



DEPARTMENT OF THE NAVY

NAVAL SEA SYSTEMS COMMAND  
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25 Sep 1998

MEMORANDUM FOR DISTRIBUTION

From: Chairman, Total Ownership Cost Goal Management Board

Subj: ESTIMATING MANPOWER IN TOTAL OWNERSHIP COST (TOC)  
BASELINES AND INITIATIVES

Ref: (a) ASN(RDA) Memorandum of 19 Aug 1997

Encl: (1) Methods For Estimating The Cost Of Manpower  
(2) Mapping Of COMET Direct and Variable Indirect  
Personnel Costs to TOC Element Structure

1. This memo provides guidance on estimating manpower costs to establish TOC baselines and for cost analysis done to support TOC reduction initiatives. Reference (a) directs the use of Cost Of Manpower Estimating Tool (COMET) for intra-Navy analytical purposes, such as Analyses of Alternatives and manpower/hardware tradeoffs. Enclosure (1) provides guidelines for estimating manpower costs and the use of COMET for establishing TOC baselines and evaluating initiatives.

2. These policies will remain in effect until cancelled or superseded by separate correspondence. As a matter of convenience, these policies will be posted on the TOC Web site (<http://www.navsea.navy.mil/sea017/toc.htm>). Questions regarding this correspondence should be directed to [REDACTED] SEA 0171, 602-1308, x166.

3. This memorandum does not apply to the systems under the responsibility of the Director, Naval Nuclear Propulsion Program (SEA 08).

  
P. M. TAMBURRINO, JR.

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## METHODS FOR ESTIMATING THE COST OF MANPOWER

1. The selection of the method to be used depends largely on two factors: (a) the purpose of the estimate, and (b) the amount of details available concerning crew composition.

2. Several methods are available for estimating the cost of Navy manpower:

a. Standard Programming Rate. The Standard Programming Rate uses one overall average for officers and one for enlisted personnel, and is used primarily for Planning, Programming and Budgeting System (PPBS) purposes. It covers all items funded by MPN, such as pay and allowances, special pay, Permanent Change of Station (PCS), Government contribution to FICA, and retirement accrual. It excludes Navy items funded in appropriations other than MPN, as well as items funded outside the Navy, such as TRICARE or GI Bill benefits. No indirect personnel costs, such as training, are included.

b. NAVCOMPT Composite Standard Military Rates. These rates are extracted from the same data as the Standard Programming Rate, but provide more detail. The NAVCOMPT Composite Standard Military Rates provide averages by paygrade for officer and enlisted personnel and are used for budgeting, for recovering costs from non-Defense agencies, and for cost estimating when little detail is available about crew composition. As with the Standard Programming Rate, these rates cover all items funded by MPN, and only MPN, including pay and allowances, special pay, PCS, Government share of FICA and retirement accrual. No indirect personnel costs are included.

c. VAMOSOC. VAMOSOC contains actual return cost data for individual ships, aircraft squadrons and major subsystems. For this reason, no indirect personnel costs are included in either VAMOSOC Ships or VAMOSOC Air. VAMOSOC is often used for estimating costs by analogy to an existing platform or system. Whereas the Standard Programming Rates and the NAVCOMPT Composite Standard Military Rates reflect the composition of all officers and enlisted personnel in the Navy, VAMOSOC personnel costs reflect the actual composition of that particular ship or aircraft squadron, and the actual amount of time that each crew member was aboard during that year.

(1) VAMOSOC(S) Ships. VAMOSOC Ships covers at an aggregate level those personnel cost items reported through the Defense Joint Military Pay System (DJMS); it does not report personnel cost by paygrade or by overall average for officer and enlisted. VAMOSOC Ships includes primarily those items reflected in the military person's paycheck, i.e., pay and allowances. VAMOSOC Ships excludes retirement pay accrual, PCS and items (MPN Line 6 items that amount to about 0.5% of

the total) not funded by the Navy. However, it does include Government FICA contributions. PCS is included in the VAMOSOC shipboard system data base, but is not shown as a personnel cost, as it is in the other cost estimating databases. VAMOSOC Ships personnel costs do not include all items funded by MPN and do not cover anything funded by non-MPN appropriations.

