The Relationship Between Afloat Training Group Norfolk Levels of Effectiveness to Formal Assessment/Inspections as a Predictor of Atlantic Fleet Shipboard Engineering Readiness

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THE RELATIONSHIP BETWEEN AFLOAT TRAINING GROUP NORFOLK LEVELS OF EFFECTIVENESS TO FORMAL ASSESSMENTS/INSPECTIONS AS A PREDICTOR OF ATLANTIC FLEET SHIPBOARD ENGINEERING READINESS

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INTRODUCTION

A recent report of increased failures in the shipboard engineering qualification readiness process and Inspection and Survey (INSURV) material inspections generated a renewed interest to conduct an inquiry of local Afloat Training Group engineering training. Since the promulgation of the new Engineering Readiness process as a result of Inter-deployment Training Cycle (IDTC) initiatives in 1998, a major transformation of training initiatives has occurred. This major transformation has created new guidance for the assessment, training, and certification of conventionally powered ships. This also changed the roles and responsibilities of Afloat Training Group, Atlantic (ATGLANT), and associated training groups under its authority.

This research was conducted at Afloat Training Group (ATG), Norfolk, located on the Naval Station Norfolk in Norfolk, Virginia. The ATGLANT has three subsidiary commands that include ATG Norfolk, ATG Mayport, and ATG Ingleside. Each subsidiary command includes an Engineering Training Department, which is composed of steam, diesel, and gas turbine training teams. The training teams are tasked to conduct training in the areas of material readiness, program administration, drills, and evolutions in accordance with the current Engineering Readiness Process instructions. Specifically, it should assist Commanding Officers and Immediate Superior In Command (ISICs) of Atlantic ships in engineering training to include conventional propulsion, damage control, auxiliaries and electrical systems, and engineering administration. Also it should provide engineering training as requested to enhance self-assessment capabilities and maintain overall engineering proficiency in the area of manning, qualification, training, operations, management programs, and material.

The Commanding Officer and the ISIC tailor individual unit training which vary for each particular set of circumstances (i.e., length of availability, crew turnover, etc.). The following major sequence of training events and assessments that comprised the basic phase training are: Light Off Assessment (LOA), Initial Assessment (IA), and Underway Demonstration (UD). Training is based on training objectives established by the Commanding Officer during the initial assessment and confirmed by the ISIC. All formal engineering training events, outside the basic training phase, are designated Limited Team Trainers (LTT). Basic phase training and LTTs will be requested by CO/ISIC and will focus only on areas designated by them. ATG engineering training and assessment teams are available to assist in any training event within the basic training phase or as an LTT.

Statement of the Problem

Since the last Chief of Naval Operation IDTC workload reduction initiative, Afloat Training Groups have changed the way they normally conduct business with afloat commands. A new Engineering Readiness Process for conventionally powered ships was promulgated to ensure compliance with the initiatives. No formal evaluation process has been conducted to ensure that engineering training provided by ATG Norfolk (N41) was effective and in compliance with current directives. The satisfactory demonstration of engineering readiness by afloat commands during the qualifying process hinges on both the quality of training provided and command's strict adherence to its recommendations.

The problem of this study was to determine the relationship between Afloat Training Group Norfolk levels of effectiveness to formal assessments/inspections as a predictor of Atlantic fleet shipboard engineering readiness. Currently, there is no administrative means in place to determine and track the efficiency of ATG engineering training teams. This may have a significant impact in determining an afloat command's ability to pass the engineering certification process.

Research Goals

It is the hope that this research project will determine the training effectiveness of ATG Norfolk engineering training teams. The research will determine if the changes made as a result of IDTC initiatives have contributed to the levels of training effectiveness and ultimately the afloat commands ability to demonstrate engineering readiness. Any negative findings resulting from this research will be provided to assist commands in correcting deficiencies and developing contingency plans for future modifications to the engineering process.

Contributing goals to answer this problem were:

1. Determine if IDTC workload reductions have affected the quality of engineering training by ATG Norfolk engineering teams.
2. Identify factors that may affect ATG Norfolk engineering team training effectiveness.
3. Based on factors found that may impact training effectiveness, provide recommendations for correction and improvement of training.
4. Determine the success or failure rates of afloat commands who

employed ATG Norfolk engineering teams during the conduct of engineering training events in preparation for various engineering certifications.

Background and Significance

The ATGLANT is tasked by the Commander In Chief, Atlantic (CINCLANT), to provide dynamic, quality afloat training to Navy and Coast Guard sailors to ensure a combat ready force capable of performing a broad spectrum of maritime missions. Special emphasis will be placed on training ships' training teams, special evolution teams, and watch teams to institutionalize the onboard capability to sustain and improve combat readiness throughout an employment cycle.

Afloat Training Group, Norfolk (ATGN), under the direction and support of ATGLANT will assist Commanding Officers in the organization and training of their ship's engineering, damage control, command and control, computer communications and intelligence (C4I), combat systems, seamanship, flight deck, and supply management personnel and shipboard training teams during the IDTC. It also supports the ship's training plans, by consolidating, under one organization, afloat training personnel, equipment, and contractor training support for maritime warfare mission areas, C4I, combat systems, engineering, damage control, seamanship, navigation, aviation, medical, personnel and administration, and supply management. ATGN also provides a training and assessment capability in major homeports. Another tool is to provide the ISIC with technical and personnel support for the conduct of assessments and facilitate feedback to shore-based schools and systems commanders. In addition, it assists in conducting shakedown training for newly commissioned ships and post-overhaul CV's/CVN's and tailored training for designated U.S. Coast Guard units. Additionally, ATGN provides selected training for foreign navy units on a reimbursable basis. Finally, it facilitates Surface Warfare Officer (SWO) professional development through the SWO Masters Program.

