INTRODUCTION

Many large organizations have had downsizing problems as they cope with reductions in demand. Issues become more complex when a large downturn is likely to be followed by an upturn, returning the organization near to previous activity levels. The Mare Island Naval Shipyard faces a probable 30% workload drop in the next two to three years (1990-1993) with a projected return to current workload levels in the following several years (1994-1996).

Change management affects shipyard effectiveness and efficiency and employee lives. The goal is to retain an adequate, skilled, core workforce during the downturn in a way that will allow building a competitive workforce for the expected upturn.

This paper describes the most recent Mare Island Naval Shipyard efforts to use all available tools and approaches for managing expected personnel turbulence. The idea is that any important decision should use all available information and be as forthright as possible so both management and employees can plan their futures. Overall management concerns include:

- Keeping the workforce lean to compete successfully for work.
- Planning for downsizing to reduce workforce impacts.
- Maintaining a highly skilled workforce.
- Planning for resource availability to meet the increasing workload in 1995 approximating that of 1988-1989.
- Anticipating large numbers of hires for return to full workload.
In previous years, the shipyard has participated in developing and implementing many workforce planning models to manage its workforce more effectively. This work is the result of a long-term Navy program in the development of civilian workforce planning methodologies and supporting information systems (see Charnes, Cooper, and Niehaus (1972) and Niehaus (1979, 1988)). These models are part of the Computer-Assisted Manpower Analyses System (CAMAS).

The next section provides additional background and more detailed strategy. The main body of the paper discusses the modeling methodology including a numerical case example. The final sections summarize the various issues, providing a future plan of action.

BACKGROUND

In the next two years, there will be significant decreases in ship overhauls at the various Naval Shipyards. This will be followed by a dramatic increase (1995-1998) due to shifting maintenance, scheduling philosophies, and cost reduction issues. The shipyard's objective is to meet the challenge of a near term workload drop followed by an expansion of expanding back to the present size by 1995 while still maintaining a highly skilled workforce. This is a difficult problem that will only be resolved through assumption of responsibilities by both management and employees.

Computerized human resource models have been developed and used by the Navy in decision-making for flexibility in workforce management. An example of the use of such models can be found in the overall Navy shipyard reduction in February 1985. The Department of the Navy conducted an efficiency study whose conclusion was that an overall Navy shipyard reduction from 80,000 to 72,000 was required. The CAMAS-based models were adapted to assist the Naval Sea Systems Command (NAVSEA) in projecting management actions required to reach a lower number while maintaining a balanced workforce (Bres, Niehaus, Sharkey, and Weber (1987)). Resulting figures showed that only 58 people were terminated in reaching the required 8000 staff reduction. Mare Island model developments also addressed ways to understand and manage occupational structure issues constrained by total work-load requirements (Bres, Niehaus, Sharkey, and Weber (1988)).

In this study the shipyard faces a 30% workload drop for FY90-91 and is expecting a return to full workload at current levels in FY95-98. Because of the projected workload decline, the shipyard will have to reduce some staff with critical skills. These personnel or equally skilled replacements are not expected to be available when needed again in the future. Transition periods will be very costly considering the magnitude of reductions and subsequent hires. The extensive training of newly hired personnel to develop needed skills must also be considered.

The data in this report illustrate alternatives under consideration at one point in time. Actual planning data change frequently as projected workload content and schedules change over time.

The shipyard manning changes (shown in Table 1) are examples of the extensive skill downsizing and subsequent restaffing caused by projected workload changes. If the shipyard had to downsize further or return to a higher manning than indicated, there would be even more turbulence in the workforce. Problems caused by lacking a trained workforce would also increase. Conflict between reducing workforce costs to remain competitive and retaining skills to meet future workload requires careful consideration. The method of downsizing will have cost and performance impacts. Reductions in force (RIFs) are expensive; the