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<p>Fleet orientation and adjustment training (FLOAT) was developed to provide seaman apprentices (SAs) with realistic expectations about shipboard living and working conditions as well as the skills and knowledge to help them cope with the demands of the fleet environment. Shipboard and shorebased versions of the program were tested with 341 SAs who received 3 to 5 days of FLOAT immediately following completion of SA training. The shipboard version of FLOAT was not effective in reducing attrition. Shorebased FLOAT had a significant impact on attrition and was a highly cost-effective program.</p>				
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**FLEET ORIENTATION AND ADJUSTMENT TRAINING
(FLOAT): A PROGRAM TO REDUCE ATTRITION
AMONG SEAMAN APPRENTICES IN THE NAVY**

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**NAVY PERSONNEL RESEARCH
AND
DEVELOPMENT CENTER
San Diego, California 92152**



**FLEET ORIENTATION AND ADJUSTMENT TRAINING (FLOAT):
A PROGRAM TO REDUCE ATTRITION AMONG SEAMAN
APPRENTICES IN THE NAVY**

Kathleen Fernandes
Ronald M. Bearden

Reviewed by
Edwin G. Aiken

Approved by
James S. McMichael

Released by
J. W. Renard
Captain, U.S. Navy
Commanding Officer

Navy Personnel Research and Development Center
San Diego, California 92152

FOREWORD

This research was performed under advanced development subproject Z1251-PN.01 (GENDET Counter Attrition Training Approaches) and engineering development subproject Z1252-PN.02 (Adjustment and Orientation Systems) and was sponsored by the Deputy Chief of Naval Operations for Manpower, Personnel, and Training (OP-01), Counter Attrition Task Force. Taken together, these two subprojects formed Project RETAIN, the objective of which was to develop, test, and evaluate two training programs designed to reduce attrition among general detail (GENDET) personnel.

The current report describes the development, test, and evaluation of the fleet orientation and adjustment training (FLOAT) program, which was designed to facilitate the adjustment of seaman apprentices to their first fleet assignment. An earlier NPRDC report (NPRDC TR 84-56) describes the development, test, and evaluation of the recruit preparation and orientation training (REPORT) program, which was designed to facilitate the adjustment of non-school-guaranteed personnel to recruit training.

The development, test, and process evaluation of FLOAT were conducted under contract N00123-79-C-1511 with Westat, Inc. and the American Institutes for Research. The contracting officer's technical representatives were Raye Newmen and Kathleen Fernandes. The impact evaluation and cost-benefit analysis of FLOAT were conducted in-house.

J. W. RENARD
Captain, U.S. Navy
Commanding Officer

JAMES W. TWEEDDALE
Technical Director

SUMMARY

Problem

Following the advent of the all-volunteer force, the Navy was experiencing costly attrition among first-term enlistees. Much of this attrition was occurring within the general detail (GENDET) force and particularly among those GENDETs who became seaman apprentices (SAs). To address this problem, two training programs were proposed:

1. The recruit preparation and orientation training (REPORT) program, to be conducted with non-school-guaranteed recruits at the start of recruit training.
2. The fleet orientation and adjustment training program (FLOAT) program, to be conducted with SAs after they completed apprenticeship training.

Objective

The objective of this effort was to develop, field test, and evaluate the FLOAT program.

Approach

A needs assessment was conducted to identify the problems experienced by SAs during their initial fleet assignment. Based on the results of the needs assessment, FLOAT was developed to provide new SAs with realistic expectations about shipboard living and working conditions as well as the skills and knowledge to help them cope with the demands of the fleet environment. Shipboard and shorebased versions of FLOAT were developed. Although each version contained a core curriculum that was conducted in a classroom setting, the intensity with which participants experienced shipboard living and working conditions differed. The shipboard version of FLOAT consisted of (1) an underway program, in which participants spent 3 to 5 days on an operational Navy ship at sea observing and participating in actual shipboard routines and evolutions and (2) a live-aboard program, in which participants spent 3 to 5 days on an operational Navy ship in port seeing and participating in the ship's daily activities. The shorebased version of FLOAT consisted of (1) a ship-visit program, in which participants toured several operational ships in port and observed the ships' activities for several hours and (2) a classroom program, in which participants viewed and discussed videotapes on shipboard living and working conditions in lieu of a direct shipboard experience.

From February through August 1981, 341 graduates of SA training were assigned temporarily to Naval Station, San Diego where they participated in one of the four FLOAT programs. To evaluate the shipboard version of FLOAT, equivalent program and control groups were selected from the shipboard participants and from the SAs who completed SA training during the field test period. Equivalent shorebased FLOAT and control groups were selected in the same manner. The members of each pair of groups were assigned to the same duty stations and were equivalent in race, educational level, and mental category. Program effectiveness was evaluated by (1) comparing the fleet attrition and performance of each pair of FLOAT and control groups and (2) conducting a cost-benefit analysis of shorebased FLOAT.

Results and Discussion

The shipboard program was not effective in reducing attrition and its lack of impact was attributed to difficulties in delivering instruction on an operating ship. By contrast, the shorebased program had a significant impact on reducing fleet losses. After 25 months of service, the attrition rate for FLOAT participants in the shorebased program was 12.1 percentage points lower than that for control group members. The success of shorebased FLOAT was attributed to the fact that integrating the videotapes into classroom discussions resulted in participants developing realistic expectations about life aboard ship. The cost-benefit analysis indicated that shorebased FLOAT was highly cost effective with benefit-to-cost ratios ranging from 4.6 to 1 to 10.7 to 1, depending on course length. By month 10 of enlistment, total implementation costs for a 3-day version of shorebased FLOAT were offset by the benefits in man-months of service gained.

Conclusions

1. FLOAT conducted in a shipboard environment is not effective in reducing attrition among SAs.
2. Shorebased FLOAT is a promising GENDET counterattrition program that reduced fleet attrition significantly and provided substantial benefit in man-months of service for the Navy.

Recommendations

It is recommended that the Research Applications Center of the Chief of Naval Education and Training:

1. Test and evaluate the shorebased FLOAT program using a larger representative sample of SAs.
2. If program effectiveness is replicated, explore the applicability of the SA FLOAT program as a prototype for developing similar programs for other GENDET groups.

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INTRODUCTION

Problem and Background

Following the advent of the all-volunteer force in 1973, the Navy was experiencing costly attrition among first-term enlistees. Much of this attrition was occurring within the general detail (GENDET) force, particularly among seaman apprentices (SAs). Guthrie, Lakota, and Matlock (1978) tracked a cohort of GENDETs who enlisted in February 1976 and found that SAs had the Navy's highest attrition rates; 54 percent of them had either deserted or been discharged during the first 2 years of their enlistment. Also, Guthrie et al. found that (1) the expectations of GENDET personnel at the time of enlistment were highly unrealistic with respect to training and educational opportunities, the nature of the specific job and the skills required, and the overall nature of shipboard life, and (2) those reporting to their first fleet assignment felt that they were ill-prepared for shipboard life, lacked essential job skills, and had received little or no orientation to their ship or to its organization and facilities.

