# 1. INTRODUCTION

The Navy Cost of Manpower Estimating Tool (COMET) was developed to enable defense contractors Navy cost analysts to accurately and consistently estimate the manpower costs of weapons systems. The program allows users to view the direct and variable indirect costs associated with an individual, and to also view the final variable cost for specific skill groups. With this capability, system developers and project officers are able to assess the economic impact on life cycle costs of hardware/manpower tradeoff alternatives.

The COMET program is a Windows95 program. The data files are quite robust, and considerable experimentation is possible with no danger of corrupting the underlying cost data. From the user's point of view, COMET is divided into three functional parts: (1) individual billet data, (2) final cost file creation/modification, and (3) life cycle cost modeling. Individual billet data may be viewed down to the level of specific variable costs by selecting a rating or designator. Individual average costs per pay grade may be viewed as well. Final cost file creation/modification allows the user to create a final cost estimate using assumptions other than the COMET defaults. These files are then available as cost "building blocks" and are used by analysts in creating a variety of costing scenarios.

The program stores all of the fixed data required for manpower cost estimates in an underlying Microsoft Access database. The program derives data from three major sources: (1) the Reserve Component Common Personnel Data System (RCCPDS), residing at the Defense Manpower Data Center (DMDC); (2) published sources, such as the Reserve Component Budget Justification Books, military pay and allowance tables, and Reserve Component bonus data; and (3) the Active Component model for data that are common across components (such as the cost of training programs).

The data are used largely, but not exclusively, within the policy modules, which are essentially sets of equations that simulate personnel policies to generate manpower costs. The modules convert the underlying data into cost flows, computing both average and marginal costs where relevant. The model contains policy modules for the following major manpower cost elements:

- Military Compensation (Basic Pay and Allowances)
- Retirement Pay Accrual
- Reenlistment Bonuses
- Special Pays
- Training
- Enlisted Recruiting
- Medical Support
- Other Benefits

- GI Bill

Rather than allocating historical budgets, the modules generally take prices as given and estimate relevant quantities based on personnel policies. As a result, the model can maintain validity when the policies change.

The program then deposits the manpower cost flows into the "structured cost" database, which defines the flow of costs an individual service person generates as he or she moves through each pay grade. These cost flows vary along the following dimensions:

- Officer/Enlisted
- Occupation rating
- Pay grade
- Non-prior/prior service
- Average/marginal cost
- Major appropriation

The cost estimating model converts the cost outlays from the policy modules into a matrix of annual manpower costs, partitioned by grade and rating. The model must handle three kinds of costs generated by the policy modules: (1) annual, (2) daily, and (3) one-time costs. The annual costs present no problem, as they are already in an appropriate form. The model must transform the daily and one-time costs before they can be matched against requirements.

The model computes some daily costs so that users can vary the inactive and active duty training requirements for each unit. For those costs that vary by training time, the cost estimating model first must multiply the daily training costs by the user-specified training requirements to generate annual manpower costs.

In addition, the policy modules generate some one-time costs. The model must amortize these investment costs, such as recruiting and reenlistment bonuses, to realistically reflect the relative cost of resources. For example, if the model did not amortize training costs, members in senior grades in which there is no training could appear to be less expensive than junior grade members currently in training. The model amortizes costs by dividing the total cost by the expected man-years at the point at which the cost is incurred, and then allocating that constant cost to all future years.

The model then adds the three kinds of costs, which at this point are all annualized, to produce a final matrix of costs by skill, grade, and appropriation. Next, these costs are multiplied by the user specified manpower quantities to estimate the time-phased cost of requirements.

## 1.1 COMET PROGRAM DOCUMENTATION

There are separate cost estimation modules for the Navy's Active Duty, Reserve, and Civilian components. Since each component has both an *Operations Manual* and a *User's Manual*, the entire COMET Program documentation set encompasses six manuals, as shown below:

**Active Component:**

*Active Component Operations Manual*

*Active Component User's Manual*

**Reserve Component:**

*Reserve Component Operations Manual* (this document)

*Reserve Component User's Manual*

**Civilian (Government employees) Component:**

*Civilian Component Operations Manual*

*Civilian Component User's Manual*

## 1.2 PURPOSE OF THIS MANUAL

This manual, intended for use as a precursor to the *Reserve Component User's Manual*, describes data flows, algorithms, and processes used in calculating costs for COMET. Readers of this manual will better understand how the model works, under what circumstances the model is used, and the methodology and data sources used in the model. By reviewing this information prior to using the model, the user will be equipped to use the model appropriately. It is intended to provide enough information to allow for updates of the various cost modules and permit critique through full disclosure of underlying assumptions, by explaining how the equations associated with the different cost modules are derived. It also provides information on data sources.

Please contact SAG Corporation (703-538-4500) for further information, if necessary.

## 1.3 ORGANIZATION OF THIS MANUAL

The remainder of this manual is organized as follows:

- Section 2 presents a listing of the notation used both in the software and in the cost modules.
- Section 3 details how each policy module draws data from underlying databases, how Reserve Component compensation and personnel systems are simulated, and how cost flows operate in the structured cost database.
- Section 4 explains the amortization techniques used.
- Appendix A provides the data sources for each variable.
- Appendix B contains a list of the job categories used.

# 2. COMET NOTATION

This section presents the notation used in discussions of the individual policy modules. All costs are annual costs. In addition to the notation linked to each policy module, the following is global notation:

| | |
|---|---|
| *AC* | = Average Cost |
| *MC* | = Marginal Cost |
| *I* | = Index of length of service |
| *j* | = Index of pay grade |
| *k* | = Index Rating/Designator |
| *E* | = Total member inventory |

## 2.1 MILITARY COMPENSATION

| | |
|---|---|
| $AC_{jk}^{bp}$ | = Average cost basic pay paid to members in grade j and rating k |
| $bp_{ij}$ | = Basic pay for an individual member in LOS i and grade j |
| $E_{ijk}$ | = Inventory of members in LOS i, grade j and rating k |
| $AC_{jk}^{baq1}$ | = Average BAQ for grade j, rating k assuming all members receive BAQ in cash |
| $w_dep\%_{jk}$ | = % of members in grade j, rating k with dependents |
| $bq1_j$ | = Rate of BAQ for members drawing w/dependents in grade j |
| $bq2_j$ | = Rate of BAQ for members drawing w/o dependents in grade j |
| $BQ_j^{w/dep(daily)}$ | = Daily active duty allowances for quarters for those with dependents |
| $BQ_j^{w/odep(daily)}$ | = Daily active duty allowances for quarters for those without dependents |
| $BQ_j^{part(daily)}$ | = Daily active duty allowances for quarters for those without dependents and in quarters |
| $p_j^{w/dep}$ | = Proportion of those in grade j with dependents |
| $p_j^{w/odep}$ | = Proportion of those in grade j without dependents not in quarters |
| $p_j^{part}$ | = Proportion of those in grade j without dependents in quarters |
| $AC_j^{BAQ}$ | = Average daily BAQ |
| $AC^{bas}$ | = Basic allowance for average cost |
| $AC_{jk}^{mc}$ | = Average annual compensation paid to a member |