The training process onboard the ship commences with Shipboard Training Team (SBTT) training, which is initially conducted to provide ships with the fundamental skills and techniques to self-train using the "plan, build, brief, train, and debrief" process during training and operational evolutions. Each training teams such as engineering, damage control, combat systems, seamanship, aviation, navigation, and medical learns basic techniques of scenario generation, coordination, and implementation. Engineering readiness is mostly determined by the effectiveness of damage control and engineering training teams. Basic Engineering Casualty Control Exercises (BECCES) provide the opportunities for watch teams to operate equipment in a simulated hostile environment and reconfigure equipment to continue to operate the ship with material degradation. Engineering management programs are also reviewed for compliance to governing documents such as technical manuals, Planned Maintenance System (PMS) cards, and Engineering Operational Sequencing System (EOSS).

In the light of current increased mishaps and reported failures in shipboard engineering operational assessments of afloat commands, it is imperative to identify problem areas that need to be revisited to prevent further degradation of engineering fleet readiness. Type Commanders (TYCOMs), as the source of subject matter expertise, may use ATG assets for analyzing trends and problems and advising on the best course to ensure sustained engineering readiness. The relationship between ATGLANT Engineering Readiness Department (N43) and ATGN Engineering Training (N41) represents a check and balance whereby the former conducts the assessment and the latter provides the necessary training. This is the initial research needed in determining the relationship between training levels of effectiveness to assessments conducted. The research will explore relationships of engineering training being conducted to an expected assessment result or outcome. Specifically, the research will focus on engineering training and assessments conducted on Atlantic fleet Navy and Coast Guard surface ships.

Limitations

The major limitations of the study were the use of data extracted from end of visit reports on conventionally powered (steam) Atlantic fleet surface ships provided by ATGLANT and ATG Norfolk from 1999 to 2001. A statistical tool was utilized to determine percentage rates of pass/failure on different training assessments conducted by ATGLANT (N43) in which LTT were provided by ATG Norfolk engineering training teams prior to assessments. The goals of the study were limited to determining the relationships of training levels of effectiveness to assessments between ATG Norfolk and ATGLANT (N43). Although there are two other subsidiary ATG Training commands under ATGLANT that are covered under the same guidelines, the results of this study may not be representative of the entire ATGLANT community. Therefore, generalization of the findings is limited to ATG Norfolk Engineering Training. The study was further limited to steam teams since they directly provided training to conventionally powered (steam) ships.

Assumptions

There were factors in this study which were assumed to be correct. The assumptions were as follows:

1. The ATGLANT and ATG Norfolk Engineering Training mission, functions, and tasks are listed in accordance with COMNAVSURFLANT INSTRUCTION 5450.8, which provide TYCOM requirements and guidance on execution of basic afloat training.
2. The policies governing the assessment, training, and certification of engineering operations aboard conventionally powered ships are promulgated in accordance with COMNAVSURFORINST 3540.1 and supported by TYCOMs who are responsible for maintaining engineering readiness.
3. The guidance governing the conduct of the Engineering Readiness Process for conventionally powered ships is promulgated in accordance with COMNAVSURFORINST 3540.2 and supported by Commanding Officers and ISICs.

Procedures

To assess an engineering training program, one must identify the most significant measuring criteria: the **quality** of training and the **effectiveness** of training. This research will focus primarily on data extracted from end of visit reports provided by ATG

Norfolk Engineering Training and ATGLANT (N43). For this research project, the **quality** of training will represent the number of areas of concern and follow-up LTT visits for a specific engineering training conducted. The **effectiveness** of training will be best represented by the results of actual assessment on any engineering event conducted by ATGLANT (N43). It is the measurable level of training effectiveness since they set the engineering standards during assessments. The effectiveness of training is related to the quality of training provided by ATG Norfolk Engineering Training teams. These two criteria are the foundation on which this research is based.

Definition of Terms

As is the case in most military situations, a great deal of abbreviations and military specific terms are used. The following list will assist the reader in understanding terms used in the military and Afloat Training Group Engineering community.

1. ISIC – Immediate Superior in Command. The most senior naval officer in charge of a squadron, group, or activity.
2. IDTC – Inter-Deployment Training Cycle. Training cycle that commences from CNO sponsored maintenance availability to completion of regular deployment.
3. SBTT – Shipboard Training Team. Onboard training teams composed of ship personnel qualified to perform duties as trainers in his field of expertise, i.e., ETT, DCTT, etc.

4. TYCOM – Type Commander. The most senior Naval Officer in charge of respective warfare specialty, i.e., SURFLANT/SURFPAC, AIRLANT/AIRPAC, or SUBLANT/SUBPAC.
5. FRB – Fleet Review Board. Select group of Senior Naval Officers responsible to CNO who validates major naval programs for accuracy and usefulness.
6. INSURV – Inspection and Survey. Group of Naval Officers that conduct material inspection of major equipment and systems throughout the ship that determines the ship's survivability.
7. LOA – Light Off Assessment. Assessments based on the ability of the ships engineering department to ensure the ship is capable of safely lighting off and operating its engineering plant prior to going to sea.
8. IA – Initial Assessment. Assessment focused on material, the level of training of engineering watch sections and training teams, and the ability to fight class "B" fires in a major machinery space using either underway or inport repair organization.
9. UD – Underway Demonstration. Assessment focused on engineering operations, evolutions, and drills.
10. LTT – Limited Team Training. All formal engineering training events outside the basic training phase.
11. PEB – Propulsion Examining Board. Composed of Engineering Officers that conduct Engineering Department readiness assessments.

