Surface Ship Readiness Depends on End-To-End Maintenance Process
by CAPT Edward Lundquist, USN (Ret)

Surface ship readiness depends on proper and timely maintenance. It's a complex process involving a lot of stakeholders, and it needs a champion.

Surface Team One (ST1) is chartered by Commander, Naval Surface Pacific (CNSP) and Commander, Naval Surface Atlantic (CNSL) to bring those stakeholders together as a collaborative team in support of the maintenance, modernization, and sustainment activities. According to Rear Adm. Dave Gale, Commander Naval Regional Maintenance Centers, ST1 is that champion.

"ST1 is the forum in which we bring the fleet, type commander, Naval Sea Systems Command (NAVSEA) and the rest of the maintenance community together around the subject of surface maintenance and modernization and how it performs," says Gale, who is co-chair of the ST1 executive steering committee (ESC).

USS Bonhomme Richard in dry dock December 1, 2010.

Gale says that ST1 encourages the surface maintenance community to share knowledge at all levels, focus on long term improvements, implement pilot projects and manage the process to identify and adopt best practices, develop and use a common set of performance metrics for key processes, and consider the needs of ship's crew and their quality of life.

"ST1 supports the surface ship community in terms of technical requirements, the long-term impact of maintenance, and collaborating on engineered products. We built upon the success of Carrier Team One and Sub Team One," he says. "Those are excellent models for us, but unlike the carrier and submarine force, where maintenance is fully mission funded for an entire fiscal year on 1 October, surface maintenance is outsourced to the private sector and funded in the form of execution year using Operation & Maintenance, Navy (O&MN) dollars.

According to Gale, it becomes a uniquely important behavior for the Surface Navy because there's a lot of variability with maintenance dollars in an execution year. "We have SURFMEPP (Surface Maintenance Engineering Planning Program), creating and establishing engineered requirements to do maintenance, and a budget to support those requirements in man-days. How we execute that in terms of how much made it to wrench-turning—is a whole different discussion from the top down."

It involves OPNAV N95 and N96, who now own the wholeness game. That's because the maintenance requirement in a budget is turned over to them to look at it from a wholeness perspective, and to decide whether the maintenance budget is right, whether or not it's whole and it gets done what it needs to get done.

USS Curts and USS Vandegrift in NASSCO's drydock for repairs. (NASSCO photo)

PACIFIC OCEAN (Jan. 31, 2013) Hull Maintenance Technician 3rd Class Jesse Belfi strikes a welding rod to mend the hinge of a quick-acting watertight door handle aboard the amphibious assault ship USS Bonhomme Richard (LHD 6). The Bonhomme Richard Amphibious Ready Group, deployed in the U. S. 7th Fleet area of responsibility, will take part in amphibious integration training (AIT), certification exercise (CERTEX), and participate in the annual multi-national combined joint training exercise Cobra Gold. (U. S. Navy photo by Mass Communication Specialist 3rd Class Amanda S. Kitchner/Released)

While readiness is often thought about in the present, ST1 takes a more holistic and long-term approach. "We're focusing on systematic improvements of maintenance availability cost, quality, and schedule performance. We're addressing current readiness challenges, but just as important we want to meet ship expected service life (ESL)," Gale says.

Gale says collaboration—and the ability to approach decisions as a single community of stakeholders—is the key element for improving surface ship readiness. "ST1 is the tool that allows the surface maintenance and modernization community to implement meaningful change, and return fully capable ships to the fleet, on time."

"ST1 brings together a lot of behaviors, activity, and product development to get the maintenance right. We have only been on this particular journey with Surface Team One now for about a year and a half. A lot of this is parallel development in not only commands and functions, but how it interacts and how it works together to get it done," he says.

End-to-End process
"We have a Surface Maintenance and Modernization End-to-End (E2E) Process Map, which is a very complex map of activities for planning and executing maintenance and modernization on a ship. It's on a notionally 720-day cycle, but it depends on the ship class. Some of them are tighter, some of them are longer. All of the different behaviors, products, and deliverables in the E2E process that build, form, and execute a maintenance availability are in there. There are many deliverables such as planning products, work pack-

U.S. Navy hull maintenance technician fireman Ryan Renneker grinds a blank flange for a seawater cooler on one of the diesel engines aboard the amphibious assault ship USS Makin Island in the Arabian Sea, March 1, 2012. The Navy has announced that sequestration will cut maintenance budgets throughout the fleet.

age building, time line requirements, milestone deliverables – all along the way that result in a fully developed work package that's been fully spec'd out, negotiated, put on contract, and ready for execution," says Gale.

"If you have a poorly planned availability handed over to an experienced contractor, you sub-optimize their ability to perform," Gale says. "You can create a lot of variability in process, the product and the final work package that hampers the ability to properly plan an availability. Surface Team One, in the end, needs to be the governing structure in how we perform."

ST1 established communities of experts focused on specific issues called Knowledge Sharing Networks (KSNs) and to identify processes, procedures and solutions for specific issues. "KSNs are Surface Team One entities; they're groups of people who are chartered to focus on challenge areas that Surface Team One Leadership has assigned them to do."

