

PORTSMOUTH NAVAL SHIPYARD – FACILITY AND HUMAN CAPACITY

Question: Does Navy have sufficient Industrial Capacity, both Facilities and Human Capacity, to perform future maintenance with closure of Portsmouth?

Answer: NO

Discussion: There has been much discussion on whether Navy has adequate industrial capacity for the future. All discussions inevitably revert to asking: “What is the Submarine Force Structure of the future?” There have been numerous different DoD responses to that question over the past two months. It continues to be very difficult to obtain a straight answer. Latest information from Navy¹ is that they used a 56 submarine force structure for analysis, although we were previously told that capacity decisions were based on a reduced submarine force². The workload and drydock information received from DoD on 22 July 2005³ supports a 55 submarine force structure. Data and analysis in this paper, and the previous Industrial Capacity Point Paper⁴ are all based on a 55 Submarine Force Structure.

There are many levels at which Navy’s Industrial Capacity can be assessed. Much data and analysis has been provided in previous briefings and testimony. Many statements have been made based on subjective comparisons between “the past and present” and much speculation of the future. Any Capacity decision should start with a review of factual data of how the Navy Fleet and Infrastructure has downsized over the past 17 years. The below (Chart 1)⁵ identifies that the Navy had 100 Submarines as part of a 573 total active ship inventory in 1988, and that it dropped to 55 as part of a 285 ship fleet in 2005. This information establishes the shipyards to ships ratio at 1:72, in 1988, and it remains constant at 1:71 today.

U.S. Navy Active Ship Force Levels, 1988 to the present

Ship Type	FY 1988	FY 2005
Aircraft Carriers	14	11
SSBN/SSGN	37	18
SSN	100	55
Surface Combatants	223	99
Amphibs	59	35
Combat Logistics	64	32
Mine Warfare	22	17
Support	54	18
Total	573	285

<http://www.history.navy.mil/branches/org9-4.htm>

Chart 1

¹ Adm. Willard Testimony to BRAC Commission on Tuesday, 18 July 2005

² DoD Officials meeting with Congressional Staffers, 22 June 2005, and referenced in Earl Donnell Testimony to Commission on 6 July 2005, slide 17

³ Provided by DoD Officials to Congressional Inquiry, 20 Jul 2005.

⁴ Industrial Capacity Point Paper, prepared by Earl Donnell, forwarded to Commission staff by Congressional Delegation

⁵ Data found on website; www.history.navy.mil/branches/org9-4.htm & http://navweb.secnav.navy.mil/pubbud/06pres/highbook/SECTION_II_Winning_Today.pdf

Library Routing Slip 2005 BRAC Commission Materials

Title of Item: Workload Point Paper

Installation or Community: NSY Portsmouth

Source: Senator Gregg's (NH) Office

Classified Material? yes no

Analyst / Provider: C. W. Furlow Date Received:

During the same timeframe, the Navy's Infrastructure was reshaped dramatically. Naval Shipyards have been cut by 50%, while the submarine force has shrunk by 45% and total fleet has dropped 50%.

Although the fleet has downsized, it now contains a greater concentration of nuclear powered ships, causing the work to be much more technically complex. A prime example of the increasing technical nature of the workload, is that through the 1980s, only 11 major submarine availabilities were conducted across the corporation, while ~55 availabilities are scheduled to start between 2000 and 2011 (Chart 2)⁶. If we analyze the history of submarine major maintenance, we see that the last time the Corporation could accommodate 5+ avails per year was in the early 90's. Knowing that submarine workload was shrinking, the Navy engaged in aggressive downsizing during the 1993 and 1995 BRAC rounds. This left us with four nuclear Shipyards to perform the one or two submarine avails per year. As 2000 approached, NAVSEA became concerned with the bow wave of submarine major maintenance that had been deferred and the reduced

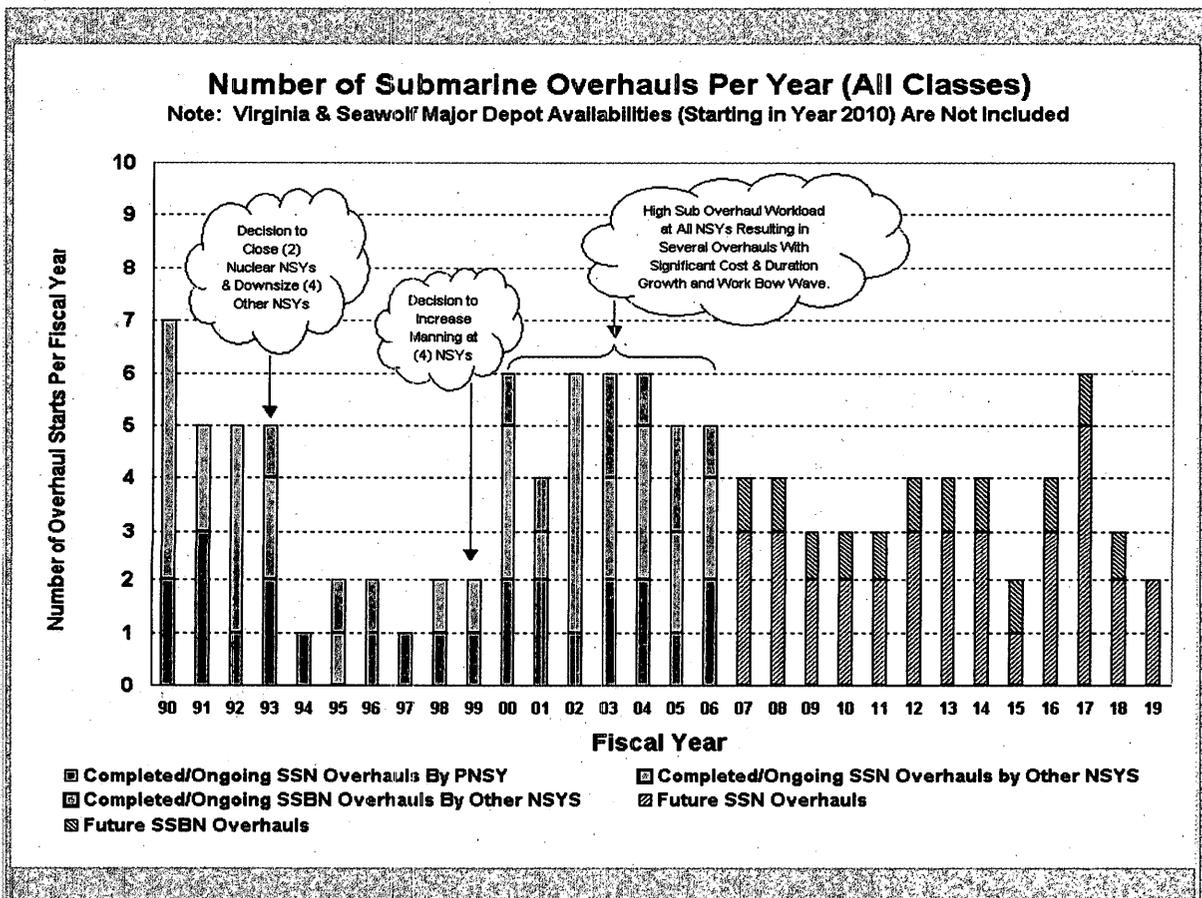


Chart 2

⁶ SSN 688 Class Overhaul, DMP, INACT, SRA, and IDD Cost and Duration Statistics Report & Local Analysis using Navy commissioning dates and submarine life expectancy

staffing and experience levels of the workforce to accomplish the peak from 2000 through 2006. That resulted in slow, incremental hiring to allow development of sufficient numbers and skills of personnel to meet the impending workload peak. Performance during this peak has been poor, especially on the west coast shipyards. A good example of why this occurred is that for nearly 10 years, Puget's only submarine work was cut-up of decommissioned ships. This work is low skill and their high-level expertise had been lost through downsizing and a decade of lesser technical submarine work. Once through this submarine peak, the existing infrastructure, four Naval Shipyards, will be better suited to perform the three to four submarine avails scheduled per year, and corporate performance should improve.

