Reducing Shore Infrastructure Cost:
Allocation of Shore Burden to Individual Units

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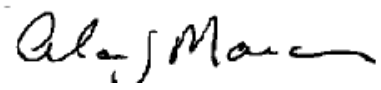
DRM-2012-U-001748-Final
August 2012

CNA
ANALYSIS & SOLUTIONS

Photo credit line: Photo credit line: 120111-N-NL401-003 Norfolk, Virginia (Jan. 11, 2011). The guided-missile destroyer USS James E. Williams (DDG 95) prepares to depart Naval Station Norfolk. James E. Williams was part of the Enterprise Carrier Strike Group, which was underway conducting a composite training unit exercise. (U.S. Navy photo by Mass Communication Specialist 3rd Class Daniel Meshel/ Released)

Approved for distribution: August 2012



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Contents

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Summary

The Navy manages more shore infrastructure than it is able to support effectively in today's budget-constrained environment and is looking to reduce shore infrastructure costs. Therefore, the Director, Shore Readiness Division (OPNAV N46) asked CNA to develop an improved process for determining current and future shore readiness support requirements for each Navy command. The Navy would like to have a top-down, shore-programming requirements process that produces estimates of current and future shore requirements based on the present laydown and anticipated commissionings, decommissionings, and relocations of Navy units. A top-down programming process requires a thorough understanding of shore execution costs in addition to knowing the location of units and their requirements. Currently, the Navy can easily determine shore costs at the OPNAV level, but the allocation of shore costs to units and installations is not yet available.

To help support the Navy programming process, we followed a two-pronged approach to assist in reducing shore infrastructure costs. First, we examined Navy force structure requirements to better define what capabilities and support individual units actually need from the shore infrastructure. Second, we developed an allocation tool that provides an estimate of how the actual shore funding was obligated down to the individual unit level.

Our method for determining Navy unit shore requirements was to develop four proof-of-concept case studies. We looked at four different unit types that represent a broad range of capabilities. The units are an aviation patrol (VP) squadron, a SSN Los Angeles class nuclear attack submarine, a DDG Arleigh Burke destroyer, and a seabee battalion. We created shore required operational capabilities (SHOROC) and shore projected operational environment (SHORE POE) documents for each unit. The SHOROC and SHORE POE were patterned after the fleet required operational capabilities (ROC) and

projected operational environment (POE) documents. The ROC and POE documents describe the capabilities a unit must have and the expected situations that the units are supposed to operate in. In like manner, the SHOROC and SHORE POE documents describe the shore support capabilities and shore organizational support framework that a Navy unit would requires to execute its mission.

For the case studies, we selected a specific command from each of the four types of units mentioned above:

- N09610 - VP-26 *Tridents* Patrol Squadron, Naval Air Station (NAS), Jacksonville, Florida
- N20994 - SSN 713 USS *Houston*, Naval Station (NAVSTA) Guam, Marianas Islands
- N22994 - DDG 86 USS *Shoup*, NAVSTA Everett, Washington
- N55451 - NMCB 133 Seabee Battalion, CBC Gulfport, Mississippi

After completing the case studies, we presented them to the sponsor as examples of what could be done by the Navy to better define and quantify Navy unit shore support requirements. The SHOROC and SHORE POE documents could be used to better match force structure requirements to shore infrastructure support capabilities. With better understanding of current unit shore requirements, cost could be reduced by adjusting shore infrastructure capabilities. Since it was also clear that creating a SHOROC and SHORE POE for each unit in the Navy would be very costly and time consuming, there were concerns by the sponsor that the up-front development effort may not be worth the potential reductions in overall shore infrastructure cost. Therefore, additional analysis and study would be needed in the future before a cost reducing unit requirements determination process can be implemented.

The second part of our research approach was to develop a cost allocation model. Since the model could not be based on specific individual unit shore requirements, due to the current lack of detailed documentation, we based the model on allocating installation infrastructure costs to the units assigned to the installation. While the four

case study units were all operational units, the model accounts for all type of Navy units. The shore cost alloctaion model includes both operational units and shore-based units that support the operational units. We used the authorized billets and base population per unit as a basis for allocating the total shore costs between the different units.

As a pilot design for the cost allocation model, we produced shore cost reports for Naval Station (NAVSTA) Everett, Washington. The reports provided a listing of commands supported by the installation, with information on the type of command, the number of authorized billets, the estimated number of military dependents, and the total shore costs by financial category. The NAVSTA Everett reports showed that the cost allocation method would be useful Navy-wide. Therefore, our final task was to develop a model that would automate the cost allocation reports for the entire Navy. We named our model the Shore Cost Allocation Evaluator (SCALE).

When developing this model, we categorized and segmented Navy units into warfighting and support areas, determined which units have similar shore support characteristics, connected units to the installations supporting them, and captured the authorized personnel loading for each unit. We also linked the various financial obligations for shore support to the host installations.

We built the SCALE model using MS Access. The model uses four major data input groups. The first group is personnel data from the Navy Total Force Manpower Management System (TFMMS). This data contains the number of authorized billets for each unit in the Navy. Using these numbers, we estimate the number of dependents for each active duty military billet for each unit in the Navy. The second data group is the force structure laydown, which links each unit to a specific installation.[1] The third group contains information on the total shore certified obligations by funding type for each installation. The final group contains data on the facility inventories for

1. Technically, the force structure data links each unit to a specific physical location called a site. An installation is the managing command of a group of sites that are generally in close physical proximity.

each installation. This data is pulled from the year-end Navy inventories.

All of these data groups are linked to provide three metrics for each fiscal year. The primary metric is total shore cost per person by fiscal year. The second metric is the total shore cost per square foot equivalent (SFE) of area. These two metrics are important because installations vary in both the number of personnel supported and in the amount of space needed to effectively provide the support. The third metric is the square foot of administrative office space per full time billet. This metric is included because the amount of administrative space has been growing rapidly and the metric shows the variation in administrative space per billet across the Navy.

We found that the average shore cost per person was $6,428 in fiscal year (FY) 2010 and $5,926 in FY 2011, the average shore cost per SFE was $10.53 in FY 2010 and $9.39 in FY 2011, and the average administrative office space was 85.2 square feet (SF) per person in FY 2010 and 87.9 SF in FY 2011. In addition to the metrics, the SCALE model provides total shore cost expenditure allocated to individual Navy commands (weighted by personnel count).

We also chose a hypothetical question to demonstrate how the SCALE tool could be utilized to answer a typical force structure laydown question. The question we selected to analyze was: What was the estimated shore operational cost difference between homeporting a typical Arleigh Burke DDG destroyer at NAVSTA Pearl Harbor, Hawaii or NAVSTA San Diego, California in FY 2011? We estimated the cost to be about $3.5 million at NAVSTA San Diego and about $14 million at NAVSTA Pearl Harbor, for a difference of about $10.5 million.

The SCALE tool only provides the estimated shore operational cost difference and does not address shore capacity investments or one-time implementation costs. Additional facilities planning, such as the analysis provided by the Navy's quick excursion tool (QET) planning process, would be also needed to complete a rough order of magnitude (ROM) alternative analysis.

Introduction

The U.S. Navy manages more shore infrastructure than it can effectively support in today's budget-constrained environment. Many organizations and programs are competing for the same budget dollars. To help manage this challenge, the Navy has developed numerous models for assessing and determining requirements and performance risks for shore investment accounts. However, the Navy does not currently have a model that links the command laydown—the complete roster of units assigned to a site or installation—to shore infrastructure cost. The current budget process allocates funds to installations based on the inventory of assets currently at an installation, instead of allocating funds based on what is required by the naval units assigned to that installation. Under the current approach, the Navy may unwittingly be supporting excessive shore asset capabilities. In the current era of limited funding, this is wasteful spending.

Background

The Director, Shore Readiness Division (OPNAV N46) asked CNA to develop an improved process for determining current and future shore requirements for each Navy command. The current shore readiness programming process, which is a bottom-up approach, does not provide a Navy unit based shore cost metric to use for forecasting shore support requirements within the future years defense program (FYDP). The Navy sponsor wants to implement a top-down management process for programming current and future shore requirements based on the present inventory and forecasted changes of operational naval units. Understanding the individual Navy unit shore support requirement linkage to functional facility capacity and costs should improve the determination of overall Navy shore infrastructure requirements. There are distinct differences between how bottom-up and top-down programming processes are implemented and used.

Bottom-up programming process

The Navy currently uses a bottom-up process to create shore support budgets, but this method does not lend itself to reducing shore costs. Under the bottom-up process, each year all installations develop a roster of all assets at their respective installations, and they estimate how much it will cost to maintain and support each asset for the upcoming year. Then, the installations submit the aggregate budget estimate to their Navy budgeting office. The budgeting office sees the final result of this bottom-up process. This type of budgeting approach does not reflect the extent to which the individual shore assets are utilized by the naval units assigned to that particular installation. As a result, the budget office is unable to identify under utilized assets that could be reused or eliminated.

There are other problems associated with a bottom-up budgeting and planning approach. Specifically, it is difficult to control aggregate spending because all units operate at an individual level. Each unit views itself as operating optimally but there may not be an overall Navy wide optimization among the individual assets at installations. Another disadvantage to planning budgets using a bottom-up process is that it can lead those in charge of the department or command to ask for more funding than necessary to actually accomplish the mission.

Top-down programming process

Under a top-down process, the budget office would examine what is required at each naval installation and set a funding level for each. It would then be the installation's responsibility to develop an allocation model of the fixed budget to individual assets that would yield an optimal allocation. This process forces installations to set priorities among its assets, ensuring that spending is aligned with the needs of the installation.

The top-down approach is more attuned to identifying and reducing shore costs. In a bottom-up approach, the individual commands or organizations specify their funding needs for the assets under their control. In a sense, while the top-down approach seeks an optimal allocation of resources, the bottom-up approach is most concerned

with funding the existing assets. In either approach, if more funding becomes available to the installation, the installation must prioritize the functions at the installation in order to determine how the additional funding will be allocated.

Research approach

For the Navy to implement top-down programming, it must have a thorough understanding of shore requirements and cost, and it must know how the costs vary across units and installations. This study follows a two-pronged approach to assist in reducing future shore infrastructure costs.

We examined Navy force structure requirements to develop a documentation process to better define what capabilities and support individual Navy units actually need from the shore infrastructure. We also developed a cost allocation tool that quickly and easily provides an estimate of how the actual shore funding was obligated down to the individual unit level.

Our method for determining Navy unit shore requirements was to conduct proof-of-concept case studies of four different types of units. Each case study quantified the specific unit's shore requirements in terms of capability areas and shore function tasks for a specific installation. The requirements are reported in documents we created called the shore required operational capability (SHOROC) and the shore projected operational environment (SHORE POE).

The SHOROC and SHORE POE are patterned after the required operational capability (ROC) and the projected operational environment (POE) documents. The ROC and POE describe how an unit is supposed to operate, and the expected situations for the unit to operate in. In like manner, the SHOROC and SHORE POE documents describe in great detail the shore requirements necessary to support a specific unit.

The second part of our research approach was to develop a shore cost allocation model. Since the model could not be based on specific individual unit shore requirements, due to the current lack of

detailed documentation, we proposed a model that was based on allocating installation infrastructure costs to the units assigned to each installation. While the four case study units were all operational units, the model accounts for all type of Navy units. The shore cost alloctaion model includes both operational units and shore-based units that support the operational units. We used the authorized billets and base population per unit as a basis for allocating the total shore costs between the different units.

Our first step in the design process was to show that shore costs could be allocated to units and installations. We developed a pilot design for the shore cost allocation model using Naval Station (NAVSTA) Everett, Washington in fiscal year (FY) 2010 as the example. The pilot design showed that it is possible to link specific units to installations and, therefore, to determine an estimated allocation of shore costs that are reproducible, accurate, consistent, and defendable. The sample NAVSTA Everett reports confirmed that a unit cost allocation method would be useful Navy-wide.

After completing the pilot design, we developed a process that would produce cost allocations for all installations and units. Our final step was to develop a stand-alone model that would automate the cost allocation reports for the entire Navy. We named our model the Shore Cost Allocation Evaluator (SCALE).

The SCALE model links units to annual shore infrastructure costs. Beyond that, the modeling technique used may be of general interest to the Navy because it provides the link between units and specific sites or installations, thus providing crucial information on the location of units and personnel.

Research coordination with the Optimal Shore Footprint (OSF) Executive Leadership Forum (ELF)

The SCALE tool complements current Navy efforts to develop an OSF strategy. The OSF ELF is concerned with having the right amount of shore infrastructure at a site or installation that matches the calculated requirements at that installation. The OSF ELF's strategy is to look at future requirements and develop a plan that meets

the long-term needs without incurring unnecessary demolition or construction costs.

In support of the OSF strategy, the Navy has developed a scenario-based Quick Excursion Tool (QET) planning process which generates a rough order of magnitude (ROM) future shore cost estimate for force structure adjustments [1]. The QET is based on Microsoft Excel and consists of eight worksheets or tabs within a workbook. The process steps are:

- Scenario input information
- Complete feasibility assessment
- Create move table
- Input Facility Cost of Ownership Tool (FCOT) cost factors
- Develop parametric ROM cost
- Develop budget by FY
- List assumptions and concerns
- Summarize results

This tool provides a relatively rapid (1 week or less) feasibility assessment and ROM cost estimate for a potential force laydown adjustment. The cost estimate is based on one-time and recurring shore facility costs. However, it only provides one-time scenario estimates based on the FCOT developed unit costs. The FCOT unit costs are installation based prior year cost averages of facilities services, facilities planning, and utilities per square foot of installation footprint. While this is an important and useful new planning tool, it does not provide Navy-wide total cost allocation by unit information.

This research is important to the Navy and the OSF strategy because, with the impending FY 2013 budget adjustments, the Navy will have to better match shore costs of a given installation with the needs of the operational units assigned to that installation. The SCALE tool developed in this study compliments the Navy's current efforts and will help guide the programming process in future years.

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Shore requirement documents

One way to develop a top-down programming process is to specify the shore requirements for all naval units. Then, a budget model for the programming process could be built based on the total requirements of the units located at the installation.

In this section, we specify the unit shore requirements of four different types of Naval units as case studies. The shore infrastructure requirements are specified in two different documents, called the SHOROC and the SHORE POE, that we created for each of the units. We explain how the SHOROC and SHORE POE are patterned after each unit types' ROC and POE statements and how they might be used to better define shore support requirements in the future.

ROC and POE documents

For many years, the Navy has developed ROCs and POEs for almost all types of operating units. When combined, these two documents give a fundamental description of what the operating unit is, what its missions are, and the environment that it operates under. Usually, the two documents are constructed in tandem because not only does the POE describe where, in terms of physical location, the unit will be operating, but it also describes, to some extent, the general tasks or missions the unit will be required to perform. The ROC is generally a longer and more extensive document that identifies the specific and detailed capabilities the operational unit must possess to meet the specific and detailed mission descriptions.

While ROCs and POEs have been developed for almost all operational unit types, there has been no recent formal effort to identify and develop ROC- or POE-like documents for specific shore requirements for a given operational unit assigned to a specific shore location. Therefore, we used the fleet ROC and POE document

framework as a guide to create a SHOROC and SHORE POE for four different units in the Navy.

SHOROC and SHORE POE documents

A SHOROC is similar to a ROC in that both documents specify operating capabilities. The difference is that the ROC describes the capabilities that a unit type must have to execute its missions, while the SHOROC describes all capabilities the shore must provide to support a unit assigned to that installation. Not only does the SHOROC account for all of the shore function tasks required by the assigned unit, it also roughly quantifies the amount to which that unit utilizes shore assets. The SHOROC addresses the capabilities the shore must provide in terms of personnel loading (the number of people associated with the unit), and loadings related to capital equipment, supply, ordnance, and training for the unit. The aggregation of all SHOROCs for all units at an installation would yield the total capabilities required to adequately support all units assigned to that installation.

Table 1 provides the SHOROC document framework that we designed to capture a Navy unit's shore capability task support requirements.

Table 1. SHOROC document structure

Part	Section	Content
I - Unit characteristics	Unit identification code	Provides the unique six digit unit identifier
	Unit name	Provides the full name of the unit
	Photo and unit seal	Provides the official photo of the unit and the command seal
	Mission statement	Summarizes the unit's mission in a short narrative format
	Unit force protection level	Provides the level of shore unit force protection required
	Personnel loading	Provides the unit personnel authorized billet allowance and estimate of military dependents
	Capital equipment loading	Provides the authorized capital equipment allowance and general characteristics

Table 1. SHOROC document structure

Part	Section	Content
	Supply loading	Provides the normal authorized supply allowance requirements
	Ordnance loading	Provides the normal authorized ordnance allowance
	Training loading	Provides the normal authorized training requirements of simulators, classrooms, and ranges
II - Shore function task requirements	Waterfront operations capability area	Provides the support levels needed relating to the five shore function tasks under this capability area
	Airfield operations capability area	Provides the support levels needed relating to the six shore function tasks under this capability area
	C5ISR operations capability area	Provides the support levels needed relating to the five shore function tasks under this capability area
	Expeditionary operations capability area	Provides the support levels needed relating to the five shore function tasks under this capability area
	Inter/depot level maintenance capability area	Provides the support levels needed relating to the five shore function tasks under this capability area
	Ordnance/weapons operations capability area	Provides the support levels needed relating to the five shore function tasks under this capability area
	Training capability area	Provides the support levels needed relating to the seven shore function tasks under this capability area
	Logistics and supply capability area	Provides the support levels needed relating to the five shore function tasks under this capability area
	Sailor and family capability area	Provides the support levels needed relating to the 11 shore function tasks under this capability area
	Utilities capability area	Provides the support levels needed relating to the seven shore function tasks under this capability area
	Base support capability area	Provides the support levels needed relating to the 17 shore function tasks under this capability area
	RDAT&E capability area	Provides the support levels needed relating to the two shore function tasks under this capability area
III - Shore support indices	Base loading support index	Provides a 0 to 100 weighted index for shore service task intensity of support requirements by SCA, SCA group, and as an entire unit.
	Strategic loading support index	Provides a 0 to 100 weighted index for shore service task breath of support requirements by SCA, SCA group, and as an entire unit.

A SHORE POE is similar to a POE in that both documents specify an anticipated operating environment for the unit. The difference is

that the SHORE POE describes the type of unit assigned to the installation and the operating conditions at that installation. The POE describes the environment the unit will be expected to operate in. The SHORE POE describes the shore environment that is necessary for the unit to operate. For example, the SHORE POE gives the deployment status and typical fleet response plan (FRP) cycle that unit will be under. In addition, if there are multiple units assigned to an installation, the SHORE POE provides the supporting and supported role relationships between the different commands.

Table 2 provides the SHORE POE document framework that we designed to capture a Navy unit's shore operating environment charteristics.

Table 2. SHORE POE document structure

Part	Section	Content
I - Unit identification	Unit identification code	Provides the unique six digit unit identifier
	Unit name	Provides the full name of the unit
II - Unit concept of operation	Readiness type	Provides the units current or future warfighter/shore readiness type
	Mission type	Provides the unit's mission type classification
	Deployment status	Provides the deployment status code and typical fleet response plan (FRP) schedule
III - Unit organizational placement	Organizational hierarchy	Provides the unit's administrative chain of command by echelon
	Unit support dependencies	Provides a matrix showing unit's relationship to other units at higher, peer, and lower echelon levels, inside and outside of the enterprise, with supported and supporting roles

A major difference between a ROC/POE and a SHOROC/SHORE POE for an operational unit is that a single ROC/POE is sufficient for all operational units of the same type, regardless of where that unit is assigned. However, there would be a unique SHOROC/SHORE POE documents for each individual unit at each installation. This is necessary because each SHOROC/SHORE POE is a joint description of

the unit's shore requirements and the installation characteristics where it is located.

Four case studies

As case studies, we created the SHOROC and SHORE POE documents for four different types of units in the Navy. We selected four random units from four separate installations to represent a wide variety of locations and unit types. For the case studies, we chose the following four commands:

- N09610 - VP (Aviation Patrol)-26 *Tridents* Patrol Squadron, Naval Air Station (NAS), Jacksonville, Florida
- N20994 - SSN-713 *Houston*, NAVSTA Guam, Marianas Islands
- N22994 - DDG-86 *Shoup*, NAVSTA Everett, Washington
- N55451 - NMCB-133 Seabee Battalion, CBC Gulfport, Mississippi

Appendixes A through D present the SHOROC and SHORE POE for each of these commands along with a summary of each document.

After completing the SHOROC and SHORE POE for each sample unit, we observed that having similar detailed shore requirement information for each unit assigned to an installation would make it much easier for the Navy to match force structure shore requirements against existing shore support capacity. We presented the case studies to our Navy sponsor as examples of what could be done to better define and quantify individual Navy unit shore requirements. With a better understanding of the current unit shore requirements, overall cost could be reduced by adjusting the shore infrastructure support capacity to align closer to force structure requirements. This would help define the optimal total shore footprint requirements.

However, it was also clear that developing a SHOROC and SHORE POE for each unit in the Navy would be a very costly and time consuming process since the Navy has over 6,000 active units. The sponsor was concerned that the up-front development effort may not be worth the potential reductions in overall shore infrastructure cost.

Therefore, additional analysis and study would be needed before a cost reducing requirements determination process using this kind of planning documentation can be implemented.

Shore cost allocation model development

This section explains the development process of the Navy-wide shore cost allocation model which we named the Shore Cost Allocation Evaluator (SCALE). The first section discusses the accounting principles of Activity-Based Costing (ABC) that highlights the value-added of this kind of financial accounting model. Then, we briefly explain the pilot example that was completed to ensure that a Navy-wide model was feasible within the scope of the study. Finally, we discuss in detail the inputs, outputs, assumptions and results of the SCALE.

Activity-based costing

The SCALE tool is designed around the accounting idea of ABC. In industry, ABC is used to assign overhead costs to specific activities and outputs. At a fundamental level, the support provided by the shore to the operational units assigned to a particular naval installation is an overhead function. Therefore, the costs incurred by the shore are overhead costs. Overhead costs are defined as "those costs that cannot be assigned exclusively to any particular product, project, process, or activity. In traditional cost accounting, overhead includes cost support services. ABC takes a much narrower view of overhead costs and strives to include only organizational activities in it." [2]

Whereas the Navy can assign and identify the direct costs of operating a surface ship, (fuel, repair parts, food and supplies for the crew, wages, etc.,) the Navy is not able to link and identify the overhead costs to a particular ship assigned to a shore location. For example, the USS *Shoup*, an Arleigh Burke class destroyer, is homeported at NAVSTA Everett, Washington. Presently, the Navy is not capable of directly assessing and identifying the overhead costs that can be directly attributable to the USS *Shoup*. The Navy can identify the total cost of operating the shore but cannot link these costs to specific naval units. Moreover, the shore overhead costs are not incurred at

the same rate as the direct effort of supported units. ABC accounting allocates costs more accurately when this is the case.

Earlier in this report, we discussed the differences between top-down and bottom-up approaches to budgeting for shore costs. In a bottom-up budgeting process, shore work centers specify the amount of funding needed to provide an appropriate level of service. This represents a traditional approach to accounting. The ABC approach is aligned with the top-down budgeting process. ABC accounting would identify how much it should cost to support the operational unit at the installation and then allocate that funding amount as part of the total allocated to the installation. In the ABC approach, costs are tied directly to an operating unit and not to support the current asset inventory of the shore.

