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SPURRING INNOVATION AT THE DECKPLATE LEVEL IN THE SUBMARINE FORCE

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The phenomenal success of the Tactical Advancements for the Next Generation (TANG) Forum held last year has ignited a revolution in the naval forces. Perhaps we are nearing Malcolm Gladwell's *tipping point* in our quest fundamentally to alter how we design and operate our submarines. Vice Admiral Richardson happily announced after the event that some of the ideas for our sonar and fire control systems were so outstanding that they would be incorporated into the next technical insertion, slated for introduction to the fleet in 2014. Only a scant two months after the TANG Forum, "working prototypes have been built and are running with at-sea data."¹ Despite the resounding success of the forum, the Submarine Force faces a significant challenge in encouraging and exploiting this fledgling culture of innovation. Reaching the *tipping point* will require the Submarine Force to create a system where all sailors have the ability to freely share their ideas for improvements to their systems—not just the combat systems. In doing so, not only will we benefit from the power and experiences of our junior sailors and officers, but we will begin to foster a new sense of ownership and pride that will propel us to the forefront of the naval service.

Small Problems that Elude Big Navy

While the TANG Forum focused on the next-generation combat systems, we can extend the idea of innovation to our current boats and their systems and achieve Vice Admiral Richardson's goal of returning our Force to a build-test-build mentality. I know from my own experience, and those of many of the sailors that I served with, that there are small changes that

would make their job significantly easier, or at least less frustrating, if we had a way to make them known and implemented.

The Voyage Management System (VMS) makes a perfect case study. In my last few patrols, both of our VMS computers would take an eternity to do the simplest of tasks: load a voyage plan, pan the map, zoom out, bring up the Targets window, etc. On more than one occasion, one of them would simply crash, requiring a significant time investment to restart them and load the current voyage plan with all of its settings. On some days, we were even more unlucky and both would crash nearly simultaneously—thankfully we weren't a certified for electronic navigation boat yet! Most sailors I spoke with as an officer of the deck when VMS would crash intuitively knew that the computer running the program simply needed more RAM to smoothly run this *processor-intensive* program. A whole new computer would have been even better.

Under the current model, it would take a long time, a year or more, perhaps, to get the drawings and contracts changed to allow us to install a few RAM chips and make our lives easier. The cheaper and easier solution: let us take ownership of our boats and execute the build-test-build model on a micro scale. I propose that we can solve the VMS problem in the following manner, which will be analogous to any other minor change that a sailor wants to propose. First, Navigation division reports a potential solution to the Navigator; we want to install RAM in VM1 to see if it improves performance. Second, the Navigator orders a message drafted outlining their proposal, the cost to complete the change with open source parts, and the testing they will perform to verify the change. Third, the message is sent to the type commander, among other recipients, who reviews it, consults with the in-service engineering agent (ISEA) for the system in question, and gives concurrence to the boat to make the alteration. Fourth, the ship completes the alteration and testing and reports the results back to the type commander. If successful, the change can be promulgated to the rest of the Submarine Force for implementation while the ISEA works to update the system schematics, parts

lists, etc. What would normally take a long time can now be done in a matter of days or weeks.

VMS is only one example. As a watch officer, I probably heard a hundred such ideas in my three years onboard. These were ideas that allowed us to make our jobs more efficient, provide better data flow, or improve watch team communications, but since the systems in question were not within our realm to change, they died with the end of the watch.

Details and Caveats

The generalized model described in the preceding section requires boundaries and caveats in order to be realistic and successful.

- Changes to programs of record, such as systems owned by Naval Reactors or the Strategic Systems Program, for example, would be off-limits for obvious reasons. Ideas for these systems should still be sent, not as a proposal for an immediate change, but as a means to keep the innovation going.
- Proposed changes must be reversible so that the designed system effectiveness can be restored should the alteration fail or prove less efficient.
- Proposed changes should be small enough to implement with open source, commercial off the shelf equipment that the boat can procure within its existing budget. Many boats do this already with the placement of additional computer monitors in control, for example.
- Recipients should not be limited to the normal addressees for messages to the type commander. Messages should also be sent directly to the top as well. While the type commander can make approvals for these alterations, tracking of proposals should be done within the staff of Commander, Naval Submarine Forces for trending, data analysis, and integration into future TANG workshops. Multiple proposals affecting the same system can provide the impetus to undertake a more rapid fix to a problem, which best can be accomplished from the top.



Returning the Boat to Her Crew

As a division officer, I felt more driven than most of my peers to keep my boat and crew at the best level of combat readiness that I could. That drive came from the subconscious knowledge that my boat, even a ballistic missile submarine, was still a warship. Keeping our boat in the best possible condition meant improving the quality of the work we provided to the fleet, and by extension, our survival.

I had a variety of experiences with our maintenance facility and local submarine support center, but, increasingly I found that I had less control to effect changes to my boat because of current contracts—things we used to be able to do ourselves in the past. Giving sailors an *easy* outlet to make their ideas known for changes would return a sense of ownership to the crew by giving them a say in the quality of their at-sea home. Seeing the changes implemented and their lives improved because of their ideas would do even more. It would inspire our junior sailors and officers to leverage their previous experiences and think critically about the systems that they operate and how they can do their jobs better. These are the sailors and officers who are the next generation of Submarine Force leaders. Engaging them and empowering them to innovate will yield dividends now and in the future, with earned interest. Encouraging our present leaders to facilitate this innovation keeps with the highest principles of the Design for Undersea Warfare. The result can only be a better, more effective Submarine Force that embodies the characteristics of our predecessors who *creatively* carried the fight to the Japanese in World War II.

ENDNOTE

1. Richardson, John VADM. *COMSUBFOR Command Blog*. January 17, 2012.