Executive Summary
Reduced Ship Manning

In the current post-Cold War era of down-sizing and reduced budgets, the Navy, tasked with new and expanded missions, is expected to do more with less. In this climate, approaches to reduced ship manning, without sacrificing readiness or jeopardizing mission, would be of great benefit inasmuch as manpower-related expenses combine to consume about 60% of the budget. With that background, the Panel reviewed reduced manning concepts and technologies with the potential to enable significant ship manning reductions. The Panel then evaluated the impact of automation on ship design and training.

OBSERVATIONS

Technology is not a roadblock to reduced manning. The application of proven, currently available technology, such as low cost, high speed computers, object-oriented software, open-system architecture, friendly graphical user interfaces, shipboard fiber optic networks, networked digital communications, reliable equipment health monitoring systems, automated ship positioning systems, and corrosion and wear resistant coatings, would yield substantial manpower savings.

Other than the "Law of the Sea" requirement for a posted lookout, there are no legal impediments to crew reduction. Barriers can, however, be found in an unwillingness to break with culture and tradition, in self-imposed policies that inhibit or discourage manpower reduction, in a pervasive perception in the Fleet that manpower is a "free" commodity and need not be constrained, and in a risk aversion philosophy founded on a lack of confidence in earlier attempts at automation.

Foreign navies, also faced with draconian budgetary constraints, have ventured into crew reduction through automation. The results are mixed, with greater success evident in ships designed initially for reduced crews, as compared with those in which the reductions have been imposed as a back-fit. Although the foreign experience is not directly applicable because of differences in mission, size, and national culture, their "lessons learned" were useful in the Panel's deliberations.

Automation is already impacting the ways in which the Navy trains its personnel. The use of multi-media training has reduced learning time and improved individual performance. Embedded training ensures that technicians and operators train on the same systems that they maintain and use.

The Navy has the opportunity to revolutionize the process by which ships are designed so that crew size becomes a principal consideration. The Surface Combatant for the 21st Century (SC-21) Program, now in the early stage of concept definition, should be the vehicle for this radical change. Manpower reductions in the current fleet should be approached through the insertion of technology for automation (which will require some

funding up-front) and the revision of restrictive policies (which does not require funding but does require a commitment to reduce manning).

RECOMMENDATIONS
PURGE INHIBITING POLICY DIRECTIVES

The Panel found that manpower-related policy, doctrine and procedures (at all levels of command) tend to impose additional manning requirements and inhibit reductions. Historically, the availability of manpower encourages the continuation of full manning and provides little or no incentive for reduction even when automation is introduced that replaces a manned function. The Chief of Naval Operations (CNO) should conduct a thorough, top-down review of manpower and personnel directives to identify and purge those that are in conflict with the goal to reduce manning. All retained manpower-increasing policy directives should be justified by quantitative risk analysis.

REVISE THE ROC/POE DOCUMENTS

The Ship Manning Document (SMD) is based on ship missions and capabilities and on the Condition III watches specified in the ship's Required Operational Capability (ROC)/Projected Operational Environmental (POE) document. Because there are currently no incentives to constrain manpower, watch requirements are inflated. The Deputy Chief of Naval Operations (Resources, Warfare Requirements and Assessments (N8)) should revise the methodology for development of ROC/POE to reflect an emphasis on manpower reduction through strict control of requirements. As technology is injected to automate ship functions, billet reductions should be generated and formalized during periodic document reviews.

DISPEL THE MYTH OF "FREE" MANPOWER

At all levels of command in the Fleet, there seems to be a general perception that manpower is a "free" commodity. Thus, there is no inclination to either conserve or reduce manning since there is no "cost" to the user. The CNO should establish in the Fleet a system of accountability for the real cost of manpower and create at the Fleet and Type Commander levels a manning budget in the personnel (MP,N) account, with responsibilities similar to Operating Target (OPTAR) accounting in the operations and maintenance (O&M,N) account.

REVOLUTIONIZE SHIP AND SHIP SYSTEMS DESIGN

The design process for new classes of ships does not focus enough attention on the need to reduce the manpower required for operations and maintenance. Specifications for new ship systems, both forward-fit and back-fit, are similarly underconstrained. The CNO should revise the process for the design of new classes of ships such that the potential cost of manpower becomes a visible and accountable factor in the dialog between the platform sponsor and the ship program manager, as are factors such as displacement and payload. New ship systems should, likewise, be required to justify manpower increases.

Mechanisms that provide incentives for attention to manning issues should be established at every level.

FOCUS ON THE SC-21

The SC-21 Program is in the early phase of concept formulation. The Mission Need Statement for the ship specifies automation to a degree sufficient to realize significant manpower reductions. The program does not appear to be adequately funded to pursue that critical objective. The CNO should increase funding for the SC-21 Program to enable a revolutionary approach to the design of the ship and a thorough review and resolution of manning issues. Ties to Fleet Process Teams such as Force 21 (COMNAVSURFPAC Study Group) should be institutionalized.

DEMONSTRATE TECHNOLOGY

Proven technologies are available with the power to reduce shipboard watch standing and maintenance manpower requirements. Some reluctance to apply those technologies is founded on a lack of confidence in the reliability of advanced systems and the absence of incentives to automate functions. The CNO should propose an initiative to demonstrate reduced manning technologies in a deployable fleet ship.

SUMMARY

The Panel believes that the Navy stands on the threshold of a new era in which highly capable ships can be made more cost-effective through the introduction of automation and the technologies that enable significantly reduced manning. The savings realized should be returned to the Fleet in additional ships and weapons.