The SCALE model is a step towards an ABC accounting approach and a top-down budgeting process. The model determines the average shore cost per person at each installation. Then, an estimate of the total shore cost for a unit equals the total number of people in a unit times the average shore cost for that installation. The SCALE allows the budget maker to estimate how shore costs should change with the introduction or removal of units at an installation instead of relying on specific one-time data calls to shore work centers.

The main limitation preventing the SCALE from following standard ABC accounting methodology is that the SCALE assigns overhead costs to an input activity rather than an output activity. Ideally, the overhead cost would be allocated to a unit based on the measurable output of value added to the Navy. However, it is impossible to measure the value added of a unit, so the SCALE assigns cost based on the number of people in that unit. The model is assigning shore costs based on an input, number of people in unit, rather than an output, the value added of the unit.

FY 2010 NAVSTA Everett, Washington, pilot design

In this section, we discuss the pilot model that was implemented for NAVSTA Everett, Washington during FY 2010. The purpose of the pilot was to determine whether unit-installation links can be identi-

fied, which is necessary to allocate shore costs to individual units and installations. Our initial calculations were done manually, before the full-fledged version of the model was built. There are four essential data inputs to this process:

1. Personnel data: We used the Total Force Manpower Management System (TFMMS) to calculate the billet structure (by billet and paygrade) as well as Navy-wide averages for the number of dependents, by paygrade, for each unit identification code (UIC) organization.

2. Unit location data: We assigned units to sites using the NAVSO P-1000-25, a document which provides the Navy's official UIC list, along with city and state for each UIC. We assigned a specific Navy site to each unit based on the city and state listed. Each installation in the Navy is a collection of Navy sites, so the P-1000-25 provided the link between unit and installation.

3. Shore costing data: We extracted cost requirements information from the Office of the Secretary of Defense's (OSD's) installations and environment web site. Specifically, the Facilities Sustainment Model (FSM) provided sustainment requirements (ST) data, and the Facilities Modernization Model (FMM) provided restoration and modernization (RM) data. We used actual FY 2010 total base operating support (BOS) obligation information for NAVSTA Everett to determine the BOS costing contribution.[2]

4. Inventory data: The internet Navy Facility Assets Data Store (iNFADS) provided the installation inventory characteristics. We used the inventory to determine the total plant replacement value (PRV) and total number of facilities at each installation. Additionally, we calculated the total area measured in square foot equivalents (SFE).

Using the data inputs, we calculated the cost per unit, based on requirements. First, we calculated the cost of shore support for the

2. The tables are available for download from the OSD Installations & Environment web site [3].

entire installation, which ultimately allowed us to derive a cost per person. Specifically, total installation requirements cost is BOS+(0.9*ST)+(0.5*RM). Navy programming policy sets each of these requirements as a percentage of the total, and has recently funded ST at 90 percent, and RM at 50 percent. Since we used actual obligations for BOS funding, we set the programming to 100 percent. As illustrated in figure 1, this results in a total annual support cost of $42,768,511 for NAVSTA Everett. Second, the sum of total full-time billets authorized and dependents provides the total population for the installation—15,135 in this case. Finally, we divide the total annual support cost by the total population to arrive at the cost per person: $2,825.

After calculating the cost per person for the installation as a whole, we then applied the cost to each unit (by multiplying the per person cost by the size of the unit's total population). A few examples of the resulting UIC-level calculations are displayed in figure 2. As explained above, the sum of dependents and total full time (FT) personnel (which is the sum of numerous types of billets authorized) equals total loading, or total population size. This number multiplied by $2,825 (the per person cost) gives the total cost of shore support, the ultimate output. For UIC N0118A, Commander, Destroyer Squadron Nine (COMDESRON 9), with a total loading of 80, the total cost of shore support is $226,064.

Figure 1. Installation-level cost calculations for NAVSTA Everett

Navy Shore Requirements Model - Facilities Cost of Ownership (FCOT)

Fiscal Year:	2010	Total Commands:	44	Total PRV:	$982,629,673
Installation UIC:	N68967	Total Full Time BA:	5,221	Total Number of Facilities:	738
Installation Title:	NAVSTA Everett, WA	Population:	15,135	Total Footprint (SFE):	3,880,086
RPSUID:	198	Population Unit Cost:	$2,825.80	Total Annual Support Cost:	$42,768,511

Cost Sector	FY 2010	Prog Level	Annual Support	Unit Cost
BOS	$22,457,897	100%	$22,457,897	$1,483.84
ST	$15,608,007	90%	$14,047,206	$928.13
RM	$12,526,815	50%	$6,263,408	$413.84
Totals	$50,592,719		$42,768,511	$2,825.80

Footprint Unit Cost: $11.02

Figure 2. Snapshot of a few unit-level cost calculations at NAVSTA Everett

SUPPORTED COMMANDS					BILLETS AUTHORIZED									POPULATION		COSTING
UIC	Unit Name	Unit Type	Unit Status	BSO	AD ENL	AD OFF	CIVIL SER	CNTR	FN DIR	FN INDIR	FTS	SELRES	TOTAL FT	DEPENDENTS	TOTAL LOADING	SHORE SUPPORT
N0118A	COMDESRON 9	COMD	Warfighter	PAC	11	11							22	58	80	$226,064
N21235	FFG 54 FORD	SHIP	Warfighter	PAC	170	14					2		186	370	556	1,571,146
N21297	CVN 72 ABRAHAM LINCOLN	SHIP	Warfighter	PAC	2,920	157							3,077	5,815	8,892	25,127,031
N21391	FFG 60 RODNEY M DAVIS	SHIP	Warfighter	PAC	121	10					55		186	373	559	1,579,623
N21430	FFG 61 INGRAHAM	SHIP	Warfighter	PAC	172	14							186	369	555	1,568,320
N22994	DDG 86 SHOUP	SHIP	Warfighter	PAC	249	24					3		276	558	834	2,356,719
N23160	DDG 92 MOMSEN	SHIP	Warfighter	PAC	251	24					1		276	558	834	2,356,719

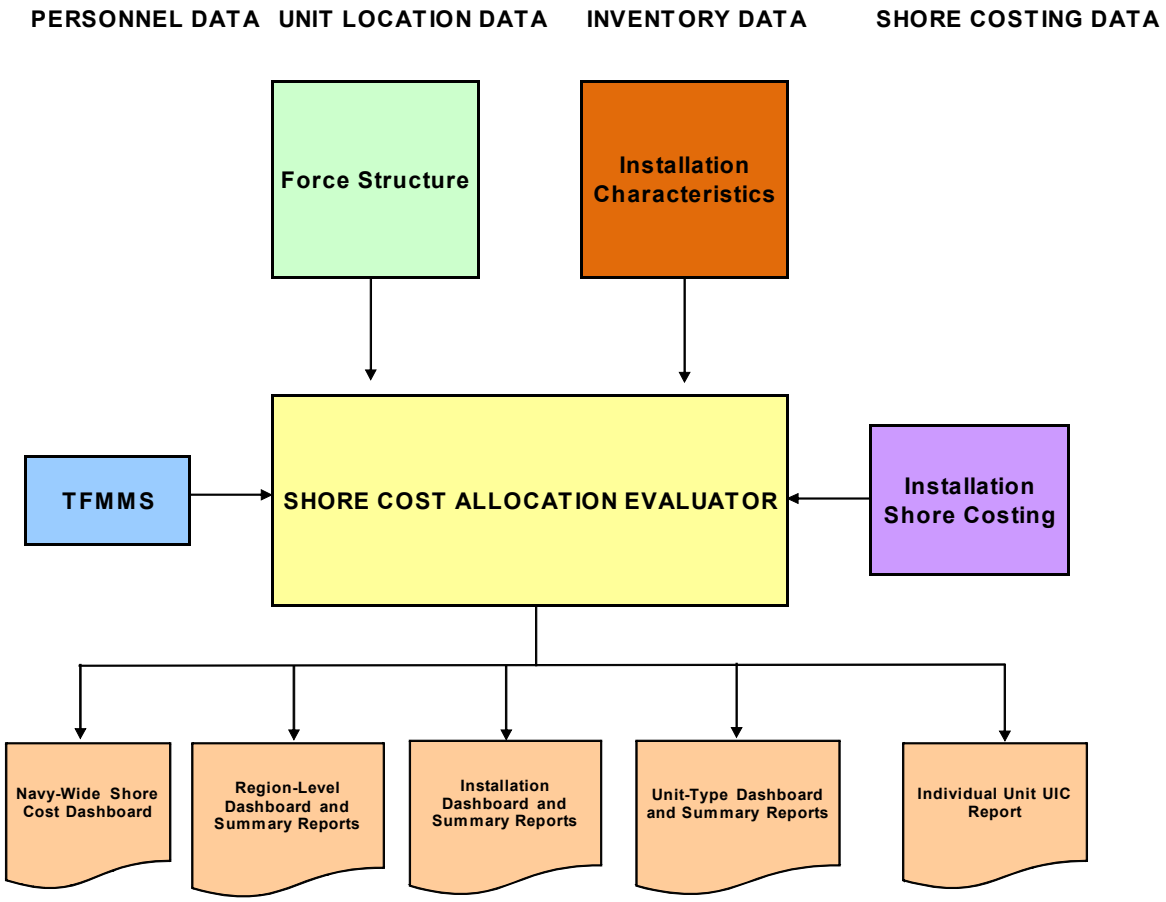
Upon the successful completion of the pilot, we extended our work to the full-fledged SCALE model that would produce cost allocations for all installations and units throughout the Navy. We learned two main lessons from this pilot exercise. The first is that we *would* be able to assign units to installations, thus making our process of starting with installation-level costs and then applying the appropriate multiplier to each individual unit a feasible strategy. Second, we learned that, although our pilot was based on creating per unit costs from requirements data, starting with actual installation *costs* would be more appropriate. Thus, as we transitioned from our pilot to building the model, we moved from a requirements-based to an obligated cost-based framework.

SCALE model design concept

The FY 2010 NAVSTA Everett pilot study provided the template for the Navy-wide SCALE tool. We expanded the model to include both FY 2010 and FY 2011. Figure 3 provides a graphical representation of the model showing its inputs and outputs. The four categories of inputs are personnel authorizations, unit locations, shore inventory information, and shore cost data. The five categories of outputs are Navy-wide reports, region-level reports, installation-level reports, unit type-level reports and individual unit reports. All of the data inputs are MS Access tables that are linked to produce the outputs. In the

next sections, we explain how the inputs are used to produce the outputs.

Figure 3. SCALE model conceptual inputs and outputs



Data inputs

The four data input groups were briefly explained in the pilot study section. This section goes into more detail about each of these groups and explain how each group is used in the model. The structure for the personnel data group and the force structure data group were not

changed from the pilot study. The other two data input groups, the shore costing data and the inventory data, were changed after we completed the pilot study and we discuss the changes below.

Personnel authorizations

The end-of-FY 2010 and end-of-FY 2011 TFMMS data tables were extracted and inserted into the model. As mentioned earlier, TFMSS provides the number of billets by pay grade for each unit. TFMMS provides the billet counts for civilians, officers, and enlisted sailors. TFMMS allows the billets to be broken into different work types. The SCALE tool shows the total number of civilian billets in each the following categories: civil servants (CIVIL SER), contractors (CNTR), non-appropriated fund workers (NAF), foreign national direct hires (FN DIR), and foreign national indirect hires (FN INDIR). The military billets are broken out into: active-duty enlisted (AD ENL), active-duty officers (AD OFF), full-time service reservists (FTS), and selected reservist (SELRES). The total full-time (TOTAL FT) billets for each unit is equal to the sum of all the civilian and military categories excluding the SELRES.

In addition to the full-time billets, the shore supports the dependents for of all the AD ENL and AD OFF. We use the average number of dependents per pay grade to calculate the estimated number of dependents for each unit. The TOTAL FT plus the sum of the dependents is the estimated population count for each unit.

The personnel table structure consists of two data input tables and three reference tables used for filtering. Tables 3 and 4 provide data directly from TFMMS end-of-fiscal year extracts.

Table 3. Personnel data table structure

Field label	Field name	Data type
UIC	Unit identification code	Text
ANAME	Activity name	Text
SEA_SHORE	Sea/shore type duty code	Text
CA_FUNC	Commercial activities function code	Text
MRC	Manpower resource code	Text

Table 3. Personnel data table structure

Field label	Field name	Data type
MPWR_CAT	Civilian manpower category	Text
CIV_FUND	Civilian funding source	Text
A_GRADE	Authorized officer pay grade code	Text
A_E_GRADE	Authorized enlisted pay grade code	Text
R_PAYPLN	Civilian pay plan code	Text
R_OCCSRS	Civilian occupational job series	Text
R_PAYGRADE	Civilian pay grade rating	Text
A_CFY	Authorized current fiscal year billets	Number
FISCAL_YEAR	Fiscal year	Number

Table 4. Activity list data table structure

Field label	Field name	Data type
AUIC	Activity unit identification code	Text
ANAME	Activity name	Text
BSO_NAME	Budget submitting office name	Text
BSO_CODE	Budget submitting office code number	Text
LOCATION	Closest city name and state or country	Text
SEA_SHORE	Sea/shore type duty code	Text
FISCAL_YEAR	Fiscal year	Number

The three reference tables only have to be updated when changes occur in the definitions or in number of categories. The Navy labor type codes are used to filter the billet counts into the standard labor type categories mentioned above. Table 5 provides the structure for this reference table.

Table 5. Navy labor type code reference table structure

Field label	Field name	Data type
LABOR_TYPE_ID	Labor type identification number	Number
LABOR_TYPE	Labor type code	Text
LABOR_TYPE_DESCRIPTION	Labor type description	Text
MRC	Manpower resource code	Text
MPWR_CAT	Civilian manpower category	Text

We also need to filter the active duty billet counts by grade to estimate the total dependent counts. This information allows us to calculate the estimated dependent population for each unit. The information is found in UFC 2-000-05N [4] as part of table 710-2 Navy and Marine Corps Personnel Averages (1992 Data). Table 6 provides the structure for this reference table.

Table 6. Navy dependents reference table structure

Field label	Field name	Data type
GRADE_CODE	TFMMS billet grade code	Text
GRADE	Pay grade code	Text
RANK	Pay grade rank title	Text
SPOUSE_RATIO	Percentage of active duty married	Number
DEPENDENT_FACTOR	Average number of dependents per active duty billet	Number

The final personnel table allows us to consolidate the individual inherently governmental commercial activity (IGCA) function codes into broader levels of functional sub-groups and groups. Table 7 provides the structure for this reference table.

Table 7. IGCA function list reference table structure

Field label	Field name	Data type
CA_ID	Commercial activity identification number	Number
IGCA_CODE	Commercial activity function code	Text
IGCA_CODE_TITLE	Commercial activity code title	Text
IGCA_GROUP_CODE	Commercial activity group code	Text
IGCA_GROUP_TITLE	Commercial activity group title	Text
IGCA_SUBGROUP_CODE	Commercial activity subgroup code	Text
IGCA_SUBGROUP_TITLE	Commercial activity subgroup title	Text

Force structure laydown

The force structure laydown table consists of three data input tables and two reference tables used for filtering. Tables 8, 9, and 10 provide data directly from the NAVSO P-1000-25, iNFADS activity and installation listings, and Standard Navy Distribution List (SNDL) end-of-fiscal year extracts. The intent of the force structure data group is to assign each Navy unit to a specific site which can then be consolidated with the total cost obligations by installation.

Table 8. Force structure data table structure

Field label	Field name	Data type
UIC	Unit identification code	Number
UNIT_NAME	Unit name	Text
UNIT_TYPE	Unit type of mission	Text
READINESS_TYPE	Readiness type	Text
DEPLOYMENT_CODE	Deployment status code	Number
MISSION_CLAIMANT	Unit mission claimant	Text
ECHELON_LEVEL	Navy organizational echelon level	Number
RPSUID	Real property site unique identifier	Number
ENTERPRISE	Navy enterprise	Text
FORCE_PROTECTION_LEVEL	Shore force protection level	Number
FISCAL_YEAR	Fiscal year	Number

Table 9. Geo site locations data table structure

Field label	Field name	Data type
SITE_CODE	Site code	Number
SITE_NAME	Site name	Text
SITE_COUNTY	Site county	Text
SITE_CITY	Site city	Text
SITE_STATE	Site state	Text
SITE_ZIP_CODE	Site postal zip code	Number
SITE_COUNTRY	Site country	Text
SITE_TYPE_CODE	Site type code	Text
ACREAGE	Total site acreage	Number

Table 9. Geo site locations data table structure

Field label	Field name	Data type
INSTALLATION_UIC	Installation unit identification code	Text
FISCAL_YEAR	Fiscal year	Number

Table 10. Navy installation data table structure

Field label	Field name	Data type
INST_UIC	Installation unit identification code	Text
INST_NAME	Installation name	Text
IINST_COUNTY	Installation county	Text
IINST_CITY	Installation city	Text
INST_STATE	Installation state	Text
INST_ZIP_CODE	Installation postal zip code	Number
INST_COUNTRY	Installation country	Text
DEPENDENTS	Dependents authorized at installation (Y/N)	Text
REGION_UIC	Navy region unit identification code	Text
REGION_NAME	Navy region name	Text
FISCAL_YEAR	Fiscal year	Number

Tables 11 and 12 provide the look-up information in order to consolidate the units into deployment type and enterprise groups.

Table 11. Navy deployment code reference table structure

Field label	Field name	Data type
DEPLOYMENT_TYPE_ID	Deployment type identification code	Number
TYPE_DUTY_CODE	Type of duty code	Number
DEPLOYMENT_TYPE_DESCRIPTION	Deployment type description	Text
DEPLOYMENT_STATUS	Deployment status code	Text

Table 12. Navy enterprise list reference table structure

Field label	Field name	Data type
ENTERPRISE_ID	Navy enterprise identification number	Number
ENTERPRISE_CODE	Navy enterprise code	Text
ENTERPRISE_NAME	Navy enterprise name	Text
ENTERPRISE_TYPE	Navy enterprise type	Text

Shore cost

In the pilot design, we used shore requirements as calculated by the OSD facility budget requirement models to determine the per person cost burden on the shore. After completing the pilot, we realized it would be more beneficial to use actual obligated costs instead of estimated requirements to determine the per person cost. The Base Operating Support (BOS), Sustainment (ST), and Restoration & Modernization (RM) requirements used in the pilot study are theoretical numbers used to help guide programming policy. They do not represent the actual amount spent by an installation. Additionally, OSD only produces cost requirements for ST and RM. These two categories do not represent all the shore cost categories for the Navy.

To account for the majority of shore cost categories, we obtained BOS, ST, RM, Family Housing Operations (FHOPS), Demolition (DE), New Footprint (NF), and Military Construction, Navy/Navy Reserve (MCON) certified obligated dollars by installation. All of these costs were provided by Commander, Naval Installations Command (CNIC).

BOS and FHOPS are the costs necessary to support the people at a site. The main costs in the BOS category are public safety costs such as fire and rescue services and force protection services, and facility support costs such as utility bills and facility management costs. FHOPS are costs associated with managing and maintianing family residences for the active duty sailors and their dependents.

ST and RM costs are similar in that both are used to maintain current facilities. OSD defines ST as “maintenance and repair activities necessary to keep an inventory of facilities in good working order” and RM as the costs “necessary to restore degraded facilities to working condi-

tion beyond design service life or to fix accidental damage" or "necessary to upgrade facilities to new standards or functions." [5]

DE, NF, and MCON costs are the costs associated with the creation or destruction of new facilities. DE costs are the costs of removing buildings and NF costs are the costs of constructing new buildings. These costs come from special projects. MCON are similar in that they are also costs from construction of new buildings or major renovations, however these costs come from projects that must be individually approved by Congress.

These costs categories encompass the range of shore costs. Using the actual costs allows the model to determine actual cost per person for each of the installations and units. Table 13 shows the total FHOPS, BOS, ST, and DE obligated costs for the Navy, and Table 14 shows the total RM, NF, and MCON costs.

Table 13. Total FHOPS, BOS, ST, and DE obligated costs for FY 2010 and FY 2011

Fiscal year	Number of installations	FHOPS	BOS	ST	DE
2010	78	$350,441,488	$3,876,692,421	$1,467,989,558	$72,080,155
2011	76	$355,587,082	$3,938,992,467	$1,625,915,420	$16,603,543

Table 14. Total DE, NF, and MCON obligated costs for FY 2010 and FY 2011

Fiscal year	Number of installations	NF	RM	MCON (NF)	MCON (RM)	Total
2010	78	$7,313,046	$330,153,811	$737,134,000	$712,977,000	$7,554,781,479
2011	76	$0	$388,986,347	$400,971,000	$243,505,000	$6,980,560,859

The shore cost table structure also consists of a single data input table. Table 15 is from certified Navy annual obligation records and

contains an end-of-fiscal year summary for the different shore funding areas.

Table 15. Navy shore cost data table structure

Field label	Field name	Data type
BUIC	Billable unit identification code	Text
BUIC_NAME	Billable unit identification code name	Text
FHOPS	Family housing operations obligations	Currency
BOS	Base operating services obligations	Currency
ST	Sustainment obligations	Currency
DE	Demolition obligations	Currency
NF	New footprint obligations	Currency
RM	Restoration and modernization obligations	Currency
MCON_(NF)	Military construction (new footprint)	Currency
MCON_(RM)	Military construction (restoration and modernization)	Currency
FISCAL_YEAR	Fiscal year	Number

Shore inventory

Similar to the pilot, we used the Navy inventory for FY 2010 and FY 2011 to calculate the total PRV, total number of facilities, and total SFE at each installation. After completing the pilot study, we added the total area of administrative office space so that we could calculate the administrative space per billet metric. We included this area in the final design because administrative space has been growing quickly in the past decade. This metric allows the model to show how the amount of administrative space varies across installations. Table

16 shows the total amounts for each category of the installation inventory data input.

Table 16. Facility inventory summary statistics

Fiscal year	Total number of facilities	Total PRV (Billions $)	Total SFE	Total Administrative SF
2010	114,329	$209.6	717,598,651	47,121,950
2011	116,191	$207.4	743,368,470	49,147,557

The shore inventory table structure consists of a single data input table. Table 17 is from iNFADS and contains the inventory summary end-of-fiscal year extracts.

Table 17. Navy shore installation inventory data table structure

Field label	Field name	Data type
INST_UIC	Installation unit identification code	Text
INST_NAME	Installation name	Text
RPSUID	Real property site unique identifier	Number
TOTAL_PRV	Total plant replacement value	Currency
FACILITY_COUNT	Total facility count	Number
TOTAL_FOOTPRINT_(SFE)	Total footprint area in square feet equivalents	Number
TOTAL_ADMIN_(SF)	Total administrative office area in square feet	Number
FISCAL_YEAR	Fiscal year	Number

Modeling assumptions

There are several assumptions we made in order to complete the cost allocation model. They can be grouped into the four data input categories; personnel, force structure, costing, and infrastructure inventory.

Personnel assumptions

There are four key assumptions used for the base populations calculations.

- Only full time authorized billets from TFMMS are included within the metric calculations (Part-time selective reserve billets are not counted)
- Only billets assigned to Navy UICs with a specified location are included
- The Navy personnel dependent averages by grade found in UFC 2-000-05N are still accurate and fairly uniform across the entire Navy
- TFMMS student billets to the training unit at a specific loaction and the student billets are included in the installation billet count. However, students do not necessarily train at that the assigned billet location.

Force structure assumptions

There is only one assumption relating to force structure calculations.

- All Navy units assigned to a given installation are assumed to benefit from all shore investments provided to their host installation

Costing assumptions

There are five key assumptions used for shore costing calculations.

