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SURFACE WARFARE ATTRITION:
DOES SHIP TYPE MAKE A DIFFERENCE?

by

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This thesis seeks to determine if there is a relationship between ship type and first-term enlisted attrition in the Surface Warfare Navy. The data used in this thesis were taken from the Department of Defense (DOD) Enlisted Master Record (EMR). Information on male sailors aboard ships with 33 months or less of completed service was extracted from the EMR. Three cohorts were examined--those who joined their first ship in fiscal 1977, 1981, and 1985, respectively. A total of 77,502 personnel serving in 300 ships were analyzed in three data formats: individual ship, ship class, and ship mission category. The results revealed wide variation in attrition rates between individual ships and respective ship classes across different cohorts. In addition, a distinct trend in attrition was observed between ships in different mission categories. For example, oilers generally had the highest rate of attrition across all three

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Surface Warfare Attrition:
Does Ship Type Make a Difference?

by

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ABSTRACT

This thesis seeks to determine if there is a relationship between ship type and first-term enlisted attrition in the Surface Warfare Navy. The data used in this thesis were taken from the Department of Defense (DOD) Enlisted Master Record (EMR). Information on male sailors aboard ships with 33 months or less of completed service was extracted from the EMR. Three cohorts were examined--those who joined their first ship in fiscal 1977, 1981, and 1985, respectively. A total of 77,502 personnel serving in 300 ships were analyzed in three data formats: individual ship, ship class, and ship mission category. The results revealed wide variation in attrition rates between individual ships and respective ship classes across different cohorts. In addition, a distinct trend in attrition was observed between ships in different mission categories. For example, oilers generally had the highest rate of attrition across all three cohorts--followed (in order) by amphibious ships, minesweepers, and repair ships with cruisers, destroyers, and frigates having the lowest rate. Further research is recommended to determine the causes for differences in attrition between ship types. Understanding this aspect of enlisted attrition may further aid Navy

manpower planners and leaders in reducing personnel attrition and its consequences for the Surface Warfare Navy.

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I. INTRODUCTION

A. PROBLEM

Navy manpower requirements are becoming increasingly difficult to meet. The All-Volunteer Force (AVF), given proper funding by Congress, was to solve many problems that had developed under the draft. Enlisted attrition rates were expected to fall from a Vietnam-era peak of 28 percent to a projected 23 percent by 1977 upon completion of the transition to an all-voluntary military. Even more optimistic was the President's Commission on an All-Volunteer Armed Force (or Gates Commission), which forecasted an attrition rate as low as 15 percent under the AVF. At the same time, retention rates were expected to rise along with the number of careerists [Ref. 1:p. 24].

In 1969, the Gates Commission also predicted that the military would have to take a large proportion of low aptitude recruits during the AVF transition and that the services would experience early deficits in manpower end-strengths. Yet, as Cooper notes, the fact that neither of these happened provides "some indication that the problems of transition have been fewer than originally anticipated." [Ref. 2:p. 387] During a conference on the future of the AVF held at Annapolis, Maryland in 1983, Secretary Defense Caspar Weinberger observed that,

> ...least part of the criticism levelled against our All-Volunteer Force was really just a smoke screen. Behind the smoke screen was a basic unwillingness to pay the price of giving our Armed Forces decent compensation for their contribution to their nation's security. Then there was fear that we could not attract enough educationally qualified people unless we had a draft--that fear has been completely dispelled by the facts. [Ref. 3:p. 2]

While many of the benefits forecasted by original AVF proponents have been realized, attrition remains a perplexing problem and one that has worsened as this decade comes to a close. The question remains: what is the best way for Navy manpower planners, recruiters, and unit commanders to maximize their resources to reverse first-term attrition within the Navy?[1] To make matters worse, the population of young adults will continue to decline through the mid-1990s--acting to intensify competition between the military, employers, and colleges [Ref. 5:p. 13]. With this smaller pool of young adults in the population available for reenlistment, there is even greater interest in seeing that enlistees successfully complete their first term.

In an effort to define and investigate one aspect of the attrition issue, this study seeks to determine if there is a relationship between first-term enlisted attrition and ship type. The results of the research should help to clarify

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[1] Elster and Flyer define attrition as "separation or discharge from military service prior to tour completion." [Ref. 4: p. 11] Recruits may sign enlistment contracts of varying length up to six years.

current understanding of personnel attrition in the Navy and provide greater insight for developing appropriate policy.

B. BACKGROUND AND LITERATURE REVIEW

Since the end of the draft, there has been extensive analysis of the attrition issue. Manpower experts have concerned themselves not only with the causes but with the effects on this growing problem on fleet readiness.

A number of factors have been examined and found to be related in some way to attrition. First and foremost, there appears to be general agreement that recruits who are high school diploma graduates (HSDGs) are almost twice as likely to complete their first enlistment than are those who do not graduate from high school [Ref. 7:p. 2]. In addition, as Cooke and Quester observe, there is also a strong relationship between attrition and aptitude test scores:

> Aptitude, as measured by the Armed Forces Qualification Test (AFQT) scores and resulting AFQT category classification, is negatively related to early attrition. Recruits with high aptitude generally qualify for the most valuable technical training the Navy offers, which may increase their job satisfaction and reduce attrition propensity. [Ref. 7:p. 2]

However, Elster and Flyer add that the "validity of AFQT in predicting attrition varies for different population subgroups. For example, it is less valid for NON-HSDGs and blacks." Additional demographic factors, such as age, sex, race, and marital status, are likewise related to attrition. [Ref. 4:pp. 66-67]

Several studies have shown that older recruits (over age 20) are more likely to separate before completing their term of enlistment than younger recruits. For instance, Buddin found that "early attrition increases about one percentage point per year for each year beyond age 17 at enlistment." Additionally, he found that prior work experience before enlistment influences attrition, "although the magnitude and significance of the effects vary somewhat." Navy enlisted personnel are four-to-five percent "more likely" to leave during the first six months if they have a period of unemployment the year before they enlist. [Ref. 8:pp. 6-7]

A study by Smith and Kendall found a relationship between attrition and assignment to the Navy's GENDET (General Detail personnel with no formal training outside boot camp) positions. As the authors point out, "GENDETS separated from the Navy early much more frequently than NONGENDET personnel." The differences were significant with over 61 percent of the GENDETS leaving the Navy in 34 months compared with 15 percent of the NONGENDETs. [Ref. 9:p. 77] Quester and Cooke hypothesize that this may be occurring in part because "the GENDET work environment is inherently less satisfying than the environments of those receiving skill training."

The Navy Personnel Research and Development Center (NPRDC), San Diego, CA has done extensive research on the personal and organizational determinants of enlisted attrition. A 1979 NPRDC study found that of an experimental

group of 636 sailors who separated from the Navy early, a majority said their decision to separate was based upon the following grievances (in order of importance):

- family or personal problems.
- general dissatisfaction with Navy life.
- lack of freedom and independence.
- dissatisfaction or lack of interest in the entry job. [Ref. 10:p. 16]

However, very little research has focused on the possible relationship between first-term enlisted attrition and ship type within the surface Navy. There are a few notable efforts in this direction. For example, Cooke and Quester examined the first-term enlisted attrition of Navy recruits from 1985 through 1988 within Atlantic and Pacific naval air forces (AIRLANT/AIRPAC), surface ship forces (SURFLANT/SURFPAC), and submarine forces (SUBLANT/SUBPAC). The results showed a trend of increasing attrition among both Atlantic and Pacific combatants from 1985 to 1988. SURFLANT combatants discharged an average of 6.15 personnel in 1988, while SURFPAC combatants discharged an average of 5.64 personnel. The number of annual first-term losses among SURFLANT surface combatants increased by 48 percent between 1985 and 1987--compared with an increase of 75 percent in the total fleet over the same period. Although the analysis by Quester and Cooke concludes that attrition is up during the 1985 through 1988 period in both SURFLANT and SURFPAC, no conclusions are drawn regarding any

possible relationship between attrition and specific ship classes. The study used the Center for Naval Analyses (CNA) Enlisted Master Record (EMR) to track file records. A list of all SURFLANT Unit Identification Codes (UICs) was considered. Only surface combatants were considered in SURFPAC. All those who left the Navy with less than 33 months on board ship were included in unit attrition statistics. The authors computed individual unit loss rates by dividing first-term attrition losses for each year by the average number of enlisted personnel on board each unit with less than 33 months on active duty aboard the unit. [Ref. 6:pp. 2-6]

A Master's thesis by C.G. Carlson examined the various factors affecting first-term attrition from Navy ships. A total of 554 ships (divided into 39 classes) was considered. This study included submarines and aircraft carriers. It also included both active and reserve ships. The data were extracted from the Survival Tracking File (STF) by UIC. Carlson attempted to determine the relationship between ship type and attrition; however, the results were inconclusive. To draw distinctions between the ship classes, Carlson examined the average underway time (i.e., time spent at sea) of each ship class. He found that nuclear submarines, while maintaining a high operational tempo (op tempo) with long periods at sea, have relatively low attrition. He recognizes that other factors unique to the nuclear submarine force weigh heavily in keeping submarine attrition low. Aircraft carriers

reflected high relative attrition (11.45 percent), as did destroyer tenders (ADs) with comparatively little underway time (12.4 percent attrition). On the whole, the results suggested that smaller ships appear to have lower attrition rates than larger ships. By analyzing the attrition data by ship class as well as by individual UIC, Carlson also attempted to control for other variables by "looking at ships with similar crew size, engineering plant, age, weapons suite, mission, habitability, and cohort distribution over time." [Ref. 4:p. 43] The Carlson study did not analyze attrition distributions by occupation (or ratings) across ship classes or types. Nor did the study delve deeply into the educational levels of attrition losses from specific ship classes. Carlson's study also revealed attrition peaks and valleys in individual ships. (This is probably explained by reasons external to ship class--such as homeport, commanding officer leadership, command climate, ship performance, or morale.) While the author drew no conclusions across ship class, he did conclude that while "some disparities among ships of the same class exist, the attrition rates are close to each class average." [Ref. 11:pp. 34-46]

Other attrition studies have only scratched the surface of the research question pursued in this analysis. The Smith and Kendall effort, for example, introduced variables to see if attrition were higher for those whose initial duty assignments were at shore commands or at sea in ships. In answering this

fundamental question, the authors observed that "personnel who were assigned to shore stations had the highest attrition rates (over 37 percent vs. 21 percent for ship duty)." As illustrated in Figure 1, Smith and Kendall concluded that "initial assignment to shore-duty stations (as opposed to sea duty) appears to increase the risk of attrition." [Ref. 9: pp. 74-77] Similar studies suggest the same relationship of sea/shore assignment to attrition.

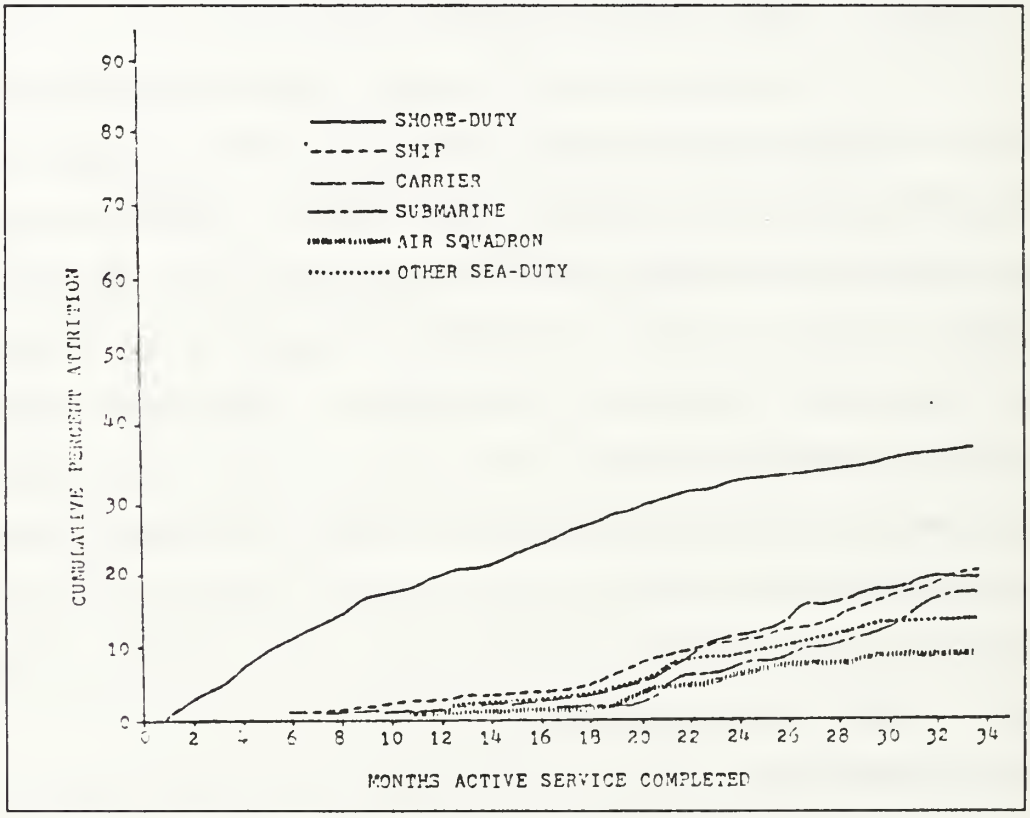


Figure 1. Attrition Over Time by Initial Fleet Duty Assignment [Ref. 9:p. 76]

C. OBJECTIVE

With dwindling dollars for defense and a shrinking population of "baby busters," military leadership must explore all aspects of the manpower issue--not only to recruit but to retain fully qualified personnel. During the last decade, over one-third of first-term Navy enlistees failed to complete their enlistment. This rate of attrition is growing and now approaching a staggering 40 percent. Thus, every avenue must be explored to unravel the causes so that solutions may be found and implemented. Attrition will always exist. It is a reality. But at current levels, the costs and overall effect on readiness are too great. The military, unlike the private sector, is unique in that its ranks are manned initially by teenagers who have little or no previous job experience. The Navy does not recruit mid-level or senior enlisted leaders. It "grows" them from their first enlistment. Therefore, if the Navy misses that narrow window to recruit the necessary talent to maintain a quality force for the future, the opportunity is lost. Of equal importance is to ensure that those who enter the Navy are given every possible opportunity to succeed.

This thesis seeks to determine if there is a relationship between ship type and first-term enlisted attrition in the surface warfare Navy. Drawing upon the DOD Enlisted Master File maintained by the Defense Manpower Data Center (DMDC), data are matched with information on over 300 ships.

Attrition behavior is examined for three cohorts: those who joined their first ship in fiscal 1977, 1981, and 1985, respectively. Individuals are tracked for 33 months from the date of enlistment.

Chapter II outlines the research methodology in detail and summarizes the ship classes considered as well as the key distinctions between them. Chapter III provides data analysis to determine possible trends in ships or ship classes that may lead to a positive relationship between ship type and first-term enlisted attrition. Chapter IV summarizes relevant findings and recommendations in view of the research results.

II. METHODOLOGY

This chapter describes the data sources, population, variables, and the programming technique used in the study. The various constraints and limitations of the data analysis are also discussed. The key distinctions between the 36 ship classes are then outlined to set the stage for Chapter III.

A. PROCEDURE

The data used in this thesis were taken from the Department of Defense (DOD) Enlisted Master Record (EMR), maintained by the Defense Manpower Data Center (DMDC), Monterey, CA. Information on male sailors aboard ships with 33 months or less of completed service was extracted from the EMR and used in the analysis. Three cohorts were examined--enlisted personnel who joined their first ship in fiscal 1977, 1981, and 1985, respectively. Utilizing the same methodology in an earlier study, Cooke and Quester justify their selection of a similar population:

> All non-prior service recruits have at least a three-year obligation so that any discharge at or before 33 months of service is a loss of obligated service to the Navy. Separation within three months of contract expiration is at the convenience of the government, permitting individuals to request an early out up to 90 days before their contract expiration. [Ref. 6:p. 2]

Using ten variables from a field of over 100 available in the EMR, data were extracted for tabulation and comparison

across ships, ship classes, and general ship mission categories. Entry variables into the EMR are listed as follows:

- Service Branch.
- Unit Identification Code (or UIC, a ship identifier).
- Sex.
- Educational Level.
- Reason for Loss (Separation Code).
- Date of Separation.
- Occupation Code (or Navy rating).
- Age.
- AFQT.
- Race.

Information provided by OP-122 (Navy Manpower Programs and Support Branch, Washington, D.C.) was used to construct a data file on over 300 ships, incorporating the following five variables:

- Unit Identification Code (UIC).
- Ship Name.
- Hull Number.
- Category/Class.
- Average crew size.

Additional information on ship class was obtained from Jane's Fighting Ships. This included the number of ships in the class as of fiscal 1978, 1982, and 1986; the propulsion system (Nuclear, Gas Turbine, Diesel, Steam); and the general

weapons capability (Guns, Missiles, Torpedos) of the ship. The average age (in years) of each ship class was also calculated using information on each ship's commissioning date in Jane's. The data provided by OP-122 aided in matching UICs with ship names and hull numbers. Utilizing PL/1 (Programming Language 1), DMDC incorporated two software programs to extract and recode information from the EMR, and merge EMR data with the OP-122 data file.

B. VARIABLE EXPLANATION

The UIC represents a key element in this research, since the objective is to determine if a possible relationship exists between ship type (as identified from the EMR by UICs) and first-term enlisted attrition.

Women were not included in this study. By restricting the study to men, an effort was made to compare "apples with apples" across all ship classes. The inclusion of women in this study would inflate first-term attrition figures on the relatively few ships partially manned by them. As Elster and Flyer point out, this is due, in part, because "large numbers of women are separated for pregnancy reasons during their first three years of service." [Ref. 4:p. 19]

The educational level (HSDG vs. NHSDG/GED) of those that separated early from the Navy is also extracted from the EMR to note any possible relationship to ship class. Likewise, a breakdown of reasons for separation and the ratings

(occupation) of those that separated early are tabulated to study any possible correlation with ship type. Also examined across ship types are average Armed Forces Qualification Test (AFQT) scores, average crew member age, and distribution by race (white, black, Hispanic, and other).

This study compares loss rates by ships, ship classes, and ships of similar mission capability (i.e., cruiser/destroyers vs. amphibious ships vs. minesweepers vs. oilers). "Loss rate" is defined as the number of individuals in a particular ship or ship class who separate early from the Navy, divided by the total number that reported aboard with less than 33 months active duty in 1977, 1981, and 1985. Attrition cases are limited to those serving in their initial ship assignment and having less than 34 months on active duty.

Average crew sizes are based upon fiscal 1988 manning levels in naval ships, as provided by OP-122. The final variable considered is average underway steaming time as defined by the average number of days-per-year a ship spends underway at sea. These data were provided by the Center for Naval Analyses and are available for each ship class for one year during each of the three cohort periods being examined. This variable represents a partial measurement of how the operating frequency of a ship or ship class may or may not influence attrition.

With the exception of minesweepers, only active-duty naval ships were considered in this study. This exception was made

to permit a comparative look at the minesweeper force where, unlike other ship classes, the vast majority of minesweepers (18 of 21) are in the Naval Reserve Force (NRF). Unlike larger naval ships in the reserve force that have a reduced manning level of 60-65 percent of active-duty ships within the same class, reserve minesweepers (MSOs) are manned to approximately 70-75 percent of active duty MSOs. In the minesweeper class only, active-duty MSOs (3 of 21) were eliminated from the analysis due to higher manning levels.

C. CONSTRAINTS OR LIMITATIONS

In the documentation of attrition by ratings, a designated "striker" (a GENDET who is working through correspondence courses and on-the-job training to achieve a particular occupation code or rating) may separate before completing his term of enlistment and before his newly-achieved rating code is administratively documented into the EMR. This loss statistic may be counted against total GENDET attrition statistics when it should be included in the occupation or rating statistics of the sailor's newly acquired rating. Consequently, GENDET attrition figures may be somewhat higher, and rating attrition figures (in ratings where designated strikers are permitted) may be somewhat lower than are actually the case. This problem probably does not distort comparisons made here when the attrition rates of ships are examined for the same rating.

As previously observed, average crew sizes by ship class were provided by OP-122 based upon fiscal 1988 manning levels. It should be noted that crew sizes have fluctuated over the years with modifications to weapons and other shipboard systems that require increased or decreased manning. Second, as ships become older, manning may increase because of increased manpower required to maintain aging systems such as a ship's engineering plant. Furthermore, total Navy manpower end strengths will also influence shipboard manning distribution resulting in rating surpluses or shortages in individual rating manning levels.

D. SHIP-TYPE CHARACTERISTICS

Before examining the loss rate data in Chapter III, it is helpful to review the unique mission capabilities and characteristics of the 36 ship classes considered here. This information can aid in identifying possible links that may exist between ship type and first-term enlisted attrition.

In this section, ship classes are examined by broad mission capability and numbers of ships within each class. In highlighting key differences, Table 1 outlines average crew sizes, average yearly underway operating time, type of propulsion system, general weapons capability, and average age of each ship class.

Aircraft carriers and amphibious helicopter carriers were not included in the analysis. Carriers have a rather unique

rating structure with large numbers of aviation-rated personnel. Therefore, comparisons with the majority of other surface ships that have no or relatively small aviation capability would be difficult.

Similar ship classes have similar broad mission requirements, described as follows:

CGN 9, 25, 35, 36, and 38 classes: CGN-Guided missile cruiser (nuclear).

CG 16, 26, and 47 classes: CG-Guided missile cruiser.

Mission: to destroy enemy aircraft, missiles, submarines, and surface ships in order to prohibit the employment of such forces against U.S. forces. Cruisers will normally be assigned to carrier battle groups or surface action groups. [Ref. 12]

DDG 2, 37, and 993 classes: DDG-Guided missile destroyer.

Mission: to provide anti-air, anti-surface, and anti-submarine self-defense and to provide local area protection to carrier battle groups, surface action groups, amphibious groups, underway replenishment groups, and other military shipping against air, surface, and sub-surfaces threats. [Ref. 12]

FFG 1 and 7 classes: FFG-Guided missile frigate.

Mission: to provide anti-air, anti-surface, and anti-submarine self-defense and to provide local area protection to underway replenishment groups, amphibious groups, and other military shipping against sub-surface, air, and surface

threats. The class may also make a limited contribution to carrier battle group or surface action group defense by temporarily supplementing more capable battle group assets. [Ref. 12]

FF 1052 class: FF-Fast frigate.

Mission: to provide anti-air, anti-surface, and anti-submarine self defense and to provide local area protection to underway replenishment groups, amphibious groups, and other military shipping against sub-surface and surface threats. The class can also provide naval gunfire support and make a limited contribution to carrier battle group or surface action group defense by temporarily supplementing more capable battle group assets. [Ref. 12]

LPD 1 and 4 classes: LPD-Amphibious Transport Dock.

Mission: to transport and land troops and their essential equipment and supplies by means of embarked landing craft or amphibious vehicles augmented by helicopter lift. [Ref. 12]

LKA 113 class: LKA-Amphibious cargo ship.

Mission: to transport and land combat equipment and material with attendant personnel in amphibious operations. [Ref. 12]

LSD 32, 36, and 41 classes: LSD-Dock landing ship.

Mission: to transport and launch loaded amphibious craft and vehicles with their crews and embarked personnel in amphibious assault by landing craft and amphibious vehicles.

LSDs will also render limited docking and repair service to small ships and craft. [Ref. 12]

LST 1179 class: LST-Tank landing ship.

Mission: to transport and land amphibious vehicles, tanks, combat vehicles, and equipment in amphibious assault. [Ref. 12]

LCC 19 class: LCC-Amphibious command ship.

Mission: to serve as a command ship for an amphibious task force, landing force, and air control group commanders during amphibious operations. [Ref. 12]

AE 21, 23, and 27 classes: AE-Ammunition ship.

Mission: as elements of the Combat Logistics Force, to support sustained combat operations at sea by naval task groups. By providing logistics support and ammunition to all classes of surface combatants, AEs will make task groups as independent as possible of overseas sources of ammunition supply. [Ref. 12]

AFS 1 class: AFS-Combat store ship.

Mission: as elements of the Combat Logistics Force, to support sustained combat operations at sea by naval task groups. AFSs support warfare tasking by providing repair/spare parts support and refrigerated and non-refrigerated consumables. Additionally, AFSs are capable of simultaneously providing refrigerated stores, general stores, fleet freight, mail and personnel to all classes of surface combatants. [Ref. 12]

AO 98 class: AO-Oiler.

Mission: to operate as units of an Underway Replenishment (UNREP) Group shuttling fuel, freight, and personnel to the fleet at sea. [Ref. 12]

AO 177 class: AO-Oiler.

Mission: to operate as units of an Underway Replenishment (UNREP) Group shuttling fuel, freight, personnel, and ammunition to the fleet at sea. [Ref. 12]

AOE 1 and AOR 1 classes: AOE-Fast Combat support ship. AOR-Replenishment oiler.

Mission: as an element of the Combat Logistics Force, to support sustained combat operations at sea by naval task groups. AOEs and AORs are equipped with modern replenishment transfer equipment and a full aviation capability for vertical replenishment of stores, ammunition, and fuel to all classes of surface combatants. [Ref. 12]

MSO 427 and 509 classes: MSO-Ocean minesweeper.

Mission: to provide mine warfare surface ship and neutralization countermeasures, and to effectively provide protection to surface battle groups, amphibious groups, and other military shipping against mining threats. [Ref. 12]

AD 15, 37, 41 classes and AR 5 class: AD-Destroyer tender. AR-Repair ship.

Mission: as an element of the Combat Logistics Force, to support sustained combat operations at sea by naval task groups. ADs and ARs provide ship repair and logistic support

facilities. Normally operating near the battle group, the AD/AR will moor or anchor in a safe haven to provide battle damage repair and intermediate maintenance to surface combatants. The AD has limited aviation capability, providing personnel and parts support to ships within the embarked flight radius. [Ref. 12]

Table 1 further highlights ship class distinctions by summarizing unique characteristics. 170 ships are cruisers, destroyers, or frigates; 55 are amphibious ships; 36 are oiler or ammunition ships; 18 are minesweepers; and eight are repair ships. As of fiscal 1978, cruiser, destroyer, and frigate class ships had the lowest average age (9.3 yrs), followed by amphibious ships (9.9 yrs), oilers and ammunition ships (14.5 yrs), and repair ships (26.4 yrs). In fiscal 1986, average ship class ages continued to be lowest among cruisers, destroyers, and frigates (14.9 yrs), followed by amphibious ships (17.9 yrs), oilers and ammunition ships (20.8 yrs), repair ships (26.8 yrs), and minesweepers (30.5 yrs). Table 1 also highlights average yearly days underway for one year during each of the three cohort periods. Cruisers, destroyers, and frigates have the highest average operating time at sea, followed by oilers, amphibious ships, minesweepers, and repair ships. Repair ships have the largest average crew size (1059), while minesweepers have the smallest (56). Clearly, cruisers, destroyers, and frigates represent the greatest weapons capability, as required to fulfill their

mission statements. Most other ship classes have only guns, primarily for self-defense in a hostile environment.

