	• Ship's schedules/events may interrupt/restrict time available to accomplish
• Little or no student to student peer engagement	• Poorly designed training can be ineffective and/or harmful
• Have a tendency to be too "knowledge" focused	• May be restricted on the amount of PM and CM that can be accomplished
• Hands-on experiences on real equipment can be difficult to facilitate	• May not be able to insert high fidelity faults into ship's equipment
• Valid and effective high fidelity simulation of hands-on experiences can be expensive to create and provide	• May not be able to disassemble ship's equipment
• High fidelity drill and practice exercises can be difficult and expensive to provide using CBT and WBT	
• Some students look for and find ways to cheat the system	
• High attrition rates	
• Sailor workloads may restrict time available to accomplish	
• Computer access may restrict time available to accomplish	
• Internet access and band width may restrict access to the training	
• CBT/WBT has a tendency to be very individualistic and does not promote team building.	
• Learning reinforcement, retention and transference measurement are often not accomplished	

Trends indicate that fleet readiness is declining for a variety of reasons, with the most critical being a failure of training for the sailors manning our ships (NAVINSGEN, 2009). The 2009 NAVINSPGEN report found that there is a mismatch between fleet expectations and the goals of Navy schoolhouse training. Training pipelines produce an operator not a maintainer and expect additional technical training to occur in the fleet. The fleet expects a sailor to have the knowledge, skills and abilities (KSAs) needed to be an operator and perform basic maintenance tasks when they arrive onboard ship. The report found that today's "A" School graduates have theoretical knowledge but no real technical knowledge of their rate. Some commands reported that it takes twice as long to qualify a sailor for watch standing duties as it did using legacy training methods. Fleet feedback indicates sailors reporting from "A" School have only a marginal ability to recognize equipment and operate its components. Many are unable to recognize and use tools, operate basic equipment, read schematics, or follow basic electronics. As stated in the NAVINSPGEN report, the over dependence on CBT as a primary, and sometimes only, training solution can create problems which result in a fleet that is not properly trained. The following findings were noted by the NAVINSPGEN study:

Figure 1. NORFOLK (March 2, 2011) – Computer Aided Instruction (CAI) in a classroom at Assault Craft Unit Four as part of a blended learning solution that includes classroom instruction, on-the-job, hands-on training, and CBT/WBT by NeL/NKO portal. (AMSEC Photo)

- While students enjoy using computers for playing games and social communities, most also stated that they preferred their learning to include engagement and interaction with an SME.
- CBT/WBT does not effectively reach kinesthetic learners (those who prefer to learn by doing). It was noted that some advanced simulators do address kinesthetic learning better than traditional PC-based CBT/WBT, but still do not address it as well as hands-on training on actual equipment provided by an SME.
- Individual achievement and progress using CBT does not foster or encourage team building.
- CBT does not effectively capitalize on the four key characteristics that all training is supposed to have: motivation, reinforcement, retention and transference. All four of these characteristics are directly related to M. David Merrill's First Principles of Instruction which defines instructional elements that all training should contain (Merrill, 2013).
    (1) Motivation is best accomplished by an instructor engaging and interacting directly with students. Instructors' model desired attitudes and monitor students for the proper motivation.
    (2) Reinforcement of learning comes from instructor-student interaction and redundancy. Instructors are able to evaluate and provide the proper amount and type of reinforcement when and where appropriate. Too often CBT and WBT remove redundancies to streamline the training in order to minimize the student's time to qualify (TTQ).
    (3) Retention comes from drill and practice, redundancy, and modeling. Retention ensures the student is able to transfer what they have learned in the training to the work place. High fidelity drill and practice exercises can be difficult and expensive to provide using CBT and WBT. Drill and practice exercises are often not used or bypassed by the instructional designer and/or student as a means to reduce TTQ. Retention is also enhanced by a student being able to watch a task being modeled by a SME as demonstration followed by hands-on practical application.
    (4) Transference requires that the student receive the proper amount of motivation, reinforcement, and retention during the training in order to transfer newly acquired knowledge and skills to the workplace. Transference of learning requires the student to be able to use the information taught in a training course in a new setting – on-the-job. Transference corresponds directly to the effectiveness of learning and impacts actual performance in the fleet.

