

**NAVAL POSTGRADUATE SCHOOL  
Monterey, California**



**THESIS**

**THE RELEVANCE OF RETENTION BEHAVIOR IN THE  
DEVELOPMENT OF ACCESSION STRATEGY**

by

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June 2002

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**THE RELEVANCE OF RETENTION BEHAVIOR IN THE DEVELOPMENT OF  
ACCESSION STRATEGY**

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Submitted in partial fulfillment of the  
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## **ABSTRACT**

This thesis develops officer retention ratios that are useful in understanding the retention behavioral trends of accession sources over time. Data files from the Defense Manpower Data Center on Supply Corp officer accessions in 1985 to 1995 are used in the analysis. The study focuses on officers that resign voluntarily after completion of the minimum service requirement and before reaching the ninth year of active service. The findings reveal that each accession source has unique accession to retention ratios. A comparison of the retention ratios to accession trends reveals that retention rates can be improved through an understanding of retention behavior. Recommendations are made for the Navy to develop cost-effectiveness metrics that are based on retention behavior. Integration of these metrics into planning and analysis models will facilitate the cost evaluation of proposed accession policies.

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## **EXECUTIVE SUMMARY**

The Navy Supply Corps has traditionally accessed officers through the Naval Academy, the Naval Reserve Officer Training Corps (NROTC) Program, Officer Candidate School (OCS) and the Enlisted Commissioning Program (ECP). In FY02, ECP was consolidated into the Seaman to Admiral (STA) Program which combined all of the fleet accession programs and was renamed the STA-21 Program.

The purpose of this thesis is to evaluate officer accession programs and retention in the Navy Supply Corps. A comparison of the retention trends of the various programs from which the Navy Supply Corps accesses officers is performed to determine the retention behavior of the various accession sources. The differences in retention are quantified through the use ratios, which serve as metrics for determining the retention benefit of each of the accession sources.

The study focuses on officers that were accessed in 1985 to 1995 and who elected voluntary resignation after completion of the minimum service requirement and prior to reaching the ninth year of active service. The findings reveal a 41.5% drop in the combined average retention after completion of the MSR and prior to the ninth year of service. The study also found that each accession source has unique resignation trends that affect overall retention differently. Analysis of the accession to resignation ratios suggests that accession mixes could be optimized to improve retention and improve the cost-effectiveness of accession policy. A comparison of the average accession

distribution percentage and the average resignation to accession ratio further supports the potential for increased retention and cost-effectiveness through improvements in accession policy.

The current personnel models available to accession planners and analysts are extremely limited in their ability to link personnel decisions to cost factors. Additionally accession planners do not have readily available and relevant data necessary to develop cost-effective accession policy. The NCR Corporation recommended that "current standard costing methods should be integrated into planning and analysis models so that personnel behavior and proposed personnel policies can be evaluated by cost, and improved techniques should be researched."

Based on the findings of this thesis, the Navy and the Supply Corps should incorporate retention cost-effective metrics into accession models. Retention performance metrics should be developed to assist in achieving optimal accession strategy mixes. Accession targets should be based on relevant, and accurate data. Retention behavioral trends should indicate improvements in retention over time. Financial incentives should be offered to improve retention. Prior to the establishment of financial incentives, performance metrics should be developed to assess the cost-effectiveness of financial incentives. Considerations for future studies include:

- What are the common factors that influence retention for sea-going warfare communities, including the Supply Corps? Do retention behavior factors

identified in other studies effect retention in the same manner across warfare communities?

- Does improved retention represent a value to the Navy? If so, should retention cost-metrics be used to evaluate the cost-effectiveness of retention incentives?
- Should the Navy consider new programs to recruit officers? Are current accession programs effectively measured for cost and retention effectiveness?
- Is it possible to achieve high retention in a robust economy? What are the economic factors that effect recruitment and retention?

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## I. INTRODUCTION

### A. PURPOSE

This thesis will evaluate officer accession programs and retention in the Navy Supply Corps. The objective is to compare the retention benefit derived from the various programs from which the Navy Supply Corps accesses officers and determine if retention data could improve the cost-effectiveness of accession policy.

The analysis focuses on retention trends from 1985 to 1995 of officers that elected to leave active duty for voluntary reasons after completing the minimum service requirement (MSR). Retention represents a direct benefit to the Supply Corps and to the Navy. A direct benefit is derived from officers who elect to remain beyond the minimum service requirement (MSR). Retention beyond the MSR and the five years following the MSR up to the ninth year of commissioned service continues to present challenges to the Supply Corps and the Navy.

The goal of this thesis is to identify the differences in retention of the four primary accession sources used by the Supply Corps and to determine if changes in accession policy could improve retention and the cost-effectiveness of the competing accession programs. Through the future development of cost-effectiveness metrics that are based on the retention behavior of the competing accession programs, manpower planners can improve the decisions related to accession quotas. Through the optimization of accession strategy, higher retention and cost savings could be achieved.

## **B. BACKGROUND**

Since its inception, the Navy Supply Corp's has developed officers with the capability to support the war-fighting mission of the Navy by providing professional logistics and personnel support services. The training received and experience gained by Supply Corps officers also develops highly marketable professionals for the private sector. This dichotomous correlation continues to present the Supply Corps with retention challenges, particularly for officers that have completed their initial service obligation.

Until recently, Navy Supply Corp's Officers were accessed from the following programs: Naval Academy, Naval Reserve Officer Training Corps (NROTC), Officer Candidate School (OCS), and Seaman to Admiral Program-21 (STA-21). STA-21 consolidated the Seaman to Admiral Program, the Enlisted Commissioning Program (ECP) and other fleet accession programs. Currently, only 10% of Supply Corps Officers are accessed from the Naval Academy, NROTC and STA-21; the remaining 90% are accessed through OCS. Some of the accessions from the Naval Academy and ROTC are individuals that are physically disqualified to serve as Unrestricted Line Officers.

Supply Corps accession quotas from the Naval Academy and ROTC are driven by policy directives from the Chief of Naval Personnel. The quotas for Enlisted Supply Corps accessions (previously the Enlisted Commissioning Program) have also been targeted for reduction in an effort to improve retention at the O-4 grade and beyond. ECP

accessions have historically been an important accession source; particularly in providing the Supply Corps with much needed fleet experience.

In determining the correct number of accessions, Supply Corps planners consider such factors as quota limitations imposed by the Chief of Naval Personnel, the number of officers retained, the number of resignations and other types of attrition, and the number of vacant billets. As a result, the number of accessions is normally a moving target and difficult to predict. An analysis of retention behavior and the development of metrics will provide military planners the ability to make more informed decisions in an increasingly cost conscious environment. As observed by the NCR Corporation in an extensive review of business processes at the Navy's Bureau of Personnel (BUPERS), "BUPERS has to invest in developing metrics to measure its own efficiency and cost-effectiveness. Without these measures it is impossible to know whether improvement efforts are making things better or worse." [Ref. 3] Through an understanding of cost as it relates to the accession process, forecasting models can be developed to assist in improving the cost-effectiveness of future accessions and improving retention.