(2) VAMOSOC(A) Air. Personnel costs contained in VAMOSOC Air are not those costs reported through DJMS. Rather, they are based on NAVCOMPT Composite rates and actual manning levels for aircraft squadrons. Therefore, retirement accrual and FICA contribution are already included in the costs, and unlike VAMOSOC Ships, VAMOSOC Air includes PCS as a personnel cost. As with VAMOSOC Ships, VAMOSOC Air does not report personnel cost by paygrade or by overall average for officer and enlisted.

d. Cost of Manpower Estimating Tool (COMET). The COMET database/model provides "granularity" of personnel costs (both direct and variable indirect) by pay grade by officer community and enlisted specialty. This "granularity" is achieved by the model user who has the option of selecting (or deselecting) cost options in many of the model's costing elements. The purpose of the manpower estimate and the forum in which it is used will determine if all costs or only Navy cost are to be presented. The degree of knowledge known about the actual or projected manning mix will determine the value of a granular versus an aggregate approach to personnel costs.

(1) Regarding Navy direct personnel costs, COMET accounts for all items funded by MPN, such as pay, allowances, special pays, bonuses, retirement accrual, FICA contribution, and PCS. COMET also captures "Other Non-Navy" direct costs associated with Navy GI Bill contributions to the Veteran's Administration (VA) to fund the program.

(2) COMET also includes Navy variable indirect personnel costs that are funded through a mix of MPN and O&MN, specifically capturing those costs associated with:

(a) recruiting;

(b) training (recruit and initial skill training only);

(c) locating (individual's account; only associated with the arrival of the member up to the first permanent duty station); and,

(d) supporting (base operational support, medical and administrative).

(3) COMET is the only model/database available to the Navy for estimating comprehensive costs of Government civilian employees. Whereas the Civil Service pay schedules issued by the Office of Personnel Management contain only direct pay, COMET includes retirement benefits, medical and insurance benefits.

(4) "Cost of A Sailor" (COAS) is a recently completed effort by NCCA that developed the methodology for estimating the variable indirect personnel costs that are included in COMET. These COAS Cost Estimating Relationships (CERs) for these variable indirect costs are established in the model as the DEFAULT settings.

### **Guidelines for the Use of COMET as A TOC Tool**

*COMET does not provide the user with a complete TOC tool for manpower. The indirect costs estimated by COMET do not provide complete cost estimates of essentially fixed Navy infrastructure, such as training facilities, hospitals and family housing; they provide variable indirect personnel costs (MPN and O&MN) associated with limited infrastructure categories that changed over time as the size and composition of Navy end strength either increased or decreased. It is therefore essential for the user of the model to accept the basic premise that as a useful manpower tool, the consequence of the cost estimate contemplated has to either result in an increase (new Sailors recruited into the Navy) or decrease (Sailors separated from the Navy) to Navy end strength. If Navy end strength is not changed by the particular cost estimate contemplated, then the COMET variable indirect costs can not be included in that estimate.*

**Note:** The Standard Programming Rate, NAVCOMPT Composite Standard Military Rates and DEFAULT settings for the direct MPN costs from COMET include special pays, such as flight pay and submarine pay, that are averaged across the applicable (enlisted or officer) population of the Navy. *Where the analysis demands and the necessary detail exists, the user should reset the DEFAULT options for special pays. For example, if the analysis deals with a ship's crew, Aviation Career Incentive Pay should not be included, or, if the analysis deals with a surface ship, Submarine Duty Pay should not be included. Other DEFAULT settings for cost elements such as housing allowances, bonuses and PCS costs may also be deselected or "typed in" depending on the "granularity" that is known and sought. User's should consult the COMET Operation Manual before deselected those settings to ensure such an action meets with the intention of their particular cost estimate.*



examine the DEFAULT settings, such as special pays, for appropriateness and adjust as needed.