A SOLUTION

Admiral Harvey, Commander US Fleet Forces Command (USFFC), in his 11 September 2009 blog on Fleet Training Effectiveness stated that it is imperative that our sailors be properly trained and know how to operate and maintain their systems (Harvey, 2009). In *The Ship is the Classroom* blog dated 27 June 2012, Fleet Forces Command (FFC) discussed various waterfront initiatives undertaken by RADM Dave Thomas, Commander, Naval Surface Force, Atlantic (CNSL) and his team to deliver maintenance training directly to sailors on the deck plates. These efforts involved various assist teams, Mini-Camps, Self-Assessment and Groom Teams (SAGTs), and other deckplate initiatives used to provide hands-on training to sailors on their equipment and in their spaces.

These initiatives address gaps in training with a majority of problems attributed to maintenance training gaps pertaining to preventive maintenance (PM), corrective maintenance (CM), and troubleshooting knowledge and skills. In many instances the deficiencies are a result from having too many different manufacturers and applications used in the Fleet to the point that Navy schoolhouses cannot teach them all. Boat davits are a good example. There are ten different boat davit configurations from eight different manufacturers in the fleet. To address this issue, the Deck Mini-Camp waterfront training was a quick response measure to address gaps with boat davit training. The Deck Mini-Camps are not intended to be used as a lifecycle training solution; rather as an interim measure while schoolhouses catch up (See Figure 2). Mini-Camps are essential for troubled systems where operator and maintainer level of knowledge (LOK) is deemed deficient and system readiness is degraded. There are three main issues that serve as Fleet drivers for Mini-Camps:

- Fleet Readiness and Expected Service Life (ESL) issues
- Operator and Maintainer LOK issues
- Declining INSURV scores

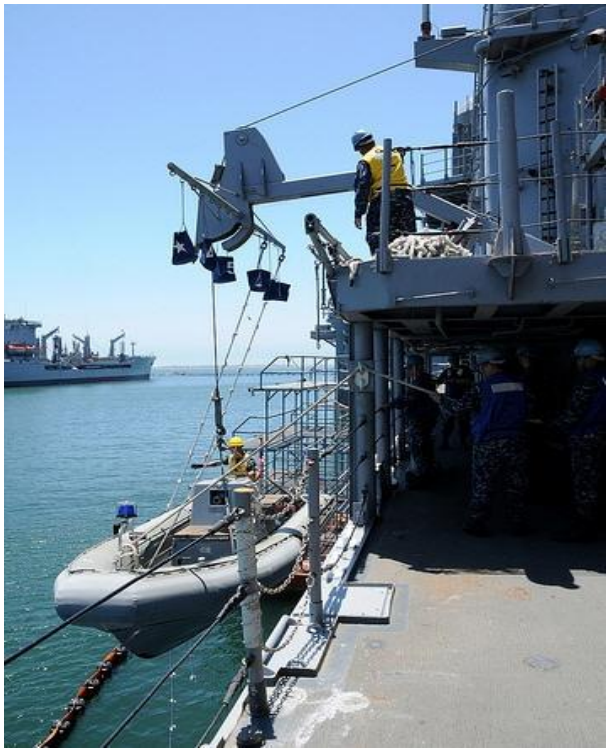

Figure 2. SAN DIEGO (June 21, 2011) - Sailors aboard USS Antietam (CG 54) lower the Rigid Hull Inflatable Boat into San Diego Bay during a Deck Systems Mini-Camp. This week-long training was held to combat declining INSURV scores. (U.S. Navy photo by Mass Communication Specialist 2nd Class (SCW) Jeffrey R. Militzer/RELEASED)