Because of these high attrition rates, the Counterattrition Task Force of the Deputy Chief of Naval Operations for Manpower, Personnel, and Training (OP-01) requested several counterattrition projects, including one that focused on developing training approaches for reducing attrition among GENDETs. This effort, known as Project RETAIN, was aimed at developing programs that would help GENDETs adjust to military life and shipboard duty, thereby reducing attrition and enhancing job performance. Two training programs were proposed under Project RETAIN:

1. The recruit preparation and orientation training (REPORT) program, to be conducted with non-school-guaranteed recruits before they begin recruit training. REPORT was intended to help recruits adjust to the unique demands of recruit training in terms of its strict regimentation, attention to detail, rigid academic and physical requirements, and negation of personal feelings and options.

2. The fleet orientation and adjustment training (FLOAT) program, to be conducted with SAs after they completed apprenticeship training.¹ FLOAT was aimed at helping SAs adjust to the demands of life on a Navy ship, where controls are relaxed and self-initiated actions are important for personal and career advancement.

FLOAT investigated various aspects of shipboard orientation by providing the training program aboard ship as well as in a more traditional classroom setting. Interest in comparing the effectiveness of these instructional settings stemmed from a pilot program conducted in 1979 to study the feasibility of moving SA training aboard ship. During the pilot test, three SA training classes were conducted aboard the USS PAUL REVERE (LPA 148), a ship assigned to the Naval Reserve Fleet. Although the initial results of the pilot field test were promising, questions remained about the quality of the shipboard training graduates and about the resources needed to implement such a program. FLOAT provided an opportunity to compare and evaluate shipboard and shorebased instructional settings.

¹FLOAT was developed and tested with SAs because they had the highest attrition rate among GENDET subgroups. If found to be effective, FLOAT for SAs would serve as a prototype for the development of fleet orientation programs for airman and fireman apprentices (AAs and FAs).

Objective

The objective of this effort was to develop, field test, and evaluate the FLOAT program. An earlier report described the development, field test, and evaluation of the REPORT program (Fernandes, Bearden, & Felter, 1984).

APPROACH

Development of FLOAT Program

Needs Assessment

A needs assessment was conducted to identify the nature, scope, and intensity of the problems experienced by SAs during their initial fleet assignment.² The needs assessment consisted of:

1. Examining existing Navy programs that address problems associated with the fleet living and working environments and identifying aspects applicable to FLOAT (see Westat, 1980).
2. Reviewing the research literature on attrition during the first term of enlistment and examining the curriculum materials used in the Navy's SA training program and in the pilot SA training program conducted aboard PAUL REVERE.
3. Conducting interviews and written surveys in April and May 1980 aboard 11 Navy ships of the Atlantic and Pacific fleets. A sample of 79 experienced enlisted and officer personnel from these ships were surveyed about their perceptions of shipboard adaptation problems among SAs and the availability and use of shipboard training opportunities. The same topics were discussed in individual interviews with 23 of the 79 ship personnel.
4. Conducting individual interviews with 24 SAs recently assigned to their first ship and 7 SAs who had participated in the pilot program on PAUL REVERE. Both groups were asked to discuss adaptation problems and training and advancement opportunities.
5. Conducting group discussions with the staffs of the SAs training programs at the Recruit Training Centers (RTCs) San Diego and Great Lakes on shipboard adaptation problems and how they are dealt with in the training curriculum.

The needs assessment identified four factors that influence the adjustment of SAs to their initial fleet assignments and that could be addressed in a program such as FLOAT. These factors, which are described in detail in a contractor report (Radtke, Butera, Felker, Hahn, & Shettel, 1981), are summarized below.

1. Realistic orientation. The newly assigned SA must adapt to both the environmental conditions aboard ship and the various psychological stresses and demands the

²The needs assessment focused on the fleet adjustment problems of male SAs. Needs assessments for female GENDETs and male AAs and FAs were carried out later by the American Institutes for Research under contract N00244-81-C-3530.

realities of shipboard life create. Environmental conditions include a drastic reduction in living space, extremes of noise and heat, and proximity to hazardous equipment and materials. Psychological stresses include monotonous and physically exhausting shipboard routines and lack of privacy.

The interviews with ship personnel indicated that failure to adjust to shipboard life was a key problem for newly assigned SAs and one that could be reduced by additional training and more realistic expectations. The problems most frequently mentioned in the interviews with SAs related to shipboard living conditions and a lack of accurate expectations about shipboard life. Lack of privacy and problems with their work assignment were also mentioned in many of the interviews. Both the ship personnel and SAs generally agreed that the orientation or indoctrination to their ship is often provided long after new personnel have arrived aboard ship and is of little real help. These findings suggested that a realistic orientation to life on a ship could alleviate some of the shock encountered during an SA's initial fleet assignment and that this orientation should be as realistic as possible to increase its likelihood of being successful.

2. Organizational commitment. The research literature suggested that many SAs experience an emotional and psychological letdown after completing their initial training. Hand, Griffith, and Mobley (1977) found that, between the end of training and their first duty assignment, enlisted Marine recruits often showed a significant decline in their satisfaction with their pay, their sense of security and personal growth, and their expectation of completing their first tour. In the case of SAs, this letdown may be intensified by the realization that life in the "real Navy" may not be as personally satisfying or challenging as hoped. The shipboard interviews similarly revealed low morale and a general lack of enthusiasm among many SAs toward their work, which was in contrast to the sense of pride expressed by many recruits during recruit training. The shipboard interviews also indicated that many new SAs believe they are at the bottom of the Navy job hierarchy and in a "dead end" job.

Overcoming the posttraining letdown by developing a sense of pride in being SAs could ease adjustment to shipboard life. New SAs need to focus on the realistic and positive aspects of their role and to be aware that without their work the ship would be unable to function. In addition, the new SAs need to know that they can enter a variety of ratings directly from the SA category.

3. Knowledge of training opportunities. A major factor relating to the organizational adjustment of new SAs is the ability of the Navy to satisfy their job-related needs and ambitions. The research literature noted that SAs who have no clear career goals find it more difficult to adjust to the rigors of shipboard life than do SAs who have thought through their options and ambitions and are working toward them (Greenberg, Murphy, & McConeghy, 1977; Mobley, Hand, Meglino, & Griffith, 1979). The survey findings pointed to the same conclusion and, further, indicated that many of the respondents had no clear-cut goals of their own. Although a wide variety of training opportunities are typically available to new SAs, the respondents indicated that they had little knowledge of these opportunities and generally did not utilize them. These findings suggested the importance of developing realistic job goals and a plan for achieving them as well as acquiring a basic knowledge of the Navy rating and advancement system and how to use it in a ship environment.

