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TECHNICAL REPORT

Impacts of the Fleet Response Plan on Surface Combatant Maintenance

Roland J. Yardley, Raj Raman, Jessie Riposo, James Chiesa, John F. Schank

Prepared for the United States Navy

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1200 South Hayes Street, Arlington, VA 22202-5050
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Summary

Until recently, the Navy's ship readiness objectives and maintenance needs for surface combatants were met through a two-year cycle. Ships were deployed in forward-presence roles for six months and spent the next 18 months primarily in maintenance and training. A ship would then be ready for another deployment. This approach satisfied the many personnel, presence, maintenance, and mission requirements of the Cold War era; however, new global threats have recently challenged these traditional methods of operation.

To achieve a more responsive and more readily deployable fleet, the Fleet Response Plan (FRP),[1] adopted in 2003, institutionalizes a new readiness approach intended to allow the Navy to deploy a high number of assets quickly. Prior to implementation of the FRP, ships normally did not commence basic training until the completion of a depot maintenance availability. Under the FRP, ships returning from deployment enter basic training almost immediately, and basic training is more flexibly conducted both before and after a ship's depot-level maintenance. The desired result is for non-deployed ships to achieve a high level of readiness earlier and to maintain high readiness longer so that they can deploy on short notice. The goal of the FRP is to achieve a readiness level that will allow six Carrier Strike Groups (CSGs) to deploy within 30 days and two more within 90 days. This is approximately twice the number of carriers deployed and ready to deploy under the 24-month cycle prior to FRP. One of the primary challenges in implementing the FRP is the establishment of processes and procedures, as well as a ready industrial base, to facilitate maintenance planning and execution to meet FRP surge requirements and maintenance demands, whose timing is no longer as predictable.

To help the Navy understand this challenge, the RAND National Defense Research Institute (NDRI) undertook to characterize the implications of the FRP for maintenance needs and to identify the range of maintenance resources that could be brought to bear. The NDRI research team also undertook to quantitatively measure the impact of the FRP on maintenance provision. To limit the scope of the analysis, we concentrated throughout on the DDG-51 class of destroyers—the largest class of surface combatants and one subject to little modernization to date, which simplifies the analysis. Our sources of information were interviews with numerous fleet maintenance and scheduling authorities, along with data on ship casualty reports and maintenance costs.

[1] Also referred to as the Fleet Readiness Program.

The Fleet Response Plan and Its Challenges to Maintenance

In the previous readiness cycle, a ship returning from deployment would sequentially have a post-deployment stand-down, enter (occasionally with some delay) a maintenance period for nine weeks, and then begin four months of basic crew training with the vessel. Under the FRP, ships must formally sustain a surge readiness posture. After the post-deployment stand-down, ships immediately begin either a maintenance period or basic training. Moreover, these two activities can be combined: The nine-week maintenance period can be conducted at the beginning, within, or at the end of the basic training period. At the end of basic training, approximately six months upon return from deployment, the ship is expected to respond to an emergency surge requirement with an additional 45 days' notice if directed. This is in comparison to the 12 months required for redeployment under the pre-FRP regime. After completing integrated training, the ship is regarded as surge ready—that is, able to deploy if needed in less-than-emergency situations and to pulse in support of limited operations. Ships continue to train and achieve and sustain targeted combat readiness requirements and are designated as routine deployable.

Partly because of the more compressed and flexible maintenance schedule, the FRP has given rise to challenges in planning maintenance. Specifically, planners of maintenance availabilities must account for several new factors:

- **Allowing for surge capacity.** For example, ships may not get expected maintenance because of a lengthy deployment or because of reallocation of resources to another ship being readied for deployment. Maintenance authorities closely monitor deferred actions so that if the ship must participate in a surge, repairs critical for mission accomplishment may be made.
- **Budgeting issues that make it difficult to fund a given availability across fiscal years.** When the Department of Defense operates under a continuing resolution, such a resolution does not authorize funding for ship maintenance. Ship maintenance activities must be postponed because funds are not available to order the required repair parts. This delay further constrains the time slots open to maintenance schedulers.
- **Continuous maintenance availabilities.** Continuous maintenance availabilities are used to perform depot-level work outside a depot-level facility. This least-intensive class of depot maintenance is performed pier side and scheduled four times per year (once per quarter) under the FRP instead of twice per year (pre-FRP). As a direct result of continuous maintenance availabilities, more depot-level maintenance is being accomplished pier side and outside the shipyard environment.
- **Modernization demands.** While most maintenance demands can be scheduled within the time required to bring the ship to emergency surge-ready status, some modernizations will take 40 to 50 weeks to complete. FRP surge readiness requirements may conflict with the need for modernization; if so, these work packages will have to be broken into segments to satisfy FRP requirements. If the modernization for a ship class is spread over a long period, by the time the last ship is completed the upgrades could be obsolete. However, if the upgrades are all performed in a compressed period, surge readiness and

operational availability may be compromised. In addition, late funding adds uncertainty and slows the modernization planning process. Fleet officials identified late funding as the number-one problem in modernization.