## 2.2 RETIRED PAY ACCRUAL

| | |
|---|---|
| $AC_{jk}^{rp}$ | = Average cost per capita of retired pay accrual for grade j, rating k |
| $AC_{jk}^{bp}$ | = Average annual basic pay paid to members in grade j, rating k |
| $r_{act}$ | = Fixed normal cost rate obtained from DoD actuary tables |

## 2.3 SELECTIVE REENLISTMENT BONUS

| | |
|---|---|
| $AC_{jk}^{SRB}$ | = Average cost of the SRB program for grade j, rating k |
| $TC_{k}^{SRB}$ | = Total annual amount spent on SRBs for rating k |
| $E_{4/9,k}$ | = Member inventory for grades E4-E9 for rating k |

## 2.4 SPECIAL PAYS

| | |
|---|---|
| $AC_{jk}^{sp}$ | = Average cost of a special pay for grade j, rating k |
| $SP_{jk}$ | = Number of people receiving a special pay by rating and pay grade |
| $E_{jk}$ | = Inventory for grade j, rating k |
| $AC_SP$ | = All Navy average cost for a special pay |

## 2.5 ENLISTED RECRUITING

| | |
|---|---|
| $AC_{k}^{REC}$ | = Average cost of recruiting a member into rating k |
| $R/S$ | = Total cost of recruiter support |
| $ADV$ | = Total advertising cost of recruiting |
| $CR_{ik}$ | = Continuation rate for LOS i and rating k |
| $\overline{B}_k$ | = Measure of pay for which the supply elasticity is defined |
| $EB_k$ | = Enlistment bonus paid to a member enlisting in rating k |
| $S_k^e$ | = Enlistment supply elasticity |
| $RPN^R$ | = Total RPN recruiter costs |
| $NT$ | = Total number of recruits, all Navy reserve |
| $NT_k$ | = Total number of recruits in rating k |
| $NT^{NP}$ | = Total number of recruits, all non-prior Navy reserve |
| $NT_k^{NP}$ | = Total number of recruits, all non-prior Navy reserve in rating k |

## 2.6 MEDICAL SUPPORT

| | |
|---|---|
| $AC_{j}^{CHAMPUS}$ | = Average CHAMPUS cost per member in grade j |

| | |
|---|---|
| $TC_j^{CHAMP,DEP}$ | = Total CHAMPUS cost per dependent per grade j |
| $Dep_j$ | = Number of dependents in grade j |
| $AFS_j$ | = Average family size of a member in grade j |
| $TC^{CHAMP,RET}$ | = Total CHAMPUS cost for retirees |
| $E$ | = Total member inventory |

## 2.7 OTHER BENEFITS

| | |
|---|---|
| $E$ | = Total Navy inventory |
| $AC_{jk}^{cloth}$ | = Average cost of clothing allowances by grade j and rating k |
| $E_{jk}$ | = Inventory by grade j, rating k |
| $\%_male_{a/b}$ | = Percentage of male Navy personnel in grades a-b |
| $cloth_1_m$ | = Basic clothing allowance for males |
| $cloth_1_f$ | = Basic clothing allowance for females |
| $cloth_2_m$ | = Standard clothing allowance for males |
| $cloth_2_f$ | = Standard clothing allowance for females |
| $cloth_3_m$ | = Special clothing allowance for males |
| $cloth_3_f$ | = Special clothing allowance for females |
| $AC_{jk}^{FICA}$ | = Average cost of FICA tax for grade j, rating k |
| $\%FICA$ | = Current FICA tax rate |
| $AC_{jk}^{bp}$ | = Average cost of basic pay for grade j, rating k |
| $AC_{jk}^{sp}$ | = Average cost of special pay for grade j, rating k |

## 2.8 GI BILL

| | |
|---|---|
| $PV$ | = Present value of the GI Bill |
| $r$ | = Discount rate |
| $EPV_k$ | = Expected present value of the GI Bill |
| $CR_{ik}$ | = Continuation rate for YOS i, rating k |
| $U$ | = Usage rate |
| $A_{enrl}$ | = Average enrollment time |

# 3. DISCUSSION OF COST POLICY MODULES

This section outlines the COMET Reserve Component policy modules individually. Each description addresses a module and may contain the following information:

- Composition—discussion of the specific policy that generates that manpower cost.
- Average Cost Computation—discussion of the methodology used to calculate the average cost for a specific policy.
- Marginal Cost Computation (where relevant)—discussion of the methodology used to calculate marginal costs.
- Discussion—general comments regarding policy module calculations and data sources.
- Notation—lists definitions of variables used in the text.

The current list of policy modules includes:

- Military Compensation *(see Section 3.1)*
- Retired Pay Accrual *(see Section 3.2)*
- Reenlistment Bonuses *(see Section 3.3)*
- Special and Incentive Pays *(see Section 3.4)*
- Training *(see Section 3.5)*
- Enlisted Recruiting *(see Section 3.6)*
- Enlistment Bonus *(see Section 3.7)*
- Medical Support *(see Section 3.8)*
- Other Benefits *(see Section 3.9)*
- GI Bill *(see Section 3.10)*

## 3.1 MILITARY COMPENSATION

### 3.1.1 Composition

The military compensation module estimates the pay and allowance expenditures for one drill or one day of active duty. Most Selected Reservists must perform 48 four-hour drills each year, and most units drill four times during one weekend every month. In general, Navy Reserve members spend 14 days on ADT per year (excluding travel time). Military compensation costs fall into the personnel appropriations.

Military compensation consists of all variable costs that compose basic pay, quarters (BAQ), and subsistence (BAS) allowances, as follows:

- Basic pay is a function of grade and length of service (LOS).[1] Reservists receive one day's active duty basic pay (or, more exactly, 1/30th of monthly pay) for each drill or each day of annual training.[2]
- Basic Allowance for Quarters (BAQ) is paid to military members who do not occupy government housing or who occupy government housing that is not adequate. Reservists are eligible for BAQ while on active duty for training.[3] All Reserve members receive some BAQ while on ADT, with the amount varying by grade, and whether the member occupies government housing and has dependents. Individuals with dependents always receive the full BAQ payment. Those members without dependents receive their full BAQ entitlement if they do not reside in quarters during annual training; those members without dependents who reside in quarters receive a partial payment.
- Basic Allowance for Subsistence (BAS) represents both the cost of food for personnel eating in government messes and the cash payments to military members in lieu of food. Officers and enlisted personnel receive different BAS allowances, and the model accounts for these differences. The model assumes that the average cost to the government for providing rations to Reservists is equal to the BAS rate. Officers receive a flat BAS rate based on the number of days of annual training. Unlike the officer rate, the BAS rate for enlisted personnel depends on the availability and conditions of government messes. However, COMET assumes that mess is always available at a cost equal to the normal BAS rate.