The personnel downsizing actually started in 1988 with the closure of Philadelphia Naval Shipyard, but accelerated between 1993 and 1997, as Mare Island, Long Beach and Charleston Naval Shipyards all closed. The remaining four Naval Shipyards downsized, as well, with their workforces reducing from ~70,000 workers to ~22,000 by 1996 (Chart 3)⁷.

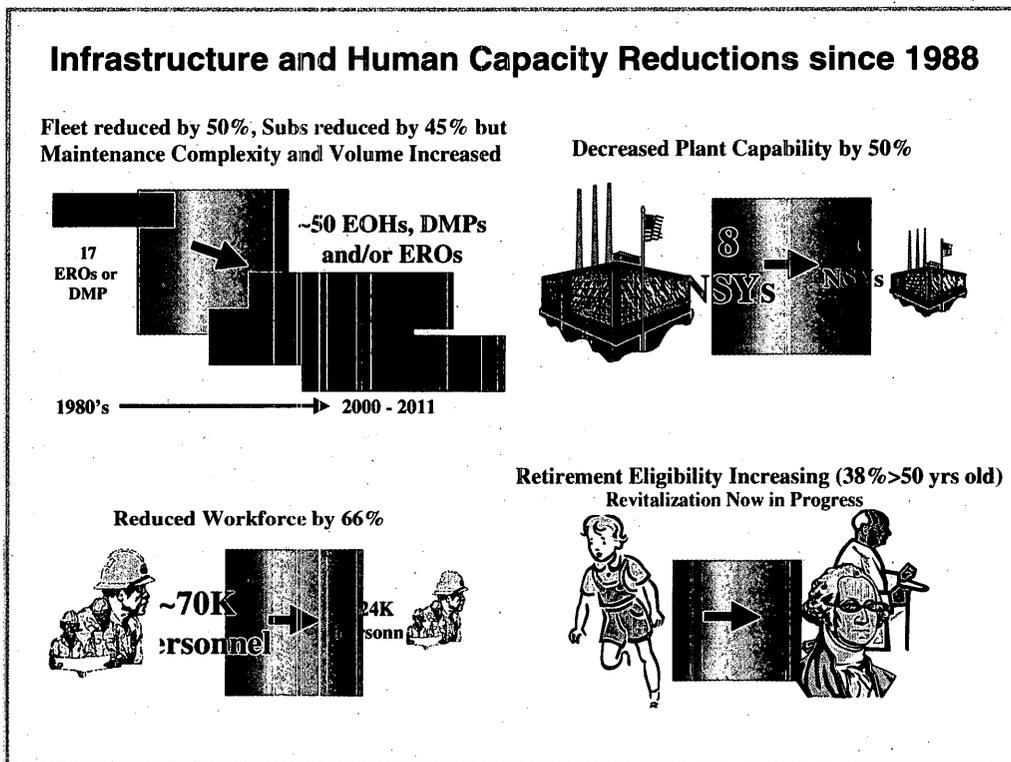


Chart 3

The downsizings in the 1990s left the workforce in a very narrow demographic band, with an average age of ~47 years old. We separated thousands of employees who were junior in tenure, while enticing thousands of older, more experienced workers, to leave service through early retirement incentives. Since 1997, we have established

⁷ Chart and personnel data from NAVSEA Integrated Project Management Course Jan 2003, conducted at Oceana Naval Air Station, VA.

revitalization initiatives to replenish our workforce consistent with workload. Today we are staffed at ~24,000 people, a remarkable 66% below levels in 1988. Through revitalization, we have lowered the average age across the corporation to ~45 years old (gaining 2 years demographically), but we still have about 38% of our workforce that is over 50. This population of ~9,100 people (including Portsmouth workforce) have optional retirement opportunities within the next five years.

During 6 July 2005 Public Hearing in Boston, MA, Portsmouth's witnesses showed an SSN chart which indicated a potential budget driven reduction of submarines in the 2030 timeframe. Below (Chart 4)⁸ is the latest version posted on the Submarine Industrial Base Council's website. It illustrates the War Fighter and National Security shortfalls. Two important take-aways from this chart are: (1) numbers of subs don't start to decline for more than 10 years, and (2) there is a real potential for the number of submarines to grow in the out-years, should the Country establish the priority to invest in additional construction and development.

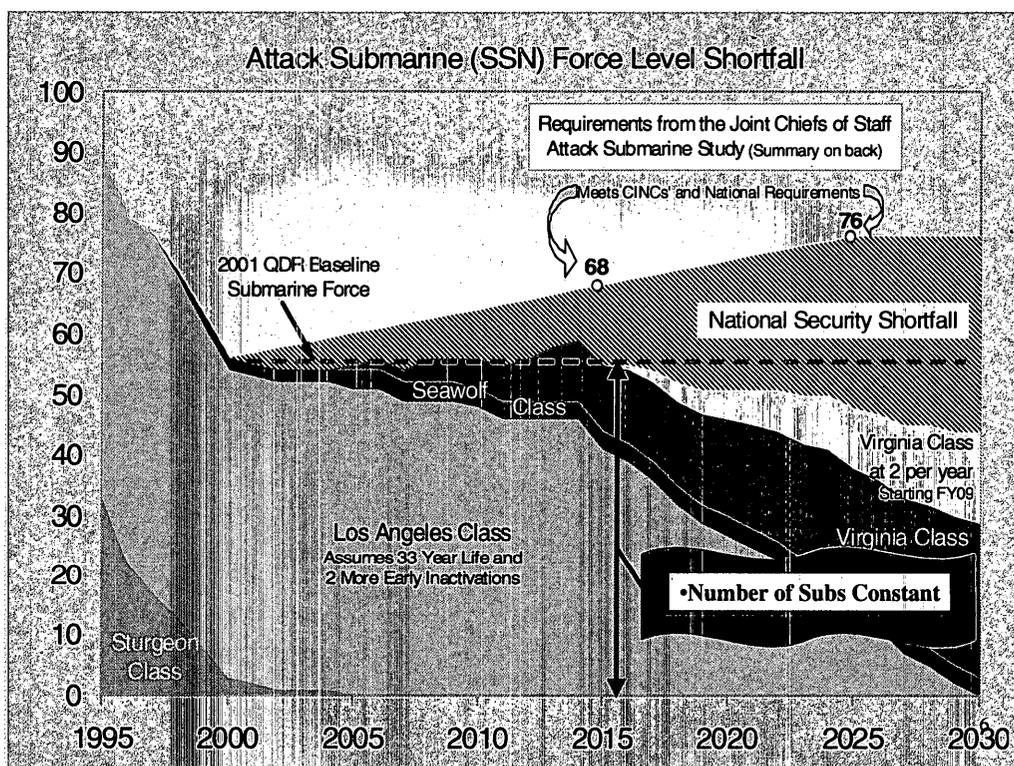


Chart 4

DoD provides the POM 06 Rev 5 workload chart⁹ as evidence of workload decline in the out-years. The workload layer cake diagram (Chart 5, following page) was provided to Commissioners and Staff at the Portsmouth site visit on 26 Jun 2005, at the direction of

⁸ <http://www.submarinesuppliers.org> then go to current programs then to force level shortfall

⁹ Included in BRAC Commission Portsmouth Command Briefing, presented during the site visit of 26 Jul 05, as directed by NAVSEA. Local comments added. Workload data from current Naval Shipyards WARR, wf-300, reports.

NAVSEA. We have annotated the chart with actual workload growth to show that since this POM 06 Rev 5 chart was published, Naval Shipyards have seen more than 1 Million mandays of growth between 2005 and 2011. The magnitude of such growth cannot be ignored as we visualize Navy's maintenance workload in the distant future. We are certain that all out-year work projections are based on Notional quantities and durations, do not account for the aging of the fleet, nor do they adequately anticipate the negative affects of performance on quantity of work or duration of availabilities.