TABLE 1

SHIP CLASS CHARACTERISTIC MATRIX

Ship Class	# of ships in class (a)			Avg. age of ship class (b)			Avg. yearly days underway (c)			Avg. crew size(d)	Propulsion System (e)	Weapons Capability (f) Guns	Missiles	Torpedos
	FY78	FY82	FY86	FY78	FY82	FY86	FY78	FY82	FY86					
CGN 38	3	4	4	0.4	3.5	7.5	118	132	113	359	Nuclear	Yes	Yes	Yes
CGN 36	2	2	2	3.2	7.2	11.2	139	127	87	579	Nuclear	Yes	Yes	Yes
CGN 35	1	1	1	10.3	14.3	18.3	159	185	196	566	Nuclear	Yes	Yes	Yes
CGN 25	1	1	1	15.0	19.0	23.0	147	98	146	529	Nuclear	Yes	Yes	Yes
CGN 9	1	1	1	16.0	20.0	24.0	165	(g)	167	736	Nuclear	Yes	Yes	Yes
CG 47	(h)	(h)	4	NA	NA	1.0	NA	NA	152	340	Gas Turbine	Yes	Yes	Yes
CG 26	9	9	9	11.3	15.3	19.3	104	153	130	444	Steam	Yes	Yes	Yes
CG 16	9	9	9	14.0	18.0	22.0	151	140	115	397	Steam	Yes	Yes	Yes
DDG 993	(h)	4	4	NA	0.1	4.0	(b)	95	129	318	Gas Turbine	Yes	Yes	Yes
DDG 37	10	10	10	16.7	20.7	24.7	117	110	124	376	Steam	Yes	Yes	Yes
DDG 2	23	23	23	15.1	19.1	23.1	120	139	111	339	Steam	Yes	Yes	Yes
DD 963	16	30	31	0.5	3.8	7.7	98	140	130	310	Gas Turbine	Yes	Yes	Yes
FFG 1	6	6	6	10.2	14.2	18.2	137	116	87	254	Steam	Yes	Yes	Yes
FF 1052	46	46	46	6.0	10.0	14.0	138	143	129	270	Steam	Yes	No	Yes
FF1040	10	10	10	11.0	15.0	19.0	136	128	104	260	Steam	Yes	No	Yes
FFG 7	1	21	48	0.1	0.6	2.9	114	109	118	195	Gas Turbine	Yes	Yes	Yes
LPD 1/4	13	13	13	10.0	14.0	18.0	133	139	121	400	Steam	Yes	No	No
LKA 113	5	5	5	8.1	12.1	16.1	132	85	126	336	Steam	Yes	No	No
LSD 32	8	8	8	21.7	25.7	29.7	107	130	105	329	Steam	Yes	No	No
LSD 36	5	5	5	6.4	10.4	14.4	138	130	101	331	Steam	Yes	No	No
LSD 41	(h)	(h)	2	NA	NA	0.1	NA	NA	145	322	Diesel	Yes	No	No
LST 1179	20	20	20	6.6	10.6	14.6	130	136	115	241	Diesel	Yes	No	No
LCC 19	2	2	2	6.8	10.8	14.8	134	110	133	771	Steam	Yes	No	No

TABLE 1 (CONTINUED)

Ship Class	# of ships in class (a)			Avg. age of ship class (b)			Avg. yearly days underway (c)			Avg. crew size(d)	Propulsion System (e)	Weapons Capability (f)		
	FY78	FY82	FY86	FY78	FY82	FY86	FY78	FY82	FY86			Guns	Missiles	TorpedosShip
AE 21	2	2	2	20.7	24.7	28.7	86	139	125	347	Steam	Yes	No	No
AE 23	3	3	3	18.1	22.1	26.1	126	90	79	330	Steam	Yes	No	No
AE 27	7	7	7	6.5	10.5	14.5	96	150	110	386	Steam	Yes	No	No
AFS 1	7	7	7	8.8	12.8	16.8	107	139	113	441	Steam	Yes	No	No
AO 98	3	3	3	32.0	36.0	40.0	155	101	83	352	Steam	Yes	No	No
AO 177	(h)	3	5	NA	0.3	4.8	105	129	129	208	Steam	Yes	No	No
AOE 1	4	4	4	10.0	14.0	18.0	132	157	151	583	Steam	Yes	No	No
AOR 1	7	7	7	5.7	9.7	13.7	117	149	116	442	Steam	Yes	No	No
MSO 427/ MSO 509	21	21	21	22.5	26.5	30.5	78	88	85	56	Diesel	No	No	No
AD 15	3	3	3	34.7	38.7	42.7	45	53	76	827	Steam	No	No	No
AD 37	2	2	2	9.8	13.8	17.8	47	41	74	1286	Steam	No	No	No
AD 41	(h)	3	4	NA	1.2	4.2	NA	36	45	1277	Steam	No	No	No
AR 5	2	2	2	34.7	38.7	42.7	34	73	72	847	Steam	No	No	No

(a),(e) Ref: *Jane's Fighting Ships (1987-1988 edition)*

(b) Computed from ship commissioning dates (in years) from *Jane's Fighting Ships* for each class. Margin of error +/- .25 years

(c) Ref: Center for Naval Analyses (Mr. John Vinci)

(d) Ref: OP-122/Manpower Programs and Support Branch (CDR Nicholn)

(f) Ref. *Jane's Fighting Ships*. Guns includes installed 3in/50, 5in/54, 5in/38, and/or Mk 16 Close-In Weapons System (CIWS) Missiles includes installed anti-air or cruise missile capability

(g) No underway time in FY82 due to extended overhaul period in shipyard facility.

(h) No ships in this class in active service during period of observation.

III. DATA ANALYSIS

This research represents an effort to study the relationship between ship type and first-term attrition by Navy enlistees. Since there is little previous research in the area, this study is exploratory--seeking to break new ground and to clear a path for further research. Nevertheless, the analysis has revealed several consistent trends across cohorts, suggesting possible directions for subsequent research on the causes of and cures for first-term enlisted attrition in the Navy.

A. COHORT ANALYSES

In analyzing the fiscal 1977, 1981, and 1985 cohorts, a total of 77,502 records were examined. These numbers reflect personnel who reported to their initial ship assignment with less than 34 months of active service (27,701 in 1977; 25,739 in 1981; and 24,062 in 1985). Personnel are then tracked to identify those who separate before reaching a total of 33 months of active service while aboard their initially-assigned ship.

As noted in Chapter II, only male attrition is evaluated. The cohort sample was drawn from a total of 227 ships in fiscal 1977, 263 ships in 1981, and 300 ships in 1985. The rise in number of ships between the first and last cohorts

represents the addition of 73 newly-commissioned ships, distributed as follows:

- 65 cruisers/destroyers/frigates.
- 1 amphibious ship.
- 5 oilers.
- 2 repair ships.

Data were tabulated in three formats: by individual ship (as identified by Unit Identification Code (UIC)), by ship class, and by mission category. The first digit of the category/ship class code represents the category of ship by broad mission requirement, as outlined in Chapter II. The first digit of the code signifies one of the following categories (CAT):

- 1--Cruisers (CG/CGN), Destroyers (DDG/DD), or Frigates (FFG/FF).
- 2--Amphibious ships (LPD/LKA/LSD/LST/LCC).
- 3--Oilers (AE/AFS/AO/AOE/AOR).
- 4--Minesweepers (MSO).
- 5--Repair ships (AD/AR).

The second character (a letter) of the code represents a specific ship class within each category. Ships within a common class are constructed to the same general specifications. As an example, the USS NIAGARA FALLS (AFS 3) has a CAT/CLASS code of 3D meaning this ship is an oiler in the Mars-class (see Appendix B).

Before exploring the attrition loss rates within and between each cohort, several demographic variables were examined by ship category. The demographic variables include average age, mean percentile score on the Armed Forces Qualification Test (AFQT), and racial/ethnic group.

1. Age

Table 2 shows the average age of all persons who separated from the Navy by ship category for each of the three cohorts.

The data reveal a consistent trend between cohorts. Within ship categories, cruisers, destroyers, and frigates (CAT 1) and repair ships (CAT 5) have the oldest personnel, on average, of those who separate early in each cohort. Minesweepers (CAT 4) tend to have the youngest personnel among those who separate early from the 1981 and 1985 cohorts.

TABLE 2

AVERAGE AGE OF ALL ENLISTEES AND FIRST-TERM LOSSES BY SHIP CATEGORY: 1977, 1981, AND 1985 COHORTS*

1977 COHORT

SHIP CATEGORY	NO. OF SHIPS IN CATEGORY	Average Age: ALL ENLISTEES	Average Age: FIRST-TERM LOSSES
1	120	19.8	19.2
2	48	19.7	19.1
3	32	19.7	19.0
4	18	20.1	19.2
5	9	19.8	19.1
TOTAL	227	19.8	19.2

*Age computed at time of loss.

1981 COHORT

SHIP CATEGORY	NO. OF SHIPS IN CATEGORY	Average Age: ALL ENLISTEES	Average Age: FIRST-TERM LOSSES
1	152	20.1	19.5
2	48	19.9	19.4
3	35	19.9	19.4
4	18	20.1	19.2
5	10	20.0	19.6
TOTAL	263	20.0	19.5

TABLE 2 (Continued)

1985 COHORT

SHIP CATEGORY	NO. OF SHIPS IN CATEGORY	Average Age: ALL ENLISTEES	Average Age: FIRST-TERM LOSSES
1	185	20.7	20.1
2	49	20.5	19.8
3	37	20.6	20.1
4	18	20.4	18.4
5	11	20.7	20.1
TOTAL	300	20.6	20.0

Source: Derived from special tabulations provided by the Defense Manpower Data Center (DMDC), Monterey, CA.

2. AFQT

Table 3 shows the AFQT mean percentile scores of all enlistees assigned to ships within each cohort by ship category. As pointed out by Elster and Flyer, "enlistees with higher AFQT scores are less likely to attrite than those with lower scores." [Ref. 4:p. 30] The data in this analysis are consistent with this finding for the 1977 and 1985 cohorts. The reader should note that these data aggregate loss rates across educational levels.

TABLE 3

AVERAGE AFQT PERCENTILE SCORES OF ALL ENLISTEES AND FIRST-TERM LOSSES BY SHIP CATEGORY: 1977, 1981, 1985 COHORTS

1977 COHORT

SHIP CATEGORY	NO. OF SHIPS IN CATEGORY	Average AFQT Percentile Score: ALL ENLISTEES	Average AFQT Percentile Score: FIRST-TERM LOSSES
1	120	57.4	53.5
2	48	50.8	49.6
3	32	49.0	49.4
4	18	59.0	52.2
5	9	51.7	48.3
TOTAL	227	54.0	51.2

1981 COHORT

SHIP CATEGORY	NO. OF SHIPS IN CATEGORY	Average AFQT Percentile Score: ALL ENLISTEES	Average AFQT Percentile Score: FIRST-TERM LOSSES
1	152	56.5	55.5
2	48	51.5	53.1
3	35	49.9	51.9
4	18	56.7	62.3
5	10	50.5	53.3
TOTAL	263	53.9	54.2

TABLE 3 (Continued)

1985 COHORT

SHIP CATEGORY	NO. OF SHIPS IN CATEGORY	Average AFQT Percentile Score: ALL ENLISTEES	Average AFQT Percentile Score: FIRST-TERM LOSSES
1	185	59.4	55.9
2	49	52.5	51.3
3	37	52.9	53.9
4	18	47.1	43.7
5	11	53.7	52.3
TOTAL	300	56.7	54.2

Source: Derived from special tabulations provided by the Defense Manpower Data Center (DMDC), Monterey, CA.

Across all ship categories and cohorts, personnel in cruisers, destroyers, and frigates (CAT 1) have the highest AFQT mean percentile score, while personnel in oilers have the lowest overall score across the three cohorts. Also worthy of note is that the AFQT mean percentile score of the 1981 cohort losses in minesweepers (CAT 4) was noticeably higher than the cohort average for minesweepers or in the other ship mission categories. The reason for this is unknown; however, the number of minesweeper losses is relatively small (37) compared to that of other ship mission categories. A step toward understanding this observation would be to organize the data by educational level and mental group.

3. Racial/Ethnic Group

Table 4 shows the racial/ethnic distribution of first-term losses by ship category. Appendix A presents the racial/ethnic make-up of each cohort by ship mission category as well as the first-term losses depicted in Table 4.

TABLE 4

PERCENT OF PERSONNEL FAILING TO COMPLETE FIRST-TERM OF ENLISTMENT BY SHIP CATEGORY AND RACIAL/ETHNIC GROUP: 1977, 1981, AND 1985 COHORTS

1977 COHORT

SHIP CATEGORY	NO. OF SHIPS IN CATEGORY	FIRST-TERM LOSSES (% OF ALL ENLIST.) WHITE	BLACK	HISPANIC	OTHER
1	120	17.0	11.3	17.4	11.2
2	48	23.4	20.1	21.4	14.7
3	32	23.7	17.1	18.3	13.6
4	18	17.4	50.0	38.4	33.3
5	9	19.3	17.1	22.1	10.7
TOTAL	227	19.5	15.1	19.1	12.6

TABLE 4 (Continued)

1981 COHORT

SHIP CATEGORY	NO. OF SHIPS IN CATEGORY	FIRST-TERM LOSSES (% OF ALL ENLIST.) WHITE	BLACK	HISPANIC	OTHER
1	152	18.3	16.0	17.2	13.4
2	48	23.3	17.8	15.3	19.3
3	35	23.8	18.4	13.8	17.2
4	18	18.4	9.1	14.3	0
5	10	17.8	16.2	16.2	7.5
TOTAL	263	20.0	16.8	16.0	12.6

1985 COHORT

SHIP CATEGORY	NO. OF SHIPS IN CATEGORY	FIRST-TERM LOSSES (% OF ALL ENLIST.) WHITE	BLACK	HISPANIC	OTHER
1	185	12.7	12.6	12.4	8.4
2	49	17.7	15.3	12.2	10.4
3	37	19.5	14.1	15.3	6.2
4	18	15.1	17.9	0	33.3
5	11	12.4	13.9	11.6	5.8
TOTAL	300	14.6	13.6	12.7	8.4

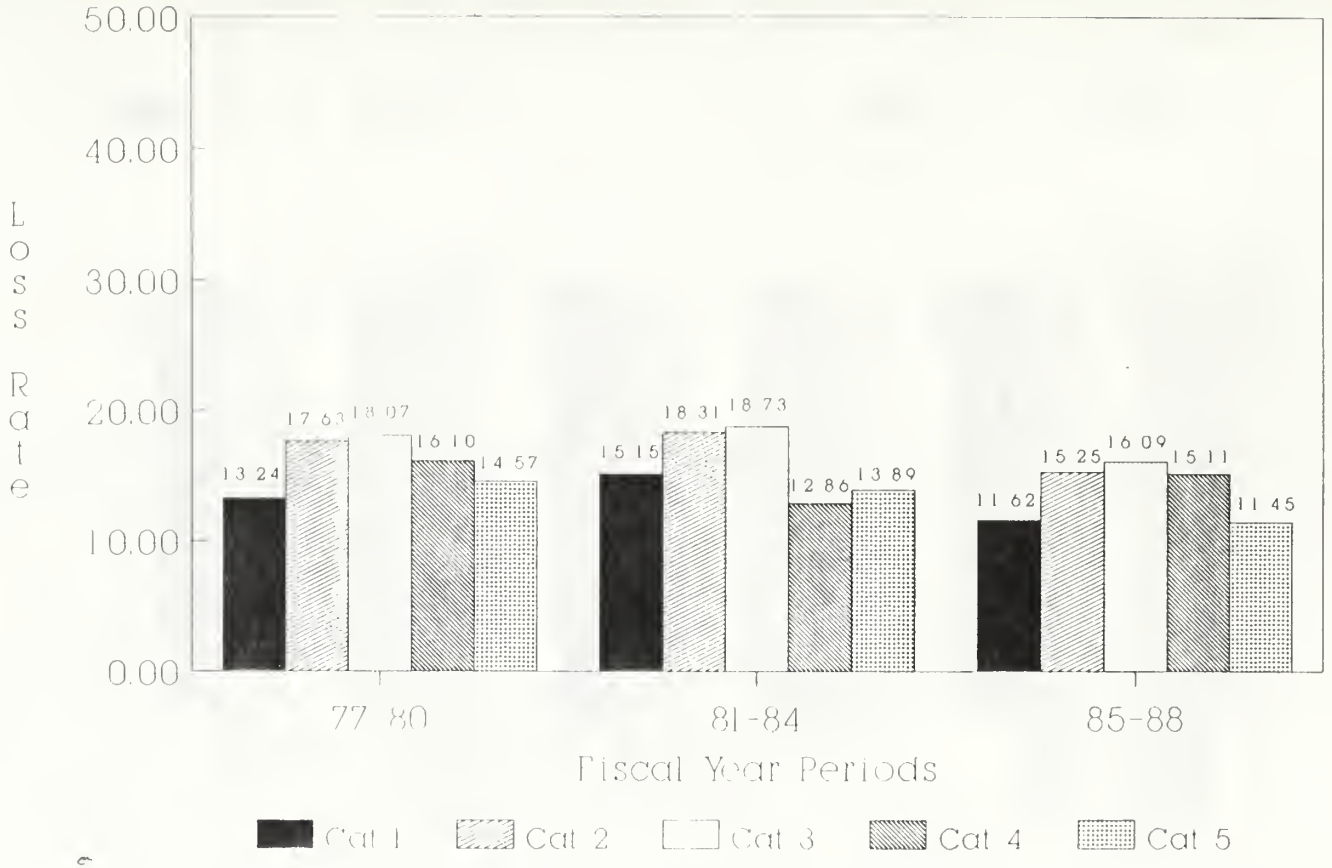
Source: Derived from special tabulations provided by the Defense Manpower Data Center (DMDC), Monterey, CA.

In all cohorts, whites generally experienced the highest attrition levels, followed by Hispanics, blacks, and "others" (primarily persons of Asian or Filipino descent). There were exceptions within each cohort. In the 1977 cohort,

first-term losses of blacks and Hispanics on minesweepers (CAT 4) was relatively high (50.0 percent and 38.4 percent, respectively) compared to whites. This is due to very small sample sizes where one of two blacks and two of five Hispanics separated early. In the 1981 cohort, black and Hispanic losses were relatively low on minesweepers (CAT 4). Again, this is attributed to small sample sizes (see Appendix A). In in the 1985 cohort, loss rates for blacks are actually higher than white loss rates on minesweepers and repair ships. It is interesting to note this departure from past observations as it represents a reversal from previous data observations. The reason for this change is unknown.

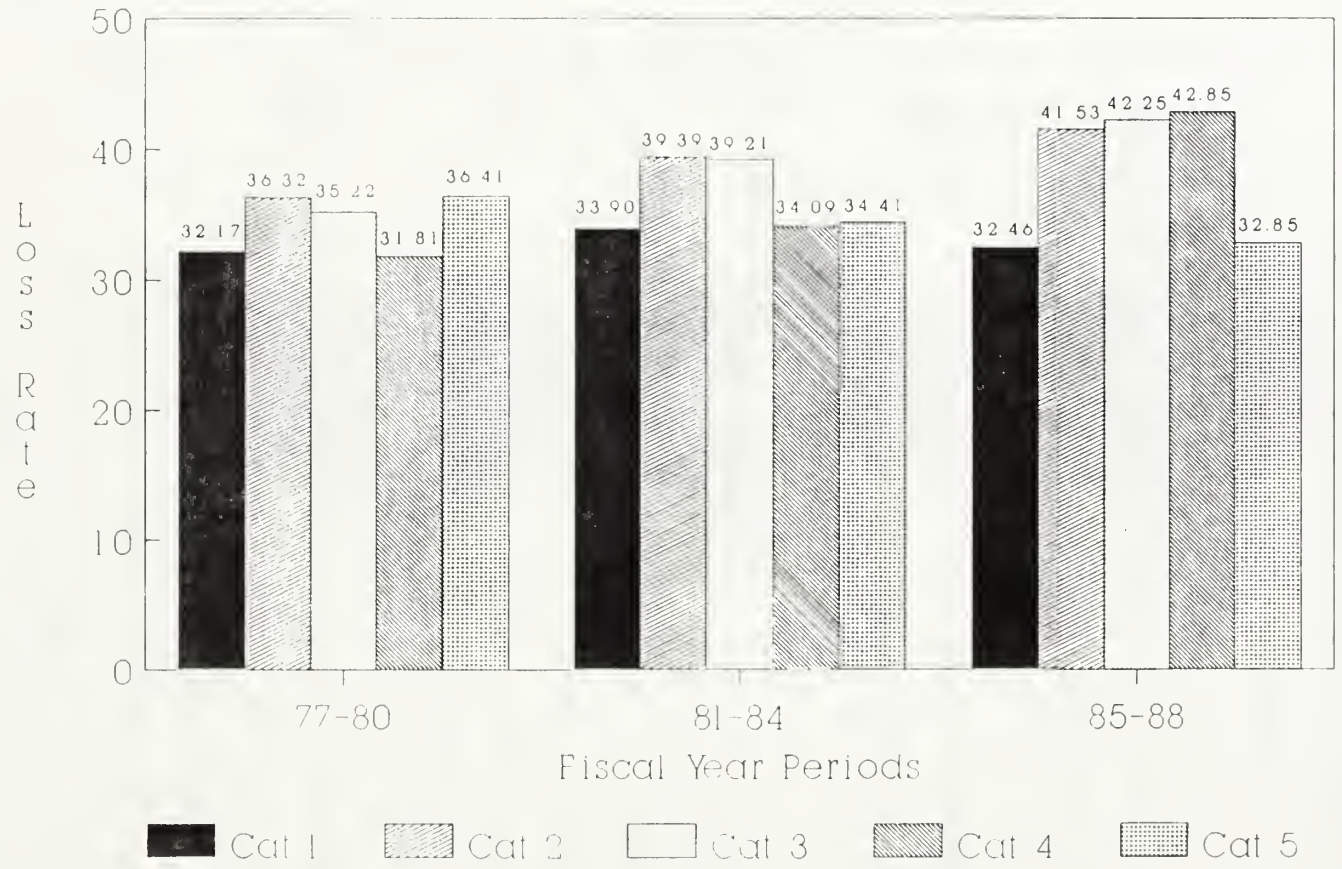
4. Educational Level

Figure 2 illustrates the loss rates of High School Diploma Graduates (HSDGs) by mission category. Figure 3 does the same for Non-High School Diploma Graduates (NHSDGs) or those with General Educational Development (GED) equivalency certificates. Loss rates are calculated as the number of HSDG (or NHSDG/GED) personnel who separate early from the Navy divided by all enlistees assigned to ships who are HSDGs (or NHSDG/GEDs). In Figures 2 and 3, and Table 5, loss rates are expressed as percentages. In examining educational levels, the loss rates of personnel who were high school graduates were consistently lower than the rates of those in the NHSDG/GED category. As shown in Figure 2, cruisers, destroyers, and frigates (CAT 1) have the lowest attrition



Source: Derived from special tabulations provided by the Defense Manpower Data Center (DMDC), Monterey, CA.

Figure 2. Loss Rates (%) of First-Term High School Diploma Graduate (HSDG) Enlistees by Ship Category: 1977, 1981, and 1985 Cohorts



Source: Derived from special tabulations provided by the Defense Manpower Data Center (DMDC), Monterey, CA.

Figure 3. Loss Rates (%) of First-Term Non-High School Diploma Graduate (HSDG) Enlistees by Ship Category: 1977, 1981, and 1985 Cohorts

TABLE 5

EDUCATIONAL LEVEL OF ALL ENLISTEES AND FIRST-TERM LOSSES WITH LOSS RATES BY SHIP CATEGORY: 1977, 1981, AND 1985 COHORTS

1977 COHORT

	HSDG			NGSDG/GED		
SHIP CAT.	ALL ENL.	FIRST-TERM LOSSES	LOSS RATE	ALL ENL.	FIRST-TERM LOSSES	LOSS RATE
1	11,446	1,516	13.2	2,530	814	32.2
2	4,644	819	17.6	1,346	489	36.3
3	3,740	676	18.1	1,198	422	35.2
4	149	24	16.1	44	14	31.8
5	2,052	299	14.6	552	201	36.4
TOTAL	22,031	3,334	15.1	5,670	1,940	34.2

1981 COHORT

	HSDG			NGSDG/GED		
SHIP CAT.	ALL ENL.	FIRST-TERM LOSSES	LOSS RATE	ALL ENL.	FIRST-TERM LOSSES	LOSS RATE
1	11,805	1,789	15.2	1,979	671	33.9
2	3,974	728	18.1	853	336	39.4
3	3,453	647	18.7	709	278	39.2
4	171	22	12.9	44	15	34.1
5	2,317	322	13.9	433	149	34.4
TOTAL	21,721	3,508	16.2	4,018	1,449	36.1

TABLE 5 (Continued)

1985 COHORT

SHIP CAT.	HSDG ALL ENL.	HSDG FIRST-TERM LOSSES	HSDG LOSS RATE	NGSDG/GED ALL ENL.	NGSDG/GED FIRST-TERM LOSSES	NGSDG/GED LOSS RATE
1	13,423	1,560	11.6	653	212	32.5
2	4,090	624	15.3	248	103	41.5
3	3,536	569	16.1	239	101	42.3
4	172	26	15.1	7	3	42.9
5	1,624	1,624	11.5	70	23	32.9
TOTAL	22,845	2,965	13.0	1,217	442	36.3

Source: Derived from special tabulations provided by the Defense Manpower Data Center (DMDC), Monterey, CA.

rates of HSDG personnel, followed by repair ships (CAT 5) and minesweepers (CAT 4). Conversely, oilers (CAT 3) have the highest HSDG losses, followed closely by amphibious ships (CAT 2). In Figure 3, cruisers, destroyers, and frigates (CAT 1) have the lowest loss rates for NHSDG/GED personnel, followed by minesweepers (CAT 4)(except in the 1985 cohort). It should be noted that the sample size among minesweepers was very small (three of seven NHSDG/GED personnel in the sample who separated early) relative to the numbers of personnel in other ship categories. Table 5 further compares the first-term loss rates of enlistees who had a traditional high school diploma with those who did not, by ship category for each cohort.

Cruisers, destroyers, and frigates (CAT 1) have the largest numbers of HSDG and NHSDG/GED personnel within each cohort, whereas minesweepers (CAT 4) have the smallest. This is explained by a larger number of ships in Category 1 relative to all other ship categories. Minesweeper crew sizes are also much smaller (about 56 personnel on average), compared with all other ships considered in this study (see Table 1). The next smallest crew size (241 personnel) can be found aboard LSTs (CAT 2), while the largest crews (1,286 personnel) serve on repair ships (ADs-CAT 5).

As discussed in Chapter I, Cooke and Quester found that NHSDG/GEDs have attrition rates that are twice as large as those of HSDGs. The loss rates in the 1977 and 1981 cohorts are consistent with this finding, however, in the 1985 cohort, the NHSDG/GED loss rate (36.3 percent) is almost three-times greater than the HSDG rate (13.0 percent). Even with specific ship mission categories in the 1985 cohort, this approximate three-to-one (NHSDG/GED-to-HSDG) loss ratio is consistent. As one hypothesis, it is possible that due to slightly higher quality enlistees in the 1985 cohort, higher standards in the fleet and elsewhere may have partially influenced an increase in the number of NHSDG/GED losses.

Across cohorts, there was no ship mission category that consistently had the largest NHSDG/GED or HSDG loss rates. However, cruisers, destroyers, and frigates (CAT 1) did have the lowest overall HSDG and NHSDG/GED loss rates

(1977, 1981, and 1985 cohorts combined). This is further investigated in the attrition loss rate analysis later in this chapter.

B. ATTRITION RATE RESULTS

With an understanding of cohort composition by sex, age, AFQT scores, racial/ethnic group, and educational level, data were extracted from the Enlisted Master Record (EMR) by individual ship (as identified by UIC), ship class, and mission category to determine possible trends in attrition between the 1977, 1981, and 1985 cohorts.

