

Presented at the 2012 SCEA/ISPA Joint Annual Conference and Training Workshop - [www.iceaaonline.com](http://www.iceaaonline.com)

# ***How VAMOSC VIEWS can help you!***



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# Outline

Presented at the 2012 SCEA/ISPA Joint Annual Conference and Training Workshop - [www.iceaaonline.com](http://www.iceaaonline.com)

- Introduction
- Applications
  1. Develop Early-on ROM Estimate
  2. Assess Technical Input/Assumptions
  3. Perform Cost Assessments
- VIEWS Use in Trade Studies/AoAs
- Conclusions

# Introduction

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- Operating and Support (O&S) cost are becoming increasingly important
  - We are entering an environment of reduced budgets within the Department of Defense (DoD) – the need for high-quality, empirically based analysis has never been greater
  - Legislative initiatives, including the Weapon Systems Acquisition Reform Act (WSARA) of 2009 and Section 803 of the FY 2012 NDAA, are aimed squarely at increasing the visibility and use of O&S costs in weapon systems decision-making
  - In its assessment of weapon system sustainment programs, the DoD's Product Support Assessment Team concluded that obtaining more insight into O&S costs is critical to determining weapon system affordability
- The Naval Visibility And Management of Operating and Support Costs (VAMOSC) system, which collects and reports US Navy historical O&S costs, provides an excellent foundation from which to address these concerns

# Introduction (Cont'd)

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Data visualization is becoming an increasingly prevalent and important method of data analysis

- VAMOSC VIEWS are a graphical representation of Navy VAMOSC data that provide useful insights about O&S costs for ships, aircraft, and Military Sealift Command (MSC) vessels
  - VAMOSC VIEWS were developed in 2004 and have continued to evolve/expand
- VAMOSC VIEWS display cost categories including personnel, unit level consumption, maintenance, and modernization costs
- VAMOSC VIEWS are a visual assessment/validation process that examine O&S cost related trends

# More about VAMOSC VIEWS

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- Provides many critical displays based on Navy VAMOSC data
- VAMOSC VIEWS can be accessed from the VAMOSC website and require a VAMOSC user account

 VIEWS – P7b 

 VIEWS – SE2 

 VIEWS – T1a 

 VIEWS – T2 

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# VAMOSC VIEWS Applications

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This brief focuses on 3 applications using VAMOSC VIEWS