4. Life management skills. Developing life management skills may assist new SAs in dealing with the realities of shipboard life. Relevant skills include recognizing and dealing with different leadership styles, understanding the informal social network that

operates on a ship, dealing with personal finances, and understanding the problems and consequences of drug and alcohol use aboard ship. Shipboard life has an impact on the personal relationships of the new SAs with their peers and supervisors. According to Nix, Thornton, and Nealy (1974), many recruits retain inaccurate perceptions of the social conditions aboard ship, even after extended exposure to Navy leadership styles and personnel practices. Greenberg et al. (1977) indicated that many new enlisted personnel react adversely to the level of harassment they encounter in their first assignment. The relationship of supervisors to enlisted personnel, complaint and grievance procedures, and regimentation were most frequently cited in connection with levels of personnel satisfaction and attrition. Drug use was also frequently mentioned by ship personnel as a problem SAs experience in adjusting to shipboard life and was often singled out by them in connection with disciplinary problems and early discharge.

Training Rationale, Outline, and Materials

A training rationale for FLOAT was generated to connect the factors identified in the needs assessment with the program's terminal objective--lower attrition. This rationale was that the experiences newly assigned SAs have during their first few weeks aboard ship are very important in determining their success in adapting to shipboard life and to the Navy in general. SAs who lack the necessary skills and knowledge to adapt may engage in behavior that can lead to poor performance, disciplinary problems, and early discharge. If FLOAT can provide SAs with a realistic orientation to living and working aboard ship and with the skills and knowledge for coping in a shipboard environment, these SAs will perform better on the job, be more satisfied, and be more likely to advance and become rated. In addition, they will experience fewer disciplinary problems and be more likely to complete their first enlistment.

After the training rationale was developed, an outline of the topics to be included in FLOAT was prepared. The outline presented, for each topic, the estimated instructional time, delivery mode, objective, program area into which the topic fell, and a summary of the learning activities to be conducted. The outline was submitted for comments to OP-01; the Chief of Naval Education and Training (CNET); the Chief of Naval Technical Training; Commander, RTC, San Diego; Commander in Chief, Pacific Fleet; and the Commander, Navy Surface Fleet Pacific in January 1981 and was revised based on the comments received. The revised outline was the basis for developing, in Navy format, the instructor guides that outline the instruction in terms of materials, objectives, instructor activity, and student activity. The instructor guides, along with the visuals and handouts are contained in Shettel, Radtke, and Felker (1982).

Two shipboard and two shorebased versions of FLOAT were developed. Each contained a core curriculum conducted in a classroom setting with class size limited to less than 30 participants. Instructors maintained an informal atmosphere and encouraged frequent discussions. The intensity with which participants experienced shipboard living and working conditions differed according to the version of FLOAT to which they were assigned. The two shipboard versions consisted of:

1. Underway program. Classes observed and participated in scheduled routines and evolutions during an underway exercise on one of three Navy ships. Participants were assigned to work as a "shadow" with a regular crew member under the direct supervision of the regular supervisor. For the remaining time aboard ship, participants were under the control and supervision of the FLOAT instructor who discussed their shipboard experiences with them and related their experiences to what they had learned in the classroom portion of the program.

2. Live-aboard program. Classes were assigned to one of three Navy ships in port. Although the routine for these classes was the same as that for the underway version, participants observed fewer deck evolutions and, therefore, spent most of their time working with their "shadow" mates in normal maintenance activities.

The shorebased versions consisted of:

1. Ship-visit program. Classes participated in one or two half-day tours of a Navy ship led by a member of the crew and a FLOAT instructor. Sometimes, the ship tours were supplemented with a "pier tour" in which participants were escorted around the docking area to see the various types of ships berthed there. In several instances, participants worked on one of the tugboats that operated in the harbor. This version of FLOAT made use of six ships plus several tugboats when they were available.

2. Classroom program. Classes were shown videotapes of interviews with SAs, petty officers, and officers and of live action aboard ship. The videotapes were used in lieu of actual shipboard experience to provide participants with a realistic view of the major areas of a ship and what it is like to live and work in them.

Table 1 lists the instructional units in the 3-day classroom program. Videotape material was presented during 3 of the 19 hours of instruction. Half of the material was included in the units on living and working aboard ship, and half was distributed across the other seven units listed in Table 1. The underway, live-aboard, and ship-visit programs, which covered all of the units in Table 1, consisted of about 5 days of classroom and ship activities but, depending on ship schedules, could last as long as 9 days. The introductory and reporting-on-board units were the first and last in the sequence, and the units concerned with living and working on a ship were replaced with actual ship experience. Although the other seven units were presented in the same manner as in the classroom program, the order of the units and the scheduling of classroom and ship activities varied depending on ship availability.

Table 1

Instructional Units in the Classroom Version of FLOAT

Unit Topic	Unit Length (hrs.)
Introduction and orientation	2.0
Living on a Navy ship	3.0
Seaman role/working on a Navy ship	3.5
Advancement	2.0
Getting a rating	2.0
Leadership and discipline	1.0
Drug and alcohol abuse	2.0
Managing finances	2.0
Reporting on board	1.5
Total	19.0

FLOAT personnel recorded and edited all of the videotape material. Much of the taping was done aboard ship and showed a wide variety of living and working conditions in short segments less than 5 minutes long. Live action shots were meshed with interview footage with specific points illustrated by alternating between the interviews with seamen and supervisors. The FLOAT instructors used the videotapes as points of departure for class discussion during and after their use.

FLOAT training materials and instructional procedures were revised during most of the field test, especially during the classes involving shipboard activities, which were tested first. Because of the time required to select and edit the videotape segments, they were integrated with the lessons as the videotapes were completed during the course of the field test. Other revisions consisted of (1) clarifying topics and eliminating excessive or obsolete information from the instructor guides, (2) improving the directions and explanatory notes for the instructors, and (3) reordering instructional units into an effective and flexible sequence that could accommodate ship schedules. Given the extensive revisions, only the classroom classes, which were field tested last, could be said to be entirely equivalent.

Field Test of FLOAT Program

Instructor Training

FLOAT instructors were three first-class petty officers who were reservists temporarily assigned to active duty and one chief petty officer on regular active duty. They had received no formal instructor training and had only limited experience in teaching. The purpose of the training conducted in January and February 1981 was to familiarize the instructors with the FLOAT materials and to teach them how to use the videotapes effectively and how to relate the various instructional units to one another and to the ship experiences of the participants.