### 3.1.2 Average Cost Computation

The model calculates the average cost of basic pay for each grade/rating cell as a weighted average of the pay for each LOS group in the cell. Hence, the LOS distribution within grade/rating cells provides variation in the cost of basic pay.

Let $E_{ijk}$ be the inventory of soldiers in rating k, grade j, and with LOS i. For each rating and grade, the average daily basic pay $AC_{jk}^{BP(daily)}$ is

$$AC_{jk}^{BP(daily)} = \frac{\sum_{i=1}^{30} bp_{ij}^{daily} \bullet E_{ijk}}{\sum_{i=1}^{30} E_{ijk}} \tag{3.1.0}$$

[1]In this manual and in reserve policies, length of service (LOS) implies total military service, including active and creditable reserve time.

[2]As a result, on a normal drill weekend, reservists receive four days' pay for two days' work, in comparison with active duty members.

[3]Reservists are only eligible for a Variable Housing Allowance (VHA) if they are on active duty for at least 140 days. The Reserve Component model does not include VHA.

This pay table look-up procedure, as opposed to using a snapshot of the Joint Uniform Military Pay System (JUMPS) file, allows users to update the pay tables directly, so that the model immediately reflects manpower cost changes.

To calculate the average cost of BAQ, the policy module first must compute daily BAQ rates for Reservists from the annual active duty allowances. Let $BQ_j^{w/dep(daily)}$, $BQ_j^{w/odep(daily)}$, and $BQ_j^{part(daily)}$ represent the daily active duty allowances for quarters for those with dependents, without dependents and not in quarters, and without dependents and in quarters, respectively.

The model assumes that all members receive BAQ in cash[4], then computes a weighted average of the BAQ rates for soldiers in each grade. Let $p_j^{w/dep}$, $p_j^{w/odep}$, $p_j^{part}$ be the proportion of those in grade j with dependents, without dependents not in quarters and without dependents in quarters, respectively. For each grade, the average daily BAQ (i.e., $AC_j^{BAQ}$)[5] is equal to:

$$AC_j^{BAQ} = (BQ_j^{w/dep(daily)} \bullet p_j^{w/dep}) + (BQ_j^{w/odep(daily)} \bullet p_j^{w/odep}) + (BQ_j^{part(daily)} \bullet p_j^{part}) \quad (3.1.1)$$

Average BAS is determined by calculating the weighted average of all who receive BAS using the information from the MPN Budget Justification Book. The daily BAS rate is located in Reserve Almanac pay tables.

To determine total military compensation paid to the member, the module sums the average costs of the three components of compensation already calculated.

$$AC_{jk}^{mc} = AC_{jk}^{bp} + AC_{jk}^{baq1} + AC^{bas} \quad (3.1.2)$$

### 3.1.3 Discussion

The data for military compensation is extracted from the appropriate OSD pay tables, allowance tables, or RMC/BMC tables, using a pay table look-up procedure. The model draws some data from the Active Component model. The RCCDPS file at DMDC contains the reserve inventory by rating, grade, LOS, and percent with dependents.

The pay table look-up procedure provides the user with the ability to avoid random fluctuations in the amount of pay received by a service member. In addition, it provides users the flexibility to update the pay tables when appropriate so that changes in manpower costs can be reflected

[4]Alternatively, this approach is equivalent to assuming that the cost to the Navy of providing in-kind benefits (quarters) is equal to the BAQ cash payment.

[5]Data estimating the percentage of reserves in/out of quarters is currently unavailable. The model reduces to two components; BAQ rates—for those with and without dependents—are multiplied by the percentage of members in each pay category. The sum of these two numbers is the average BAQ for that pay grade by rating:

$$AC_{jk}^{baq1} = (w_dep\%_{jk})bq1_j) + [1 - (w_dep\%_{jk})](bq2_j)$$

immediately. The Navy's Military Personnel Cost (MPN) accounts for the largest portion of total billet cost; thus, this flexibility is a key to maintaining overall factor estimate accuracy.

### 3.1.4 Notation

| | |
|---|---|
| $AC_{jk}^{bp}$ | = Average cost of basic pay paid to members in grade j and rating k |
| $bp_{ij}$ | = Basic pay for an individual member in LOS i and grade j |
| $E_{ijk}$ | = Inventory of members in LOS i, grade j and rating k |
| $AC_{jk}^{baq1}$ | = Average BAQ for grade j, rating k assuming all members receive BAQ in cash |
| $w_dep\%_{jk}$ | = % of members in grade j, rating k with dependents |
| $bq1_j$ | = Rate of BAQ for members drawing w/dependents in grade j |
| $bq2_j$ | = Rate of BAQ for members drawing w/o dependents in grade j |
| $BQ_j^{w/dep(daily)}$ | = Daily active duty allowances for quarters for those with dependents |
| $BQ_j^{w/odep(daily)}$ | = Daily active duty allowances for quarters for those without dependents |
| $BQ_j^{part(daily)}$ | = Daily active duty allowances for quarters for those without dependents and in quarters |
| $p_j^{w/dep}$ | = Proportion of those in grade j with dependents |
| $p_j^{w/odep}$ | = Proportion of those in grade j without dependents not in quarters |
| $p_j^{part}$ | = Proportion of those in grade j without dependents in quarters |
| $AC_j^{BAQ}$ | = Average daily BAQ |
| $AC^{bas}$ | = Basic allowance for average cost |
| $AC_{jk}^{mc}$ | = Average annual compensation paid to a member |

## 3.2 RETIRED PAY ACCRUAL

### 3.2.1 Composition

This module calculates the DoD's contribution to its military retirement fund under the provisions of 10 U.S.C. 1466 of the FY84 Defense Authorization Act, Public Law 98-94. Under the accrual concept, each service budgets for retired pay in the Military Personnel account, and transfers funds on a monthly basis to the Military Retirement Trust fund from which payments are made to retirees.

