

USCG Deepwater acquisition

As a multimission, maritime, military Service, the Coast Guard is responsible for a variety of missions in environments ranging from the ports, navigable rivers, coastal zones, and exclusive economic zones of the United States to international waters. The Coast Guard's Deepwater missions generally occur 50 or more nautical miles from U.S. shores and, therefore, require assets with the endurance to spend prolonged periods at sea. Over the next decade, many of the Coast Guard's current Deepwater assets will reach the end of their planned service lives. The Coast Guard is planning to replace its current collection of Deepwater cutters, aircraft, and C4ISR assets with an Integrated Deepwater System. The IDS will combine new technology with new concepts of operation to meet the Coast Guard's Deepwater mission requirements more effectively and with a lower life-cycle cost.

To achieve this goal, the Coast Guard awarded contracts to three industry teams to develop innovative IDS concepts. The Coast Guard also awarded a contract to CNA to serve as the Independent Analysis Government Contractor. As the IAGC, we have a different role than that of the industry teams. We will not be designing an IDS to sell to the government. Rather, we will identify key cost and technology drivers that will affect the choice of an IDS concept. We will use these insights to highlight the tradeoffs between the capability of individual components of the IDS and the ability of the IDS as a whole to best meet the full range of Deepwater missions.

In this sense, our work on the Deepwater program will be similar to the analyses of alternatives (AOAs) we conducted for such Navy programs as SC-21 and CVX. Our work on SC-21 will be especially useful in one aspect of Deepwater. The

CNO and the Commandant of the Coast Guard recently promulgated the National Fleet Concept, which commits both Services to seeking interoperability between their surface forces. Our experience with SC-21 and our work as the Deepwater IAGC should prove beneficial to both the Navy and the Coast Guard as they seek to make the National Fleet Concept a reality.

(Dr. Mark Lewellyn, (703) 824-2190)

New findings on Navy bootcamp attrition

Past research on bootcamp attrition focused on the characteristics of recruits. By far the best predictor of bootcamp attrition is educational background, with high school graduates having the lowest attrition rates. Recruits who enter through the Delayed Entry Program and those with higher test scores also have low attrition.

Recent research reveals that recruits who smoke have double the bootcamp attrition rates of non-smokers. About one-third of Navy recruits smoke before bootcamp, where smoking is prohibited. Our statistical analysis of these findings showed that the relationship between preservice smoking and bootcamp attrition is extremely strong, holding up for all subgroups, including high school graduates.

Bootcamp attrition is expensive. Every recruit separated from the Navy at bootcamp must be replaced at a cost of about \$10,000. Reducing bootcamp attrition without affecting the quality of bootcamp graduates is a *win-win* situation--saving money as well as helping Navy recruiters in this difficult recruiting market. Our analysis suggests that it is worth providing recruits who smoke with a nicotine replacement, probably in the few weeks before accession and certainly at the start of bootcamp. Nicotine replacements, such as the patch, could reduce the added stress

of having to stop smoking in bootcamp. Our calculations show that, if bootcamp attrition for recruits on the patch is halfway between the rate for smokers and nonsmokers, the Navy will save \$8 for every \$1 it spends for the patch.

(Dr. Aline Quester, (703) 824-2728)

From Desert Thunder to Desert Fox

At the request of COMUSNAVCENT, CNA is assessing the effectiveness of Navy TLAM and TACAIR strikes in Operation Desert Fox. We are well prepared for this reconstruction because of our analysis of the planning for Desert Thunder, the unexecuted strike on Iraq in February 1997. Our Desert Thunder analysis was broad, covering many topics: strike planning, command and control, coalition issues, NAVCENT's chem/bio readiness, the information campaign from both the Navy's perspective and the national level, joint theater air and missile defense, plans for counter-mine and mine countermeasures operations, the sustainability of the operation, and the planning for MPS/APS operations and employment of the ARG/MEU.