### **C. RESEARCH QUESTIONS**

This thesis will answer the following questions:

1. What are the accession trends and ratios of the competing accession programs?
2. What are the retention trends and ratios of the competing accession programs?

3. Does the retention data suggest that retention can be improved through the optimization of accession mixes?
4. Does the data suggest that improved cost-effectiveness can be achieved in accession planning?
5. Should retention ratios and cost-effective metrics be used in Supply Corps accession planning models?

#### **D. SCOPE**

The scope of this thesis includes: (1) evaluation of officer retention in the Supply Corps, (2) development of retention measurement ratios based on retention trends from 1985 to 1995, and (3) recommendations for including retention related cost metrics in accession planning. Other variables that affect retention that will not be considered within the scope of this study are: economic conditions (employment rate, inflation, etc.), Optempo, quality of life, pay and benefits, tour quality, medical disqualification, marital status, number of dependents, etc.

Officer retention remains a high priority in the Navy, particularly for designators with high initial training costs, such as aviator, submarine, and medical/dental officers. Typically, financial incentives are used to entice officers in these communities to remain beyond the MSR. Training costs for Supply Corps officers are significantly lower and therefore financial incentives such as bonuses do not exist for them. One consequence of the lack of retention incentives for Supply Corps Officers is that alarmingly large numbers of Supply Corps officers from all the accession sources elect to leave active duty

immediately after completion of the MSR and continue to leave at a high rate up to the ninth year, prior to their next promotion opportunity.

The Navy and the Supply Corps receive significant benefits from officers that remain beyond the MSR. These include decreases in future training costs, improved selectivity resulting from larger O-4 promotion selection pools, and increased levels of experience beyond the MSR. However, despite the benefits of improved retention, quantitative cost measures of retention benefits are not incorporated into accession planning.

A cost analysis will not be performed in this study because the costs of accession training are considered sunk costs at the MSR regardless of whether an officer elects to leave or stay on active duty.<sup>1</sup> These costs include undergraduate education, the Basic Qualification Course and other training required to qualify Supply Corps officer for their first assignment. Supply Corps officers that elect to remain on active duty beyond the MSR provide the Navy with a benefit that is equal to at least the opportunity cost of the salary deferred by electing to remain without a competing incentive. Other indirect costs are the costs of training new accessions that result indirectly from resignations and the cost of lost experience that is not replaced by lateral transfers from other officer communities. Suffice it to say that to derive a benefit (retention) without a retention incentive (cost), the Navy achieves considerable cost-effectiveness. This study therefore proceeds with the concept that if improvements in

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<sup>1</sup> From an economic point of view, all training costs are sunk costs once the MSR is reached. Refer to Ref. 2.

retention can be achieved through the optimization of accession mixes, the result is cost savings for the Navy.

This study only includes officers that elect voluntary resignation after completing their MSR and prior to the ninth year of service. Nine years of commissioned service is the minimum number required under the Defense Officer Personnel Management Act (DOPMA) to qualify for promotion to the grade of O-4. Officers that promote to O-4 are considered career officers and are normally retained at higher levels compared to officers below the grade of O-4.

Officers in this study are divided into four accession groups: Naval Academy, NROTC, OCS and ECP.<sup>2</sup> ECP officers were extracted from the OCS files based on a minimum age of 25 at time of commissioning in order to separate fleet accessions from non-prior service civilian accessions. The minimum age is based on the minimum age for entry into ECP of 22 years and 24 months of training prior to commissioning. The methodology used to separate ECP and OCS may have resulted in the capture of some OCS files in the ECP files. Therefore, for this thesis, ECP includes all accessions via OCS or ECP that were 25 years or older at the time of commissioning.

## **E. ORGANIZATION**

Chapter II provides an overview of the accession programs researched in this study. Changes to the accession programs and the introduction of new programs are also presented. A discussion of the accession planning

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<sup>2</sup> Cohort files obtained from The Defense Manpower Data Center do not differentiate between OCS and ECP.

process in the Navy as related to the Supply Corps is also included. Additionally, policy, retention, attrition, and their function on accession planning are also discussed. Chapter III discussed the source of the data. Chapter IV is a review of the findings of the study. Chapter V is the analysis, which includes the conclusions and recommendations.

#### **F. SUMMARY**

The purpose of this thesis is to evaluate officer accession programs and retention in the Navy Supply Corps.

A comparison of the retention trends of the various programs from which the Navy Supply Corps accesses officers is performed. The differences in retention of the four primary accession sources are quantified through the use of retention ratios. The ratios serve as metrics for determining the retention benefit of the various accession mixes and the cost-effectiveness of the competing accession sources.

The scope of the study is limited to: 1. Officers accessed through the Naval Academy, NROTC, OCS and ECP, 2. Officers accessed in FY 1985 to FY 1995, and 3. Voluntary resignations after completion of the MSR and through the ninth year of service.

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## **II. RESEARCH REVIEW**

### **A. BACKGROUND**

The Navy's officer accession programs fall into four general categories: Naval Academy, Naval Reserve Officer Training Corps, Officer Candidate School and Fleet Accession. Fleet Accession programs include the Seaman to Admiral Program; Enlisted Commissioning Program; Aviation Enlisted Commissioning Program (AECP); Nuclear Enlisted Commissioning Program (NECP); Civil Engineer Corps Enlisted Commissioning Program (CECECP); Fleet Accession to Naval Reserve Officer Training Corps (NROTC), including the Nurse Corps option and the Broadened Opportunity for Officer Selection and Training (BOOST) program. In FY 2002, the STA-21 Program was created by combining the original Seaman to Admiral Program and several fleet accession programs. Officers accessed through STA-21 receive commissions in the Unrestricted Line, Nurse Corps, Supply Corps and Civil Engineers Corps.

### **B. ACCESSION PROGRAMS**

#### **1. Naval Academy**

The Naval Academy is a four-year military university that prepares young men and women to serve as officers in the Navy or Marine Corps. The Naval Academy's primary focus is to prepare midshipmen on technical fields of study such as engineering, math, and physics, which lead to appointments in the Unrestricted Line communities of the Navy. Graduates of the Naval Academy incur a five-year active duty service obligation. Applicants to the Naval

Academy must be at least 17 years of age and must not have reached the age of 23 as of July 1 of the year of entry into the Academy.