This aligned approach is standardizing procedures and documentation with a view towards the long-term. "The Lessons Learned Conference KSN published the Availability Project Team Handbook, a tool that is utilized to aid project teams in developing and implementing availability project plans and includes an end-to-end process and best practice checklist. The Metrics KSN developed a CNO availability 'Common Operating Picture' (COP). The COP sets a new standard for collecting, displaying, evaluating, and disseminating information from seven separate IT systems that have never before been integrated. In the upcoming year the COP is expected to improve the operational efficiency of the Navy's Surface Ship Maintenance and Modernization process by 5-7%."

SAN DIEGO (March 1, 2013) The littoral combat ship USS Freedom (LCS 1) departs San Diego Bay for a deployment to the Asia-Pacific region. Freedom will demonstrate her operational capabilities and allow the Navy to evaluate crew rotation and maintenance plans. LCS platforms are designed to employ modular mission packages that can be configured for three separate purposes: surface warfare, anti-submarine warfare or mine countermeasures. (U.S. Navy photo by Mass Communication Specialist 3rd Class Christine Walker-Singh/Released)

"For example, we have KSNs that work on the process piece of how we do advanced planning and planning," he says. "We have a modernization KSN that focuses on how modernization alterations are developed and how they get integrated into work packages. We also have KSNs for lessons learned; metrics; C5I; assessments; quality assurance; and engineering. We have a membership that cuts across lines—from OPNAV, Fleet, TYCOM, RMC—so everybody's got a stake in it. "

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Measuring performance is critical, Gale says, but that means everyone involved must utilize common metrics and capture the same data for objective quality evidence analysis.
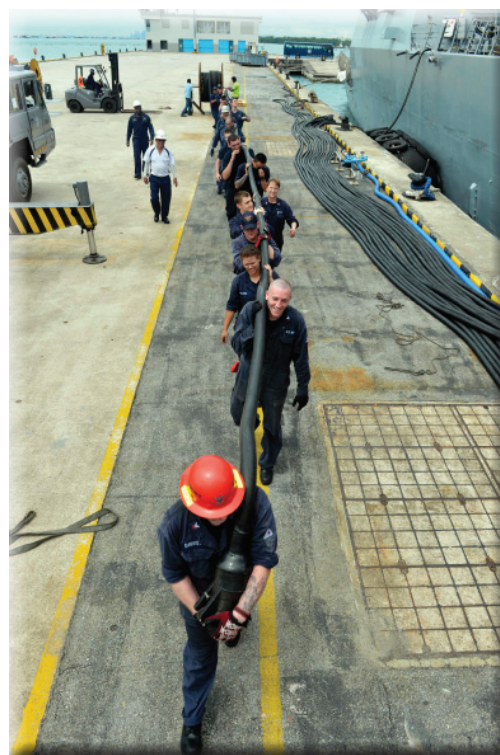
Deliberate planning
Gale has some advice for ship commanding officers and crews getting ready for an availability. "My first piece of advice is to know and learn the work package. Engage in the project team development training that we sponsor to learn not only their work package but the processes by which an availability gets planned and executed. Deliberate planning is something that we in the surface navy haven't invested much in, but we're starting to do that now. We need to involve ship's force in both the planning and execution."

"Involvement of a ship's maintenance team is especially important during the first one hundred hours on an availability; that can make or break it," said Gale.

"If you haven't sat down with the team -- the management team, the industry partner and ship's force -- and decided what that 100-hour plan is going to look like, you can get off to a very bad start and it can permeate and reverberate through that entire availability."

"The challenge for Surface Team One, and the surface ship maintenance community as a whole, is ensuring we routinely, rigorously and thoroughly engage in the planning process, while closely evaluating the outcomes of the plans we execute," Gale says. "Did we get out of it what we put into it?' Was it done effectively and efficiently? Did we properly engineer our requirements to achieve expected service life, and did the engineered requirement on one side translate into real work on the other side with the budget that was garnered for it?"

"ST1 is the governance of all things that must take place across this end-to-end process," Gale says. "Together we have to

SINGAPORE (Feb. 15, 2013) Sailors assigned to the Arleigh Burke-class guided-missile destroyer USS William P. Lawrence (DDG 110) carry a power line to provide shore power to the ship. William P. Lawrence is in Singapore for a port visit. (U.S. Navy photo by Mass Communication Specialist 3rd Class Carla Ocampo/Released)

own these processes, and build, and improve on them to address the changing needs of the future," says Gale. "That's what Surface Team One is about."

ST1 is comprised of a governance council, Executive Steering Committee (ECS), knowledge sharing networks (KSNs), multiple initiatives, and forums. The governance council is comprised of CNSP, CNSL, OPNAV N96, OPNAV N95, FFC N43, CPF N43, NAVSEA 21, and CNRMC.

ST1's Executive Steering Committee (ECS) is co-chaired by NAVSEA 21 Rear Adm. Jim Shannon and CNRMC Rear Adm. Dave Gale. Fleet and TYCOM members include FFC N43B, CPF N431, CNSP N43 and CNSL N43. OPNAV and SYSCOM members include OPNAV N95/N96/N43, SEA 21A, SEA05D, SEA04RM, PEO C4I, PEO IWS, PMS 400F, PMS470, SPAWAR, and SURFMEPP.

PACIFIC OCEAN (Aug. 15, 2008) Sailors assigned to the engineering repair division aboard the amphibious command ship USS Blue Ridge (LCC 19) raise an external hatch to perform maintenance on the watertight gasket and moving parts. Blue Ridge is the flagship for Commander, U.S. 7th Fleet. (U.S. Navy photo by Mass Communication Specialist 2nd Class Peter D. Lawlor/Released)

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