An executive summary highlights the overall lessons from Desert Thunder. Desert Thunder planning showed that the Navy has addressed the lessons from Desert Storm. But Desert Thunder posed new challenges for joint military forces—not just naval forces. In Desert Thunder, military forces were required to prepare for a broad spectrum of operational outcomes while operating in a complex, interconnected world. This challenge calls for great flexibility from the military—a result particularly important for naval forces, because they are inherently flexible and, in today's world, are likely to be in great demand.

(Ms. Christine Fox, (703) 824-2445)

USMC component HQ assessment

Motivated by the growing disparity between requirements and resources and by opportunities associated with the changing operating environment, the Commandant of the Marine Corps directed an assessment of the Marine Corps' Ser-

vice component headquarters and MEF command elements. Specifically, he asked CNA to assess two specific component headquarters options, each built around a Marine Forces Command (MFC), and to examine concepts for organizing and operating headquarters differently.

Our assessment of the component headquarters showed the two options would require more personnel than the current organization. Also, the Commander, MFC would face span of control problems, particularly the time and travel demands of supporting 5 unified combatant commands.

But our analysis also revealed that significant benefits might be achieved by operating existing headquarters differently. We analyzed two overarching concepts:

- The intent of *distributed staff operations* is to perform functions where they can be done most effectively and efficiently. Distributed staff operations may reduce the size of in-theater headquarters; our initial work suggests reductions of one-third or more. Distributed staff operations would also reduce lift and support requirements.
- A *non-Napoleonic organization* involves a shift in organizing principle, from the expertise areas of the G-staff to processes. By focusing on required products and the processes that deliver them, the non-Napoleonic organization may address problems identified with the G-staff organization—problems such as unintegrated products reaching the Commander or friction resulting from functional overlaps.

(Mr. John Nelson, (703) 824-2262)

Continuing efforts on carrier operations

CNA continues to support the Fleet's goal to achieve the full firepower potential of its aircraft carriers. In work sponsored by NSAWC and coordinated with CCG-7, CVW-9, and USS *Nimitz*, we studied flight deck operations during the *Nimitz* Surge to understand all the constraints on sortie

generation. One constraint we identified was the ordnance process. A carrier generating sorties at peak capacity can exhaust its magazines in a few days; a carrier's inventory of technically sophisticated and special-purpose weapons, in particular, can be quickly expended.

Currently, the Fleet is exploring new concepts for rearming the carrier. USS *Constellation* is experimenting with one particular concept--Just-In-Time Ordnance Delivery (JITOD). In this concept, ordnance is transferred from the AOE/AO to the carrier while flight operations are in progress--a practice prohibited by current procedures. The Commanding Officer of USS *Constellation* asked CNA to help design experiments to evaluate different implementations of JITOD. We are developing a model of the weapons flow both from the AOE/AO to the carrier and within the carrier. Our goal is to identify specific procedures that offer the most promise; then we can design experiments to evaluate those procedures. Further modeling and experimentation will examine bottlenecks in the aviation ordnance build-up and delivery process, and will enable us to identify procedural, manning, and equipment changes. Experimentation with JITOD implementation is scheduled throughout USS *Constellation's* work-up and deployment.

(Dr. Tim Roberts, (703) 824-2853)

Training partnerships and Navy recruiting

Because of the widespread perception among young people that military service and higher education are incompatible, attracting technically oriented recruits is becoming increasingly difficult for the Services. CNA identified the potential for the Tech Prep program to help the Navy expand recruiting and reduce training costs. Established by Congress in 1990, the Tech Prep program was intended to help smooth the transition of young workers into the labor force by improving their academic and technical skills. The 4-year program includes the last 2 years of high school and 2 years of community college or technical school. The schools form partnerships

with prospective employers to develop curricula that focus on job-skill requirements. Upon completion of the program, graduates are qualified for employment.