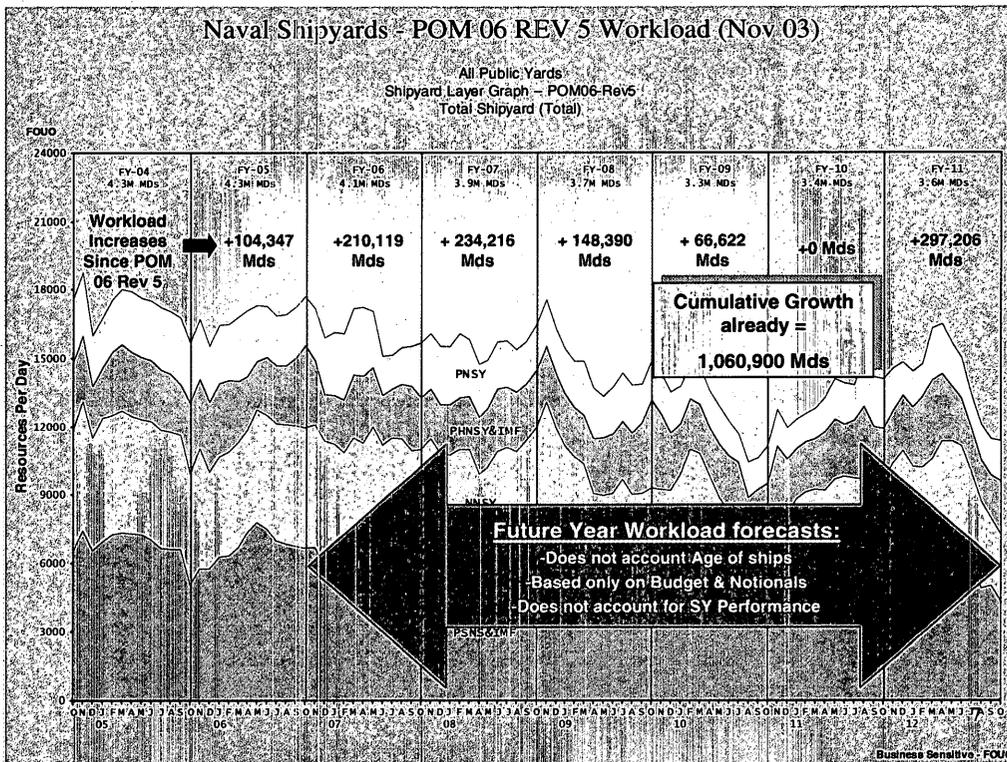


Chart 5

If FY 07 has grown by ~250K mandays in the 20 months since this Chart's development, what will '07 look like during the year of execution? What will FYs 2009 – 2020 look like by then? There should be grave concern for Capacity decisions made at the macro level, in the absence of comprehensive, accurate evaluation of true future workload requirements.

Navy alleges that proper analysis was performed of Drydock and Commodity Capacity to support their recommendation to close Portsmouth, yet DoD has provided little objective evidence to substantiate their claims. After two months of asking for evidence to support the recommendation and analysis performed, the Navy finally supplied the Drydock study (Chart 6, following page)¹⁰, illustrating that much, but not all, of the Portsmouth workload could physically fit in the Norfolk Drydocks. This chart represents Norfolk's workload for the 80/20-workload split, where 80% of Portsmouth work would relocate to

¹⁰ Provided by DoD Officials to Congressional Inquiry, 20 Jul 2005. Notes added to reflect required ship schedule changes and omitted workload.

Norfolk; the remaining 20% relocates to Puget. This represents the initial Data Call Scenario. As noted in the yellow text box, one EOH was deferred by 4 months and one SRA was deferred for 2 months to make the plan workable. There is still no capacity for the 15 Portsmouth SRAs shown in light blue below the actual Drydock plan. There is not capacity for the historical 6 emergent dockings per year. Note the excessive high risk of this plan, as there is no room for any slippage of any schedule.

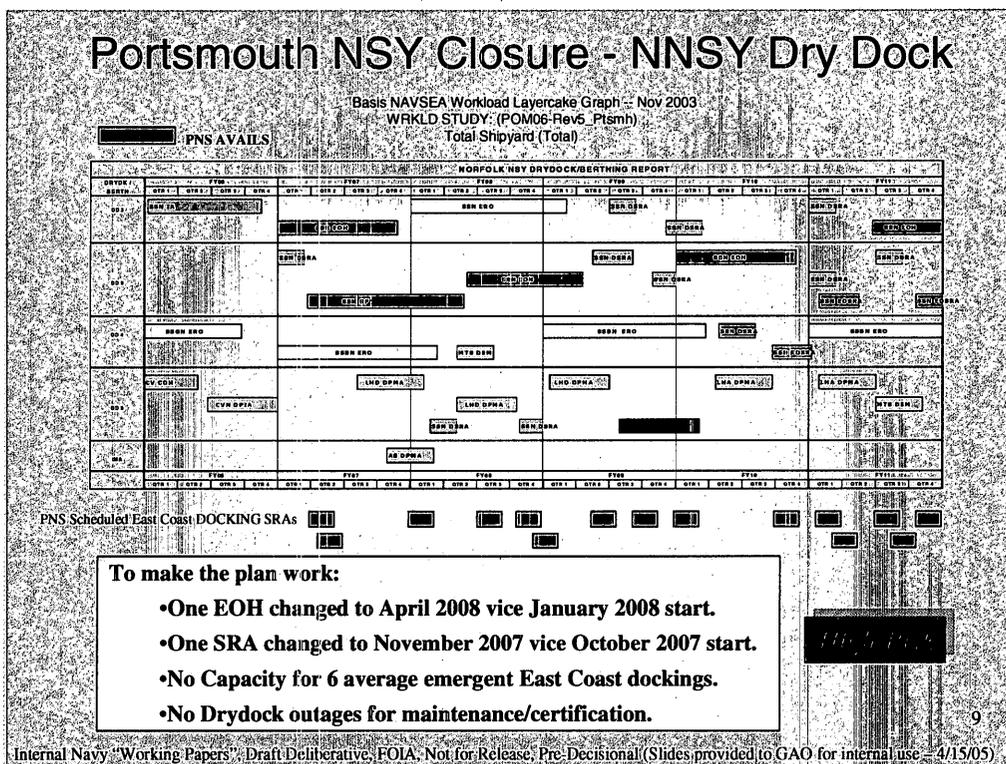


Chart 6

More important than the high risk of the above docking sequences is the fact that the above study is un-executable based on Norfolk's historical capacity. Over the past 5 years, Norfolk has been staffed, and actually executed ~1.2 million mandays of work annually (see Chart 7, following page). The above plan would expect Norfolk to perform 1.7M mandays in both FY07 and FY08, some 500,000 manday above current and historical capacity. Chart 7¹¹ illustrates the increased workload created by this unrealistic drydock study which supports the 80/20 Portsmouth workload redistribution. Clearly this plan is/was unexecutable, resulting in DoD later deciding that a 45/45/10 redistribution would be required. When asked for the revised study, DoD Officials responded to Congressional Staffers, that **none had been performed**¹². Not only was there no high-level analytical analysis performed, there was also no Commodity/Human Capacity analysis performed. All analytics are based on this flawed study, and none of the analytical conclusions from this study support the closure recommendation.

¹¹ Slide was part of a SEA 00 Briefing on 16 Dec 2004. Provided to Naval Shipyard Workload Forecasters by NAVSEA 04X, via e-mail dated 17 Dec 2004.