1. Development of Early-on ROM Estimates
2. Assessment of Technical Inputs/Assumptions
3. Performing Cost Assessments

# I - Develop Early-on ROM Estimate

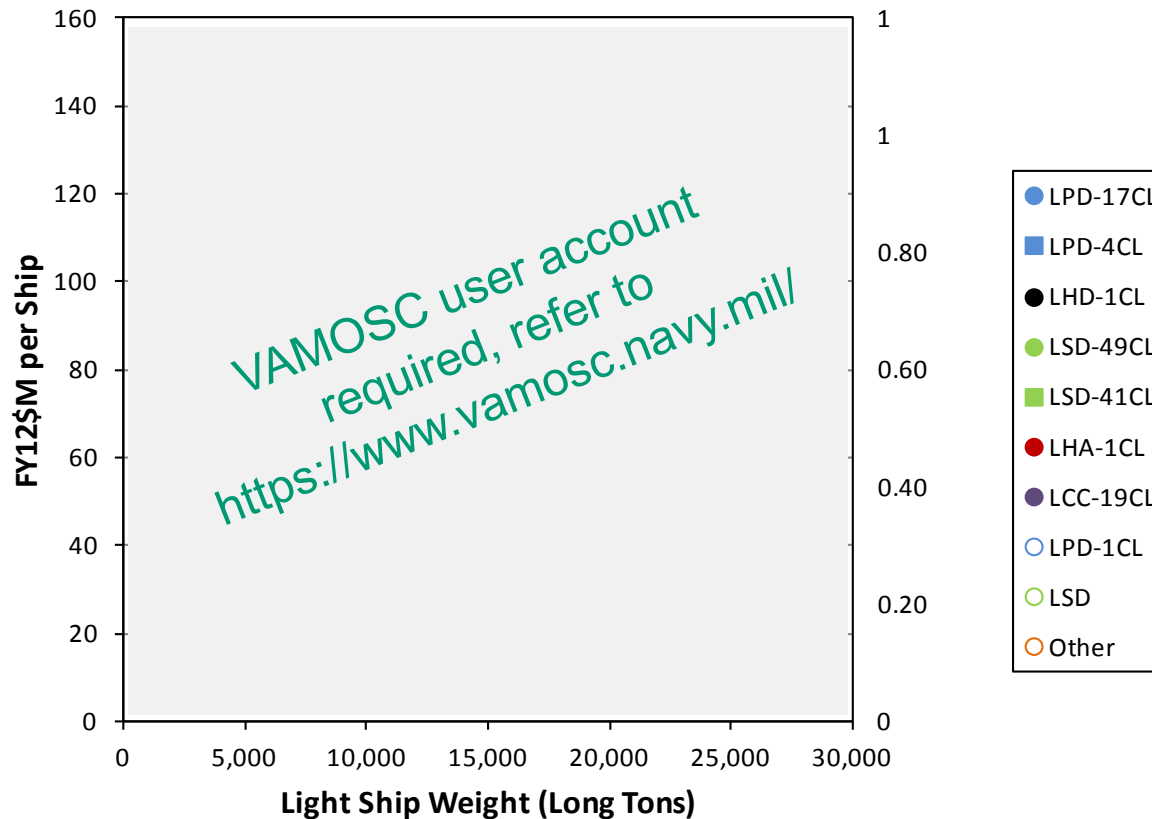
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- Question: What is the next amphibious ship class going to cost annually?
- Information given:
  - 15,000 light ship displacement, long tons (LT)
- Approach:
  - Analyze historical costs per ship ton
  - Examine historical allocation of O&S costs
  - Explore specific cost areas/elements

# Total Cost versus Ship Weight

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**Total Costs versus Ship Weight**  
**Amphib FY84 - FY11 Historical Average**



- Given: 15,000 LT

Total annual O&S cost per ship is correlated with displacement

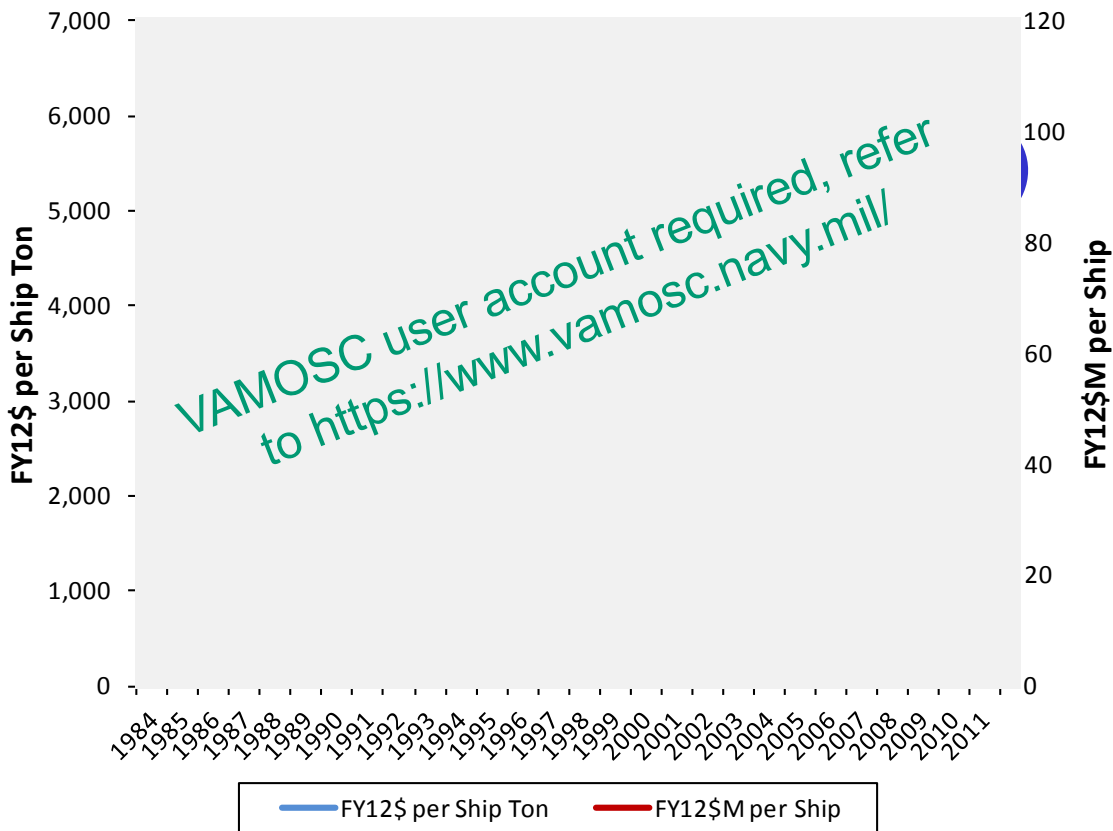
- Conclusion: total cost at this displacement is ~\$80M