## **2. Naval Reserve Officer Training Corps Program**

The purpose of the Naval Reserve Officer Training Corps Program (NROTC) is to educate and train young men and women for careers as commissioned officers of the Navy's Unrestricted Line and Nurse Corps. The NROTC Scholarship program provides two and four years scholarships in technical related fields of study, such as engineering, math, physics, except for Nurse Corps. Limited non-technical degree scholarships are offered, however, emphasis is given to technical majors. Graduates of the NROTC Scholarship Program are appointed to the grade of Ensign and incur a four-year active service obligation. Applicants must be under 27 years of age on June 30 of the year of becoming commissioning eligible or, for prior active service, must not have reached 30 years of age as of 30 June of the year of graduation and commissioning eligibility.

## **3. Officer Candidate School**

Officer Candidate School is a 13-week initial commissioning program. The course provides officer training and indoctrination and is designed to "prepare members to become commissioned officers by providing basic knowledge of the naval profession, and its related military, academic, and nautical subjects." OCS selectees choose a designator or occupational specialty within the Unrestricted Line, Restricted Line, and certain Staff Corps designators. OCS training is divided into 14 units of

general instruction. Specialized follow-on training for initial Fleet assignments is received after completing OCS. OCS applicants must have a baccalaureate degree from an accredited university. Enlisted applicants from all paygrades are eligible for OCS. Supply Corps designator candidates must be at least 19 years of age and must be commissioned prior to reaching the age of 35. Supply Corps OCS graduates are commissioned as Ensigns in the Naval Reserve and incur a four-year service obligation. A bachelor's degree in Economics or a Business-related field is desired for Supply Corps designator candidates; however, not required.

#### **4. Enlisted Commissioning Program**

The Enlisted Commissioning Program provides active duty personnel with previous college credit the opportunity to complete requirements for a baccalaureate degree and earn a commission. The ECP provides designator options in aviation, nuclear, and Civil Engineer Corps. ECP selectees elect to earn technical or non-technical degrees based on personal preferences, the number of previously completed credits, and the maximum time allowed for completion of a technical or non-technical degree, 36 and 30 months respectively. Applicants must be at least 22 years of age by November 1 of the year of applying for the ECP and complete requirements and receive a commission before reaching the age of 31. Additionally, applicants must have completed at least four years of active duty service in any branch of the armed services. Upon commissioning, officers incur a four-year active duty service obligation.

## **5. Seaman To Admiral Program**

The Seaman to Admiral Program (STA-21) is a full-time undergraduate and commissioning program for enlisted personnel. Selectees are commissioned as Ensigns after earning a bachelor's degree and following OCS training. The officers commissioned under this program incur a service obligation based on the requirements of their warfare designator. Designators are assigned based on the needs of the Navy, individual qualifications, and personal preference.

### **C. OFFICER FORCE MANAGEMENT**

Officer Accession Planners are part of the Navy officer management force that includes the Officer Community Managers (OCMs), Officer Strength Planners, and the Officer Promotion Planners. Officer Accession planners are responsible for developing plans to meet officer accession requirements for each accession source. Accession planners use an officer inventory projection model called STRAPO in planning and analyzing accession and retention. However, the tools currently available to planners do not provide the information necessary to recognize problems before the damage has occurred.

As accession planners struggle with retention problems and an increased demand to justify their resource allocations; the need for good, relevant, and readily available information, including retention data, is necessary for developing cost-effective accession policy. The current models available to accession planners and analysts are extremely limited in their ability to link

personnel decisions to cost factors. Additionally, planners routinely use financial incentives to correct force structure problems without the tools to evaluate the alternative courses of action. Although the Annualized Cost of Leaving (ACOL) model for estimating the effect of varying compensation on stay/leave decisions exists, the model is not integrated into the tools used by accession planners for making decisions. According to an NCR Corporation recommendation, "current standard costing methods should be integrated into planning and analysis models so that personnel behavior and proposed personnel policies can be evaluated by cost, and improved techniques should be researched." [Ref. 3]

#### **D. SUMMARY**

The Navy's officer accession programs are primarily designed to fulfill the need for commissioned officers in the Unrestricted Line communities. The Naval Academy, Naval Reserve Officer Training Corps, and Officer Candidate School provide commissioning opportunities to civilian, prior service and active enlisted personnel. The fleet accession programs; STA, ECP, Fleet Accession to NROTC, including the Nurse Corps option, and BOOST program, provide commissioning opportunities to active enlisted and reserve personnel. In FY02, the STA-21 program was created, which combined several of the fleet accession programs. The Naval Academy, NROTC, OCS, and ECP fleet accession programs are the focus of this study.

Accession planners currently do not have the tools to evaluate alternative courses of action related to accession

decisions. The integration of standard costing methods into planning and analysis models should be explored so that personnel behavior and personnel decisions can be evaluated by cost. Retention remains a significant personnel behavior challenge for accession planners and represents costs that should be linked to personnel decisions.

### III. SOURCE OF DATA

#### A. DATA

The data file for this analysis was obtained from Mr. Mike Dove of the Defense Manpower Data Center. The file was constructed by Ms. Teri L. Cholar from officer gain and loss files and provided in Microsoft Office Excel format. The database included all 31XX officers gained in fiscal year 1985 to 1995 and contained fields that included personal data, fiscal year of gain, age at time of gain, commissioning source, paygrade at time of gain, commissioning date, loss date, interservice separation code, and paygrade at time of loss.

The database originally contained 2,854 records, of which 622 were eliminated for the following reasons: 80 commissioning source unknown or direct appointment, 10 unknown interservice separation code, 50 involuntary separations, 90 medical disqualifications, 10 deaths, 68 retirements, 254 failure to meet minimum behavioral and performance requirements, 9 other separations/discharges (secretarial authority, conscientious objector), 28 transactions (imprisonment, dropped from rolls), 23 commissioning date unknown or gains originally commissioned prior to 1985.

Accessions with corresponding resignations that occurred prior to the end of the minimum service requirement and after completion of the tenth year of service were not included. Retention beyond the tenth year

is considered career.<sup>3</sup> A total of 260 records (USNA 4, ROTC 121, ECP 57, OCS 78) in this category were eliminated from the database, leaving. The remaining 1,972 records were used in the analysis. These records represent the voluntary resignations prior to the ninth year of service and after completion of the MSR.

## **B. DATA FIELDS**

The fiscal year of gain field is used to determine the year of accession. The loss flag field is used to determine if a resignation has occurred. Resignation dates are calculated from the loss fiscal year field if the loss flag field indicates a loss. Resignation data is tracked according to the fiscal year of gain.

The commissioning source field is used to isolate the data for each accession source analyzed. Separate Excel worksheets are used for each accession source. The age at time of gain field is used to separate the ECP accessions from the OCS accessions. As discussed in Chapter 1, ECP represents all accessions designated OCS that contain a number greater than 24 in the age at time of gain field.