- Only direct appropriations that are programmed by OPNAV N46 are captured
- Reimbursables and rate structure shore support (i.e., Navy Working Capital Fund (NWCF)) are not included
- Cost obligations are location specific—All shore support funds obligated by units at an installation are considered that installation's expenditure

- Cost allocation is based on base population totals allocated by unit billet allowances and dependent loading
- All cost obligations are in current year dollars

Infrastructure inventory assumptions

There is only one assumption relating to infrastructure inventory calculations.

- SFE area quantities are converted at that specific installation's SF to PRV ratio rather than using a Navy-wide ratio

Report outputs

The SCALE tool provides two different aspects of analysis as outputs. The first is an organizational view which has four categories of analysis. The views provided are:

- Individual unit view
- Installation view
- Region view
- Navy-wide view

Each of these views provide options for selecting an overall metric calculation by fiscal year and more detailed summary reports.[3]

3. The model does not produce reports that aggregate installations into Fleet concentration areas, such as San Diego, CA or Norfolk, VA, where there are multiple installations in close proximity that provide some level of support to each other. However, the model user could calculate the metrics for a defined concentration area by producing inslattion reports for each installation in the area and calculating the metrics using the totals from these reports.

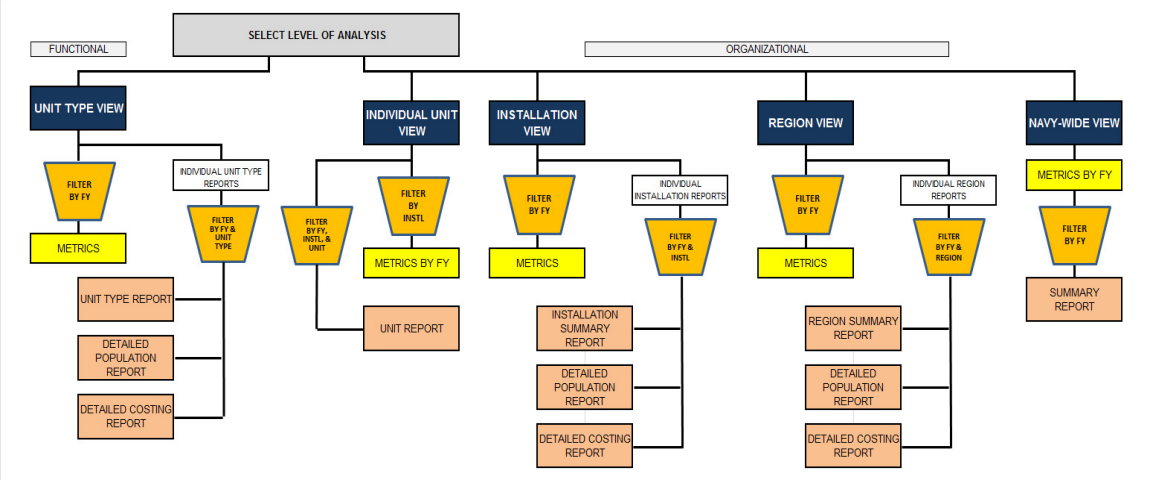
The other aspect of analysis is based on a functional view. This view is based on a unit mission function categorizations as listed in table 18.

Table 18. Navy unit mission type code reference table

Unit mission type code	Unit mission type description
ADMIN	Administrative support
COMD	Command and control
COMM	Communications and automated data processing
EXPD	Expeditionary unit
HELO	Rotary-wing aircraft squadron
LOG	Logistics support
MED	Medical and dental
PLANE	Fixed-wing aircraft squadron
RDTE	Research development and technical evaluation
RES	Reserve
SHIP	Ship or vessel
SHORE	Shore support
SUB	Submarine
TRAIN	Education and training

This view also provides options for selecting an overall metric calculation by fiscal year and more detailed summary reports. Figure 4 provides a diagram of the output reporting structure.

Figure 4. SCALE tool output reporting structure diagram



The blue boxes represent the view selection lines on the main screen of the tool. The first screen that opens is a combination filter screen and metrics summary report. From this screen, further reporting options can be selected. We will describe each of these report views and output reports in more detail.

Individual unit reports

The individual unit view is the deepest level of analysis that can be done with the tool. The first screen is a combination screen that allows selection of all units located at a particular installation. This view provides a bar chart by fiscal year of the total shore obligation allocation amount by every unit located upon a specific installation. The default installation is N00128, NAVSTA Great Lakes, Illinois. If the cursor pointer is placed on the bar of interest, a reference box appears that provides the total dollar amount with installation and

unit UICs. A drop-down box allows for the selection of other installations to view.

The selection box in the upper right hand corner of the view allows for the retrieval of individual unit profiles. The filter box has drop-down windows for filter criteria. The first window is for selecting the fiscal year. The second is to select an installation. Once an installation is selected in the drop-down window, the master UIC list is pre-filtered to provide only units located at that installation. The report can either be a specific unit profile, or if the unit drop-down window is blank, a summary list of units at the selected installation. The individual profile sheet has information sections of designation, organizational information, requirements (force protection level), key metrics, unit population, and authorized billets.

Installation-level reports

The installation-level view is the next highest level of analysis that can be done with the tool. The first screen is a combination screen that provides the cost per SFE, cost per individual, and administrative area per full-time individual for each installation. The default view is for the most current fiscal year. A drop-down box allows for the selection of other fiscal years.

The selection box in the upper right hand corner of the view allows for the retrieval of individual installation reports. The filter box has drop-down windows for filter criteria. The first window is for selecting the fiscal year. The second is to select an installation. Three different report options are provided. This first is a metrics summary report which has the information categories of designation, infrastructure, base population, metrics graphs, and total cost sector amounts. The other reports provide detailed base population and cost breakdown information about the installation. These reports can have more that one page of information and can be printed by simply clicking on the report page and executing a print command from the MS Access menu bar.

Region-level reports

The region-level view provides one organizational step higher of summary information and has the same features as the installation-level view except that regional averages and totals are provided. The individual region reports are similar in format to the three installation reports except the regional reports also provide a listing of the individual installation information that makes up the regional roll-up numbers.

Navy-wide reports

The navy-wide view provides the highest level of organizational summary information which results in a different reporting framework. The first screen is a combination screen that provides the overall Navy cost per individual, cost per SFE, and administrative area per full-time individual for each fiscal year.

The selection box located under the report heading allows for the retrieval of specific fiscal year information. The filter box has a drop-down window for filter criteria. The only window available is for selecting the fiscal year. When a fiscal year is selected, and the get report action is executed, a Navy-wide profile is generated for that fiscal year. It has summary information for total infrastructure, total base population, total shore cost sectors, total authorized billets, the three Navy-wide metrics results, and a cost sector pie chart. This information current fits onto a single report page.

Unit type level reports

The final aspect of analysis is based on a functional view. This view is based on a unit mission function categorizations and has the same reporting structure as the installation and region view levels of analysis. However the reports are summarized by unit mission type as defined in table 18. The first screen is a combination screen that provides the average cost per individual for each unit mission type. The default view is for the most current fiscal year. A drop-down box allows for the selection of other fiscal years.

The selection box in the upper right hand corner of the view allows for the retrieval of individual unit mission type reports. The filter box has drop-down windows for filter criteria. The first window is for selecting the fiscal year. The second is to select a mission unit type. Three different report options are provided. The first summary report has designation, base population, and average cost per individual on base information for that unit mission type. It also has a cost sector total obligation table that is segmented into the installations which host this kind of unit mission type. The other reports provide detailed base population and cost breakdown information about the mission unit type. These reports can have more that one page of information depending on how many installations host this type of unit.

We loaded the prototype tool with the best source data we could obtain and generated the following aggregate results for FY 2010 and FY 2011.

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SCALE results

This section presents the main results from the SCALE tool.[4] We developed three metrics to summarize shore infrastructure costs and support. The metrics are described along with a breakdown of how the metrics vary across years and installations. Also, we show how the tool is able to report the variation in unit cost across installations for different unit types. Finally, we use the tool to answer a hypothetical force laydown question.

Shore cost per person

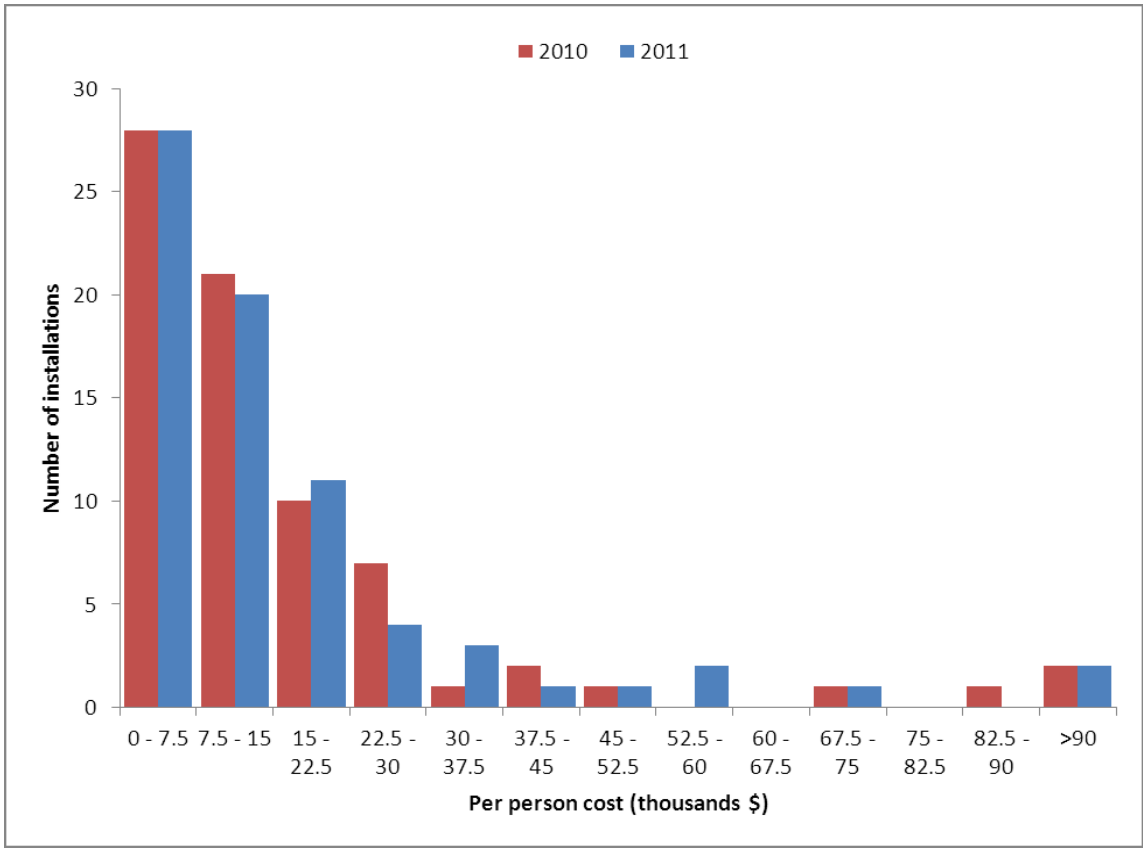
The first metric is the Navy-wide shore cost per person. The SCALE adds together all eight categories of shore costs to get the total shore cost and also calculates the total population for the entire Navy.[5] Then, the shore cost per person equals the total shore cost divided by the total population. This metric was equal to $6,428 in FY 2010 and $5,570 in FY 2011.

4. These values represent the best estimate at this time. Future work to validate the input data is necessary to certify the force laydown structure.

5. As was described earlier, the total population is equal to the sum of the full-time military and civilian billets plus the estimate of dependents for the active duty military billets.

This metric is also calculated for each installation. Figure 5 shows the distribution of the shore cost person metric across installations for FY 2010 and FY 2011.

Figure 5. Per person cost metric histogram for FY 2010 and FY 2011

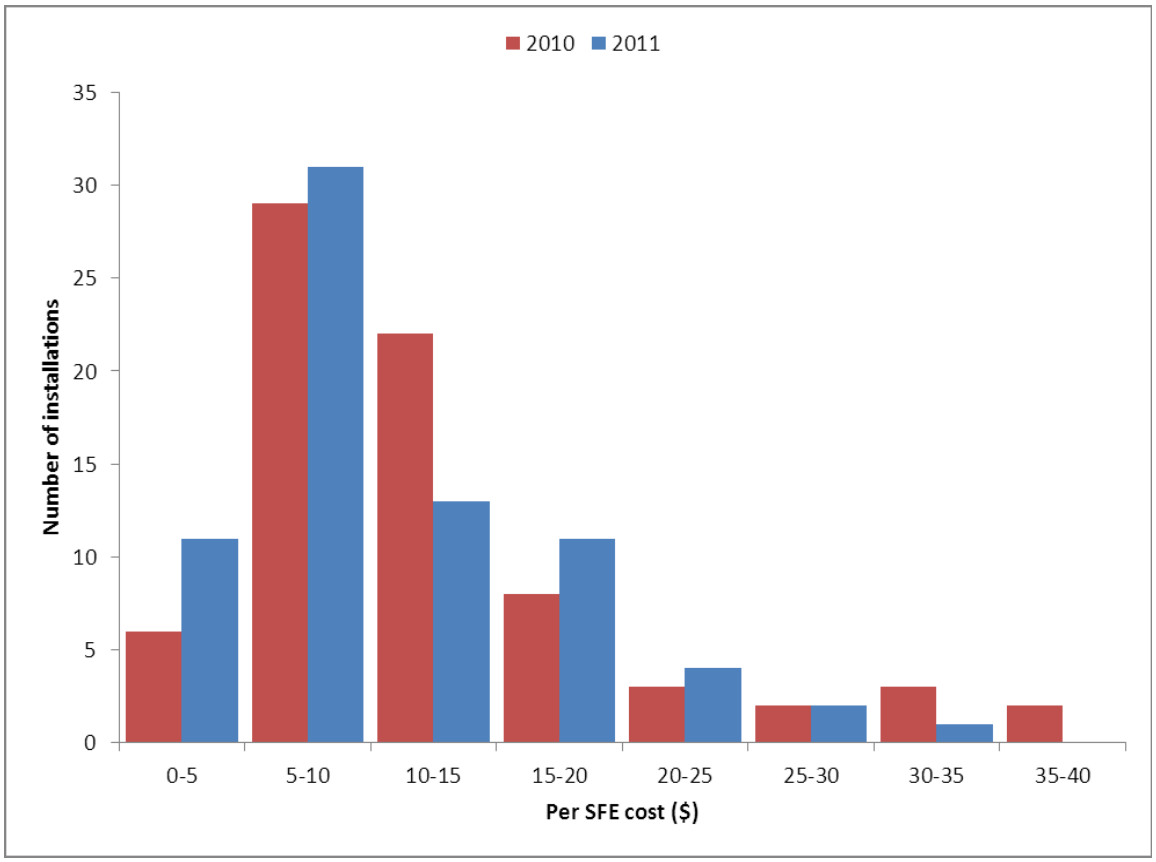


Shore cost per SFE

The second metric is the Navy-wide shore cost per SFE. Similar to the first metric, the SCALE divides the total shore cost by the total SFE.. This metric was equal to $10.53 in FY 2010 and $9.39 in FY 2011.

The metric is also calculated for each installation. Figure 6 shows the distribution of the shore cost per SFE metric across installations for FY 2010 and FY 2011.

Figure 6. Cost per SFE metric histogram for FY 2010 and FY 2011

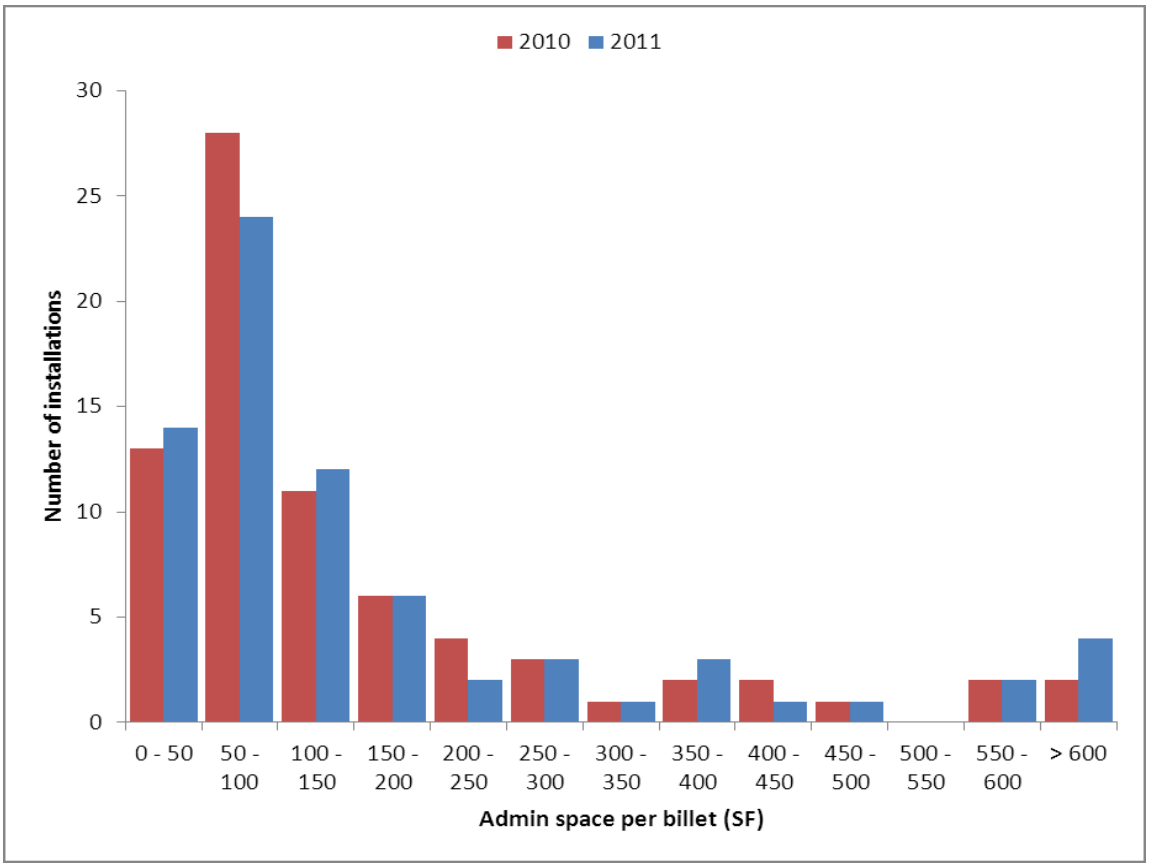


Administrative office space per full-time billet

The third metric is the Navy-wide administrative office space per full-time billet. For this metric, the SCALE divides the total administrative space by the total number of full-time billets. Unlike the first metric, this metric does not include the active duty dependents in the calculation because the Navy does not provide office space to dependents.

This metric was equal to 85.2 SF in FY 2010 and 87.9 SF in FY 2011. Figure 7 shows the distribution of the shore cost person metric across installations for FY 2010 and FY 2011.

Figure 7. Administrative office space per billet metric histogram for FY2010 and FY 2011



Cost distribution by type of installation

Navy installations can be aggregated by their primary mission activity types. The following tables provide a listing of installations and their base support cost metrics for each fiscal year by category of installa-

tion. Table 19 provides the base support cost metrics for the administrative type installations.

Table 19. Base support cost metrics for administrative installations

		FY 2010			FY 2011		
UIC	Installation name	Cost per basepop unit	Footprint unit cost	Admin per billet	Cost per basepop unit	Footprint unit cost	Admin per billet
N00205	NSA NEW ORLEANS LA	$3,365	$4	590.7	$2,935	$3	595.3
N00639	NAVSUPPACT MID-SOUTH MEMPHIS TN	$6,310	$11	383.1	$3,758	$6	386.1
N57095	NAVSUPPACT NORFOLK VA	$19,054	$16	422.0	$20,879	$15	423.9
N61007	NAVAL SUPPORT ACTIVITY ORLANDO FL	$18,385	$14	407.6	$68,077	$2	12,629.7
N61150	NSA NORTH POTOMAC WASHINGTON DC	$16,426	$12	274.0	-	-	-
N68469	NAVAL SUPPORT ACTIVITY WASH DC	$23,251	$32	277.9	$26,253	$23	384.3

Table 20 provides the base support cost metrics for the ammunition storage type installations .

Table 20. Base support cost metrics for ammunition storage installations

		FY 2010			FY 2011		
UIC	Installation name	Cost per basepop unit	Footprint unit cost	Admin space per billet	Cost per basepop unit	Footprint unit cost	Admin space per billet
N61018	NAVAL SUPPORT ACTIVITY CRANE IN	$11,825	$3	64.1	$7,340	$2	57.4
N61065	NAVWPNSTA SEAL BEACH CA	$28,315	$6	198.9	$20,058	$4	194.2
N69212	NAVAL WEAPONS STATION YORKTOWN VA	$12,370	$4	184.9	$18,618	$6	204.4
N69213	NAVAL WEAPONS STATION EARLE NJ	$37,726	$9	143.1	$39,270	$8	188.8
N69214	NAVAL WEAPONS STATION CHASN SC	$7,285	$7	110.8	-	-	-

Table 21 provides the base support cost metrics for the air station type installations.

Table 21. Base support cost metrics for air station installations

		FY 2010			FY 2011		
UIC	Installation name	Cost per basepop unit	Footprint unit cost	Admin space per billet	Cost per basepop unit	Footprint unit cost	Admin space per billet
N00158	NAS JRB WILLOW GROVE PA	$11,051	$10	96.2	$13,636	$8	150.7
N00196	NAS ATLANTA GA	$1,200	$4	24.1	$1,590	$22	0.0
N00206	NAS JRB NEW ORLEANS LA	$14,446	$9	459.5	$20,938	$12	498.5
N00207	NAS JACKSONVILLE FL	$11,399	$21	78.0	$6,738	$11	77.7
N00213	NAS KEY WEST FL	$12,105	$6	146.0	$12,359	$6	123.4
N00620	NAS WHIDBEY ISLAND WA	$3,441	$8	44.1	$2,862	$7	35.5
N41557	NSA ANDERSEN GUAM	$107,991	$9	789.1	$19,474	$1	827.3
N60042	NAF EL CENTRO CA	$21,207	$13	108.2	$15,270	$8	125.2
N60087	NAS BRUNSWICK ME	$6,383	$9	63.4	$3,515	$8	71.3
N60191	NAS OCEANA VA	$5,527	$14	33.9	$3,941	$9	33.8
N61057	NAF ATSUGI JA	$4,894	$6	70.2	$7,236	$9	66.8
N61060	NAF MISAWA JA	$2,100	$4	53.3	$2,167	$4	55.3
N63042	NAS LEMOORE CA	$3,887	$7	24.6	$3,775	$6	30.3
N83447	NAS JRB FT WORTH TX	$17,255	$10	244.8	$18,429	$12	280.2

Table 22 provides the base support cost metrics for the naval complex type installations.

Table 22. Base support cost metrics for naval complex installations

		FY 2010			FY 2011		
UIC	Installation name	Cost per basepop unit	Footprint unit cost	Admin space per billet	Cost per basepop unit	Footprint unit cost	Admin space per billet
N00246	NAVBASE CORONADO CA	$3,589	$5	87.5	$5,150	$8	87.1
N60514	NAVSTA GUANTAN-AMO BAY CU	$43,526	$8	231.6	$59,301	$8	292.1

Table 22. Base support cost metrics for naval complex installations

		FY 2010			FY 2011		
UIC	Installation name	Cost per basepop unit	Footprint unit cost	Admin space per billet	Cost per basepop unit	Footprint unit cost	Admin space per billet
N61755	NAVBASE GUAM	$72,840	$38	188.9	$53,567	$26	186.9
N62688	NAVSTA NORFOLK VA	$2,108	$12	50.7	$2,351	$12	51.5
N68436	NAVAL BASE KITSAP BREMERTON WA	$10,972	$18	47.0	$9,371	$15	46.7
N69232	NAVBASE VENTURA CTY PT MUGU CA	$6,012	$7	64.6	$9,064	$10	74.8

Table 23 provides the base support cost metrics for the operational support type installations.