2. Variable indirect personnel costs should be included in TOC Element 3.7. If detailed estimates or actuals of these costs exist, they should be used to establish TOC baselines as the preferred method. Lacking detailed estimates or actuals, applicable variable indirect costs estimated by COMET should be used. See enclosure (2) for a detailed mapping of the variable indirect cost estimated by COMET to the TOC Element Structure. The preferred settings would be those that capture values based on the Cost Of A Sailor (COAS) study. If direct MPN is established using information from VAMOSC(S) or standard rates, first choice should be to use the variable indirect cost estimated for composite standard rates. If detailed enlisted rating/paygrade and officer community breakdown of the crew is available, this information should be used to tailor the estimated variable indirect costs to better match the crew. Also, non-Navy indirect costs should be included as was done for direct costs.

**Specific Guidelines for Cost Analyses performed for TOC Reduction Initiatives:**

1. Direct MPN costs should be included in TOC Element 3.1, Mission Personnel. In analyzing TOC initiatives, estimates of direct MPN should initially be developed with average pay rates assumed in the TOC baseline. If these are based on actuals from VAMOSC(S), the analyst should ensure that portions of MPN costs, such as retirement pay accrual (that VAMOSC(S) does not report) are included. Where the initiative would result in changes to the rating and paygrade structure of the crew, detailed rating information in COMET should be used to estimate direct MPN costs; however, the user should examine the DEFAULT settings, such as for special pays, for appropriateness and adjust as needed.
2. Include variable indirect personnel costs in analyses only if the need for an entire sailor is created or eliminated. Sailors fulfill multiple functions onboard a ship. If an initiative that frees up a man-year of effort does not result in crew leaving a ship and the Navy end strength, the Navy will not see a TOC reduction. The cost avoidance in this case can only be cited as a benefit. Similarly, if an initiative results in moving a crew member from ship to shore, the Navy will not see a TOC reduction.
3. Applicable variable indirect personnel costs should be included in TOC Element 3.7. Unless the initiative would

result in a change to the rating and paygrade structure of the crew, the same approach used to estimate variable indirect costs in the baseline should be used in any analysis of an initiative. Where the initiative would result in changes to the rating and paygrade structure of the crew, this detailed rating information should be entered into COMET to tailor the estimated variable indirect costs to a specific initiative.

**Have Questions?** If you have question regarding estimating manpower costs, contact:

XXXXXXXXXXXXXXXXXX  
SEA 0171  
(703) 602-1308 ext. 166  
email: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

The COMET model is maintained by the Naval Center for Cost Analysis (NCCA). The NCCA world wide web site, URL: <http://www.ncca.navy.mil/comet/index.htm>, contain much information on the theory behind and use of the COMET Model. If you have questions regarding the operation of the COMET model or its application to your specific analysis, contact:

XXXXXXXXXXXXXXXXXX  
Naval Center for Cost Analysis (NCCA-412)  
(703) 604-0289  
email: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

**Be aware of:**

In accordance with policies of the Assistant Secretary of the Navy, Research, Development and Acquisition, and the Chairman, OSD Cost Analysis Improvement Group, the variable indirect personnel costs contained in COMET are to be used only for intra-Navy studies and analyses such as AoAs, not for analyses prepared for use outside the Navy. Since the other Services do not include variable indirect personnel costs in their estimates, the Navy would be unfairly disadvantaged by having analyses based on higher personnel costs compared to analyses based on direct costs only. PMs need to be able to identify and segregate variable indirect costs in TOC baselines so that these differences can be clearly delineated and explained. This guidance directs the inclusion of these variable indirect costs in TOC ES 3.7 to permit this segregation.

## Mapping Of COMET Direct and Variable Indirect Personnel Costs to TOC Element Structure

### Table Explanations

The listing of COMET direct and variable indirect personnel cost elements below are all the DEFAULT and possible user selected cost elements included in the model.

The COMET model is pre-programmed to operate in the DEFAULT direct and variable indirect personnel cost mode. If the user operates in the DEFAULT mode for both direct and variable indirect personnel costs, then the **BOLDED** elements listed below are applicable to the user's cost estimate.

The COMET model does allow the user to deselect the DEFAULT settings on most direct and variable indirect cost options and program another cost of the user's choosing (either cash amount (VHA), percentage of bonus, full amount of special pay, etc.).