This paper advocates that the best solution for training is a blended solution that integrates multiple instructional strategies, methods, and media. Waterfront training, and in particular the TYCOM-sponsored Mini-Camps tailored to documented needs onboard ship and supported by a web-based Mini-Camp Training website should be a key part of the solution. The NSWCCD-SSES Mini-Camp Training website is used to provide an online resource available to all stakeholders; it contains training materials, schedules, points of contact, and other useful information. In the future, it is anticipated that the website will be expanded to host other new resources as they are developed, such as Mini-Camp related CBTs, Job Performance Aids (JPAs), Video Clips, Interactive Multi-media Instruction (IMI), images from using laser metrology, and electronic performance support tools. The website requires a Common Access Card (CAC), password, and permission from NSWCCD-SSES Code 942 to access.

MINI-CAMP CONCEPT

The Mini-Camp concept originated in 2010 in an effort to turn around a five-year downward trend INSURV Deck scores. In response, the NSWCCD-SSES In-Service Engineering Agents (ISEAs) were tasked to do a "state of Deck System" review of five key areas that contributed to low system readiness:

- Design reliability
- Technical documentation accuracy
- Integrated Logistic Support (ILS)
- Operator and maintainer training pipeline(s)
- Operators and maintainers proficiency levels

Findings from the review were discussed with key Navy stakeholders which included; Technical Warrant Holders, Type Commanders, Regional Maintenance Centers, Afloat Training Group, and INSURV. They agreed on the recommended solution - Deck Mini-Camps.

The stakeholders viewed Mini-Camp waterfront training as an effective tool to ensure shipboard operator and maintenance personnel become better trained and qualified on the shipboard equipment and systems. Mini-Camps are used to augment formal training delivered by Navy Learning Centers and provide just-in-time training when the TYCOM determines a training gap exists that needs to be filled quickly and on-the-job. The Mini-Camp's primary focus is to provide targeted and tailorable hands-on training on actual shipboard equipment supported by classroom training. The Mini-Camp is taught by an ISEA, who is a SME on the equipment, and is tailored to match the student's knowledge and skill level. The ship becomes the classroom, and sailors receive documented, needs-based training tailored to the equipment and systems they operate and maintain on a daily basis. As the Mini-Camp concept matured, the next phase was to establish a pilot program to have the ISEAs augment the Afloat Training Group (ATG) with assistance in training on ship scheduled basic phase events. The basic phase events are conducted in accordance with the Surface Force Readiness Manual (SFRM). The ISEA's have conducted Train-the-Trainers events with ATG, which has enhanced the ATG level of knowledge and ability to help the fleet and standardizes the training ships will receive from multiple commands and entities. The Mini-Camp training events are typically hosted by one ship, but other ships and shore installations in the area are invited to send personnel.

The Mini-Camp consists of two elements or phases – a Deep Dive and the Mini-Camp training event. The Deep Dive is a thorough documentation review of all areas of logistics, such as; technical manuals, Planned Maintenance System (PMS) procedures, supply support, and other training resources. The Mini-Camp training is used to provide hands-on training tailored to the ship's needs and to supplement training pipeline deficiencies. Mini-Camp training follows the Deep Dive and will use PMS procedures, operational procedures, technical manuals, Naval Ships Technical Manuals (NTSMs), and common assessment procedures to train sailors and waterfront personnel. Since Mini-Camps require accurate technical documents and a means to validate needed changes, the Deep Dives also result in the updating of technical documentation, other logistic element updates, and determining the need to create or update long-term (lifecycle) training solutions.

MINI-CAMP TRAINING – CURRENT APPLICATION

Mini-Camp training is provided by ISEAs from NSWCCD-SSES Philadelphia, PA. Mini-Camps are usually initiated by the TYCOM who identifies a problem where mission critical equipment or systems are experiencing less than optimal performance, and subsequently determines that on-the-job training will solve the problem by increasing operator and maintainer knowledge and skill levels.