Table 23. Base support cost metrics for operational support installations

		FY 2010			FY 2011		
UIC	Installation name	Cost per basepop unit	Footprint unit cost	Admin space per billet	Cost per basepop unit	Footprint unit cost	Admin space per billet
N61077	SINGAPORE AREA COORDINATOR SN	$32,025	$18	335.5	$32,980	$18	337.8
N61078	NAVSUPPFAC DIEGO GARCIA IO	$88,134	$12	200.8	$90,711	$8	278.9
N62588	NAVSUPPACT NAPLES IT	$23,306	$32	93.5	$23,564	$31	100.5
N62863	NAVSTA ROTA SP	$23,968	$15	67.2	$20,155	$12	70.9
N62995	NAS SIGONELLA IT	$13,479	$15	62.5	$14,521	$16	69.3
N63005	NAVSUPPACT BAHRAIN	$13,955	$39	52.7	$10,248	$24	76.6
N66691	NAVSUPPACT SOUDA BAY GR	$24,867	$34	77.3	$25,033	$29	81.5

Table 24 provides the base support cost metrics for the port and harbor type installations.

Table 24. Base support cost metrics for port and harbor installations

		FY 2010			FY 2011		
UIC	Installation name	Cost per basepop unit	Footprint unit cost	Admin space per billet	Cost per basepop unit	Footprint unit cost	Admin space per billet
N00129	NAVSUBASE NEW LONDON CT	$6,325	$11	112.0	$7,405	$13	113.6
N00245	NAVBASE SAN DIEGO CA	$2,282	$10	37.3	$4,198	$18	43.0
N32778	FLEET ACTIVITIES CHIN-HAE KS	$10,420	$12	128.3	$8,179	$9	117.6
N42237	SUBASE KINGS BAY GA	$6,102	$8	106.5	$12,783	$14	153.6
N60201	NAVSTA MAYPORT FL	$6,419	$23	31.0	$2,687	$9	30.6
N61054	COMFLEACT YOKO-SUKA JA	$4,862	$8	62.5	$6,379	$10	64.0
N61056	COMFLEACT OKI-NAWA JA	$17,126	$16	123.2	$24,060	$21	132.5
N61058	COMFLEACT SASEBO JA	$5,815	$7	56.5	$6,055	$7	55.7
N62813	JBPHH PEARL HARBOR HI	$11,297	$11	94.8	$17,038	$12	139.8
N63406	NAVBASE POINT LOMA CA	$7,548	$6	371.0	$9,944	$7	395.4
N68891	NAVSTA INGLESIDE TX	$2,266	$5	121.0	$53	$0	127.5
N68967	NAVSTA EVERETT WA	$3,057	$15	20.5	$2,080	$10	18.5

Table 25 provides the base support cost metrics for the professional school type installations.

Table 25. Base support cost metrics for professional school installations

		FY 2010			FY 2011		
UIC	Installation name	Cost per basepop unit	Footprint unit cost	Admin space per billet	Cost per basepop unit	Footprint unit cost	Admin space per billet
N32411	NAVAL STATION NEWPORT RI	$12,042	$13	98.2	$10,165	$11	92.3
N61014	NAVSUPPACT MONTEREY CA	$26,240	$13	70.3	$14,736	$7	90.1
N61152	NAVSUPPACT ANNAPOLIS MD	$9,758	$19	50.7	$9,379	$18	44.4

Table 26 provides the base support cost metrics for the research and development type installations.

Table 26. Base support cost metrics for research and development installations

		FY 2010			FY 2011		
UIC	Installation name	Cost per basepop unit	Footprint unit cost	Admin space per billet	Cost per basepop unit	Footprint unit cost	Admin space per billet
N44852	NAVMEDRSCHU SIX LIMA PE	$2,482	$17	8.8	$1,946	$19	6.0
N47608	NAVAL AIR STATION PAX RIVER MD	$8,269	$9	49.4	$5,507	$7	139.7
N61008	NAVAL SUPPORT ACTY PANAMA CITY FL	$4,245	$8	289.1	$8,017	$9	39.4
N61151	NSA SOUTH POTOMAC VA	$6,075	$6	123.6	$5,284	$6	113.1

Table 27 provides the base support cost metrics for the shipyard type installations.

Table 27. Base support cost metrics for shipyard installations

		FY 2010			FY 2011		
UIC	Installation name	Cost per basepop unit	Footprint unit cost	Admin space per billet	Cost per basepop unit	Footprint unit cost	Admin space per billet
N32443	NSA NORFOLK NAVY SHIPYARD VA	$15,609	$25	64.2	$10,794	$17	65.7
N32446	NSS PORTSMOUTH NAVY SHIPYARD NH	$20,046	$21	72.2	$18,965	$19	71.4

Table 28 provides the base support cost metrics for the training center type installations.

Table 28. Base support cost metrics for training center installations

		FY 2010			FY 2011		
UIC	Installation name	Cost per basepop unit	Footprint unit cost	Admin space per billet	Cost per basepop unit	Footprint unit cost	Admin space per billet
N00128	GREAT LAKES NAVAL STATION IL	$17,196	$17	147.1	$12,984	$13	115.2
N00204	NAS PENSACOLA FL	$9,148	$10	182.1	$8,107	$8	176.8
N00216	NAS CORPUS CHRISTI TX	$11,364	$8	238.5	$16,338	$10	249.0
N60241	NAS KINGSVILLE TX	$23,789	$12	98.3	$31,709	$15	97.7
N60495	NAS FALLON NV	$12,272	$14	47.4	$9,163	$10	48.1
N60508	NAS WHITING FLD MILTON FL	$20,997	$11	85.1	$14,820	$7	78.6
N61011	NSA SARATOGA SPRINGS NY	$21,173	$9	74.7	$2,354	$5	30.7
N63043	NAS MERIDIAN MS	$2,024	$4	36.9	$31,155	$15	73.9

Table 29 provides the base support cost metrics for the weapons range type installations.

Table 29. Base support cost metrics for weapons range installations

		FY 2010			FY 2011		
UIC	Installation name	Cost per basepop unit	Footprint unit cost	Admin space per billet	Cost per basepop unit	Footprint unit cost	Admin space per billet
N0534A	PACMISRANFAC BARKING SANDS HI	$47,200	$9	95.1	$49,615	$9	95.2
N47609	NAWS CHINA LAKE CA	$8,678	$6	56.7	$7,553	$4	53.5

Table 30 provides the base support cost metrics for the other type installations.

Table 30. Base support cost metrics for other installations

		FY 2010			FY 2011		
UIC	Installation name	Cost per basepop unit	Footprint unit cost	Admin space per billet	Cost per basepop unit	Footprint unit cost	Admin space per billet
N31188	NIOC SUGAR GROVE WV	$13,279	$18	70.4	$4,056	$5	70.4
N32414	NAVSUPPACT MECHANICSBURG PA	$11,515	$6	563.5	$8,633	$4	569.0
N50092	JNTEXPBASE LITTLE CREEK FS VA	$3,836	$11	41.6	$3,732	$10	42.0
N62604	CBC GULFPORT MS	$3,315	$6	157.4	$6,894	$13	121.4

Table 31 provides a composite summary of the metrics by installation type.

Table 31. Cost distribution by type of installation summary

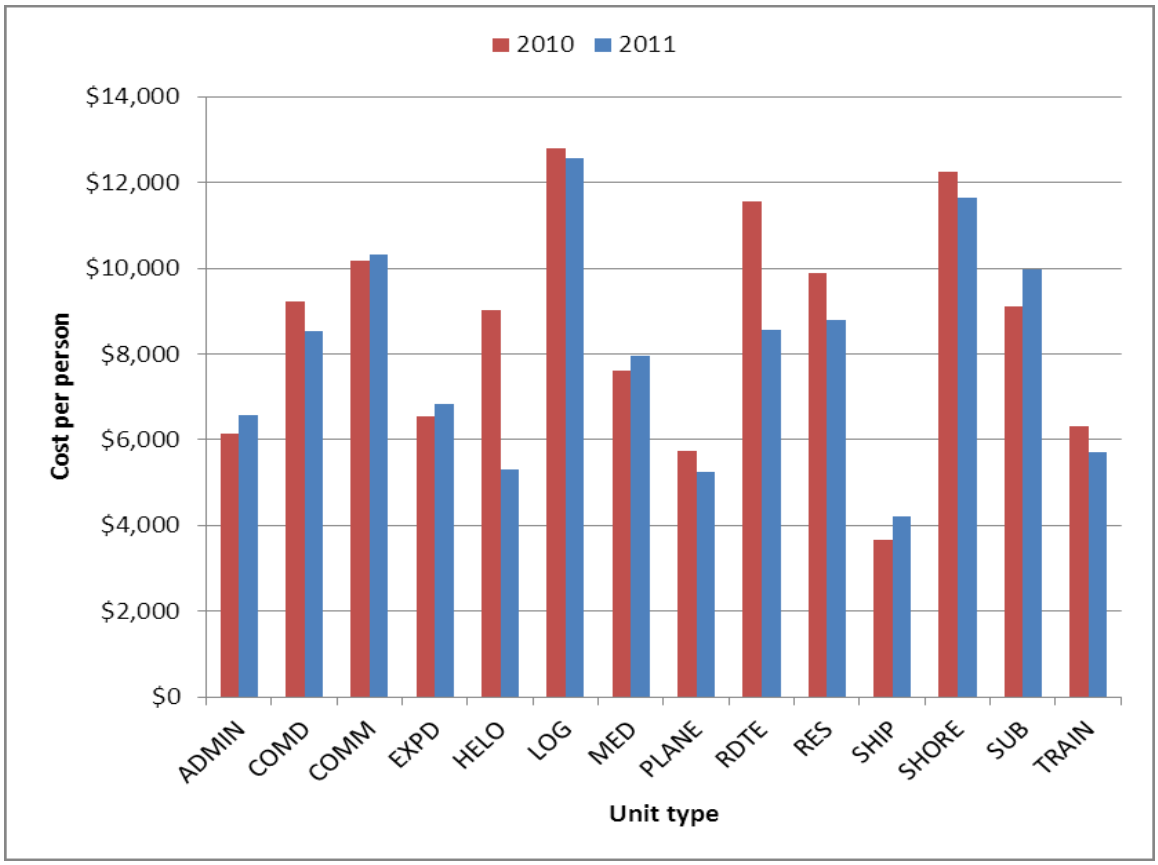
	FY 2010				FY 2011			
Installation type	Num instl	Cost per basepop unit	Footprint unit cost	Admin space per billet	Num instl	Cost per basepop unit	Footprint unit cost	Admin space per billet
Administration	6	$6,076	$19	180	5	$4,894	$15	171
Ammunition storage	5	$4,744	$4	191	4	$6,483	$4	64
Air station	14	$2,542	$10	37	14	$1,901	$7	39
Naval complex	6	$2,069	$15	29	6	$1,961	$12	32
Communications/surveillance	1	$4,190	$18	35	1	$950	$4	35
Expeditionary ground training	2	$2,148	$9	61	2	$2,433	$10	52
Land terminal	1	$3,775	$5	282	1	$2,985	$4	285
Operational support	7	$6,369	$21	41	7	$5,944	$18	48
Port/harbor	12	$1,768	$10	38	12	$2,457	$12	46
Professional school	4	$3,515	$13	38	4	$3,015	$11	54
Research and development	4	$3,011	$6	91	3	$3,398	$6	91
Shipyard	2	$6,186	$22	33	2	$4,771	$17	34
Training center	8	$4,230	$12	75	8	$3,736	$10	69
Weapons range	2	$5,362	$7	31	2	$5,183	$6	29

Cost distribution by type of command

In addition to providing comparisons across installations, the SCALE also provides comparison across unit types. As mentioned earlier, each unit is classified as one of fourteen different unit types. We cal-

culated the cost per person metric within each unit type and the distribution of this metric is shown in figure 8.

Figure 8. Cost per person variation across unit types for FY 2010 and FY 2011



SCALE model uses

The SCALE provides a single application the organizes and presents a large amount of information about the Navy's shore infrastrucutre. These metrics can be used to assess which installations costs are not in line with the overall Navy costs. The model does not necessarily tell you the reason for cost discrepencies, but provides a tool to show where the discrepencies exist.

The model goes beyond producing metrics by providing the data that produces the metrics. The model provides a very quick way to see how much was spent at different levels of the Navy organization. Additionally, the SCALE produces lists of which units are assigned to which locations. This information is not readily available in any other Navy database. The information provided by the SCALE gives historical support for planners who must decide how funds will be allocated in the future. The next section highlights the SCALE uses by answering a hypothetical shore cost question.

Using the model to answer a hypothetical tasker

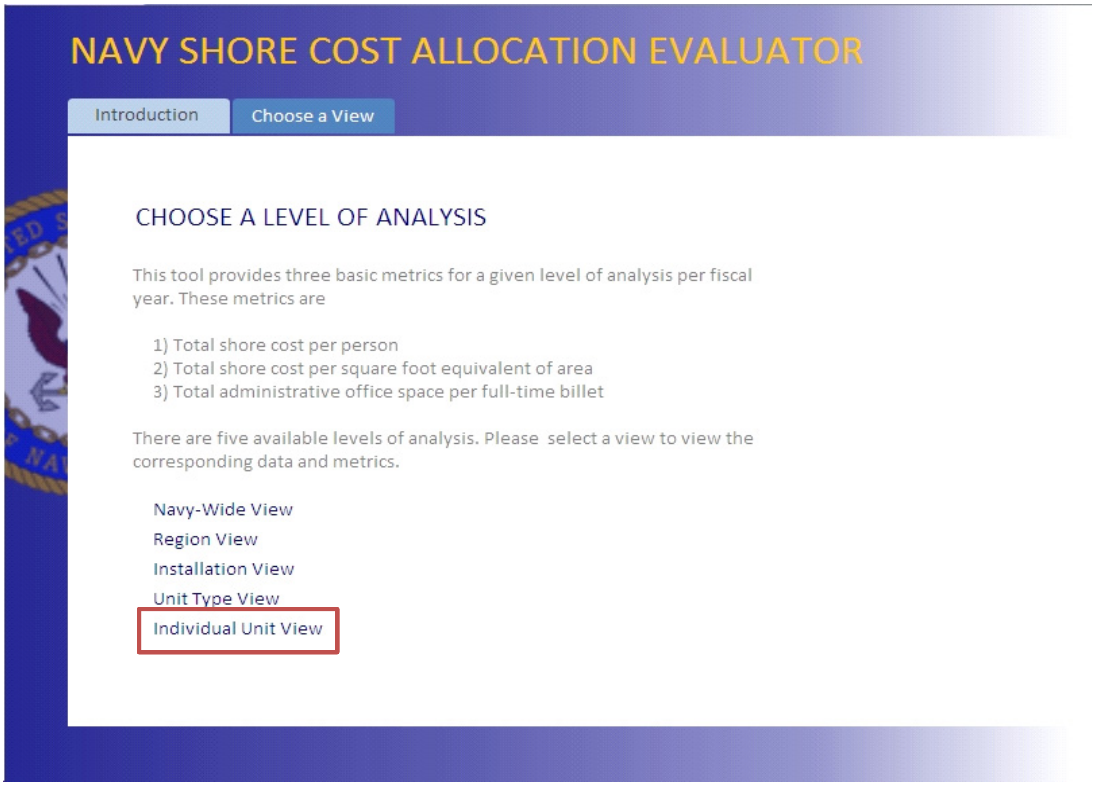
The SCALE organizes and allocates shore costs to the units. The model is able to quickly answer questions that relate to shore costs and unit laydown. For example, assume that their was a hypothetical tasker with the following question: "What was the difference in shore costs from homeporting a typical DDG at NAVSTA Pearl Harbor, HI versus NAVSTA San Diego in FY 2011?" The SCALE tool provides the information to quickly answer this question.

Base population estimate for a typical DDG

The first step in determining the different costs is to estimate the number of people associated with the DDG that the shore must support. A simple way to estimate the personnel is to use the personnel loading from a similar unit. While both NAVSTA San Diego and NAVSTA Pearl Harbor host DDGs, we decided to use the population loading from a typical DDG of anoher installation to ensure this comparison is based on the same personnel numbers. In this case, we use the personnel structure from the USS *Shoup* to estimate the personnel from the new DDG. To find the personnel breakdown of the

Shoup, start in the "Choose a View" tab of the SCALE and select "Individual Unit View" as shown in figure 9.

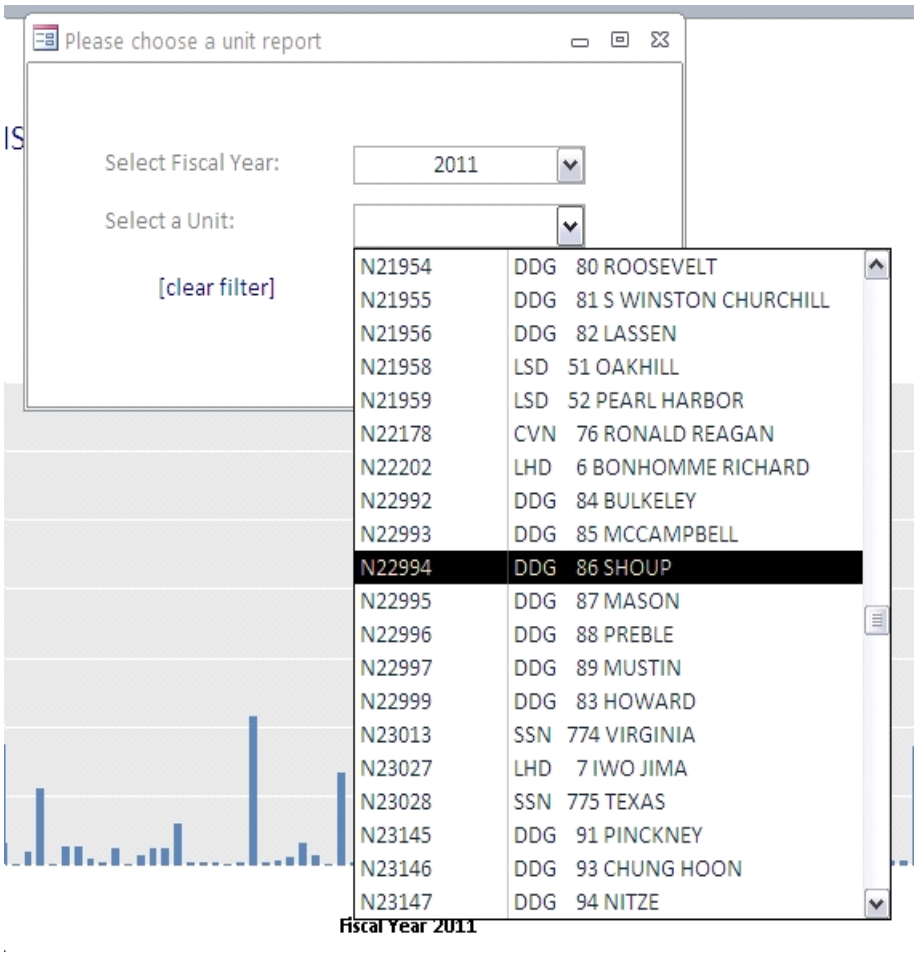
Figure 9. SCALE level of analysis screen with "Individual Unit View" highlighted



The next screen is the "Unit View". In this screen, click the "Get Individual Reports: GO!" button. Select "2011" from the "Select Fiscal Year" dropdown and select the USS *Shoup* from "Select a Unit:" dropdown as shown in figure 10. Then click "[get report]" and the unit

summary report for the USS *Shoup* from FY 2011 opens in a new window.

Figure 10. Selecting USS *Shoup* from the "Unit View" screen



The unit report, shown in figure 11, can be saved as a document by right-clicking on the report, selecting "Export" and choosing a file type. Note that you have to select "Export" and not "Save As" to save it outside of the Access database. "Save As" will save the report within Access and it will not be accessible outside of the SCALE. The unit

report shows that the USS *Shoup* had 276 full-time billets and 557 dependents assigned to the unit. Therefore, the total base population is 833 and we use this as an estimate of the total base population for a typical DDG.

Figure 11. Unit report for USS *Shoup*

DESIGNATION

Unit UIC	N22994
Unit Name	DDG 86 SHOUP
Unit Type	SHIP

KEY METRICS

Shore Support	$1,732,702
Base Population Unit Cost	$2,080

ORGANIZATION

Supporting Installation UIC	N68967
Supporting Installation Name	NAVSTA EVERETT WA

STATUS

BSO	COMPACFLT
Deployment Status	DEPLOYING
Deployment Type	US SEA DUTY

BASE POPULATION

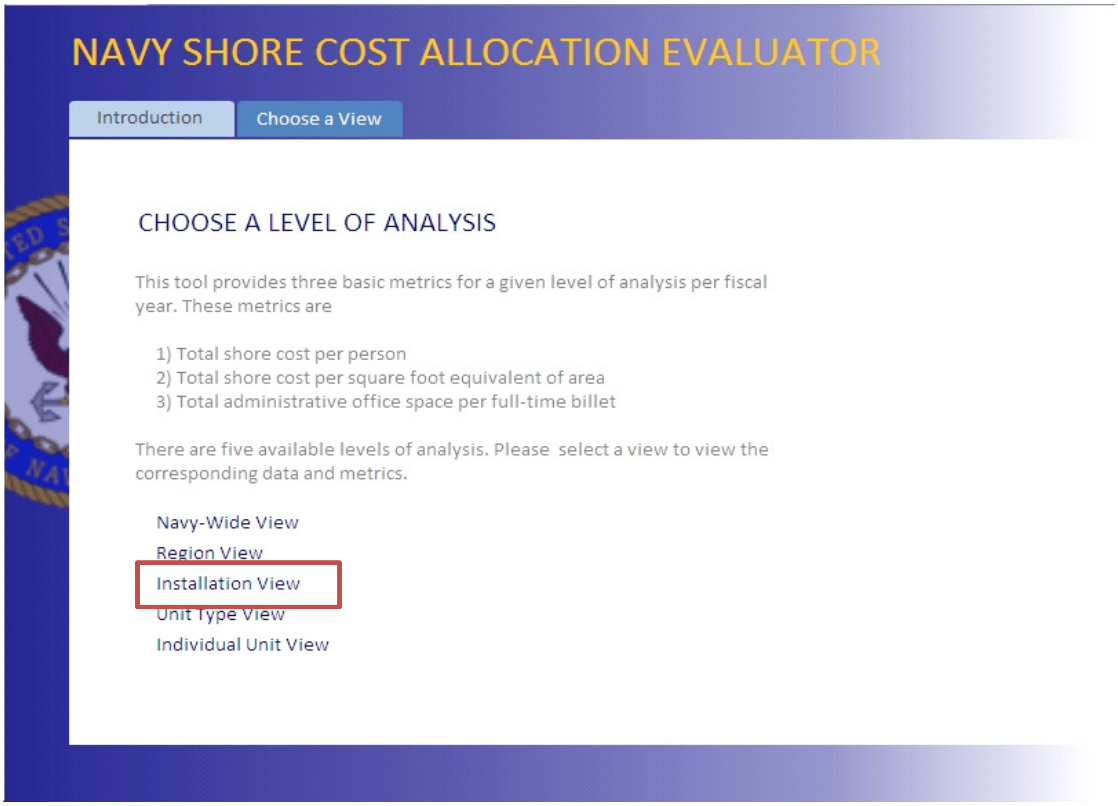
Full-Time Billets	Number of Dependents	Total Base Population
276	557	833

Cost difference between NAVSTA Pearl Harbor and NAVSTA San Diego

The second step in determining the shore cost differences for the typical DDG is to find the per person cost at each of the bases. The per

person cost is available in the "Installation View" as shown in figure 12.