User's should consult the COMET Operations Manual to better acquaint themselves with the other user cost estimation alternatives the model offers, before deselecting the DEFAULT setting.

Note: The COMET model "printout" (as do the Tables attached) currently gives the user a line-by-line itemized identification of every cost element available to the user in each cost category. Ensure that value ultimately selected by the user in the model is correctly identified in the "printout" or the attached Tables for cost estimation purposes. Working outside the model, without identifying the correct cost element within a specific cost category, defeats the purpose of using the model and will lead to incorrect cost estimations via multiple counting errors.

Mapping Of COMET Direct and Variable Indirect Personnel  
Costs to TOC Element Structure

**Enlisted Manpower**

<b>Direct Cost Elements</b>	<b>COMET Cost Element</b>	<b>TOC ES MAPPING</b>
<b><i>MPN Military Compensation</i></b>	<b>ac_mc</b>	3.1.2
Basic Pay (BP)	ac_bp	3.1.2
Basic Allowance For Quarters (BAQ)	ac_baq1	3.1.2
	ac_baq2	3.1.2
Variable Housing Allowance (VHA)	ac_vha1	3.1.2
	user_VHA	3.1.2
Basic Allowance For Subsistence (BAS)	ac_bas	3.1.2
<b><i>MPN Enlistment Bonus</i></b>	<b>am_ac_eb</b>	3.1.2
	ac_eb	3.1.2
	mc_eb	3.1.2
	am_mc_eb	3.1.2
	user_EB	3.1.2
<b><i>MPN Reenlistment Bonus</i></b>	<b>ac_srb</b>	3.1.2
<b><i>MPN PCS Costs *</i></b>	<b>ac_pcs</b>	3.1.2
Accession Move *	<b>ac_amov</b>	3.1.2
Training Move *	<b>ac_tmov</b>	3.1.2
	ac_rots	3.1.2
	ac_op	3.1.2
	user_PCS	3.1.2
<b><i>MPN Separation Costs</i></b>	<b>ac_sep</b>	3.1.2
	ac_sev	3.1.2
	ac_leav	3.1.2
	ac_smov	3.1.2
<b><i>MPN Retired Pay Accrual</i></b>	<b>ac_rp</b>	3.1.2
<b><i>MPN Special Pays</i></b>	<b>ac_sp</b>	3.1.2
Enlisted Flight Pay	acflt	3.1.2
Hazardous Duty Incentive Pay (HDIP)	ac_haz	3.1.2
Diving Duty Pay	ac_dive	3.1.2
Imminent Danger/Hostile Fire Pay	ac_hfire	3.1.2
Submarine Duty Pay	ac_sub	3.1.2
Foreign Language Proficiency Pay (FLPP)	ac_lang	3.1.2
Special Duty Assignment Pay (SDAP)	ac_sduty	3.1.2
Foreign Duty/Certain Places Pay	ac_f duty	3.1.2
Career Sea Pay (CSP)	ac_sea	3.1.2
Family Separation Allowance (FSA)	ac_fsa	3.1.2
Overseas Housing Allowance (OHA)	ac_os	3.1.2
	user_SP	3.1.2
<b><i>MPN Other Benefits</i></b>	<b>ac_ob</b>	3.1.2

Clothing Allowances	ac_cloth	3.1.2
Federal Insurance Contribution Act (FICA)	ac_fica	3.1.2
Miscellaneous *	ac_misc	3.1.2
<b>Enlisted Manpower (Con't)</b>		

Direct Cost Elements	COMET Cost Element	TOC ES MAPPING
<b>MGIB (Non-Navy MPN Cost) GI Bill *</b>	<b>am_gib</b>	3.1.2
<b>Grade Inventories *</b>	<b>ac_gib</b>	3.1.2
<b>* Costs not reported in VAMOS(S)</b>	<b>grade_inv</b>	3.1.2