# Historical costs per ship ton trend

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**Total Costs  
Amphib Composite**



- Latest trend shows that Amphibs have an O&S cost of ~ \$5,500 per ship ton annually
- Based on a 15,000 LT ship that equates to \$82.5M annually

# Examine historical allocation of O&S costs

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- Based on historical experience costs are comprised of many elements
- The major cost drivers are Manpower, Depot Maintenance, and Fuel
- At this level the \$82.5M annual O&S cost can be allocated across elements

## *Allocation of VAMOSC Costs Amphibs FY07 - FY11*

Element	Cost
---------	------

■ Manpower
■ TAD + PCS
■ Training
■ Fuel
■ Repair Parts & Repairables
■ I-Level Maintenance
■ Depot Maintenance
■ Modernization
■ Supplies & Expendables
■ Purchased Services
■ Other

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# 2 - Assess Technical Inputs/Assumptions

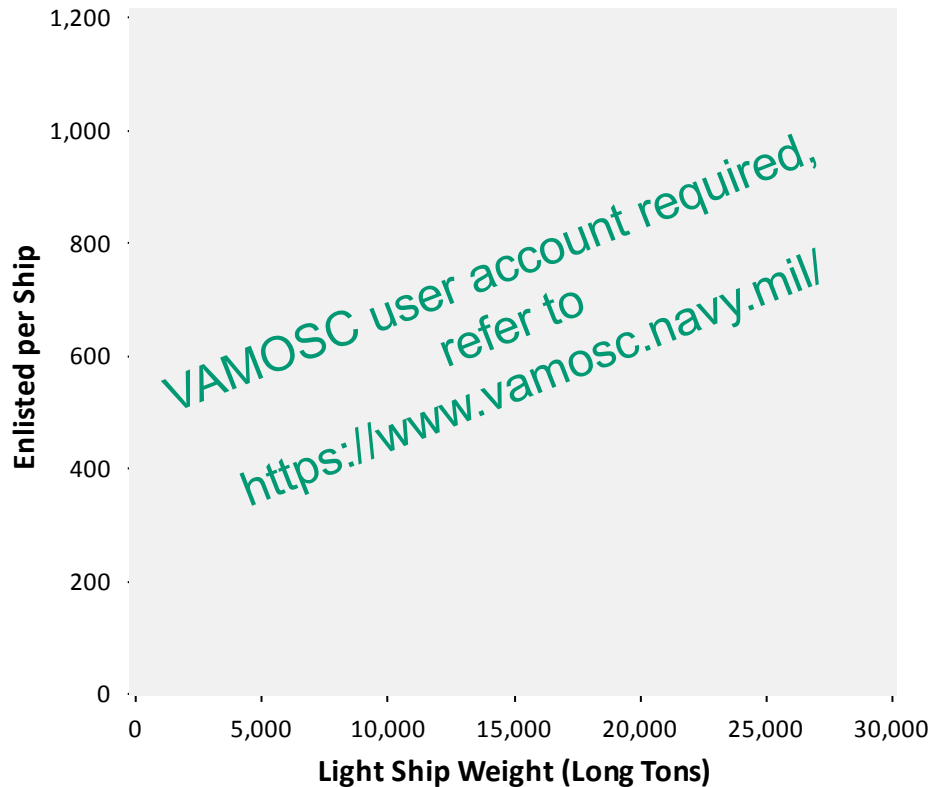
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- Questions:
  - Is the estimated crew size reasonable?
  - What is a realistic operating tempo (steaming hours underway (SHU))?
  - Is the estimated fuel consumption reasonable?
- Information given:
  - Light ship displacement : 15,000 LT (previously given)
  - Crew: 500 Enlisted, 40 Officers
  - OPTEMPO: 2,500 SHU per year
  - Propulsion Type: Diesel
- Approach:
  - Assess number of enlisted personnel vs. light ship displacement
  - Assess number of officers vs. number of enlisted personnel
  - Examine historical SHU
  - Examine fuel consumption by light ship displacement and propulsion type