The interservice code field is used to extract the voluntary separations from other types of separations. Voluntary resignations include expiration of term of service, unqualified resignations, and voluntary separation incentive(VSI)/service separation bonus(SSB). Resignations that occur before completion of the MSR and after the tenth

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<sup>3</sup> Maeder defined "success" as completion of the MSR.[Ref. 9] Jonak and Paradis classified officers that completed the MSR and were promoted to O-4 as "successful".[Ref. 10] Weitzman and Robertson identified officers that are 2 years beyond their initial MSR as "career". [Ref. 11]

year of service are not included in the analysis. The minimum service requirement is based on information obtained from official instructions for each accession program. The ninth year is the earliest year of eligibility for promotion to O-4. The number of years served is calculated by comparing the data in the commissioning date field and the loss date field and converting the result to years served.

Pivot tables are used to manipulate the data. Excel functions are used for calculations. Data from the pivot tables is summarized in data tables. The data tables are linked to the graphs for illustration of the data findings. The graphs are imported to the research document.

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## **IV. FINDINGS**

### **A. BACKGROUND**

Previous studies on officer retention reviewed for this research provided varying conclusions as to the effects of different variables on retention. One study by a Naval Postgraduate School (NPS) student concluded that several factors are important in explaining individual retention decisions in the Surface Warfare Community. These factors include initial assignment, age of the officer at time of commissioning, officers with/without children (married or divorced), number of times an officer is recommended for accelerated promotion, undergraduate grade point average, undergraduate major, and commissioning source.[Ref. 8] Two theses on retention in the Nurse Corps (NC) conducted by NPS students concluded that accession sources could be used to predict the future retention of NC officers.[Ref. 9,10] A study by the Naval Personnel Research and Development Center concluded that Structural Pattern Analysis models could provide estimates of future personnel retention. The models could also be useful in estimating the cost of assignments and for allocation optimization.[Ref. 11] Related studies on the Navy Supply Corps may exist, however, none were identified in the literature search for this thesis.

This thesis focuses on accession and resignation trends during a ten-year period and developed resignation/accession ratios useful in evaluating the four accession sources used by the Supply Corps. The ratios were used to assess the effectiveness of prior accession

strategy. The same ratios could be used to assess effectiveness on the basis of training cost and assist planners in developing optimal strategies and budget planning.

**B. ACCESSION TRENDS**

The total accessions by source for the sample population of 1,972 Navy Supply Corps Officers are: USNA 333, ROTC 751, OCS 372, and ECP 516.<sup>4</sup> Figure 1 summarizes the accession trends by source for the sample population.

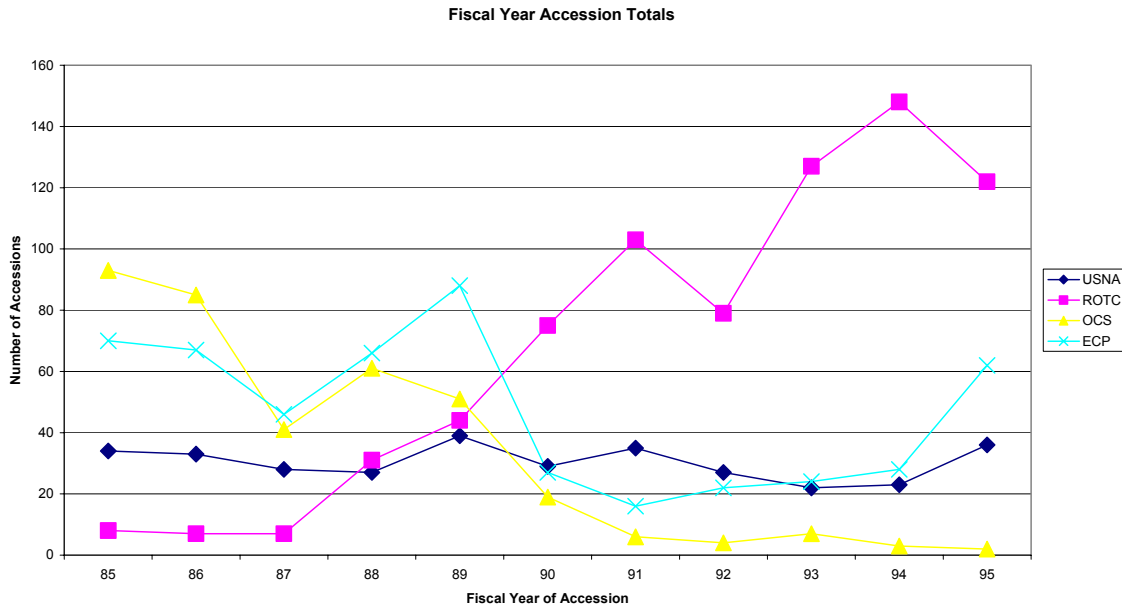


Figure 1.

The number of Supply Corps Officers accessed from the ROTC increased steadily from 1987 to 1997, dropped briefly in 1992 and continued to increase through 1994 and dropped again slightly in 1995. In the late 80's total accessions for ROTC were the lowest of the four accession sources.

<sup>4</sup> The sample excludes officers that resigned prior to completing the MSR and non-voluntary resignations.

Following 1990, ROTC accessions were the highest of the four accession sources. Naval Academy accessions remained constant from 1985 to 1991, experienced a slight decreasing trend through 1994, and followed by an increase in 1995, returning total USNA accessions to near pre-1991 averages. ECP and OCS followed nearly the same trend from 1985 to 1991. However, in 1987 and thereafter, ECP accession totals were greater than OCS. After 1991, OCS and ECP experienced diverging trends. From 1990 to 1995, in terms of total accessions, OCS accessions were the lowest of the four sources, dropping from the highest and second highest prior to 1990. Figure 2 summarizes the distribution of

