



Interview with Vice Admiral Richard W. Mayo, USN Commander, Naval Network Warfare Command

“Our combination of Defense in Depth, Information Operations, and a coherent network will be the threat to them [network intruders] — they are the ones who better worry.”

CHIPS: NETWARCOM was established with the realignment of the operational functional areas of space, information warfare, and command and control in day-to-day network management to a fleet operational command. It has been a short time since stand up in July 2002, but has the transition from N6 been successful in terms of what you had hoped to accomplish by the realignment of resources and responsibilities?

Vice Adm. Mayo: I think we have been successful. It is hard to imagine how something will develop that has never been done before. We were working on this proposal for almost two years before we actually established NETWARCOM on July 11, 2002 — seven months ago. One of the first things we did was to identify short-term goals for the first six months and then long-term goals. We just completed our first six months and we met every one of our short-term goals in the areas of networks, information operations and space. And what is good about that is that these are tangible, concrete, discrete things that we accomplished and can show to the fleet and to the Navy as a result of the establishment of NETWARCOM.

Because NETWARCOM is a fleet organization, acting as the Type Commander for networks and network operations we were able to accomplish these things. For example, in the network area we have clearly improved our information assurance posture. We have completed a good review of Navy Web sites and their registration within DoD. We have improved our awareness of information conditions, what we call “INFOCONs” and how we would execute them. In the information operations area we started to develop an IO architecture. We have become very closely aligned

with the new U.S. Strategic Command, which has responsibility for information operations in the joint world. I think STRATCOM sees NETWARCOM as a model for how a Service should establish itself as a network and IO functional Service component.

In the space area, we are looking to firm up the Navy's role in space after the issuance of the Rumsfeld Report [Feb. 16, 2001] designating the Air Force as the Executive Agent for Space. We also have been able to build and deploy an offensive-counter space capability, of which I am proud because that represents real operations capability. So these were among our first six-month short-term goals and I feel very good about achieving them.

CHIPS: I heard [former] Under Secretary of the Navy, Susan Morrissey Livingstone speak about the Navy's reenergized focus on space as a key enabler for joint operations, she said that the stand up of NETWARCOM with you also as head of the Naval Network and Space Operations Command (NNSOC) are important beginnings for the Navy to participate as leaders in space development.

Vice Adm. Mayo: With the establishment of NETWARCOM the former Naval Space Command in Dahlgren, Va., was renamed Naval Network and Space Operations Command under Rear Adm. [John P.] Cryer. We have aligned NNSOC under NETWARCOM, which is part of our functional component strategy. On the joint side, the former U.S. Space Command in Colorado Springs merged with STRATCOM [Oct. 1, 2002]. So just as space has been operationalized on the joint side, so has space been operationalized in the Navy as well — and that is important.

In the aftermath of the Rumsfeld Report when we briefed the Chief of Naval Operations (CNO) on what would be the Navy's future role in space, Adm. [Vern] Clark directed that we concentrate on the operational applications of space to enhance the Navy's mission and combat effectiveness.

So NNSOC is clearly focused on those things, which will help us operationalize the products that we get from space to help us do our combat missions even better. For example, effectively using such things as the TENCAP Program [Navy Tactical Exploitation of National Capabilities] products; improving Time Critical Strike through space communications links; the Global Positioning System; precise positioning information and more.

The purpose of the TENCAP Program is to exploit the current and future tactical potential of national space systems and to integrate these capabilities into the Navy's tactical decision-making process as rapidly as possible. Among other things, this will give us quicker turnaround on intelligence data from overhead sensors. The TENCAP program provides the commander immediate access to national assets and the information they provide. We are focusing on how we may operationalize these capabilities in support of the combat mission.

CHIPS: Prior to stand up the plan was that the NNSOC would perform about 75 percent of the network operational functions with NETWARCOM providing the long-range planning for Information Assurance/Information Operations (IA/IO)?

Vice Adm. Mayo: That is the way the division of responsibilities has unfolded. At NETWARCOM our focus with respect to networks has really been on the information side with computer network defense, making sure that we improve our network readiness especially in terms of security. The day-to-day, 24 x 7 operational running and management of the network is accomplished by NNSOC.