# How many enlisted would we expect?

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**Enlisted versus Ship Weight**  
**Amphib FY84 - FY11 Historical Average**

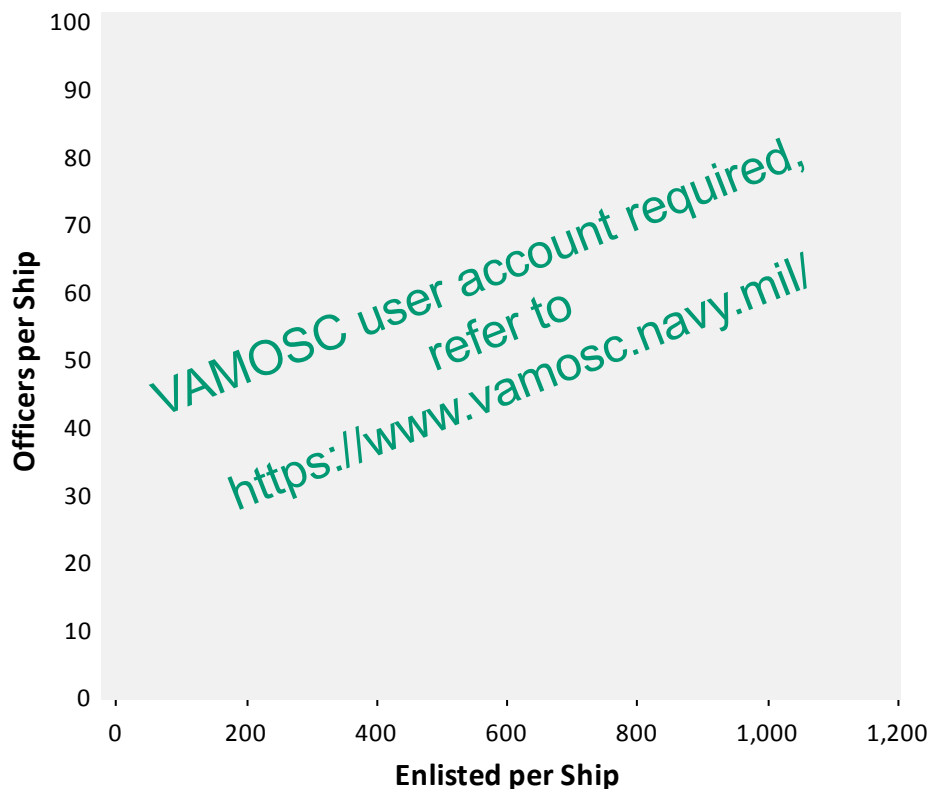


- Given: the new amphib ship class will have 500 enlisted personnel and weigh 15,000 LT
- Conclusion: this appears reasonable based on other ship classes

# How many officers would we expect?

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**Officers versus Enlisted**  
**Amphib FY84 - FY11 Historical Average**