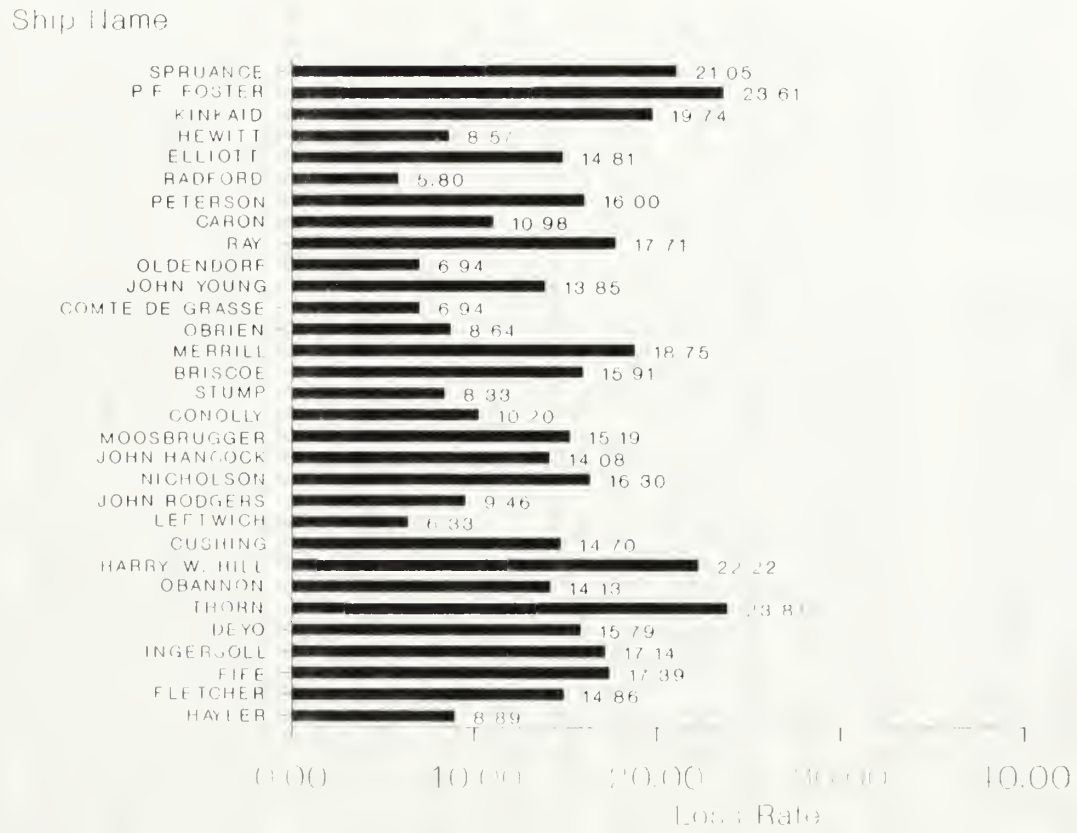
1. Individual Ship Analysis

Appendix B shows the number of attrition losses, by UIC, among personnel who reported to their ship in each cohort year with less than 34 months of active service. Personnel were tracked aboard their ship until they reached the 33-month time-in-service window. By running a frequency history on each cohort, it was determined that the average sailor reported aboard his initial ship with between four and ten months time-in-service. Specifically, the greatest number of sailors had between five and seven months active service by the time they reported aboard ship. The frequency history also revealed that there were relatively more persons with less than 12 months of service (69.1 percent) in the 1977 cohort than in the 1985 cohort (64.8 percent). This suggests

that sailors in the 1985 cohort received more training enroute to their first ship than did those in the 1977 cohort.

Further analyzing loss data in Appendix B, it was observed that attrition rates are largest during the first year aboard a ship (i.e., the year following cohort entry). This trend is consistent in the 1977, 1981, and 1985 cohorts. Attrition then tapers off in succeeding years, as sailors become more experienced and accrue more time aboard their ship.

Figure 4 provides an example of differences in loss rates that may occur among individual ships of the same class. In Figure 4, the personnel loss rates from the 1985 cohort for 31 Spruance-class destroyers (1L) are shown. While the Spruance-class average loss rate is 14.1 percent, a high of 23.8 percent (THORN) and a low of 5.8 percent (RADFORD) can be observed. The explanation for this wide variation between individual ships is not clear. The ships within this class are of similar age. They possess the same mission capability. Where they may be different is in operating schedules (although over a 33-month period, the operating days at sea are not expected to be greatly different), command climate, commanding officer leadership, crew/ship performance record, and other possible variables discussed in Chapter I. In observing one ship over two different cohorts, there may also be wide variation. For example, one ship in the Spruance class (1L) had a loss rate of 6.9 percent (THORN) for the 1985



Source: Derived from special tabulations provided by the Defense Manpower Data Center (DMDC), Monterey, CA.

Figure 4. Loss Rates (%) of First-Term Enlistees Among Individual Ships of the Spruance-Class (1L): 1985 Cohort

cohort. That same ship had a loss rate of 19.1 percent for the 1981 cohort (see Appendix B). This difference in loss rate may reflect both differences between the 1981 and 1985 cohorts, and the differences betwee DD988 (circa 1981) vs. DD988 (circa 1985) with regard to ship schedule, commanding officer, and so on.

2. Ship Class Analysis

The following is a list of ship classes that correlate to the CAT/CLASS code appearing in Table 5 and Appendix C:

- 1A--Virginia class CGN.
- 1B--California class CGN.
- 1C--Truxton class CGN.
- 1D--Bainbridge class CGN.
- 1E--Long Beach class CGN.
- 1F--Ticonderoga class CG.
- 1G--Belknap class CG.
- 1H--Leahy class CG.
- 1I--Kidd class DDG.
- 1J--Farrragut class DDG.
- 1K--Adams class DDG.
- 1L--Spruance class DD.
- 1M--Brooke class FFG.
- 1N--Knox class FF.
- 1P--Garcia class FF.
- 1Q--Oliver Hazard Perry class FFG.
- 2A--Raleigh class LPD.

- 2B--Charleston class LKA.
- 2C--Spiegel Grove class LKA.
- 2D--Anchorage class LSD.
- 2E--Whidbey Island class LSD.
- 2F--Newport class LST.
- 2G--Blue Ridge class LCC.
- 3A--Suribachi class AE.
- 3B--Nitro class AE.
- 3C--Butte class AE.
- 3D--Mars class AFS.
- 3E--Caloosahatchee class AO.
- 3F--Cimarron class AO.
- 3G--Sacramento class AOE.
- 3H--Witchita class AOE.
- 4A--Constant class MSO.
- 5A--Prairie class AD.
- 5B--Samuel Gompers class AD.
- 5C--Yellowstone class AD.
- 5D--Vulcan class AR.

Table 6 provides a summary of loss data in the ship-class format.

TABLE 6

NUMBER AND PERCENT OF COHORT LOSSES (ATTRITION)
BY SHIP CLASS: 1977, 1981, AND 1985 COHORTS

1977 COHORT

CAT/ CLASS	NO. SHIPS	Number of Personnel CREW WITH LESS THAN 34 MONTHS SERVICE	Personnel Losses NUMBER	RATE*
1A	3	382	49	12.8
1B	2	362	66	18.2
1C	1	148	23	15.5
1D	1	202	26	12.9
1E	1	343	44	12.8
1G	8	1,210	191	15.8
1H	9	1,237	191	15.4
1J	0	1,477	241	16.3
1K	3	2,767	510	18.4
1L	8	865	129	14.9
1M	6	584	115	19.7
1N	9	3,542	579	16.3
1P	9	857	166	19.4
2A	13	2,188	476	21.8
2B	5	534	116	21.7
2C	3	337	60	17.8
2D	5	625	153	24.5
2F	0	1,790	421	23.5
2G	2	516	82	15.9
3A	2	240	54	22.5
3B	3	364	104	28.6
3C	7	903	233	25.8
3D	7	1,024	205	20.0
3E	2	271	62	22.9
3G	4	868	180	20.7
3H	7	1,268	260	20.5
4A	8	193	38	19.7
5A	3	903	163	18.1
5B	2	707	144	20.4
5C	1	208	22	10.6
5D	3	786	171	21.8
TOTAL	227	27,701	5,274	19.0

*Rate of personnel losses is the percentage of those with less than 34 months of service who leave the Navy before completing a first-term enlistment

TABLE 6 (Continued)

1981 COHORT

CAT/ CLASS	NO. SHIPS	Number of Personnel: CREW WITH LESS THAN 34 MONTHS SERVICE	Personnel Losses: NUMBER	Personnel Losses: RATE*
1A	4	492	66	13.4
1B	2	280	37	13.2
1C	1	153	18	11.8
1D	1	153	27	17.6
1E	1	194	43	22.2
1G	9	1,117	200	17.9
1H	9	1,101	208	18.9
1I	4	446	39	8.7
1J	10	1,094	218	19.9
1K	23	2,291	416	18.2
1L	30	2,304	411	17.8
1M	6	454	103	22.7
1N	39	2,959	531	17.9
1P	9	606	122	20.1
1Q	4	140	21	15.0
2A	13	1,721	404	23.5
2B	5	318	74	23.3
2C	3	327	72	22.0
2D	5	507	108	21.3
2F	20	1,501	314	20.9
2G	2	454	92	20.3
3A	2	169	43	25.4
3B	3	270	70	25.9
3C	7	740	172	23.2
3D	7	949	178	18.8
3E	2	238	60	25.2
3F	3	230	36	15.7
3G	4	691	174	25.2
3H	7	875	192	21.9
4A	18	215	37	17.2
5A	3	785	177	22.5
5B	2	684	112	16.4
5C	2	637	75	11.8
5D	3	644	107	16.6
TOTAL	263	25,739	4,957	19.3

TABLE 6 (Continued)

1985 COHORT

CAT/ CLASS	NO. SHIPS	Number of Personnel CREW WITH LESS THAN 34 MONTHS SERVICE	Personnel Losses NUMBER	RATE*
1A	4	515	42	8.2
1B	2	267	28	10.5
1C	1	156	21	13.5
1D	1	158	15	9.5
1E	1	231	29	12.6
1F	3	273	15	5.5
1G	9	945	136	14.4
1H	9	833	90	10.8
1I	4	343	36	10.5
1J	10	926	129	13.9
1K	32	1,842	229	12.4
1L	31	2,419	342	14.1
1M	6	364	48	13.2
1N	39	2,484	305	12.3
1P	9	551	89	16.2
1Q	33	1,769	218	12.3
2A	13	1,356	234	17.3
2B	5	467	72	15.4
2C	3	265	49	18.5
2D	5	437	74	16.9
2E	1	207	22	10.6
2F	20	1,213	238	19.6
2G	2	393	38	9.7
3A	2	203	53	26.1
3B	3	270	47	17.4
3C	7	653	138	21.1
3D	7	812	110	13.5
3E	2	175	33	18.9
3F	5	214	31	14.5
3G	4	639	97	15.2
3H	7	809	161	19.9
4A	18	179	29	16.2
5A	3	371	43	11.6
5B	2	478	57	11.9
5C	3	495	62	12.5
5D	3	350	47	13.4
TOTAL	300	24,062	3,407	14.2

Source: Derived from special tabulations provided by the Defense Manpower Data Center (DMDC), Monterey, CA.

Across all three cohorts, the Suribachi (3A), Nitro (3B), and Butte (3C) class oilers have the highest attrition rates, while nuclear-powered guided missile cruisers (CGNs) have the lowest rates. There is wide variation in loss rates by cohort year among the 36 ship classes examined. As the age of a ship class increases, attrition rates among later cohorts (1981 and 1985) do not necessarily increase. In fact, in some classes, the rate of attrition actually declines for later cohorts. No clear relationship can be shown regarding operating days at sea. Some ship classes with relatively heavy operating schedules (see Table 1) have low loss rates compared with the cohort average. At the same time, other ship classes with few operating days at sea also have relatively low loss rates compared to the cohort average. The attrition loss rates are similar for repair ships, which have light operating schedules, and some cruiser, destroyer, and frigate classes, which have many more average operating days at sea.

Among the majority of ships across ship classes, there remains no distinct relationship of attrition with operating days at sea. Within and across ship classes, loss rates may be low with a high yearly number of days at sea, and in other cases, loss rates may be high with a high number of days at sea (see Appendix B).

Ship size revealed no clear relationship across ship classes. Repair ships (CAT 5) have the largest average crew

sizes (see Figure 1), yet their loss rates were comparable to or lower than some ship classes in all cohorts. The loss rates for repair some destroyers and frigates, which tend to have comparatively small crew sizes, were higher than repair ships with larger crews.

3. Ship Mission Category Analysis

Ship classes were grouped in the five broad mission categories described earlier in this chapter. This format was chosen to determine general trends among ship classes that may share similar mission requirements as outlined in Chapter II. Table 7 presents the attrition loss rates for each cohort by these five categories.

Across all three cohorts, it can be seen that ships in the cruiser, destroyer, and frigate classes (CAT 1) have the lowest loss rates. Repair ships (CAT 5), which have the largest crew sizes and the fewest operating days at sea, have the second lowest attrition rates compared with all other ship classes examined here. The third lowest rates are found on minesweepers (CAT 4), followed by amphibious ships (CAT 2). Oilers (CAT 3) tend to have the highest personnel loss rates of the five categories. The trends are quite clear. (There may be numerous explanations for these results, some of which are explored in the concluding chapter.) The loss rates are graphically displayed in Figure 5, which provides another view of the differences between ship classes.

TABLE 7

NUMBER AND PERCENT OF FIRST-TERM LOSSES (ATTRITION) BY MISSION CATEGORY: 1977, 1981, AND 1985 COHORTS

1977 COHORT

MISSION CATEGORY	NO. OF SHIPS IN CATEGORY	First-Term Enlisted Personnel: ALL ENLISTEES	FIRST-TERM LOSSES	LOSS RATE*
1	120	13,976	2,330	16.7
2	48	5,990	1,308	21.8
3	32	4,938	1,098	22.2
4	18	193	38	19.7
5	9	2,260	500	19.2
TOTAL	227	27,701	5,274	19.0

1981 COHORT

MISSION CATEGORY	NO. OF SHIPS IN CATEGORY	First-Term Enlisted Personnel: ALL ENLISTEES	FIRST-TERM LOSSES	LOSS RATE*
1	152	13,784	2,460	17.8
2	48	4,828	1,064	22.0
3	35	4,162	925	22.2
4	18	215	37	17.2
5	10	2,750	471	17.1
TOTAL	263	25,739	4,957	19.3

TABLE 7 (Continued)

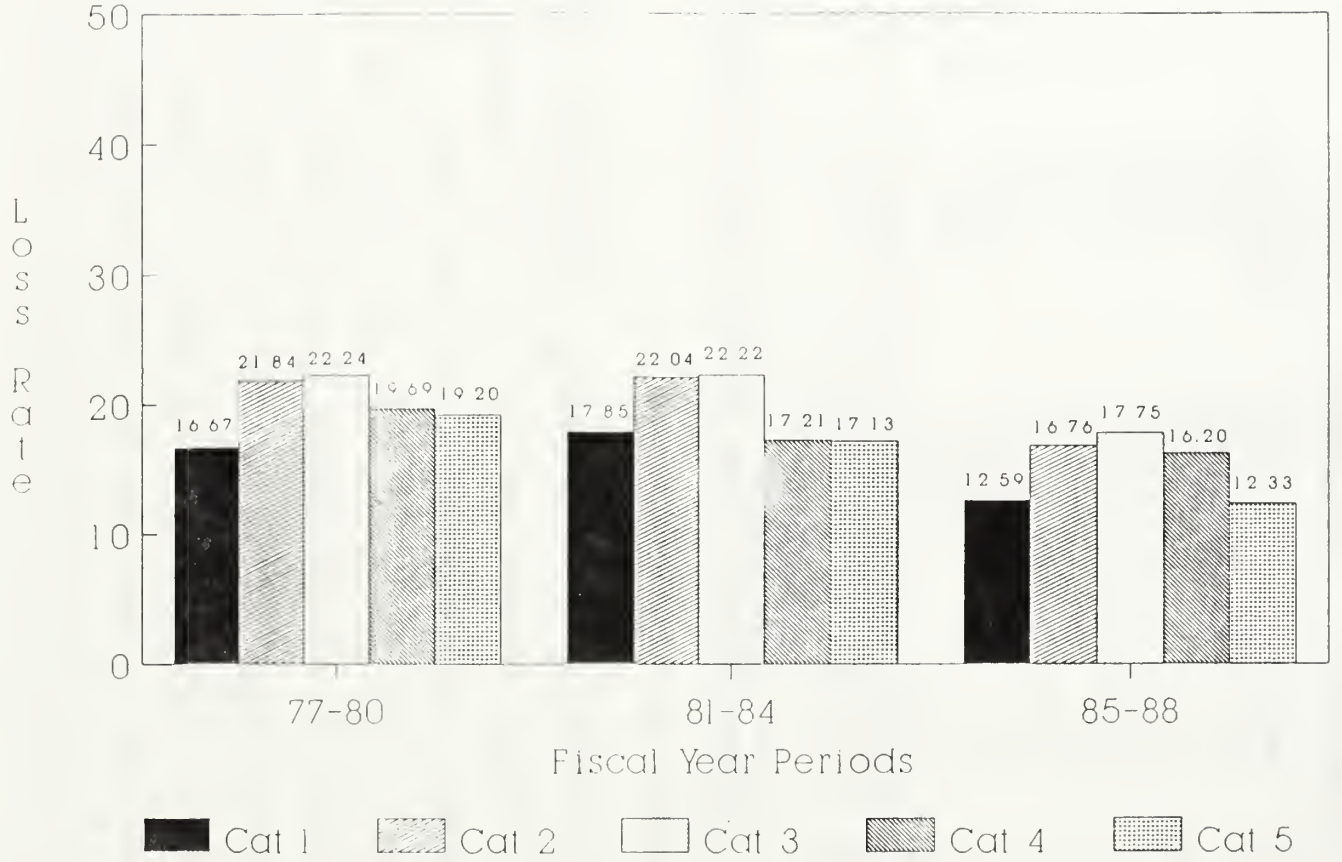
1985 COHORT

MISSION CATEGORY	NO. OF SHIPS IN CATEGORY	First-Term Enlisted Personnel: ALL ENLISTEES	FIRST-TERM LOSSES	LOSS RATE*
1	185	14,076	1,772	12.6
2	49	4,338	727	16.8
3	37	3,775	670	17.7
4	18	179	29	16.2
5	11	1,694	209	12.3
TOTAL	300	24,062	3,407	14.2

*Rate of personnel losses is the percentage of those with less than 34 months of service who leave the Navy before completing a first term of enlistment.

Source: Derived from special tabulations provided by the Defense Manpower Data Center (DMDC), Monterey, CA.

The total average personnel loss rate remained relatively constant between the 1977 and 1981 cohorts (19.0 and 19.3 percent, respectively); but it fell to 14.2 percent for the 1985 cohort. It should be noted that a substantial number of persons in the designated cohorts actually enlisted during the prior year. Thus, a large portion of persons in the 1985 cohort (those assigned to ships in 1985) enlisted during fiscal 1984. In 1983 and 1984, the Navy experienced an increase in the quality of its new recruits. This increase in



Source: Derived from special tabulations provided by the Defense Manpower Data Center (DMDC), Monterey, CA.

Figure 5. Loss Rates (%) of First-Term Enlisted Personnel by Ship Category: 1977, 1981, and 1985 Cohorts

quality resulted in a modest reduction in attrition of first-term enlistees during the mid-1980s. [Ref. 7] The lower attrition rate for the 1985 cohort is also affected by a rise in the relative number of persons leaving the Navy during the first few months of service (i.e., before many report to their first ship because they are in the school pipeline). For example, in 1981 male attrition during the first 12 months was 12.1 percent, compared to a rate of 15.1 percent for those in the 1985 cohort. This rise in early attrition, combined with the fact that personnel are apparently reporting aboard ship with more training (i.e., this is inferred from greater time-in-service) in 1985 than 1977 or 1981, may also help to explain why attrition rates were unexpectedly lower for the 1985 cohort of enlistees assigned to ships. Although the 1985 cohort represents an increased number of high quality accessions compared with the 1977 and 1981 cohorts, the drop in attrition represented in this cohort has not been sustained by those who enlisted beyond late 1985. Consequently, this may partially explain why overall attrition rates have continued to rise since that time [Ref. 7].

4. Losses by Rating

From the loss statistics, the ratings (or occupations) of personnel were extracted to examine possible relationships among ship types. Appendix D details cohort losses by rating within ship categories. Table 8 shows the loss rates for Navy ratings that had the highest attrition rates within each ship

TABLE 8

THE TEN NAVY RATINGS WITH THE HIGHEST RATES OF ATTRITION WITHIN SHIP CATEGORY: 1977, 1981, AND 1985 COHORTS (a)

		1977 Cohort		1981 Cohort		1985 Cohort	
SHIP CAT.	RANK	RATING	LOSS RATE	RATING	LOSS RATE	RATING	LOSS RATE
1	1	FR	34.4	BM	71.9	SR	28.9
	2	SR	28.5	SR	31.6	FR	27.0
	3	FN	25.9	FR	28.2	SM	25.2
	4	BM	23.1	SH	24.3	BM	18.4
	5	FA	22.9	SA	23.7	FN	17.7
	6	SA	22.0	FN	22.5	SH	16.7
	7	YN	20.9	SN	20.6	SA	16.1
	8	SH	19.0	SK	19.6	FC	15.0
	9	SN	18.7	FA	19.6	FA	14.3
	10	BT	17.7	SM	18.1	BT	12.5
2	1	FR	36.3	FN	42.5	SR	31.9
	2	SR	28.7	SR	36.6	SM	29.4
	3	SA	26.9	FR	31.7	FR	24.5
	4	FA	24.5	AR	28.9	SK	23.3
	5	MS	24.4	MS	28.3	MS	21.7
	6	AA	23.4	BT	26.6	QM	20.3
	7	SN	22.1	SA	20.9	HT	19.1
	8	SH	19.6	SN	19.9	FA	18.6
	9	SM	17.4	HT	18.6	YN	18.4
	10	FN	17.4	FA	17.1	SA	18.1

TABLE 8 (Continued)

SHIP CAT.	RANK	1977 Cohort RATING	1977 Cohort LOSS RATE	1981 Cohort RATING	1981 Cohort LOSS RATE	1985 Cohort RATING	1985 Cohort LOSS RATE
3	1	FR	34.3	SR	33.8	FR	28.9
	2	FN	31.8	FR	30.2	SR	27.3
	3	FA	28.7	GMG	25.6	FN	26.8
	4	SA	27.9	EN	24.0	SH	21.7
	5	SR	24.6	SA	22.1	SK	18.1
	6	MS	23.9	FN	21.2	MS	19.4
	7	SN	21.7	BT	20.2	SK	18.1
	8	BT	17.2	SM	19.1	SA	17.7
	9	MM	16.5	OS	18.4	SN	15.9
	10	RM	16.2	SN	18.0	HT	14.4
4	1 (c)	FR	50.0	SN	45.5	SR	30.8
	2	HT	44.4	MS	36.4	FA	25.0
	3	SR	40.9	BM	33.3	SA	17.9
	4	FN	33.3	FR	28.6	EM	14.3
	5	FA	28.6	SA	21.7	FN	12.5

TABLE 8 (Continued)

SHIP CAT.	RANK	1977 Cohort RATING	1977 Cohort LOSS RATE	1981 Cohort RATING	1981 Cohort LOSS RATE	1985 Cohort RATING	1985 Cohort LOSS RATE
5	1	FA	32.3	SR	34.9	MS	27.3
	2	FR	30.3	FR	27.2	SR	23.6
	3	YN	27.8	SN	23.1	FR	21.7
	4	SA	27.0	YN	20.0	YN	14.3
	5	SR	26.7	SK	17.9	MM	12.3
	6	FN	24.6	BT	17.9	SA	12.4
	7	SN	23.3	FN	16.7	SN	10.8
	8	EN	17.9	EN	13.6	FA	10.3
	9	BT	15.9	MM	13.4	FN	10.0
	10	STG	13.3	HT	12.3	SK	10.0

(a) This is a relative scale and does not take into account the actual size of the cohort within the ratings listed.

(b) Loss rates are relative within each ship mission category among all ratings that experienced losses.

(c) Due to the relatively small crews on minesweepers (an average of 56 per ship), relative to other ship classes, there is a much narrower range of ratings that serve on this class of ship. Therefore, only the <u>five</u> highest ratings that experienced the highest loss rates were listed.

Source: Derived from special tabulations provided by the Defense Manpower Data Center (DMDC), Monterey, Ca.

mission category. The abbreviations for the Navy ratings listed in Table 8 are explained below:

- AR--Airman Recruit.
- BM--Boatswain's Mate.
- BT--Boiler Technician.
- EM--Electrician's Mate.
- EN--Engineman.
- FA--Fireman Apprentice.
- FC--Fire Controlman.
- FN--Fireman.
- FR--Fireman recruit.
- GMG--Gunner's Mate (Guns).
- HT--Hull Technician.
- OS--Operations Specialist.
- QM--Quartermaster.
- RM--Radioman.
- SA--Seaman Apprentice.
- SH--Ship's Serviceman.
- SK--Storekeeper.
- SM--Signalman.
- SN--Seaman.
- SR--Seaman Recruit.
- STG--Sonar Technician.
- YN--Yeoman.

As seen in Table 8, within the same mission category, there are distinct trends across cohorts. Within cruisers, destroyers, and frigates (CAT 1), for example, the highest losses are consistently among SR, SA, SN, BM, FR, FA, and FN

personnel. In amphibious ships (CAT 2) and oilers (CAT 3), the MS rating also experiences high losses. Within minesweepers (CAT 4), the greatest losses are in line with CAT 1, 2, and 3 ships. Unlike the other mission category ships, YNs also experience high loss rates in repair ships (CAT 5). These findings are consistent with previous studies showing that persons in General Detail (GENDET) ratings (SR, SA, SN, FR, FA, FN, AR, AA, AN) generally have higher attrition than do personnel who have completed additional formal skill training after boot camp. [Ref. 9:p. 77] As Quester and Cooke state:

> Although there are competing hypotheses, the usual interpretation of higher attrition rates for GENDETs is that the GENDET work environment is inherently less satisfying than the environments of those receiving skill training. [Ref. 13:p. 11]

High rates of attrition in other ratings (as shown in Table 8) may be partially explained by the workload or work environment (especially in the engineering ratings, such as EN,BT,HT,MM, and EM) unique to a particular ship or ship class. It is difficult to interpret loss rates in specific Navy ratings since many other factors such as command climate, organizational culture, and supervisory leadership may also affect these rates. However technical ratings tend to have fairly selective aptitude and education standards, screening out new recruits who are more likely to experience attrition or fail training. GENDETs, on the other hand, are among the least selective occupations in the Navy, attracting new

recruits who have generally lower aptitude test scores and levels of education. Previous research has shown that education (completion of high school) and aptitude are strongly linked with attrition, providing further explanation for the higher loss rates among those in non-technical or GENDET ratings.

5. Reason for Loss

The reason for each loss was tabulated to note similarities or differences between ship types. Table 9 categorizes these data for each cohort by mission category. Percent losses are grouped under five general discharge categories:

- Medical (includes disability or unqualified for active duty).
- Hardship or dependency.
- Death (battle or non-battle casualty).
- Performance (failure to meet performance criteria, such as drugs, court martial, desertion, homosexuality, behavioral disorders, misconduct, unsuitability, or civil conviction).
- Other (such as breach of contract, pregnancy, sole surviving son, or erroneous enlistment).

Table 9 shows that performance deficiencies account for between eight or nine out of every ten personnel losses within each cohort, followed by medical, and then "other." (Performance-related discharges increased in all categories except CAT 1 for the 1981 cohort.) In 1983 Navy and Marine Corps policy changes resulted in modifications to coding

TABLE 9

ATTRITION RATES, BY REASON, WITHIN SHIP MISSION CATEGORY: 1977, 1981, AND 1985 COHORTS

SHIP CATEGORY	Reason	Attrition Rate (Percent) 1977	1981	1985
1	Medical	8.3	3.7	4.5
	Hardship or dependency	1.5	0.7	1.8
	Death	2.2	1.5	1.1
	Performance	82.6	90.8	92.0
	Other	5.4	3.3	.6
2	Medical	6.3	1.8	5.8
	Hardship or dependency	1.0	0.8	1.0
	Death	1.8	1.6	1.1
	Performance	88.9	92.0	91.1
	Other	2.6	3.9	1.0
3	Medical	6.4	1.5	4.5
	Hardship or dependency	1.2	0.6	1.2
	Death	1.3	1.0	1.0
	Performance	85.7	93.6	92.5
	Other	5.4	3.1	.8

TABLE 9 (Continued)

SHIP CATEGORY	Reason	Attrition Rate (Percent) 1977	1981	1985
4	Medical	5.3	0	6.9
	Hardship or dependency	0	0	3.4
	Death	2.6	0	0
	Performance	86.8	91.9	89.7
	Other	5.3	8.1	0
5	Medical	6.8	2.9	5.3
	Hardship or dependency	1.0	0	.5
	Death	1.2	1.3	.5
	Performance	86.2	94.1	92.8
	Other	4.8	1.7	.9

Source: Derived from special tabulations provided by the Defense Manpower Data Center (DMDC), Monterey, CA.

losses. This policy change may explain the apparent difference in performance-related discharges between the 1981 and 1985 cohorts for CAT 2, 3, 4, and 5 ships. CAT 1 ships, however, still experienced a slight increase in performance-related discharges between the 1981 and 1985 cohorts. Likewise, there was also a policy change in loss coding between the 1977 and 1981 cohorts that resulted in a decrease in medical discharges in all ship mission categories.