Summary and Overview

Chapter I illustrates the overall responsibilities of ATGLANT and one of its subsidiary commands, ATG Norfolk Engineering Training. The importance of engineering training cannot be overemphasized due to its impact on overall shipboard engineering readiness. The quality and effectiveness of training must translate to the qualifications of training requirements laid out in the engineering process. The problem of this study was to determine the relationship between ATG Norfolk levels of training effectiveness to formal assessments/inspections as a predictor of Atlantic fleet shipboard engineering readiness. The demands of heightened security and increased operational commitments in support of various local and international missions against terrorism has significantly impacted the ability of naval surface ships to respond on short notice. Engineering readiness plays a pivotal role in contributing to the overall combat readiness capable of performing a broad spectrum of maritime missions.

Chapter II is a review of the literature which evaluates the major changes in the engineering process brought forth by IDTC workload reductions. Recognized subject matter experts present their views on the effects of IDTC changes, engineering processes, and roles of two major afloat training groups, specifically ATGLANT (N43) and ATG Norfolk Engineering Training. Selected readings and articles from journals, magazines and newspapers that provide insights on the state of Atlantic fleet shipboard engineering readiness will be reviewed.

Chapter III will provide methods and procedures used throughout the research process. Chapter IV will detail the findings of this research. Chapter V will provide a summary and conclusion as well as recommendations for any modifications to the ATG Norfolk engineering training.

CHAPTER II

REVIEW OF LITERATURE

The introduction of Inter Deployment Training Cycle (IDTC) initiatives, in September 1998, has impacted major Naval personnel, operational, and training programs. The Chief of Naval Operations directed IDTC initiatives has introduced major changes in the quality of life of sailors and various navy-wide administrative and operational requirements. These include the elimination of the Propulsion Examining Board (PEB), some inspections, and engineering administrative programs, which are major factors in determining fleet readiness. Chapter II will present contemporary articles ranging from current IDTC training initiatives, general concepts of training effectiveness evaluation, and the promulgation of new Surface Force Training Manuals which standardizes the surface force training program of all Naval Surface ships, and units of U.S. Pacific and Atlantic Fleets.

IDTC Training Initiatives

The former Chief of Naval Operations, Adm. Jay L. Johnson, was credited for the development of IDTC initiatives that included series of actions designed to return additional discretionary time to commanding officers and allow sailors more time at home during the IDTC. "I am convinced we can maintain readiness, continue to safely and effectively execute our many missions and at the same time restructure the way we do business to reduce the workload on our sailors" (CNO Announces, 1998). One of the major changes concerning engineering readiness assessment was the elimination of PEB, which sets the tone for the overhaul of ATGLANT. "This assumption of responsibility by the CO and the engineers has a two-fold benefit. Sailors must be more familiar with engineering requirements rather than relying on an outside source to identify problem areas for them. It also gives sailors the opportunity to concentrate more on necessary maintenance vice the time-intensive processes required for an inspection" (Paternoster, 1998). The re-alignment of ATGLANT and subsidiary commands under its authority changed the mission, tasks, and functions to reflect the IDTC initiatives mandated by the CNO. The ATG Norfolk Engineering Training Teams for instance, became a support asset to the ISICs, assisting in any required training events in preparation for a major engineering assessment or inspections. The training provided by this command is so valuable to the progression of shipboard training teams as they ultimately become proficient and self-sufficient at the culmination of the basic phase training. An ISIC assessment that will be less intrusive and focused on safety and operations replaced the engineering certification that was primarily the job performed by the then PEB. The ATGLANT (N43) Engineering Readiness Department supports ISIC in executing the Engineering Qualification Program. They set the engineering standards, which became the primary determiner of engineering readiness.

IDTC Aftermath

Since the initial implementation of IDTC initiatives in 1998, series of IDTC workload reductions were introduced. The Fleet Review Board (FRB) conducted periodic reviews to continue to evaluate IDTC effectiveness. For the past three years, ships in both the Atlantic and Pacific fleets have seen dramatic cuts in the number of inspections and workloads for crews as the Navy tried to give sailors more time at home with families between deployments. Those cuts essentially helped increase retention and morale. But lately, there are reports of concerns from senior Navy officials that the condition of some ships has deteriorated. Last fiscal year, for instance, nearly two-thirds of the Navy ships tested in a mandated inspection were unable to operate at full power for a required period. The failures were revealed in something known as INSURV, an inspection required at least once every three years by the Navy Board of Inspection and Survey. "With many Navy ships not performing up to fleet standards, senior Navy officers are bringing back the clipboard-carrying experts who once ensured that warships were fit for duty" (Dorsey, 2001).

These clipboard-carrying experts are part of the Navy organization known as the Afloat Training Group. Prior to IDTC initiatives, this organization, particularly the engineering training teams, followed very stringent guidelines. Their range of authority was based on the tenets of PEB, formerly an assessment team eliminated by the IDTC initiatives. They were able to make an assessment and provide applicable grades to the training events conducted. Such training visits were reduced after fleet leaders determined many of them redundant, and driving ship commanders and their crews too hard. Currently, ATG Norfolk Engineering Training Teams strictly conduct training as required by COMNAVSURFLANT INSTRUCTION 5450.8, ATGLANT Mission, Functions and Tasks. They are basically "trainers" that support every training endeavor that the ship requests. The ATG personnel will also be assigned to the ISIC and the ship's CO during the conduct of these events. While these problems are not directly attributed to the reduction of training visits and assessments, ATG personnel will be gainfully employed more in the future utilizing standard training guidelines that will be applicable to all surface ships in both fleets.