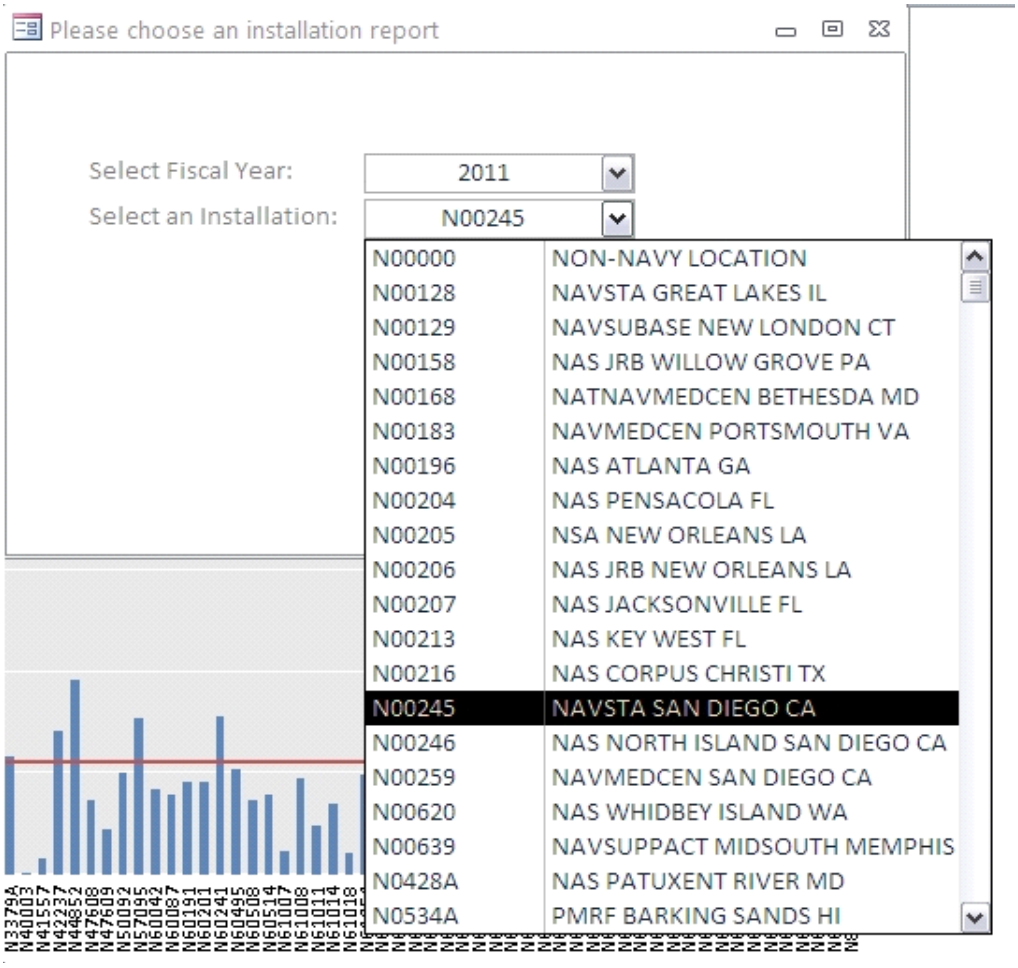
Figure 12. SCALE level of analysis screen with "Installation View" highlighted



In the "Installation View" screen, click the "Get Individual Installation Reports: GO!" button. Select "2011" from the "Select Fiscal Year" dropdown and select the NAVSTA San Diego from "Select a Unit:" dropdown as shown in figure 13. Then click "[get metrics report]"

and the summary report for NAVSTA San Diego from FY 2011 opens in a new window.

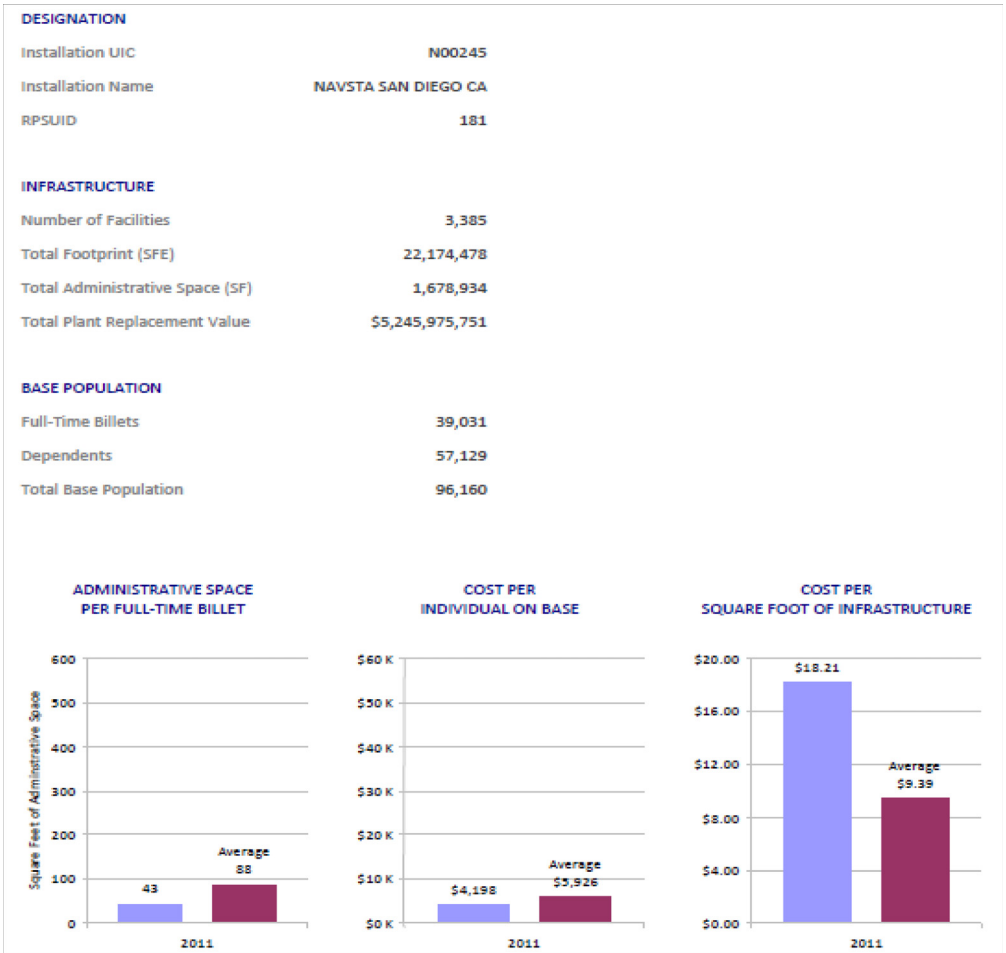
Figure 13. Selecting NAVSTA San Diego from the "Installation View" screen



The installation summary report, shown in figure 14, shows that the per person unit cost at NAVSTA San Diego in FY 2011 was $4,199. Recall that the typical DDG is estimated to have a total population

requirement of 833, and therefore, it is estimated that a DDG homeported at NAVSTA San Diego cost about $3,500,000 in FY 2011.

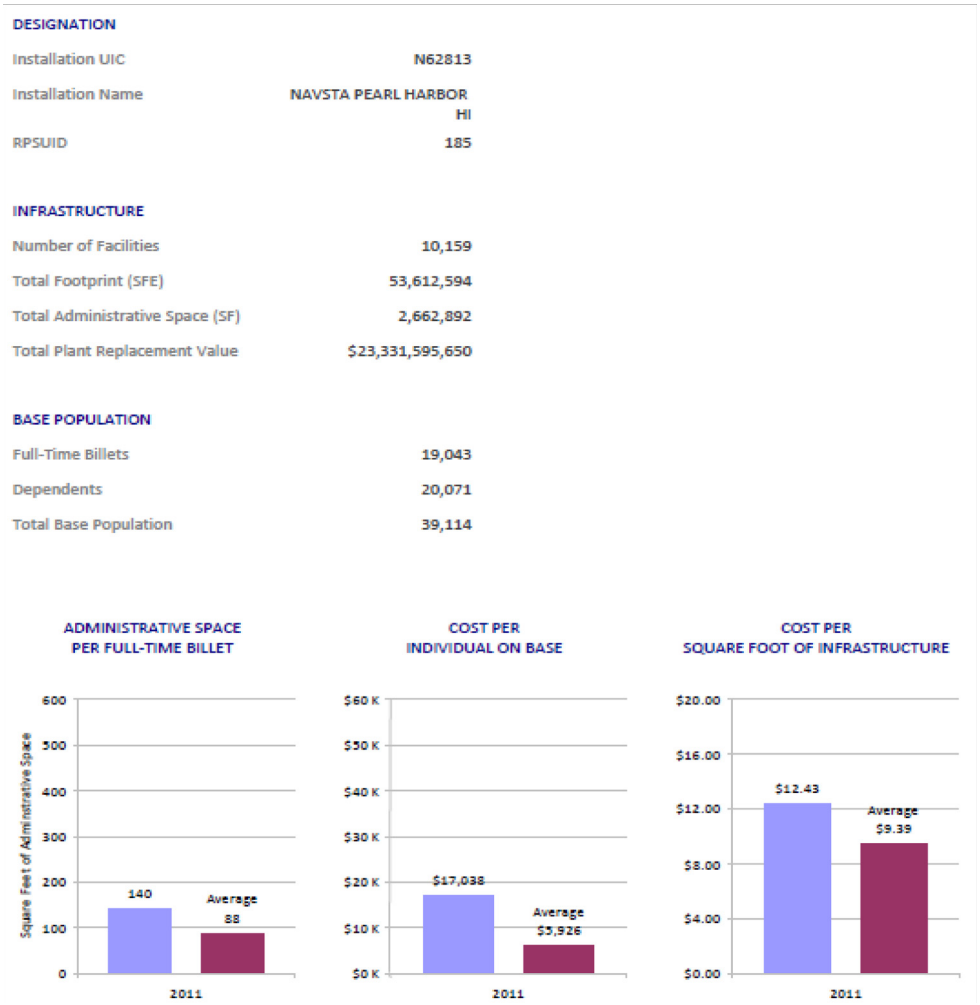
Figure 14. Installation summary report for NAVSTA San Diego



The installation summary report for NAVSTA Pearl Harbor can be extracted following the same steps as above. The report, shown in figure 15, shows a per person cost of $17,038 during FY 2011. There-

fore, it is estimated that a typical DDG homeported at NAVSTA Pearl Harbor cost about $14,000,000 in FY 2011.

Figure 15. Installation summary report for NAVSTA Pearl Harbor



DESIGNATION

Installation UIC	N62813
Installation Name	NAVSTA PEARL HARBOR HI
RPSUID	185

INFRASTRUCTURE

Number of Facilities	10,159
Total Footprint (SFE)	53,612,594
Total Administrative Space (SF)	2,662,892
Total Plant Replacement Value	$23,331,595,650

BASE POPULATION

Full-Time Billets	19,043
Dependents	20,071
Total Base Population	39,114

This shows that there can be vastly different shore cost implications for unit laydown decisions. Using the actual obligated costs and FY 2011 unit laydown, it is estimated that a typical DDG costs about four times as much to homeport it a NAVSTA Pearl Harbor versus homeporting the ship at NAVSTA San Diego.

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Conclusions

In this study, we were asked to help develop a top-down budget programming process. To accomplish this goal, we examined how to allocate shore requirements and annual shore infrastructure cost to individual units. We developed shore required operational capabilities (SHOROC) and shore potential operational environments (SHORE POE) documents for four different types of units. The idea was to produce documents that emulated the ROC and POE documents by describing the shore support requirements necessary for each unit. After completing the SHOROC/SHORE POE documents, we presented them to the sponsor as examples of what could be done by the Navy to better define and quantify Navy unit shore support requirements. While it was noted that such documentation would make it much easier to match force structure requirements to shore infrastructure support capabilities, there was concern that the upfront development effort may not be worth the potential reductions in overall shore infrastructure cost. Therefore, additional analysis and study will be needed before a cost reducing unit requirement process based on this kind of documentation can be implemented.

Given that our cost allocation model could not be based on specific individual unit shore requirements, due to the current lack of detailed documentation, we generated a model concept of allocating shore cost requirements to individual units. A pilot study, based on NAVSTA Everett, Washington in FY 2010, showed that it was possible to identify which units were located at which site and installation. This pilot study led to the development of the Shore Cost Allocation Evaluator (SCALE) tool. The tool expanded the pilot study to all naval installations and units.

Unlike in the pilot study, the SCALE tool uses actual obligated shore costs instead of theoretical shore cost requirements. The obligations allow the model to calculate the actual cost per person and actual cost per square foot equivalent. These two metrics, along with the square

foot of administrative office space per billet metric, can help N46 identify how cost burdens vary across installation and units and N46 will be better able to program shore funds from a top-down approach.

We found that the average shore cost per person was $6,428 in FY 2010 and $5,926 in FY 2011, the average shore cost per SFE was $10.53 in FY 2010 and $9.39 in FY 2011, and the average administrative office space was 85.2 square feet (SF) per person in FY 2010 and 87.9 SF in FY 2011. In addition to the metrics, the SCALE model provides total shore cost expenditure allocated to individual Navy commands (weighted by personnel count).

We also chose a hypothetical question to demonstrate how the SCALE tool could be utilized to answer a typical force structure lay-down question. The question we selected to analyze was: What was the shore operational cost difference between homeporting a typical Arleigh Burke DDG destroyer at NAVSTA Pearl Harbor, Hawaii or NAVSTA San Diego, California in FY 2011? We estimated the cost to be about $3.5 million at NAVSTA San Diego and about $14 million, for a difference of about $10.5 million.

The SCALE tool only provides the estimated shore operational cost difference and does not address shore capacity investments or one-time implementation costs. Additional facilities planning, such as the analysis provided by the Navy's quick excursion tool (QET) planning process, would be also needed to complete a rough order of magnitude (ROM) alternative analysis.

Appendix A: VP-26 *Tridents* SHOROC and SHORE POE documents

SHOROC description

The SHOROC for VP-26 describes the specific capabilities the shore must provide to support the patrol squadron. The SHOROC notes that VP-26 requires 1,095 personnel including military personnel and their dependents. The VP-26 squadron requires eight Lockheed P-3 aircraft. The SHOROC also describes the special ordnance, supply, and training requirements associated with VP-26 and the level of support the squadron needs for each of the requirements.

The SHOROC also calculates two impact measures on the shore support requirements with respect to the 80 shore function tasks. The two measures are the Base Loading Index and the Strategic Loading Index. The Base Loading Index provides an index measure on how much of a demand the VP-26 squadron will have on the shore. The Strategic Loading Index is the proportion of all possible shore function tasks that are needed by the squadron, regardless of the level of support needed.

SHORE POE description

The Navy Maritime Patrol Squadron, VP-26, is an aviation patrol squadron that flies P-3s. VP-26 is a Type 2, self-deployable, fixed-wing aircraft squadron. The Type 2 designation indicates that the unit is homeported or based in the continental United States (CONUS) but that it is deployable to forward locations. It is assigned to NAS Jacksonville.

The VP-26 squadron operates on an 18-month Fleet Response Plan (FRP) cycle with the deployment lasting 6 months. However, the squadron is in the process of shifting to a 12-month deployment cycle

with the deployment length remaining at 6 months. The commanding officer of VP-26 is a commander who reports to the captain in command of Patrol Reconnaissance Wing Eleven.

In addition to all the above information, the SHORE POE reflects that there are five additional patrol squadrons assigned to NAS Jacksonville with an additional six units that can be considered peer units to VP-26.

25 July 11

SHORE REQUIRED OPERATIONAL CAPABILITIES (SHOROC)

UIC: N09610
UNIT NAME: NAVY MARITIME PATROL SQUADRON VP-26

I. MISSION: The mission of the VP-26 Tridents Maritime Patrol Squadron is to be a land-based fixed wing aviation unit that provides a long-range anti-submarine warfare, anti-surface warfare, command and control warfare, command, control and communications, intelligence, mine warfare, anti-morale warfare, and mobility support of broad-area, maritime, and littoral operations.

UNIT FORCE PROTECTION LEVEL	1	2	3	4	5
VP-26 TRIDENTS		X			

Personnel loading

UNIT ALLOWANCE				
IGCA CODE	MRC	MPWR	GRADE	NUMBER
M415	AD	O	H	2
M415	AD	O	I	5
M415	AD	O	J	15
M415	AD	O	K	36
M415	AD	O	L	1
M415	AD	O	M	0
M415	AD	O	N	1
M415	AD	O	O	1
M415	AD	E	9	2
M415	AD	E	8	6
M415	AD	E	7	20
M415	AD	E	6	49
M415	AD	E	5	73
M415	AD	E	4	52
M415	AD	E	3	67
			TOTAL	330

BASE LOADING							
RANK	TOTAL	MARRIED RATIO (%)	FH	BQ	Spouses	Ave # Children	Total Dependents
O5	2	90.0	2	0	2	2.9	8
O4	5	84.2	4	1	4	2.7	15
O3	15	69.1	10	5	10	2.2	32
O2	36	45.9	17	19	17	1.7	46
O1	1	30.1	0	1	0	1.8	0
W4	0	90.5	0	0	0	2.8	0
W3	1	90.5	1	0	1	2.8	4
W2	1	90.5	1	0	1	2.8	0
E9	2	91.1	2	0	2	2.9	8
E8	6	88.8	5	1	5	3.0	20
E7	20	86.2	17	3	17	2.9	66
E6	49	80.3	39	10	39	2.6	140
E5	73	64.3	47	26	47	2.1	146
E4	52	39.6	21	31	21	1.6	55
E3	67	25.0	17	50	17	1.5	43
TOTAL	330		183	147	183		582
BASE LOADING TOTAL							1,095

[1]

Capital equipment loading

8 – Lockheed P-3C Update III maritime patrol aircraft

General characteristics

Required crew:	11
Range:	3,420 miles
Power Plant:	Four Allison T56-A-14 turboprops, 4,600 shp each
Fuel Capacity:	60,000 lbs or 8,876 gallons
Weight:	
Empty:	77,200 lb
Loaded:	135,000 lb
Max takeoff:	142,000 lb
Useful load:	57,800 lb
Dimensions:	
Wing area:	1,300 sq ft
Wing span:	99 ft 8 in
Length:	116 ft 10 in
Height:	38 ft 8 in
Armament:	
Guns:	None
Pylons:	Internal – 8
	External – 10
Missiles:	AGM-65 Maverick Air to Surface
	AGM-84 Harpoon Air to Surface
	Standoff Land Attack Missile (SLAM)
Bombs:	Depth charges
	MK20 Rockeyes
	MK80 Series
Torpedoes:	MK 46
	MK 50
	MK 54
	MU 90
Mines:	MK 25
	MK 39
	MK 55
	MK 56
	MK 60
	MK 65
Other:	Sonobuoys (Active and Passive)

[2]

Supply loading

TBD

Ordnance loading

For VP-26, the squadron does not require any specialized ordnance training. However, the Commander, Patrol and Reconnaissance Wing-11, headquartered at Naval Air Station Jacksonville, and the Maritime Patrol and Reconnaissance School, also located in Jacksonville, will provide training assistance for Conventional Weapons proficiency Inspections and other standard ordnance training on an as-needed basis.

Training loading

The Commander, Patrol and Reconnaissance Wing-11, weapons and tactics unit, will provide advanced readiness program training to all aircrews assigned to the VP-26 squadron. In conjunction with VP-30, another patrol squadron, the Maritime Patrol and Reconnaissance School will provide any additional flight instrument training required by members of VP-26. The Center for Naval Aviation Technical Train Unit, located in Jacksonville, provides additional classroom training but mostly on an as-needed basis. This implies that a variable shore requirement exists for VP-26 in regards to certain types of training.

Note that members of VP-26 will sometimes require specialized training offered at legal officer schools, safety office schools, HAZMAT schools, etc., but these schools are not located at Jacksonville and therefore do not impose a direct shore requirement for VP-26 at Jacksonville.