(Appendix E provides a specific breakdown of Navy personnel who separate early in each cohort by mission category.)

In Chapter IV, conclusions are made based upon a summary of the data analysis. Additionally, recommendations for future research are offered, stemming from new questions raised in this study as a result of the research findings.

IV. SUMMARY AND RECOMMENDATIONS

A. SUMMARY

This thesis has attempted to determine if there is a relationship between first-term enlisted attrition and ship type, using the Defense Manpower Data Center (DMDC) Enlisted Master Record (EMR). The results of longitudinal analysis suggest that a relationship exists.

Each of three cohorts (including over 77,000 enlisted personnel) was examined with respect to average age, mean percentile score on the Armed Forces Qualification Test (AFQT), racial/ethnic background, and educational level. This was done to better understand the demographic composition of the cohorts and to provide possible explanations for the early separation of enlistees within each cohort. The distributions of personnel losses by demographic variables are generally consistent with the findings of previous studies. For example, results by aptitude followed the findings of previous studies, where it has been observed that those who separate early generally have lower AFQT scores than do their counterparts who complete a first term of enlistment. A comparison of loss rates by racial/ethnic group revealed higher attrition among whites than among other groups. The loss rates for Hispanics were higher than those for blacks; and the rates for blacks were higher than those for "other"

groups. This finding is also supported by previous research. Studies conducted over the past 30 years have repeatedly shown that possession of a high school diploma is strongly linked with adaptability to military life and successful completion of a first term of enlistment. Those who separated early and did not possess a high school diploma outnumbered (in terms of percent lost) high school graduates by greater than two-to-one in the 1977 and 1981 cohorts; and this ratio was three-to-one in the 1985 cohort, with no clear explanation for the increase.

By arranging the cohort data in three formats--individual ship, ship class, and broad mission category--trends and common relationships could be observed. As revealed in Chapter III, individual ships showed wide variation in cohort loss rates, which may suggest the influence of other factors such as command climate, commanding officer/executive officer leadership, crew/ship performance, operating schedule, and so on. Similarly, no clear trends could be observed within the separate ship classes. For example, age of the ship class, crew size, weapons capability, and operating days at sea appeared to vary in relationship to attrition within different classes of ships. On the other hand, evidence of a relationship between attrition and ship type was found when the data were analyzed using the third format. Here, ship classes were grouped into one of five broad mission categories--cruisers, destroyers, and frigates (CAT 1),

amphibious ships (CAT 2), oilers (CAT 3), minesweepers (CAT 4), and repair ships (CAT 5). Cruisers, destroyers, and frigates (CAT 1) had the lowest loss rates overall (all three cohorts combined). Repair ships (CAT 5) and minesweepers (CAT 4) had similarly low loss rates. The highest loss rates were found for oilers (CAT 3) and amphibious ships (CAT 2).

There are several possible hypotheses that may explain the observed trends in attrition by mission category. Cruisers, destroyers, and frigates (CAT 1) have long been regarded by many Surface warfare sailors as the "most glamorous" ships in the fleet. This image has included perceptions, true or false, that warships provide sailors with greater challenge, prestige, opportunities for warfare skill development, and "importance." Thus, among many Surface Warfare officers and enlisted sailors alike, cruisers, destroyers, and frigates are frequently the most sought-after ships for duty assignment. This introduces the opinion of some in the Surface Warfare Navy that, in general, more qualified leaders (in commanding officer and executive officer positions) are being assigned to these ships than to others. This may partially explain the difference in attrition between ship types, assuming that attrition is influenced to some extent by the greater abilities or higher achievements of senior personnel (officer and enlisted) on the ship. While this may offer a possible explanation for differences in cruisers, destroyers, and frigates, it may not be as valid for minesweepers and repair

ships. Across ship types, the presence and relative influence of other variables may explain observed differences in loss rates.

As observed in Chapter III, cruisers, destroyers, and frigates generally receive a slightly higher caliber sailor, based upon AFQT mean percentile scores and educational level. This occurs because more technically qualified enlisted personnel are required on these ships. Since education and aptitude are linked with success in naval service, this distribution of enlisted talent may also provide a partial explanation for lower attrition rates on such ships.

As previously noted, a combination of factors may influence attrition including crew/ship performance, number of operating days at sea, and command climate. These variables should be explored to more fully determine which may serve to increase or decrease attrition across varying ship types. Multivariate analysis techniques should be applied in attempts to model attrition as a function of personnel, ship, deployment and other data.

B. RECOMMENDATIONS

This research suggests that there is a relationship between ship type and first-term enlisted attrition. These results raise several questions:

- Given the loss rates among ships within differing mission categories, is the difference large enough to warrant enlisted and officer manning policy changes in an attempt

to distribute more evenly personnel talent, given the unique requirements of each ship class?

- Given the technology of differing ships, is such a distribution of talent feasible?
- If the loss rate differences between ship types are determined to be significant enough to consider making policy changes, what negative and/or positive effects would these changes cause in the mission readiness of each ship class?
- What other variables unique to different ships, such as deployment cycle and operating days at sea, might be related to attrition differences between ships with different mission requirements?

There are several possibilities for future research that may help to determine the cause for differences in attrition among ship types. For example, one area of research could examine more directly the distribution of enlisted talent across ships in the fleet, given varying levels of complexity in ships with differing requirements for technically-skilled personnel. Additionally, a survey might be useful to examine whether there is a perception among surface warriors that duty on cruisers, destroyers, and frigates enhances a naval career more than on other ship classes. If so, are officer manning policies and the personnel detailing process influenced by this to the detriment of other ship classes? Finally, manpower planners and researchers should determine if attrition differences exert a disproportionate influence, negative or positive, on the readiness of different ship types.

Navy manpower experts agree that attrition is currently at unacceptably high levels. Navy records show that just three out of every five new recruits can be expected to complete a first term of enlistment. Although attrition will always exist, present levels are too high, with the cost in dollars reaching into the hundreds of millions, and the cost in readiness exacting an immeasurable toll. There is not just one cause of early separation, but many. With continued focus on this important issue, Navy manpower planners and leaders may more effectively reduce its impact on the readiness of the Surface Navy.

APPENDIX A

LOSS RATES BY RACIAL/ETHNIC GROUP

LOSS RATES BY RACE AND CATEGORY
FY77-80

CLASS	SHIPS	WHITE LOSSES	WHITE <34 MOS SERVICE	WHITE LOSS RATE	BLACK LOSSES	BLACK <34 MOS SERVICE	BLACK LOSS RATE	HISPANIC LOSSES	HISPANIC <34 MOS SERVICE	HISPANIC LOSS RATE	OTHER LOSSES	OTHER <34 MOS SERVICE	OTHER LOSS RATE	TOTAL LOSSES	TOTAL <34 MOS SERVICE	TOTAL LOSS RATE
	120 1	1,970	11,573	17.022	58	495	11.717	252	1,445	17.439	52	403	11.231	2,330	13,976	16.671
	48 2	1,050	4,696	22.359	49	243	20.164	172	801	21.473	37	250	14.799	1,308	5,990	21.836
	32 3	903	3,805	23.731	33	193	17.098	131	713	18.373	31	227	13.656	1,098	4,938	22.235
	18 4	30	172	17.441	1	5	20.000	5	13	38.401	2	6	33.333	38	193	19.689
	9 5	407	2,103	19.353	18	105	17.142	63	284	22.133	12	112	10.714	500	2,604	19.201
TOTALS	227	4,366	22,349	19.508	157	1,039	15.125	623	3,256	19.133	134	1,058	12.665	5,274	27,701	19.039

LOSS RATES BY RACE AND CATEGORY
FY81-84

		WHITE			BLACK			HISPANIC			OTHER			TOTAL		
CLASS	SHIPS	LOSSES	<34 MOS SERVICE	LOSS RATE	LOSSES	<34 MOS SERVICE	LOSS RATE	LOSSES	<34 MOS SERVICE	LOSS RATE	LOSSES	<34 MOS SERVICE	LOSS RATE	LOSSES	<34 MOS SERVICE	LOSS RATE
	1	2,038	11,123	18.322	293	1,833	15.993	81	472	17.161	48	357	13.445	2,460	13,784	17.846
	2	873	3,745	23.311	137	770	17.792	25	163	15.337	29	150	19.333	1,064	4,828	22.038
	3	747	3,140	23.789	126	663	19.448	26	188	13.829	26	151	17.218	925	4,162	22.224
	4	34	185	18.378	2	22	9.090	1	7	14.285	0	1	0.000	37	215	17.209
	5	384	2,162	17.761	64	396	16.161	16	99	16.161	7	93	7.526	471	2,750	17.127
TOTALS	263	4,076	20,355	20.024	622	3,703	16.797	149	929	16.038	110	752	14.627	4,957	25,739	19.258

LOSS RATES BY RACE AND CATEGORY
FY85-88

CLASS	SHIPS	WHITE LOSSES	WHITE <34 MOS SERVICE	WHITE LOSS RATE	BLACK LOSSES	BLACK <34 MOS SERVICE	BLACK LOSS RATE	HISPANIC LOSSES	HISPANIC <34 MOS SERVICE	HISPANIC LOSS RATE	OTHER LOSSES	OTHER <34 MOS SERVICE	OTHER LOSS RATE	TOTAL LOSSES	TOTAL <34 MOS SERVICE	TOTAL LOSS RATE
1	185	1,429	11,233	12.721	240	1,898	12.644	73	590	12.372	30	355	8.450	1,772	14,076	12.588
2	49	567	3,196	17.740	116	756	15.343	27	222	12.162	17	164	10.365	727	4,338	16.758
3	37	534	2,738	19.503	98	694	14.121	26	182	15.384	10	161	6.211	670	3,775	17.748
4	8	19	126	15.079	7	39	17.948	0	5	0.000	3	9	33.333	29	179	16.201
5	11	164	1,320	12.424	33	236	13.983	8	69	11.594	4	69	5.797	209	1,694	12.337
TOTALS	300	2,713	18,613	14.575	494	3,623	13.635	136	1,068	12.734	64	758	8.443	3,407	24,062	14.159

APPENDIX B

LOSS RATES BY INDIVIDUAL SHIP

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY77	FY78	FY79	FY80	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
20624	MISSISSIPPI	CGN40	1A		4	2	2	8	539	84.00	9.323
20681	VIRGINIA	CGN38	1A	3	4	3		10	539	107.00	9.345
20682	TEXAS	CGN39	1A	8	16	6	1	31	539	191.00	16.230
20541	CALIFORNIA	CGN36	1B	9	22	12		43	579	196.00	21.938
20669	SOUTH CAROLINA	CGN37	1B	8	11	4		23	579	166.00	13.855
52712	TRUXTON	CGN35	1C	2	15	6		23	566	148.00	15.540
52700	BAINBRIDGE	CGN25	1D	7	14	5		26	529	202.00	12.871
03651	LONG BEACH	CGN9	1E	6	25	13		44	736	343.00	12.827
52702	J. DANIELS	CG27	1G	5	12	10	1	28	444	160.00	17.499
52703	WAINWRIGHT	CG28	1G	4	9	10	1	24	444	151.00	15.894
52704	JOUETT	CG29	1G	11	11	4		26	444	147.00	17.687
52705	HORNE	CG30	1G	8	15	4	1	28	444	149.00	18.791
52706	STERRETT	CG31	1G	5	7	3	2	17	444	125.00	13.599
52707	W. H. STANDLEY	CG32	1G	9	10	8	1	28	444	169.00	16.568
52708	FOX	CG33	1G	2	10	6		18	444	142.00	12.676
52709	BIDDLE	CG34	1G	6	5	11		22	444	167.00	13.173
52087	LEAHY	CG16	1H	5	9	2		16	397	130.00	12.307
52088	H.E.YARNELL	CG17	1H	12	9	6	2	29	397	131.00	22.137
52089	WORDEN	CG18	1H	3	3	8		14	397	158.00	8.860
52090	DALE	CG19	1H	14	21	7		42	397	160.00	26.249
52091	R.K.TURNER	CG20	1H	2	10	7	1	20	397	111.00	18.018
52092	GRIDLEY	CG21	1H	8	7	6		21	397	117.00	17.948
52693	ENGLAND	CG22	1H	12	9	1		22	397	152.00	14.473
52698	HALSEY	CG23	1H	3	5	8		15	397	136.00	11.029
52099	REEVES	CG24	1H	3	6	3		12	397	142.00	8.450
52231	FARRAGUT	DDG37	1J	6	6	4	1	17	376	120.00	14.166
52232	LUCE	DDG38	1J	8	18	3		29	376	147.00	19.727
52233	MACDONOUGH	DDG39	1J	10	16	2	2	30	376	152.00	19.736
52234	COONTZ	DDG40	1J	4	10	2		16	376	115.00	13.913
52235	KING	DDG41	1J	13	15	4	1	33	376	249.00	13.253
52236	MAHAN	DDG42	1J	4	12	2	3	21	376	131.00	16.030
52083	DAHLGREN	DDG43	1J	7	7	2	1	17	376	117.00	16.239
52084	W.V.PRATT	DDG44	1J	2	16	6	2	30	376	160.00	22.499
52085	DEWEY	DDG45	1J	2	9	3		14	376	120.00	11.666
52086	PREBLE	DDG46	1J	3	17	6		26	376	166.00	15.662
04668	ADAMS	DDG2	1K	8	7			15	339	103.00	14.563
04669	JOHN KING	DDG3	1K	5	12	3		20	339	122.00	16.393
04670	LAWRENCE	DDG4	1K	9	25	3		37	339	128.00	28.906
04671	C.V.RICKETTS	DDG5	1K	4	16	2	1	23	339	115.00	19.999
04672	BARNEY	DDG6	1K	8	16	8		32	339	151.00	24.427
04673	H.B.WILSON	DDG7	1K	2	7	4		13	339	118.00	11.016
04674	MCCORMICK	DDG8	1K	10	12	8	1	31	339	139.00	22.302
04675	TOWERS	DDG9	1K	5	7	2		14	339	113.00	12.389
04676	SAMPSON	DDG10	1K	4	6	10		20	339	118.00	16.949
04677	SELLERS	DDG11	1K	5	8	4		17	339	102.00	16.666
04678	ROBISON	DDG12	1K	4	14	4	1	23	339	111.00	20.720
04679	HOEL	DDG13	1K		13	4		17	339	87.00	19.540
04680	BUCHANAN	DDG14	1K	6	10	9	1	26	339	120.00	21.666
04681	BERKLEY	DDG15	1K	6	8	4	1	19	339	115.00	16.521
04682	STRAUSS	DDG16	1K	6	11	3	1	21	339	136.00	15.441
04083	CONYNGHAM	DDG17	1K	5	19	3	1	28	339	99.00	28.282
04684	SEMMES	DDG18	1K	10	8	3	2	23	339	124.00	18.548
04685	TATTNALL	DDG19	1K	6	14	4	1	25	339	112.00	22.321

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY77	FY78	FY79	FY80	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
04686	GOLDSBOROUGH	DDG20	1K	7	4	3		14	339	159.00	8.805
04687	COCHRANE	DDG21	1K	10	8	3		21	339	134.00	15.671
04688	STODDERT	DDG22	1K	4	7	9	1	20	339	140.00	14.285
04690	BYRD	DDG23	1K	9	13	6	2	30	339	128.00	23.437
04691	WADDELL	DDG24	1K	5	9	5	2	21	339	113.00	18.584
20574	SPRUANCE	DD963	1L		4	5		9	310	93.00	9.677
20575	P.F.FUSTER	DD964	1L	3	5	2		10	310	103.00	9.708
20576	KINKAID	DD965	1L	2	5	3		10	310	73.00	13.698
20586	HEWITT	DD966	1L	2	2	4		8	310	80.00	9.999
20587	ELLIOTT	DD967	1L	9	8	3		20	310	140.00	14.285
20588	RADFORD	DD968	1L	7	9	10	1	27	310	99.00	27.272
20589	PETERSON	DD969	1L	11	15	3	1	30	310	152.00	19.736
20590	CARON	DD970	1L	2	6	7		15	310	125.00	11.999
04692	BROOKE	FFG1	1M	9	7	6		22	254	104.00	21.153
04693	RAMSEY	FFG2	1M	2	6	4		12	254	77.00	15.584
04694	SCHOFIELD	FFG3	1M	6	13	3		24	254	99.00	24.242
04695	TALBOT	FFG4	1M	6	6	4	3	19	254	103.00	18.446
04698	R.L.PAGE	FFG5	1M	3	9	4		16	254	100.00	15.999
04699	J.A.FURER	FFG6	1M	7	11	6		24	254	101.00	23.762
20049	HEWES	FF1078	1N	4	12	3		19	270	105.00	18.095
20050	BOWEN	FF1079	1N	7	4	6	1	18	270	93.00	19.354
20051	PAUL	FF1080	1N	4	9	6	1	20	270	96.00	20.833
20052	AYLWIN	FF1081	1N	6	13	1		20	270	92.00	21.739
20053	MONTGOMERY	FF1082	1N	6	16	6		28	270	96.00	29.166
20054	COOK	FF1083	1N	11	4	4	2	19	270	86.00	22.093
20055	MCCANDLESS	FF1084	1N	5	4	3	2	14	270	73.00	19.178
20056	BEARY	FF1085	1N	7	3	2		12	270	103.00	11.650
20057	BREWTON	FF1086	1N	2	8	2		12	270	80.00	14.999
20058	KIRK	FF1087	1N		3	2		5	270	77.00	6.493
20066	BARBEY	FF1088	1N	3	8	4		15	270	89.00	16.853
20067	BROWN	FF1089	1N	2	3	1	1	7	270	71.00	9.859
20068	AINSWORTH	FF1090	1N	1	9	3	1	14	270	91.00	15.384
20070	HART	FF1092	1N	3	2	3	3	11	270	102.00	10.784
20071	CAPODANNO	FF1093	1N	7	5	1	1	14	270	98.00	14.285
20072	PHARRIS	FF1094	1N		4	1		5	270	72.00	6.944
20073	TRUETT	FF1095	1N	3	9	3		15	270	106.00	14.150
20075	MUIRMESTER	FF1097	1N	6	8	3		17	270	89.00	19.101
54047	KNOX	FF1052	1N	9	10	2	2	23	270	126.00	18.253
54050	HEPBURN	FF1055	1N	3	2	3	1	9	270	85.00	10.588
54051	CONNOLE	FF1056	1N	5	1	2		8	270	81.00	9.876
54052	RATHBURNE	FF1057	1N	1	11	2		14	270	75.00	18.666
54053	MEYERKORD	FF1058	1N	6	6	1	1	14	270	85.00	16.470
54054	W.S.SIMS	FF1059	1N	5	10	4	1	20	270	95.00	21.052
54057	WHIPPLE	FF1062	1N	3	6	1		10	270	94.00	10.638
54058	REASONER	FF1063	1N	4	8	4	2	18	270	81.00	22.222
54059	LOCKWOOD	FF1064	1N	2	5	1	1	9	270	88.00	10.227
54060	STEIN	FF1065	1N	8	6	5	1	20	270	105.00	19.047
54061	MARVIN SHIELDS	FF1066	1N	4	4	4	5	17	270	105.00	16.190
54062	HAMMOND	FF1067	1N	1	4	2	1	8	270	98.00	8.163
54063	VREELAND	FF1068	1N	12	13	6		31	270	110.00	28.181
54064	BAGLEY	FF1069	1N	6	7	4	3	20	270	83.00	24.096
54065	DOWNES	FF1070	1N	3	6	2		11	270	78.00	14.102
54066	BADGER	FF1071	1N		3	1		4	270	88.00	4.545

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY77	FY78	FY79	FY80	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
54068	PEARY	FF1073	1N	6	4	0		16	270	99.00	16.161
54069	H.E.HOLT	FF1074	1N	2	5	0	1	14	270	95.00	14.736
54070	TRIPPE	FF1075	1N	5	7	1		13	270	78.00	16.666
54071	FANNING	FF1076	1N	6	10	1	2	19	270	85.00	22.352
54072	OUELLET	FF1077	1N	5	5	4	2	16	270	89.00	17.977
54037	GARCIA	FF1040	1P	8	8	3	1	20	260	100.00	19.999
54038	BRADLEY	FF1041	1P	3	9	6	2	20	260	76.00	26.315
54039	MCDONNELL	FF1042	1P	5	9	4	3	21	260	95.00	22.105
54040	BRUMBY	FF1044	1P	3	11	1	2	22	260	116.00	18.965
54041	DAVIDSON	FF1045	1P	4	4	9		17	260	95.00	17.894
54042	VOGE	FF1047	1P	3	3	7	1	14	260	84.00	16.666
54043	SAMPLE	FF1046	1P	5	8	3		16	260	110.00	14.545
54044	KOELSCH	FF1049	1P	8	8	6		22	260	88.00	25.000
54045	DAVID	FF1048	1P	3	8	3		14	260	93.00	15.053
07170	RALEIGH	LPD1	2A	7	16	8	1	32	400	177.00	18.079
07171	VANCOUVER	LPD2	2A	4	17	5	2	28	400	160.00	17.499
07175	AUSTIN	LPD4	2A	8	24	8	1	41	400	183.00	22.404
07176	OGDEN	LPD5	2A	16	12	7	3	38	400	152.00	25.000
07177	DULUTH	LPD6	2A	16	16	12	4	48	400	183.00	26.229
07181	CLEVELAND	LPD7	2A	10	20	10	3	43	400	163.00	26.380
07182	DUBUQUE	LPD8	2A	9	18	12	4	43	400	162.00	26.543
07183	DENVER	LPD9	2A	14	19	6	2	41	400	168.00	24.404
07184	JUNEAU	LPD10	2A	13	5	12		30	400	174.00	17.241
07195	SHREVEPORT	LPD12	2A	10	15	4	1	30	400	161.00	18.633
07196	NASHVILLE	LPD13	2A	17	9	7	3	36	400	154.00	23.376
07200	TRENTON	LPD14	2A	7	17	5	1	30	400	154.00	19.480
07201	PONCE	LPD15	2A	12	12	11	1	36	400	197.00	18.274
05844	CHARLESTON	LKA113	2B	3	16	11	1	31	336	125.00	24.799
05845	DURHAM	LKA114	2B	4	14	8	1	27	336	104.00	25.961
05846	MOBILE	LKA115	2B	9	8	4		21	336	98.00	21.428
05847	SAINT LOUIS	LKA116	2B	5	10	4		19	336	94.00	20.212
20004	EL PASO	LKA117	2B	7	6	4	1	18	336	113.00	15.929
03132	SPIEGEL GROVE	LSD32	2C	4	7	7	2	20	329	127.00	15.748
03133	ALAMO	LSD33	2C	7	3	9		19	329	94.00	20.212
03134	HERMITAGE	LSD34	2C	7	11	3	1	21	329	116.00	18.103
07203	ANCHORAGE	LSD36	2D	10	13	7	1	31	331	127.00	24.409
20012	PORTLAND	LSD37	2D	7	10	6		23	331	106.00	21.698
20013	PENSACOLA	LSD38	2D	11	17	7	1	36	331	135.00	26.666
20014	MOUNT VERNON	LSD39	2D	14	15	4		33	331	148.00	22.297
20015	FORT FISHER	LSD40	2D	6	16	7	1	30	331	109.00	27.522
20019	MANITOWOC	LST1180	2F	1	4	1		6	241	97.00	6.185
20020	SUMTER	LST1181	2F	8	9	1	3	21	241	95.00	22.105
20021	FRESNO	LST1182	2F	11	8	4		23	241	101.00	22.772
20022	PEORIA	LST1183	2F	6	14	7	1	28	241	96.00	29.166
20023	FREDRICK	LST1184	2F	4	8	6	2	20	241	96.00	20.833
20024	SCHENECTADY	LST1185	2F	5	7	5		17	241	80.00	21.249
20025	CAYUGA	LST1186	2F	7	7	5	1	20	241	71.00	22.535
20026	TUSCALOOSA	LST1187	2F	4	8	2	5	19	241	74.00	25.675
20027	SAGINAW	LST1188	2F	6	11	8	2	27	241	89.00	30.337
20028	SAN BERNADINO	LST1189	2F	2	11	5	1	19	241	87.00	21.839
20029	BOULDER	LST1190	2F	7	13	3		23	241	96.00	23.958
20030	RACINE	LST1191	2F	2	9	5	2	18	241	84.00	21.428
20031	SPARTANBURG CTY	LST1192	2F	7	9	6	1	23	241	84.00	27.380

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY77	FY78	FY79	FY80	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
20032	FAIRFAX CTY	LST1193	2F	3	9	2	3	17	241	68.00	19.318
20033	LAMOURE CTY	LST1194	2F	6	15	1		22	241	102.00	21.568
20221	BARBOUR CTY	LST1195	2F	12	9	4	1	26	241	95.00	27.368
20222	HARLAN CTY	LST1196	2F	1	15	8	2	26	241	100.00	25.999
20223	BARNSTABLE CTY	LST1197	2F	1	10	6	1	18	241	75.00	23.999
20224	BRISTOL CTY	LST1198	2F	12	11	6	1	30	241	96.00	31.250
58179	NEWPORT	LST1179	2F	4	11	6	1	22	241	84.00	26.190
05340	BLUE RIDGE	LCC19	2G	8	17	18	4	47	771	270.00	17.407
20001	MOUNT WHITNEY	LCC20	2G	4	19	8	4	35	771	246.00	14.227
08821	SURIBACHI	AE21	3A	5	20	7		32	347	136.00	23.529
08822	MAUNA KEA	AE22	3A	3	14	3	2	22	347	104.00	21.153
08301	HALEAKALA	AE25	3B	3	19	14		36	330	115.00	31.304
08391	NITRO	AE23	3B	6	13	7	3	29	330	119.00	24.369
08392	PYRO	AE24	3B	6	21	9	3	39	330	130.00	29.999
05839	BUTTE	AE27	3C	6	20	8	2	36	386	127.00	28.346
20111	SANTA BARBARA	AE28	3C	13	19	6	1	39	386	144.00	27.083
20112	MOUNT HOOD	AE29	3C	3	7	4	1	15	386	114.00	13.157
20113	FLINT	AE36	3C	7	20	9	1	37	386	115.00	32.173
20114	SHASTA	AE33	3C	17	12	12	3	44	386	172.00	25.581
20115	MOUNT BAKER	AE34	3C	3	14	7	2	26	386	115.00	22.608
20245	KISKA	AE35	3C	7	18	8	3	36	386	116.00	31.034
05831	MARS	AFS1	3D	10	20	4		34	411	130.00	26.153
05834	NIAGARA FALLS	AFS3	3D	4	14	4	1	23	411	133.00	17.293
05835	WHITE PLAINS	AFS4	3D	1	13	10		24	411	155.00	15.483
05836	CONCORD	AFS5	3D	9	8	11	2	30	411	133.00	22.556
20116	SAN DIEGO	AFS6	3D	15	12	4	2	33	411	141.00	23.404
20118	SAN JOSE	AFS7	3D	5	14	6	4	29	411	159.00	18.238
74025	SYLVANIA	AFS2	3D	11	9	8	4	32	411	173.00	18.497
04848	CALOOSAHATCHEE	AOR8	3E	14	9	4	1	28	352	145.00	19.310
04849	CANISTEO	AOR9	3E	9	14	10	1	34	352	126.00	26.984
05832	SACRAMENTO	AOE1	3G	15	18	8	2	43	583	226.00	19.026
05833	CAMDEN	AOE2	3G	10	17	7	2	36	583	199.00	18.090
05848	SEATTLE	AOE3	3G	23	16	6	1	46	583	210.00	21.904
20120	DETROIT	AOE4	3G	23	22	6	7	55	583	233.00	23.605
05849	WITCHITA	AOR1	3H	12	11	3		26	442	167.00	15.568
05850	MILWAUKEE	AOR2	3H	3	7	7		16	442	111.00	14.414
20122	KANSAS CITY	AOR3	3H	9	15	5	1	30	442	167.00	17.964
20123	SAVANNAH	AOR4	3H	13	19	10	2	44	442	179.00	24.581
20124	WABASH	AOR5	3H	23	23	8	3	57	442	180.00	31.666
20125	KALAMAZOO	AOR6	3H	9	13	9	2	33	442	166.00	19.879
20248	ROANOKE	AOR7	3H	12	26	15	1	54	442	298.00	18.120
07957	CONSTANT	MSO427	4A	1		2		3	56	9.00	33.333
07963	ENGAGE	MSO433	4A		2			2	56	11.00	18.181
07967	ENHANCE	MSO437	4A		1		1	2	56	12.00	16.666
07968	ESTEEM	MSO438	4A			1		1	56	6.00	16.666
07969	EXCEL	MSO439	4A	1	3			4	56	12.00	33.333
07970	EXPLOIT	MSO440	4A						56	17.00	.000
07971	EXULTANT	MSO441	4A		2	1		3	56	19.00	15.789
07972	FEARLESS	MSO442	4A	1	2			3	56	15.00	19.999
07976	FORTIFY	MSO446	4A			2		2	56	9.00	22.222
07979	IMPERVIOUS	MSO449	4A		1			1	56	10.00	9.999
07985	IMPLICIT	MSO455	4A				1	1	56	12.00	8.333
07986	INFLICT	MSO456	4A	1			1	5	56	14.00	35.714