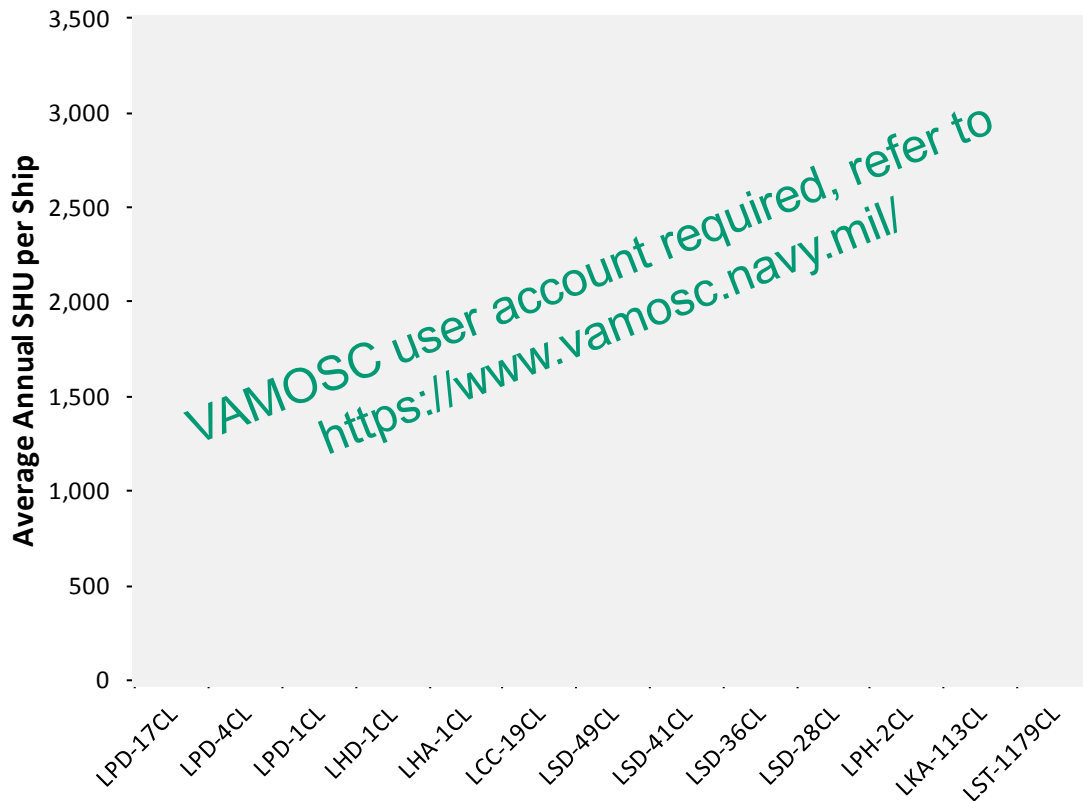


- Given: the new amphib ship class will have 40 officers
- Conclusion: given 500 enlisted, the number of officers seems reasonable

# How many SHU would we expect?

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**Annual SHU per Ship**  
**Amphib Historical Average FY84 - FY11**