### 3.2.2 Average Cost Computation

Retired pay accrual average per capita cost is determined by multiplying the basic pay by a fixed normal cost percentage obtained from the DoD actuary. The calculation estimates the accrual percentage based upon DoD retention rates and retirement probabilities.

$$AC_{jk}^{rp} = AC_{jk}^{bp} \bullet r_{act} \tag{3.2.0}$$

### 3.2.3 Notation

| | |
|---|---|
| $AC_{jk}^{rp}$ | = Average cost per capita of retired pay accrual for grade j, rating k |
| $AC_{jk}^{bp}$ | = Average annual basic pay paid to members in grade j, rating k |
| $r_{act}$ | = Fixed normal cost rate obtained from DoD actuary tables |

## 3.3 SELECTIVE REENLISTMENT BONUS

### 3.3.1 Composition

This module consists solely of the Selective Reenlistment Bonus. The bonus offer is computed as

*SRB = Award Level x Monthly Basic Pay x Years of Reenlistment.*

In accordance with Section 308b, Title 37, the Navy Reserve offers reenlistment bonuses to qualified personnel reenlisting or extending a tour in the Selected Reserves. Reservists can receive only one bonus in a career, and only those in targeted skills and units are eligible to receive a bonus. Individuals must also have fewer than 10 years of total military service at ETS to be eligible.

The bonus is paid to personnel who reenlist or extend in the Selected Reserves in ratings designated most critical (Level 1) and critical (Level 2). Identified critical Ratings/NECs are periodically revised to maintain “current status.”

Individuals with fewer than 10 years total military service at ETS who reenlist for six years can receive a maximum bonus of $5,000. They receive $2,500 on the effective date of the reenlistment; the remaining $2,500 is paid in increments (not to exceed $416.66) at the end of each year of the contract.

Individuals with more than 6 years but fewer than 10 years of total military service at ETS who reenlist for 3 to 5 years can receive a bonus of up to $2,500. They receive $1,500 on the effective date of the reenlistment; the remaining $1,250 is paid in increments (not to exceed $416.66) at the

end of the first through third years of the term.[6] RPN appropriations fund reserve reenlistment bonuses.

### 3.3.2 Average Cost Computation

Using the Navy's SRB report to calculate the average cost of the SRB program for a particular billet is unreliable both because of the movement between NECs to maximize the level of SRB received and because changes in the SRB report occur quarterly. Instead, the model takes the total amount of bonus paid to a rating over the course of the year and divides it by the inventory for that rating for grades E4-E9:[7]

$$AC_{jk}^{SRB} = \frac{TC_k^{SRB}}{E_{4/9,k}} \tag{3.3.0}$$

This average cost is added to each grade E4-E9 for that rating, and bonuses that are awarded based only on NEC are divided up among all the ratings with members of that NEC.

### 3.3.3 Discussion

Bonus amounts came from LCDR Trice at NRC Budgeting Office, (504) 948-5929. The Rating/ NEC inventories came from the Enlisted Distribution Projection System, EPROJ II, (703) 695-9342.

### 3.3.4 Notation

| | |
|---|---|
| $AC_{jk}^{SRB}$ | = Average cost of the SRB program for grade j, rating k |
| $TC_k^{SRB}$ | = Total annual amount spent on SRB for rating k |
| $E_{4/9,k}$ | = Member inventory for grades E4-E9 for rating k |

[6]Data from the Commander of the Naval Reserve Forces indicates that actual bonuses (in 1994) were, on average, less than the maximum. The bonus schedule is provided below:

| PAYMENT LEVEL | YEARS | TOTAL PAYMENT | INITIAL PAYMENT | ANNIVERSARY PAYMENTS |
|---|---|---|---|---|
| level 1 | 6 | $3,000 | $1,200 | $300(6) |
| level 1 | 3 | $1,500 | $ 600 | $300(3) |
| level 2 | 6 | $1,800 | $ 900 | $150(6) |
| level 2 | 3 | $ 900 | $ 450 | $150(3) |

[7]Grades E1-E3 are not included because generally they are not eligible to reenlist.

## 3.4 SPECIAL AND INCENTIVE PAYS

### 3.4.1 Composition

In addition to pay for weekend drills and two-week annual active duty training, some Reservists with high demand skills or who perform high-risk duties are eligible for special and incentive pays. This cost element calculates the cost of these, which are separated into special pays and incentive pays. Special pays are received by all individuals who possess certain skills or perform a difficult duty with no obligation incurred. Members who are entitled to a special pay generally receive it only while on active duty (e.g., for training) at 1/30th the monthly active duty rate for each day of service. Both enlisted personnel and officers receive special pays.

Incentive pays are awarded to those officers who possess certain skills and agree to remain under obligation for a certain period of time. In the reserves, these pays are awarded exclusively to medical personnel.

For special pays, this module simply calculates the average daily cost of each special pay, given that the individual receives it, by dividing the annual rate by 360. For incentive pays, no costs are assigned in the default data. Users can choose to award the full amount of the pay to certain designators when creating a new cost database.

Finally, the model assumes that individuals receive special pays while on active and inactive duty training for two main reasons. First, individuals can collect the most significant pays for both types of training. Second, the general trend in Reserve Component compensation indicates that special pays eventually will not distinguish between active duty and drill training. Hence, the model is a fair approximation for life cycle costs.

### 3.4.2 Average Cost Computation

The average cost of all special pays varies by both pay grade and rating. The general formula for finding it is

$$AC_{jk}^{sp} = \frac{\sum_{j=1}^{9} SP_{jk}}{\sum_{j=1}^{9} E_{jk}} AC_SP \tag{3.4.0}$$

$SP_{jk}$ is the number of people receiving that special pay by rating for each grade. $E_{jk}$ is the inventory for that grade and rating. $AC_SP$ is the average cost of that special pay.

Members are allowed to receive, at most, two hazardous duty pays. To account for this possibility, $SP_{jk}$ becomes the number of hazardous duty pays given to a particular rating and grade instead of the number of people receiving the pay.

For aviation, diving, nuclear and medical pays, the full amount (based on pay grade) is given to the ratings that require these skills. All other ratings receive zero for these categories.

The average cost of overseas allowance is computed by multiplying the percent of Naval personnel OCONUS by grade and rating by the overseas rate.

### 3.4.3 Notation

| | |
|---|---|
| $AC_{jk}^{sp}$ | = Average cost of a special pay for grade j, rating k |
| $SP_{jk}$ | = Number of people receiving a special pay by rating and pay grade |
| $E_{jk}$ | = Inventory for grade j, rating k |
| $AC_SP$ | = All Navy average cost for a special pay |

## 3.5 TRAINING

### 3.5.1 Composition

This module captures variable costs associated with individual training; these costs are broken down into three parts:

1. Initial Training—consists of the basic training common to all Naval personnel.
2. Base Rating Training—includes all A-school training that members of a rating receive.
3. Specialized Training—provides specialized skill training; may award an NEC; varies greatly among individuals within a rating.