After the instructors discussed the philosophy and training approach of FLOAT, they practiced delivering the instructional units to each other and to small groups of SAs. Instructor performance was critiqued, objectives and content were clarified as necessary, and units needing revisions were identified and subsequently modified. Following these practice sessions, the instructors delivered the training under realistic classroom and shipboard conditions with a class of SAs.

Procedures

Program participants were 341 SAs who graduated from SA training at the Recruit Training Center, San Diego between February and August 1981. Between 11 and 28 SAs who completed their SA training during the week preceding the FLOAT class were temporarily assigned to Naval Station, San Diego where they participated in the program. Because the versions of FLOAT were scheduled to accommodate the operational ships involved in the field test, each FLOAT class was assigned to whatever version was scheduled for the week following their graduation from SA training. After completing FLOAT, participants received 2 weeks of leave and then reported to their first duty station.

The SAs who took part in the FLOAT classes were distributed among the programs as follows:

1. Underway--6 classes, 87 participants.

2. Live-aboard--5 classes, 82 participants.
3. Ship-visit--5 classes, 87 participants.
4. Classroom--5 classes, 85 participants.

The fact that three versions of FLOAT involved operational Navy ships affected the extent to which experimental control could be maintained during the field test. Participants experienced a combination of planned activities that were part of FLOAT and unplanned activities that were due to circumstances existing on the ship at the time of the class. In the underway and live-aboard classes, the instructors had the least control over what the participants saw and did. To maintain control over the use of shipboard time, instructors received a list of ship activities, evolutions, areas, and personnel and were expected to have FLOAT participants observe or complete as many of them as possible. In addition, an attempt was made to inform each ship's personnel of the purpose of the program and to enlist their cooperation. Despite these efforts, however, very few of the shipboard classes received all of the planned activities.

Evaluation of FLOAT Program

The evaluation of FLOAT consisted of the following components: a formative assessment of attitudes and knowledge about the shipboard environment, a summative evaluation of attrition and performance during fleet assignment, and a cost-benefit analysis.

Attitudes and Knowledge About Shipboard Environment

A total of 296 participants³ in the four versions of FLOAT completed pre- and postcourse questionnaires covering expectations about living and working on a ship, attitudes about their status in the Navy, plans for obtaining a rating and advancing in rate, and knowledge of facts, policies, and procedures related to living and working on a Navy ship. The postcourse questionnaire asked participants to rate the adequacy, clarity, and usefulness of the lessons they had been presented. A control group of 194 students in SA training who had not been selected for FLOAT during the field test period also completed the precourse questionnaire at the end of their SA training.

Attrition

Equivalent FLOAT and control groups were formed after the field test was completed. The shipboard FLOAT group was selected from participants in the underway and live-aboard programs; the shorebased FLOAT group, from the participants in the ship-visit and classroom programs; and the two control groups, from the SAs who completed SA training during the field test period. The members of each FLOAT and control group were assigned to the same duty station and were similar in race, educational level, and mental category. The shipboard FLOAT and control groups each contained 96 SAs; and the shorebased FLOAT and control groups, 116 SAs.

Table 2 presents the demographic characteristics of each pair of FLOAT and control groups. The groups did not differ significantly on any of the variables. Also, they were similar in education and mental category but contained a lower percentage of Caucasians

³FLOAT participants in the first three classes did not complete the questionnaires, which reduced the sample size from 341 to 296 participants.

than did a sample of 5,782 male SAs who entered the Navy in FY81.⁴ The representativeness of the duty stations in the FLOAT and control groups was not determined.

Table 2
Demographic Characteristics of FLOAT and Control Groups

Characteristic	Shipboard Program			Shorebased Program		
	FLOAT Group (%) (N=96)	Control Group (%) (N=96)	χ^2 Value ^a	FLOAT Group (%) (N=116)	Control Group (%) (N=116)	χ^2 Value ^a
<u>Race</u>			.73			.90
Caucasian	64.6	67.7		63.8	65.5	
Black	14.6	16.7		24.1	19.8	
Other	20.8	15.6		12.1	14.7	
<u>Education</u>			3.34			.12
Non-high-school graduate	21.9	16.7		14.7	15.5	
GED ^b recipient	13.5	18.8		20.9	19.8	
High school graduate	61.5	57.3		61.2	61.2	
Some college	3.1	7.3		3.4	3.4	
<u>Mental Category</u>			.68			.19
I and II	20.8	15.6		17.2	17.2	
III upper	28.1	30.2		24.1	25.0	
III lower	25.0	25.0		30.2	28.4	
IV	26.0	29.2		28.4	29.3	

Note. Percentages do not always total 100 due to rounding.

^aThe differences were not statistically significant.

^bGED = graduation equivalency diploma.

The survival tracking file (STF) (Gay & Borack, 1982), a longitudinal data file containing demographic and military experience information on Navy enlisted personnel, was used to identify the SAs who attrited after reporting to the fleet. Attrition was tracked through June 1983 using quarterly updates of the STF. Members of each pair of FLOAT and control groups reported to the fleet between February and August 1981 and had completed between 25 and 32 months of service from the time of enlistment to the end of the tracking period. To equate the length of service (LOS) within and between the groups, attrition was tracked across 25 months of service; discharges and desertions that occurred after that time were not included in the evaluation.

⁴Demographic characteristics of the FY81 sample were 65.6 percent high school graduates, 17.4 percent GED recipients, and 17.0 percent non-high-school graduates; 20.8 percent in mental categories I and II, 27.2 percent in mental category III upper, 26.3 percent in mental category III lower, and 25.7 percent mental in category IV; and 76.1 percent Caucasian, 19.1 percent black, and 4.7 percent other.

An attrite was defined as an individual who was discharged from active duty prior to the end of obligated service. A deserter was considered to be an attrite if he was discharged after desertion or if he was in desertion status as of June 1983. LOS was defined as follows:

1. For individuals on active duty, the number of months between their most recent active duty service date (ADSD) on the STF and June 1983.
2. For individuals who were discharged or who had deserted and were discharged, the number of months between the ADSD as of the quarter of discharge and the date of discharge.
3. For individuals in desertion status as of June 1983, the number of months from the most recent ADSD to the date of desertion.

Fleet attrition rates by month of service were computed and plotted for each pair of FLOAT and control groups. In addition, survival rates were computed based on the LOS as of June 1983. Cumulative survival distributions for each pair of FLOAT and control groups were compared using the generalized Wilcoxon test developed by Breslow (1970).

Fleet Performance

The supervisors of FLOAT and control group members on active duty in June 1983 were asked to (1) evaluate the individual's performance on variables such as work quality and motivation, supervision required, military conduct, and disciplinary record, (2) check the current status of the individual (e.g., rated petty officer, designated striker), and (3) indicate whether or not they would recommend the individual for reenlistment. For each pair of FLOAT and control groups, the frequency of responses to each question was tabulated, and the distribution of responses for FLOAT and control group members was compared using χ^2 tests.