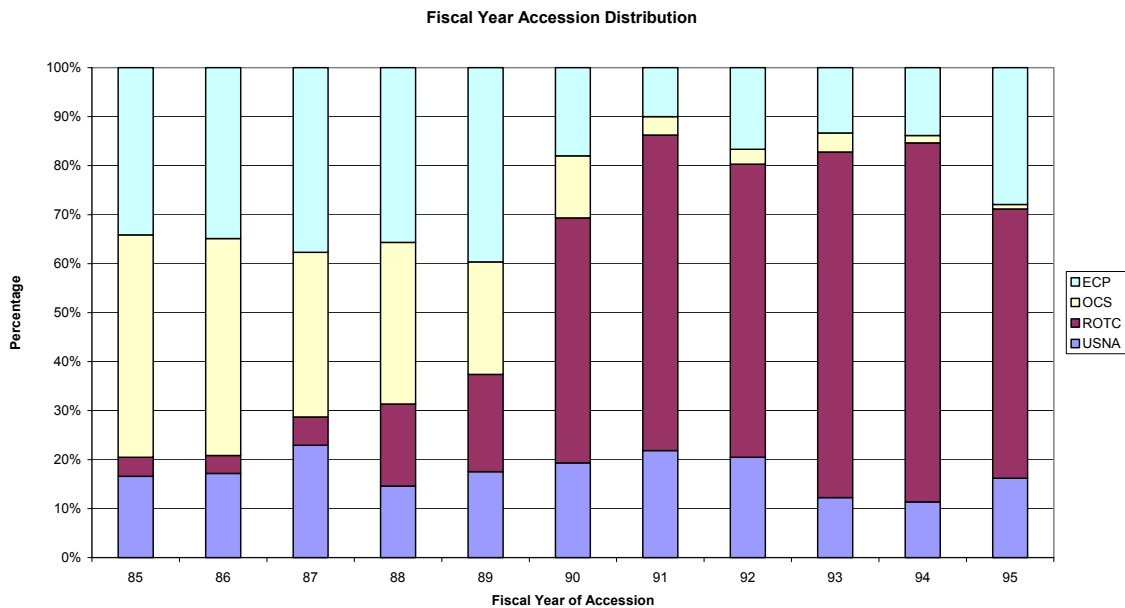


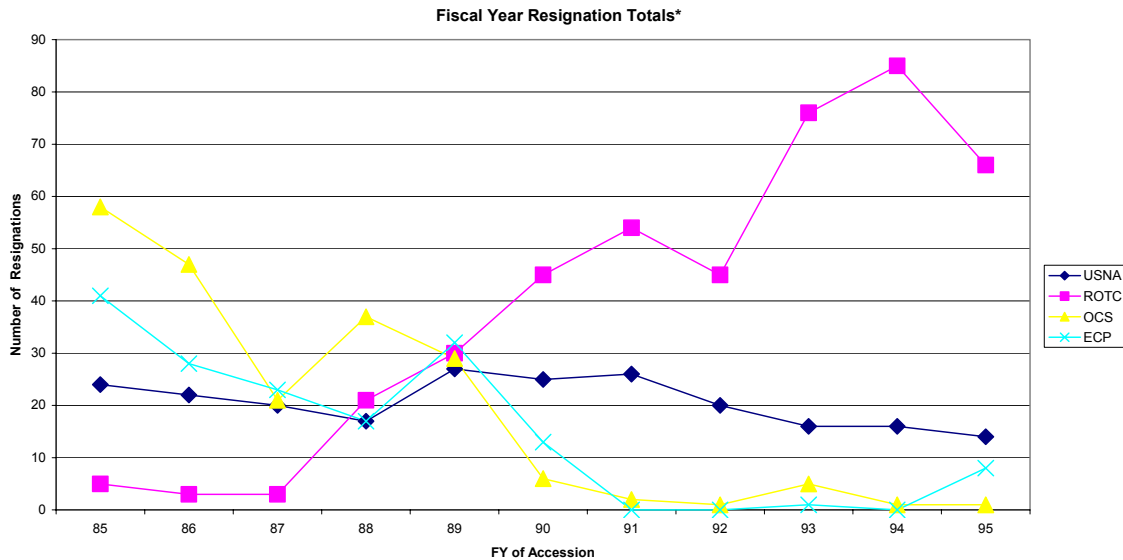
Figure 2.

accessions by source as a percentage of the total accessions in fiscal year. This graph indicates a significant change in accession strategy after 1989. The data indicates that ROTC accessions represent a higher proportion of the total accession costs. In 1990, ROTC

accessions represented 50.0% of the total accessions, increasing from a pre-1990 high of 19.8% in 1989. ROTC's proportion of accessions reached a high of 73.3% in 1994 and dropped to 55.0% in 1995. The average accession distribution percentages by source are: USNA 17.3%, ROTC 38.4%, OCS 18.6%, and ECP 25.6%.

**C. RESIGNATION TRENDS**

The total resignations by source for the accession sample population of 1,972 are: USNA 227, ROTC 433, OCS 212, and ECP 168.<sup>5</sup> Figure 3 summarizes the resignation totals. Observation of Figure 1 and Figure 3 indicates



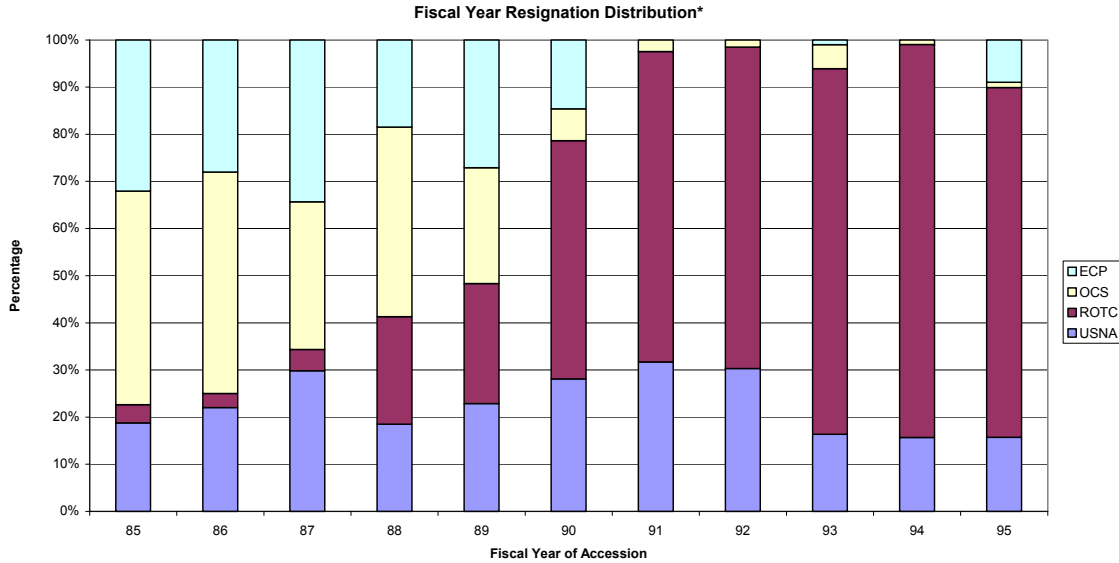
\*Only includes voluntary resignations after completion of minimum service requirement and prior to 9th year of service. Excludes resignations prior to completion of MSR

Figure 3.

that voluntary resignation trends closely follow accession trends. This is expected because accessions and resignations are represented according to the year of

<sup>5</sup> Includes only voluntary resignations prior to and including the 9<sup>th</sup> year of service. Prior enlisted service members require a minimum 10 years of commissioned service to retire as a commissioned officer.

commissioning. Figure 4 summarizes resignations as a percentage of fiscal year resignation totals by commissioning source. As expected, ROTC maintains a



\*Only includes voluntary resignations after completion of minimum service requirement and prior to 9th year of service. Excludes resignations prior to completion of MSR

Figure 4.

significantly higher proportion of the total resignations from 1990 and thereafter. Resignation proportions in 1989 were more equally distributed across the accession sources. Prior to 1987, ROTC represented a very small proportion of the resignations across the accession sources. Before 1989, OCS and ECP represented over 60 percent of the resignations. The average resignation distribution percentages by source are: USNA 22.5%, ROTC 43.4%, OCS 18.8%, and ECP 15.2%.