[3]

II. SHORE SUPPORT REQUIREMENTS:

FLEET OPERATIONS SHORE CAPABILITY AREAS

WATERFRONT OPERATIONS	Measure	Major	Med	Minor	None
MAGNETIC SILENCING SERVICES (100)	Ship draft (FT)				N/A
HARBOR DEFENSE & PORT SECURITY (45)	Displacement (LT)				N/A
HARBOR MASTER SERVICES (46)	Displacement (LT)				N/A
AT BERTH SUPPORT (46)	Linear berthing space (FB)				N/A
SMALL CRAFT SUPPORT SERVICES (46)	Linear berthing space (FB)				N/A

AIRFIELD OPERATIONS	Measure	Major	Med	Minor	None
AIRCRAFT SERVICING SUPPORT (87)	Number of aircraft (EA)		8		
PASSENGER TERMINAL/CARGO SERVICES (38)	Number of cargo/pax aircraft (EA)				N/A
AIRCRAFT HANGER SUPPORT (37)	Number of aircraft (EA)		8		
AIRFIELD SERVICES (37)	Number of aircraft (EA)		8		

[4]

AIRFIELD GROUND ELECTRONICS SUPPORT (37)	Number of aircraft (EA)		8		
AIR TRAFFIC CONTROL SERVICES (24)	Number of aircraft (EA)		8		

C5ISR OPERATIONS	Measure	Major	Med	Minor	None
INTELLIGENCE TECHNOLOGY SERVICES (52)	Total military and civilians (PN)		330		
COMMUNICATIONS ACCESS SERVICES (47)	Total military and civilians (PN)		330		
SPACE SURVEILLANCE SUPPORT (47)	Total military and civilians (PN)		330		
TELEPHONE SERVICES (44)	Total military and civilians (PN)		330		
INFORMATION TECHNOLOGY SERVICES (41)	Total military and civilians (PN)		330		

EXPEDITIONARY OPERATIONS	Measure	Major	Med	Minor	None
SPECIAL FORCES SUPPORT SERVICES (35)	Total SOF active duty (BA)				N/A
EXPEDITIONARY ADMINISTRATION SUPPORT (35)	Total expeditionary active duty (BA)				N/A

[5]

EXPLOSIVE ORDNANCE DISPOSAL SUPPORT SERVICES (35)	Total expeditionary active duty (BA)				N/A
LANDING CRAFT SUPPORT SERVICES (35)	Total expeditionary active duty (BA)				N/A
DIVING & SALVAGE SUPPORT SERVICES (35)	Total expeditionary active duty (BA)				N/A

FLEET SUPPORT SHORE CAPABILITY AREAS

INTER / DEPOT LEVEL MAINTENANCE SUPPORT	Measure	Major	Med	Minor	None
SHIP REPAIR, MAINTENANCE, & MODIFICATION SERVICES (63)	Ship displacement (TN)				N/A
AIRCRAFT ENGINE REPAIR, MAINTENANCE, & MODIFICATION SERVICES (60)	Number of aircraft engines (EA)		32		
AIRCRAFT REPAIR, MAINTENANCE, & MODIFICATION SERVICES (60)	Number of aircraft (EA)		8		
MISSILE REPAIR, MAINTENANCE, & MODIFICATION SERVICES (56)	Number of missiles (EA)		X		
OTHER EQUIPMENT REPAIR, MAINTENANCE, & MODIFICATION SERVICES (46)	Number of other equipment (EA)		X		

ORDNANCE / WEAPONS OPERATIONS SUPPORT	Measure	Major	Med	Minor	None

[6]

ORDNANCE/MUNITIONS STORAGE (45)	Ordnance requirement (TN)		X		
ARMAMENT & ORDNANCE REPAIR, MAINTENANCE, & MODIFICATION SERVICES (45)	Ordnance requirement (TN)		X		
MUNITIONS REPAIR, MAINTENANCE & MODIFICATION SERVICES (45)	Ordnance requirement (TN)		X		
WATERFRONT ORDNANCE LOADING/OFFLOADING SUPPORT SERVICES (32)	Pier side ordnance requirement (TN)				N/A
AIR ORDNANCE LOADING/OFFLOADING SUPPORT SERVICES (32)	Airfield ordnance requirement (TN)		X		

TRAINING SUPPORT	Measure	Major	Med	Minor	None
PROFESSIONAL MILITARY EDUCATION SERVICES (84)	Total military (BA)		330		
SPECIALIZED SKILL TRAINING SERVICES (84)	Total military (BA)		330		
OFFICER ACQUISITION TRAINING SERVICES (58)	Total officer (BA)	61			
TRAINING RANGE SERVICES (58)	Total military (BA)		330		
RECRUIT TRAINING SERVICES (58)	Total enlisted (BA)		269		

[7]

FLIGHT TRAINING SERVICES (55)	Total aviation military (BA)		330		
MULTIPLE CATEGORY TRAINING SERVICES (5)	Total military (BA)		330		

LOGISTICS AND SUPPLY SUPPORT	Measure	Major	Med	Minor	None
BULK LIQUID STORAGE (40)	Total capacity requirement (GL)		72,000		
POL DISTRIBUTION SERVICES (40)	Total requirement (GPD)		X		
STORAGE & WAREHOUSING (27)	Total annual requirement (CF)			X	
LIQUID, GASEOUS, & CHEMICAL PRODUCT DISTRIBUTION SERVICES (15)	Total requirement (GPD)		X		
PREPARATION, DEMILITARIZATION, & DISPOSAL OF EXCESS AND SURPLUS INVENTORY SERVICES (1)	Total requirement (CF)			X	

SHORE SUPPORT SHORE CAPABILITY AREAS

SAILOR AND FAMILY SUPPORT	Measure	Major	Med	Minor	None
FOOD SERVICES (59)	Total military (BA)		330		

[8]

POSTAL SERVICES (35)	Total base loading (PN)	1,095
BACHELOR HOUSING SERVICES (32)	Total BH loading (PN)	147
TEMPORARY LODGING SERVICES (32)	Deployment eligible (PN)	330
CHILD DEVELOPMENT SERVICES (32)	Total minor dependents (PN)	582
DEPENDENT SCHOOL SERVICES (32)	Total minor dependents (PN)	582
FAMILY HOUSING SERVICES (32)	Total family units (FA)	183
FAMILY SUPPORT SERVICES (32)	Total family units (FA)	183
MWR SERVICES (32)	Total base loading (PN)	1,095
RELIGIOUS & SPIRITUAL SUPPORT (32)	Total active duty military and spouses (PN)	513
RETAIL EXCHANGE SERVICES (6)	Total base loading (PN)	1,095

UTILITIES SUPPORT	Measure	Major	Med	Minor	None
ELECTRICAL POWER SERVICES (42)	Total base loading (PN)		1,095		

[9]

CHILLER PLANT & AIR CONDITIONING SERVICES (42)	Total base loading (PN)	1,095
COMPRESSED GAS SERVICES (42)	Total base loading (PN)	1,095
NATURAL GAS SERVICES (42)	Total base loading (PIN)	1,095
COLLECT, TREAT & DISPOSE OF SEWAGE (42)	Total base loading (PN)	1,095
STEAM & HOT WATER HEATING SERVICES (42)	Total base loading (PN)	1'095
WATER SERVICES (42)	Total base loading (PN)	1,095

BASE SUPPORT	Measure	Major	Med	Minor	None
MEDICAL SERVICES (83)	Total active duty military and families (PN)		1,095		
DENTAL SERVICES (83)	Total active duty military (BA)		330		
FORCE PROTECTION SECURITY SERVICES (46)	Total base loading (PN)		1,095		
AIRCRAFT RESCUE & FIREFIGHTING SERVICES (43)	Number of aircraft (EA)		8		
STRUCTURAL FIRE PROTECTION & EMS SUPPORT (43)	Total base loading (PN)		1,095		

[10]

CASUALTY AND MORTUARY AFFAIRS ASSISTANCE (42)	Total active duty military (BA)	330	
BUILDING & STREET MAINTENANCE/REPAIR SERVICES (42)	Total base loading (PN)	1,095	
INCINERATOR & LANDFILL SERVICES (42)	Total base loading (PN)	1,095	
GROUNDS DRAINAGE SERVICES 42)	Total base loading (PN)	1,095	
REFUSE COLLECTION/RECYCLING SERVICES (42)	Total base loading (PN)	1,095	
ADMINISTRATIVE SUPPORT (41)	Total active duty military and civilians (PN)	330	
PUBLIC AFFAIRS SERVICES (41)	Total active duty military and civilians (PN)	330	
EMERGENCY MANAGEMENT SERVICES (35)	Total base loading (PN)	1,095	
HAZARDOUS WASTE CLEAN UP & DISPOSAL SERVICES (16)	Total base loading (PN)	1,095	
MUSEUM SUPPORT (16)	Total base loading (PN)		N/A
BRIG & PRISON SERVICES (16)	Total active duty military (BA)	330	
VETERINARY SERVICES (4)	Total base loading (PN)		N/A

[11]

RDAT&E SUPPORT	Measure	Major	Med	Minor	None
R&D SUPPORT SERVICES (28)	Total active duty military (BA)				N/A
TEST RANGE SERVICES (28)	Total active duty military (BA)				N/A

[12]

III. STRATEGIC AND BASE LOADING SUPPORT INDICIES

BASE LOADING INDEX

SCA	Index
Waterfront Operations	0.00
Airfield Operations	56.92
C5ISR Operations	66.67
Expeditionary Operations	0.00
Inter/Depot Level Maintenance Support	50.63
Ordnance/Weapons Operational Support	55.95
Training Support	71.48
Logistics and Supply Support	59.08
Sailor and Family Support	33.33
Utilities Support	66.67
Base Support	64.70
RDAT&E Support	0.00

Group	Index
Fleet Operations	31.72
Fleet Support	60.43
Shore Support	63.00

Unit	Index
N09610	43.34

STRATEGIC LOADING INDEX

SCA	Index
Waterfront Operations	0.00
Airfield Operations	85.38
C5ISR Operations	100.00
Expeditionary Operations	0.00
Inter/Depot Level Maintenance Support	75.94
Ordnance/Weapons Operational Support	83.92
Training Support	100.00
Logistics and Supply Support	100.00
Sailor and Family Support	100.00
Utilities Support	100.00
Base Support	97.05
RDAT&E Support	0.00

Group	Index
Fleet Operations	47.58
Fleet Support	89.24
Shore Support	94.50

Unit	Index
N09610	79.73

[13]

15 Sep 11

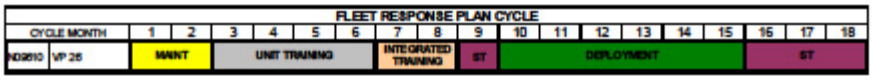
SHORE PROJECTED OPERATIONAL ENVIRONMENT (POE)

UIC: N09610
UNIT NAME: NAVY MARITIME PATROL SQUADRON VP-26

I. READINESS TYPE: Current – Warfighter [M415A]

II. MISSION TYPE: PLANE – Fixed-wing Aircraft Squadron

III. DEPLOYMENT STATUS: Type 2 self-deployable to forward operating locations



IV. ORGANIZATIONAL HIERARCHY

ADMINISTRATIVE CHAIN OF COMMAND			
NAVY ECHELON	**UIC**	**UNIT NAME**	**SENIORITY**
2	N00060	U.S. FLEET FORCES COMMAND [BSO]	
3	N57012	NAVAL AIR FORCE, ATLANTIC	
4	N39555	PATROL RECONNAISSANCE GROUP ATLANTIC	
5	N09461	PATROL RECONNAISSANCE WING ELEVEN	
6	N09610	MARITIME PATROL SQUADRON TWENTY-SIX	

V. UNIT SUPPORT DEPENDENCIES

Navy Enterprise Domain: [NAE] Naval Aviation

	PRIMARY SUPPORTING UNITS - BSO NAME (HOMEPORT - BOLD)		WITHIN ENTERPRISE		PRIMARY SUPPORTED UNITS - BSO NAME	
HIGHER LEVEL UNITS	**N00207**	**NAS JACKSONVILLE FL - CNI**	N09461	COMPATRECONWING 11		
	N65886	FLTREADCEN SOUTHEAST - NAVAIR				
	N66051	CNATT UNIT JACKSONVILLE FL - NETC				
	N44226	PUBLIC WORKS DEPT JAX - NAVFAC				
	N59450	NAVFAC SOUTHEAST JAX - NAVFAC				
	N32222	SOUTHEAST REGIONAL CALIB CNTR - CFFC				
	N58365	NLSO SE DET JACKSONVILLE - FSA				
	N43043	PERSUPPDET JACKSONVILLE - CNI				
	N46773	NASC DET PMA F222 JAX - NAVAIR				
	N00232	NAVHOSP JACKSONVILLE FL - BUMED				
	N52362	NAVAL OCEAN ASW DET JAX - CFFC				
	N58836	NAVSUP FLT LOG CTR JAX - NAVSUP				
	N67039	DEF SUP CTR R DET JF - DLA				
PEER UNITS (ECHELON 6)	N68734	NAVCOMTELSTA JACKSONVILLE - CFFC	**N09610**	**VP-26**		
			N09047	VP-30		
			N09229	VP-16		
			N09630	VP-5		
			N09639	VP-10		
			N09661	VP-8		
			N09665	4P-45		
			N4354A	PATRECONWING 11 DET FSU 5		
			N47688	AMPO		
			N53869	VPU-1		
			N55619	FMP MOCC ALPHA		
			N55620	FMP MOCC		
SUBORDINATE UNITS						

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Appendix B: SSN-713 USS *Houston* SHOROC and SHORE POE documents

SHOROC description

The SHOROC describes specific operational capabilities the shore must provide to the USS *Houston*. The SHOROC breaks out the personnel loading associated with unit that places a requirement on the shore infrastructure. For the USS *Houston*, there is an estimated total personnel demand of 497; this includes military personnel and their dependents.

The shore must also provide the appropriate capabilities to handle the capital equipment associated with berthing support. In addition, the SHOROC specifies the equipment needed to handle the ordnance aboard an SSN. The SHOROC also takes into account the demands placed upon the supply corps, and any specific training facilities the SNN places upon the shore.

The SHOROC also identifies and calculates two impact measures on the shore support requirements with respect to the 80 shore function tasks. An example is given in Appendix B where we calculate what we term the "Base Loading Index" and also the "Strategic Loading Index" for the SSN as it impacts the shore. The "Base Loading Index" provides an index measure on how much of a demand the SSN will have on the shore. The "Strategic Loading Index" is the proportion of all possible shore function tasks are needed by the SSN, regardless of the level of support needed.

Similar to the VP-26 SHOROC, the *Houston* SHOROC presents two measures that show how the VP-26 affects shore functions. The two measures are the Base Loading Index and the Strategic Loading Index. The measure quantify how the *Houston* impacts the 80 shore function tasks at Guam.

SHORE POE description

The SHORE POE for the SSN USS *Houston*, SSN-713, provides a general description of the shore operational environment. The USS *Houston* is a Type 4 unit, which means that it is homeported outside of CONUS (OCONUS) and is deployable. The USS *Houston* is a Los Angeles class nuclear attack submarine homeported in Guam; it is one of three Los Angeles class submarines homeported there. The SHORE POE for the USS *Houston* will be common to the other two submarines homeported at Guam. However, the SHORE POE will be different from the Los Angeles class vessels that are homeported in CONUS. Guam possesses minimal training facilities because training is generally done in CONUS. Therefore, the SHORE POE for training will not be nearly as extensive as it is for the submarine bases located in CONUS.

The FRP for the USS *Houston* calls for a 17-month deployment cycle. Of those 17 months, the *Houston* is deployed for six. Because there are three SSNs homeported at Guam, the SHORE POE should reflect that, on balance, one SSN will be deployed at any given time leaving two in port.

The commanding officer of the USS *Houston* has the rank of commander. The officer reports to a captain who commands Submarine Squadron 15, who in turn reports to the three-star admiral commanding Submarine Forces, U.S. Pacific Fleet.

25 July 11

SHORE REQUIRED OPERATIONAL CAPABILITIES (SHOROC)

UIC: N20994
UNIT NAME: SSN-713 USS HOUSTON NUCLEAR ATTACK SUBMARINE

I. MISSION: The mission of the SSN-713 USS Houston nuclear attack submarine is to destroy hostile ships, primarily submarines, in order to prohibit the employment of such forces in the attack and destruction of United States or Allied targets.

UNIT FORCE PROTECTION LEVEL	1	2	3	4	5
SSN-713 USS HOUSTON	X				

Personnel demand

UNIT ALLOWANCE				
IGCA CODE	MRC	MPWR	GRADE	NUMBER
M415	AD	O	H	1
M415	AD	O	I	2
M415	AD	O	J	4
M415	AD	O	K	7
M415	AD	O	L	1
M415	AD	O	M	0
M415	AD	O	N	0
M415	AD	O	O	0
M415	AD	E	9	1
M415	AD	E	8	4
M415	AD	E	7	12
M415	AD	E	6	25
M415	AD	E	5	36
M415	AD	E	4	23
M415	AD	E	3	26
			TOTAL	142

BASE-LOADING							
RANK	TOTAL	MARRIED RATIO (%)	FH	BQ	Spouses	Ave # Children	Total Dependents
O5	1	90.0	1	0	1	2.9	4
O4	2	84.2	2	0	2	2.7	7
O3	4	69.1	3	1	3	2.2	10
O2	7	45.9	3	4	3	1.7	8
O1	1	30.1	0	1	0	1.8	0
W4	0	90.5	0	0	0	2.8	0
W3	0	90.5	0	0	0	2.8	0
W2	0	90.5	0	0	0	2.8	0
E9	1	91.1	1	0	1	2.9	4
E8	4	88.8	4	0	4	3.0	16
E7	12	86.2	10	2	10	2.9	39
E6	25	80.3	20	5	20	2.6	72
E5	36	64.3	23	13	23	2.1	71
E4	23	39.6	9	14	9	1.6	23
E3	26	25.0	7	19	7	1.5	18
TOTAL	142		83	59	83		272
BASE LOADING TOTAL							497

[1]

Capital equipment demand

1 – Newport News Shipbuilding Los Angeles class nuclear attack submarine

General characteristics

Required crew:	110
Power Plant:	S6G nuclear reactor
Weight:	
Displacement:	6,103 tons
Dimensions:	
Length:	361 ft 11 in
Beam:	32 ft 10 in
Draft:	31 ft 10 in
Berthing:	462 berthing feet (BF)
Armament:	
Torpedoes:	4 – 21 in. torpedo tubes Mk 48 torpedo
Missiles:	UGM-84 Harpoon anti-ship missile GGM-109 Tomahawk land-attack cruise missile

[2]

Supply demand

Ordnance demand

Torpedoes:	4 – 21 in. torpedo tubes Mk 48 torpedo
Missiles:	UGM-84 Harpoon anti-ship missile GGM-109 Tomahawk land-attack cruise missile 12 vertical launch tubes for Tomahawks - also can be launched from torpedo tubes.
Mines:	

Training demand

Fire Fighting

Flooding training "wet trainer"

Simulated Sonar Room

Torpedo tube mock-up

Preventive maintenance training

[3]

II. SHORE SUPPORT REQUIREMENTS:

FLEET OPERATIONS SHORE CAPABILITY AREAS

WATERFRONT OPERATIONS	Measure	Major	Med	Minor	None
MAGNETIC SILENCING SERVICES (100)	Ship draft (FT)		32		
HARBOR DEFENSE & PORT SECURITY (45)	Displacement (LT)		6,103		
HARBOR MASTER SERVICES (46)	Displacement (LT)		6,103		
AT BERTH SUPPORT (46)	Linear berthing space (FB)		462		
SMALL CRAFT SUPPORT SERVICES (49)	Linear berthing space (FB)		462		

AIRFIELD OPERATIONS	Measure	Major	Med	Minor	None
AIR CRAFT SERVICING SUPPORT (87)	Number of aircraft (EA)				N/A
PASSENGER TERMINAL/CARGO SERVICES (38)	Number of cargo/pax aircraft (EA)				N/A
AIRCRAFT HANGER SUPPORT (37)	Number of aircraft (EA)				N/A
AIRFIELD SERVICES (37)	Number of aircraft (EA)				N/A

[4]

AIRFIELD GROUND ELECTRONICS SUPPORT (37)	Number of aircraft (EA)				N/A
AIR TRAFFIC CONTROL SERVICES (24)	Number of aircraft (EA)				N/A

C5ISR OPERATIONS	Measure	Major	Med	Minor	None
INTELLIGENCE TECHNOLOGY SERVICES (52)	Total military and civilians (PN)			142	
COMMUNICATIONS ACCESS SERVICES (47)	Total military and civilians (PN)			142	
SPACE SURVEILLANCE SUPPORT (47)	Total military and civilians (PN)			142	
TELEPHONE SERVICES (44)	Total military and civilians (PN)			142	
INFORMATION TECHNOLOGY SERVICES (41)	Total military and civilians (PN)			142	

EXPEDITIONARY OPERATIONS	Measure	Major	Med	Minor	None
SPECIAL FORCES SUPPORT SERVICES (35)	Total SOF active duty (BA)				N/A
EXPEDITIONARY ADMINISTRATION SUPPORT (35)	Total expeditionary active duty (BA)				N/A

[5]

EXPLOSIVE ORDNANCE DISPOSAL SUPPORT SERVICES (35)	Total expeditionary active duty (BA)				N/A
LANDING CRAFT SUPPORT SERVICES (35)	Total expeditionary active duty (BA)				N/A
DIVING & SALVAGE SUPPORT SERVICES (35)	Total expeditionary active duty (BA)				N/A

FLEET SUPPORT SHORE CAPABILITY AREAS

INTER / DEPOT LEVEL MAINTENANCE SUPPORT	Measure	Major	Med	Minor	None
SHIP REPAIR, MAINTENANCE, & MODIFICATION SERVICES (53)	Ship displacement (TN)		6,103		
AIRCRAFT ENGINE REPAIR, MAINTENANCE, & MODIFICATION SERVICES (50)	Number of aircraft engines (EA)				N/A
AIRCRAFT REPAIR, MAINTENANCE, & MODIFICATION SERVICES (50)	Number of aircraft (EA)				N/A
MISSILE REPAIR, MAINTENANCE, & MODIFICATION SERVICES (55)	Number of missiles (EA)		X		
OTHER EQUIPMENT REPAIR, MAINTENANCE, & MODIFICATION SERVICES (49)	Number of other equipment (EA)			X	

ORDNANCE / WEAPONS OPERATIONS SUPPORT	Measure	Major	Med	Minor	None
ORDNANCE/MUNITIONS STORAGE (45)	Ordnance requirement (TN)		X		

[6]

ARMAMENT & ORDNANCE REPAIR, MAINTENANCE, & MODIFICATION SERVICES (45)	Ordnance requirement (TN)	X			
MUNITIONS REPAIR, MAINTENANCE & MODIFICATION SERVICES (45)	Ordnance requirement (TN)	X			
WATERFRONT ORDNANCE LOADING/OFFLOADING SUPPORT SERVICES (32)	Pier side ordnance requirement (TN)	X			
AIR ORDNANCE LOADING/OFFLOADING SUPPORT SERVICES (32)	Airfield ordnance requirement (TN)				N/A

TRAINING SUPPORT	Measure	Major	Med	Minor	None
PROFESSIONAL MILITARY EDUCATION SERVICES (84)	Total military (BA)		142		
SPECIALIZED SKILL TRAINING SERVICES (84)	Total military (BA)		142		
OFFICER ACQUISITION TRAINING SERVICES (58)	Total officer (BA)		15		
TRAINING RANGE SERVICES (58)	Total military (BA)		142		
RECRUIT TRAINING SERVICES (58)	Total enlisted (BA)		127		
FLIGHT TRAINING SERVICES (55)	Total aviation military (BA)				N/A
MULTIPLE CATEGORY TRAINING SERVICES (5)	Total military (BA)		142		

[7]

LOGISTICS AND SUPPLY SUPPORT	Measure	Major	Med	Minor	None
BULK LIQUID STORAGE (40)	Total capacity requirement (GL)				N/A
POL DISTRIBUTION SERVICES (40)	Total requirement (GPD)				N/A
STORAGE & WAREHOUSING (27)	Total annual requirement (CF)			X	
LIQUID, GASEOUS, & CHEMICAL PRODUCT DISTRIBUTION SERVICES (15)	Total requirement (GPD)			X	
PREPARATION, DEMILITARIZATION, & DISPOSAL OF EXCESS AND SURPLUS INVENTORY SERVICES (1)	Total requirement (CF)			X	

SHORE SUPPORT SHORE CAPABILITY AREAS

SAILOR AND FAMILY SUPPORT	Measure	Major	Med	Minor	None
FOOD SERVICES (59)	Total military (BA)		142		
POSTAL SERVICES (35)	Total base loading (PN)		497		

[8]

BACHELOR HOUSING SERVICES (32)	Total BH loading (PN)	59			
TEMPORARY LODGING SERVICES (32)	Deployment eligible (PN)				N/A
CHILD DEVELOPMENT SERVICES (32)	Total minor dependents (PN)	272			
DEPENDENT SCHOOL SERVICES (32)	Total minor dependents (PN)	272			
FAMILY HOUSING SERVICES (32)	Total family units (FA)	83			
FAMILY SUPPORT SERVICES (32)	Total family units (FA)	83			
MWR SERVICES (32)	Total base loading (PN)	497			
RELIGIOUS & SPIRITUAL SUPPORT (32)	Total active duty military and spouses (PN)	225			
RETAIL EXCHANGE SERVICES (6)	Total base loading (PN)	497			

UTILITIES SUPPORT	Measure	Major	Med	Minor	None
ELECTRICAL POWER SERVICES (42)	Total base loading (PN)		497		
CHILLER PLANT & AIR CONDITIONING SERVICES (42)	Total base loading (PN)		497		

[9]

COMPRESSED GAS SERVICES (42)	Total base loading (PN)		497		
NATURAL GAS SERVICES (42)	Total base loading (PIN)		497		
COLLECT, TREAT & DISPOSE OF SEWAGE (42)	Total base loading (PN)		497		
STEAM & HOT WATER HEATING SERVICES (42)	Total base loading (PN)		497		
WATER SERVICES (42)	Total base loading (PN)		497		