Cost-Benefit Analysis

A cost-benefit analysis was conducted to determine if the benefits associated with the reduction in attrition due to the shorebased FLOAT outweighed the costs of adding the program to the SA training curriculum. The shipboard program was not analyzed because of the problems encountered in using a Navy ship as an effective teaching platform for delivering this type of instruction.

In calculating benefits, it was assumed that the Navy was experiencing a shortfall in GENDET personnel⁵ such that FLOAT would benefit the Navy by reducing GENDET attrition. Cumulative survival rates from the survival analysis were applied to two cohorts of 1,000 SAs to obtain the number of man-months of service gained as a result of participating in shorebased FLOAT. Benefits in terms of productive time for the Navy were assumed to occur after the individual completed training and were reflected by the number of additional man-months of service gained due to lower attrition from the middle

⁵Data available for January 1984 indicated that the Navy had 84.1 percent of the personnel on board to fill the GENDET billets available.

of month 4 through month 25 of service.⁶ The calculation of benefits disregarded all sources of cost avoidance and savings and considered only the number of man-months of service gained; as a result, the calculation should be considered as underestimating the actual benefits associated with attrition reduction.

The benefits associated with the program can be generalized to the Navy as a whole only if the demographic characteristics and duty assignments in the shorebased FLOAT and control groups are representative of SA characteristics and duty assignments. The FLOAT and control groups contained a lower percentage of Caucasians compared to a sample of SAs who enlisted in FY81; the representativeness of the duty assignments was not determined.

The analysis used military pay and allowances to represent the value of an individual's productivity.⁷ To value the number of man-months of gain, the combined distribution of SAs in the shorebased FLOAT and control groups across pay grades and months of service was generated. This distribution was combined with the appropriate monthly pay and allowances figures and applied to the man-months of gain to obtain the dollar benefits associated with reducing attrition. A discount rate of 10 percent, as required by the Economic Analysis Handbook (1980), was used to obtain the present value of the benefits generated across the tracking period. Benefit calculations were limited to the time period for which attrition data were available so that actual pay and allowances figures and actual distributions of personnel across pay grades could be applied; benefits accruing to the end of enlistment were not projected because of difficulties in making assumptions about future compensation and pay grade distributions. In addition, benefit calculations were based on a cohort of 1,000 SAs rather than on the total number of SA training graduates per year. As a result, the dollar value of the benefits computed in the analysis represents only a fraction of the value that would accrue across an entire enlistment with the annual SA throughput.

Costs were estimated for implementing shorebased FLOAT as a 2-, 3-, and 5-day add-on to SA training. In each scenario, it was assumed that (1) FLOAT and SA classes would be the same size and (2) the impact of the 2- and 5-day versions of FLOAT would be the same as that for the 3-day program tested. Implementation costs included (1) a share of the research and development (R&D) costs to develop FLOAT, (2) a share of the curriculum and videotape development costs to prepare FLOAT for implementation, (3) a share of FLOAT's annual curriculum maintenance costs, (4) a share of the costs to train SA instructors to offer FLOAT, and (5) the costs associated with adding the program to the SA curriculum. Implementation costs were generated for a cohort of 1,000 SAs and, hence, may overestimate the actual costs of offering FLOAT to all SA graduates annually.

⁶SAs were assumed to report to the fleet during the middle of month 4 of service after spending 3 months in recruit and SA training and 1/2 month in FLOAT and on leave.

⁷At this writing, no agreement exists on how to monetize the benefits of service time. Therefore, it was assumed that productivity is normally distributed around the mean pay and allowances. Thus, since some SAs' productivity does not equal their pay and allowances, while others produce above this figure, the mean pay and allowances was considered to be a reasonable figure to apply to the benefits accruing from additional service time.

The R&D costs for both versions of FLOAT were estimated to be \$850,000, and the curriculum development costs to be \$6,000 per hour of instruction⁸ plus \$300,000 for development of videotapes. The share of these costs to be applied to a cohort of 1,000 SAs was based on 12,000 SA graduates per year and a program life of 10 years. The share of R&D costs associated with shorebased FLOAT was based on total R&D costs even though the total costs included both shipboard and shorebased programs. In estimating curriculum maintenance costs, it was assumed that 5 percent of the curriculum would need to be revised annually, at a cost of \$6,000 per hour of instruction. In estimating instructor costs, it was assumed that FLOAT instructors would be E-7 SA instructors who had completed 3 days of training before offering the program.

SA training costs for FY83 excluding trainee pay and allowances were obtained from Frankel and Butler (1983) and deflated to FY81 dollars. The calculation of the costs to train instructors and to offer FLOAT was based on 21 training days per month and 252 training days per year. The costs associated with trainee pay and allowances were calculated from the distribution of pay grades and months of service used in the computation of benefits.

Benefit-to-cost ratios were calculated for the three versions of shorebased FLOAT. In addition, net benefits over time were plotted for the 3-day program to determine the point at which the costs of implementing FLOAT were offset by the benefits associated with the man-months of service gained. It was assumed that all of the implementation costs were incurred by the beginning of month 4 of the tracking period. Cumulative benefits were calculated from the middle of month 4 through month 25. The payback point was defined as the month of service at which total benefits equalled total implementation costs.

RESULTS

Attitude and Knowledge Changes

The changes in attitude and knowledge about shipboard life as perceived by FLOAT participants and students in SA training not selected for FLOAT are summarized below (see Shettel et al., 1982, for detailed results).

1. Participants felt that the underway version of shipboard FLOAT provided the best opportunity to see a variety of activities on the ship. Of the 33 areas, routines, and evolutions being rated, 75 percent of the participants in the underway program indicated that they had observed the ship area or had been involved in the activity, compared to 52 percent of the live-aboard participants and 55 percent of the ship-visit participants.

2. Participants' ratings of the usefulness, adequacy, and clarity of the shipboard presentations were very positive. The underway version was considered to be the most effective, followed by the ship-visit and live-aboard versions.

⁸This figure reflects the costs associated with curriculum development for expanding the SA curriculum from 12 to 20 days of instruction; it was provided during planning meetings held in September 1982 to consider implementing the RETAIN programs.

3. Participants' ratings of the classroom curriculum were also very positive. The most effective units were those on advancement and getting a rating, reporting on board, living on a Navy ship, and managing finances. Participants were aware that some of the units overlapped with materials covered in recruit or SA training; however, the units about which participants indicated they had the most prior knowledge were also the units they rated as most useful. Thus, participants seemed to welcome the overlap between the FLOAT units and material they had covered earlier.