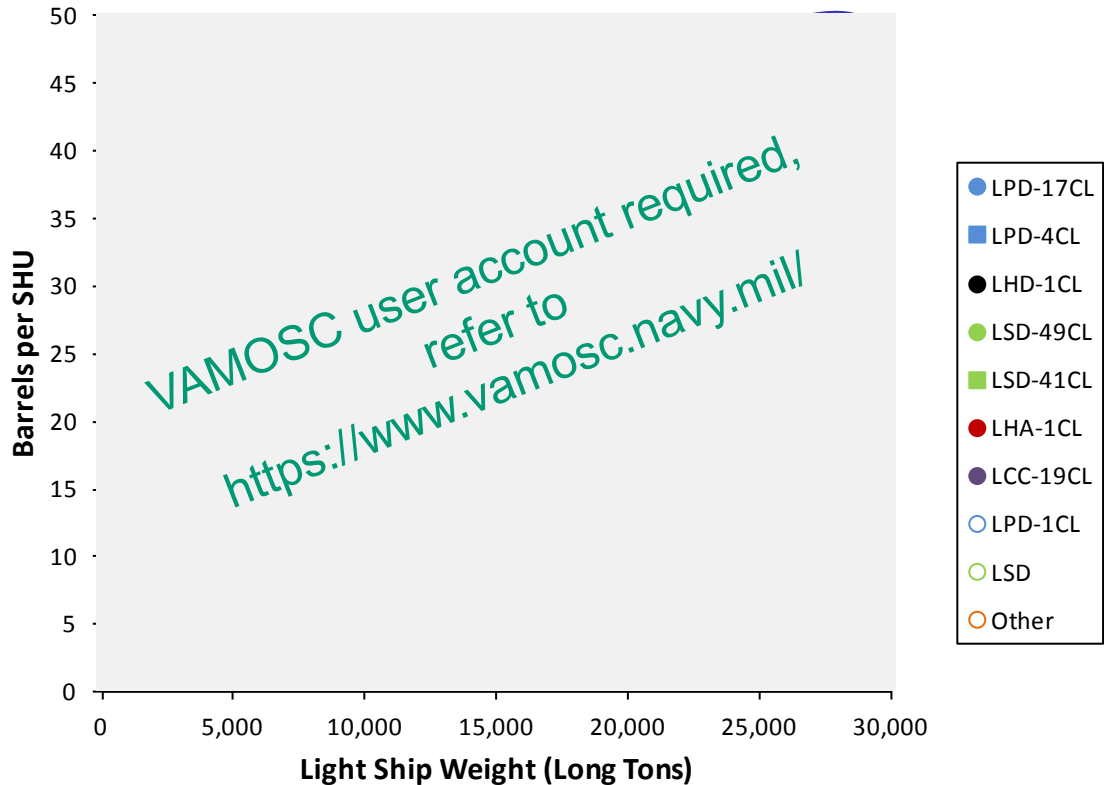


- Given: 2,500 SHU per year
- Conclusion: Assessing **current** amphib classes, 2,500 SHU seems reasonable
- Fluctuations in SHU may be due to the life cycle of the class, the environment and different missions

# What fuel consumption might we expect?

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**Barrels per SHU versus Ship Weight  
Amphib Historical Average FY84 - FY11**



- Given: 15,000 LT, Diesel Propulsion
- Conclusion: the ship should consume about 12 barrels per SHU
- If it were steam, fuel consumption would be ~25 barrels per SHU (twice as much)

# 3 - Perform Cost Assessments

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- Question: Does the cost estimate being evaluated appear to be reasonable?
- Information given:
  - Same technical info
  - Annual Repair Parts & Repairables Cost per Ship = \$1,350K
  - Annual Supplies Cost per Ship = \$1,250K
  - Average Annual Personnel Cost per Enlisted = \$85K
- Approach:
  - Assess Repair Parts & Repairables Cost vs. Light Ship Displacement
  - Assess Supplies Cost vs. Number of Personnel
  - Assess Historical Annual Average Cost per Enlisted



# Is the Repair Parts cost reasonable?

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## Repair Parts and Repairables (FY12\$K) Amphib Historical Average FY84 - FY11