¹² Email from Senator Collins staff assistant, documenting communication with DoD Officials, dated 20 July 2005

Portsmouth NSY Closure – Norfolk Workload

Report: WF-510
Data Date: 11/28/03

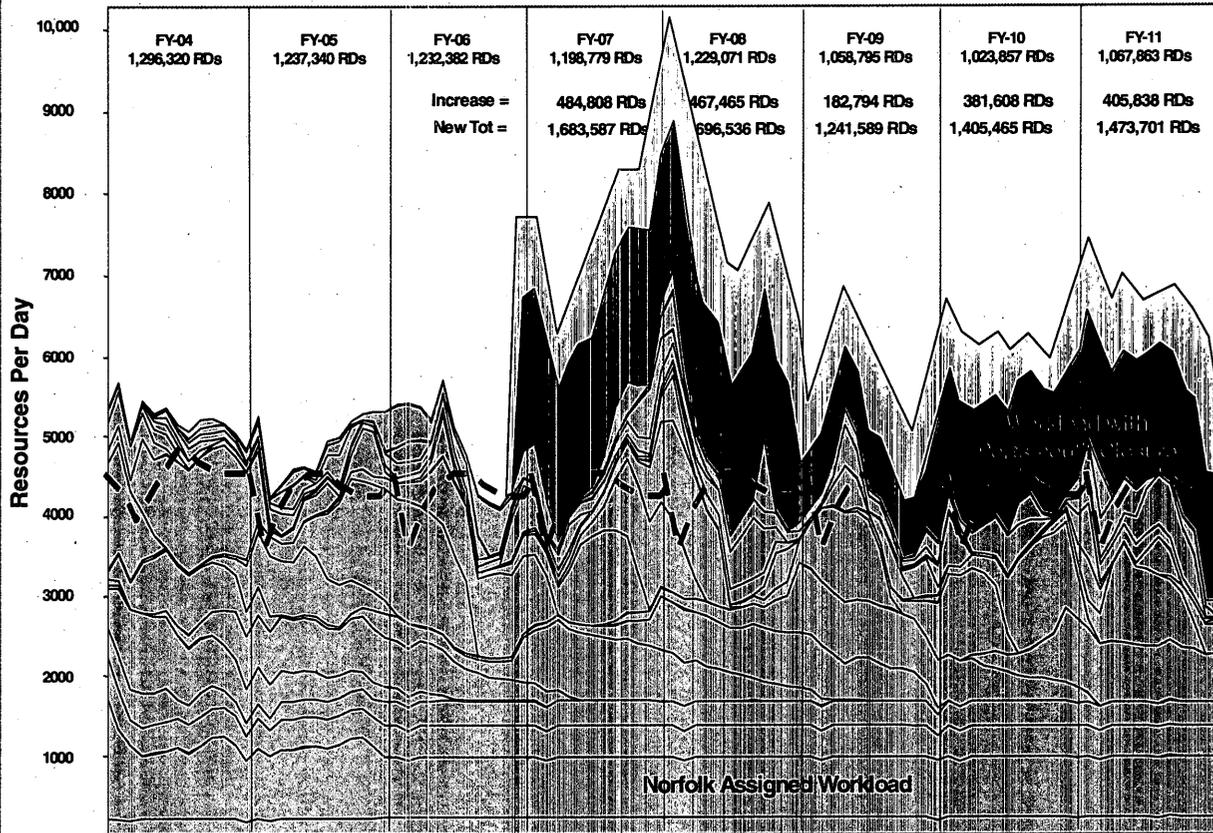


Chart 7

From this review of Navy's history of downsizing and the uncertainties of the future workload, we can conclude the following:

- Navy cut sufficiently deep in the 1990s to synchronize with future fleet size.
- Navy performed inadequate analysis of their own data to support their recommendation to close Portsmouth.
- Insufficient capacity will exist on the east coast for emergent dockings, SRAs and drydock maintenance.
- The Force Structure and workload of the future is ill defined.

All of the analysis and Data Calls were based on the POM 06 Rev 5 workload (Chart 5), and on a Force Structure that included 55 submarines. It was this workload that shipyards used to complete the 7 Jan 04 Data Calls and corresponding Tables. Chart 8 (following page) provides Table numbers, definitions, and methodology used by Navy in completing the Data Call¹³.

¹³ Found in www.defenselink.mil/brac, then go to Additional Documentation, Joint Cross-Service Groups, Industrial, then to Capacity Analysis Plan (3.9MB)

DoD Capacity Analysis Methodology

Started with 4 Certified Capacity Data Tables

Table 5.3.1.A
Required

Table 5.3.1.B
Back-shop

Table 5.3.1.C
Drydock/Pier

Table 5.3.1.D
Total

Methodology

- Table A = POM 06 Rev 5
 - Required Capacity = Workload + some growth
- Table B = Bldg. sq.ft. + Workstations
 - Theoretical Capacity of Back-shops
- Table C = Drydock loading as provided by NAVSEA
- Table D = Table B + Table C

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Chart 8

Chart 9 (below) also lists assumptions, and some significant problems with the certified data, methodology employed by Navy, and conclusions drawn by DoD¹⁴.

DoD Capacity Analysis Methodology

Assumptions

- Unlimited people/skills
- Back-shop and Drydock are directly additive
- Excess Capacity = Table D – Table A

Problems

- Table B + C does NOT equal Table D
- Back-shop and Drydock are not directly additive
- Growth in Table A averaged only 4%
 - Historical growth 14%...likely 20% in future
- NO Human Capacity evaluation
- DoD concluded excess Commodities in the very years (FY 03, 04, 05) the Corporation experienced large shortages

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Chart 9

¹⁴ Found in www.defenselink.mil/brac, then go to Additional Documentation, Joint Cross-Service Groups, Industrial, then to Capacity Analysis Plan (3.9MB) and local review of results = (problems)

Chart 10¹⁵ (following page) plots the certified data from the 7 Jan 04 Data Call and Tables listed in Chart 8, for eleven of our most critical Commodities. The Corporate Production Resource Team has denoted these as critical and comprising the majority of the direct Production work during a ship's major maintenance depot-level availability. The left graph on each of the following slides plots Total (certified) DoD Capacity, Required Capacity, and Workforce Capacity of all four Shipyards. The middle and right graphs plot Total (certified) DoD Capacity, Required Capacity and Workforce without the Portsmouth Capacity or workforce. The right graph adds 14% "historical and inefficiency" growth to the Required Capacity. In an effort to explain why Shipyard Capacity is overstated, each of the Total Capacity bars is split between drydock capacity (blue), and backshop capacity (yellow). The backshop, yellow portion, is again split between yellow band, which equals 15% above drydock workload, and a red

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Required Capacity = Table 5.3.1.A; found in www.defenselink.mil/brac, then go to Scenario Data Calls, Department of the Navy, Redacted Activity Data Calls-Final Certified Answers (Capacity), ZipFile 4 (32.6MB), then add the totals for 5.3.1.A in the following PDF files: Redacted BRAC Capacity Data Call, 7 January, NAVSHIPYD_AND_IMF_PEARL_HARBOR_HI (Page 63), NAVSHIPYD_NORFOLK_VA (Page 72), NAVSHIPYD_PORTSMOUTH_NH (Page 111) and NAVSHIPYD_PUGET_SOUND_WA (Page 63)

Back-Shop Capacity = Table 5.3.1.B found in www.defenselink.mil/brac, then go to Scenario Data Calls, Department of the Navy, Redacted Activity Data Calls-Final Certified Answers (Capacity), ZipFile 4 (32.6MB), then add the totals for 5.3.1.B in the following PDF files: Redacted BRAC Capacity Data Call, 7 January, NAVSHIPYD_AND_IMF_PEARL_HARBOR_HI (Page 63), NAVSHIPYD_NORFOLK_VA (Page 72), NAVSHIPYD_PORTSMOUTH_NH (Page 112) and NAVSHIPYD_PUGET_SOUND_WA (Page 64)

Drydock/Pier Capacity = Table 5.3.1.C found in www.defenselink.mil/brac, then go to Scenario Data Calls, Department of the Navy, Redacted Activity Data Calls-Final Certified Answers (Capacity), ZipFile 4 (32.6MB), then add the totals for 5.3.1.C in the following PDF files: Redacted BRAC Capacity Data Call, 7 January, NAVSHIPYD_AND_IMF_PEARL_HARBOR_HI (Page 65), NAVSHIPYD_NORFOLK_VA (Page 73), NAVSHIPYD_PORTSMOUTH_NH (Page 114) and NAVSHIPYD_PUGET_SOUND_WA (Page 66)

Total Capacity = Table 5.3.1.D found in www.defenselink.mil/brac, then go to Scenario Data Calls, Department of the Navy, Redacted Activity Data Calls-Final Certified Answers (Capacity), ZipFile 4 (32.6MB), then add the totals for 5.3.1.D in the following PDF files: Redacted BRAC Capacity Data Call, 7 January, NAVSHIPYD_AND_IMF_PEARL_HARBOR_HI (Page 66), NAVSHIPYD_NORFOLK_VA (Page 75), NAVSHIPYD_PORTSMOUTH_NH (Page 115) and NAVSHIPYD_PUGET_SOUND_WA (Page 67)