### 3.5.2 Average Cost Computation

The cost of training a soldier is independent of component. As such, the model takes the average cost of each course from the Active Component Model. Unlike the Active Component System, however, not everyone takes each course as they progress along their career paths. Thus, ideally, the model would compute the average cost of training as the cost per graduate multiplied by the probability that a Reserve Component soldier takes that training. In practice, due to data limitations and historical variability in training practices, this probability cannot be accurately calculated.

Nonetheless, the module is designed to include only training costs incurred by the Reserve Forces, and to ignore the costs of previous military training that the Active Component incurs for prior military service. CNET provides per graduate costs for each course broken down by MPN, OMN, and SPA (student pay and allowances). Courses are separated into one of the above three categories based on course descriptions, source ratings, and subject matter expert knowledge. For non-priors, each rating has a default cost that includes initial training plus base rating training. Priors are assumed to only receive base rating training, since they received initial training as active

members.[8] This provides the cost of a sailor qualified for that rating but without any specialized training.

For a member with specialized training, the user may pull up the courses screen for that rating and select the courses he or she wishes the sailor to have as well as the grade in which they are taken. The full cost of those courses is then added to the default average cost. This allows the user to select the training needed for a specific billet.

### 3.5.3 Discussion

All data was received from CNET. Requests were sent to:

Commanding Officer
Naval Education and Training Program Support Activity
6490 Saufley Field Road
Pensacola, FL 32509-5241

## 3.6 ENLISTED RECRUITING

### 3.6.1 Composition

This module consists of all the variable costs of recruiting enlisted personnel (both prior service and non-prior service) into the Navy Reserve. These costs include:

- Navy resources necessary to attract a recruit: recruiter costs and enlistment bonuses.
- Navy's pro-rated share of "joint" costs: advertising, market research, recruiting facilities, postage, etc.
- Operational costs: examining, accession travel, and CNRC processing costs.

### 3.6.2 Average Cost Computation

The average cost of recruiting varies by rating for two reasons. First, targeted recruiting incentives such as enlistment bonuses vary by rating. Second, the average cost of recruiting prior service and non-prior individuals differs, and each rating has a potentially different percentage of prior-service recruits.[9]

The Naval Reserve recruiting budget is broken into three main components: (1) OMNR advertising, (2) OMNR operational costs, and (3) RPN, which accounts for the largest share. RPN consists primarily of recruiter costs (salaries) and administrative and managerial support. Enlisted bonuses also fall under the RPN category. The average recruiting cost for a Reservist of a given rating is calculated as follows:

[8] We assume all members in relevant ratings receive base rating training. As data becomes available, accuracy can be increased by specifying the percentage of Reservists who actually receive such training (since some may have received it while in active status).

[9] The active component of COMET assigns accession costs based on the distribution of high and low quality recruits (high quality recruits are high school graduates who score in AFQT categories I-III). This "cell-A" distinction is not applicable in the Navy Reserve context.

$$AC_k^{REC} = \frac{RPN^R}{NT} + (ADV + R/S) \bullet \frac{NT_k^{NP}}{NT_k} \tag{3.6.0}$$

This calculation assumes that both prior and non-prior recruits generate RPN recruiter costs; however, advertising and operational costs (OMNR) are assumed to only apply to the recruitment of non-priors.[10]

This average cost per recruit is then allocated across length of service.

$$AC_{ik}^{REC} = \frac{AC_k^{REC}}{\sum_{n=1}^{30} \prod_{i=1}^{n} CR_{ik}} \tag{3.6.1}$$

This value is then averaged across pay grades based on the inventories grouped by pay grade, LOS, and rating.

### 3.6.3 Discussion

The Navy Recruiting Command made all of the data available broken up by budget appropriations. Our point of contact was LCDR Trice at (504) 948-5929.

### 3.6.4 Notation

| | |
|---|---|
| $AC_k^{REC}$ | = Average cost of recruiting a member into rating k |
| $R/S$ | = Total cost of recruiter support |
| $ADV$ | = Total advertising cost of recruiting |
| $CR_{ik}$ | = Continuation rate for LOS i and rating k |
| $RPN^R$ | = Total RPN recruiter costs |
| $NT$ | = Total number of recruits, all Navy reserve |
| $NT_k$ | = Total number of recruits in rating k |
| $NT^{NP}$ | = Total number of recruits, all non-prior Navy reserve |
| $NT_k^{NP}$ | = Total number of recruits, all non-prior Navy reserve in rating k |

[10] The accuracy of this module can be improved by estimating the percentage of prior service accessions with and without obligation and assigning processing costs accordingly. Individuals who enter the Selected Reserve with a remaining military obligation generate virtually no processing costs, but units spend resources recruiting them. Conversely, the Reserve Component does not spend money to recruit prior service members with no obligation but must incur the cost of processing. Similarly, the module assumes that advertising is intended to obtain non-prior service recruits. In practice, some advertising is directed toward prior service recruits with a remaining obligation.

## 3.7 ENLISTMENT BONUS

### 3.7.1 Composition

This module consists of the direct cost of enlistment bonuses for members of the selected reserves. Enlistment bonuses may be paid to any individual who enlists into the Selected Reserve for a term of 6 years who has no prior service. An initial payment is made upon successful completion of the initial training required to make the individual deployable. The remainder is paid in equal anniversary installments.

### 3.7.2 Average Cost Computation

The enlistment bonuses vary by rating and are currently capped at $5,000. The average cost for a Reservist of a given rating is calculated as follows:

$$AC_k^{EB} = \frac{EB_k}{NT_k} \tag{3.7.0}$$

This average cost per recruit is then allocated across length of service.

$$AC_{ik}^{EB} = \frac{AC_k^{EB}}{\sum_{n=1}^{30} \prod_{i=1}^{n} CR_{ik}} \tag{3.7.1}$$

This value is then averaged across pay grades based on the inventories grouped by pay grade, LOS, and rating.

### 3.7.3 Marginal Cost Computation

Marginal cost is computed under the assumption that the marginal recruit is attracted into the rating by using enlistment bonuses and is, therefore, a 5-year enlistment. The marginal cost of a recruit, then, is equal to average cost plus the infra-marginal rents generated by the bonus necessary to attract the marginal recruit.

$$MC_k = AC_k + \left(\overline{B}_k + EB_k\right)\left(\frac{1}{S_k^e} + 1\right) - \overline{B}_k \tag{3.7.2}$$

$\overline{B}_k$ is the measure of pay for which the enlistment supply elasticity, $S^e$, is defined. (Generally, it will be the present value of first-term pay, discounted by 7%, the discount rate found in Appendix C of Revised OMB Circular A-94.) Note that marginal cost is equal to the change in total cost with respect to a change in output, or

$$MC = \frac{dTC}{dQ} and, TC = PQ \qquad where P = price, Q = quantity \tag{3.7.3}$$

Then,

$$\frac{dPQ}{dQ} = P\frac{dQ}{dQ} + Q\frac{dp}{dQ} = P + P\frac{Q}{P} \bullet \frac{dP}{dQ}$$

$but, \frac{Q}{P}\frac{dp}{dQ}$ is the inverse of the supply elasticity, $S^e$. Hence, $\frac{dTC}{dQ} = P\left(1 + \frac{1}{S^e}\right)$

Now, let $P = EB_k + \overline{B}_k$ and $Q = Recruit;$ then, we have $\left(\overline{B}_k + EB_k\right)\left(1 + \frac{1}{S^e}\right)$

Note that, because the recruit does not receive an enlistment bonus until after completing recruit training, we have omitted the effects of early attrition.