CNA is working with the Navy to establish Tech Prep partnerships with several community colleges in Virginia. We have helped design hybrid programs where a combination of some college plus Navy training in a high-tech field will enable a sailor to earn an Associate Degree. By participating in Tech Prep partnerships, the Navy could acquire ready access to a large technically oriented population. Tech Prep offers another advantage for the Navy: many graduates will have received Navy training but not at the Navy's expense. An aggressive program could reduce the cost of training and training infrastructure by millions of dollars.

(Dr. Peggy Golfin, (703) 824-2811)

Battle group deployment options

With fewer ships and growing constraints on operating budgets, the Navy faces ever-increasing challenges supporting the unified combatant commanders' requirements for presence, engagement, and crisis response. Many senior Navy officials contend that the demand for naval forces already has outstripped the supply, and they expect that the imbalance will persist and perhaps grow. Operational commanders and others have proposed alternative training and deployment options for increasing support to the unified combatant commanders. We viewed the disparate set of options from the common perspective of how naval forces support the unified combatant commanders' missions, and identified options that warrant further investigation.

Our analysis suggests that the most promising option for the Navy in the long term will be to consider deploying split battle groups--two components that train independently and take advantage of opportunities for integration in theater, as needed. In the near term, preliminary steps toward a split-BG concept of operations can allow

the Navy both to fulfill today's commitments to promote U.S. security interests abroad and to prepare to handle emerging requirements better. These steps can help the Navy operate in the face of persistent trends: shaping the geopolitical environment will continue to be important; fiscal constraints are likely to drive the Navy to a *Horizon*-like future; and technology will offer opportunities to uncover new processes that can lead to creative and revolutionary changes in operations. (Dr. Dave Zvijac, (703) 824-2465)

Status of readiness

CNA's latest semiannual report on Navy readiness, which looks at FY 1998 and early FY 1999, reveals that personnel quality remains high and deployed readiness fairly high. However, signs of weakness are apparent, especially in manning levels and aviation unit training.

The readiness of deployed surface combatants remains high, although it has been declining for over 2 years. Deployed units have had a drop in manning in most paygrades. The loss of experienced personnel is probably more detrimental to readiness than the more publicized decrease in junior seamen and firemen. Previous research suggests that experienced sailors have more effect than general detail sailors on readiness.

Overall deployed aviation FMC rates are high. Indeed, the readiness of deployed carrier aircraft has fully recovered from its 1997 decline, but we see declines in nondeployed units and in specific communities. Although nondeployed FMC rates have declined overall, the severe readiness decline in squadrons nearing deployment was less evident in 1998 than in 1997. As for specific aircraft types, the decline in the EA-6B community has been quite severe, a trend that continues into the first quarter of 1999. Readiness rates for

the E-2 are also lower than a few years ago. Deployable squadrons show declines in manning in both junior and very senior paygrades. Unit training, especially for fighter and attack units, continues to decline.

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Preparing for the biennial UCP review

Since the release of the most recent update to the Unified Command Plan in January 1998, debate about changes to it has raged. N3/N5 asked CNA to help develop a position on proposed changes to the UCP in time for the 1999 review. We recommended the Navy support a set of changes:

- Divest USACOM of its geographic and homeland defense responsibilities. Redesignate USACOM as Joint Forces Command, a functional unified combatant command responsible for training and integrating joint forces and providing them to the geographic unified combatant commanders.
- Redesignate USSOUTHCOM as Americas Command, a geographic unified combatant command responsible for North, Central, and South America. The responsibility for North America would include homeland defense of the U.S.
- Assign the water off the west coasts of Europe and Africa to USEUCOM and the water surrounding the contiguous U.S. to Americas Command.

Our analysis also showed that the Navy could support the implementation of a Joint Forces Command holding COCOM of all rotationally deploying naval forces based in the contiguous U.S. without having to change the current responsibilities of the two major fleets.

(Maureen Wigge, (703) 824-2490)