Marshaling Maintenance Resources

Despite the challenges, FRP-driven increases in surge-related maintenance do not seem to have stressed manpower resources so far. This success may be attributed to the Navy's attempts to improve the flexibility and efficiency of maintenance resource supply. The challenge is to bring resources to bear while keeping costs low.

In recognition of this challenge, the Navy has been attempting to improve the flexibility and efficiency of maintenance resource supply. Uncertainties about the timing of a surge necessitate a flexible supply base capable of addressing the scheduling challenges. Those attempts include the following:

- **Multi-ship, multi-option (MSMO) contracts.** Historically, private shipyards have competed for each depot-level availability. Recently, the Navy has instituted the practice of awarding a single overarching contract to a prime contractor responsible for depot-level maintenance work on multiple ships in a class. This allows the contractor the flexibility to quickly bring the appropriate resources and personnel to bear to meet evolving demands. (It also places on the contractor the responsibility for meeting the demand.)
- **Regional Maintenance Centers (RMCs).** In the RMC concept, Ship Intermediate Maintenance Activities (SIMAs); Supervisors of Ships, Conversion, and Repair; port engineers; and other previously separate entities function together as a consolidated provider of maintenance. Furthermore, SIMAs are limited to work at 80 percent capacity to allow room for a surge.
- **SHIPMAIN (ship maintenance initiative).** The purpose of this initiative is to improve maintenance planning by streamlining the planning process and attempting to get work done in continuous maintenance periods instead of waiting for a major availability.
- **Maintenance teams.** Senior decisionmakers from the ship, port maintenance authorities, and maintenance supervisors and providers have established teams to cost-effectively schedule and allocate work. They do so by validating all planned work items, brokering work candidates to the appropriate activity, and ensuring that maintenance providers are used efficiently (e.g., that one provider does not have to incur additional costs by paying overtime while another has a shortage of work for equally qualified personnel).
- **"One Shipyard."** This initiative seeks to increase the efficiency of maintenance provision by pooling resources across shipyards.
- **Distance support.** The ship's force can now obtain technical assistance from shore-based experts via the Internet.
- **Systems and engineering materiel assessment teams.** These teams can be flown to ships to collect information (e.g., on the condition of components) that can be useful in identifying and scheduling maintenance.

The Navy has recently been successful in resourcing surface ship maintenance availabilities (Congress has recently increased funding for ship maintenance). The plus-ups were applied to maintenance availabilities in fiscal years 2003 and 2004, which resulted in fully funding the maintenance requirements for ships that underwent Chief of Naval Operations availabilities during these fiscal years.

Is Maintenance Supply Meeting Demand?

Are maintenance resources, aided by the Navy initiatives listed above, meeting the changing profile for maintenance demand under the FRP? Ultimately, the answer to this question lies in the ability to provide the needed ships in a surge situation. Interviews with fleet authorities indicate that there are a sufficient number of operationally available DDG-51 ships to respond to FRP surge demands. The scheduling and maintenance implications of responding to the FRP were considered to be manageable, since there are notionally only two DDGs per CSG; so a maximum of 16 DDGs (out of 43 DDG-51s in the fleet) would be required to surge in a 6+2 FRP carrier surge scenario. (The sufficiency of other surface combatant forces is an issue we did not pursue.)

Determining whether the ships surging under the FRP are more ready or less so—and if more so, at what cost—requires a quantitative assessment. We undertook such an assessment with casualty report and cost data from Navy sources. We found no significant change in ship casualty reports or maintenance costs following implementation of the FRP. Unfortunately, the FRP was implemented too recently (and in the midst of major deployment changes following September 11, 2001) and Navy maintenance spending is too closely tied to funding to draw FRP-related inferences with any confidence. Thus, while the evidence from our interviews appears promising, any confident conclusions regarding the interrelationship between maintenance supply and FRP-related maintenance demands will require at least the passage of some time. This topic should be revisited in the future.