Workforce Capacity = Naval Shipyard Available Force Data (Avg. Oct 04- Feb 05); found in www.nde.navy.mil, then go to WEBWARR, workforce, and use available force data

Calculated workforce capacity shortage (WF) (middle thermometer) (used 14% leave, 70% direct labor index, 15% overtime, and 2008 work hours per year) compared to certified Required Capacity data, Section 5.3.1.A of 7 Jan 04 (above)

Shortage Calculations = Compared straight-time workforce capacity to certified Required Capacity and Required Capacity + 14% Growth to determine percentage short and people per day short, with no overtime and 15% overtime calculation.

crosshatched area, which represents the potential “over-calculated capacity”. Naval Shipyards are in the business of performing repair work aboard ships. The backshop work is staffed to provide minimum throughput in direct support of ships undergoing repair/modernization. There is essentially no backshop manufacturing of products to be sold on the open market. We only perform essential work in backshops that is in direct support of drydock and pierside work. About 15% of our direct work is “backshop” and consequently, the backshop capacity should have been capped at about 15% over drydock capacity. The use of building square footage and workstations, while assuming unlimited personnel, is a major failure in Navy’s approach to determining both Total and Excess Capacity.

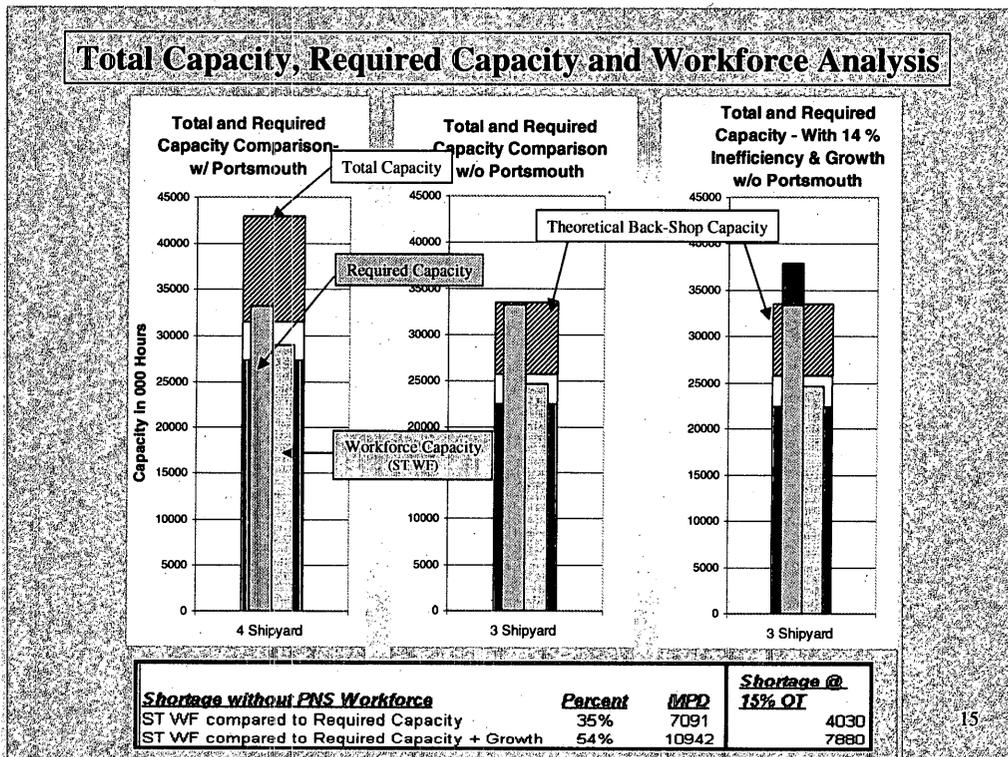


Chart 10

When comparing data in the middle and right graphs, the Required Capacity will significantly exceed actual capacity (blue area plus the yellow 15% band) in both. The Workforce Capacity will be 35% and 54% below Required Capacity, respectively, and the total skills shortages will range from ~ 4,000 people to as many as ~8,000, if we apply a 15% overtime rate. Many experts will argue that sustained overtime at 15% is excessively high. Navy has had an unofficial overtime goal for the past 5 years, of 10%, but has yet to get the annual rate below the 16 – 20% band.

Individual Trade graphs were developed from the same Data Tables as the total graph, using individual Trade/Commodity information, in lieu of aggregated data. When developing the Trade graphs, we used the NAVSEA overtime goal of 10% to determine our potential shortages. We believe firmly that all Trade backshop Capacities were grossly overstated, primarily because there was NO consideration for the staffing and

skill levels that ultimately control throughput and actual capacity. The individual trade shortages (in people per day), without the Portsmouth workforce, are summarized below:

- Marine (Outside) Machinist (Chart 11) shortage ~500 – 850
- Paint (Chart 12) shortage ~500 – 650
- Crane and Rigging (Chart 13) shortage ~280 – 480
- Heavy Fabrication – Shipfitting (Chart 14) shortage ~130 – 300
- Piping (Chart 15) shortage ~300 – 480
- Welding (Chart 16) shortage ~320 – 510
- Electrical (Chart 17) shortage ~270 – 430
- Electronics (Chart 18) shortage ~ 0 – 14
- Sheetmetal (Chart 19) shortage ~40 – 110
- Shipwright (Chart 20) shortage ~8 – 90
- Inside Machining (Chart 21) shortage ~170 – 300

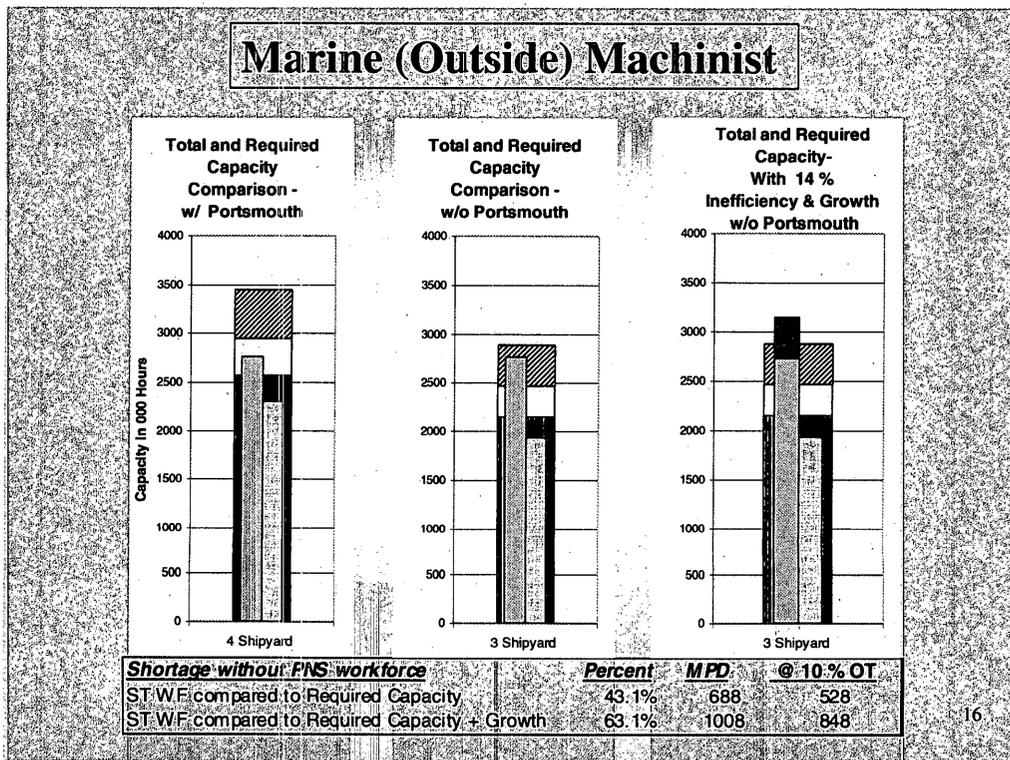
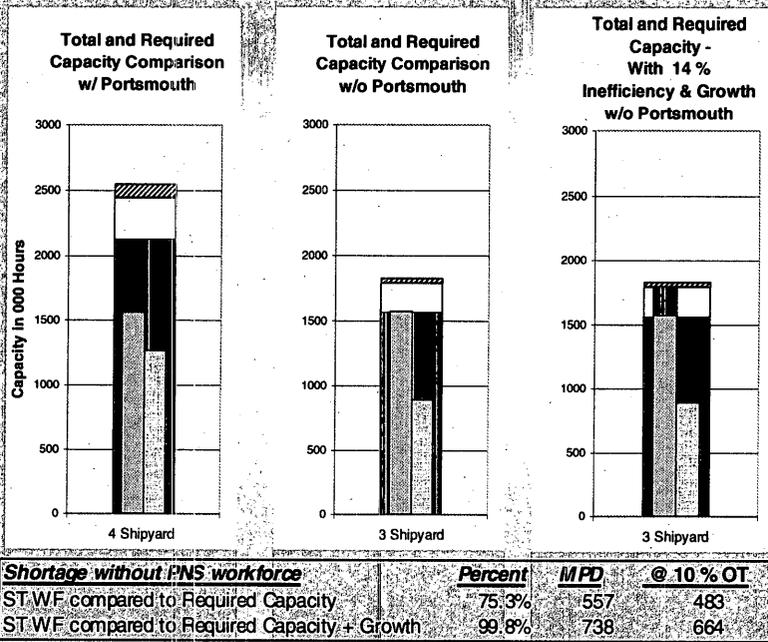