BASE SUPPORT	Measure	Major	Med	Minor	None
MEDICAL SERVICES (83)	Total active duty military and families (PN)		497		
DENTAL SERVICES (83)	Total active duty military (BA)		142		
FORCE PROTECTION SECURITY SERVICES (46)	Total base loading (PN)		497		
AIRCRAFT RESCUE & FIREFIGHTING SERVICES (43)	Number of aircraft (EA)				N/A
STRUCTURAL FIRE PROTECTION & EMS SUPPORT (43)	Total base loading (PN)		497		
CASUALTY AND MORTUARY AFFAIRS ASSISTANCE (42)	Total active duty military (BA)		142		

[10]

BUILDING & STREET MAINTENANCE/REPAIR SERVICES (42)	Total base loading (PN)	497		
INCINERATOR & LANDFILL SERVICES (42)	Total base loading (PN)	497		
GROUNDS DRAINAGE SERVICES 42)	Total base loading (PN)	497		
REFUSE COLLECTION/RECYCLING SERVICES (42)	Total base loading (PN)	497		
ADMINISTRATIVE SUPPORT (41)	Total active duty military and civilians (PN)		142	
PUBLIC AFFAIRS SERVICES (41)	Total active duty military and civilians (PN)		142	
EMERGENCY MANAGEMENT SERVICES (35)	Total base loading (PN)	497		
HAZARDOUS WASTE CLEAN UP & DISPOSAL SERVICES (16)	Total base loading (PN)	497		
MUSEUM SUPPORT (16)	Total base loading (PN)			N/A
BRIG & PRISON SERVICES (16)	Total active duty military (BA)	142		
VETERINARY SERVICES (4)	Total base loading (PN)			N/A

[11]

RDAT&E SUPPORT	Measure	Major	Med	Minor	None
R&D SUPPORT SERVICES (28)	Total active duty military (BA)				N/A
TEST RANGE SERVICES (28)	Total active duty military (BA)				N/A

[12]

III. STRATEGIC AND BASE LOADING SUPPORT INDICIES

BASE LOADING INDEX

SCA	Index
Waterfront Operations	66.67
Airfield Operations	0.00
C5ISR Operations	33.33
Expeditionary Operations	0.00
Inter/Depot Level Maintenance Support	31.30
Ordnance/Weapons Operational Support	55.95
Training Support	57.55
Logistics and Supply Support	11.65
Sailor and Family Support	30.34
Utilities Support	66.67
Base Support	56.43
RDAT&E Support	0.00

Group	Index
Fleet Operations	28.12
Fleet Support	43.50
Shore Support	57.41

Unit	Index
N20994	39.09

STRATEGIC LOADING INDEX

SCA	Index
Waterfront Operations	100.00
Airfield Operations	0.00
C5ISR Operations	100.00
Expeditionary Operations	0.00
Inter/Depot Level Maintenance Support	53.62
Ordnance/Weapons Operational Support	83.92
Training Support	86.32
Logistics and Supply Support	34.96
Sailor and Family Support	91.01
Utilities Support	100.00
Base Support	90.69
RDAT&E Support	0.00

Group	Index
Fleet Operations	54.31
Fleet Support	69.41
Shore Support	89.08

Unit	Index
N20994	73.18

[13]

15 Sep 11

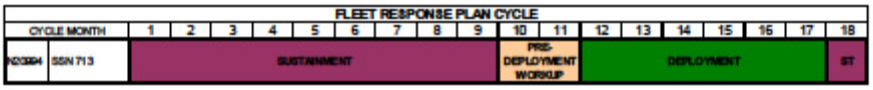
SHORE PROJECTED OPERATIONAL ENVIRONMENT (POE)

UIC: N20994
UNIT NAME: SSN-713 USS HOUSTON NUCLEAR ATTACK SUBMARINE

I. READINESS TYPE: Current – Warfighter [M415W]

II. MISSION TYPE: SUB – Submarine

III. DEPLOYMENT STATUS: Type 2 self-deployable



IV. ORGANIZATIONAL HIERARCHY

ADMINISTRATIVE CHAIN OF COMMAND			
NAVY ECHELON	**UIC**	**UNIT NAME**	**SENIORITY**
2	N00070	U.S. PACIFIC FLEET [BSO]	
3	N57020	SUBMARINE FORCE U. S. PACIFIC FLEET	
4	N43709	SUBMARINE SQUADRON 15	
5	N20994	SSN 713 USS HOUSTON	

[1]

V. UNIT SUPPORT DEPENDENCIES

Navy Enterprise Domain: [USE] Undersea

	PRIMARY SUPPORTING UNITS - BSO NAME (HOMEPORT - BOLD)		WITHIN ENTERPRISE		PRIMARY SUPPORTED UNITS - BSO NAME	
HIGHER LEVEL UNITS	N61755	NAVAL BASE GUAM - CNI	N43709	SUBMARINE SQUADRON 15		
	N61128	JOINT REGION MARIANAS GU - CNI				
	N65787	DEFSUPLYCTR PAC GUAM - DLA				
	N66606	NAV CAL LAB NAS AGANA GUAM - NAVAIR				
	N40192	NAVFAC MARIANAS GUAM - NAVFAC				
	N40333	NAVSUP FLT LOG CTR MARIANAS - NAVSUP				
	N68377	NLSO PACIFIC BROFF GUAM - FSA				
	N43462	PSD NAVSTA GUAM - CNI				
	N62766	PUBLIC WORKS DEPT MARIANAS - NAVFAC				
	N42142	SLC LEARNING SITE GUAM - NETC				
	N66121	SPAWARSYSCEN FAC PAC - SPAWARS				
PEER UNITS (ECHELON 5)	N20865	AS-40 USS FRANK CABLE - PACFLT	N20994	SSN-713 USS HOUSTON		
	N68096	NAVHOSP GUAM MI - BUMED	N20996	SSN-715 USS BUFFALO		
			N21102	SSN-723 USS OKLAHOMA CITY		
SUBORDINATE UNITS	N70243	NAVCOMTELSTA GUAM - CFFC				

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Appendix C: DDG-86 USS *Shoup* SHOROC and SHORE POE documents

SHOROC description

The SHOROC for the USS *Shoup* describes the specific operational capabilities the shore must provide for the DDG. The SHOROC shows that it will place an estimated total personnel demand of 910 people on the shore. For a DDG, the shore must also provide the necessary berthing space for the ship and any special equipment needed to load and unload the Tomahawk, Harpoon, and other missiles it carries.

The SHOROC also reports the Base Loading Index and also the Strategic Loading Index for the USS *Shoup*. These indexes show the impact on the shore with respect to all of the shore function tasks, individually and in aggregate.

SHORE POE description

The SHORE POE for the USS *Shoup* is the document that describe the shore operating environment. The USS *Shoup* is a DDG Arleigh Burke class destroyer homeported in NAVSTA Everett, Washington. It possesses a Type 2 duty assignment, which means that it is homeported in the CONUS and has deployable sea duty. The SHORE POE notes that a total of seven DDG destroyers are homeported at Everett, Washington, and that at least five are in port at any given time.

The FRP is on a 27-month cycle and a typical deployment lasts for six months. This implies that there will likely be no more than two DDGs deployed from Everett at any given time and that the SHORE POE should plan on at having at least five ships in port. The deployment cycle for the USS *Shoup* is fairly predictable given the Navy's goal of maintaining the 27-month deployment cycle.

The commanding officer for the USS *Shoup* has the rank of commander. This officer reports to the captain who commands Destroyer Squadron Nine, who, in turn, reports to the admiral who commands Naval Surface Forces, Pacific.

25 July 11

SHORE REQUIRED OPERATIONAL CAPABILITIES (SHOROC)

UIC: N22994
UNIT NAME: DDG-86 USS SHOUP GUIDED MISSILE DESTROYER

I. MISSION: The mission of the DDG-86 USS Shoup guided missile destroyer is to conduct sustained combat operations at sea, providing primary protection for the Navy's aircraft carriers and battle groups, as well as essential escort to Navy and Marine Corps amphibious forces and auxiliary ships, and independent operations as necessary. The ship is capable of fighting of air, surface, and subsurface battles simultaneously.

UNIT FORCE PROTECTION LEVEL	1	2	3	4	5
DDG-86 USS SHOUP		X			

Personnel demand

UNIT ALLOWANCE				
IGCA CODE	MRC	MPWR	GRADE	NUMBER
M415	AD	O	H	1
M415	AD	O	I	2
M415	AD	O	J	5
M415	AD	O	K	4
M415	AD	O	L	10
M415	AD	O	M	0
M415	AD	O	N	1
M415	AD	O	O	1
M415	AD	E	9	1
M415	AD	E	8	5
M415	AD	E	7	19
M415	AD	E	6	39
M415	RT	E	6	1
M415	AD	E	5	73
M415	AD	E	4	69
M415	RT	E	4	2
M415	AD	E	3	43
			TOTAL	276

BASE-LOADING							
RANK	TOTAL	MARRIED RATIO (%)	FH	BQ	Spouses	Ave # Children	Total Dependents
O6	1	90.0	1	0	1	2.9	4
O4	2	84.2	2	0	2	2.7	7
O3	5	69.1	3	2	3	2.2	10
O2	4	45.9	2	2	2	1.7	5
O1	10	30.1	3	7	3	1.8	8
W4	0	90.5	0	0	0	2.8	0
W3	1	90.5	1	0	1	2.8	4
W2	1	90.5	1	0	1	2.8	0
E9	1	91.1	1	0	1	2.9	4
E8	5	88.8	4	1	4	3.0	16
E7	19	86.2	16	3	16	2.9	62
E6	39	80.3	31	8	31	2.6	112
E6	1	80.3	1	0	1	2.6	4
E5	73	64.3	47	26	47	2.1	146
E4	69	39.6	27	42	27	1.6	70
E4	2	39.6	1	1	1	1.6	3
E3	43	25.0	11	32	11	1.5	28
TOTALS	276		152	124	152		482
BASE LOADING TOTAL							910

[1]

Capital equipment loading

1 – Ingalls Shipbuilding Arleigh Burke class aegis destroyer

General characteristics

Required crew:	380
Power Plant:	Four General Electric LM2500-30 gas turbines, 2 shafts, 100,000 shp
Fuel capacity:	
Weight:	
Displacement:	9,200 tons
Dimensions:	
Length:	509 ft 6 in
Beam:	66 ft
Draft:	31 ft
Berthing:	609 berthing feet (BF)
Armament:	
Guns:	1 – 5 in 62 2 – 25 mm 4 – 12.7 mm 1 – Phalanx 1B close in weapons system (CIWS)
Missiles:	1- 32 cell Mk 41 vertical launch system (VLS) 1 – 64 cell Mk 41 VLS RIM-66 SM-2 BGM-109 Tomahawk RUM-139 VL - Asroc
Torpedoes:	2- Mk 46 triple torpedo tubes
Aircraft:	2- SH-60 Sea Hawk helicopters

[2]

Supply loading

Ordnance loading

Training loading

[3]

II. SHORE SUPPORT REQUIREMENTS:

FLEET OPERATIONS SHORE CAPABILITY AREAS

WATERFRONT OPERATIONS	Measure	Major	Med	Minor	None
MAGNETIC SILENCING SERVICES (100)	Ship draft (FT)		31		
HARBOR DEFENSE & PORT SECURITY (48)	Displacement (LT)		9,200		
HARBOR MASTER SERVICES (46)	Displacement (LT)		9,200		
AT BERTH SUPPORT (45)	Linear berthing space (FB)		609		
SMALL CRAFT SUPPORT SERVICES (46)	Linear berthing space (FB)		609		

AIRFIELD OPERATIONS	Measure	Major	Med	Minor	None
AIRCRAFT SERVICING SUPPORT (87)	Number of aircraft (EA)				N/A
PASSENGER TERMINAL/CARGO SERVICES (38)	Number of cargo/pax aircraft (EA)				N/A
AIRCRAFT HANGER SUPPORT (37)	Number of aircraft (EA)				N/A
AIRFIELD SERVICES (37)	Number of aircraft (EA)				N/A

[4]

AIRFIELD GROUND ELECTRONICS SUPPORT (37)	Number of aircraft (EA)				N/A
AIR TRAFFIC CONTROL SERVICES (24)	Number of aircraft (EA)				N/A

C5ISR OPERATIONS	Measure	Major	Med	Minor	None
INTELLIGENCE TECHNOLOGY SERVICES (52)	Total military and civilians (PN)		276		
COMMUNICATIONS ACCESS SERVICES (47)	Total military and civilians (PN)		276		
SPACE SURVEILLANCE SUPPORT (47)	Total military and civilians (PN)		276		
TELEPHONE SERVICES (44)	Total military and civilians (PN)		276		
INFORMATION TECHNOLOGY SERVICES (41)	Total military and civilians (PN)		276		

EXPEDITIONARY OPERATIONS	Measure	Major	Med	Minor	None
SPECIAL FORCES SUPPORT SERVICES (35)	Total SOF active duty (BA)				N/A
EXPEDITIONARY ADMINISTRATION SUPPORT (35)	Total expeditionary active duty (BA)				N/A

[5]

EXPLOSIVE ORDNANCE DISPOSAL SUPPORT SERVICES (35)	Total expeditionary active duty (BA)				N/A
LANDING CRAFT SUPPORT SERVICES (35)	Total expeditionary active duty (BA)				N/A
DIVING & SALVAGE SUPPORT SERVICES (35)	Total expeditionary active duty (BA)				N/A

FLEET SUPPORT SHORE CAPABILITY AREAS

INTER / DEPOT LEVEL MAINTENANCE SUPPORT	Measure	Major	Med	Minor	None
SHIP REPAIR, MAINTENANCE, & MODIFICATION SERVICES (53)	Ship displacement (TN)		9,200		
AIRCRAFT ENGINE REPAIR, MAINTENANCE, & MODIFICATION SERVICES (50)	Number of aircraft engines (EA)				N/A
AIRCRAFT REPAIR, MAINTENANCE, & MODIFICATION SERVICES (50)	Number of aircraft (EA)				N/A
MISSILE REPAIR, MAINTENANCE, & MODIFICATION SERVICES (55)	Number of missiles (EA)		X		
OTHER EQUIPMENT REPAIR, MAINTENANCE, & MODIFICATION SERVICES (46)	Number of other equipment (EA)			X	

ORDNANCE / WEAPONS OPERATIONS SUPPORT	Measure	Major	Med	Minor	None
ORDNANCE/MUNITIONS STORAGE (45)	Ordnance requirement (TN)		X		

[6]

ARMAMENT & ORDNANCE REPAIR, MAINTENANCE, & MODIFICATION SERVICES (46)	Ordnance requirement (TN)	X			
MUNITIONS REPAIR, MAINTENANCE & MODIFICATION SERVICES (46)	Ordnance requirement (TN)	X			
WATERFRONT ORDNANCE LOADING/OFFLOADING SUPPORT SERVICES (32)	Pier side ordnance requirement (TN)	X			
AIR ORDNANCE LOADING/OFFLOADING SUPPORT SERVICES (32)	Airfield ordnance requirement (TN)				N/A

TRAINING SUPPORT	Measure	Major	Med	Minor	None
PROFESSIONAL MILITARY EDUCATION SERVICES (64)	Total military (BA)		276		
SPECIALIZED SKILL TRAINING SERVICES (64)	Total military (BA)		276		
OFFICER ACQUISITION TRAINING SERVICES (58)	Total officer (BA)		24		
TRAINING RANGE SERVICES (58)	Total military (BA)		276		
RECRUIT TRAINING SERVICES (58)	Total enlisted (BA)		252		
FLIGHT TRAINING SERVICES (55)	Total aviation military (BA)				N/A
MULTIPLE CATEGORY TRAINING SERVICES (5)	Total military (BA)		252		

[7]

LOGISTICS AND SUPPLY SUPPORT	Measure	Major	Med	Minor	None
BULK LIQUID STORAGE (40)	Total capacity requirement (GL)		X		
POL DISTRIBUTION SERVICES (40)	Total requirement (GPD)		X		
STORAGE & WAREHOUSING (27)	Total annual requirement (CF)		X		
LIQUID, GASEOUS, & CHEMICAL PRODUCT DISTRIBUTION SERVICES (15)	Total requirement (GPD)		X		
PREPARATION, DEMILITARIZATION, & DISPOSAL OF EXCESS AND SURPLUS INVENTORY SERVICES (1)	Total requirement (CF)			X	

SHORE SUPPORT SHORE CAPABILITY AREAS

SAILOR AND FAMILY SUPPORT	Measure	Major	Med	Minor	None
FOOD SERVICES (59)	Total military (BA)		276		
POSTAL SERVICES (35)	Total base loading (PN)		910		

[8]

BACHELOR HOUSING SERVICES (32)	Total BH loading (PN)	124
TEMPORARY LODGING SERVICES (32)	Deployment eligible (PN)	276
CHILD DEVELOPMENT SERVICES (32)	Total minor dependents (PN)	482
DEPENDENT SCHOOL SERVICES (32)	Total minor dependents (PN)	482
FAMILY HOUSING SERVICES (32)	Total family units (FA)	152
FAMILY SUPPORT SERVICES (32)	Total family units (FA)	152
MWR SERVICES (32)	Total base loading (PN)	910
RELIGIOUS & SPIRITUAL SUPPORT (32)	Total active duty military and spouses (PN)	428
RETAIL EXCHANGE SERVICES (6)	Total base loading (PN)	910

UTILITIES SUPPORT	Measure	Major	Med	Minor	None
ELECTRICAL POWER SERVICES (42)	Total base loading (PN)		910		
CHILLER PLANT & AIR CONDITIONING SERVICES (42)	Total base loading (PN)		910		

[9]

COMPRESSED GAS SERVICES (42)	Total base loading (PN)		910		
NATURAL GAS SERVICES (42)	Total base loading (PIN)		910		
COLLECT, TREAT & DISPOSE OF SEWAGE (42)	Total base loading (PN)		910		
STEAM & HOT WATER HEATING SERVICES (42)	Total base loading (PN)		910		
WATER SERVICES (42)	Total base loading (PN)		910		

BASE SUPPORT	Measure	Major	Med	Minor	None
MEDICAL SERVICES (83)	Total active duty military and families (PN)		910		
DENTAL SERVICES (83)	Total active duty military (BA)		276		
FORCE PROTECTION SECURITY SERVICES (46)	Total base loading (PN)		910		
AIRCRAFT RESCUE & FIREFIGHTING SERVICES (43)	Number of aircraft (EA)				N/A
STRUCTURAL FIRE PROTECTION & EMS SUPPORT (43)	Total base loading (PN)		910		
CASUALTY AND MORTUARY AFFAIRS ASSISTANCE (42)	Total active duty military (BA)		276		

[10]

BUILDING & STREET MAINTENANCE/REPAIR SERVICES (42)	Total base loading (PN)	910	
INCINERATOR & LANDFILL SERVICES (42)	Total base loading (PN)	910	
GROUNDS DRAINAGE SERVICES 42)	Total base loading (PN)	910	
REFUSE COLLECTION/RECYCLING SERVICES (42)	Total base loading (PN)	910	
ADMINISTRATIVE SUPPORT (41)	Total active duty military and civilians (PN)	276	
PUBLIC AFFAIRS SERVICES (41)	Total active duty military and civilians (PN)	276	
EMERGENCY MANAGEMENT SERVICES (35)	Total base loading (PN)	910	
HAZARDOUS WASTE CLEAN UP & DISPOSAL SERVICES (16)	Total base loading (PN)	910	
MUSEUM SUPPORT (16)	Total base loading (PN)		N/A
BRIG & PRISON SERVICES (16)	Total active duty military (BA)	276	
VETERINARY SERVICES (4)	Total base loading (PN)		N/A

[11]

RDAT&E SUPPORT	Measure	Major	Med	Minor	None
R&D SUPPORT SERVICES (28)	Total active duty military (BA)				N/A
TEST RANGE SERVICES (28)	Total active duty military (BA)				N/A

[12]

III. STRATEGIC AND BASE LOADING SUPPORT INDICIES

BASE LOADING INDEX

SCA	Index
Waterfront Operations	66.67
Airfield Operations	0.00
C5ISR Operations	66.67
Expeditionary Operations	0.00
Inter/Depot Level Maintenance Support	31.30
Ordnance/Weapons Operational Support	55.95
Training Support	57.55
Logistics and Supply Support	66.40
Sailor and Family Support	33.33
Utilities Support	66.67
Base Support	60.46
RDAT&E Support	0.00

Group	Index
Fleet Operations	36.20
Fleet Support	49.80
Shore Support	60.93

Unit	Index
N22994	44.76

STRATEGIC LOADING INDEX

SCA	Index
Waterfront Operations	100.00
Airfield Operations	0.00
C5ISR Operations	100.00
Expeditionary Operations	0.00
Inter/Depot Level Maintenance Support	53.62
Ordnance/Weapons Operational Support	83.92
Training Support	86.32
Logistics and Supply Support	100.00
Sailor and Family Support	100.00
Utilities Support	100.00
Base Support	90.69
RDAT&E Support	0.00

Group	Index
Fleet Operations	54.31
Fleet Support	76.89
Shore Support	91.40

Unit	Index
N22994	76.47

[13]

15 Sep 11

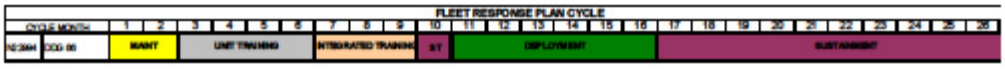
SHORE PROJECTED OPERATIONAL ENVIRONMENT (POE)

UIC: N22994
UNIT NAME: DDG-86 USS SHOUP GUIDED MISSILE DESTROYER

I. READINESS TYPE: Current – Warfighter [M415W]

II. MISSION TYPE: SHIP – Ship or vessel

III. DEPLOYMENT STATUS: Type 2 self-deployable



IV. ORGANIZATIONAL HIERARCHY

ADMINISTRATIVE CHAIN OF COMMAND			
NAVY ECHELON	**UIC**	**UNIT NAME**	**SENIORITY**
2	N00070	U.S. PACIFIC FLEET [BSO]	
3	N53824	NAVAL SURFACE FORCE U. S. PACIFIC FLEET	
4	N0118A	DESTROYER SQUADRON NINE	
5	N22994	DDG-86 USS SHOUP	

V. UNIT SUPPORT DEPENDENCIES

Navy Enterprise Domain: [SWE] Surface Warfare

	PRIMARY SUPPORTING UNITS - BSO NAME (HOMEPORT - BOLD)		WITHIN ENTERPRISE		PRIMARY SUPPORTED UNITS - BSO NAME	
HIGHER LEVEL UNITS	**N68967**	**NAVSTA EVERETT - CNI**	N01118A	DESTROYER SQUADRON NINE		
	N39971	CSCS DET PACNORWEST - PACFLT				
	N49769	NAVIMFAC PNW DET - PACFLT				
	N69226	NAVSUP FLT LOG CTR - NAVSUP				
	N47430	NBRHLTHCLINIC - BUMED				
	N42957	NCISRA NW - DON/AA				
	N43136	PERSONNEL SUP ACTY DET - CNI				
	N45865	PUBLIC WORKS DEPT - NAVFAC				
	N55271	REGIONAL SUPPORT ORG PNW - PACFLT				
	N31539	RLSO NW DET - FSA				
	N41172A	SPAWAR SYSTEMS CENTER SD - SPAWARS				
	N31379	AFLOATRAGUR PACNORWEST - PACFLT				
PEER UNITS (ECHELON 5)	N3844A	FLTREADCEN NW DET - PACFLT	**N22994**	**DDG-86 USS SHOUP**		
			N21235	DDG-54 USS FORD		
			N21391	DDG-60 USS RODNEY M DAVIS		
			N21430	DDG-61 USS INGRAHAM		
			N23154	DDG-23154 USS HALSEY		
			N23160	DDG-92 USS MOMSEN		
			N23166	DDG-104 USS STERETT		
SUBORDINATE UNITS						

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Appendix D: Navy mobile construction battalion, NMCB-133, SHOROC and SHORE POE documents

SHOROC description

The SHOROC for NMCB-133 describes the specific shore capabilities needed to support a Seabee battalion at that naval installation. The SHOROC describes the basic mission of the battalion and also the force protection level required by the unit. The SHOROC notes that the unit imposes an estimated personnel demand on the shore of 1,811 people. This total includes both military personnel and their dependents. The SHOROC will identify any special needs to support the unit in terms of capital equipment, supply, ordnance, and training. One interesting fact about a Seabee battalion is that the battalion does not own its equipment. When the battalion deploys, it typically replaces another Seabee battalion and the equipment (bulldozers, road graders, backhoes, welding equipment, etc.) is already on site. Seabee battalions, therefore, share much of their equipment. The battalion, in effect, is the custodian of the personnel skills and another organization is in charge of the equipment.