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY77	FY78	FY79	FY80	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
07994	PLUCK	MSO464	4A		1			1	56	4.00	25.000
08146	CONQUEST	MSO488	4A		1			1	56	4.00	25.000
08147	GALLANT	MSO489	4A			1		1	56	5.00	19.999
08150	PLEDGE	MSO492	4A	1	1			2	56	10.00	19.999
08157	ADROIT	MSO509	4A		4			4	56	17.00	23.529
08159	AFFRAY	MSO511	4A		1	1		2	56	7.00	28.571
04020	PRAIRIE	AD15	5A	13	27	8		48	827	307.00	15.635
04038	SIERRA	AD18	5A	16	20	8	1	45	827	278.00	16.187
04039	YOSEMITE	AD19	5A	19	30	17	4	70	827	318.00	22.012
04048	SAMUEL GOMPERS	AD37	5B	6	44	26	4	80	1,286	376.00	21.276
05d37	PUGET SOUND	AD38	5B	20	30	12	2	64	1,286	331.00	19.335
04044	SHENANDOAH	AD44	5C	4	7	8	3	22	1,277	208.00	10.576
08d06	AJAX	AR6	5D	18	36	21	2	77	847	309.00	24.919
08808	VULCAN	AR5	5D	10	23	19	3	55	847	280.00	19.642
08810	JASON	AR8	5D	8	19	9	3	39	847	197.00	19.796
	TOTALS			227	1,429	2,411	1,190	238	5,274	453.0	27,701.00	19.039

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY81	FY82	FY83	FY84	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
20024	MISSISSIPPI	CGN40	1A	5	3	8	2	18	539	168.00	10.714
20081	VIRGINIA	CGN38	1A	4	6	8		18	539	119.00	15.126
20682	TEXAS	CGN39	1A	5	6	9	2	22	539	148.00	14.864
20807	ARKANSAS	CGN41	1A		7		1	8	539	57.00	14.035
20541	CALIFORNIA	CGN36	1B	3	10	3		16	579	146.00	10.958
20669	SOUTH CAROLINA	CGN37	1B	4	9	7	1	21	579	134.00	15.671
52712	TRUXTON	CGN35	1C	5	5	9	2	18	566	153.00	11.764
52700	BAINBRIDGE	CGN25	1D	9	14	3	1	27	529	153.00	17.647
03051	LONG BEACH	CGN9	1E	8	17	13	5	43	736	194.00	22.164
52701	BELKNAP	CG26	1G	3	8	7		18	444	76.00	23.684
52702	J. DANIELS	CG27	1G	3	14			17	444	81.00	20.987
52703	WAINWRIGHT	CG28	1G	4	5	6	3	18	444	130.00	13.846
52704	JOUETT	CG29	1G	3	8	8	1	20	444	118.00	16.949
52705	HORNE	CG30	1G	4	7	6		17	444	116.00	14.655
52706	STERRETT	CG31	1G	3	25	10	4	42	444	199.00	21.105
52707	W. H. STANDLEY	CG32	1G	2	5	10	1	18	444	139.00	12.949
52708	FOX	CG33	1G	1	7	11	4	23	444	144.00	15.972
52709	BIDDLE	CG34	1G	10	14	2	1	27	444	114.00	23.684
52687	LEAHY	CG16	1H	5	8	10		23	397	107.00	21.495
52688	H.E.YARNELL	CG17	1H	3	24	3		30	397	123.00	24.390
52689	WORDEN	CG18	1H	6	7	8		21	397	123.00	17.073
52690	DALE	CG19	1H	8	9	8		25	397	153.00	16.339
52691	R.K.TURNER	CG20	1H	1	6	6	2	15	397	101.00	14.851
52692	GRIDLEY	CG21	1H	2	7	4	2	15	397	125.00	11.999
52693	ENGLAND	CG22	1H	3	16	7		26	397	111.00	23.423
52698	HALSEY	CG23	1H	10	18	8	2	38	397	156.00	24.358
52699	REEVES	CG24	1H	3	6	4	2	15	397	102.00	14.705
21430	KIDD	DDG993	1I	2	6	3		11	318	147.00	7.482
21437	CALLAGHAN	DDG994	1I		13	4		17	318	144.00	11.805
21438	SCOTT	DDG995	1I		4	5	1	10	318	154.00	6.493
21439	CHANDLER	DDG996	1I			1		1	318	1.00	.000
52231	FARRAGUT	DDG37	1J	2	6	3	1	12	376	86.00	13.953
52232	LUCE	DDG38	1J	10	11	7		28	376	108.00	25.925
52233	MACDONOUGH	DDG39	1J	1	8	6		15	376	102.00	14.705
52234	COONTZ	DDG40	1J	5	7	5	2	19	376	104.00	18.269
52235	KING	DDG41	1J	5	10	17	1	35	376	137.00	25.547
52230	MAHAN	DDG42	1J	4	7	7	2	20	376	138.00	14.492
52683	DAHLGREN	DDG43	1J	1	6	7	1	15	376	100.00	14.999
52684	W.V.PRATT	DDG44	1J	3	18	9	1	31	376	110.00	28.181
52685	DEWEY	DDG45	1J	4	15	2		21	376	109.00	19.266
52686	PREBLE	DDG46	1J	5	10	7		22	376	100.00	21.999
04668	ADAMS	DDG2	1K	1	8	5	1	15	339	98.00	15.306
04669	JOHN KING	DDG3	1K	5	13	8		26	339	104.00	25.000
04670	LAWRENCE	DDG4	1K	2	6	8	3	19	339	71.00	26.760
04671	C.V.RICKETTS	DDG5	1K	6	10	7		23	339	94.00	24.468
04672	BARNEY	DDG6	1K	5	4	8		17	339	105.00	16.190
04673	H.B.WILSON	DDG7	1K	5	3	3		11	339	89.00	12.359
04674	MCCORMICK	DDG8	1K	2	4	12	2	20	339	106.00	18.867
04675	TOWERS	DDG9	1K		10	2	1	13	339	136.00	9.558
04676	SAMPSON	DDG10	1K	6	9	6		21	339	126.00	16.666
04677	SELLERS	DDG11	1K	4	4	5		13	339	126.00	10.317
04678	ROBISON	DDG12	1K	2	5	6		13	339	98.00	13.265
04679	HOEL	DDG13	1K	6	6	7		19	339	111.00	17.117

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY81	FY82	FY83	FY84	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
04680	BUCHANAN	DDG14	1K	2	12	8	1	23	339	120.00	19.166
04681	BERKLEY	DDG15	1K	1	7	6	1	15	339	104.00	14.423
04682	STRAUSS	DDG16	1K	2	6	2	1	11	339	93.00	11.827
04683	CONYNGHAM	DDG17	1K	2	8	5	3	18	339	82.00	21.951
04684	SEMMES	DDG18	1K	6	14	14		34	339	143.00	23.776
04685	TATTNALL	DDG19	1K	3	10	5	2	20	339	96.00	20.833
04686	GOLDSBOROUGH	DDG20	1K	1	4	5	1	11	339	65.00	16.923
04687	COCHRANE	DDG21	1K	1	11	2	1	15	339	71.00	21.126
04688	STODDERT	DDG22	1K	4	6	0		16	339	73.00	21.917
04690	BYRD	DDG23	1K	1	7	8	1	17	339	62.00	27.419
04691	WADDELL	DDG24	1K	8	9	8	1	26	339	118.00	22.033
20574	SPRUANCE	DD963	1L	3	9	1		13	310	88.00	14.772
20575	P.F.FOSTER	DD964	1L	4	11	2		17	310	72.00	23.611
20576	KINKAID	DD965	1L	5	7	3	1	16	310	76.00	21.052
20586	HEWITT	DD966	1L	7	3	3	1	14	310	80.00	17.499
20587	ELLIOTT	DD967	1L	3	8	1	1	13	310	78.00	17.105
20588	RADFORD	DD968	1L	4	12	2		18	310	82.00	21.951
20589	PETERSON	DD969	1L	3	7	6		16	310	78.00	20.512
20590	CARON	DD970	1L	6	6	3	2	17	310	83.00	20.481
20591	RAY	DD971	1L	2	6	7		15	310	89.00	16.853
20598	OLDENDORF	DD972	1L	1	5	11		17	310	80.00	21.249
20599	JOHN YOUNG	DD973	1L	1	13	5	2	21	310	79.00	26.582
20600	COMTE DE GRASSE	DD974	1L	3	3	6		12	310	79.00	15.189
20601	OBRIEN	DD975	1L	1	9	6		16	310	91.00	17.582
20602	MERRILL	DD976	1L	4	9	4		17	310	77.00	22.077
20603	BRISCOE	DD977	1L	4	4	6	1	15	310	91.00	16.483
20604	STUMP	DD978	1L	2	6	6		14	310	88.00	15.909
20611	CONOLLY	DD979	1L	3	5	3	2	13	310	90.00	14.444
20612	MOOSBRUGGER	DD980	1L	2	4	3		9	310	65.00	13.846
20613	JOHN HANCOCK	DD981	1L	1	6	3	1	11	310	80.00	13.749
20614	NICHOLSON	DD982	1L	1	6	7		14	310	84.00	16.666
20615	JOHN RODGERS	DD983	1L	7	7	3		17	310	88.00	19.318
20616	LEFTWICH	DD984	1L	4	3	2		9	310	71.00	12.676
20617	CUSHING	DD985	1L	2	7	2		11	310	60.00	18.333
20633	HARRY W. HILL	DD986	1L	1	2	1		4	310	57.00	7.017
20634	OBANNON	DD987	1L	3	3	4		10	310	69.00	14.492
20635	THORN	DD988	1L	2	7	3	5	13	310	68.00	19.117
20636	DEYO	DD989	1L		11	2		13	310	70.00	18.571
20637	INGERSOLL	DD990	1L	1	11	3		15	310	81.00	18.518
20638	FIFE	DD991	1L	7	2	4		13	310	64.00	20.312
20639	FLETCHER	DD992	1L	3	1	4		8	310	48.00	16.666
04692	BROOKE	FFG1	1M	3	5	4	2	24	254	94.00	25.531
04693	RAMSEY	FFG2	1M		9	11		20	254	57.00	35.087
04694	SCHOFIELD	FFG3	1M		2	7	1	10	254	62.00	16.129
04695	TALBOT	FFG4	1M	9	12			21	254	84.00	25.000
04698	R.L.PAGE	FFG5	1M	1	14	3		18	254	72.00	25.000
04699	J.A.FURER	FFG6	1M	2	6	2		10	254	85.00	11.764
20049	HEWES	FF1078	1N	1	5			6	270	68.00	8.823
20050	BOWEN	FF1079	1N	6	6	6		18	270	89.00	20.224
20051	PAUL	FF1080	1N	7	6	1		14	270	89.00	15.730
20052	AYLWIN	FF1081	1N	5	11	3	1	20	270	105.00	19.047
20053	MONTGOMERY	FF1082	1N	3	4	4	3	14	270	92.00	15.217
20054	COOK	FF1083	1N	3	6	7		21	270	75.00	27.999

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY81	FY82	FY83	FY84	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
20055	MCCANDLESS	FF1084	1N	6	2	3		11	270	81.00	13.580
20056	BEARY	FF1085	1N	3	7	5	2	17	270	86.00	19.767
20057	BREWTON	FF1086	1N	1	2	3	1	7	270	66.00	10.606
20058	KIRK	FF1087	1N	1	6	8	1	16	270	81.00	19.753
20066	BARBEY	FF1088	1N	5	14	6	1	26	270	89.00	29.213
20067	BROWN	FF1089	1N	2	2	4	1	9	270	65.00	13.846
20068	AINSWORTH	FF1090	1N	3	10	3	1	17	270	87.00	19.540
20070	HART	FF1092	1N	1	4	3	2	10	270	89.00	11.235
20071	CAPODANNO	FF1093	1N	1	3			4	270	49.00	8.163
20072	PHARRIS	FF1094	1N	5	9	3	1	18	270	92.00	19.565
20073	TRUETT	FF1095	1N	2	13	4	1	20	270	95.00	21.052
20075	MOINESTER	FF1097	1N	1	4	9		14	270	83.00	16.867
54047	KNOX	FF1052	1N	1	6	5		12	270	84.00	14.285
54050	HEPBURN	FF1055	1N	5	3	9	1	18	270	77.00	23.376
54051	CONNOLE	FF1056	1N	4	6	3		13	270	79.00	16.455
54052	RATHBURNE	FF1057	1N	2	5	2	1	10	270	66.00	15.151
54053	MEYERKORD	FF1058	1N	7	11	5		23	270	81.00	28.395
54054	W.S.SIMS	FF1059	1N	2	5	4	1	12	270	71.00	16.901
54057	WHIPPLE	FF1062	1N		5	4	1	10	270	63.00	15.873
54058	REASONER	FF1063	1N	7	5	3		15	270	62.00	24.193
54059	LOCKWOOD	FF1064	1N	1	7	4		12	270	78.00	15.384
54060	STEIN	FF1065	1N	1	9	5		15	270	75.00	19.999
54061	MARVIN SHIELDS	FF1066	1N	1	6	3		10	270	81.00	12.345
54062	HAMMOND	FF1067	1N	1	7	3		11	270	76.00	14.473
54063	VREELAND	FF1068	1N	4	4	8	3	19	270	59.00	32.203
54064	BAGLEY	FF1069	1N	1	8	7		16	270	77.00	20.779
54065	DOWNES	FF1070	1N	2	7		1	10	270	65.00	15.384
54066	BADGER	FF1071	1N	3	2	3		8	270	48.00	16.666
54068	PEARY	FF1073	1N	1	2	1		4	270	61.00	6.557
54069	H.E.HOLT	FF1074	1N	3	5	6	1	15	270	72.00	20.833
54070	TRIPPE	FF1075	1N	5	4	3		12	270	75.00	15.999
54071	FANNING	FF1076	1N	5	5	4		14	270	57.00	24.561
54072	OUELLET	FF1077	1N		8	2		10	270	71.00	14.084
54037	GARCIA	FF1040	1P	2	5	4	4	15	260	61.00	24.590
54038	BRADLEY	FF1041	1P	3	2	3		8	260	69.00	11.594
54039	MCDONNELL	FF1042	1P	5	3	3	2	14	260	99.00	14.141
54040	BRUMBY	FF1044	1P	1	10	2	1	14	260	57.00	24.561
54041	DAVIDSON	FF1045	1P	2	7	2		11	260	54.00	20.370
54042	VOGE	FF1047	1P	5	9	6		20	260	67.00	29.850
54043	SAMPLE	FF1046	1P	1	9	6	2	18	260	63.00	28.571
54044	KOELSCH	FF1049	1P	5	4	6		15	260	67.00	22.388
54045	DAVID	FF1048	1P	3		4		7	260	69.00	10.144
20975	FAHRION	FFG22	1G						195	10.00	.000
20977	WILLIAMS	FFG24	1G		5	7	1	13	195	81.00	16.049
20979	GALLERY	FFG26	1G		1	2		3	195	17.00	17.647
21032	MCINERNEY	FFG8	1G	2	2	1		5	195	32.00	15.625
07170	RALEIGH	LPD1	2A	5	15	7	1	29	400	109.00	26.605
07171	VANCOUVER	LPD2	2A	4	17	9	2	32	400	126.00	25.396
07175	AUSTIN	LPD4	2A	7	8	8	2	23	400	106.00	21.698
07176	OGDEN	LPD5	2A	8	9	5	1	23	400	136.00	16.911
07177	DULUTH	LPD6	2A	6	18	9		33	400	135.00	24.444
07181	CLEVELAND	LPD7	2A	3	19	12	1	35	400	134.00	26.119
07182	DUBUQUE	LPD8	2A	9	22	17	1	49	400	164.00	29.878

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY81	FY82	FY83	FY84	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
07183	DENVER	LPD9	2A	10	13	6	1	30	400	147.00	20.408
07184	JUNEAU	LPD10	2A	7	19	13	3	42	400	135.00	31.111
07195	SHREVEPORT	LPD12	2A	4	6	19	2	30	400	104.00	28.846
07196	NASHVILLE	LPD13	2A	5	4	9	2	20	400	116.00	17.241
07200	TRENTON	LPD14	2A	11	15	6	2	34	400	148.00	22.972
07201	PONCE	LPD15	2A	7	10	9	2	24	400	101.00	14.906
05844	CHARLESTON	LKA113	2B	6	5	3	1	15	336	66.00	17.441
05845	DURHAM	LKA114	2B	1	7	4	1	13	336	69.00	18.840
05846	MOBILE	LKA115	2B	5	4	4	1	14	336	46.00	30.434
05847	SAINT LOUIS	LKA116	2B	2	7	7	2	18	336	74.00	24.324
20004	EL PASO	LKA117	2B	2	8	4		14	336	43.00	32.558
03132	SPIEGEL GROVE	LSD32	2C	1	19	5	2	27	329	137.00	19.708
03133	ALAMO	LSD33	2C	5	11	6		22	329	93.00	23.655
03134	HERMITAGE	LSD34	2C	7	10	3	3	23	329	97.00	23.711
07203	ANCHORAGE	LSD36	2D	5	12	6	1	24	331	94.00	25.531
20012	PORTLAND	LSD37	2D	5	13	3		21	331	108.00	19.444
20013	PENSACOLA	LSD38	2D	5	16	4	1	26	331	105.00	24.761
20014	MOUNT VERNON	LSD39	2D	8	4	10	1	23	331	97.00	23.711
20015	FORT FISHER	LSD40	2D	3	6	4	1	14	331	103.00	13.592
20019	MANITOWOC	LST1180	2F	3	5	8		16	241	83.00	19.277
20020	SUMTER	LST1181	2F	4	16	4		24	241	107.00	22.429
20021	FRESNO	LST1182	2F	2	5	6	1	14	241	70.00	19.999
20022	PEORIA	LST1183	2F	4	8	5	4	21	241	65.00	32.307
20023	FREDRICK	LST1184	2F	1	6	3	1	11	241	72.00	15.277
20024	SCHENECTADY	LST1185	2F	3	5	4		12	241	82.00	14.634
20025	CAYUGA	LST1186	2F	2	4	6		13	241	68.00	19.117
20026	TUSCALOOSA	LST1187	2F	4	10	3	1	18	241	70.00	25.714
20027	SAGINAW	LST1188	2F		6	1	1	8	241	70.00	11.428
20028	SAN BERNADINO	LST1189	2F	7	15	5	1	24	241	51.00	47.058
20029	BOULDER	LST1190	2F	2	8	5	2	15	241	92.00	16.304
20030	RACINE	LST1191	2F		2			2	241	43.00	4.651
20031	SPARTANBURG CTY	LST1192	2F	1	10	3	1	15	241	86.00	17.441
20032	FAIRFAX CTY	LST1193	2F		10	3	2	15	241	94.00	15.957
20033	LAMOURE CTY	LST1194	2F	4	11	3	2	20	241	68.00	29.411
27221	BARBOUR CTY	LST1195	2F	1	4	7		12	241	65.00	16.461
27222	HARLAN CTY	LST1196	2F	6	7	12		25	241	85.00	29.411
27223	BARNSTABLE CTY	LST1197	2F	2	6	11		20	241	75.00	26.666
27224	BRISTOL CTY	LST1198	2F	3	11	3		17	241	79.00	21.518
58179	NEWPORT	LST1179	2F	4	2	3	2	12	241	76.00	15.789
05840	BLUE RIDGE	LCC19	2G	5	23	7	2	36	771	266.00	15.254
20051	MOUNT WHITNEY	LCC20	2G	14	23	12	1	50	771	218.00	25.688
08821	SURIBACHI	AE21	3A	4	13	4	3	24	347	104.00	23.076
08822	MAUNA KEA	AE22	3A	4	8	5	2	19	347	65.00	29.230
08301	HALEAKALA	AE25	3B	11	20	4	1	36	330	110.00	32.727
08391	NITRO	AE23	3B	4	17	3	3	27	330	106.00	25.471
08392	PYRO	AE24	3B		4	3		7	330	54.00	12.962
05839	BUTTE	AE27	3C	5	11	4		20	386	102.00	19.607
20111	SANTA BARBARA	AE28	3C	5	10	8	2	25	386	100.00	25.000
20112	MOUNT HOOD	AE29	3C	5	14	7		26	386	104.00	25.000
20113	FLINT	AE32	3C	9	21	5		35	386	135.00	25.925
20114	SHASTA	AE33	3C	5	8	14		27	386	113.00	23.893
20115	MOUNT BAKER	AE34	3C	3	8	2		13	386	91.00	14.285
20245	KISKA	AE35	3C	3	18	3	2	26	386	95.00	27.368

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY81	FY82	FY83	FY84	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
05831	MARS	AFS1	3D	10	4	10	1	25	411	106.00	15.060
05834	NIAGARA FALLS	AFS3	3D	4	16	10	2	32	411	172.00	18.604
05835	WHITE PLAINS	AFS4	3D	2	8	10	2	22	411	127.00	17.322
05836	CONCORD	AFS5	3D	7	21	5	1	34	411	97.00	35.051
20110	SAN DIEGO	AFS6	3D	2	10	[illegible]	2	16	411	165.00	12.799
20118	SAN JOSE	AFS7	3D	2	9	8	2	21	411	150.00	13.999
74025	SYLVANIA	AFS2	3D	7	14	7		28	411	112.00	25.000
04848	CALOOSAHATCHEE	AO98	3E	9	12	5	2	28	352	100.00	27.999
04849	CANISTEO	AO99	3E	9	9	12	2	32	352	138.00	23.188
20861	CIMARRON	AO177	3F	3	5	4		12	208	93.00	12.903
20862	MONONGAHELA	AO178	3F	2	12	6		20	208	121.00	16.528
21007	MERRIMACK	AO179	3F		4			4	208	16.00	25.000
05832	SACRAMENTO	AOE1	3G	7	10	18	7	42	583	175.00	23.999
05833	CAMDEN	AOE2	3G	6	17	18	1	42	583	155.00	27.096
05848	SEATTLE	AOE3	3G	15	31	11	4	61	583	233.00	26.180
20120	DETROIT	AOE4	3G	2	11	14	2	29	583	128.00	22.650
05849	WITCHITA	AOR1	3H	7	10	12	4	33	442	128.00	25.781
05850	MILWAUKEE	AOR2	3H	10	9	6		25	442	102.00	24.509
20122	KANSAS CITY	AOR3	3H	3	8	7	4	21	442	145.00	14.482
20123	SAVANNAH	AOR4	3H	2	10	9	4	25	442	111.00	22.522
20124	WABASH	AOR5	3H	2	15	6		23	442	124.00	18.548
20125	KALAMAZOO	AOR6	3H	3	8	5	2	18	442	103.00	17.475
20248	ROANOKE	AOR7	3H	10	24	11	2	47	442	162.00	29.012
07957	CONSTANT	MSO427	4A			3	1	4	56	24.00	16.666
07963	ENGAGE	MSO433	4A		1			1	56	8.00	12.500
07967	ENHANCE	MSO437	4A			2		2	56	16.00	12.500
07968	ESTEEM	MSO438	4A		3	1		4	56	11.00	36.363
07969	EXCEL	MSO439	4A						56	16.00	.000
07970	EXPLOIT	MSO440	4A			2		2	56	12.00	16.666
07971	EXULTANT	MSO441	4A	1	3			4	56	12.00	33.333
07972	FEARLESS	MSO442	4A		1			1	56	6.00	16.666
07976	FORTIFY	MSO446	4A	1				1	56	14.00	7.142
07979	IMPERVIOUS	MSO449	4A		1	2		3	56	12.00	25.000
07985	IMPLICIT	MSO455	4A		1	2		3	56	15.00	19.999
07986	INFLICT	MSO456	4A		1	1		2	56	12.00	16.666
07994	PLUCK	MSO464	4A						56	4.00	.000
08146	CONQUEST	MSO438	4A		1	2		3	56	15.00	19.999
08147	GALLANT	MSO489	4A		2			2	56	12.00	16.666
08150	PLEDGE	MSO492	4A						56	6.00	.000
08157	ADROIT	MSO509	4A		4			4	56	8.00	50.000
08159	AFFRAY	MSO511	4A			1		1	56	12.00	8.333
04020	PRAIRIE	AD15	5A	17	33	21	3	73	827	304.00	24.013
04038	SIERRA	AD18	5A	5	13	14	1	32	827	227.00	14.096
04039	YOSEMITE	AD19	5A	23	22	21	6	72	827	254.00	28.346
04048	SAMUEL GOMPERS	AD37	5B	15	43	8	3	69	1,286	348.00	19.827
05837	PUGET SOUND	AD38	5B	5	20	15	2	43	1,286	336.00	12.797
21049	YELLOWSTONE	AD41	5C	8	12	10		30	1,277	186.00	16.129
21047	ACADIA	AD42	5C	5	17	21	2	45	1,277	451.00	9.977
08800	AJAX	AR6	5D	6	25	18	1	50	847	236.00	21.186
08808	VULCAN	AR5	5D	8	15	16	1	40	847	161.00	22.099
08810	JASON	AR8	5D	2	9	5	1	17	847	227.00	7.488
	TOTALS		263	979	2,237	1,491	250	4,957	391.0	25,739.00	19.258