Training Standardization

The basic phase of the IDTC for surface ships in the Atlantic and Pacific fleets will soon become formalized with the implementation of COMNAVSURFORINST 3502.1, Surface Force Training Manual. "For the majority of the mission areas, ships will not notice much change. They will be training to the same standards that were in place before. What we have tried to do, though, is more clearly define the process and consolidate the standards into a single source document" (Surface Force Standardizes, 2002). The surface Force Training Manual (SURFORTRAMAN) is the primary source of policy, direction, and requirements for all aspects of basic phase training. This manual includes significant changes to the plan for ships' basic training. These changes include the establishment of specific criteria to be used to evaluate certification of basic phase completion over a wide area of surface ship missions and core competencies. The training effort is focused on developing training team expertise and watch stander proficiency as well as completing specific certifications. The certification process will include ISICs, working closely with the ATG, evaluating a ships material readiness, manning, and ability to train, along with demonstrating proficiency in primary mission areas and a wide area of core competencies.

Evaluating Training Effectiveness

At the completion of training, certain questions have to be answered to evaluate training effectiveness. This will be achieved through some measure of performance or series of tests that will ultimately reveal how much of the training objectives were satisfactorily accomplished. For many years, trainers have attempted ways to reliably evaluate their programs. Until quite recently, there were signs of increased efforts to find valid and reliable methods to conduct such evaluations. Any significant change to a work environment could contribute to a wide range of other changes in the work force. Investments in employee education and lifelong learning could very well pay dividends to counteract most of these changes. "Most adult and workplace training programs are concerned with the development of adult education and specific workplace training that provides certain elements necessary in the evaluation of training" (Boverie, Mulcahy, & Zondlo). There were basically three major areas of change that influence adult learning: demographic changes; economic changes; and technological changes.

Among the three areas of change, technological change has the most visible presence in our society today. This change comes in exorbitant prices and increased competition. Because of the sweeping effects of change and competition, a great deal of interest has been placed on higher education and lifelong learning. Business is turning to training to cut costs and increase productivity among employees. However, in the rush to train and educate people, many organizations have failed to treat the evaluation of such training as a priority. "Some trainers gather data for evaluation but do not analyze those data for trends or use them to improve existing training programs" (Boverie, Mulcahy, & Zondlo, 1994). Such an oversight can be costly, especially in light of the billions of dollars that have been spent and will continue to be spent annually on training efforts as a result of the demographic, economic, and technological changes. Evaluating the effectiveness of costly training efforts is paramount to the success of any program.

In the area of training evaluation, the most comprehensive and widely referenced model of evaluation is Donald Kirkpatrick's (1979). The four levels of this model are as follows: reaction; learning; behavior; and results. **Reaction** is the term that Kirkpatrick uses to refer to how well the participants liked a particular training program. Evaluation of participant's reactions consists of measuring their feelings but not necessarily a measure of actual learning. Kirkpatrick defines **learning** as the "principles, facts and techniques that were understood and absorbed by the participants" (p. 82) and identifies guidelines or standards for evaluation in terms of learning. Evaluation of learning is much more difficult to measure than reaction. The third level in the evaluation model is **transfer of learning**. This involves assessing the transfer of training skills or knowledge to the job. Kirkpatrick's fourth level of evaluation is **results** or impact on the organization. This level of evaluation is difficult to measure due to the ability to separate training from the multitude of other variables that can impact long term performance. The significance of this model is widely used and referenced in most current training-evaluation literatures. Training not only must be cost effective but also must teach participants skills and concepts that they can readily use in their organizations after the training has been completed.

Summary

Chapter II reviewed several important training concepts that evolved during the promulgation of Inter Deployment Training Cycle initiatives. These concepts form the organizational change of mission, tasks, and functions at the Afloat Training Group, Atlantic and subsidiary commands such as Afloat Training Group, Norfolk. Also, briefly discussed were general concepts of evaluating training effectiveness based on Donald Kirkpatrick's model. Fundamental for training program success is flexibility due to the constantly changing environment of Naval operations and complexity of missions. Work load reductions for the improvement of morale and retention without jeopardizing the overall engineering readiness of the fleet is a difficult task to bear. The Afloat Training Group has a tremendous opportunity to make a difference in providing this task.

CHAPTER III

METHODS AND PROCEDURES

The purpose of this study was to determine any relationship which may or may not exist between ATG Norfolk Engineering Training levels of effectiveness to formal assessments/inspections conducted by ATGLANT (N43) as a predictor of Atlantic fleet shipboard engineering readiness. Information regarding this topic was gathered through the use of a survey, specifically a questionnaire, and the evaluation of the past and present conventionally powered (steam) surface ships engineering training end of visit reports from the 1999 to 2001 training cycle. Chapter III will discuss the methods and procedures used to gather responses and evaluate information concerning the study to determine the existence of this relationship.

Population

The research began with the identification of the correct target group. Only trainers attached to ATG Norfolk Engineering Training were surveyed to collect important data connected with this research. This step revealed actual numbers of qualified Engineering Trainers, which was a total number of 70 people. In addition, pertinent data collected from conventionally powered (steam) ships in the Atlantic fleet under the cognizance of ATG Norfolk were also evaluated in the research process. The following breakdown of each class and number of steam powered ships included in this evaluation were as follows: LPD (3), AGF (1), LHA (1), LHD (3), AO (2), AS (1), LSD (1), and LCC (1).