Chart 11

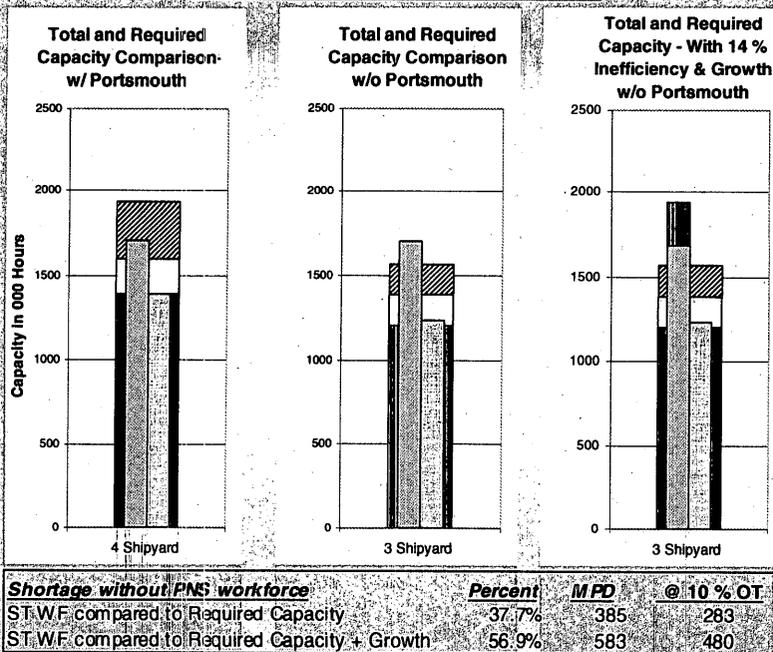
Paint



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Chart 12

Cranes and Rigging



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Chart 13

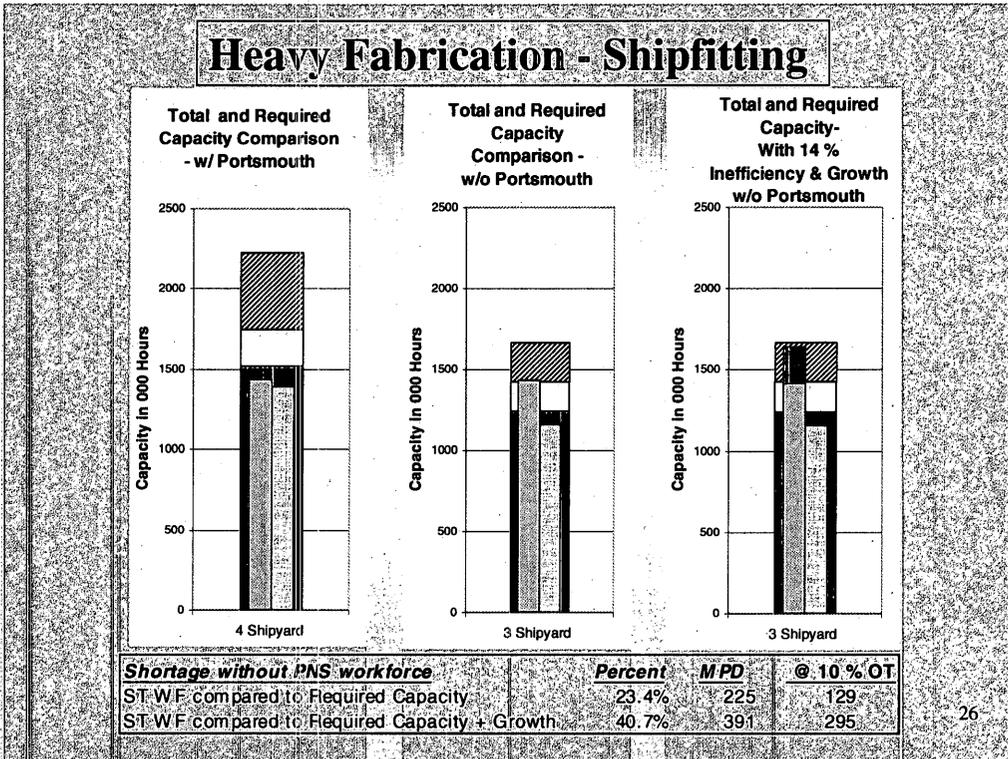