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY85	FY86	FY87	FY88	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
21624	MISSISSIPPI	CGN40	1A	1	1[illegible]	4		15	539	124.00	12.09[illegible]
21681	VIRGINIA	CGN38	1A	3	3	2	1	9	539	140.00	6.428
21682	TEXAS	CGN39	1A	[illegible]	4	2		8	539	116.00	6.89[illegible]
20807	ARKANSAS	CGN41	1A	[illegible]	5	2	1	10	539	135.00	7.407
21541	CALIFORNIA	CGN36	1B	[illegible]	7			9	579	128.00	7.031
21669	SOUTH CAROLINA	CGN37	1B		11	8		19	579	139.00	13.669
52712	TRUXTON	CGN35	1C	3	11	0	1	21	566	156.00	13.461
52700	BAINBRIDGE	CGN25	1D	3	8	4		15	529	158.00	9.493
45651	LONG BEACH	CGN9	1E	9	11	0	3	29	736	231.00	12.554
21225	YORKTOWN	CG48	1F			1		1	340	43.00	2.325
21281	TICONDEROGA	CG47	1F		[illegible]		1	4	340	73.00	5.479
21295	VINCENNES	CG49	1F	2	6	2		10	340	157.00	6.369
52701	BELKNAP	CG26	1G	11	16		1	28	444	117.00	23.931
52702	J. DANIELS	CG27	1G	3	3	1		7	444	93.00	7.526
52703	WAINWRIGHT	CG28	1G	3	9	1	1	14	444	94.00	14.893
52704	JOUETT	CG29	1G	2	6	3	1	12	444	90.00	13.333
52705	HORNE	CG30	1G	3	11	0		20	444	129.00	15.503
52706	STERRETT	CG31	1G		1	3		4	444	105.00	3.809
52707	W. H. STANDLEY	CG32	1G	2	15	4		21	444	85.00	24.705
52708	FOX	CG33	1G	4	9	7	1	21	444	120.00	17.499
52709	BIDDLE	CG34	1G	1	2	5	1	9	444	112.00	8.035
52687	LEAHY	CG16	1H	3	6	2		11	397	82.00	13.414
52688	H.E.YARNELL	CG17	1H	1	2	3		6	397	87.00	6.896
52689	WORDEN	CG18	1H	1	5	2		8	397	103.00	7.766
52690	DALE	CG19	1H		5	5		10	397	84.00	11.904
52691	R.K.TURNER	CG20	1H	2	6	5		13	397	111.00	11.711
52692	GRIDLEY	CG21	1H	2	8	5		15	397	86.00	17.441
52693	ENGLAND	CG22	1H	1	4	1		6	397	112.00	5.357
52698	HALSEY	CG23	1H	4	7	4		15	397	78.00	19.230
52699	REEVES	CG24	1H	1	2	3		6	397	90.00	6.666
21436	KIDD	DDG993	1I		5			5	318	70.00	7.142
21437	CALLAGHAN	DDG994	1I		7	3		10	318	78.00	12.820
21438	SCOTT	DDG995	1I	2	3	2	1	8	318	101.00	7.920
21439	CHANDLER	DDG996	1I	4	7	2		13	318	94.00	13.829
52231	FARRAGUT	DDG37	1J	[illegible]	4	4		11	376	80.00	13.749
52236	LUCE	DDG38	1J		5	3		8	376	104.00	7.692
52233	MACDONOUGH	DDG39	1J	3	13	0		22	376	112.00	19.642
52234	COONTZ	DDG40	1J	1	4	0		11	376	78.00	14.102
52235	KING	DDG41	1J	[illegible]	2	[illegible]	2	12	376	93.00	12.903
52236	MAHAN	DDG42	1J	4	4	[illegible]		10	376	104.00	9.615
52683	DAHLGREN	DDG43	1J	6	6	4	1	17	376	106.00	16.037
52684	W.V.PRATT	DDG44	1J	2	2	3	1	8	376	66.00	12.121
52685	DEWEY	DDG45	1J	2	11	3		16	376	92.00	17.391
52686	PREBLE	DDG46	1J	1	8	5		14	376	91.00	15.384
04668	ADAMS	DDG2	1K	1	4	1		6	339	61.00	9.836
04669	JOHN KING	DDG3	1K		7	3		10	339	67.00	14.925
04670	LAWRENCE	DDG4	1K	3	2	0	1	12	339	93.00	12.903
04671	C.V.RICKETTS	DDG5	1K		3	4	2	9	339	90.00	9.999
04672	BARNEY	DDG6	1K		4	3		7	339	59.00	11.864
04673	H.B.WILSON	DDG7	1K		13	2		15	339	98.00	15.306
04674	MCCORMICK	DDG8	1K	3	[illegible]	2	1	8	339	80.00	9.999
04675	TOWERS	DDG9	1K		2	[illegible]		4	339	91.00	4.395
04676	SAMPSON	DDG10	1K	3	5	3		11	339	72.00	15.277

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY85	FY86	FY87	FY88	TOTAL	AVG CREW	< 36 MO SERVICE	LOSS RATE (%)
04077	SELLERS	DDG11	1K		2	1	1	4	339	65.00	6.153
04078	ROBISON	DDG12	1K	1	4	2		7	339	61.00	11.475
04079	HOEL	DDG13	1K	5	3	5		13	339	106.00	12.264
04080	BUCHANAN	DDG14	1K	2	10	3		15	339	75.00	19.999
04081	BERKLEY	DDG15	1K	3	6	1		10	339	92.00	10.869
04082	STRAUSS	DDG16	1K		5	5		10	339	77.00	12.987
04083	CONYNGHAM	DDG17	1K	3	6	7	1	17	339	92.00	18.478
04084	SEMMES	DDG18	1K	1	4	2		7	339	69.00	10.144
04085	TATTNALL	DDG19	1K	3	4	5		12	339	89.00	13.483
04086	GOLDSBOROUGH	DDG20	1K	1	10	2		13	339	85.00	15.294
04087	COCHRANE	DDG21	1K	2	2	2		6	339	82.00	7.317
04088	STODDERT	DDG22	1K		2			2	339	82.00	2.439
04090	BYRD	DDG23	1K	1	7	4		12	339	78.00	15.384
04091	WADDELL	DDG24	1K	6	9	4		19	339	78.00	24.358
20574	SPRUANCE	DD963	1L	3	6	3		12	310	57.00	21.052
20575	P.F.FOSTER	DD964	1L	3	7	7		17	310	72.00	23.611
20576	KINKAID	DD965	1L		9	6		15	310	76.00	19.736
20586	HEWITT	DD966	1L		4	2		6	310	70.00	8.571
20587	ELLIOTT	DD967	1L	6	4	2		12	310	81.00	14.814
20588	RADFORD	DD968	1L		3	1		4	310	69.00	5.797
20589	PETERSON	DD969	1L	3	5	3	1	12	310	75.00	15.999
20590	CARON	DD970	1L	4	3	2		9	310	82.00	10.975
20591	RAY	DD971	1L	3	7	7		17	310	96.00	17.708
20598	OLDENDORF	DD972	1L	1	3	1		5	310	72.00	6.944
20599	JOHN YOUNG	DD973	1L	1	5	3		9	310	65.00	13.846
20600	COMTE DE GRASSE	DD974	1L	1	2	2		5	310	72.00	6.944
20601	O'BRIEN	DD975	1L	1	2	4		7	310	81.00	8.641
20602	MERRILL	DD976	1L	2	10			12	310	64.00	18.750
20603	BRISCOE	DD977	1L	2	6	3	3	14	310	88.00	15.909
20604	STUMP	DD978	1L	3	3	1		7	310	84.00	8.333
20611	CONOLLY	DD979	1L	1	4	4	1	10	310	98.00	10.204
20612	MOOSBRUGGER	DD980	1L	5	6	1		12	310	79.00	15.189
20613	JOHN HANCOCK	DD981	1L	1	7	2		10	310	71.00	14.084
20614	NICHOLSON	DD982	1L	4	7	3	1	15	310	92.00	16.304
20615	JOHN RODGERS	DD983	1L	4	1	2		7	310	74.00	9.459
20616	LEFTWICH	DD984	1L		3	2		5	310	79.00	6.329
20617	CUSHING	DD985	1L	1	9			10	310	68.00	14.705
20633	HARRY W. HILL	DD986	1L	3	13	5	1	22	310	99.00	22.222
20634	O'BANNON	DD987	1L	4	7	2		13	310	92.00	14.130
20635	THORN	DD988	1L	3	6	11	1	20	310	84.00	23.809
20636	DEYO	DD989	1L	1	8	3		12	310	76.00	15.789
20637	INGERSOLL	DD990	1L	2	5	4	1	12	310	70.00	17.142
20638	FIFE	DD991	1L	3	4	5		12	310	69.00	17.391
20639	FLETCHER	DD992	1L	1	3	5	2	11	310	74.00	14.864
21416	HAYLER	DD993	1L		4	4		8	310	90.00	8.888
04092	BROOKE	FFG1	1M	2	3	2		7	254	47.00	14.893
04093	RAMSEY	FFG2	1M	1	4	1		10	254	81.00	12.345
04094	SCHOFIELD	FFG3	1M	1	3	2		6	254	53.00	11.320
04095	TALBOT	FFG4	1M		5	1		6	254	48.00	12.500
04098	P.L.PAGE	FFG5	1M	3	6	2		11	254	67.00	16.417
04099	J.A.FOWLER	FFG6	1M	1	5	2		8	254	68.00	11.764
20649	HEWES	FF1073	1N	1	5	3	1	7	270	85.00	10.769
20650	BOWEN	FF1079	1N	2	5	1	1	9	270	67.00	13.432

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY85	FY86	FY87	FY88	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
20051	PAUL	FF1080	1N	4	3	3	1	11	270	70.00	15.714
20052	AYLWIN	FF1081	1N	2	3			5	270	57.00	8.771
20053	MONTGOMERY	FF1082	1N	5	2	2	1	10	270	50.00	19.999
20054	COOK	FF1083	1N	4	8	2		14	270	79.00	17.721
20055	MCCANDLESS	FF1084	1N		3	4		7	270	42.00	16.666
20056	BEARY	FF1085	1N	1	2	3		6	270	68.00	8.823
20057	BREWTON	FF1086	1N		3	3		6	270	59.00	10.169
20058	KIRK	FF1087	1N	4	1	2		7	270	70.00	8.999
20066	BARBEY	FF1088	1N	8	9	1		18	270	76.00	23.684
20067	BROWN	FF1089	1N	1	2			3	270	64.00	4.687
20068	AINSWORTH	FF1090	1N		1	1		2	270	49.00	4.081
20070	HART	FF1092	1N	1	5	1		7	270	70.00	9.999
20071	CAPODANNO	FF1093	1N	1	3	1		5	270	69.00	7.246
20072	PHARRIS	FF1094	1N	2	3	2		7	270	57.00	12.280
20073	TRUETT	FF1095	1N	1	6	2		9	270	61.00	14.754
20075	MOINESTER	FF1097	1N	3	1	2		6	270	46.00	13.043
54047	KNOX	FF1052	1N		3	2		5	270	68.00	7.352
54050	HEPBURN	FF1055	1N		8	1		9	270	61.00	14.754
54051	CONNOLE	FF1056	1N		1	1		2	270	56.00	3.571
54052	RATHBURNE	FF1057	1N	1	3	5		9	270	74.00	12.162
54053	MEYERKORD	FF1058	1N	2	9	6	1	18	270	78.00	25.076
54054	W.S.SIMS	FF1059	1N	1	2	2	1	6	270	61.00	9.836
54057	WHIPPLE	FF1062	1N	2	2		1	5	270	65.00	7.692
54058	REASONER	FF1063	1N	1	7	2	1	11	270	62.00	17.741
54059	LOCKWOOD	FF1064	1N	1	2	1		4	270	86.00	4.651
54060	STEIN	FF1065	1N	2	6			8	270	73.00	10.958
54061	MARVIN SHIELDS	FF1066	1N	3	6	6		15	270	74.00	20.270
54062	HAMMOND	FF1067	1N		4	2		6	270	64.00	9.375
54063	VREELAND	FF1068	1N		3	4		7	270	53.00	13.207
54064	BAGLEY	FF1069	1N	7	9	3		19	270	76.00	25.000
54065	DOWNES	FF1070	1N	1	3	3		7	270	53.00	13.207
54066	BADGER	FF1071	1N	1	2	1		4	270	60.00	6.666
54068	PEARY	FF1073	1N	1	4	4		9	270	57.00	15.789
54069	H.E.HULL	FF1074	1N	1	1	1		3	270	64.00	4.687
54070	TRIPPE	FF1075	1N	3	2	1	1	7	270	67.00	10.447
54071	FANNING	FF1076	1N		4			4	270	48.00	8.333
54072	OUELLET	FF1077	1N	1	5	2		8	270	65.00	12.307
54037	GARCIA	FF1040	1P	1	2	4	1	8	260	64.00	12.500
54038	BRADLEY	FF1041	1P	5	4	3		13	260	60.00	21.666
54039	MCDONNELL	FF1042	1P	2	5	3		10	260	60.00	16.666
54040	9RUMBY	FF1044	1P		3	0		9	260	63.00	14.285
54041	DAVIDSON	FF1045	1P	2	5			7	260	68.00	10.294
54042	VOGE	FF1047	1P		3	2		5	260	57.00	8.771
54043	SAMPLE	FF1046	1P	4	6	4	1	15	260	67.00	22.388
54044	KOELSCH	FF1049	1P	2	8	2	1	13	260	51.00	25.490
54045	DAVID	FF1048	1P	1	6	2		9	260	61.00	14.754
20975	FAHRION	FFG22	1G	3	2			5	195	42.00	11.904
20977	WILLIAMS	FFG24	1G	4	6	1		11	195	45.00	24.444
20978	COPELAND	FFG25	1G	1	5	3		9	195	51.00	17.647
20979	GALLERY	FFG26	1G	3	9	1		13	195	56.00	23.214
21032	MCINERNEY	FFG8	1G	1	3	1		5	195	30.00	16.666
21052	TISDALE	FFG27	1G		3	2		5	195	45.00	11.111
21053	BOONE	FFG28	1G	1	4	2		7	195	56.00	12.500

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY85	FY86	FY87	FY88	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
21054	GROVES	FFG29	1G		4	1		5	195	37.00	13.513
21055	REID	FFG30	1G		6	2		8	195	49.00	16.326
21056	STARK	FFG31	1G		2	8		10	195	41.00	24.390
21057	HALL	FFG32	1G	1	1	1	1	4	195	26.00	15.384
21058	JARRETT	FFG33	1G	1	3	3		7	195	49.00	14.285
21059	FITCH	FFG34	1G	1	4	3	2	10	195	35.00	28.571
21103	UNDERWOOD	FFG36	1G	2	2		1	5	195	44.00	11.363
21104	CROMWELLIN	FFG37	1G		1	1		2	195	44.00	4.545
21105	CURTIS	FFG38	1G		8	2		10	195	49.00	20.408
21106	DOYLE	FFG39	1G			1		1	195	39.00	2.564
21107	HALYBURTON	FFG40	1G	3	2	1		6	195	46.00	13.043
21108	MCCLUSKEY	FFG41	1G	2	2	2		6	195	50.00	11.999
21109	KLAKRING	FFG42	1G	4	4	3		11	195	55.00	19.999
21110	THACH	FFG43	1G	1	5	4		10	195	50.00	19.999
21197	DEWERT	FFG45	1G		1	2		3	195	36.00	8.333
21198	RENTZ	FFG46	1G		5	1		6	195	26.00	23.076
21199	NICHOLAS	FFG47	1G		2	4		6	195	34.00	17.647
21200	VANDEGRIFT	FFG48	1G	2	3			5	195	66.00	7.575
21201	BRADLEY	FFG49	1G		5	2	2	9	195	29.00	31.034
21231	TAYLOR	FFG50	1G		3	3		6	195	83.00	7.228
21232	GARY	FFG51	1G		2	1		3	195	77.00	3.896
21233	CARR	FFG52	1G		5	4		9	195	95.00	9.473
21234	HAWE	FFG53	1G	1	5	3		9	195	106.00	8.490
21235	FORD	FFG54	1G		1	1		2	195	96.00	2.083
21236	ELROD	FFG55	1G	1	5	3		9	195	94.00	9.574
21350	SIMPSON	FFG56	1G			1		1	195	88.00	1.136
07170	RALEIGH	LPD1	2A	5	3	2		15	400	124.00	12.096
07171	VANCOUVER	LPD2	2A	2	8	6	1	17	400	118.00	14.406
07175	AUSTIN	LPD4	2A	1	11	4	1	17	400	112.00	15.178
07176	OGDEN	LPD5	2A	3	10	4		17	400	90.00	18.888
07177	DULUTH	LPD6	2A	3	9	7		20	400	81.00	24.691
07181	CLEVELAND	LPD7	2A	4	19	5		28	400	96.00	29.166
07182	DUBUQUE	LPD8	2A	1	10	9	1	21	400	139.00	15.107
07183	DENVER	LPD9	2A	3	8	5		16	400	94.00	17.021
07184	JUNEAU	LPD10	2A	4	8	5		17	400	105.00	16.190
07195	SHREVEPORT	LPD12	2A	3	7	3	1	14	400	87.00	16.091
07196	NASHVILLE	LPD13	2A	5	14	5		26	400	102.00	25.490
07200	TRENTON	LPD14	2A	2	4	1		8	400	90.00	8.888
07201	PONCE	LPD15	2A	4	5	9		18	400	118.00	15.254
05844	CHARLESTON	LKA113	2B	2	9	6	2	19	336	88.00	21.590
05845	DURHAM	LKA114	2B	2	2	3		7	336	97.00	7.216
05846	MOBILE	LKA115	2B	2	13	7		22	336	85.00	25.882
05847	SAINT LOUIS	LKA116	2B	2	2	7		11	336	104.00	10.576
20004	EL PASO	LKA117	2B	5	4	4		13	336	95.00	13.978
03132	SPIEGEL GROVE	LSD32	2C		3	2		5	329	87.00	5.747
03133	ALAMO	LSD33	2C	5	12	7		25	329	87.00	28.735
03134	HERMITAGE	LSD34	2C	2	14	2	1	19	329	91.00	20.879
07203	ANCHORAGE	LSD36	2C	2	6	5	2	15	331	67.00	22.386
20012	PORTLAND	LSD37	2D	2	5	3		10	331	83.00	12.048
20013	PENSACOLA	LSD38	2D	3	12	3		18	331	97.00	18.556
20014	MOUNT VERNON	LSD39	2D	2	20	2	1	25	331	85.00	29.411
20015	FORT FISHER	LSD40	2D	3	3			6	331	105.00	5.714
21218	WHIDBEY ISLAND	LSD41	2C	3	11	8		22	322	207.00	10.628

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY85	FY86	FY87	FY88	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
20019	MANITOWOC	LST1180	2F	2	4	4		10	241	77.00	12.987
20020	SUMTER	LST1181	2F	6	11	5		22	241	75.00	29.333
20021	FRESNO	LST1182	2F	2	9	4		15	241	61.00	24.590
20022	PEORIA	LST1183	2F	6	5	3		14	241	62.00	22.580
20023	FREDRICK	LST1184	2F	2	1	3	2	6	241	61.00	13.114
20024	SCHENECTADY	LST1185	2F	6	6	5		17	241	75.00	22.666
20025	CAYUGA	LST1186	2F	3	11	3		17	241	72.00	23.611
20026	TUSCALOOSA	LST1187	2F	2	16	1		19	241	73.00	26.027
20027	SAGINAW	LST1188	2F	3	6	5		14	241	66.00	21.212
20028	SAN BERNADINO	LST1189	2F	5	9	1	1	16	241	61.00	26.229
20029	BOULDER	LST1190	2F	1	1	2		4	241	33.00	12.121
20030	RACINE	LST1191	2F	1	5	1		7	241	36.00	19.444
20031	SPARTANBURG CTY	LST1192	2F	2	6	3	2	13	241	63.00	20.634
20032	FAIRFAX CTY	LST1193	2F	4	4	2		10	241	64.00	15.625
20033	LAMOURE CTY	LST1194	2F	3	2	2		7	241	54.00	12.962
20221	BARBOUR CTY	LST1195	2F		5	4		9	241	61.00	14.754
20222	HARLAN CTY	LST1196	2F			2		2	241	48.00	4.166
20223	BARNSTABLE CTY	LST1197	2F	2	7	3		12	241	57.00	21.052
20224	BRISTOL CTY	LST1198	2F	1	3	6		10	241	63.00	15.873
58179	NEWPORT	LST1179	2F	1	8	3		12	241	51.00	23.529
05840	BLUE RIDGE	LCC19	2G	1	8	6		15	771	199.00	7.537
20001	MOUNT WHITNEY	LCC20	2G	5	7	10	1	23	771	194.00	11.855
03821	SURIBACHI	AE21	3A	5	11	8	1	25	347	93.00	26.881
08822	MAUNA KEA	AE22	3A	6	16	6		28	347	110.00	25.454
08301	HALEAKALA	AE25	3B	4	12	4		20	330	89.00	22.471
08391	NITRO	AE23	3B	2	8	4		14	330	79.00	17.721
08392	PYRO	AE24	3B	3	7	3		13	330	102.00	12.745
05839	BUTTE	AE27	3C	5	4	6	1	16	386	78.00	20.512
20111	SANTA BARBARA	AE28	3C	6	12	5		23	386	89.00	25.842
20112	MOUNT HOOD	AE29	3C	5	11	5	1	22	386	91.00	24.175
20113	FLINT	AE32	3C		9	4		13	386	83.00	15.662
20114	SHASTA	AE33	3C	2	10	5		17	386	111.00	15.315
20115	MOUNT BAKER	AE34	3C	6	5	9		20	386	111.00	18.018
20245	KISKA	AE35	3C	2	20	5		27	386	90.00	29.999
05831	MARS	AFS1	3D	5	7	4	2	18	411	104.00	17.307
05834	NIAGARA FALLS	AFS3	3D	1	7	9		17	411	167.00	10.179
05835	WHITE PLAINS	AFS4	3D	1	14	3		18	411	121.00	14.876
05836	CONCORD	AFS5	3D	6	6	3		15	411	99.00	15.151
20116	SAN DIEGO	AFS6	3D	1	14	4	1	20	411	116.00	17.241
20118	SAN JOSE	AFS7	3D		5	3		8	411	114.00	7.017
74025	SYLVANIA	AFS2	3D	2	10	2		14	411	91.00	15.384
04848	CALOOSAHATCHEE	AO98	3E	6	5	4		15	352	82.00	18.292
04849	CANISTEO	AO99	3E	6	10	2		18	352	93.00	19.354
20861	CIMARRON	AO177	3F	1	6	1		8	208	51.00	15.686
20862	MONONGAHELA	AO178	3F	1	1	2		4	208	36.00	11.111
21007	MERRIMACK	AO179	3F	4	5			9	208	42.00	21.428
21048	WILLIAMETTE	AO180	3F		4	1		5	208	53.00	9.433
21049	PLATTE	AO186	3F	2	2	1		5	208	32.00	15.625
05832	SACRAMENTO	AOE1	3G	3	12	9		24	583	151.00	15.894
05833	CAMDEN	AOE2	3G	5	18	6		29	583	162.00	17.901
05848	SEATTLE	AOE3	3G	2	15	7		24	583	178.00	13.483
20120	DETROIT	AOE4	3G	5	14	1		20	583	148.00	13.513
05849	WITCHITA	AOR1	3H	9	8	4		21	442	134.00	15.671

ATTRITION RATE BY CAT/CLASS

UIC	SHIP NAME	HULL NO	CAT/CLASS	FY85	FY86	FY87	FY88	TOTAL	AVG CREW	< 34 MO SERVICE	LOSS RATE (%)
05850	MILWAUKEE	AOR2	3H	2	12	6	1	21	442	116.00	18.103
20122	KANSAS CITY	AOR3	3H	7	20	7		34	442	130.00	26.153
20123	SAVANNAH	AOR4	3H	1	14	5		20	442	97.00	20.618
20124	WABASH	AOR5	3H	1	27	8	2	38	442	129.00	29.457
20125	KALAMAZOO	AOR6	3H	1	8	4	1	14	442	96.00	14.583
20243	ROANOKE	AOR7	3H		7	5	1	13	442	107.00	12.149
07957	CONSTANT	MSO427	4A	1	2	1		4	56	14.00	28.571
07963	ENGAGE	MSO433	4A						56	8.00	.000
07967	ENHANCE	MSO437	4A	1	1	1		3	56	9.00	33.333
07968	ESTEEM	MSO438	4A		1			1	56	9.00	11.111
07969	EXCEL	MSO439	4A			1		1	56	13.00	7.692
07970	EXPLOIT	MSO440	4A	1		1		2	56	10.00	19.999
07971	EXULTANT	MSO441	4A	1		2		3	56	13.00	23.076
07972	FEARLESS	MSO442	4A	2		1		3	56	12.00	25.000
07976	FORTIFY	MSO446	4A						56	6.00	.000
07979	IMPERVIOUS	MSO449	4A	1				1	56	7.00	14.285
07985	IMPLICIT	MSO455	4A		1			1	56	6.00	16.666
07986	INFLICT	MSO456	4A		1			1	56	7.00	14.285
07994	PLUCK	MSO464	4A		1	1		2	56	13.00	15.384
08146	CONQUEST	MSO488	4A	1				1	56	8.00	12.500
08147	GALLANT	MSO489	4A	1		1	1	3	56	11.00	27.272
08150	PLEDGE	MSO492	4A						56	9.00	.000
08157	ADROIT	MSO509	4A						56	11.00	.000
08159	AFFRAY	MSO511	4A	1	1	1		3	56	13.00	23.076
04620	PRAIRIE	AD15	5A	2	5	3		10	827	110.00	9.090
04638	SIERRA	AD18	5A	2	6	2		10	827	98.00	10.204
04639	YOSEMITE	AD19	5A	5	9	6	3	23	827	163.00	14.110
04648	SAMUEL GOMPERS	AD37	5A	1	12	5		18	1,286	137.00	13.138
05837	PUGET SOUND	AD38	5A	1	24	13	1	39	1,286	341.00	11.436
21046	YELLOWSTONE	AD41	5C	2	6	9		17	1,277	176.00	9.659
21047	ACADIA	AD42	5C	2	19	3		24	1,277	143.00	16.783
21063	CAPE COD	AD43	5C	3	12	5	1	21	1,277	176.00	11.931
08800	AJAX	AR6	5D	1	8	11	1	21	847	116.00	18.103
08808	VULCAN	AR5	5D	2	3	2	1	8	847	90.00	8.888
08810	JASON	AR8	5D		11	7		18	847	144.00	12.500
	TOTALS		300	612	1,771	937	87	5,407	343.0	24,062.00	14.159

APPENDIX C

LOSS RATES BY SHIP CLASS

ATTRITION RATE BY SHIPS CLASS

NO SHIPS IN CLASS	CAT/CLASS	FY77	FY78	FY79	FY80	TOTAL	AVG CREW SIZE	< 54 MO SERVICE	AVG LOSS RATE (%)
003	1A	11	24	11	3	49	539	382.00	12.82
002	1B	17	33	16		66	579	362.00	18.23
001	1C	2	15	6		23	566	148.00	15.54
001	1D	7	14	5		26	529	202.00	12.87
001	1E	6	25	13		44	730	343.00	12.82
008	1G	50	79	56	6	191	444	1,210.00	15.78
009	1H	61	79	48	3	191	397	1,237.00	15.44
010	1J	69	126	39	10	241	378	1,477.00	16.31
023	1K	138	254	103	15	510	339	2,767.00	18.43
008	1L	36	54	37	2	129	310	865.00	14.91
006	1M	33	52	27	3	115	254	584.00	19.69
039	1N	173	257	114	35	579	270	3,542.00	16.34
009	1P	47	69	42	9	166	260	857.00	19.36
013	2A	143	200	107	26	476	400	2,188.00	21.75
005	2B	28	54	31	3	116	336	534.00	21.72
003	2C	18	21	18	3	60	329	337.00	17.80
005	2D	48	71	31	3	153	331	625.00	24.47
020	2F	109	194	91	27	421	241	1,790.00	23.51
002	2G	12	36	26	8	82	771	516.00	15.89
002	3A	8	34	10	2	54	347	240.00	22.49
003	3B	15	53	30	6	104	330	364.00	28.57
007	3C	56	110	54	13	233	386	903.00	25.80
007	3D	55	90	47	13	205	411	1,024.00	20.01
002	3E	23	43	14	2	82	352	271.00	22.87
004	3G	68	73	27	12	180	583	868.00	20.73
007	3H	80	114	57	9	260	442	1,268.00	20.50
018	4A	5	23	8	3	38	50	193.00	19.68
003	5A	48	77	33	5	163	627	903.00	18.05
002	5B	26	74	38	6	144	1,286	707.00	20.36
001	5C	4	7	8	3	22	1,277	208.00	10.57
003	5D	36	78	49	8	171	847	786.00	21.75
TOTALS 227		1,429	2,411	1,196	238	5,274	453	27,701.00	19.039