Instrument Design

In order to ascertain the actual scope of training, an informal "question and answer period" was conducted with the target group prior to the distribution of the formal questionnaire. The informal meeting was performed in an effort to gather general information to assist with the construction of a valid questionnaire. A ten-item questionnaire was randomly handed out to Engineering Trainers of ATG Norfolk. The questionnaire was conducted instead of a personal interview due to financial and time constraints. All questionnaires were received and analyzed within a reasonable amount of time. This survey was conducted with a homogenous group, and therefore, is not a random sample. However, the Engineering Trainers as a whole were a random selection and results maybe used in comparison and contrast with the other subsidiary Afloat Training Groups under ATGLANT.

The questionnaire was constructed to meet the following goals: identify the correct target group; determine total number of Engineering Trainers qualified in their area of expertise; determine necessity for additional in-house training and cross training with ATGLANT (N43); determine limiting factors as trainers while onboard ship; and impact of new CNO-IDTC initiatives towards trainers and training. The questionnaire also encouraged respondents to provide additional comments on any pertinent training issues. See Appendix A.

The most important information crucial to this research were the evaluations of pertinent data from end of visit reports generated by ATG Norfolk Engineering Training Teams and ATGLANT (N43). These reports were results of training and assessments conducted on conventionally powered (steam) ships in the Atlantic fleet. The End of

Visit Report documents the engineering readiness of the ship during any particular Limited Training Team and assessment visit. The majority of the findings documented in the report were based on the training events requested by the ship either listed in the SOE or general deck plate review. The following major areas of engineering readiness contained in the report are: material, operations, fire fighting, training, and engineering management programs. Areas of Concern (AOC) are generated to emphasize elements of any four major areas of the engineering readiness that were found or noted to have significant problems. Most training and follow-on visits are geared towards the satisfaction of requirements leading to the qualification of engineering assessments in a ship's training cycle.

Method of Data Collection

Since this study involved the United States Armed Forces, specifically the Department of the Navy, permission to gather data was requested from the Director, Engineering Training, ATG Norfolk. See Appendix B. All respondents were verified through the Administrative Department to be on active operational status. Due to operational security and current terrorist threat conditions, a list of names is not included in this study. The surveys were completed and deposited in a sealed box provided by the researcher at a specified safe location. The surveys from the respondents were completed and received by the researcher without delay. Data collection was carefully performed based on responses indicated in the survey forms in an effort to support research goals. Compiled data from training end of visit reports generated by ATG Norfolk and ATGLANT (N43) on conventionally powered (steam) ships were carefully evaluated and compared for correctness and accuracy. The information obtained in this study will be used in comparison/contrast to study other Afloat Training Groups both in the Atlantic and Pacific fleets.

Statistical Analysis

Data from both the survey and EOVRs were tabulated and analyzed in order to meet the goals of the study. Some of the survey questions were open-ended and presented opportunities for respondents to provide additional comments as desired. The Pearson's r was utilized to determine degree of relationship between ATG Norfolk levels of effectiveness to ATGLANT (N43) formal assessments.

Summary

Chapter III discussed the methods and procedures for data collection in this research study on determining the relationship between ATG Norfolk Engineering Training Team levels of effectiveness to formal assessment/inspection conducted by ATGLANT (N43). Surveys were used to collect data from Engineering Trainers in an attempt to determine factors that may influence training effectiveness. Evaluation results of data compiled from training end of visit reports conducted on conventionally powered (steam) ships were utilized to support the premise in an attempt to determine the relationship between training effectiveness and assessment/inspections. Chapter IV will provide survey results and an analysis of ship readiness reports.

CHAPTER IV

FINDINGS

Chapter IV presents the two main components of the research study. They are the results of the questionnaire of the ATG Norfolk Engineering Trainers and statistical analysis of ATGLANT (N43) engineering assessment results of selected conventionally powered (steam) ships. The research was guided by four goals: (a) Determine if IDTC workload reductions have affected the quality of engineering training by ATG Norfolk engineering teams, (b) Identify factors that may affect ATG Norfolk engineering team training effectiveness, (c) Based on factors found that may impact training effectiveness, provide recommendation for correction and improvement of training, and (d) Determine the success or failure rates of afloat commands who employed ATG Norfolk engineering teams during the conduct of engineering training events in preparation for various engineering certifications. The training survey questions were carefully analyzed and reviewed separately to explain the importance of each question in attempting to find legitimate answers to support each research goal. Each survey question offered an opportunity for trainers to respond based on their knowledge and level of competence in determining their training effectiveness.

Engineering Training Survey Questionnaire

The survey conducted was the first of its kind to research ATG Norfolk engineering training effectiveness since the implementation of IDTC training initiatives in 1998. The results from the survey indicated all 70 respondents were assigned to ATG Norfolk as Engineering Trainers. See Table 4-1.

Table 4-1

Question #1. Are you an Engineering Trainer assigned to ATG Norfolk? Yes/No.

Total number of respondents	70
Answered YES	70
Answered NO	0
Failed to Answer	0

There are only 21 of 70 respondents identified that were assigned in steam teams. They constitute 30% of the Engineering Trainers that directly provide training to conventionally powered (steam) ships. See Table 4-2.

Table 4-2

Question #2. Which team are you assigned to? Gas Turbine/Diesel/Steam.

Total number of respondents	70
Answered Gas Turbine	35
Answered Diesel	14
Answered Steam	21
Failed to Answer	0

Majority of all respondents completed the ATG Engineering Training JQR, which designated them as a Trainer or Instructor. It is also important to note that 23% of the Engineering Trainers have not completed the ATG Engineering Training JQR. However, eight of 16 respondents who are not JQR qualified were identified as steam team trainers. See Table 4-3. The first three questions of the engineering training survey were designed as filter questions. As a result of the effective placement of filter questions, the majority of respondents were eliminated from the survey.

Table 4-3

Question #3. Have you completed the ATG Engineering Training JQR, which designates you as a Trainer or Instructor? Yes/No.