### 3.7.4 Notation

| | |
|---|---|
| $AC_k^{EB}$ | = Average cost of enlistment bonuses for rating k |
| $CR_{ik}$ | = Continuation rate for LOS i and rating k |
| $\overline{B}_k$ | = Measure of pay for which the supply elasticity is defined |
| $EB_k$ | = Enlistment bonus paid to a member enlisting in rating k |
| $S_k^e$ | = Enlistment supply elasticity |
| $NT$ | = Total number of recruits, all Navy reserve |
| $NT_k$ | = Total number of recruits in rating k |
| $NT^{NP}$ | = Total number of recruits, all non-prior Navy reserve |
| $NT_k^{NP}$ | = Total number of recruits, all non-prior Navy reserve in rating k |

## 3.8 MEDICAL SUPPORT

### 3.8.1 Composition

This module captures the variable indirect non-pay costs associated with the provision of health care for a Reservist and his or her family. Reservists on active duty for more than 30 days are eligible for Civilian Health and Medical Program for the Uniformed Services (CHAMPUS) benefits. The cost of dependent health care is assumed not to vary between Active and Reserve

Components.[11] Hence, the model uses the calculations from the Active Component model as an approximation for eligible Reservists.

### 3.8.2 Average Cost

CHAMPUS costs vary as a function of family size and age of dependents. Family size tends to vary directly with grade. Average cost, then, is estimated by using the total government cost for CHAMPUS (inpatient and outpatient care) per grade multiplied by the average family size per grade and divided by the total inventory for that grade. The retired personnel portion of CHAMPUS is allocated across the active duty inventory.

$$AC_j^{CHAMPUS} = \frac{TC_j^{CHAMP,DEP}}{Dep_j}\left(AFS_j - 1\right) + \frac{TC^{CHAMP,RET}}{E} \tag{3.8.0}$$

### 3.8.3 Discussion

The model does not include a cost for retiree direct care. It is provided on an *as available* basis and is therefore simply the use of surplus care and not an additional cost. Contact for the data from the Medical Expense and Performance Reporting System (MEPRS) was by LT Thomas G. Mihara at BUMED, (202) 653-0100.

### 3.8.4 Notation

| | |
|---|---|
| $AC_j^{CHAMPUS}$ | = Average CHAMPUS cost per member in grade j |
| $TC_j^{CHAMP,DEP}$ | = Total CHAMPUS cost per dependent per grade j |
| $Dep_j$ | = Number of dependents in grade j |
| $AFS_j$ | = Average family size of a member in grade j |
| $TC^{CHAMP,RET}$ | = Total CHAMPUS cost for retirees |
| $E$ | = Total member inventory |

## 3.9 OTHER BENEFITS

### 3.9.1 Composition

This module consists of direct costs associated with miscellaneous benefits. It includes clothing allowances and government contribution to social security tax.[12]

[11]CHAMPUS costs do vary with family size and age of dependents, but the cost of CHAMPUS is so small as to not warrant investigation of these differences between the two components.

[12]Unlike the Active Component, it does not include death gratuities paid to beneficiaries of military personnel who die during active duty, apprehension of deserter rewards, unemployment compensation paid to eligible ex-servicemen, survivor benefits paid to spouses and children of deceased service members, and adoption expenses.

## 3.9.2 Average Cost

### 3.9.2.1 Clothing Allowance

Each reservist is authorized an initial issue of clothing plus a basic replacement allowance through his or her 36th month, a standard replacement allowance until the third year after making E-7 and a special replacement allowance from then through the end of his or her enlistment. Each member receives an additional clothing allowance on advancement to E-7. Each replacement allowance is weighted by sex, added together and divided by the enlisted inventory. The initial clothing allowances are weighted by sex, and the full amount given to that pay grade.

$$AC_{jk}^{cloth} = \frac{[\%_male_{1/3} \bullet cloth_1_m + (1 - \%_male_{1/3}) cloth_1_f]}{\sum_{i=1}^{9} E_j} \tag{3.9.0}$$

$$+ \frac{\sum_{i=4}^{16} E_{ijk} (\%_male_{4/6} \bullet cloth_2_m + (1 - \%_male_{4/6}) cloth_2_f)}{\sum_{i=1}^{9} E_j}$$

$$+ \frac{\sum_{i=17}^{30} E_{ijk} [\%_male_{7/9} \bullet cloth_3_m + (1 - \%_male_{7/9}) cloth_3_f]}{\sum_{i=1}^{9} E_j}$$

### 3.9.2.2 FICA

The FICA tax represents the funds paid to the Social Security Administration as required by the Federal Insurance Contribution Act. The FICA tax is calculated by multiplying the member's annual base pay, plus special pays up to the limit set by tax codes, and then by the applicable percentage:

$$AC_{jk}^{FICA} = \%FICA(AC_{jk}^{bp} + AC_{jk}^{sp}) \tag{3.9.1}$$

## 3.9.3 Discussion

All costs are found in the MPN and OMN budget justification books. To determine at which LOS clothing allowances go from standard to special, Average Time in Service for Promotion table statistics are used.

### 3.9.4 Notation

| | |
|---|---|
| $E$ | = Total Navy inventory |
| $AC_{jk}^{cloth}$ | = Average cost of clothing allowances by grade j and rating k |
| $E_{jk}$ | = Inventory by grade j, rating k |
| $\%_male_{a/b}$ | = Percentage of male Navy personnel in grades a-b |
| $cloth_1_m$ | = Basic clothing allowance for males |
| $cloth_1_f$ | = Basic clothing allowance for females |
| $cloth_2_m$ | = Standard clothing allowance for males |
| $cloth_2_f$ | = Standard clothing allowance for females |
| $cloth_3_m$ | = Special clothing allowance for males |
| $cloth_3_f$ | = Special clothing allowance for females |
| $AC_{jk}^{FICA}$ | = Average cost of FICA tax for grade j, rating k |
| $\%FICA$ | = Current FICA tax rate |
| $AC_{jk}^{bp}$ | = Average cost of basic pay for grade j, rating k |
| $AC_{jk}^{sp}$ | = Average cost of special pay for grade j, rating k |

## 3.10 GI BILL

### 3.10.1 Composition

This module estimates the expected present value of basic benefits associated with the Selected Reserve's Montgomery GI Bill. Benefits are actually funded by the Veteran's Administration and appear in neither the Navy's nor the Department of Defense's budget. However, this module computes the expected present value, at the time of enlistment, of the net government outlays associated with the basic benefit.