**Total Variable Indirect Cost Elements**

Variable Indirect Cost	COMET Cost Element	TOC ES MAPPING
<b>MPN Recruiting Costs</b>	<b>coas_rec_nav_mpn</b>	3.7.4
	ac_rec_rate_mpn	3.7.4
	am_rec_rate_mpn	3.7.4
	coas_rec_rate_mpn	3.7.4
	user_REC_mpn	3.7.4
<b>MPN Training</b>	<b>coas_trng_rate_mpn</b>	3.7.7
	ac_trng1_mpn	3.7.7
	ac_trng2_mpn	3.7.7
	am_tot_trng_mpn	3.7.7
	coas_trng_nav_mpn	3.7.7
	user_TRNG_mpn	3.7.7
<b>MPN Medical Support</b>	<b>coas_med_mpn</b>	3.7.6.2
<b>MPN Individual's Account</b>	<b>coas_indvacct_mpn</b>	3.7.6.2
<b>MPN Base Support</b>	<b>coas_base_mpn</b>	3.7.2.3
<b>MPN Administrative Activities</b>	<b>coas_admin_mpn</b>	3.7.6.2
<b>MPN Total</b>		
<b>OMN Recruiting</b>	<b>coas_rec_nav_omn</b>	3.7.4
	ac_rec_rate_omn	3.7.4
	am_rec_rate_omn	3.7.4
	coas_rec_rate_omn	3.7.4
	user_REC_omn	3.7.4
<b>OMN Training</b>	<b>coas_trng_rate_omn</b>	3.7.7
	ac_trng1_omn	3.7.7
	ac_trng2_omn	3.7.7
	am_tot_trng_omn	3.7.7
	coas_trng_nav_omn	3.7.7
	user_TRNG_omn	3.7.7
<b>OMN Medical Support</b>	<b>coas_med_omn</b>	3.7.6.2
<b>OMN Individual's Account</b>	<b>coas_indvacct_omn</b>	3.7.6.2

<b>OMN Base Support</b>	<b>coas_base_omn</b>	<b>3.7.2.3</b>
<b>OMN Administrative Activities</b>	<b>coas_admin_omn</b>	<b>3.7.6.2</b>
<b>OMN Total</b>		

**Enlisted Manpower (Con't)**

<b>Variable Indirect Cost DoD Health Care (Non-Navy OMN Cost)</b>	<b>COMET Cost Element</b>	<b>TOC ES MAPPING</b>
Direct Care	<b>ac_dc</b>	<b>3.7.6</b>
CHAMPUS	<b>ac_champ</b>	<b>3.7.6</b>
Retiree CHAMPUS	<b>ac_rechamp</b>	<b>3.7.6</b>
Member And Dependent Dental	<b>ac_dental</b>	<b>3.7.6</b>

Note: None of TOC WBS Elements 3.7 (Indirect/Infrastructure) are collected by VAMOS(S)

## Officer Manpower

Direct Cost Element	COMET Default Terminology	TOC ES MAPPING
<b>MPN Military Compensation</b>	<b>ac_mc</b>	3.1.1
Basic Pay (BP)	ac_bp	3.1.1
Basic Allowance For Quarters (BAQ)	ac_baq1	3.1.1
	ac_baq2	3.1.1
Variable Housing Allowance (VHA)	ac_vha1	3.1.1
	user_VHA	3.1.1
Basic Allowance For Subsistence (BAS)	ac_bas	3.1.1
<b>MPN PCS Costs *</b>	<b>ac_pcs</b>	3.1.1
Accession Move *	<b>ac_amov</b>	3.1.1
Training Move *	<b>ac_tmov</b>	3.1.1
	ac_rots	3.1.1
	ac_op	3.1.1
	user_PCS	3.1.1
<b>MPN Separation Costs</b>	<b>ac_sep</b>	3.1.1
	ac_sev	3.1.1
	ac_leav	3.1.1
	ac_smov	3.1.1
<b>MPN Retired Pay Accrual *</b>	<b>ac_rp</b>	3.1.1
<b>MPN Special Pays</b>	<b>ac_sp</b>	3.1.1
Aviation Career Incentive Pay (ACIP)	acflt	3.1.1
Hazardous Duty Incentive Pay (HDIP)	ac_haz	3.1.1
Diving Duty Pay	ac_dive	3.1.1
Imminent Danger/Hostile Fire Pay	ac_hfire	3.1.1
Submarine Duty Pay	ac_sub	3.1.1
Foreign Language Proficiency Pay (FLPP)	ac_lang	3.1.1
Special Duty Assignment pay (SDAP)	ac_sduty	3.1.1
Foreign Duty/Certain Places Pay	ac_fduty	3.1.1
Career Sea Pay (CSP)	ac_sea	3.1.1
Family Separation Allowance (FSA)	ac_fsa	3.1.1
Overseas Housing Allowance (OHA)	ac_os	3.1.1
	ac_av	3.1.1
	ac_nuc	3.1.1
	ac_awc	3.1.1
	ac_medsrv	3.1.1
	ac_medcrt	3.1.1
	user_SP	3.1.1
<b>MPN Incentive Pays</b>		
Aviation Continuation Pay	inc_av	3.1.1