Total number of respondents	70
Answered YES	54
Answered NO	16
Failed to Answer	0

Research Goal 1

The first research goal in determining the impact of IDTC workload reductions to the quality of training was clearly revealed by the results of the survey. Based on the survey, 95% of the respondents believed they were effective as indicated in Table 4-4.

Table 4-4

Question #4. As a trainer under the new Engineering Readiness Process as a result of IDTC initiatives, do you consider yourself effective during the conduct of training? Yes/No.

Total number of respondents	21
Answered YES	20
Answered NO	1
Failed to Answer	0

Research Goal 2

To present the second research goal in identifying factors that may affect ATG Norfolk engineering team effectiveness was documented through the summarized statements and highlights of responses gathered during the survey. These factors can be grouped into two categories: Afloat Command based factors and ATG Norfolk engineering team based factors. The factors under Afloat Command based were identified (in no specific order): ship's operational commitments, insufficient or absence of SOE (schedule of events), utilizing ATG Norfolk Engineering Team as a check in the box, and no set standards of training. The ATG Norfolk engineering team based factors were also identified as: inability to enforce compliance of training objectives (recommendations only), and adherence to training standards is sometimes at the discretion of OIC/Team leader. Table 4-5 lists summarized responses to Questions 5 and 6. This table includes reasons of training ineffectiveness that are considered factors that impact training effectiveness.

Table 4-5

Question #5. If yes to question 4, what is the measure of your effectiveness?

Question #6. If no to question 4, what could be the reason for your ineffectiveness?

Measure of Effectiveness	**Reason for Ineffectiveness**
a. Good, very good	Adherence to standards is at the discretion of OIC/Team Leader
b. Pass/fail grade	Insufficient or lack of SOE
c. Performance during assessment	Operational commitment
d. Feedback from ship	No set/clear standard on training
e. Follow-on visits	Check in the box
f. Increased knowledge	TO's are recommendation only
g. Scale of 1-5	

In Question #7 all respondents believed that ship's training success would greatly depend on compliance to recommendations, which are composed of training objectives necessary to guide them towards the next training event. See Table 4-6.

Table 4-6

Question #7. As a trainer, your recommendation upon completion of training is very important to provide the ship with training objectives which will guide them towards the next training event. Does ship's training success depends on compliance of these recommendations? Yes/No.

Total number of respondents	21
Answered YES	21
Answered NO	0
Failed to Answer	0

More than half of all respondents were unsure whether the quality of training they provided did or did not reflect the assessment results or inspections. However, the survey revealed seven of 21 respondents experienced direct reflection between training and assessment results. See results in Table 4-7.

Table 4-7

Question #8. Since ATGLANT (N43) conducts the training assessment on key engineering events (i.e., LOA, IA, UD) and you as a trainer conduct the training in preparation for these key events, do you feel that the quality of training you provided reflect the results of the assessments/ inspections? Yes/No/Sometimes.

Total number of respondents	21
Answered YES	7
Answered NO	2
Answered SOMETIMES	12
Failed to Answer	0

There were several other factors identified that could impact training on both the trainer and the trainee (ship). Some of the most notable factors identified were: clear or same standards between ATG Trainers and Assessors, conduct of regular training, and good communication. There were factors identified that could contribute to a ship's training success or failures as well. Table 4-8 summarized responses of Questions 9 and 10.

Table 4-8

Question #9. If yes or sometimes to question 8, what is needed to happen to have a consistent approach to training principles and guidelines between trainers and assessors?

Question #10. If no or sometimes to question 8, what major factors can you think of that might contribute to the ship's success or failure during training assessments?

Requirements needed between trainers and assessors	**Factors contribute to ship's success/failure**
a. Good communication	Follow TO recommendations
b. Clear/Same standards	Material readiness
c. Share knowledge/information	Enforce standards
d. Conduct periodic training	Willingness to improve & succeed
	Training be a priority
	Dedicated training time

End of Visit Reports

The End of Visit Reports for conventionally powered (steam) ships generated by ATG Engineering Training Teams identified AOCs for each major areas of engineering readiness. These were based on the review of EOVRs on selected conventionally powered (steam) ships from 1999 to 2001. The majority of the AOCs found during training visits were engineering management programs and material conditions. This research revealed that ships with the most number of AOCs have reoccurring discrepancies found during subsequent visits. Table 4-9 lists the frequency of AOCs for each major area of engineering readiness during the entire training cycle.

Table 4-9 Major Areas of Engineering Readiness

Conventionally Powered (steam) Ships	# Of LTT Visits by ATG	Material	Operations	Fire Fighting	Training	Engineering Management Programs
1	1	1	1	0	0	1
2	1	0	0	0	0	0
3	2	0	0	0	0	0
4	2	1	0	0	0	0
5	2	0	0	1	0	0
6	3	0	0	0	2	3
7	3	0	0	0	1	3
8	3	1	1	0	1	3
9	3	1	0	0	0	1
10	3	0	0	0	0	0
11	4	3	3	2	1	2
12	6	3	1	3	1	5
13	8	1	0	0	2	5
Total	41	11	6	6	8	23

Research Goal 3

The third research goal on factors identified that impact training effectiveness and appropriate recommendations for correction and improvement will be sufficiently discussed in Chapter V of this research.

Research Goal 4

This section provides information relevant to the last research goal which determines the success or failure rates of afloat commands who employed ATG Norfolk engineering training teams during the conduct of engineering training events in preparation for various engineering certifications. To address the research goal, mathematical comparisons were conducted utilizing Pearson's product-moment correlation between two variables, number of times selected conventionally powered (steam) ships employed ATG Norfolk engineering training team and assessment grades assigned by ATGLANT (N43). Table 4-10 lists all 13 ships in no specific order as to class and size.