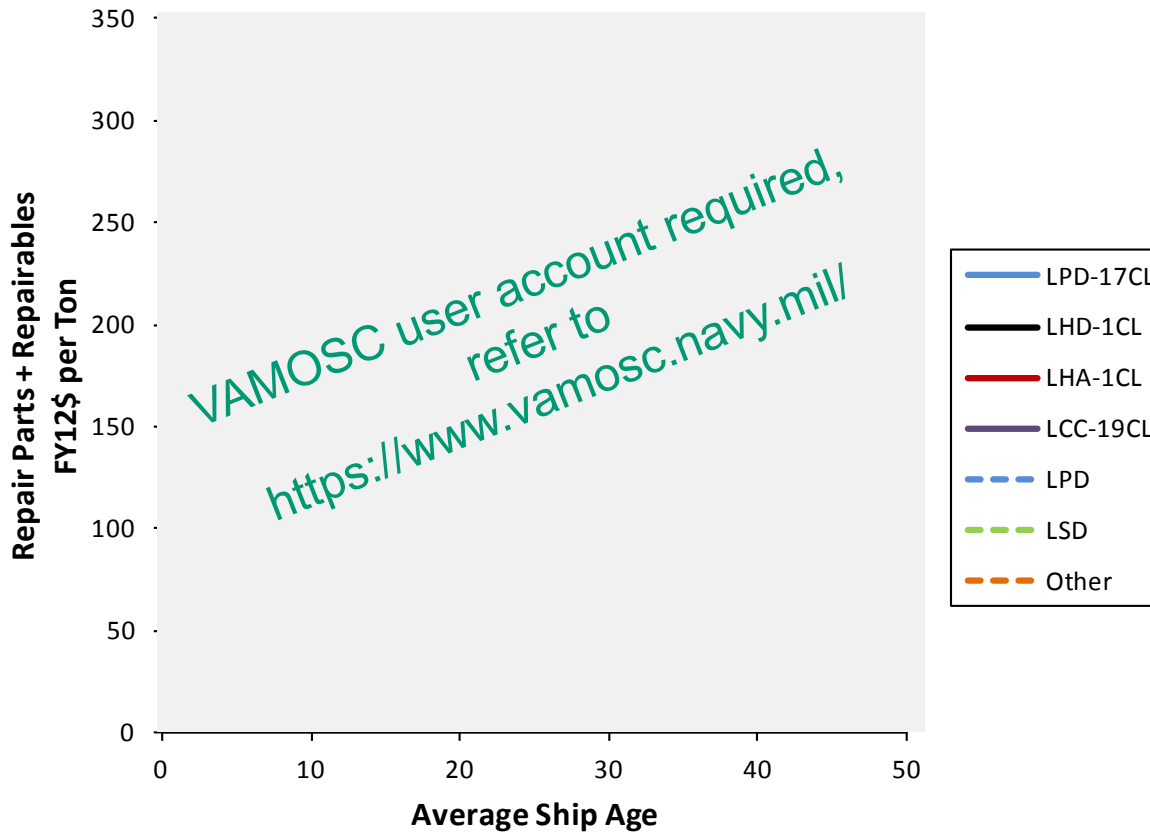


- Given: \$1,350K, 15,000 LT
- Conclusion: \$1,350K is lower than expected
- Why might this be?
  - May reflect different maintenance philosophy
  - Or data used to develop estimate was not adjusted for age and full life cycle averages

# Age Impacts on Repair Parts & Repairables

Presented at the 2012 SCEA/ISPA Joint Annual Conference and Training Workshop - [www.iceaaonline.com](http://www.iceaaonline.com)

**Repair Parts and Repairables (FY12\$) per Ton  
Amphib FY84 - FY11**



- Maintenance costs increase as ships age
- Data used to develop estimates should be adjusted to reflect full life cycle / age cost impacts

# Is the Supplies cost estimate reasonable?

Presented at the 2012 ICEA/ISPA Joint Annual Conference and Training Workshop - [www.iceaaonline.com](http://www.iceaaonline.com)