Only high school graduates without a college degree in the Selected Reserves can participate in the Montgomery GI Bill program.[13] The basic program pays individuals who enroll in college a stipend of $190 per month for full-time enrollment, $143 per month for three-quarters-time enrollment, and $95 per month for half-time enrollment. The program pays no benefits for less than half-time enrollment, and the maximum lifetime benefit under this program is $6,800.

[13] Individuals on ROTC scholarships are not eligible.

### 3.10.2 Average Cost/Marginal Cost Computation

The expected present value of GI Bill outlays is computed by summing up and discounting the expected outlays per participant,[14] then multiplying that number by the usage rate:

$$PV = \sum_{t=1}^{9} \frac{190\, A_{enrl}}{\left(1+\frac{r}{12}\right)^{t}} \bullet U \qquad (3.10.0)$$

This number is then averaged across pay grades based on the inventories grouped by pay grade, LOS and rating:

$$EPV_k = \frac{PV}{\sum_{n=1}^{30} \prod_{i=1}^{n} CR_{ik}} \qquad (3.10.1)$$

### 3.10.3 Notation

| | |
|---|---|
| $PV$ | = Present value of the GI Bill |
| $r$ | = Discount rate |
| $EPV_k$ | = Expected present value of the GI Bill |
| $CR_{ik}$ | = Continuation rate for LOS i, rating k |
| $U$ | = Usage rate |
| $A_{enrl}$ | = Average enrollment time |

[14] $A_{enrl}$ is the average enrollment time (1= FT, 3/4 = TQT, and 1/2 = HT). Until a more accurate estimate can be established, $A_{enrl}$ is assumed to be equal to .75.

# APPENDIX A: DATA SOURCES

The sections of this appendix present the data sources for each variable used in the policy modules.

## A.1 MILITARY COMPENSATION

| VARIABLE | DEFINITION | DATA SOURCE |
|---|---|---|
| bp | basic pay by grade and YOS | Pay Tables |
| bq1 | BAQ w/dependents | Pay Tables |
| bq2 | BAQ w/o dependents | Pay Tables |
| bq3 | partial BAQ w/o dependents | Pay Tables |
| bas | basic allowance for subsistence | Pay Tables |
| inv | inventory | DMDC |
| w_dep% | % drawing w/dependents | MPN J-Book |

## A.2 RETIRED PAY ACCRUAL

| VARIABLE | DEFINITION | DATA SOURCE |
|---|---|---|
| inv | inventory | DMDC |
| bp | base pay | Pay Tables |
| | continuation rates | Skipper, OP 136 |
| r_act | DoD actuary rpa factor | MPN J-Book |

## A.3 SELECTIVE REENLISTMENT BONUS

| VARIABLE | DEFINITION | DATA SOURCE |
|---|---|---|
| inv | inventory by grade | DMDC |
| tc_srb | total cost of SRB by rating | Pers 20 |

## A.4 SPECIAL PAYS

| VARIABLE | DEFINITION | DATA SOURCE |
|---|---|---|
| dive | # in rating receiving dive pay | JUMPS FY97 |
| dive_pay | amount of dive pay | Pay Tables |
| fduty | # in rating receiving foreign duty | JUMPS FY97 |
| fduty_pay | amount of foreign duty pay | Pay Tables |
| flight | # in rating receiving flight pay | JUMPS FY97 |
| flight_pay | amount of flight pay | Pay Tables |
| fsa | # in rating receiving family separation allowance | JUMPS FY97 |
| fsa_pay | amount of family separation allowance | MPN J-Book |
| hazard | # in rating receiving hazardous duty | JUMPS FY97 |
| hazard_pay | amount of hazardous duty pay | Pay Tables |
| lang | # in rating receiving foreign language proficiency pay | JUMPS FY97 |
| lang_pay | amount of foreign language proficiency pay | Pay Tables |
| med | # in rating receiving medical pay | JUMPS FY97 |
| med_pay | amount of medical pay | Pay Tables |
| nuclear | # in rating receiving nuclear pay | JUMPS FY97 |
| nuclear_pay | amount of nuclear pay | Pay Tables |
| oha | # in rating receiving overseas housing allowance | JUMPS FY97 |
| oha_pay | amount of overseas housing allowance | Pay Tables |
| sduty | # in rating receiving special duty pay | JUMPS FY97 |
| sduty_pay | amount of special duty pay | Pay Tables |
| sea | # in rating receiving sea pay | JUMPS FY97 |
| sea_pay | amount of sea pay | Pay Tables |
| sub | # in rating receiving sub pay | JUMPS FY97 |
| sub_pay | amount of sub pay | Pay Tables |

## A.5 TRAINING

## A.6 ENLISTED RECRUITING

| VARIABLE | DEFINITION | DATA SOURCE |
|---|---|---|
| cr | continuation rates | Skipper |
| adv | total NRF advertising costs | NRC Budgeting Off. |
| r/s | total NRF recruiter support costs | NRC Budgeting Off. |
| mpn | total NRF MPN costs | NRC Budgeting Off. |
| b | measure of pay for supply elasticity | Calculated |
| se | supply elasticity | Assumed = 2 |
| eb | enlistment bonus | PERS-20 |

## A.7 MEDICAL SUPPORT

| VARIABLE | DEFINITION | DATA SOURCE |
|---|---|---|
| chmp_dep | total CHAMPUS costs for dep | BUMED |
| chmp_ret | total CHAMPUS costs for retirees | BUMED |
| dep | number of dependents | DMDC |
| afs | average family size | DMDC |

## A.8 OTHER BENEFITS

| VARIABLE | DEFINITION | DATA SOURCE |
|---|---|---|
| cloth_1 | basic clothing allowance | Pay Tables |
| cloth_2 | standard clothing allowance | Pay Tables |
| cloth_3 | special clothing allowance | Pay Tables |
| fica | FICA percentage for base year | Soc Sec Admin |
| ficalimit | maximum pay that is taxed | Soc Sec Admin |
| bp | base pay | Pay Tables |

## A.9 GI BILL

| VARIABLE | DEFINITION | DATA SOURCE |
|---|---|---|
| r | discount rate | OMB circular A-94 |
| cr | continuation rate | Skipper |
| usage | usage rate | Dept of Vet Aff |