Resignation ratios are summarized in Figure 5. The ratios are the number of resignations to accessions.<sup>6</sup> The data indicates that resignation to accession ratios did not

<sup>6</sup> Resignations are tied directly to accessions by the year accessed.

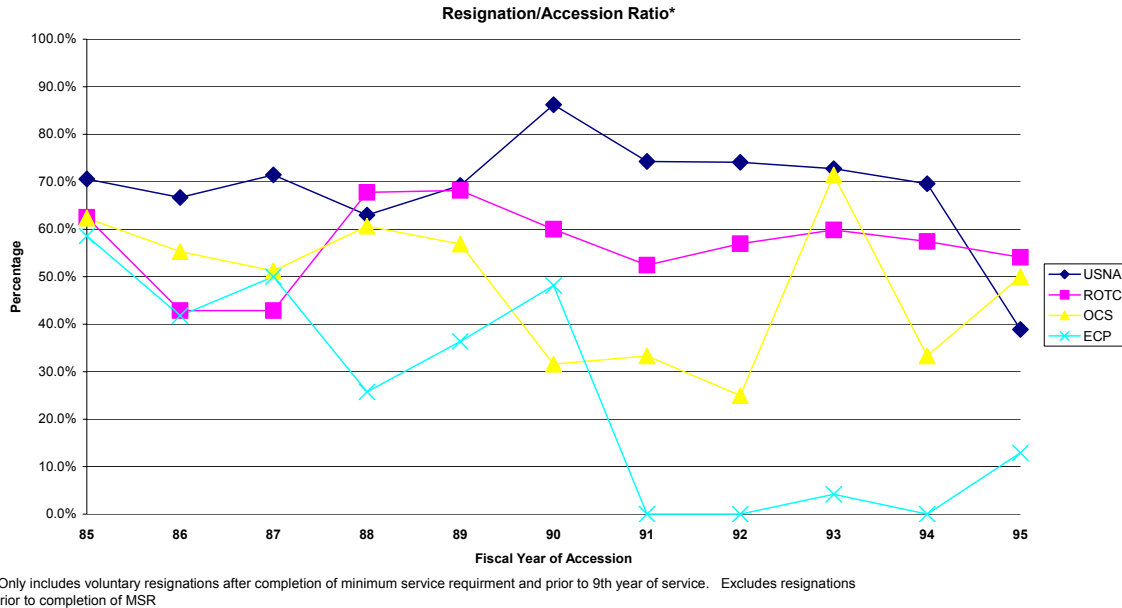


Figure 5.

follow accession trends for each of the accession sources. That is, increases or decreases in accessions did not correspond to proportionate changes in resignation to accession ratios. In some cases, resignation to accession ratios increased for decreases in accessions and the opposite occurred as well. The number of ECP and OCS accessions were lowest from 1990 to 1994. Both ECP and OCS experienced very low resignation numbers for accession years 1991 to 1995. There were no ECP resignations for accession years 1991, 1992, and 1994. Additionally, combined ECP and OCS ratios maintained a significant decrease in the resignation to accession ratio after 1989 in comparison to USNA and ROTC; therefore, ECP and OCS are treated separately in this study.

A comparison of the average accession distribution percentage and the average resignation to accession ratio is summarized in Figure 6. Columns 1, 3, 5, and 7 are the

averages by source from Figure 2. The averages are: USNA 17.3%, ROTC 38.4%, OCS 18.6%, and ECP 25.6%. These values represent the average distribution of each accession source to the total accessions in each fiscal year. Columns 2, 4, 6, and 8 are the averages by source from Figure 5. The averages are: USNA 68.8%, ROTC 56.8%, OCS 48.3%, and ECP 25.2%.

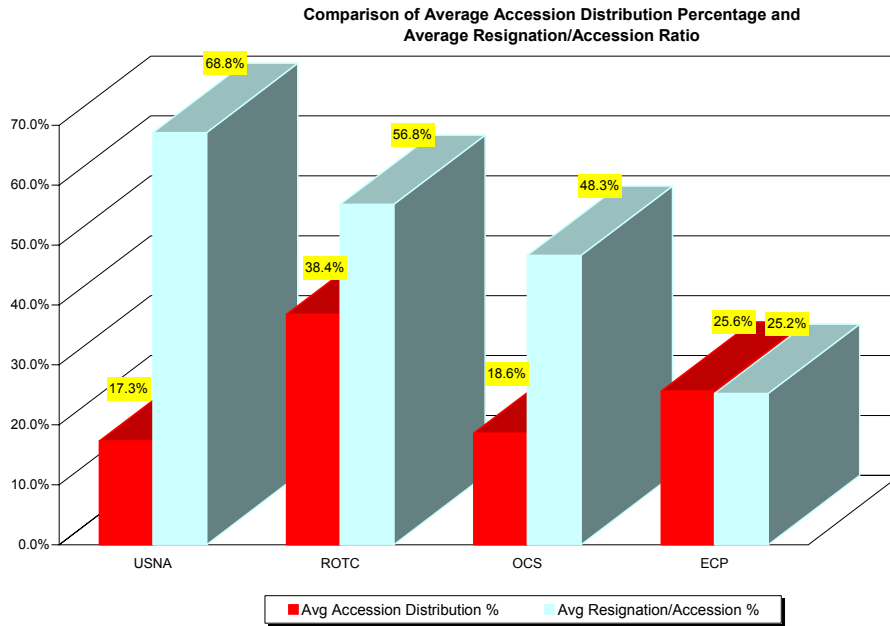
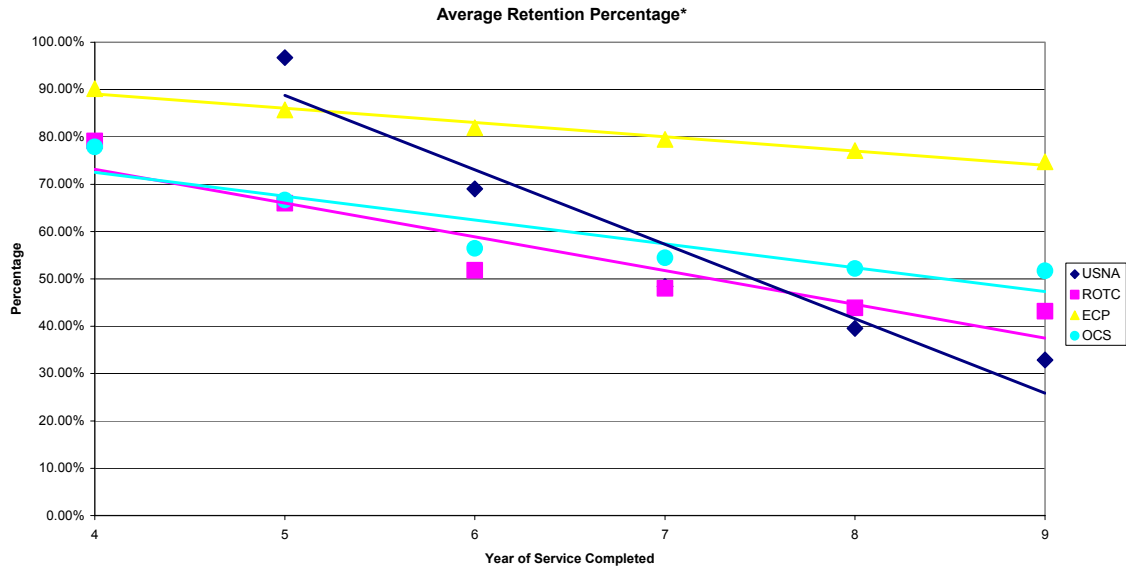