4. Questionnaires administered before and after FLOAT indicated that the course influenced participants' learning and attitudes. Participation in the course was associated with (a) a positive change in participants' self-perceived level of preparation for their shipboard assignment, (b) a reduction in uncertainty about shipboard living conditions, (c) an increase in knowledge about how to strike for a rating and advance in rate, and (d) an increase in knowledge about shipboard living and working subjects. Participation in FLOAT had no effect on whether or not the participants planned to strike for a rating, to complete the enlistment, or to make a career out of the Navy.

Impact on Fleet Attrition and Performance

Figures 1 and 2 present the attrition rate by LOS for the shipboard FLOAT and control groups and for the shorebased FLOAT and control groups. Shipboard FLOAT was not effective in reducing attrition (generalized Wilcoxon test = .19, $p < .33$, one-tailed test). By contrast, shorebased FLOAT had a substantial and reliable impact on reducing fleet attrition (generalized Wilcoxon test = 7.44, $p < .003$, one-tailed test). After 25 months of service, the attrition rate for the shorebased FLOAT participants was 12.1 percentage points lower than that for the shorebased control group members.

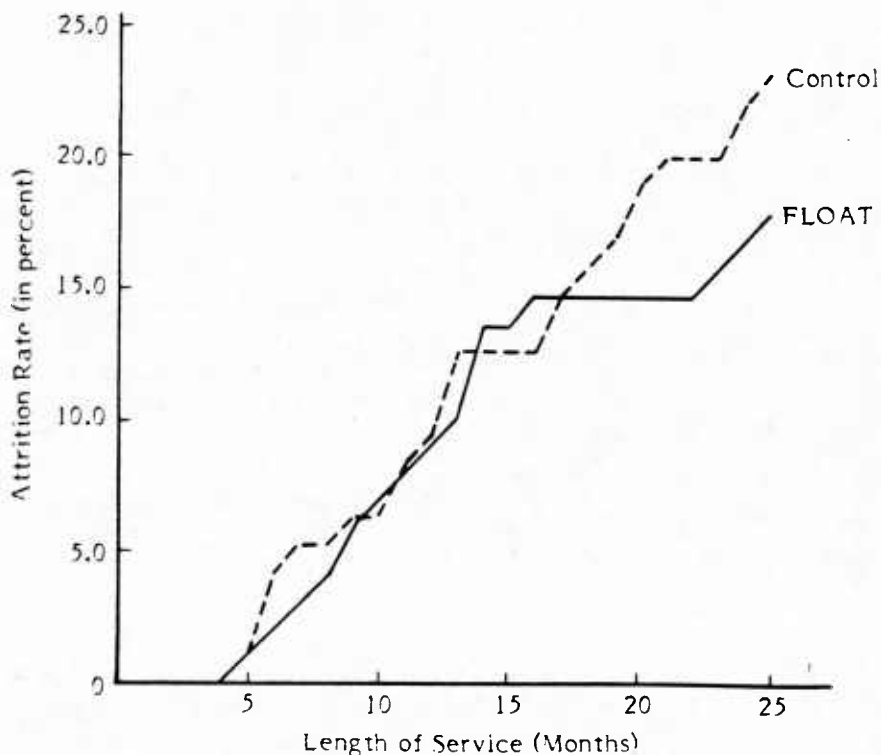


Figure 1. Attrition rate by length of service for shipboard FLOAT and control groups.

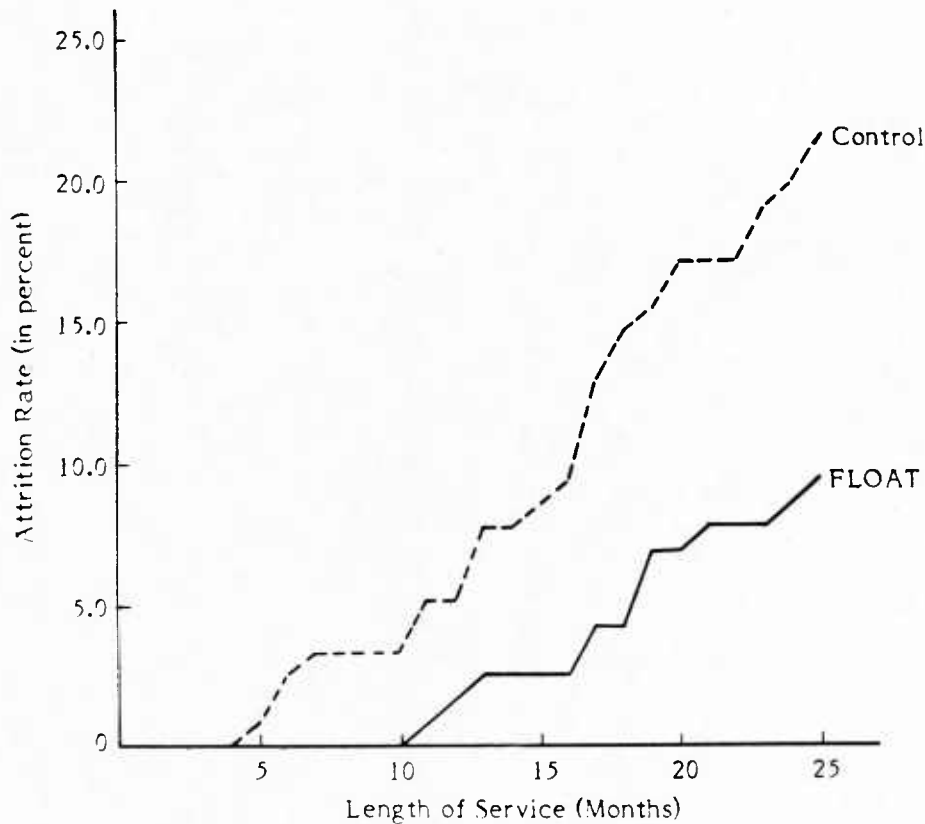


Figure 2. Attrition rate by length of service for shorebased FLOAT and control groups.

Table 3 presents the results from the questionnaire sent to supervisors of shipboard and shorebased FLOAT and control group members on active duty in June 1983. Responses were received from supervisors of 63 of 96 (65.6%) shipboard FLOAT and 52 of 96 (54.2%) control group members and from supervisors of 78 of 116 (67.2%) shorebased FLOAT and 64 of 116 (55.2%) control group members. In both versions of the program, supervisors' assessments of the members of the FLOAT and control groups did not differ on the six performance variables being evaluated or in their recommendation of group members for reenlistment. In addition, in both versions of the program, FLOAT and control group members did not differ in their success at striking for or obtaining a rating. These results suggest either that the instruction in FLOAT on advancement and getting a rating was not effective or that the variables that influence getting rated go beyond the individual's knowledge of how to do it.