# APPENDIX B: SKILL IDENTIFIERS

## B.1 ENLISTED PERSONNEL

| | |
|---|---|
| AB | Aviation Boatswain's Mate |
| ABE | Aviation BM - Launching and Recovery |
| ABF | Aviation BM - Fuels |
| ABH | Aviation BM - Aircraft Handling |
| AC | Air Traffic Controller |
| AD | Aviation Machinist's Mate |
| AE | Aviation Electrician's Mate |
| AF | Aviation Maintenanceman (Comp Rating) |
| AG | Aerographer's Mate |
| AK | Aviation Storekeeper |
| AM | Aviation Structural Mechanic |
| AME | Aviation Struct Mech - Safety Equip |
| AMH | Aviation Struct Mech - Hydr Mech |
| AMS | Aviation Struct Mech - Structures |
| AO | Aviation Ordnanceman |
| AS | Aviation Support Equipment Technician |
| AT | Aviation Electronics Technician |
| AV | Aviation Avionics Technician (Comp Rating) |
| AW | Aviation ASW Operator |
| AZ | Aviation Maintenance Administrationman |
| BM | Boatswain's Mate |
| BT | Boilerman |
| BU | Builder |
| CE | Construction Electrician |
| CM | Construction Mechanic |
| CTA | Cryptologic Technician (Administrative) |
| CTI | Cryptologic Technician (Interpretative) |
| CTM | Cryptologic Technician (Maintenance) |
| CTO | Cryptologic Technician (Communications) |
| CTR | Cryptologic Technician (Collection) |
| CTT | Cryptologic Technician (Technical) |
| CU | Constructionman (Comp Rating) |
| DC | Damage Control |
| DIV | Diver (EMC) |
| DK | Disbursing Clerk |
| DM | Illustrator Draftsman |
| DP | Data Processing Technician |
| DS | Data Systems Technician |
| DT | Dental Technician |
| EA | Engineering Aid |
| EM | Electrician's Mate |

| | |
|---|---|
| EMNUCSS | Electrician's Mate Sub Nuc (EMC) |
| EMNUCSW | Electrician's Mate Surf Nuc (EMC) |
| EMSW | Electrician's Mate Surf (EMC) |
| EN | Engineman |
| ENAUX | Engineman, Auxiliaries (EMC) |
| ENMN | Engineman, Main Propulsion (EMC) |
| EO | Equipment Operator |
| EOD | Explosive Ordnance Disposal |
| EQ | Equipmentman (Comp Rating) |
| ET | Electronics Technician |
| ETNUCSS | Electronics Technician, Sub Nuc (EMC) |
| ETNUCSW | Electronics Technician, Surf Nuc (EMC) |
| ETSS | Electronics Technician, Sub (EMC) |
| ETSW | Electronics Technician, Surf (EMC) |
| EW | Electronic Warfare Technician |
| FC | Fire Controlman |
| FT | Fire Control Technician (Comp Rating) |
| FTG | Fire Control Tech - Gun |
| GM | Gunner's Mate |
| GMG | Gunner's Mate - Guns |
| GMM | Gunner's Mate - Missile |
| GS | Gas Turbine Systems Technician |
| GSE | Gas Turbine - Electrical |
| GSM | Gas Turbine - Mechanical |
| HM | Hospital Corpsman |
| HMDIV | Medical Deep Sea Dive Tech (EMC) |
| HMNUC | Nuclear Medicine Tech (EMC) |
| HMSEAL | Special Operations Tech (EMC) |
| HMSUB | Independent Duty Corpsman, Sub (EMC) |
| HMSURF | Independent Duty Corpsman, Surf (EMC) |
| HT | Hull Maintenance Technician |
| IC | Interior Comm Electrician |
| ICSS | Interior Comm Electrician, Sub (EMC) |
| IM | Instrumentman |
| IS | Intelligence Specialist |
| JO | Journalist |
| LI | Lithographer |
| LN | Legalman |
| MA | Master-At-Arms |
| ML | Molder |
| MM | Machinist's Mate |
| MMNUCSS | Machinist's Mate, Sub Nuc (EMC) |
| MMNUCSW | Machinist's Mate, Surf Nuc (EMC) |
| MMSS | Machinist's Mate, Sub (EMC) |
| MN | Mineman |
| MR | Machinery Repairman |
| MS | Mess Management Specialist |
| MSSS | Mess Management Specialist, Sub (EMC) |
| MT | Missile Technician |

| | |
|---|---|
| MU | Musician |
| NC | Navy Counselor |
| OM | Opticalman |
| OS | Operations Specialist |
| OT | Ocean Systems Technician (Comp Rating) |
| OTA | Ocean Systems Technician, Anal |
| OTM | Ocean Systems Technician, Maint |
| PC | Postal Clerk |
| PH | Photographer's Mate |
| PM | Patternmaker |
| PN | Personnelman |
| PR | Aircrew Survival Equipmentman |
| QM | Quartermaster |
| QMSS | Quartermaster, Sub (EMC) |
| RM | Radioman |
| RMSS | Radioman, Sub (EMC) |
| RP | Religious Program |
| SEAL | Seal, Special Warfare (EMC) |
| SH | Ship's Serviceman |
| SK | Storekeeper |
| SKSS | Storekeeper, Sub (EMC) |
| SM | Signalman |
| STG | Sonar Technician - Surface |
| STS | Sonar Technician - Submarine |
| SW | Steelworker |
| TM | Torpedoman's Mate |
| TMSS | Torpedoman's Mate, Sub (EMC) |
| UT | Utilitiesman |
| WT | Weapons Control Technician |
| YN | Yeoman |
| YNSS | Yeoman, Sub (EMC) |

## B.2 OFFICERS

| | |
|---|---|
| 110X | General unrestricted line officer |
| 111X | Line officer qualified in Surface Warfare |
| 112X | Line officer qualified in Submarine Warfare |
| 113X | Line officer qualified in Special Warfare |
| 114X | Line officer qualified in Special Operations |
| 131X | Line officer Aviation Pilot |
| 132X | Line officer Aviation NFO |
| 144X | Engineering Duty officer |
| 151X | Aeronautical EDO (Aeronautical Engineering) |
| 152X | Aeronautical EDO (Aviation Maintenance) |
| 161X | Special Duty officer (Cryptology) |
| 163X | Special Duty officer (Intelligence) |
| 165X | Special Duty officer (Public Affairs) |
| 180X | Special Duty officer (Oceanography) |
| 210X | Medical Corps officer |
| 220X | Dental Corps officer |

| | |
|---|---|
| 230X | Medical Service Corps officer |
| 250X | Judge Advocate General's Corps officer |
| 290X | Nurse Corps officer |
| 310X | Supply Corps officer |
| 410X | Chaplain Corps officer |
| 510X | Civil Engineer Corps officer |
| 600X | Limited Duty officer |