

Shipyard Material Control



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Abstract

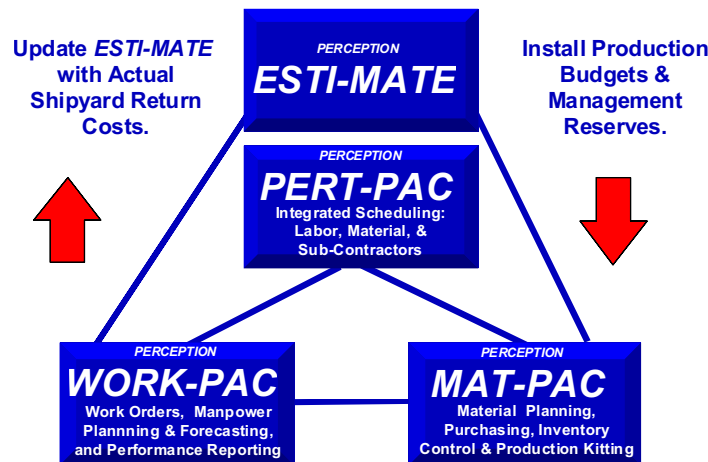
Shipyard planning and material control have three fundamental objectives:

- ❑ Ensure that all required resources (drawings, material, labor, subcontractors and facilities) are all available when the work is scheduled
- ❑ Organize the work to be the most productive possible
- ❑ Monitor progress and measure actual costs and schedules against budgets and plans

This document presents the fundamentals for planning and managing material for new ship construction and major ship conversion contracts¹. The discussion outlines a framework from which the shipyard can develop a logical, well-organized material control plan from the outset of a contract. The computerized material control system requirements and capabilities are based upon SPAR's *PERCEPTION*® system, of which *PERCEPTION MAT-PAC*™ provides the majority of the purchasing and material control functions.

Good Material Control Management is always seeking ways to reduce material costs, better support production and eliminate non-value-added efforts. Reducing material handling costs should be a major priority for material control. In addition, obtaining better cooperation from vendors to deliver material that better addresses the needs of production processes can result in significant savings overall.

SPAR Associates, Inc.



The Integrated *PERCEPTION* Planning & Resource Management System

¹ Material control for ship repair projects has similar functions and procedures as for new construction, but usually with fewer opportunities for long range planning and scheduling and detailed engineering requirements.

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Chapter 1: Introduction

Over half of the non-capital cost in shipbuilding is the cost of material. In fact, larger shipyards are approaching 70%-80% as more and more of their outfit items are being purchased when traditionally they may have been manufactured within the shipyard.

Material, therefore, is not a trivial element of the cost of construction. Further, regardless of its own cost of purchase, material can directly affect the other major non-capital cost in shipbuilding: labor. If material is available at the most productive early stages of construction, significant labor cost savings is possible. However, if material is not available, work must be postponed to later, less productive stages of construction and labor costs will escalate. For example, work that could have been done on block, but due to material delays must be done on-board, and this on-board work being less productive can suffer a cost penalty of factors 3-5 times. Even if the stage of construction is not put in jeopardy by missing material, the simple act of having to stop and restart work carries a penalty of non-value time wasted.

In addition, having an accurate accounting of inventory is critical to a business operation. But how is accuracy measured? A sound, real-time system for managing all inventory requisitions, purchases, deliveries, and issues to production today is a pre-requisite. This system, of course, cannot operate without a complete set of prescribed ground rules by which everyone involved in these inventory management processes must follow.

When operating under a Vendor Managed Inventory (VMI) approach, supplier-managed inventory can add value to the company bottom line and can free up resources better used in other areas of the operation. However, the company and the supplier have to work as a team to accurately measure inventory levels. Otherwise, there can be serious cost penalties to the operation.

The cost of poor inventory record accuracy is not always apparent to management. It results in increases in production costs and profit reduction, unanticipated “stock-outs”, decreased production efficiency, higher investment in safety stocks, requirement for staging of items to determine availability or shortages, invalid data for inventory replenishment, and more obsolete and excess inventory. Therefore, it is important to have accurate and timely inventory records. Most experts agree that this accuracy must be at least 95% and even higher for critical and high unit-value items.

The objective of this document is to offer a general description of the material control process, including who is involved, and what basic considerations are necessary to make the process be efficient and effective. Each shipyard should have its own plan for managing material. While each plan can differ from others, the shipyard should focus on ways perhaps unique to its own operation to reduce material costs and its impact upon production labor. Since material control involves different shipyard departments and responsibilities (Figures 1.1 and 1.2), each role must be well organized, supporting and supported by the other necessary roles for a successful material control process.