In this scenario the TYCOM selects topics and sets the priority of systems equipment that necessitates a Mini-Camp. Gaps may initially be identified by CASREPs and/or by the need for technical assist visits. When deemed necessary, the analysis will identify gaps between what the Navy schools teach and what the sailors need to know on his or her ship. It has been found that gaps normally result from the schoolhouse either not teaching the same equipment that is found on the ship or lack of the hands-on training (students to receive true experiential training). In this scenario, when the TYCOM identifies a problem where an equipment or system is experiencing less than optimal performance, the following occurs:

1. TYCOM determines that on-the-job training is needed to solve the problem by increasing operator and maintainer LOK and skill levels.
2. TYCOM notifies the appropriate ISEA who assembles the appropriate stakeholders to identify the root cause of the problem, deep dive the logistics, maps the appropriate intervention(s) to correct the problem, and implements the correcting intervention(s) using the Mini-Camp.
3. SSES designs and develops the Mini-Camp.
4. TYCOM schedules and coordinates a host ship (or ships) to participate in the Mini-Camp. Before conducting the Mini-Camp, TYCOM will send out a message to the waterfront inviting other ships and commands (e.g., ships of the class, Afloat Training Group (ATG), INSURV, RMCs) to participate.
5. The ISEA conducts the Mini-Camp and upon completion will develop a trip report for TYCOM detailing the results/outcome with recommendations.

Other shipboard training being performed by the ISEA is in support of modernization and acquisition programs requiring initial installation and/or interim training. For this instance, the shipboard training is an effective tool to ensure operators and maintenance personnel are properly trained and qualified to operate and maintain new or significantly modified equipment. The acquisition activity will coordinate the training through SSES or TYCOM as appropriate.

USE CASE HISTORIES

The Mini-Camp planning and development started with Deck Systems in 2010 with the first Mini-Camps delivered in the summer of 2010 onboard the USS NITZE (DDG 94) and the USS BAINBRIDGE (DDG 96). Since that time there has been a consistent number of mini-camps hosted on the waterfront that cover an assortment of systems and equipment with hundreds of participants from various ship's and Navy organizations. An America's News™ article on the first Mini-Camps hosted as a joint pilot program by ATG and NAVSEA stated the following with regard to the Mini-Camps, "Methods of learning vary from person to person. Being able to learn by doing seems to work for these sailors in this situation (Pence, 2011)." Table 2 provides a list of Mini-Camps being conducted across the Fleet with more topics being planned for FY14.

Table 2. Mini-Camp System & Equipment

Mini-Camp Title	Platform
Ventilation with Collective Protection System CPS	LHD
Compressed Air System (CAS)	DDG, CG, FFG, LPD, LSD
	CVN (MARC 350A LPAP)
	CVN (CAP 12/Sauer)
Oil Pollution Abatement (OPA)	DDG, CG, LPD, LSD
	LHD, LHA
	DDG 89AF, LPD 17
	FFG
	MCM, PC

Mini-Camp Title	Platform
Lubrication Oil (L/O)	DDG, CG
Helo Hangar Door (HHD)	CG, DDG 79AF, FFG
Deck Systems	FLEETWIDE
Tri-Tec Valve Actuators	CVN 77, DDG
Cargo Weapons Elevator (CWE)	LHD 1-4
Air Conditioning (AC) Plants	DDG, LPD, LSD
Chlorinator / Dechlorinator	DDG 83AF
	CVN
Ballast / Deballast System	LHD, LSD, LPD
Damage Control Petty Officer (DCPO)	FLEETWIDE
Controllable Pitch Propeller (CPP)	DDG
400 Hz Static Frequency Converters	CVN 77