(ACP)

inc_nuc	3.1.1
inc_med	3.1.1
inc_mmed	3.1.1

**Officer Manpower (Con't)**

<b>Direct Cost Element</b>	<b>COMET Default Terminology</b>	<b>TOC ES MAPPING</b>
<b><i>MPN Other Benefits</i></b>	inc_certrn	3.1.1
Clothing Allowances	user_INCENT	3.1.1
Federal Insurance Contribution Act (FICA)	<b>ac_ob</b>	3.1.1
Miscellaneous *	ac_cloth	3.1.1
<b><i>MGIB (Non-Navy MPN Cost) *</i></b>	ac_fica	3.1.1
<b><u>Grade Inventories</u></b>	ac_misc	3.1.1
	grade_inv	3.1.1

\* Costs are not reported in VAMOS

**Total Variable Indirect Cost**

<b>Variable Indirect Cost</b>	<b>COMET Default Terminology</b>	<b>TOC WBS MAPPING</b>
<b><i>MPN Acquisition Costs</i></b>	am_tot_acq_spa	3.7.4
	ac_acq1_spa	3.7.4
	ac_acq2_spa	3.7.4
	ac_acq3_spa	3.7.4
	user_ACQ_mpn	3.7.4
<b><i>MPN Training Costs</i></b>		
General Officer Training	coas_trng1_mpn	3.7.7.4
Community-Specific Training (Flight School)	coas_trng2_mpn	3.7.7.4
<b><i>MPN Medical Support</i></b>	coas_med_mpn	3.7.6.1
<b><i>MPN Individual's Account</i></b>	coas_indvacct_mpn	3.7.6
<b><i>MPN Base Support</i></b>	coas_base_mpn	3.7.2.3
<b><i>MPN Administrative Activities</i></b>	coas_admin_mpn	3.7.6
<b><i>MPN Total</i></b>		
<b><i>OMN Acquisition Costs</i></b>		3.7.4
<b><i>OMN Training</i></b>		
General Officer Training	coas_trng1_omn	3.7.7.4
Community-Specific Training (Flight School)	coas_trng2_omn	3.7.7.4
<b><i>OMN Medical Support</i></b>	coas_med_omn	3.7.6.1
<b><i>OMN Individual's Account</i></b>	coas_indvacct_omn	3.7.6
<b><i>OMN Base Support</i></b>	coas_base_omn	3.7.2.3
<b><i>OMN Administrative Activities</i></b>	coas_admin_omn	3.7.6
<b><i>OMN Total</i></b>		
<b><i>DoD Health Care (Non-Navy OMN Cost</i></b>		

Direct Care	ac_dc	3.7.6
CHAMPUS	ac_champ	3.7.6
Retiree CHAMPUS	ac_ret_cham	3.7.6
<b>Officer Manpower (Con't)</b>		
<b>Variable Indirect Cost</b>	<b>COMET Default Terminology</b>	<b>TOC ES MAPPING</b>
Member And Dependent Dental	ac_dental	3.7.6
<b>Note: None of the TOC WBS Elements 3.7 (Indirect/Infrastructure) are collected by VAMOSC</b>		