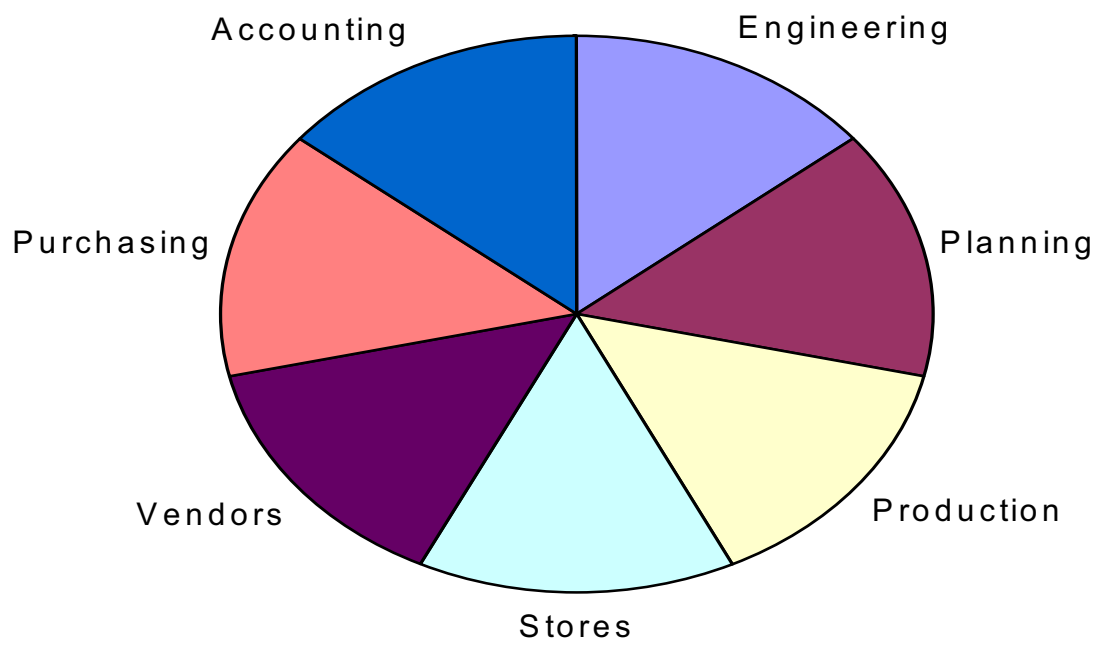


Figure 1.1: Primary Breakdown of Material Control Organization

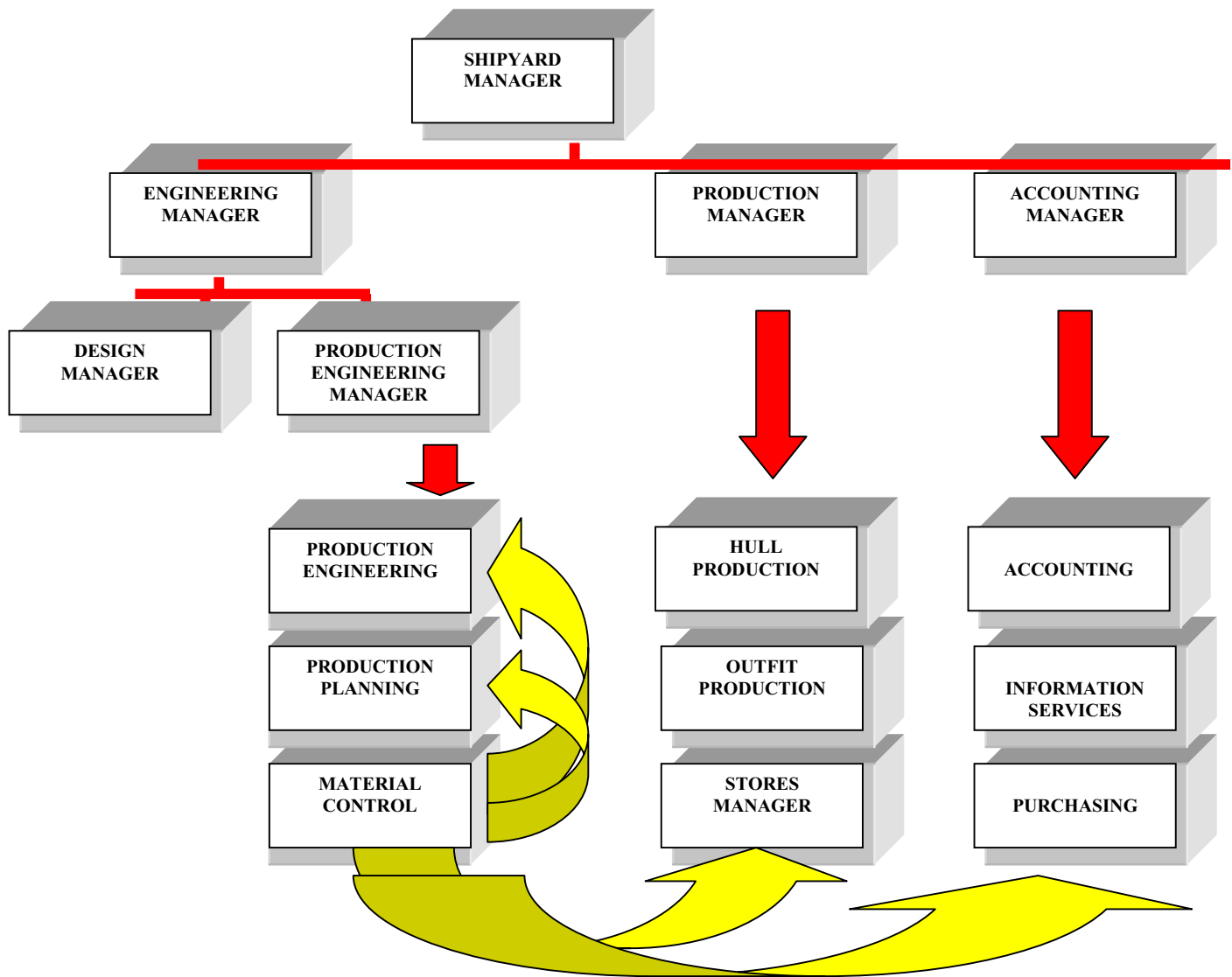


Figure 1.2: Typical Shipyard Responsibility Breakdown Organization