Benefits Derived from the Mini-Camp

Mini-Camps are open for all to attend and made available to many commands and activities – e.g., Ships, Regional Maintenance Center (RMC) personnel, Material Assist Teams (MATs), NAVSEA, INSURV, Naval Shipyards, etc. One of the biggest advantages for the training is the face-to-face contact the sailor student gets with the ISEA SME. Not only are the ISEAs teaching the sailor, the sailor is providing the ISEAs with valuable feedback as well. For example, during a Mini-Camp held on a Guided Missile Cruiser (CG) for Helo Hangar Doors, feedback identified a maintenance problem that resulted in the need to replace fasteners on the doors with fasteners using a different base metal to ease maintenance requirements. It was found that the old screws were corroding and adding unnecessary maintenance to the doors. During a Compressed Air System (CAS) Mini-Camp on a Guided Missile Destroyer (DDG), it was discovered that the ISEA was not aware of the installed Programmable Logic Controllers (PLCs), which enabled the ISEA to update his configuration records for CAS installations.

Initially there was some concern that ships would be hesitant to host Mini-Camps out of fear that Mini-Camp activities could potentially degrade systems/equipment. To date, commands have not expressed concerns about the potential to degrade a system or equipment's material readiness as a result of a Mini-Camp. Ships seem satisfied that risks are more than offset by the training received and are confident that the ISEA SME will return affected systems and equipment to the proper state of readiness.

Lessons learned are collected following each Mini-Camp held, and these lessons learned are used to improve the Mini-Camp process and experience. Figure 3 illustrates the Mini-Camp lifecycle process. The center column identifies the main steps in the process and the text boxes to the left and right identify the various support elements reviewed during the Deep Dive Mini-Camp process. The boxes inside the yellow box at the bottom of the figure detail the benefits derived from the Deep Dive-Mini-Camp process.

Weaknesses of the Mini-Camp

Mini-Camps must be scheduled when the ship is in port and equipment is available for training. When scheduling, the TYCOM is careful not to unnecessarily increase the ship's burden. Mini-Camps are a "come as you are" voluntary event. Low participation may result when the training competes with the ship's schedule or when the ship's OPTEMPO causes the Mini-Camp to compete with other events. The opposite can also be true where the turnout is too large. For one Ventilation Mini-Camp, 70 students showed up when only 20 were expected. This particular Mini-Camp was able to be divided into smaller groups by using INSURV and Norfolk Ship Support Activity (NSSA) representatives to provide stand-in instructor support. In this instance, these representatives showed up to attend the training, but were able to support the training by sharing their own experiences and areas of expertise with the students.

Mini-Camps are normally restricted to five days or less (often only two or three days) so as not to unnecessarily interrupt ships schedules, since the ship serves as the classroom. With the limited amount of days and using the ships equipment, the amount of time spent on more complex maintenance tasks and the ability to actually demonstrate these more complex procedures is limited. However, the overhaul of equipment is typically not assigned to shipsforce but to the shore maintenance organizations, so the sailors are instructed on their PMS, troubleshooting, and repairs accomplished by sailors onboard the ship.