Cost-Benefit Analysis

Tables 4 and 5 summarize the estimates of benefits and costs of implementing shorebased FLOAT. An additional 1,394 man-months of service would be gained by the end of 25 months of service for each cohort of 1,000 FLOAT vs. control SAs with the demographic characteristics and duty station assignments of shorebased FLOAT and control group members. The gain in benefits associated with the additional man-months of service was estimated to be \$1,017,147. Total implementation costs for offering shorebased FLOAT as 3 additional days of SA training were estimated as \$136,970. Based on these figures, FLOAT has a benefit-to-cost ratio of 7.2 to 1.

Table 3
Questionnaire Responses by Supervisors of Shipboard and Shorebased
FLOAT and Control Group Members

Characteristic	Shipboard Program				χ^2 Value ^a	Shorebased Program				χ^2 Value ^a
	FLOAT Group N	%	Control Group N	%		FLOAT Group N	%	Control Group N	%	
1. Ability to perform tasks assigned					.19					.12
Unacceptable	1	1.6	1	1.9		3	3.9	2	3.1	
Marginal	5	7.9	5	9.6		7	9.0	5	7.8	
Satisfactory	41	65.1	32	61.5		44	56.4	37	57.8	
Outstanding	16	25.4	14	26.9		24	30.8	20	31.3	
	63	100.0	52	99.9		78	100.1	64	100.0	
2. Work quality on assigned tasks					.02					3.40
Unacceptable	1	1.6	1	1.9		1	1.3	1	1.6	
Marginal	6	9.5	5	9.6		12	15.4	4	6.3	
Satisfactory	40	63.5	33	63.4		38	48.7	38	59.4	
Outstanding	16	25.4	13	25.0		27	34.6	21	32.8	
	63	100.0	52	99.9		78	100.0	64	100.1	
3. Work motivation					.50					1.31
Unacceptable	1	1.6	1	1.9		3	3.9	1	1.6	
Marginal	7	11.1	8	15.4		12	15.4	8	12.5	
Satisfactory	30	47.6	24	46.2		31	39.7	30	46.9	
Outstanding	25	39.7	19	36.5		32	41.0	25	39.1	
	63	100.0	52	100.0		78	100.0	64	100.1	
4. Supervision required to complete assigned tasks					3.22					3.42
Constant	2	3.2	1	1.9		5	6.4	1	1.6	
Excessive	4	6.4	8	15.4		7	9.0	10	15.6	
Average	35	55.6	23	44.2		35	44.9	30	46.9	
Minimum	22	34.9	20	38.5		31	39.7	23	35.9	
	63	100.1	52	100.0		78	100.0	64	100.0	
5. Military bearing and conduct					2.87					1.60
Unacceptable	3	4.8	2	3.9		6	7.7	3	4.7	
Marginal	11	17.5	16	30.8		12	15.4	14	21.9	
Satisfactory	29	46.0	21	40.4		36	46.2	26	40.6	
Outstanding	20	31.8	13	25.0		24	30.8	21	32.8	
	63	100.1	52	100.1		78	100.1	64	100.0	
6. Disciplinary record					1.44					.64
Unacceptable	7	11.1	9	17.3		7	9.0	8	12.5	
Marginal	10	15.9	10	19.2		18	23.1	16	25.0	
Satisfactory	14	22.2	9	17.3		14	18.0	11	17.2	
Outstanding	32	50.8	24	46.2		39	50.0	29	45.3	
	63	100.0	52	100.0		78	100.1	64	100.0	
7. Considering this person's overall record of performance and conduct, would you recommend him for reenlistment?					2.01					1.18
Definitely not	5	8.2	5	9.8		6	7.8	4	6.4	
Probably not	4	6.6	7	13.7		6	7.8	6	9.5	
Probably yes	15	24.6	13	25.5		19	24.7	20	31.8	
Definitely yes	37	60.7	26	51.0		46	59.7	33	52.4	
	61	100.1	51	100.0		77	100.0	63	100.1	
8. Individual's current status					10.36					3.99
Rated petty officer	29	46.8	13	25.5		30	39.0	21	33.3	
Designated striker	9	14.5	10	19.6		16	20.8	10	15.9	
Striking for rating	14	22.6	19	37.3		15	19.5	20	31.8	
Attending an "A" or "C" school	3	4.8	0	0.0		4	5.2	2	3.2	
Not striking	7	11.3	9	17.6		12	15.6	10	15.9	
	62	100.0	51	100.0		77	100.1	63	100.1	

Notes.

- Percentages may not total 100 due to rounding.
- N varies with the number of valid responses for each question.

^aThe differences were not statistically significant.

Table 4

Estimated Benefits of Shorebased FLOAT Implementation

Month of Service	Month	Months of Gain	Value of Gain	Discount Period (Years)	Present Value ^a
0	May 81				
1	Jun 81				
2	Jul 81				
3	Aug 81				
4	Sep 81	0	\$ 0	.04	\$ 0
5	Oct 81				
6	Nov 81				
7	Dec 81	69	55,800	.29	54,279
8	Jan 82				
9	Feb 82				
10	Mar 82	102	81,754	.54	77,653
11	Apr 82				
12	May 82				
13	Jun 82	130	104,264	.79	96,702
14	Jul 82				
15	Aug 82				
16	Sep 82	181	146,984	1.04	133,113
17	Oct 82				
18	Nov 82				
19	Dec 82	276	223,670	1.29	197,793
20	Jan 83				
21	Feb 83				
22	Mar 83	291	243,851	1.54	210,562
23	Apr 83				
24	May 83				
25	Jun 83	345	293,001	1.79	247,045
		<u>1,394</u>			<u>\$1,017,147</u>

^aPresent value was computed according to the following formula:

$$PV = \frac{FT}{(1+i)^t}$$

where FT = dollar value of gain, i = discount rate of 10 percent, and t = number of years.

Table 5
Estimated Costs of Shorebased FLOAT Implementation

Item	Costs	Present Value ^a
1. Implement FLOAT as a 3-day program		
a. Share of R&D costs per cohort of 1,000 SAs	\$ 7,083	\$ 7,083
b. Share of curriculum development costs per cohort of 1,000 SAs	3,500	3,500
c. Share of annual curriculum maintenance costs per cohort of 1,000 SAs	500	500
d. Share of instructor training costs per cohort of 1,000 SAs	133	133
e. Costs to offer FLOAT to 1,000 SAs as 3 additional days of SA training		
SA training costs	22,435	22,435
Trainee pay and allowances	103,319	<u>103,319</u>
Total		\$136,970
2. Implement FLOAT as a 2-day program		
a. Share of R&D costs per cohort of 1,000 SAs	\$ 7,083	\$ 7,083
b. Share of curriculum development costs per cohort of 1,000 SAs	3,300	3,300
c. Share of annual curriculum maintenance costs per cohort of 1,000 SAs	400	400
d. Share of instructor training costs per cohort of 1,000 SAs	95	95
e. Costs to offer FLOAT to 1,000 SAs as 2 additional days of SA training		
SA training costs	14,946	14,946
Trainee pay and allowances	69,100	<u>69,100</u>
Total		\$ 94,924
3. Implement FLOAT as a 5-day program		
a. Share of R&D costs per cohort of 1,000 SAs	\$ 7,083	\$ 7,083
b. Share of curriculum development costs per cohort of 1,000 SAs	4,500	4,500
c. Share of annual curriculum maintenance costs per cohort of 1,000 SAs	1,000	1,000
d. Share of instructor training costs per cohort of 1,000 SAs	209	209
e. Costs to offer FLOAT to 1,000 SAs as 5 additional days of SA training		
SA training costs	37,382	37,382
Trainee pay and allowances	172,149	<u>172,149</u>
Total		\$222,323

^aCosts were not discounted; hence, present value equals costs.