Figure 6.

25.9%. These values represent the average resignation to accession ratio for each accession source. A high resignation to accession ratio indicates that an accession source provides a decreased retention benefit compared to a source with a low resignation to accession ratio.

The retention trends for each source are illustrated in Figure 7.<sup>7</sup> Each source indicates varying rates of decreased retention from the MSR to the ninth year of service. USNA has the sharpest decreasing trend, OCS and

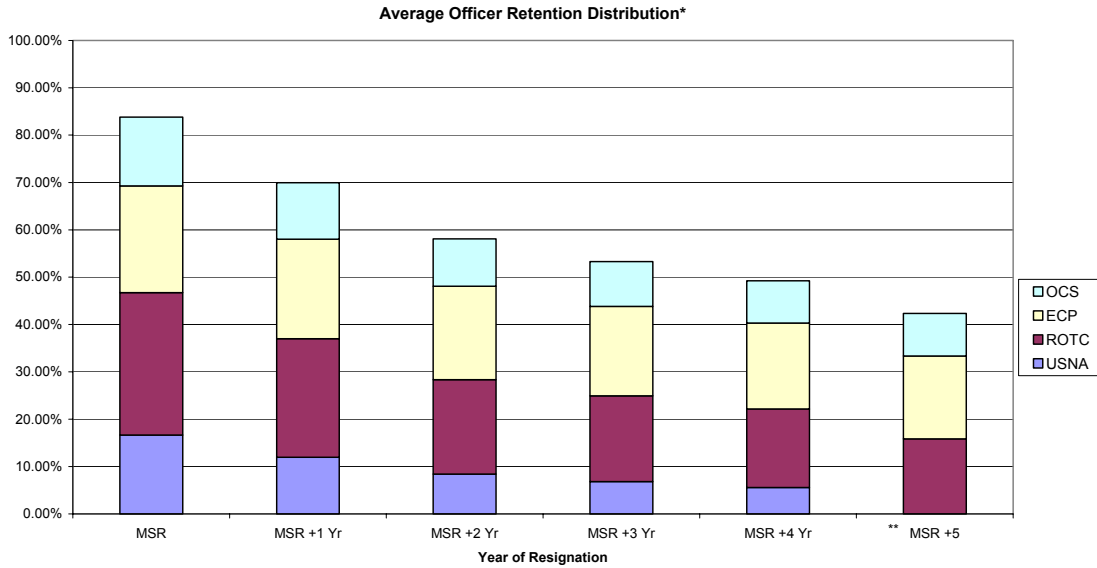
<sup>7</sup> Rates are based on accessions that completed the MSR and resigned voluntarily.



\*Only includes voluntary resignations after completion of minimum service requirement and prior to 9th year of service. Excludes resignations prior to completion of MSR

Figure 7.

ECP have the flattest trend. The ROTC trend is slightly steeper compared to OCS.



\*Only includes voluntary resignations after completion of minimum service requirement and prior to 9th year of service. Excludes resignations prior to completion of MSR

\*\*USNA MSR is 5 years, all others is 4 years.

Figure 8.

The combined retention rates for the sample are: MSR 83.8%, MSR +1 69.9, MSR +2 58.1%, MSR +3 53.3%, MSR +4

49.2%, MSR +5 42.3%. The average officer retention rates are illustrated in Figure 8 as a product of the combined retention rates summarized in this paragraph. The data suggests that as the overall retention rate decreases over time, the fiscal year average of each source contributes differently to the overall retention rates. These changes in average officer retention distribution from Figure 8 are illustrated in Figure 9.

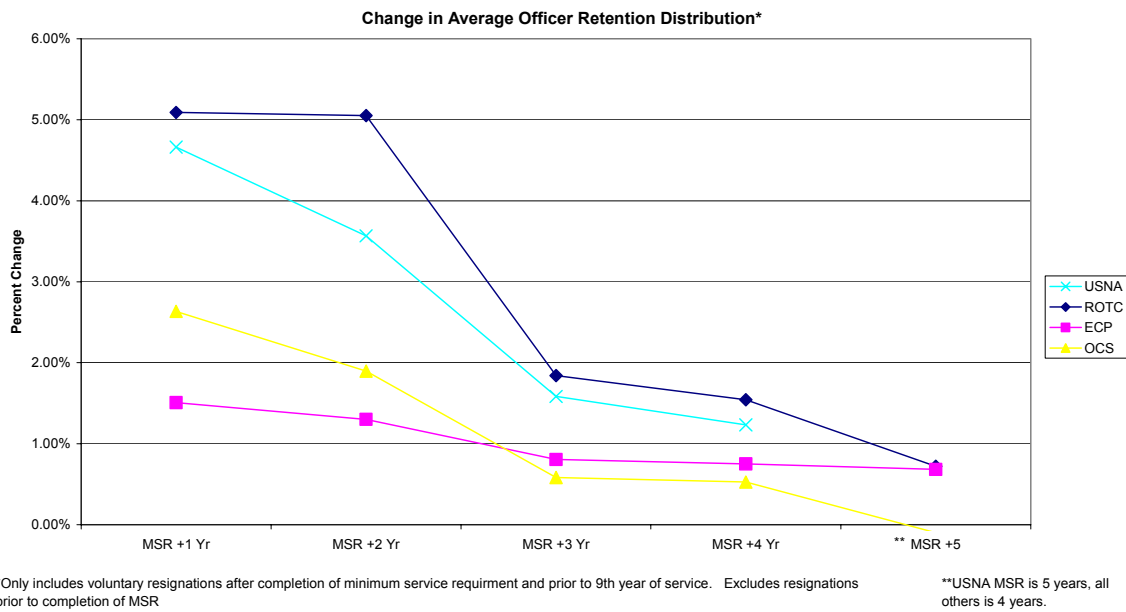


Figure 9.