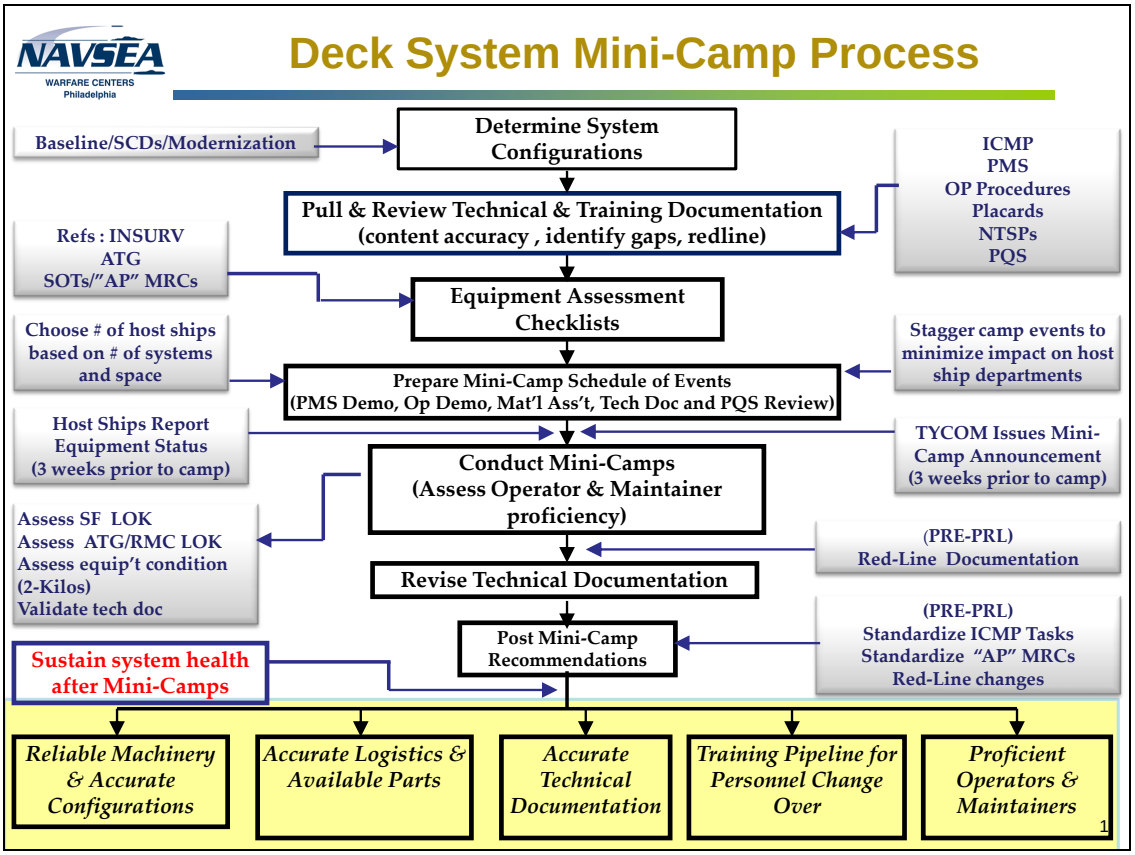

Figure 3 – Mini-Camp Process with Support Elements

RESULTS

Mini-Camps play an important part of a blended solution by supporting and supplementing other forms of Navy training with on-the-job training provided by subject matter experts on the student's own ships and systems. The Deck System Mini-Camp, for example, has proven to be very cost-effective and beneficial to the Fleet. The Deck Mini-Camp sent ISEA SME instructors to Fleet Concentration Areas (FCA) and provided much needed hands-on training to both ships force and to support personnel from various shore organizations. It would have cost significantly more to send all the personnel that benefitted from the Deck Mini-Camp training to formal schools – schools that are not currently ready to address all of the fleet's needs. In this instance, it is more effective to send one or two ISEAs to the fleet, rather than sending the fleet to a schoolhouse. In addition, since the Mini-Camp training materials are available on the website for stakeholders to download and use, there is additional benefit in the re-usability gained by ships and other activities accessing and using the materials themselves.

Material Readiness

A driving force behind instituting the Deck Mini-Camps was the declining INSURV scores for surface ships. In 2009, Deck Systems INSURV scores were in the 65 percentile range, but since instituting the Deck Mini-Camps, INSURV scores for ships completing Deck Mini-Camps (host and visiting ships), when compared to ships that have not received Mini-Camps, have shown an improvement of 21 points to the 86 percentile (See Figure 4). It is anticipated that these scores will continue to increase as more Mini-Camps are held and ships realize the value and re-usability of the training materials available to them.