Table 4-10 Data for Correlation Coefficient

Conventionally Powered (Steam) Ships	# Of Training visits provided by ATG Norfolk Engineering Team (Note 1)	ATGLANT (N43) Assessment Grade (Note2)
1	1	95
2	1	100
3	2	80
4	2	90
5	2	100
6	3	80
7	3	95
8	3	100
9	3	100
10	3	100
11	4	90
12	6	70
13	8	90

Note 1 - Data was taken from ATG Norfolk Engineering Team EOVRs between 1999 and 2001 training cycle.

Note 2 – A grading matrix was created based on the type of assessment (LOA, IA, UD) since the ATGLANT (N43) assessment reports provided did not give corresponding numerical values (i.e., Ready to Light, Average, Qualified).

Summary

This chapter presented the data from the engineering training surveys and analysis of EOVRs generated by ATG Norfolk Engineering Team and ATGLANT (N43). ATG Norfolk Engineering Team Trainers were asked to complete a survey that pertains to the quality and effectiveness of training. Responses were either closed or open-ended. The results were tabulated and presented in a table format and statistical analysis. Data extracted from EOVRs of selected conventionally (steam) powered ships were carefully analyzed and compared. Two important variables were identified and mathematically compared utilizing Pearson's product moment correlation. This exploratory study began with the intent to determine any relationship between ATG Norfolk Engineering Team levels of effectiveness to assessments/inspections.

Chapter V will provide a summary of this research study, the conclusions, and recommendations for future-training evaluations based on the information gained from this study. Due to the population limitations established by this research, it is important that all respondents are assigned in this particular Training Command. There are other subsidiary Training Commands under ATGLANT throughout the Atlantic Region that utilizes the same training goals and objectives. Specific comments and details were provided for some question along with the breakdown of responses shown in each associated tables.

4. Determine the success or failure rates of afloat commands who employed ATG Norfolk engineering teams during their conduct of engineering training events in preparation for various engineering certifications.

Information was gathered through ATG Norfolk Engineering Training Survey and EOVRs generated by ATG Norfolk Engineering Training and ATGLANT (N43) on conventionally powered (steam) ships from 1999 to 2001. This portion of the study provided information on both the quality of training and training effectiveness. Assessment results from ATGLANT (N43) reports and numbers of LTT provided by ATG Norfolk Engineering teams were mathematically compared utilizing Pearson's product moment correlation to determine if any relationship existed between the two variables.

Conclusions

Several conclusions can be drawn from the responses returned from the ATG Norfolk Engineering Training Survey, analysis and evaluation of EOVRs, and Statistical analysis of Pearson's product moment correlation. Some of the survey questions were open-ended and presented opportunities for respondents to provide additional comments as desired. However, not all respondents provided comments and reason behind that is not known. It may be assumed that the trainer may not have enough background to feel comfortable to respond. These conclusions were based on the study's research goals:

1. Determine if IDTC workload reductions have affected the quality of engineering training by ATG Norfolk engineering teams. The majority of respondents believed they were effective in conducting training under the new Engineering Readiness Process as a result of IDTC initiatives. However,

more than half of all respondents have a feeling of ambiguity towards the notion that the quality of training provided to afloat commands is a direct reflection of the assessment results. There were also reoccurring discrepancies identified from ships with the most number of AOCs and follow on LTT visits. This can be explained as a result of significant lack of authority by ATG Norfolk Engineering Team to enforce training objectives. Since their roles were relegated to Trainers, their ability to enforce standards is weakened. The training objectives presented are merely considered as recommendations. Afloat commands are not mandated to follow such recommendations, which significantly degrade training effectiveness and opportunities.

2. Identify factors that may affect ATG Norfolk engineering team training effectiveness. The study revealed no clear and definite measure of ATG Norfolk Engineering Team training effectiveness. However, there were several factors noted. They were identified on the survey and analysis of Recommendation Section of EOVRs specifically:
    a. Insufficient or lack of SOE. The inability by afloat command to maximize training opportunities from ATG Norfolk Engineering Teams while onboard due to lack of a short or long range training plans.
    b. Operational commitments. The failure to execute planned training due to other important commitments beyond command control and oftentimes dictated by higher authority.

c. Material and watchstander readiness. The failure to conduct scheduled training due to significant numbers of material discrepancies found that prevented safe operation of the engineering plant. Also, due to lack of qualified personnel to operate equipment and maintain minimum watchstanding requirements caused by poor management of watch team replacement plan.

d. No set/clear standards. ATG Norfolk Engineering Team did not always have full and clear understanding on some guidance and instructions that govern propulsion plant operations. Insufficient training conducted among ATG Norfolk Engineering Teams and between ATGLANT (N43) to clarify issues that are prominent areas of concern during training and assessment.

e. Adherence to recommendations. Afloat command failure to enforce strict adherence to recommendations provided by ATG Norfolk Engineering Teams evidenced by repeated discrepancies found during follow on training visits.

f. Lack of ship's support. Afloat commands that performed unsuccessfully during training and assessment visits failed to provide administrative, logistical, and dedicated training support time during the conduct of the engineering readiness process.

3. Based on factors found that may impact training effectiveness, provide recommendations for correction and improvement. All recommendations for

correction and improvement are found in the Recommendations section of this chapter.