Chart 14

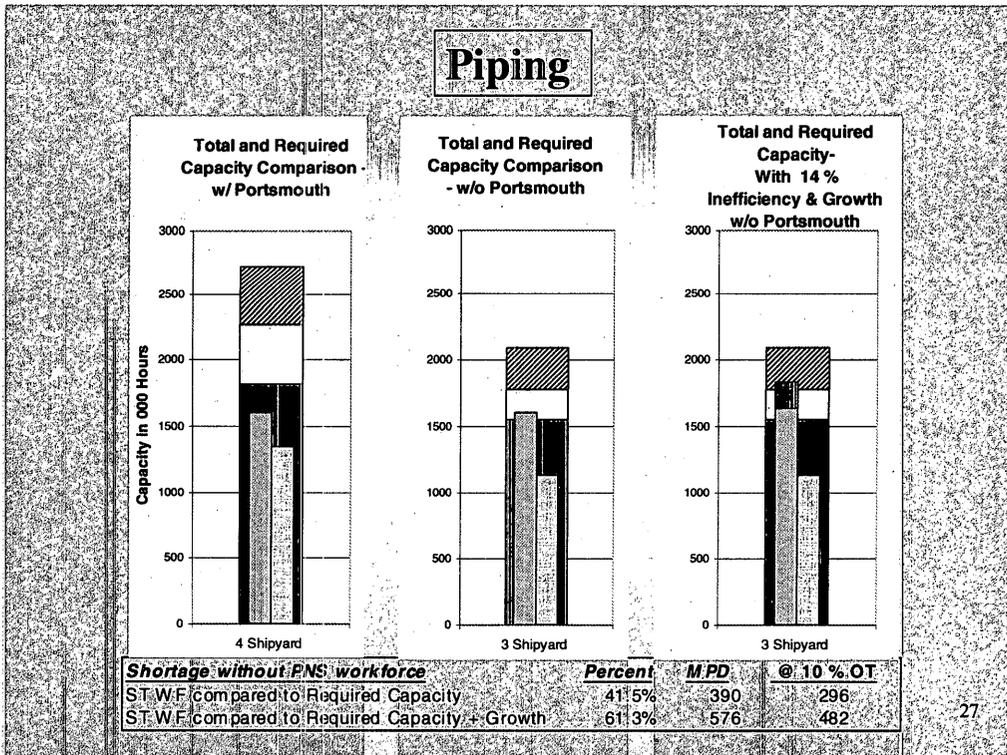


Chart 15

Welding

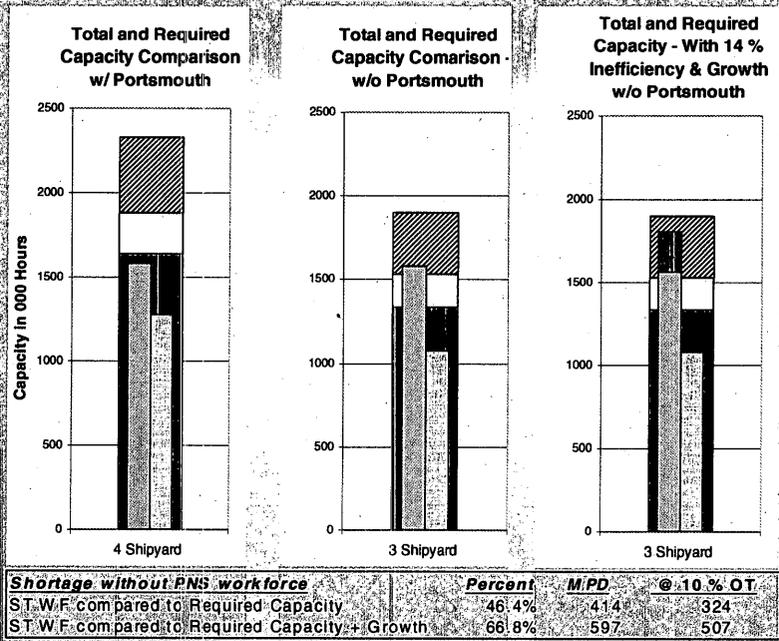


Chart 16

Electrical

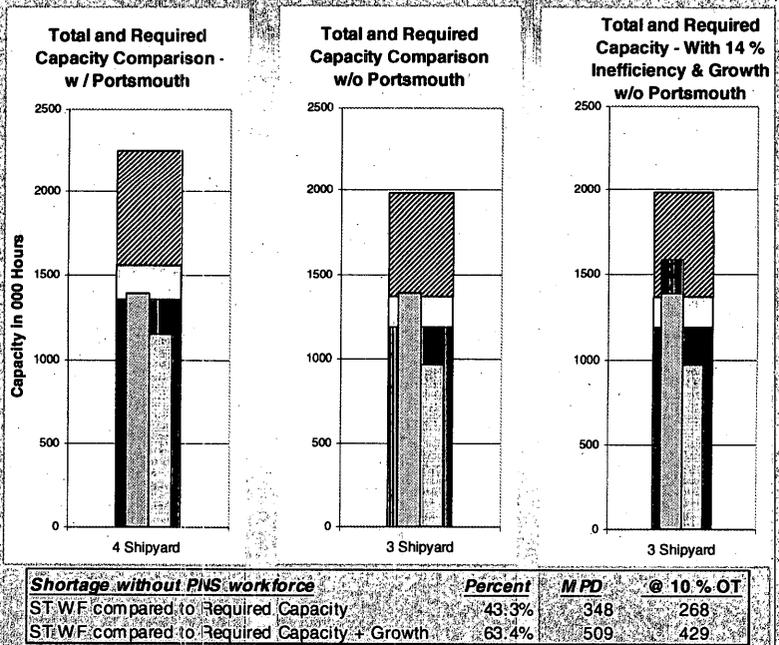
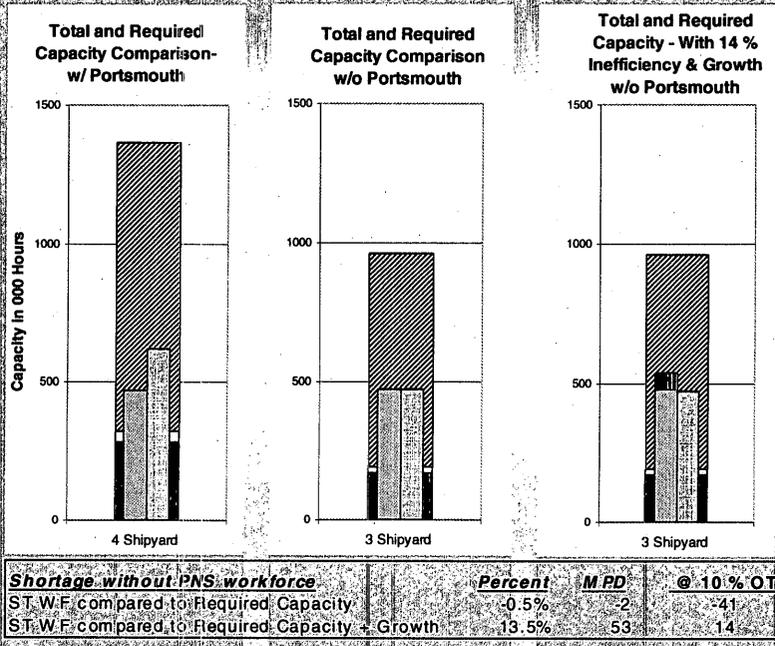


