

SPECIAL SHIPYARD TRANSFORMATION PLAN ISSUE

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Shipyard
TRANSFORMATION

Theory of Constraints/Critical Chain Project Management

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The Theory of Constraints, or TOC for short, is a set of concepts, principles and tools created by Dr. Eliyahu Goldratt to manage systems better. TOC is a management philosophy providing the tools and applications to systematically identify and construct simple solutions to seemingly complex problems. Critical Chain Project Management (CCPM) is one of the many solutions in the TOC framework. CCPM involves managing time buffers and task priorities to systematically work through a project plan that will define and exploit constraints. The five focusing steps that this solution uses to accomplish this are:

1. Identify the system constraint.
2. Exploit the constraint.
3. Subordinate everything else to the constraint.
4. Elevate the system constraint to a new level of productivity (increase its throughput).
5. Go back to step 1 and find the new constraint.

This is the “Plan-Do-Check-Act” applied to strategically selected areas.

Some other TOC solutions that are being implemented elsewhere in the Shipyard include:

- Drum-Buffer-Rope (DBR) in shops 31 and 38M6
- Better resource loading through a single resource portal being developed throughout all shipyards

This is the start of a much larger process being implemented throughout the Naval Sea Systems Command (NAVSEA) corporation and is targeted to reduce the cost associated with work we perform. These are just a few of the processes that have a hand in increasing productivity/efficiency and improving infrastructure use. The goal when Pearl Harbor Naval Shipyard (PHNSY) is completely integrated in this new management system is to reduce the cycle times of availabilities by 20 to 30 percent.

Current divisions at PHNSY that use this

new management philosophy include Fleet Maintenance Availability Project for Submarines (FMB) and Selected Restricted Availability (SRA) projects. FMB was the pioneer that led the way beginning in March 2002 and have completed 40 availabilities to date using CCPM. The SRA Program Office decided to try the system on USS Louisville (July 2003) followed by USS Key West and USS Chicago (both in execution).

The Crane Division has completed two crane maintenance periods using CCPM and has one in execution. Fleet Maintenance Availability Project for Surface Craft (FMR) is preparing to execute the USS Salvor upkeep using TOC/CCPM principles. On tap in the near future is the Code 300N team that is developing plans to incorporate CCPM for Nuclear Regional Maintenance Department (NRMD), Radioactive Material (RAM) Project and other Chief of Naval Operations (CNO) work.

The benefits that have been derived from using this management philosophy and system are:

[The Payoff]

- Reduced overtime
- Projects completing on time or ahead of schedule
- Increased throughput
- More focused meetings
- A single prioritized list of jobs for production and support codes to focus on
- Less multitasking

To date, the on-time completion rates for FMB (85 percent) and SRA (100 percent) availabilities have improved, while a significant reduction in the amount of overtime (FMB, 14.5 percent; Louisville SRA, 21.7 percent; Key West SRA, 15 percent) has occurred. This is all being accomplished while performing more work on the ships, which increases the throughput of the system and translates into gains in productivity and efficiency.