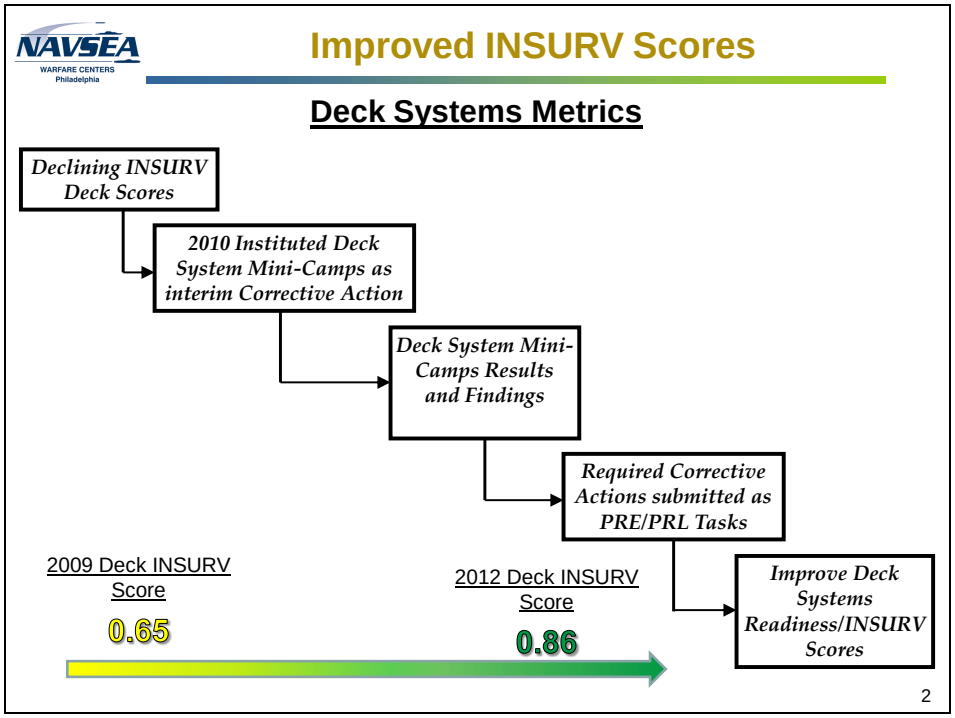

Figure 4 – Deck System INSURV Scores Improved

In addition, it is noted here that the Type Commanders have also instituted other measures to combat the dropping INSURV scores that contributed to the ships readiness improvement. This involved other Navy organizations going down on ship and working hands-on with the crew by providing assessments and sending Maintenance Assist Teams (MATs) from the Regional Maintenance Centers (RMCs) which also provided a positive impact to ship's maintenance and training.

Training Evaluations

To date, the primary training evaluation metric has been the student reaction to the training (Kirkpatrick Level 1 evaluation). One of the most common positive comments from the training evaluation sheets (questionnaires) is that the students like receiving hands-on training onboard their own ship and they like having access to the ISEA SMEs for the training. The most common negative comment is that they would like to see even more hands-on training and/or less time in the classroom. The student reaction comments show that the students are engaged with the learning, and student engagement is important to ensure the students transfer the learning to the job (Merrill, 2008). Fleet organizations believe that the current Mini-Camp working model and process is good for today's needs, but also that they need to ensure self-assessments are completed to monitor goal achievement. CNSL has recently initiated the first self-assessment on the Compressed Air Systems (CAS) Mini-Camps. They are planning on identifying and collecting measurable changes in job performance resulting from the Mini-Camp – a measure of the capability to perform the newly learned skills while on the job (Kirkpatrick Level 3 evaluation).

SUMMARY/CALL TO ACTION

The NAVSEA and fleet partnership in support of the ships and waterfront organizations has thus far proven to be successful with positive feedback from all participating organizations. The most important role of Mini-Camp training is to deliver needs-based, tailored, hands-on training to sailors using the systems and equipment they will operate and maintain, and having the ISEA available to model the actions. This vital role of the Mini-Camp is being achieved by providing the ship's force and waterfront support personnel with the necessary training, so they are ready to operate and maintain today's highly complex systems.