Chart 17

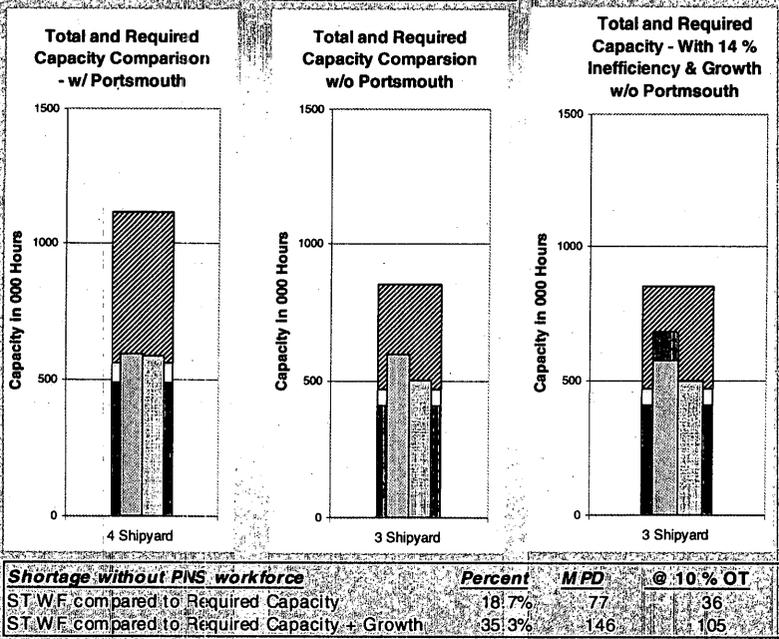
Electronics



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Chart 18

Sheetmetal



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Chart 19

Shipwright

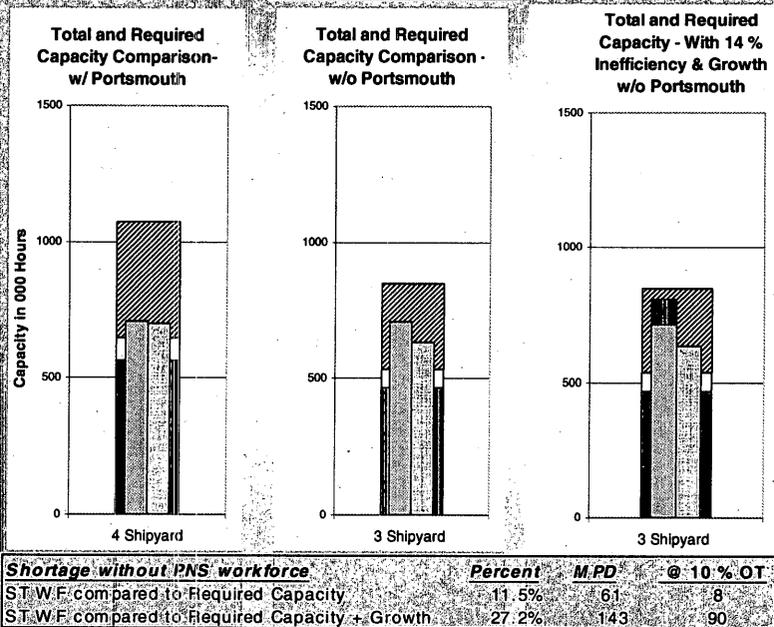


Chart 20

Inside Machine

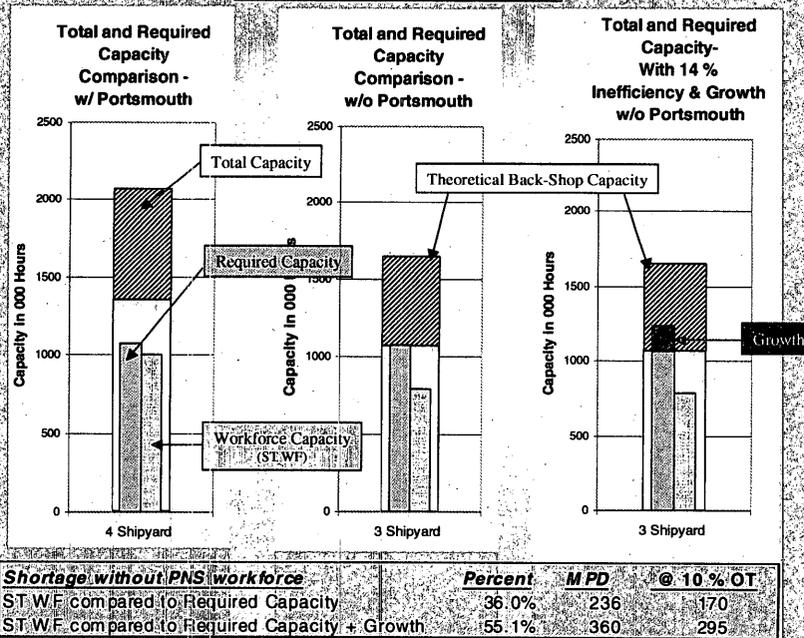


Chart 21

An example of the overstated Backshop Capacity is well represented by an in-depth analysis of the Inside Machine Trade data. The Total Capacity calculated for Portsmouth by DoD was 423,700 hours per year¹⁶. DoD also states Required Capacity as 227,200¹⁷. Comparing these two figures (e.g.: $(423700-227200)/227200$) places DoD's Excess Capacity calculation at 90%. Using actual staffing levels¹⁸, this Trade/Commodity has 212,300 hours of straight-time capacity. The actual capacity this Commodity will execute this year is 232,000 hours¹⁹ (using 9% overtime). Comparing Total DoD to Workforce straight-time capacity shows 98% Excess Capacity. Total Capacity is overstated by 83% from what the workforce can actually perform. There is NO excess, as the shop, as currently staffed, would have to work 7% overtime to meet Required Capacity of the future. Similar analysis can be performed for every trade. Simply stated, the 423,700 hours Total Capacity calculated by DoD is fundamentally wrong and grossly overstates the throughput of this Trade. The methodology used to calculate Total Capacity was woefully inaccurate.

Human Capacity should have been used as an element when computing Total Industrial Capacity. This point was emphasized on numerous occasions by Adm. Klemm during meetings with the ISG and IJCSG, but ultimately was discounted²⁰. The following Human Capacity conclusions can be drawn from our discussion:

- Today, Navy has 66% less Human Capacity than it had at Shipyards in 1988, while the fleet and shipyards have only reduced by 50%.
- Navy miscalculated the Total Capacity by assuming theoretical Backshop and Drydock/Pierside Capacities were additive.
- By their own admission, Navy never conducted the comprehensive analyses of Commodities, or Drydocks to ensure feasibility of recommendations.
- Scenario COBRA data received substantial scrutiny (e.g.: 10 or more revisions after initial certification of data) prior to final acceptance. There is not evidence that Capacity data ever received validation as reasonable, accurate or supportive of their recommendation.
- Without the Portsmouth workforce, the Corporation will be short between 4,000 and 8,000 skilled artisans to perform scheduled work.

¹⁶ Inside Machine Total Capacity = Table 5.3.1.D found in www.defenselink.mil/brac, then go to Scenario Data Calls, Department of the Navy, Redacted Activity Data Calls-Final Certified Answers (Capacity), ZipFile 4 (32.6MB), then average the FY03 through FY05 ((DLH (K)) total for 5.3.1.D in the following PDF file: Redacted BRAC Capacity Data Call, 7 January, NAVSHIPYD_PORTSMOUTH_NH (Page 115) – Inside Machine

¹⁷ Inside Machine Required Capacity = Table 5.3.1.A; found in www.defenselink.mil/brac, then go to Scenario Data Calls, Department of the Navy, Redacted Activity Data Calls-Final Certified Answers (Capacity), ZipFile 4 (32.6MB), then average the FY03 through FY05 ((DLH(K)) total for 5.3.1.A in the following PDF file: Redacted BRAC Capacity Data Call, 7 January, NAVSHIPYD_PORTSMOUTH_NH (Page 111) – Inside Machine

¹⁸ Portsmouth Workload and Resources Report June 2005

¹⁹ Same as Footnote 18

²⁰ ISG meeting minutes, October 3, 2003 and IJCSG meeting minutes, November 18, 2003.

Workforce Demographics²¹ (Chart 22) are adding risk to future Commodity Capacity and more importantly to our Trade knowledge, skills and capabilities. We continue to deal with a workforce that has 38% eligible for retirement in the next five years. Naval Shipyards have a current staffing level of about 24,000 employees. Should the workforce at Portsmouth not relocate²², total employment would drop to about 20,000. If 38% of the remaining personnel retire and the Portsmouth workforce has to be reconstituted, then the Corporation would be looking at hiring about 11,000 people in the next five years. This equates to about 50% of the workforce. There has been no cost analysis done on a workforce change-out of this magnitude. The training infrastructure could not support and there would be a deleterious effect on Quality of work, further Schedule degradation and worsening Cost performance.

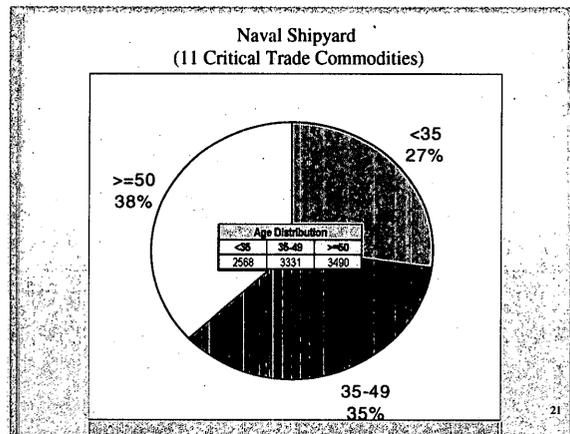


Chart 22

In conclusion:

- Navy's Infrastructure reductions since 1988 have been significant
 - Submarines 45%
 - Total Fleet 50%
 - Shipyards 50%
 - Workforce 66%
- Navy has not performed essential comprehensive analyses of Commodity and Drydock Capacity to support their recommendation
- Maintenance does not reduce for 15+ years
- Future Force Structure still very uncertain
- Op Tempo and Age of ships is increasing maintenance requirements
- Workforce Demographics are working against elimination of an entire shipyard's workforce.

²¹ Corporate Production Resource Team Demographic Data from June 2005 Meeting

²² Earl Donnell Testimony at Boston Hearing. Substantiated by Comptroller General Walker's Testimony to Commission on 19 July 2005. GAO 05-905 Military Bases, Transition Plans for Minimizing Disruption of Operations due to Loss of Specialized Skills, page 25 of Report.

There is no Excess as reported by DoD, in the areas of Drydock, Backshop or Human Capacities. Based on the facts in this document, previously supplied data and Testimony, a Portsmouth Naval Shipyard closure places the Navy and Nation at excessively high risk of being able to maintain it's war fighting capability; thereby, placing our National Security at risk.

This information is certified to be accurate to the best of my knowledge, Earl R. Donnell Jr.
//s//

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