Figure 3 presents the net benefits over time for the 3-day version of shorebased FLOAT. Implementation costs were incurred at the start of month 4 and are recorded as negative benefits. Positive benefits are recorded from the middle of month 4 through month 25. The payback point for shorebased FLOAT was month 10 of service, when total implementation costs were offset by the benefits associated with man-months of service gained. Benefits occurring after month 10 were pure gain in productive time for the Navy. The difference in attrition between the shorebased FLOAT and control groups was sustained after 25 months of service; net benefits accruing to the Navy through the end of the tracking period were \$880,177. If the attrition differences continued through the remainder of the enlistment, as Figure 2 suggests, and if no further costs were incurred, the cost effectiveness of shorebased FLOAT would continue to increase.

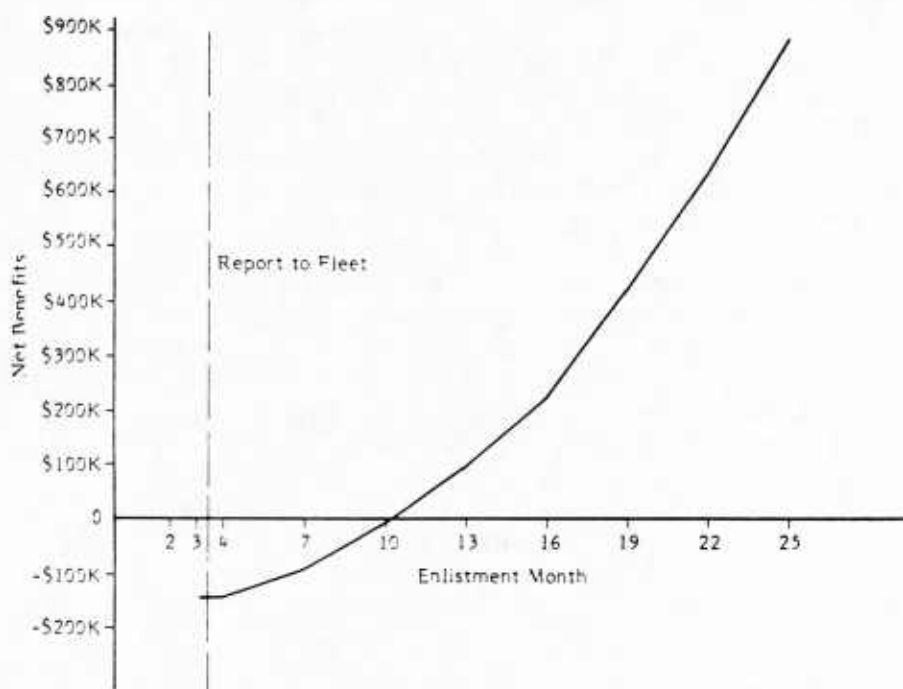


Figure 3. Net benefits over time for the 3-day shorebased FLOAT program.

The costs to implement shorebased FLOAT as a 2- and 5-day add-on to SA training were estimated to be \$94,924 and \$222,323 respectively (see Table 5). Assuming that both alternatives produce the same gain in man-months of service as the 3-day program that was tested, the benefit-to-cost ratio would be 10.7 to 1 for the 2-day program and 4.6 to 1 for the 5-day program.

DISCUSSION

These results indicate that within the limitations of generalizability imposed by sampling procedures, shorebased FLOAT can be considered to be a promising counterattrition program for SAs. The program generated a statistically reliable reduction in attrition that would provide substantial benefits in man-months of productive time for the Navy. In addition, the similarity in fleet performance as judged by supervisors suggests that individuals retained as a result of FLOAT performed as well as other SAs in the fleet. These results disagree with the notion that only the poor performers are retained as a result of counterattrition programs such as FLOAT.

The attitude and knowledge assessment indicates that FLOAT had the desired impact in terms of reducing uncertainty about future shipboard service. The intention of FLOAT was to provide a balanced view of shipboard life, including both the good and bad, and not necessarily to give participants a positive set of expectations. Participation in FLOAT was associated with an increase in self-perceived level of preparation for the shipboard assignment and with an increase in knowledge about shipboard living and working conditions.

Although both versions of FLOAT reduced the uncertainty about shipboard service, only the shorebased program had the desired impact on attrition. A key difference between the shipboard and shorebased programs was the extent to which instructors could plan and structure what participants saw and did. Although the availability of a ship greatly enhanced the realism conveyed by FLOAT, the opportunity to observe a given activity depended on the type of ship, its training and work schedule, and the work assignment of the participants. The FLOAT instructors in such an environment frequently treated units and events in isolation and had difficulty in relating the significance of participants' experiences to program objectives. As a result, the amount learned in the shipboard program was probably sufficient to produce a modest and immediate increase in cognitive knowledge, but insufficient to produce a more permanent change in expectations that would be reflected in lower fleet attrition.

By contrast, the combination of videotapes and classroom discussions in shorebased FLOAT provided a systematic and thorough presentation about living and working aboard ship. The instructors were able to use the more structured setting to convey information about shipboard life in a credible and orderly manner. As a result, the shorebased program developed realistic expectations and an understanding of life aboard ship that were reflected in a substantial reduction in fleet attrition.

CONCLUSIONS

1. FLOAT conducted in a shipboard environment is not effective in reducing attrition among SAs.
2. Shorebased FLOAT is a promising GENDET counterattrition program that reduced fleet attrition significantly and provided substantial benefit in man-months of service for the Navy.

RECOMMENDATIONS

It is recommended that the Research Applications Center of the Chief of Naval Education and Training:

1. Test and evaluate the shorebased FLOAT program using a larger representative sample of SAs.
2. If program effectiveness is replicated, explore the applicability of the SA FLOAT program as a prototype for developing similar programs for other GENDET groups.

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