4. Determine the success or failure rates of afloat commands who employed ATG Norfolk engineering teams during conduct of engineering training events in preparation for various engineering certifications. The research has found indirect relationship between frequencies of training provided by ATG Norfolk Engineering Training Team to assessment grades assigned by ATGLANT (N43). These analyses indicated that afloat command's frequency in utilizing ATG Norfolk engineering training team was indirectly related to its actual performance during the assessment. The ***r*** coefficient indicated a moderate correlation of substantial relationship between the two variables ($r = -.41$, $df = 11$, $p > .05$, one tailed). The two variables which are the number of LTT provided to a conventionally powered (steam) ship and actual assessment grades assigned by ATGLANT (N43) were indirectly related.

With all the information gathered from the survey and EOVRs, a clear picture has developed regarding the quality and effectiveness of training. More importantly, the relationship was determined between training levels of effectiveness and assessments or inspection. The research shows no direct relationship exist between Afloat Training Group Norfolk Engineering Team Training levels of effectiveness to formal assessments or inspections as a predictor of Atlantic fleet shipboard engineering readiness. Afloat commands that utilized ATG Norfolk Engineering Training Teams frequently did not necessarily perform well during assessments. It also revealed the lack of training evaluation provided by the training command, which is vital in assessing its own effectiveness. This chapter presented the data from surveys and EOVRs generated by ATG Norfolk Engineering Team and ATGLANT (N43) from 1999 to 2001. Although the survey data initially appeared to be insufficient to support the study, the findings from the survey, EOVRs, and statistical analysis of Pearson's moment product correlation provided usable information.

Recommendations

The findings and conclusions of this study support the following recommendations to improve ATG Norfolk Engineering Training levels of effectiveness.

1. This study, or one similar, should be conducted on a regular basis to ensure compliance with the ever-changing Engineering Readiness Process.
2. The ATG Norfolk Director of Training appoint a Training Officer that supervises all Engineering Program Managers to include regular update and validation of all governing instructions and manuals and coordinates training, lectures, and discussions among engineering training teams.
3. Create a cooperative training session with ATGLANT (N43). This will provide clear and consistent understanding of critical engineering issues that are prominently areas of concern during training and assessment visits.
4. ATG Norfolk Engineering Team Training Officer creates an evaluation process or method that truly measures training effectiveness. Also, conduct periodic evaluations of training to ensure compliance with current directives and standards.

5. The Training Liaison Officer (TLO) ensures that afloat commands provide a legitimate, realistic, and finalized SOE to maximize training opportunities and should be a mandatory requirement for training request.
6. Training should only be provided when afloat commands in concurrence with their ISIC is in a "ready to train" mode. Consider minimum equipment and watchstanding requirements.
7. ATG Norfolk Engineering Team ensures that ISIC strictly enforces its respective subordinate afloat commands, adherence to training recommendations provided by the training teams.
8. Although all seventy respondents were evaluated, it is recommended that the study be used immediately in a comparison/contrast study against the other ATG subsidiary training commands under ATGLANT throughout the Atlantic Region that utilizes the same training goals and objectives.

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APPENDIX A
AFLOAT TRAINING GROUP NORFOLK ENGINEERING TRAINING SURVEY

In an effort to improve the quality of training at this command, please complete this questionnaire. Please drop the completed questionnaire in the box provided at the Engineering Training Administrative assistant's desk.

1. Are you an Engineering Trainer assigned to ATG Norfolk? Yes/No.

2. Which team are you assigned to? Gas Turbine/Diesel/Steam.

3. Have you completed the ATG Engineering Training JQR, which designates you as a Trainer or Instructor? Yes/No

4. As a trainer under the new Engineering Readiness Process as a result of IDTC initiatives, do you consider yourself effective during conduct of training? Yes/No.

5. If yes to question 4, what is the measure of your effectiveness?

6. If no to question 4, what could be the reason for your ineffectiveness?

7. As a trainer, your recommendations upon completion of training is very important to provide the ship with training objectives which will guide them towards the next training event. Does ship's training success depends on compliance of these recommendations? Yes/No.

8. Since ATGLANT (N43) conducts the training assessment on key engineering events (i.e. LOA, IA, UD) and you as a trainer conduct the training in preparation for these key events, do you feel that the quality of training you provided reflect the results of the assessments/inspections? Yes/No/Sometimes

9. If yes or sometimes to question 8, what is needed to happen to have a consistent approach to training principles and guidelines between trainers and assessors?

10. If no or sometimes to question 8, what major factors can you think that might contribute to the ship's success or failure during training assessments?

Thank you for your time and energy in completing this questionnaire. The information gained will be used to determine future training needs and improvement for our command.

APPENDIX B

May 17, 2002

Juan D. Marpuri, Jr.
3236 Fayette Drive
Virginia Beach, VA 23456

Engineering Training Director
Afloat Training Group, Norfolk
8952 First Street Suite 121
Norfolk, VA 23511-3786

Dear Commander,

As previously discussed with your Assistant Training Director, LCDR John Lones, I respectfully request permission to distribute and collect a one page questionnaire at your command in an effort to determine the relationship between Afloat Training Group Norfolk levels of effectiveness to formal assessments/inspections as a predictor of Atlantic Fleet shipboard engineering readiness. The results of the questionnaire will be evaluated by myself and reported as a graduate study to John M. Ritz, DTE, Director of Graduate Studies for Old Dominion University, Department of Occupational and Technical Studies. At the conclusion of the study, a copy will be forwarded to you and your engineering department in hopes of improving this important engineering training program.

Should any questions concerning the questionnaire or study itself, I may be reached by telephone at (757) 427-0057 or e-mail at alexian8@cox.net. Please be assured Dr. Ritz, your command, and myself will only see the results of the study. Thank you in advance for your cooperation in improving this very important training program.

Respectfully,

Juan D. Marpuri, Jr.
Old Dominion University
Graduate Student