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## V. ANALYSIS

### A. CONCLUSIONS

From 1985 to 1995, the Supply Corps has increased its reliance on ROTC accessions in its accession policy. The increase has resulted in a corresponding decrease in the number of OCS and ECP accessions. The data suggests that the increase in ROTC accessions has contributed to an increase in the ROTC fiscal year resignation percentages.

The ratio of resignations to accessions indicates that individual accession sources have unique retention characteristics. Fluctuations in the resignation/accession ratios suggest that there is a benefit to using retention metrics in developing accession policy. By applying retention ratios, such as the resignation/accession ratio, optimal accession mixes could be achieved with relative ease. Furthermore, the resignation to accession ratio as well as other retention metrics could be useful in developing retention incentive programs for Supply Corps officers. The ratios themselves could serve as cost-effectiveness metrics.

The comparison of the average accession distribution percentage and the average resignation to accession ratio suggests that accession policy during the period under study may not have achieved optimal retention outcomes. Since current accession models do not incorporate retention metrics, it is impossible to ascertain what mix of accessions would result in optimal retention outcomes. However, this study's findings suggest that potential retention efficiencies exist. Specifically, the average

accession distribution percentage for ROTC is 19.8% higher than the OCS average accession distribution percentage, despite the fact that the OCS average resignation/accession ratio is 7.9% lower compared to ROTC's ratio. A reasonable conclusion is that retention efficiencies could be achieved if OCS average accession distribution percentages more closely matched that of the ROTC. As previously stated, the solution to this finding is outside the context of this discussion; however, the relevance of retention behavior should not be overlooked.

The data findings indicate that retention trends are relatively unique for each of the accession sources. The data suggests that retention incentives are lacking for Supply Corps officers after completing their MSR. Combined retention drops from a high of 83.8% at the end of the MSR to a low of 42.3% at the end of the MSR plus five years. The difference of 41.5% represents significant opportunity and training costs, experience lost, and reduced promotion pools. The data indicates that each accession source possesses unique retention behavior as illustrated by the marginal changes at each year following the MSR.

In a their thesis, Jonak and Paradis concluded that accession source could be used to predict retention.[Ref 10.] Their findings indicated a relationship between gain source and retention beyond initial obligated service. The study recommended that growth should continue through a schools oriented accession policy. Their recommendations were based on making "better use of recruiting dollars and included the ROTC, Medical ECP, and Nurse Commissioning

Program (NCP). The study also noted the MECP as an "excellent" source of experience and retention potential.

The Jonak and Paradis findings support this study's conclusions that a right mix of officers from the various accession sources could be achieved after developing better fitting models. This study indicates that ECP maintains a low resignation to accession ratio (high retention) as does the Jonak and Paradis study. A possible disadvantage of the ECP is lower retention after completing 10 years of commissioned service. ECP accessions attain 20-year retirement eligibility earlier than non-prior service officer accessions. The Jonak and Paradis study also concluded that direct accessions appeared to have higher retention rates. Surprisingly, the Navy Supply Corps does not have a direct accession program. Significant benefits could be achieved if the retention behavior of Nurse Corp accessions parallels retention behavior in the Supply Corps.

A thesis by Jonathan C. Duffy on retention in the Navy Surface Warfare Community concluded that eight factors can be used to predict retention in the community to the O-4 promotion review.[Ref. 8] These factors are: 1. Initial ship assignment; 2. Age at time of commissioning; 3. Marital status of persons with children; 4. Number of times recommended for accelerated promotion; 5. Grade point average; 6. Undergraduate major; 7. Commissioning source; and 8. Prior enlisted status and marital status of persons with no children.

The findings suggest retention is higher for officers with an initial assignment to a cruiser or destroyer and

lower for frigates and other ship platforms. The study also finds officers who are commissioned later than the average age of 23.6 years (average of the data set), are more likely to remain in the Surface Warfare community. According to the same study, other factors that explain retention are: officers with children, whether married or divorced, have higher retention; officers more frequently recommended for accelerated promotion are more likely to be retained; officer's with high undergraduate GPA's or who majored in engineering are more likely to resign or transfer; and officers commissioned through OCS are less likely to be retained. Duffy's thesis studies support this studies conclusion's that retention is influenced by accession source.

Although age and prior enlisted status are not the focus of this thesis, age is used as the primary criteria for separation of ECP and OCS candidates. The data in this study concludes that ECP retention is higher during the period prior to the ninth year of service and after completing the MSR. Duffy's findings support this conclusion. This is not to suggest that ECP accessions should increase. Rather, the point that should be made is that the current 20-year retirement incentive lacks the appeal it once possessed and has minimal effect on retention efforts prior to the tenth year of service. Clearly, new and targeted retention incentives that are tied to cost-effective metrics are needed. More importantly, accession strategies must provide the optimal mix of officers to retain the most qualified officers at the best cost.

## **B. RECOMMENDATIONS**

The results of the analysis indicate accession sources do have retention behavior implications. The analysis results raise further questions that should be researched. Source of accession represents only one factor that effect retention.

- What are the common factors that influence retention for sea-going warfare communities, including the Supply Corps? Do retention behavior factors identified in other studies effect retention in the same manner across warfare communities?
- Does improved retention represent a value to the Navy? If so, should retention cost-metrics be used to evaluate the cost-effectiveness of retention incentives?
- Should the Navy consider new programs to recruit officers? Are current accession programs effectively measured for cost and retention effectiveness?
- Is it possible to achieve high retention in a robust economy? What are the economic factors that effect recruitment and retention?

The Navy and the Supply Corps should incorporate retention cost-effective metrics into accession models. The current cost conscious environment necessitates that programs provide acceptable cost benefit ratios. Retention performance metrics should be developed to assist in achieving optimal accession strategy mixes. Accession targets should be based on relevant, and accurate data.

Retention behavioral trends should indicate improvements in retention over time. Financial incentives programs should be explored to improve retention of Supply Corps officers. Prior to the establishment of financial incentives, performance metrics must be developed to assess their future cost-effectiveness.

Although OCS accessions are essentially direct accessions, the Navy Supply Corps should consider a direct accession source similar to the program used by the Nurse Corps. Recruitment of direct accessions from the private sector could provide relief to retention problems and fill the experience gap left by officers that resign after completion of the MSR.

Accession trends revealed in this study indicate that accession strategies changed dramatically during the period; however, the resignation to accession ratios for USNA and ROTC indicate no improvement in retention and OCS shows a marginal improvement. ECP indicates a moderate improvement; however, there may be reduced retention benefits after the tenth year of commissioned service. These findings are troubling and should be studied further.

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