The "Ship as a Classroom" concept is being formally adopted as a Navy instructional strategy and used as part of a blended learning solution to provide hands-on training to the Fleet. As such, this concept should drive future requirements to establish and formalize this concept with embedded trainers located on the waterfront and recognized in Navy training plans (e.g., the Naval Training System Plan – NTSP). The waterfront training works in conjunction with formal schoolhouse training and in some instances serves as interim training until formal training is developed. For systems/equipment not taught in a Navy schoolhouse where the cost and/or student throughput is too low to justify a schoolhouse solution at present, the Mini-Camp (or other waterfront training) may be the only training available for some time until the budget catches up with the requirement.

Mini-Camps are still relatively new and quantitative and qualitative results and their value will become clearer and better documented as more data is collected. To verify the success and value of the Mini-Camps (and other waterfront training) an evaluation program is needed to measure and document the results of the training. To do this, Level 3 and Level 4 evaluation instruments for collecting the required data need to be developed and used. The Level 3 evaluation would be used to measure the transfer and application of the learning to the workplace and the Level 4 evaluation would be used to measure the results of the learning as to how it benefits the organization (Kirkpatrick, 1998). Level 3 and Level 4 evaluation are essential for determining training Return on Investment (ROI), measuring reductions in TOC resulting from the training, and for planning and budgeting for future training efforts.

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Figure 1 is an AMSEC original photograph and the appropriate release/permission slips are held by the AMSEC LLC Multimedia Manager, Mr. Steven Kortz. Stephen.kortz@hii-amsec.com.

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REFERENCES

Gagne, R. (1962). *Military Training and Principles of Learning*. American Psychologist, 17, 263-276.

Harvey, J. (27 June 2012). *The Ship is the Classroom.* [US Fleet Forces Command Blog (2009 – 2012)]. Downloaded from http://usfleetforces.blogspot.com/2012/06/ship-is-classroom.html

Harvey, J. (11 September 2009). *Fleet Training Effectiveness.* [US Fleet Forces Command Blog (2009 – 2012)]. Downloaded from http://usfleetforces.blogspot.com/2009/09/fleet-training-effectiveness.html

Kirkpatrick, Donald (1998). *Evaluating Training Programs: The Four Levels (Second Edition).* Berrett-Koehler Publishers, San Francisco, CA.

Merril, N. David (2013). *First Principles of Instruction: Identifying and designing Effective, Efficient and Engaging Instruction*. Pfeiffer, John Wiley & Sons, San Francisco, CA.

Merrill, M. D., Barclay, M., & Schaak, A. v. (2008). Prescriptive Principles for Instructional Design. In AECT Handbook (pp. 173-184).

Naval Inspector General (NAVINSGEN) Report to the Secretary of the Navy (2009). *Computer Based Training Study*. Downloaded from https://www.ig.navy.mil/studies/studies.htm.

Navy Knowledge Online (NKO), (May, 2013). *Blended Learning*. [The Learning Standards Officer Community of Practice (CoP); Computer Improved Instructor's Training Aid (CIITA)]. Downloaded from https://wwwa.nko.navy.mil/portal/learningstandardsofficer/home/computerimprovedinstructorstrainingaid

Pence, Elana (2011). *ATG and NAVSEA Conduct Deck Systems Mini-Camp*. In America's Navy™, the Online News Website for the Commander Naval Surface Forces. Downloaded from Commander Naval Surface Force, U.S. Pacific Fleet, Afloat Training Group Pacific, ATG San Diego website: http://www.public.navy.mil/surfor/atgsd/Pages/ATGandNAVSEAConductDeckSystemsMini-Camp.aspx.

Romiszowski, Alexander (1999). *The Development of Physical Skills: Instruction in the Psychomotor Domain.* In Charles M. Reigeluth (Ed.), *Instructional-Design theories and Models: A New Paradigm of Instructional Theory* (Volume II, p 458). Lawrence Erlbaum Associates, Publishers: New Jersey and London. Sea Power, (January, 2006). *Hybrid Sailors*. Downloaded from Military.com on 2/23/2011; http://www.military.com/forums/0,15240,85194,00.html