**Supplies (FY12\$K) versus Personnel  
Amphib Historical Average FY84 - FY11**

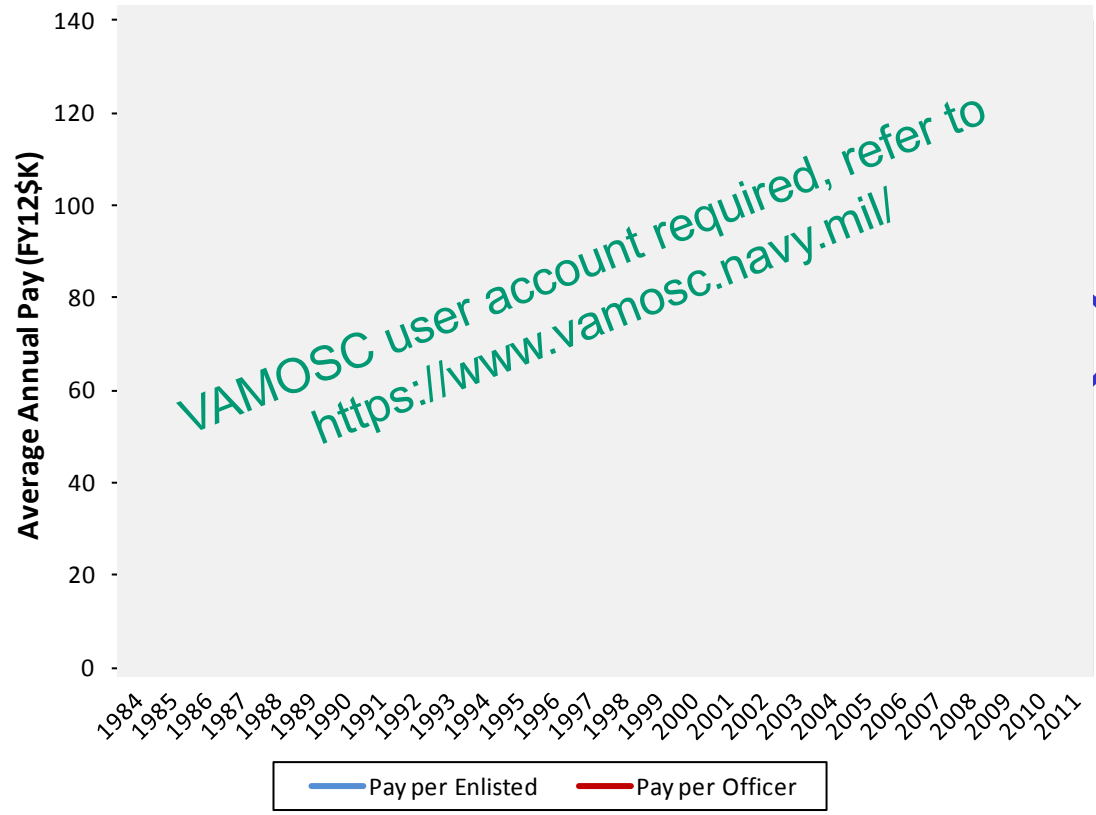


- Given: a total of 540 personnel, \$1,250K
- Conclusion: \$1,250K for the cost of supplies seems reasonable
- Other VAMOSOC VIEWS that show costs driven by the number of personnel include PCS, TAD, Training and Purchased Services

# Is the average cost per enlisted reasonable?

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**Enlisted and Officer Pay (FY12\$K)**  
**Amphib Composite**



- The average cost per enlisted of \$85K is higher than historical data
- What is the average skill mix being assumed for the new amphib ship class compared to current classes?

# Personnel Skill Mix

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## Amphib Composite - Percentage by Grade (FY11 Average)

	Enlisted Personnel %									Officers %					
	E-1	E-2	E-3	E-4	E-5	E-6	E-7	E-8	E-9	O-1	O-2	O-3	O-4	O-5	O-6
2011															
LPD-17CL															
LPD-4CL															
LHD-1CL															
LSD-49CL															
LSD-41CL															
LHA-1CL															
LCC-19CL															

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- These views show the most recent class, LPD-17, has a higher than average enlisted skill mix compared to other classes/composite. This may relate to it having less enlisted per ship ton
  - On the other hand, LPD-17 has a lower average officer skill mix compared to other classes/composite. Maybe this relates to its officer to enlisted ratio being slightly higher than other classes
- The new amphib ship class has a higher than average enlisted pay rate but its number of enlisted personnel per ship ton is not less than average like the LPD-17. Is this reasonable?

# VIEWS Use in Trade Studies/AoAs

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As demonstrated in the previous applications, VAMOSC VIEWS can be used to provide cost support for various high level trade-off studies that impact:

- Ship Size
- Number of Personnel
- Propulsion Type
- OPTEMPO
- Service Life Extension (Age Impacts)
- Use of different Ship Types

# Conclusions

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- In the current environment, understanding O&S costs is critical
- VAMOSC VIEWS are powerful tools that provide both analysts and decision makers an understanding of O&S costs
- VAMOSC VIEWS provide the capability to assess/validate engineering or design assumptions
- VAMOSC VIEWS can stimulate additional questions that can generate important analyses and findings

# ***How VAMOSC VIEWS can help you!***

## Questions?

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- Online Training
- Documentation
- Fact Files

### Public Resources

- About VAMOSC
- View Sample Data
- Online Support
- Contact VAMOSC
- Site Map
- Links

### meteor

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- About METEOR
- Documentation
- Online Training

## What's New

- [Naval VAMOSC Continued FY11 Annual Update](#)
- [10th Annual Naval VAMOSC/OSCAM User Conference Presentation Slides](#)
- [CAC/PKI is now required to log onto VAMOSC. Need Help? \[CAC/PKI FAQ\]\(#\) \[CAC User Guide\]\(#\)](#)
- [NEW! METEOR replaces COMET as the manpower cost estimating tool](#)
- [Quick Reference Guide to New Version of Business Objects](#)
- [NEW Online Training Videos](#)
- [Graphical VIEWS Provide Ship and Aircraft Cost Trends!](#)

## NAVY Links

- [U.S. Navy Homepage](#)
- [Navy Careers and Jobs](#)
- [Freedom of Information Act \(FOIA\)](#)

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