ATTRITION RATE BY SHIPS CLASS

NO SHIPS IN CLASS	CAT/CLASS	FY81	FY82	FY83	FY84	TOTAL	AVG CREW SIZE	< 34 MO SERVICE	AVG LOSS RATE (%)
004	1A	14	22	25	5	66	539	492.00	13.41
002	1B	7	19	10	1	37	579	280.00	13.21
001	1C	5	5	6	2	18	566	153.00	11.76
001	1D	9	14	3	1	27	529	153.00	17.64
001	1E	8	17	13	5	43	736	194.00	22.16
009	1G	33	93	60	14	200	444	1,117.00	17.90
009	1H	41	101	58	8	208	397	1,101.00	18.89
004	1I	2	23	13	1	39	318	446.00	8.74
010	1J	40	98	72	8	218	376	1,094.00	19.92
023	1K	75	175	147	19	416	339	2,291.00	18.15
030	1L	90	169	116	16	411	310	2,304.00	17.83
006	1M	20	48	32	3	103	254	454.00	22.68
039	1N	117	234	156	24	531	270	2,959.00	17.94
009	1P	27	43	36	9	122	260	606.00	20.13
004	1W	2	8	10	1	21	195	140.00	14.99
013	2A	82	175	126	20	404	400	1,721.00	23.47
005	2B	16	31	22	5	74	336	318.00	23.27
003	2C	13	40	14	5	72	329	327.00	22.01
005	2D	26	51	27	4	108	331	507.00	21.30
020	2F	56	147	93	18	314	241	1,501.00	20.91
002	2G	19	44	26	3	92	771	454.00	20.26
002	3A	8	21	9	5	43	347	169.00	25.44
003	3B	15	41	10	4	70	330	270.00	25.92
007	3C	35	93	43	4	172	386	740.00	23.24
007	3D	34	83	52	10	178	411	949.00	18.75
002	3E	18	21	17	4	60	352	238.00	25.21
003	3F	5	21	10		36	208	230.00	15.65
004	3G	30	89	51	14	174	583	691.00	25.18
007	3H	36	84	56	16	192	442	875.00	21.94
018	4A	2	18	16	1	37	56	215.00	17.20
003	5A	45	66	56	10	177	627	785.00	22.54
002	5B	30	63	24	5	112	1,286	684.00	16.37
002	5C	13	29	31	2	75	1,277	637.00	11.77
003	5D	10	49	39	3	107	847	644.00	16.61
TOTALS	263	979	2,237	1,491	250	4,957	391	25,739.00	19.258

ATTRITION RATE BY SHIPS CLASS

NO SHIPS IN CLASS	CAT/CLASS	FY85	FY86	FY87	FY88	TOTAL	AVG CREW SIZE	< 34 MO SERVICE	AVG LOSS RATE (%)
004	1A	8	22	10	2	42	539	515.00	8.15
002	1B	2	13	8		23	579	267.00	10.48
001	1C	3	11	6	1	21	566	156.00	13.46
001	1D	3	8	4		15	529	158.00	9.47
001	1E	9	11	6	3	29	736	231.00	12.55
003	1F	2	9	3	1	15	340	273.00	5.49
009	1G	29	72	30	5	136	444	945.00	14.39
009	1H	15	45	30		90	397	833.00	10.80
004	1I	6	22	7	1	36	318	343.00	10.49
010	1J	25	59	41	4	129	376	926.00	13.93
023	1K	37	117	69	6	229	339	1,842.00	12.43
031	1L	65	109	97	11	342	310	2,419.00	14.13
006	1M	9	29	10		48	254	364.00	13.18
039	1N	68	148	80	9	305	270	2,484.00	12.27
009	1P	18	42	26	3	89	260	551.00	16.15
033	1Q	32	113	67	6	218	195	1,769.00	12.32
013	2A	39	126	65	4	234	400	1,356.00	17.25
005	2B	13	30	27	2	72	330	467.00	15.41
003	2C	7	30	11	1	49	329	265.00	18.49
005	2D	12	46	13	3	74	331	437.00	16.93
001	2E	3	11	8		22	322	207.00	10.62
020	2F	54	119	62	5	238	241	1,213.00	19.62
002	2G	6	15	16	1	38	771	393.00	9.66
002	3A	11	27	14	1	53	347	203.00	26.10
003	3B	9	27	11		47	330	270.00	17.40
007	3C	26	71	39	2	138	386	653.00	21.13
007	3D	16	63	28	3	110	411	812.00	13.54
002	3E	12	15	6		33	352	175.00	18.85
005	3F	8	18	5		31	208	214.00	14.48
004	3G	15	59	23		97	583	639.00	15.17
007	3H	21	96	39	5	161	442	809.00	19.90
018	4A	10	3	16	1	29	50	179.00	16.20
003	5A	9	20	11	3	43	827	371.00	11.59
002	5B	2	36	18	1	57	1,280	478.00	11.96
003	5C	7	37	17	1	62	1,277	495.00	12.52
003	5D	3	22	20	2	47	847	350.00	13.42
TOTALS 300		612	1,771	937	87	3,407	343	24,062.00	14.159

APPENDIX D

LOSS RATES BY RATING (OCCUPATION)

LOSS BY RATING

SHIPS CATEGORY = 1

RATING	AVG NO ON BOARD	FY77	FY78	FY79	FY80	TOTAL	LOSS RATE
AA	8.0	0	0	1	0	1	12.50
AN	3.0	0	1	0	0	1	33.33
AK	16.0	1	0	0	0	1	6.25
BM	26.0	1	1	3	1	6	23.07
BT	778.0	43	56	34	5	138	17.73
CTT	1.0	0	0	0	0	0	.00
DK	29.0	2	0	0	0	2	6.89
DS	69.0	3	0	0	0	3	4.34
EM	354.0	10	12	5	0	27	7.62
EN	150.0	3	5	3	0	11	7.33
ET	0.0	0	0	0	2	2	.00
EW	218.0	2	0	0	2	4	1.83
FA	422.0	23	31	19	4	97	22.98
FN	112.0	4	12	10	3	29	25.89
FR	462.0	31	87	36	5	159	34.41
FTG	510.0	6	15	4	0	25	4.90
FTM	456.0	4	19	5	0	28	6.14
GMG	271.0	7	9	7	2	25	9.22
GMM	361.0	14	20	13	0	47	13.01
GMT	104.0	0	4	3	0	7	6.73
HA	5.0	0	0	0	0	0	.00
HM	20.0	0	1	0	0	1	4.99
HN	34.0	0	0	0	1	1	2.94
HR	2.0	0	1	0	0	1	50.00
HT	403.0	13	43	16	2	72	17.86
IC	188.0	6	3	4	0	11	5.85
JO	18.0	0	0	2	0	2	11.11
MM	942.0	44	53	24	5	122	12.95
MK	29.0	0	1	1	0	2	6.89
MS	312.0	19	20	11	3	53	16.98
MT	1.0	0	0	0	0	0	.00
OS	802.0	22	45	21	7	95	11.84
PC	41.0	1	4	0	1	6	14.63
PN	75.0	1	4	5	0	10	13.33
QM	161.0	7	3	6	0	21	13.04
RM	411.0	8	17	10	1	36	8.75
SA	1,443.0	102	146	59	11	318	22.03
SH	258.0	20	17	12	0	49	18.99
SK	209.0	7	13	6	2	28	13.39
SM	223.0	3	13	6	3	25	11.21
SN	587.0	23	51	34	2	110	18.73
SR	2,120.0	183	275	119	22	604	28.49
STG	706.0	19	45	31	4	99	14.02
STS	1.0	0	0	0	0	0	.00
TM	74.0	3	0	0	0	5	6.75
YN	105.0	3	9	5	0	22	20.95
UNK	456.0	7	13	4	0	24	5.26
TOTALS	13,976	647	1,060	517	86	2,330	16.67

LOSS BY RATING

SHIPS CATEGORY = 2

RATING	AVG NO ON BOARD	FY77	FY78	FY79	FY80	TOTAL	LOSS RATE
AA	64.0	7	5	3	0	15	23.43
ABF	15.0	0	0	1	0	1	6.66
ABH	13.0	1	0	0	0	1	7.69
AD	0.0	0	0	0	1	1	.00
AG	4.0	0	1	0	0	1	25.00
AN	13.0	1	1	1	0	3	23.07
AR	92.0	9	14	5	1	29	31.52
ASE	5.0	0	0	0	0	0	.00
ASM	2.0	0	0	0	0	0	.00
BM	26.0	0	1	2	2	5	19.23
BT	160.0	6	14	15	4	39	24.37
DK	13.0	0	0	1	0	1	7.69
DM	1.0	0	0	1	0	1	100.00
DP	4.0	0	0	0	0	0	.00
DR	1.0	0	0	0	0	0	.00
DS	5.0	0	0	0	0	0	.00
DT	2.0	0	0	0	0	0	.00
EM	149.0	4	7	2	1	14	9.39
EN	214.0	5	13	5	4	27	12.61
ET	0.0	0	0	1	1	2	.00
EW	33.0	0	0	0	0	3	9.09
FA	318.0	18	41	15	4	78	24.52
FN	80.0	3	5	6	1	15	17.44
FR	350.0	38	58	28	3	127	36.28
FTG	24.0	0	3	0	0	3	12.50
FTM	0.0	0	0	0	0	0	.00
GMG	106.0	8	4	1	0	13	12.26
GMM	1.0	0	0	0	0	0	.00
HA	9.0	0	0	0	0	0	.00
HM	21.0	0	0	0	0	0	.00
HN	20.0	1	2	0	0	4	19.99
HK	3.0	1	0	0	0	1	33.33
HT	208.0	6	14	4	2	26	12.50
IC	57.0	3	2	1	1	7	12.28
IS	4.0	0	1	0	0	1	25.00
JO	7.0	0	0	0	0	0	.00
LI	10.0	0	0	0	0	0	.00
MM	233.0	14	15	11	1	41	17.59
MR	25.0	0	0	1	0	1	3.99
MS	160.0	11	18	10	0	39	24.37
OS	140.0	2	7	5	0	14	9.99
PC	30.0	1	1	1	0	3	9.99
PH	5.0	0	0	0	0	0	.00
PN	34.0	1	2	0	0	3	8.82
QM	67.0	1	1	3	0	5	7.46
RM	249.0	8	14	3	0	25	10.04
SA	897.0	59	112	59	11	241	26.86
SH	92.0	3	5	8	2	18	19.56
SK	62.0	0	4	0	0	4	6.45
SM	109.0	4	7	6	2	19	17.43
SN	298.0	13	31	16	6	66	22.14
SR	1,389.0	130	159	88	22	399	28.72
TM	1.0	0	0	0	0	0	.00
YN	44.0	0	5	0	1	6	13.63

LOSS BY RATING

SHIPS CATEGORY = 2

RATING	AVG NO ON BOARD	FY77	FY78	FY79	FY80	TOTAL	LOSS RATE
UNK	109.0	0	5	1	0	6	5.50
TOTALS	5,990	358	576	304	70	1,308	21.83

LOSS BY RATING

SHIPS CATEGORY = 3

RATING	AVG NO ON BOARD	FY77	FY78	FY79	FY80	TOTAL	LOSS RATE
AA	2.0	0	0	1	0	1	50.00
AK	2.0	0	0	0	0	0	.00
AN	2.0	0	0	0	0	0	.00
AR	17.0	0	0	0	1	1	5.88
BM	25.0	0	0	3	0	3	11.99
BT	180.0	5	14	11	1	31	17.22
DK	17.0	0	1	3	0	4	23.52
DP	14.0	0	2	1	0	3	21.42
EM	107.0	2	4	3	0	9	8.41
EN	42.0	0	4	2	0	6	14.28
EW	0.0	0	0	0	0	0	.00
FA	240.0	20	35	12	2	69	28.74
FN	66.0	1	9	8	3	21	31.81
FR	271.0	30	53	19	6	93	34.31
FTG	11.0	1	0	0	0	1	9.09
FT1	14.0	0	1	0	0	1	7.14
GMG	81.0	2	7	1	0	10	12.34
GMM	9.0	1	1	0	0	2	22.22
GMT	3.0	0	0	0	0	0	.00
HA	12.0	0	1	0	0	1	8.33
HM	0.0	0	0	0	0	0	.00
HN	12.0	0	0	1	0	1	8.33
HT	102.0	4	4	3	1	12	11.76
IC	55.0	1	2	0	0	3	5.45
JO	16.0	0	0	0	0	0	.00
MM	231.0	9	19	7	3	38	16.45
MR	14.0	0	2	0	0	2	14.28
MS	96.0	6	10	5	2	23	23.95
OS	77.0	2	5	3	2	12	15.58
PC	13.0	0	1	0	0	1	7.69
PN	17.0	0	0	0	0	2	11.76
QM	34.0	2	1	1	0	4	11.76
RM	105.0	3	10	3	1	17	16.19
SA	941.0	73	125	54	11	263	27.94
SH	55.0	3	2	1	0	6	10.90
SK	172.0	8	13	5	0	26	15.11
SM	62.0	1	4	5	0	10	16.12
SN	383.0	8	42	25	8	83	21.67
SR	1,339.0	117	137	60	16	330	24.64
TM	1.0	0	0	0	0	0	.00
YN	20.0	1	2	1	0	4	19.99
UNK	72.0	3	1	1	0	5	6.94
TOTALS	4,938	305	497	239	57	1,098	22.23

LOSS BY RATING

SHIPS CATEGORY = 4

RATING	AVG NO ON BOARD	FY77	FY78	FY79	FY80	TOTAL	LOSS RATE
AR	0.0	0	0	1	0	1	.00
EM	18.0	0	1	1	0	2	11.11
EN	25.0	0	2	0	0	2	7.99
FA	21.0	0	5	0	1	6	28.57
FN	6.0	0	0	2	0	2	33.33
FR	6.0	1	1	1	0	3	50.00
GMG	1.0	0	0	0	0	0	.00
HT	9.0	0	1	3	0	4	44.44
IC	4.0	0	0	0	0	0	.00
MS	16.0	1	1	0	0	2	12.50
OS	6.0	0	1	0	0	1	16.66
PN	5.0	0	0	0	0	0	.00
RM	7.0	0	1	0	0	1	14.28
SA	15.0	0	1	0	1	2	13.33
SN	5.0	0	0	0	0	0	.00
SR	22.0	2	6	0	1	9	40.90
UNK	27.0	1	2	0	0	3	11.11
TOTALS	193	5	22	8	3	38	19.68

LOSS BY RATING

SHIPS CATEGORY = 5

RATING	AVG NO ON BOARD	FY77	FY78	FY79	FY80	TOTAL	LOSS RATE
AR	6.0	1	0	0	0	1	16.66
BM	5.0	0	0	0	0	0	.00
BT	82.0	2	6	5	0	13	15.85
DK	5.0	0	0	0	0	0	.00
DN	10.0	0	0	0	0	0	.00
DP	21.0	0	1	0	0	1	4.76
DR	1.0	0	0	0	0	0	.00
DT	0.0	0	1	0	0	1	.00
EM	41.0	1	1	1	1	4	9.75
EN	39.0	1	4	2	0	7	17.94
FA	198.0	12	37	12	3	64	32.32
FN	65.0	1	5	9	1	16	24.61
FR	277.0	20	33	22	4	84	30.32
FTG	35.0	0	0	0	0	0	.00
GMG	13.0	0	1	0	0	1	7.69
GMM	1.0	0	0	0	0	0	.00
GMT	4.0	0	0	0	0	0	.00
HA	4.0	0	1	0	0	1	25.00
HM	1.0	0	0	0	0	0	.00
HN	3.0	0	1	0	0	1	33.33
HR	2.0	0	0	0	0	0	.00
HT	249.0	7	9	8	2	26	10.44
IC	34.0	2	1	0	0	3	8.82
IM	17.0	0	1	0	0	1	5.88
JO	1.0	0	0	0	0	0	.00
LI	5.0	1	0	0	0	1	19.99
ML	26.0	0	0	2	0	2	7.69
MM	130.0	1	3	6	1	14	10.76
MK	91.0	3	4	1	0	8	8.79
MS	28.0	2	0	1	0	4	14.28
OM	18.0	0	0	0	0	0	.00
OS	6.0	0	0	1	0	1	16.66
PC	0.0	0	0	0	0	0	.00
PH	8.0	0	1	0	0	1	12.50
PM	10.0	0	0	1	0	1	9.99
PN	12.0	0	0	0	0	0	.00
QM	3.0	0	0	0	0	0	.00
RM	36.0	0	2	0	0	2	5.55
SA	270.0	15	4	14	4	73	27.03
SH	24.0	0	1	1	0	2	8.33
SK	63.0	2	3	1	0	6	9.52
SM	5.0	0	0	0	0	0	.00
SN	103.0	7	8	8	1	24	23.30
SR	472.0	35	57	29	5	126	26.69
STG	15.0	0	2	0	0	2	13.33
TM	48.0	1	1	1	0	3	6.25
YN	18.0	2	1	2	0	5	27.77
UNK	93.0	0	0	1	0	1	1.07
TOTALS	2,604	114	236	128	22	500	19.20

LOSS BY RATING

SHIPS CATEGORY = 1

RATING	AVG NO ON BOARD	FY81	FY82	FY83	FY84	TOTAL	LOSS RATE
AA	2.0	0	1	0	0	1	50.00
AD	4.0	1	0	0	0	1	25.00
AN	4.0	0	0	0	0	0	.00
AR	13.0	1	0	0	0	1	7.69
AT	1.0	0	0	0	0	0	.00
AZ	1.0	0	0	0	0	0	.00
BM	32.0	1	5	15	2	23	71.87
BT	827.0	20	66	51	7	144	17.41
BU	2.0	0	1	0	0	1	50.00
CE	1.0	0	0	0	0	0	.00
CR	2.0	0	0	0	0	0	.00
CTI	1.0	0	0	0	0	0	.00
CTO	6.0	0	1	0	0	1	16.66
CTR	1.0	0	0	0	0	0	.00
CTT	1.0	0	0	0	0	0	.00
DK	41.0	2	0	1	0	3	7.31
DS	132.0	0	2	2	0	4	3.03
EM	313.0	6	9	3	2	20	6.38
EN	245.0	5	12	12	2	31	12.65
ET	365.0	3	10	1	0	14	3.83
EW	151.0	0	7	2	0	9	5.96
FA	606.0	28	53	36	2	119	19.63
FN	178.0	5	16	17	2	40	22.47
FR	613.0	35	78	50	10	173	28.22
FTB	1.0	0	0	0	0	0	.00
FTG	234.0	2	9	1	0	12	5.12
FTM	202.0	2	9	1	0	12	5.94
GMG	127.0	2	5	6	2	15	11.81
GMM	207.0	4	7	9	2	22	10.62
GMT	97.0	1	5	2	0	9	9.27
GSE	66.0	0	5	1	0	8	12.12
GSM	179.0	4	11	3	0	18	10.05
HA	4.0	1	1	0	0	2	50.00
HM	32.0	0	3	0	0	0	.00
HN	40.0	0	3	1	0	4	9.99
HR	3.0	1	2	0	0	3	100.00
HT	386.0	2	18	16	2	38	9.84
IC	153.0	1	4	2	0	7	4.57
JO	18.0	0	1	0	0	1	5.55
MM	1,224.0	32	100	56	7	195	15.93
MK	33.0	1	0	1	0	2	6.06
MS	464.0	29	0	28	2	119	25.64
MT	3.0	0	0	0	0	0	.00
OS	1,093.0	15	91	57	7	140	12.80
PC	61.0	2	1	1	0	4	6.55
PN	102.0	2	7	3	0	12	11.76
PR	1.0	0	0	0	0	0	.00
RM	168.0	3	7	10	0	20	11.90
RP	423.0	8	20	13	0	41	9.69
SA	1,353.0	44	131	87	13	321	23.72
SH	115.0	10	5	11	2	28	24.34
SK	102.0	3	7	8	2	20	19.60
SM	199.0	7	11	14	4	36	18.09

LOSS BY RATING

SHIPS CATEGORY = 1

RATING	AVG NO ON BOARD	FY81	FY82	FY83	FY84	TOTAL	LOSS RATE
SN	574.0	23	41	50	4	118	20.55
SR	1,714.0	116	245	144	36	541	31.56
STG	581.0	14	35	34	3	86	14.80
STS	5.0	0	0	0	0	0	.00
TM	89.0	1	3	4	0	11	12.35
YN	160.0	5	15	6	2	28	17.49
UNK	26.0	1	0	0	1	2	7.69
TOTALS	13,784	490	1,094	759	117	2,460	17.84

LOSS BY RATING

SHIPS CATEGORY = 2

RATING	AVG NO ON BOARD	FY81	FY82	FY83	FY84	TOTAL	LOSS RATE
AA	17.0	1	2	1	0	4	23.52
ABF	13.0	0	0	0	0	0	.00
ABH	7.0	0	0	0	0	0	.00
AG	10.0	0	0	0	0	0	.00
AMS	0.0	0	0	1	0	1	.00
AN	9.0	0	0	1	0	1	11.11
AR	38.0	2	7	1	1	11	28.94
ASE	3.0	1	0	0	0	1	33.33
ASM	8.0	0	0	1	0	1	12.50
BM	25.0	0	2	3	0	5	19.99
BT	109.0	4	11	14	0	29	26.60
CR	1.0	0	0	0	0	0	.00
CTR	2.0	0	0	0	0	0	.00
DK	17.0	0	0	0	0	0	.00
DM	1.0	0	0	0	0	0	.00
DN	1.0	0	0	0	0	0	.00
DP	29.0	1	3	0	1	5	17.24
DR	0.0	0	1	0	1	2	.00
DS	13.0	0	0	0	0	0	.00
EM	107.0	3	2	3	0	8	7.47
EN	262.0	3	16	11	1	36	13.74
ET	57.0	0	2	1	0	3	8.82
EW	34.0	1	2	0	0	3	17.15
FA	408.0	7	34	25	4	70	42.46
FN	73.0	1	12	18	0	31	31.71
FR	473.0	28	65	45	11	150	100.00
FTB	1.0	1	0	0	0	1	14.28
FTM	7.0	0	1	0	0	1	17.85
GMG	28.0	1	1	3	0	5	100.00
GMM	1.0	0	1	0	0	1	33.33
HA	6.0	0	1	1	0	2	9.52
HM	21.0	1	1	0	0	2	14.28
HN	21.0	1	1	1	0	3	100.00
HR	4.0	2	1	1	0	4	18.60
HT	129.0	3	12	9	0	24	15.78
IC	36.0	1	3	2	0	6	19.99
IS	5.0	0	0	0	0	0	.00
JO	12.0	0	0	0	0	0	.00
LI	2.0	0	0	0	0	0	18.57
MM	350.0	10	31	19	5	65	7.99
MR	25.0	0	2	0	0	2	28.30
MS	212.0	15	34	9	2	60	13.67
OS	212.0	7	9	12	1	29	.00
PC	19.0	0	0	0	0	0	9.99
PH	14.0	1	0	0	0	1	19.51
PN	41.0	4	2	2	0	8	11.11
QM	45.0	1	3	1	0	5	13.51
RM	185.0	4	9	10	2	25	33.33
RP	3.0	0	0	0	1	1	20.85
SA	561.0	29	60	25	3	117	14.70
SH	34.0	1	4	1	0	5	18.91
SK	37.0	2	4	2	0	7	17.70
SM	90.0	4	9	4	1	17	19.90
SN	211.0	12	17	10	1	42	

LOSS BY RATING

SHIPS CATEGORY = 2

RATING	AVG NO ON BOARD	FY81	FY82	FY83	FY84	TOTAL	LOSS RATE
SR	705.0	81	116	63	18	258	30.59
STS	3.0	0	1	0	0	1	33.33
TM	2.0	0	1	0	0	1	50.00
YN	82.0	1	8	2	0	11	13.41
UNK	3.0	0	0	0	0	0	.00
TOTALS	4,828	212	489	308	55	1,064	22.03

LOSS BY RATING

SHIPS CATEGORY = 3

RATING	AVG NO ON BOARD	FY81	FY82	FY83	FY84	TOTAL	LOSS RATE
AA	2.0	0	0	0	0	0	.00
AK	4.0	1	0	0	0	1	25.00
AMS	1.0	0	0	0	0	0	.00
AN	3.0	0	0	0	0	0	.00
AR	4.0	0	1	0	1	1	25.00
BM	22.0	1	1	1	1	4	18.18
BT	124.0	2	15	6	2	25	20.16
CM	1.0	0	0	0	0	0	.00
CR	1.0	0	0	0	0	0	.00
DK	14.0	0	0	0	0	0	.00
DP	31.0	2	0	0	0	2	6.45
DS	2.0	0	0	0	0	0	.00
DT	1.0	0	0	0	0	0	.00
EM	110.0	2	3	2	0	7	6.36
EN	50.0	0	9	3	0	12	23.99
ET	42.0	0	0	0	0	0	.00
EW	7.0	0	0	0	0	0	.00
FA	250.0	8	15	15	1	39	15.59
FN	66.0	1	5	7	0	14	21.21
FR	324.0	24	48	21	5	98	30.24
FTG	7.0	0	1	0	0	1	14.28
FTM	16.0	0	0	0	0	0	.00
GMG	43.0	2	6	2	1	11	25.58
GMM	5.0	0	1	1	0	2	39.99
HA	5.0	0	0	0	0	0	.00
HM	14.0	0	0	0	0	0	.00
HN	12.0	0	2	0	0	2	16.66
HR	1.0	0	0	0	0	0	.00
HT	118.0	5	6	7	1	19	16.10
IC	36.0	0	1	0	0	1	2.77
JO	0.0	0	0	0	0	0	.00
MM	318.0	4	32	20	0	56	17.61
MR	11.0	0	1	0	0	1	9.09
MS	143.0	7	26	16	7	54	37.76
OS	114.0	3	10	7	1	21	18.42
PC	6.0	0	0	0	0	0	.00
PN	30.0	1	0	0	0	1	3.33
QM	40.0	0	0	0	0	0	.00
RM	103.0	1	3	5	1	9	8.73
RP	3.0	0	0	0	0	0	.00
SA	651.0	35	71	36	7	144	22.11
SH	30.0	0	2	1	2	5	16.66
SK	90.0	1	5	5	0	12	13.33
SM	68.0	3	7	3	0	13	19.11
SN	261.0	12	13	20	1	47	16.90
SR	920.0	75	140	70	27	313	33.80
STS	0.0	0	0	0	0	0	.00
TM	1.0	0	0	0	0	0	.00
YN	36.0	3	2	4	0	9	25.00
UNK	7.0	0	1	0	0	1	14.28
TOTALS	4,162	181	429	253	57	925	22.22

LOSS BY RATING

SHIPS CATEGORY = 4

RATING	AVG NO ON BOARD	FY81	FY82	FY83	FY84	TOTAL	LOSS RATE
BM	3.0	0	0	1	0	1	33.33
EM	14.0	0	0	0	0	0	.00
EN	39.0	0	1	1	0	2	5.12
ET	7.0	0	1	0	0	1	14.28
FA	17.0	0	0	2	1	3	17.64
FN	9.0	0	0	1	0	1	11.11
FR	7.0	0	1	1	0	2	28.57
HT	6.0	0	1	0	0	1	16.66
IC	1.0	0	0	1	0	1	100.00
MM	10.0	0	1	0	0	1	9.99
MS	11.0	2	2	0	0	4	36.36
OS	3.0	0	0	0	0	0	.00
QM	1.0	0	0	1	0	1	100.00
RM	9.0	0	0	1	0	1	11.11
SA	23.0	0	3	2	0	5	21.73
SK	1.0	0	0	0	0	0	.00
SM	3.0	0	0	0	0	0	.00
SN	11.0	0	4	1	0	5	45.45
SR	26.0	0	1	2	0	3	11.53
STG	12.0	0	2	3	0	5	41.66
STS	1.0	0	0	0	0	0	.00
UNK	1.0	0	0	0	0	0	.00
TOTALS	215	2	18	16	1	37	17.20