The SHOROC includes the Base Loading Index and also the Strategic Loading Index for the battalion. Since a Seabee battalion does not require any shore support with respect to waterfront operations, airfield operations, or research & development support, the two index measures reflect the fact that this unit requires relatively low shore support.

SHORE POE description

The Navy Mobile Construction Battalion, NMCB-133, is a Seabee unit homeported at Gulfport, Mississippi. NMCB-133 is a Type 2 expeditionary, deployable unit. A Type 2 unit indicates that the unit is homeported in CONUS but deployable to forward operating locations. Recent changes in the FRP cycle call for the active duty Seabee units to be deployable for 8 months out of the 18-month deployment cycle. They are homeported the remaining 10 months. Prior to January 2010, the deployment duration was 6 months.

The deployment cycle can be described as somewhat predictable to the extent that units know when they will deploy but they don't know to where. Exceptions to the set deployment schedule may occur in the event of a natural disaster, such as the recent earthquake in Haiti. The Seabee unit may be deployed provide humanitarian assistance outside of its normal deployment schedule.

Gulfport supports four other Seabee units in addition to NMCB-133. With the new 8-month deployment period in place, the shore should expect to have three Seabee units at the installation at any given time. This is reflected SHORE POE.

The commanding officer of NMCB-133 is a Navy commander. The commander reports to the captain in charge of the 20th Seabee Readiness Group. The captain, in turn, reports to a two-star admiral who commands the First Naval Construction Division/Naval Construction Forces Command.

25 July 11

SHORE REQUIRED OPERATIONAL CAPABILITIES (SHOROC)

UIC: N55451
UNIT NAME: NAVY MOBILE CONSTRUCTION BATTALION NMCB-133

I. MISSION: The mission of the NMCB-133 Navy Mobile Construction Battalion is to be a land-based deployable unit providing responsive military expeditionary construction support to Naval, Marine Corps, and other forces in military operations; to construct base facilities; and to conduct defensive operations as required by the circumstances of the deployment situation. In times of emergency or disaster, the Battalion conducts disaster control and recovery operations, including emergency public works functions as directed.

UNIT FORCE PROTECTION LEVEL	1	2	3	4	5
NMCB 133		X			

Personnel demand

UNIT ALLOWANCE				
IGCA CODE	MRC	MPWR	GRADE	NUMBER
M510	AD	O	H	1
M510	AD	O	I	3
M510	RT	O	I	1
M510	AD	O	J	9
M510	AD	O	K	4
M510	AD	O	L	5
M510	AD	O	M	0
M510	AD	O	N	0
M510	AD	O	O	2
M510	AD	E	9	4
M510	AD	E	8	7
M510	AD	E	7	32
M510	AD	E	6	81
M510	AD	E	5	117
M510	AD	E	4	159
M510	AD	E	3	160
			TOTAL	686

BASE-LOADING							
RANK	TOTAL	MARRIED RATIO (%)	FH	BQ	Spouses	Ave # Children	Total Dependents
O5	1	90.0	1	0	1	2.9	4
O4	3	84.2	3	0	3	2.7	11
O4	1	84.2	1	0	1	2.7	4
O3	9	69.1	6	3	6	2.2	19
O2	4	45.9	2	2	2	1.7	5
O1	5	30.1	2	3	2	1.8	6
W4	0	90.5	0	0	0	2.8	0
W3	0	90.5	0	0	0	2.8	0
W2	2	90.5	2	0	2	2.8	0
E9	4	91.1	4	0	4	2.9	16
E8	7	88.8	6	1	6	3.0	24
E7	32	86.2	28	4	28	2.9	109
E6	81	80.3	65	16	65	2.6	234
E5	117	64.3	75	42	75	2.1	233
E4	159	39.6	63	96	63	1.6	164
E3	160	25.0	40	120	40	1.5	100
TOTAL	686		298	287	298		928
BASE LOADING TOTAL							1,811

[1]

Capital equipment demand

Supply demand

Ordnance demand

Training demand

[2]

II. SHORE SUPPORT REQUIREMENTS:

FLEET OPERATIONS SHORE CAPABILITY AREAS

WATERFRONT OPERATIONS	Measure	Major	Med	Minor	None
MAGNETIC SILENCING SERVICES (100)	Ship draft (FT)				N/A
HARBOR DEFENSE & PORT SECURITY (48)	Displacement (LT)				N/A
HARBOR MASTER SERVICES (46)	Displacement (LT)				N/A
AT BERTH SUPPORT (46)	Linear berthing space (FB)				N/A
SMALL CRAFT SUPPORT SERVICES (46)	Linear berthing space (FB)				N/A

AIRFIELD OPERATIONS	Measure	Major	Med	Minor	None
AIRCRAFT SERVICING SUPPORT (87)	Number of aircraft (EA)				N/A
PASSENGER TERMINAL/CARGO SERVICES (38)	Number of cargo/pax aircraft (EA)				N/A
AIRCRAFT HANGER SUPPORT (37)	Number of aircraft (EA)				N/A
AIRFIELD SERVICES (37)	Number of aircraft (EA)				N/A

[3]

AIRFIELD GROUND ELECTRONICS SUPPORT (37)	Number of aircraft (EA)				N/A
AIR TRAFFIC CONTROL SERVICES (24)	Number of aircraft (EA)				N/A

C5ISR OPERATIONS	Measure	Major	Med	Minor	None
INTELLIGENCE TECHNOLOGY SERVICES (52)	Total military and civilians (PN)		585		
COMMUNICATIONS ACCESS SERVICES (47)	Total military and civilians (PN)		585		
SPACE SURVEILLANCE SUPPORT (47)	Total military and civilians (PN)		585		
TELEPHONE SERVICES (44)	Total military and civilians (PN)		585		
INFORMATION TECHNOLOGY SERVICES (41)	Total military and civilians (PN)		585		

EXPEDITIONARY OPERATIONS	Measure	Major	Med	Minor	None
SPECIAL FORCES SUPPORT SERVICES (35)	Total SOF active duty (BA)				N/A
EXPEDITIONARY ADMINISTRATION SUPPORT (35)	Total expeditionary active duty (BA)	585			

[4]

EXPLOSIVE ORDNANCE DISPOSAL SUPPORT SERVICES (35)	Total expeditionary active duty (BA)	585			
LANDING CRAFT SUPPORT SERVICES (35)	Total expeditionary active duty (BA)				N/A
DIVING & SALVAGE SUPPORT SERVICES (35)	Total expeditionary active duty (BA)				N/A

FLEET SUPPORT SHORE CAPABILITY AREAS

INTER / DEPOT LEVEL MAINTENANCE SUPPORT	Measure	Major	Med	Minor	None
SHIP REPAIR, MAINTENANCE, & MODIFICATION SERVICES (83)	Ship displacement (TN)				N/A
AIRCRAFT ENGINE REPAIR, MAINTENANCE, & MODIFICATION SERVICES (60)	Number of aircraft engines (EA)				N/A
AIRCRAFT REPAIR, MAINTENANCE, & MODIFICATION SERVICES (60)	Number of aircraft (EA)				N/A
MISSILE REPAIR, MAINTENANCE, & MODIFICATION SERVICES (56)	Number of missiles (EA)				N/A
OTHER EQUIPMENT REPAIR, MAINTENANCE, & MODIFICATION SERVICES (46)	Number of other equipment (EA)	X			
ORDNANCE / WEAPONS OPERATIONS SUPPORT	**Measure**	**Major**	**Med**	**Minor**	**None**
ORDNANCE/MUNITIONS STORAGE (45)	Ordnance requirement (TN)		X		

[5]

ARMAMENT & ORDNANCE REPAIR, MAINTENANCE, & MODIFICATION SERVICES (45)	Ordnance requirement (TN)		X		
MUNITIONS REPAIR, MAINTENANCE & MODIFICATION SERVICES (45)	Ordnance requirement (TN)		X		
WATERFRONT ORDNANCE LOADING/OFFLOADING SUPPORT SERVICES (32)	Pier side ordnance requirement (TN)				N/A
AIR ORDNANCE LOADING/OFFLOADING SUPPORT SERVICES (32)	Airfield ordnance requirement (TN)				N/A
TRAINING SUPPORT	**Measure**	**Major**	**Med**	**Minor**	**None**
PROFESSIONAL MILITARY EDUCATION SERVICES (84)	Total military (BA)		585		
SPECIALIZED SKILL TRAINING SERVICES (84)	Total military (BA)		585		
OFFICER ACQUISITION TRAINING SERVICES (58)	Total officer (BA)		25		
TRAINING RANGE SERVICES (58)	Total military (BA)		585		
RECRUIT TRAINING SERVICES (58)	Total enlisted (BA)	560			
FLIGHT TRAINING SERVICES (55)	Total aviation military (BA)				N/A
MULTIPLE CATEGORY TRAINING SERVICES (5)	Total military (BA)		585		

[6]

LOGISTICS AND SUPPLY SUPPORT	Measure	Major	Med	Minor	None
BULK LIQUID STORAGE (40)	Total capacity requirement (GL)			X	
POL DISTRIBUTION SERVICES (40)	Total requirement (GPD)			X	
STORAGE & WAREHOUSING (27)	Total annual requirement (CF)	X			
LIQUID, GASEOUS, & CHEMICAL PRODUCT DISTRIBUTION SERVICES (15)	Total requirement (GPD)			X	
PREPARATION, DEMILITARIZATION, & DISPOSAL OF EXCESS AND SURPLUS INVENTORY SERVICES (1)	Total requirement (CF)			X	

SHORE SUPPORT SHORE CAPABILITY AREAS

SAILOR AND FAMILY SUPPORT	Measure	Major	Med	Minor	None
FOOD SERVICES (50)	Total military (BA)		585		
POSTAL SERVICES (35)	Total base loading (PN)		1,811		

[7]

BACHELOR HOUSING SERVICES (32)	Total BH loading (PN)	287
TEMPORARY LODGING SERVICES (32)	Deployment eligible (PN)	585
CHILD DEVELOPMENT SERVICES (32)	Total minor dependents (PN)	928
DEPENDENT SCHOOL SERVICES (32)	Total minor dependents (PN)	928
FAMILY HOUSING SERVICES (32)	Total family units (FA)	298
FAMILY SUPPORT SERVICES (32)	Total family units (FA)	298
MWR SERVICES (32)	Total base loading (PN)	1,811
RELIGIOUS & SPIRTUAL SUPPORT (32)	Total active duty military and spouses (PN)	883
RETAIL EXCHANGE SERVICES (6)	Total base loading (PN)	1,811

UTILITIES SUPPORT	Measure	Major	Med	Minor	None
ELECTRICAL POWER SERVICES (42)	Total base loading (PN)		1,811		
CHILLER PLANT & AIR CONDITIONING SERVICES (42)	Total base loading (PN)		1,811		

[8]

COMPRESSED GAS SERVICES (42)	Total base loading (PN)	1,811
NATURAL GAS SERVICES (42)	Total base loading (PIN)	1,811
COLLECT, TREAT & DISPOSE OF SEWAGE (42)	Total base loading (PN)	1,811
STEAM & HOT WATER HEATING SERVICES (42)	Total base loading (PN)	1,811
WATER SERVICES (42)	Total base loading (PN)	1,811

BASE SUPPORT	Measure	Major	Med	Minor	None
MEDICAL SERVICES (83)	Total active duty military and families (PN)		1,811		
DENTAL SERVICES (83)	Total active duty military (BA)		585		
FORCE PROTECTION SECURITY SERVICES (46)	Total base loading (PN)		1,811		
AIRCRAFT RESCUE & FIREFIGHTING SERVICES (43)	Number of aircraft (EA)				N/A
STRUCTURAL FIRE PROTECTION & EMS SUPPORT (43)	Total base loading (PN)		1,811		
CASUALTY AND MORTUARY AFFAIRS ASSISTANCE (42)	Total active duty military (BA)		585		

[9]

BUILDING & STREET MAINTENANCE/REPAIR SERVICES (42)	Total base loading (PN)	1,811	
INCINERATOR & LANDFILL SERVICES (42)	Total base loading (PN)	1,811	
GROUNDS DRAINAGE SERVICES 42)	Total base loading (PN)	1,811	
REFUSE COLLECTION/RECYCLING SERVICES (42)	Total base loading (PN)	1,811	
ADMINISTRATIVE SUPPORT (41)	Total active duty military and civilians (PN)	585	
PUBLIC AFFAIRS SERVICES (41)	Total active duty military and civilians (PN)	585	
EMERGENCY MANAGEMENT SERVICES (35)	Total base loading (PN)	1,811	
HAZARDOUS WASTE CLEAN UP & DISPOSAL SERVICES (16)	Total base loading (PN)	1,811	
MUSEUM SUPPORT (16)	Total base loading (PN)		N/A
BRIG & PRISON SERVICES (16)	Total active duty military (BA)	585	
VETERINARY SERVICES (4)	Total base loading (PN)		N/A

[10]

BUILDING & STREET MAINTENANCE/REPAIR SERVICES (42)	Total base loading (PN)	1,811	
INCINERATOR & LANDFILL SERVICES (42)	Total base loading (PN)	1,811	
GROUNDS DRAINAGE SERVICES 42)	Total base loading (PN)	1,811	
REFUSE COLLECTION/RECYCLING SERVICES (42)	Total base loading (PN)	1,811	
ADMINISTRATIVE SUPPORT (41)	Total active duty military and civilians (PN)	585	
PUBLIC AFFAIRS SERVICES (41)	Total active duty military and civilians (PN)	585	
EMERGENCY MANAGEMENT SERVICES (35)	Total base loading (PN)	1,811	
HAZARDOUS WASTE CLEAN UP & DISPOSAL SERVICES (16)	Total base loading (PN)	1,811	
MUSEUM SUPPORT (16)	Total base loading (PN)		N/A
BRIG & PRISON SERVICES (16)	Total active duty military (BA)	585	
VETERINARY SERVICES (4)	Total base loading (PN)		N/A

[10]

III. STRATEGIC AND BASE LOADING SUPPORT INDICIES

BASE LOADING INDEX

SCA	Index
Waterfront Operations	0.00
Airfield Operations	0.00
C5ISR Operations	66.67
Expeditionary Operations	40.00
Inter/Depot Level Maintenance Support	13.33
Ordnance/Weapons Operational Support	45.23
Training Support	62.35
Logistics and Supply Support	47.97
Sailor and Family Support	33.33
Utilities Support	66.67
Base Support	60.46
RDAT&E Support	0.00

Group	Index
Fleet Operations	23.53
Fleet Support	41.69
Shore Support	60.93

Unit	Index
N55451	38.67

STRATEGIC LOADING INDEX

SCA	Index
Waterfront Operations	0.00
Airfield Operations	0.00
C5ISR Operations	100.00
Expeditionary Operations	40.00
Inter/Depot Level Maintenance Support	13.33
Ordnance/Weapons Operational Support	67.84
Training Support	86.32
Logistics and Supply Support	100.00
Sailor and Family Support	100.00
Utilities Support	100.00
Base Support	90.69
RDAT&E Support	0.00

Group	Index
Fleet Operations	31.62
Fleet Support	60.90
Shore Support	91.40

Unit	Index
N55451	65.10

[12]

15 Sep 11

SHORE PROJECTED OPERATIONAL ENVIRONMENT (POE)

UIC: N55451
UNIT NAME: NAVY MOBILE CONSTRUCTION BATTALION NMCB-133

I. READINESS TYPE: Current – Warfighter [M480E]

II. MISSION TYPE: EXPD – Expeditionary Unit

III. DEPLOYMENT STATUS: Type 2 deployable to forward operating locations

IV. ORGANIZATIONAL HIERARCHY

ADMINISTRATIVE CHAIN OF COMMAND			
NAVY ECHELON	**UIC**	**UNIT NAME**	**SENIORITY**
2	N00060	U.S. FLEET FORCES COMMAND [BSO]	
3	N4582A	NAVY EXPEDITIONARY COMBAT COMMAND	
4	N57034	FIRST NAVAL CONSTRUCTION DIVISION/NAVAL CONSTRUCTION FORCES COMMAND	
5	N55460	20TH SEABEE READINESS GROUP	
6	N55451	NAVAL MOBILE CONSTRUCTION BATTALION 133	

[1]

V. UNIT SUPPORT DEPENDENCIES

Navy Enterprise Domain: [NECC] Naval Expeditionary Combat

	PRIMARY SUPPORTING UNITS - BSO NAME (HOMEPORT - BOLD)		WITHIN ENTERPRISE		PRIMARY SUPPORTED UNITS - BSO NAME	
HIGHER LEVEL UNITS	N62604	CB CEN - CNI	N55460	20TH SEABEE READINESS GROUP		
	N58403	DLA DDJFDG - DLA				
	N65971	NAVCONSTRACEN - NETC				
	N40302	NAVSUP FLT LOG CTR - NAVSUP				
	N32360	CONST EQUIP DIV DET - NAVFAC				
	N66739	NAVPERSCOMMOB DET - BUPERS				
	N59375	NBRHLTHCLINIC CBC - BUMED				
	N54413	NCISRA CN - DONIAA				
	N45710	NLSO CENT BROFF - FSA				
	N43084	PERSUPPDET - CNI				
	N44220	PUBLIC WORKS DEPT - NAVFAC				
	N64697	ROICC - NAVFAC				
PEER UNITS (ECHELON 6)			N55451	NMCB-133		
			N30121	UCT-1		
			N41411	EXPD COMBAT CAMERA		
			N46084	NMCB-4		
			N55101	NMCB-1		
			N55117	NMCB-7		
			N55488	NMCB-74		
			N55643	CBU-202		
SUBORDINATE UNITS						

Appendix E: SCALE file attributes

File name: 20120831 Navy SCALE Tool

File type: MS Access 2010 database

Date: 31 August 2012

Author: Dorothy Morgan

Size: 52.1 MB

File name: 20120831 Navy SCALE Tool - Access 2003

File type: MS Access 2003 database

Date: 31 August 2012

Author: Dorothy Morgan

Size: 53.6 MB

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Glossary

A GRADE	Authorized officer pay grade code
A E GRADE	Authorized enlisted pay grade code
ABC	Activity Based Cost
AD ENL	Active-duty enlisted
AD OFF	Active-duty officer
ADMIN	Administrative support
ANAME	Activity name
BA	Billets authorized
BOS	Base operating support
BSO	Budget submitting office
BUIC	Billable unit identification code
C5ISR	Command, control, communications, computers, combat systems, intelligence, surveillance, and reconnaissance
CA FUNC	Commercial activities function
CF	Cubic feet
CFY	Current fiscal year
CIV FUND	Civilian funding source
CIVIL SER	Civil servants
CNIC	Commander, Navy Installations Command

CNTR	Contractor
COMD	Command and control
COMDESRON	Commander destroyer squadron
COMM	Communications
CONUS	Continental United States
CVN	Nuclear aircraft carrier
DDG	Guided missile destroyer
DE	Demolition
EA	Each
ELF	Executive leadership forum
EXPD	Expeditionary unit
FA	Family units
FB	Feet of berthing
FCOT	Facility cost of ownership tool
FFG	Guided missile fast frigate
FN DIR	Foreign national direct hire
FN INDIR	Foreign national indirect hire
FHOPS	Family housing operations
FRP	Fleet response plan
FMM	Facilities modernization model
FSM	Facilities sustainment model
FT	Full time

FTS	Full-time service reservist
FY	Fiscal year
FYDP	Future years defense program
GL	Gallons
GPD	Gallons per day
HAZMAT	Hazardous material
HELO	Rotary-wing aircraft squadron
IA	Individuals account
ID	Identification
IGCA	Inherently governmental commercial activities
iNFADS	Internet Navy facility assets data store
JRB	Joint reserve base
LOG	Logistics support
LT	Long tons
MED	Medical and dental
MCON	Military construction
MPWR CAT	Civilian manpower category
MRC	Manpower resource code
MS	Microsoft
NAE	Naval aviation enterprise
NAF	Non-appropriated fund worker
NAS	Naval air station

NAVSO	Navy staff office
NAVSTA	Naval station
NECC	Naval expeditionary combat enterprise
NF	New footprint
NMCB	Naval mobile construction battalion
NWCF	Navy working capital fund
OCONUS	Outside continental United States
OPNAV	Office of the Chief of Naval operations
OSD	Office of the Secretary of Defense
OSF	Optimal shore footprint
PLANE	Fixed-wing aircraft squadron
PAC	Pacific fleet
PN	Personnel
POE	Projected operational environment
PRV	Plant replacement value
QET	Quick excursion tool
R OCCSRS	Civilian occupational job series
R PAYGRADE	Civilian pay grade rating
R PAYPLAN	Civilian pay plan code
RES	Reserve
RDAT&E	Research, development, acquisition, test & evaluation
RDTE	Research, development, test & evaluation

RM	Restoration and modernization
ROC	Required operational capabilities
ROM	Rough order of magnitude
RPSUID	Real property site unique identifier
SCA	Shore capability area
SCALE	Shore cost allocation evaluator
SELRES	Selected reservist
SF	Square feet
SFE	Square foot equivalent
SHIP	Ship or vessel
SHORE	Shore support
SHORE POE	Shore projected operational environment
SHOROC	Shore required operational capabilities
SFE	Square foot equivalent
SSN	Nuclear attack submarine
ST	Sustainment
SUB	Submarine
SWE	Surface warfare enterprise
TBD	To be determined
TFMMS	Navy Total Force Manpower Management System
TN	Short tons
TOTAL FT	Total full-time

TRAIN	Education and training
UFC	Unified facilities criteria
UIC	Unit Identification Code
USE	Undersea enterprise
USS	United states ship
VP	Aviation Patrol

References

[1] Dennis D. Quick and David D. Foy. "OSF ELF Program Update." Presentation for the Optimal Shore Footprint Executive Leadership Forum. Washington, D.C. Feb. 13, 2012.

[2] Joseph Kehoe et al. *Activity-Based Management in Government.* Washington, D.C.:Coopers & Lybrand, 1995.

[3] "Facilities Sustainment/Modernization/Operation Models (FSM/FMM/FOM)". *Office of the Deputy Under Secretary of Defense, Installations and Environment.* Last updated on May 17, 2011, accessed at http://www.acq.osd.mil/ie/fim/programanalysis_budget/tool_metrics/FPRS/FSMDescription.shtml.

[4] UFC 2-000-05N (P-80). *Facility Planning for Navy and Marine Corps Shore Installations.* Jan. 31, 2005.

[5] "Department of Defense Facility Definitions". *Office of the Deputy Under Secretary of Defense, Installations and Environment.* Last updated on December 3, 2008, accessed at http://www.acq.osd.mil/ie/fim/inst_definitions.shtml.

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List of figures

List of tables

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