LOSS BY RATING

SHIPS CATEGORY = 5

RATING	AVG NO ON BOARD	FY81	FY82	FY83	FY84	TOTAL	LOSS RATE
AA	2.0	0	0	0	0	0	.00
AN	1.0	0	0	0	0	0	.00
AR	1.0	0	1	0	0	1	100.00
AT	1.0	0	0	0	0	0	.00
BM	9.0	0	0	2	0	2	22.22
BT	56.0	1	4	3	2	10	17.85
DK	13.0	0	1	2	0	3	23.07
DM	1.0	0	0	0	0	0	.00
DN	6.0	0	0	0	0	0	.00
DP	53.0	2	2	3	0	7	13.20
DS	8.0	0	0	0	0	0	.00
EM	88.0	2	3	1	0	6	6.81
EN	81.0	2	7	2	0	11	13.58
ET	41.0	1	1	0	0	2	4.87
FA	309.0	4	16	20	1	41	13.26
FN	60.0	1	3	6	0	10	16.66
FR	324.0	19	40	22	7	88	27.16
FTG	5.0	0	0	0	0	0	.00
GMG	1.0	0	0	0	0	0	.00
GMT	14.0	0	0	0	0	0	.00
GSM	1.0	0	1	0	0	1	100.00
HM	10.0	0	0	0	0	0	.00
HN	9.0	0	0	0	0	0	.00
HR	0.0	0	1	0	0	1	.00
HT	326.0	4	15	18	3	40	12.26
IC	27.0	0	0	0	0	0	.00
IM	14.0	0	1	0	0	1	7.14
JO	2.0	0	0	0	0	0	.00
LI	3.0	0	0	0	0	0	.00
ML	9.0	0	1	2	0	3	33.33
MM	239.0	5	13	14	0	32	13.38
MR	86.0	4	1	1	0	6	6.97
MS	60.0	6	4	4	0	14	23.33
OM	21.0	0	1	3	0	4	19.04
OS	5.0	0	0	1	0	1	19.99
PC	1.0	0	0	0	0	0	.00
PH	14.0	0	1	1	0	2	14.28
PM	6.0	0	0	0	0	0	.00
PN	18.0	0	1	1	0	2	11.11
QM	3.0	0	0	0	0	0	.00
RM	35.0	0	2	0	1	3	8.57
RP	3.0	0	0	0	0	0	.00
SA	289.0	9	18	10	1	38	13.14
SH	11.0	0	1	0	0	1	9.09
SK	28.0	0	5	0	0	5	17.85
SM	8.0	0	0	2	0	2	25.00
SN	91.0	4	9	7	1	21	23.07
SR	289.0	27	48	22	4	101	34.94
STG	2.0	0	0	0	0	0	.00
TM	35.0	1	2	2	0	5	14.28
YN	25.0	0	4	1	0	5	19.99
UNK	6.0	0	0	0	0	0	.00
TOTALS	2,750	94	207	150	20	471	17.12

LOSS BY RATING

SHIPS CATEGORY = 1

RATING	AVG NO ON BOARD	FY85	FY86	FY87	FY88	TOTAL	LOSS RATE
AA	3.0	0	0	0	0	0	.00
AN	1.0	0	0	0	0	0	.00
AR	12.0	1	1	0	0	2	16.66
AT	3.0	0	0	0	0	0	.00
BM	38.0	0	0	6	1	7	18.42
BT	335.0	7	15	19	1	42	12.53
BU	1.0	0	0	0	0	0	.00
CE	1.0	0	0	0	0	0	.00
CM	1.0	0	0	0	0	0	.00
CR	3.0	0	0	0	0	0	.00
CTO	5.0	0	0	0	0	0	.00
CTR	3.0	0	0	0	0	0	.00
CTT	1.0	0	0	0	0	0	.00
DK	62.0	0	0	4	0	4	6.45
DR	1.0	1	0	0	0	1	100.00
DS	131.0	0	1	0	0	1	.76
EM	298.0	3	2	1	0	6	2.01
EN	269.0	1	14	11	1	27	10.03
ET	495.0	3	4	0	0	7	1.41
EW	417.0	5	11	5	0	21	5.03
FA	440.0	13	25	21	4	63	14.31
FC	200.0	7	23	0	0	30	14.99
FN	203.0	2	14	18	2	36	17.73
FR	511.0	26	83	27	2	138	27.00
FTG	255.0	4	0	0	0	4	1.56
FTM	340.0	0	0	0	0	0	.00
GMG	484.0	4	12	7	1	24	8.45
GMM	173.0	1	5	0	0	6	3.46
GMT	136.0	2	3	3	0	8	5.88
GSE	115.0	2	3	0	0	5	4.34
GSM	146.0	1	11	1	0	13	8.90
HA	3.0	0	1	0	0	1	33.33
HM	9.0	0	0	0	0	0	.00
HN	47.0	1	0	0	0	1	2.12
HT	469.0	6	3	16	1	46	9.80
IC	209.0	2	11	5	0	18	8.61
JO	13.0	0	0	0	0	0	.00
MM	704.0	11	28	11	2	52	7.38
MR	23.0	0	1	2	0	3	13.04
MS	409.0	16	50	24	7	93	22.73
OS	1,140.0	22	51	42	4	119	10.43
OTA	14.0	0	0	0	0	0	.00
PC	59.0	0	1	2	0	3	5.08
PN	86.0	1	4	4	1	10	11.62
QM	256.0	4	7	9	0	20	7.81
RM	642.0	4	25	9	1	40	6.23
RP	7.0	0	0	1	0	1	14.28
SA	1,264.0	42	95	61	5	204	16.13
SH	114.0	3	7	9	0	19	16.66
SK	243.0	7	8	9	2	26	10.69
SM	214.0	3	26	15	4	54	25.23
SN	751.0	15	56	39	3	107	14.24
SR	1,444.0	90	240	83	4	417	28.87
STG	846.0	17	35	22	4	73	8.60

LOSS BY RATING

SHIPS CATEGORY = 1

RATING	AVG NO ON BOARD	FY85	FY86	FY87	FY88	TOTAL	LOSS RATE
STS	4.0	0	0	0	0	0	.00
TM	65.0	0	1	2	2	5	7.69
YN	131.0	4	5	6	0	15	11.45
UNK	25.0	0	0	0	0	0	.00
TOTALS	14,076	331	895	494	52	1,772	12.58

LOSS BY RATING

SHIPS CATEGORY = 2

RATING	AVG NO ON BOARD	FY85	FY86	FY87	FY88	TOTAL	LOSS RATE
AA	10.0	2	0	2	0	4	39.99
ABF	2.0	0	0	1	0	1	50.00
ABH	4.0	0	0	1	0	1	25.00
AG	5.0	0	0	0	0	0	.00
AN	5.0	0	1	0	0	1	19.99
AR	32.0	2	2	3	0	7	21.87
ASE	4.0	0	0	0	0	0	.00
ASM	5.0	0	0	0	0	0	.00
BM	20.0	0	0	2	1	3	14.99
BT	102.0	0	5	3	0	8	7.84
CR	1.0	0	0	0	0	0	.00
CTO	1.0	0	0	0	0	0	.00
DK	21.0	1	1	0	0	2	9.52
DN	3.0	0	0	0	0	0	.00
DP	7.0	0	0	0	0	0	.00
DR	2.0	0	0	0	0	0	.00
DS	4.0	0	0	0	0	0	.00
EM	92.0	1	2	1	0	4	4.34
EN	324.0	12	18	21	2	53	16.35
ET	81.0	1	1	0	0	2	2.46
EW	55.0	0	2	0	0	2	3.63
FA	236.0	9	23	11	1	44	18.64
FC	0.0	0	0	0	0	0	.00
FN	82.0	0	4	6	0	12	14.63
FR	274.0	12	44	9	2	67	24.45
FTB	1.0	0	0	0	0	0	.00
FTG	0.0	0	0	0	0	0	.00
FTM	10.0	0	0	0	0	0	.00
GMG	87.0	1	3	1	0	5	5.74
GMM	3.0	0	1	0	0	1	33.33
GMT	1.0	0	0	0	0	0	.00
HA	4.0	1	0	0	0	1	25.00
HM	13.0	0	0	0	0	0	.00
HN	46.0	1	1	0	0	2	4.16
HT	173.0	3	22	7	1	33	19.07
IC	52.0	1	1	1	0	3	5.76
IS	10.0	0	0	0	0	0	.00
JO	9.0	0	0	0	0	0	.00
LI	1.0	0	0	0	0	0	.00
MM	99.0	4	1	2	0	7	7.07
MR	23.0	0	0	1	0	1	4.34
MS	220.0	7	12	19	2	46	21.09
OS	175.0	7	9	7	0	23	13.14
PC	18.0	1	0	0	0	1	5.55
PH	3.0	0	0	0	0	0	.00
PN	31.0	0	1	2	0	3	9.67
QM	74.0	2	4	10	1	15	20.27
RM	257.0	2	12	5	0	19	7.39
SA	568.0	15	55	32	1	103	18.13
SH	56.0	2	4	4	0	8	14.28
SK	60.0	2	8	2	2	14	23.33
SM	85.0	6	10	9	0	25	29.41
SN	302.0	7	16	8	1	32	10.59
SR	517.0	32	103	28	2	165	31.91

LOSS BY RATING

SHIPS CATEGORY = 2

RATING	AVG NO ON BOARD	FY85	FY86	FY87	FY88	TOTAL	LOSS RATE
YN	49.0	1	4	4	0	9	18.36
UNK	5.0	0	0	0	0	0	.00
TOTALS	4,338	132	377	202	16	727	16.75

LOSS BY RATING

SHIPS CATEGORY = 3

RATING	AVG NO ON BOARD	FY85	FY86	FY87	FY88	TOTAL	LOSS RATE
AD	1.00	0	0	0	0	0	.00
AK	4.00	0	0	0	0	0	.00
AN	1.00	0	0	0	0	0	.00
AR	4.00	0	0	0	0	0	.00
BM	21.00	2	2	2	0	6	28.57
BT	99.00	2	5	4	1	12	12.12
CM	1.00	0	0	0	0	0	.00
CTT	1.00	0	0	0	0	0	.00
DK	11.00	0	0	0	0	0	.00
DP	15.00	0	1	0	0	1	6.66
DR	1.00	0	0	0	0	0	.00
DS	1.00	0	0	0	0	0	.00
EM	96.00	4	5	0	0	9	9.37
EN	15.00	0	0	1	0	1	6.66
ET	44.00	0	0	0	0	0	.00
EW	29.00	0	2	1	0	3	10.34
FA	154.00	4	10	5	0	19	14.33
FC	14.00	0	1	0	0	1	7.14
FN	56.00	2	4	9	0	15	26.78
FR	149.00	6	4	12	2	43	28.85
FTG	9.00	0	0	0	0	0	.00
FTM	10.00	0	0	0	0	0	.00
GMG	100.00	0	7	0	0	7	6.99
GMM	2.00	0	0	0	0	0	.00
GMT	1.00	0	0	0	0	0	.00
HA	2.00	0	0	0	0	0	.00
HM	4.00	0	0	0	0	0	.00
HN	35.00	1	2	0	0	3	8.57
HR	2.00	0	0	0	0	0	.00
HT	153.00	2	13	7	0	22	14.37
IC	57.00	1	2	0	0	3	5.26
JO	12.00	1	2	0	0	3	25.00
LI	1.00	0	0	0	0	0	.00
MM	180.00	4	12	4	1	21	11.29
MR	6.00	1	1	0	0	1	16.66
NS	98.00	2	15	2	0	19	19.38
OS	87.00	1	9	1	0	11	12.64
PC	6.00	0	1	1	0	2	25.00
PN	21.00	1	1	3	0	5	23.80
QM	44.00	0	3	2	1	6	13.63
RM	134.00	5	8	4	0	17	12.68
RP	9.00	0	0	1	0	1	11.11
SA	604.00	19	53	33	2	107	17.71
SH	46.00	2	2	2	0	10	21.73
SK	182.00	2	22	9	0	33	18.13
SM	48.00	2	5	3	0	10	20.83
SN	353.00	6	31	18	0	56	15.86
SR	807.00	50	126	40	4	220	27.26
TM	1.00	0	0	0	0	0	.00
YN	35.00	0	2	1	0	3	8.57
UNK	1.00	0	0	0	0	0	.00
TOTALS	3,775	113	376	165	11	670	17.74

LOSS BY RATING

SHIPS CATEGORY = 4

RATING	AVG NO ON BOARD	FY85	FY86	FY87	FY88	TOTAL	LOSS RATE
BM	3.0	0	0	0	0	0	.00
EM	14.0	0	0	0	0	2	14.28
EN	36.0	0	1	1	0	2	5.55
ET	2.0	0	0	0	0	0	.00
FA	8.0	0	1	1	0	2	25.00
FN	8.0	0	0	0	0	1	12.50
FR	11.0	0	1	2	1	1	9.09
HT	1.0	0	1	2	0	3	300.00
IC	3.0	0	0	0	0	0	.00
MS	11.0	0	1	0	0	1	9.09
OS	1.0	0	0	0	0	0	.00
QM	1.0	0	0	0	0	0	.00
RM	8.0	1	0	0	0	1	12.50
SA	28.0	1	2	3	0	5	17.85
SK	0.0	0	0	0	0	2	.00
SN	9.0	1	0	0	0	1	11.11
SK	26.0	2	3	3	0	8	30.76
STG	9.0	0	0	0	0	0	.00
TOTALS	179	10	8	10	1	29	16.20

LOSS BY RATING

SHIPS CATEGORY = 5

RATING	AVG NO ON BOARD	FY85	FY86	FY87	FY88	TOTAL	LOSS RATE
AN	0.0	0	0	1	0	1	.00
AT	1.00	0	0	0	0	0	.00
BM	12.00	0	1	0	0	2	5.12
BT	39.00	0	2	0	0	2	11.11
DK	18.00	0	0	0	0	0	.00
DM	2.00	0	0	0	0	0	.00
DN	4.00	0	0	0	0	0	.00
DP	10.00	0	0	0	0	0	.00
DR	4.00	0	0	0	0	0	.00
DS	9.00	0	0	0	0	0	.00
EM	44.00	1	2	0	1	4	9.09
EN	24.00	0	2	2	0	4	16.66
ET	48.00	0	2	0	0	2	4.16
FA	165.00	1	3	11	0	17	10.30
FN	60.00	0	4	1	1	6	9.99
FR	198.00	3	8	11	1	43	21.71
GMG	8.00	0	0	0	0	0	.00
GMM	4.00	0	1	0	0	1	25.00
GMT	7.00	1	0	0	0	1	14.28
GSE	1.00	0	0	0	0	0	.00
HA	2.00	0	1	0	0	1	50.00
HM	4.00	0	0	0	0	0	.00
HN	14.00	0	0	0	0	0	.00
HT	229.00	0	1	9	0	25	10.91
IC	21.00	1	0	0	0	1	4.76
IM	21.00	0	1	0	0	1	4.76
JO	5.00	0	0	1	0	1	19.99
LI	2.00	0	0	0	0	0	.00
ML	15.00	0	0	0	0	0	.00
MM	122.00	4	3	5	0	15	12.29
MR	91.00	2	0	2	0	5	5.49
MS	66.00	0	8	8	1	18	27.27
OM	8.00	0	2	1	0	2	25.00
OS	5.00	0	0	0	0	0	.00
PC	1.00	0	0	0	0	0	.00
PH	4.00	0	0	0	0	0	.00
PM	5.00	0	0	0	0	0	.00
PN	8.00	0	0	0	0	0	.00
RM	19.00	0	2	0	0	2	25.00
SA	105.00	3	5	5	0	13	12.38
SH	8.00	0	1	0	0	1	12.50
SK	60.00	1	4	2	0	6	9.99
SM	8.00	0	1	1	0	2	25.00
SN	74.00	1	1	5	1	8	10.81
SR	89.00	3	14	2	2	21	23.59
STG	11.00	1	0	0	0	1	9.09
TM	13.00	0	0	0	0	0	.00
YN	21.00	0	2	1	0	3	14.28
UNK	5.0	0	0	0	0	0	.00
TOTALS	1,094	21	115	66	7	209	12.33

APPENDIX E

LOSSES BY REASONS

ATTRITION RATE BY REASON

SHIPS CATEGORY = 1

NUMBER OF LOSSES

REASONS FOR LOSS	FY77	FY78	FY79	FY80	TOTAL
011	6	42	31	1	80
012		1	1		2
013	7	21	15	1	44
016	25	35	6	1	67
022	3	19	3		35
032	10	27	15		52
060	149	128	48	4	329
061	118	78	33	6	235
063	3	3			6
064	3	4	13		20
065	124	304	172	13	613
066	1				1
067	11	57	22	1	91
068	1				1
069	1				1
070		1			1
071	5	12	16	2	35
072		2			2
073		4	18	24	46
074	0	6	1		13
075	1	1	1	3	6
076	12	40	13		65
077	1	1			2
078	25	95	32	23	175
080	1	4	2	1	8
082	31	71	28	2	132
086	50	62	9	1	122
091	9	29	22	1	49
092	1				1
095		1			1
096	1	4	2		7
098		1	1		2
099	15	36	10	2	66
TOTALS	647	1,080	517	86	2,330

ATTRITION RATE BY REASON

SHIPS CATEGORY = 2

NUMBER OF LOSSES

REASONS FOR LOSS	FY77	FY78	FY79	FY80	TOTAL
011	7	17	17	2	43
012		1			1
013	6	7	4	1	20
016	[illegible]	9	[illegible]		19
022	[illegible]	7	1		13
031		1			1
032	4	12	5		21
060	85	57	15	4	161
061	70	61	17	5	153
063	1	2			3
064	2	5	10		17
065	73	192	128	14	407
066			1		1
067	11	36	12	1	60
068		1			1
071	1	4	5		10
073		3	12	20	35
074	5	5	2		12
075				4	4
076	14	10	3		27
077			1		1
078	12	45	22	16	95
080		3	2	1	6
082	16	34	20	1	71
086	23	37	11	1	72
091	2	14	5		21
095	1	1			2
096			1		1
098		1			1
099	10	11	8		29
TOTALS	358	576	304	70	1,308

ATTRITION RATE BY REASON

SHIPS CATEGORY = 3

NUMBER OF LOSSES

REASONS FOR LOSS	FY77	FY78	FY79	FY80	TOTAL
011	5	17	11	1	35
012		1			1
013	3	10	10	1	24
016	0	2	2		10
022	5	6	2		13
031		1			1
032	4	3	6		13
060	63	61	27	4	155
061	86	58	5		149
063	1				1
064	2	2	1		5
065	41	142	82	11	276
067	9	25	10	2	46
068		1			1
071	2	4	1	3	10
073		2	12	9	23
074	5	4			9
075			1		1
076	9	16	6		31
077		1			1
078	10	49	19	21	105
080	1	2			3
082	14	35	23	1	73
080	22	21	7	2	52
091	1	18	5	1	25
095		1			1
096		2	1		3
098	2				2
099	7	13	8	1	29
TOTALS	305	497	239	57	1,098

ATTRITION RATE BY REASON

SHIPS CATEGORY = 4

NUMBER OF LOSSES

REASONS FOR LOSS	FY77	FY78	FY79	FY80	TOTAL
011	1				1
016		1			1
032		1			1
060	4	4			8
061			1		1
065		7	3		10
067		2			2
071		1			1
073				1	1
076		1			1
078		2	1	2	5
082		2	1		3
086			1		1
091			1		1
099		1			1
TOTALS	5	22	8	3	38

ATTRITION RATE BY REASON

SHIPS CATEGORY = 5

NUMBER OF LOSSES

REASONS FOR LOSS	FY77	FY78	FY79	FY80	TOTAL
U11	1	9	4		14
U13	4	6	5		15
U16		4	1		5
U22	1	2	2		5
U32	2	3	1		6
U60	20	29	7		56
U61	15	13	2	1	32
U64	2		3		5
U65	23	86	55	5	169
U67	5	14	5		24
U68		1			1
U71	1	6	3		10
U73		2	8	7	17
U74	4	2			6
U76	5	3	2		10
U78	5	19	10	8	42
U80			1		1
U82	6	11	8		25
U86	14	14	5		33
U91	1	10	3	1	15
U95			1		1
U99	4	2	2		8
TOTALS	114	236	128	22	500

ATTRITION RATE BY REASON

SHIPS CATEGORY = 1

NUMBER OF LOSSES

REASONS FOR LOSS	FY81	FY82	FY83	FY84	TOTAL
011	3	16	20	1	40
013	2	12	10	2	26
016	5	15	2		22
022	4	8	4		16
032	12	13	7	1	33
033			1		1
060	43	64	9	1	117
061	4	18	5		27
063	1	2			3
064	3	12	8		23
065	75	233	200	21	529
066			2		2
067	12	113	171	23	319
068	1	1			2
070	1	1			2
071	1	6	6	1	14
072		2	2		4
073	5	8	85	44	140
074	6	7	1	1	15
076	45	83	24	1	138
078	7	20	18	3	48
080		7			7
082	85	82	45	2	214
083			38	2	40
084			35	9	44
086	120	320	39		479
091	2	5	2		9
092			1		1
095		2			2
096	1	1			2
099	32	42	2		76
101	22	16	22	5	65
TOTALS	490	1,094	759	117	2,460

ATTRITION RATE BY REASON

SHIPS CATEGORY = 2

NUMBER OF LOSSES

REASONS FOR LOSS	FY81	FY82	FY83	FY84	TOTAL
011	2	5	2		9
012		1			1
013		1	2		3
016	1	4	1		6
022	1	2	5		8
031		1			1
032	6	7	3		16
060	13	29	3		45
061	1	8	1		10
064	1	6	2		9
065	40	104	78	12	234
067	2	46	72	7	127
071	1	6	1	1	9
073	2	7	37	23	69
074	4	4			8
076	14	21	3		38
078	4	7	8		19
082	28	32	28		88
083			30		30
084			18	5	23
086	59	166	5		230
091	1				1
096			1		1
099	18	20	1		39
101	14	12	7	7	40
TOTALS	212	489	308	55	1,064

ATTRITION RATE BY REASON

SHIPS CATEGORY = 3

NUMBER OF LOSSES

REASONS FOR LOSS	FY81	FY82	FY83	FY84	TOTAL
011		1	4	1	6
013	1		1		2
016	2	2	2		6
022	1	2	3		6
031	1				1
036	5	1	1		7
033			2		2
060	24	32	4		60
061	3	4			7
064	1	4	7		12
065	24	110	68	11	213
067	5	54	67	8	134
071				1	1
073	3	1	27	21	52
074	2	1			3
076	15	12	4		31
078	4	12	11	3	30
080		1			1
082	24	19	14	1	58
083			11		11
084			7	5	12
086	49	146	18		213
091		1			1
099	9	19	1		28
101	8	8	6	6	28
TOTALS	191	429	258	57	925

ATTRITION RATE BY REASON

SHIPS CATEGORY = 4

NUMBER OF LOSSES

REASONS FOR LOSS	FY81	FY82	FY83	FY84	TOTAL
060		4			4
061		1			1
064		1	1		2
065		2	5		7
067		3	6	1	10
076		1			1
082	1		2		3
083			1		1
086		4	1		5
099	1	2			3
TOTALS	2	18	16	1	37

ATTRITION RATE BY REASON

SHIPS CATEGORY = 5

NUMBER OF LOSSES

REASONS FOR LOSS	FY81	FY82	FY83	FY84	TOTAL
011		3	3		6
013	1	4	3		8
032	3	1			4
033			2		2
060	5	13	9		27
061		2			2
064	1		5		6
065	15	53	32	6	103
067	2	17	35	1	55
070	1				1
071		2		1	3
073	1	1	8	8	18
074		1			1
076	6	12	7		25
078	1	2	3	1	7
080		1			1
082	11	4	16		31
083			4		4
084			8	3	11
086	36	84	10		132
091		1			1
099	0		1		7
101	0	6	4		16
TOTALS	94	267	150	20	471

ATTRITION RATE BY REASON

SHIPS CATEGORY = 1

NUMBER OF LOSSES

REASONS FOR LOSS	FY85	FY86	FY87	FY88	TOTAL
011	1	17	18	2	38
013		9	7	1	17
016	9	13	2		24
022	5	20	7	2	34
030			1		1
031		2			2
032	9	5	2	1	17
060	26	38	19		83
063		1	1		2
064	5	15	5		25
065	58	210	153	14	435
067	60	296	137	9	502
071	2	7	6	1	16
073	2	3	7	2	14
074	7	6	3		16
076	20	28	8	2	58
078	1	7	11	5	24
080	1				1
082	4	5	3		12
083	20	1	3		24
084	33	101	66	9	209
086	9	5	3		17
087		2	1		3
091	1	4			5
096	2		1		3
098		1			1
099			1		1
101	56	99	29	4	188
TOTALS	331	895	494	52	1,772

ATTRITION RATE BY REASON

SHIPS CATEGORY = 2

NUMBER OF LOSSES

REASONS FOR LOSS	FY85	FY86	FY87	FY88	TOTAL
011		7	12	1	20
013	1	5	3		9
016	4	7			11
017		2			2
022		1	4	2	7
036	1	5	2		8
060	10	11	7		28
064		3	1		4
065	31	141	71	4	227
067	10	109	47	1	166
071	1	1	1		3
073		1	1		2
074	5	2			7
076	9	13	8		30
078	4	3	4	3	14
080				1	1
082	4	4	1		9
083	6		1		7
084	6	44	18	1	69
086	6	5			11
087	1				1
090	1				1
091	1	3			4
096		1			1
097		1			1
101	31	29	21	3	84
TOTALS	132	377	202	16	727

ATTRITION RATE BY REASON

SHIPS CATEGORY = 3

NUMBER OF LOSSES

REASONS FOR LOSS	FY85	FY86	FY87	FY88	TOTAL
011	1	13	6		20
013	1	5	3		9
016		1			1
022		5	3		8
032	2	3	2		7
050		1			1
060	7	6	6	1	20
064		5	1		6
065	22	110	73	4	209
067	25	117	29	2	173
071	1	2		2	5
073		1	2		3
074	5	2	3		10
076	5	13	3		21
078	6	4	3		13
080		1	1		2
082	1	2	3		6
083	3				3
084	14	38	15		67
086	1	3			4
087	1				1
091	2				2
097		1			1
099	1				1
101	20	43	12	2	77
TOTALS	118	376	165	11	670

ATTRITION RATE BY REASON

SHIPS CATEGORY = 4

NUMBER OF LOSSES

REASONS FOR LOSS	FY85	FY86	FY87	FY88	TOTAL
011			2		2
022	1				1
060	1				1
065	1	1	4		6
067	1	5	2	1	9
084			2		2
086	1				1
101	5	2			7
TOTALS	10	8	10	1	29

ATTRITION RATE BY REASON

SHIPS CATEGORY = 5

NUMBER OF LOSSES

REASONS FOR LOSS	FY85	FY86	FY87	FY88	TOTAL
011			6		6
013	1	2			3
016		2			2
022	1				1
032		1			1
060	2	5	1	1	9
064		2			2
065	3	25	13	1	42
067	4	48	21	1	74
071				1	1
073		1		1	2
074		1			1
076	1	5			6
078		2	2	1	5
082			1		1
084	3	12	15		30
086		1			1
091			1		1
097	1				1
101	5	8	6	1	20
TOTALS	21	115	66	7	209

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