CHIPS: What has been apparent to me is the heightened security on our ashore networks and Web sites directed by NETWARCOM. Are the security measures a result of the war on terrorism or were these controls in the planning as part of the NETWARCOM mission?

Vice Adm. Mayo: We discovered that we

had a high number of official Navy Web sites that were not officially registered with the DoD GILS — the Government Information Locator Service. This discovery led NETWARCOM to direct a review of all Navy Web sites — forcing all commands to review their Web sites for both need and content, and subsequently to register their sites to ensure we had an accurate listing. We have been extremely successful in getting over 2,500 Navy Web sites registered. Now we are 100 percent complete. Because of my uncertainty, I was concerned about an intrusion or a misuse of official government information so we cleaned it up. And yes, I was concerned because of the events of 9-11.

CHIPS: I've heard you describe our network-centric warfare capabilities at sea as "fragile." And I've heard you say that the CNO's vision for Sea Power 21 is a transformation solution in many areas. But have there been improvements in capabilities since NETWARCOM stood up that Combatant Commanders and the warfighter can use right now in the war on terrorism?

Vice Adm. Mayo: When I talk about the fragility of network-centric warfare, I generally am talking about redundancy in our communications paths especially in the tactical world — and we also have a few more single points of failure than I would like to have. What we have done at NETWARCOM in the last seven months is to start work on a comprehensive ashore and afloat architecture so we can plan to eliminate single points of failure and build in redundancy and combat survivability.

We put in place a configuration management process so that changes can't be made to our network afloat and ashore without my approval. Therefore, a program management office that is dealing with new capabilities for our networks has to convince me that adequate end-to-end testing has been performed so that when a new system is put on the network there will be no degradation to the network — there will be no failure. Unfortunately in the past we have experienced failures because of incomplete testing. So I think the introduction of a configuration management process has helped greatly.

CHIPS: Part of the DoD transformation plan is bandwidth expansion. DoD is working to bring that expansion to the tactical level. Do you foresee a time when the warfighter and

Combatant Commander will have what he needs in terms of sufficient bandwidth?

Vice Adm. Mayo: I see a time when we are going to have more bandwidth than we have now. We are soon going to experiment with an accelerator, which will increase bandwidth to a unit ship. We have recently increased the throughput of our Challenge Athena C/Ku wideband terminals from a T-1, which is a dedicated connection supporting data rates of 1.5 Mbits per second to an E-1, which is a European digital transmission format, supporting 2.0488 Mbits per second. We are also going to introduce new modems and routers to our ship and shore stations, which will dramatically increase the throughput to our large deck ships, command ships and cruisers in the 2004 - 2005 time frame. This will help us to position to take advantage of the new DoD satellite system, the wideband Gapfiller system. So there are some significant bandwidth improvements that are going to happen in the next two years.

But to go back to your question, no, I don't think ships at sea will ever have "enough" bandwidth, but they are certainly going to have more than they do now. And if we could make some progress on information management techniques and knowledge management schemes, I think we will be pretty well off, but we will always need to manage the use of available bandwidth!!!

CHIPS: In an interview with Diann McCoy, DISA Principal Director for Applications Engineering we discussed the worst case scenario, the possibility of a terrorist/criminal threat, which could bring down the DoD architecture. She said chances were very slim due to the Defense in Depth measures in practice. She said that we may have isolated incidents, but ultimately the DISN — and DoD and DON security would save the day. Is this something that concerns you?

Vice Adm. Mayo: I think we could do a better job in preventing attacks. Let me say I am concerned regularly, but that concern is that we stay ahead of both the day-to-day pests and the deliberate state or non-state sponsored intruder intending us harm. I know the Navy Marine Corps Intranet is going to help significantly in this regard because we are going to have much better visibility of all the users who are on the net. We will have a lock down ability to lock a user out if we see suspicious ac-

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Vice Adm. Richard W. Mayo was raised in Falls Church, Virginia. Graduating from Brown University under the NROTC Program, he was commissioned an Ensign in June 1968.

Vice Adm. Mayo's sea service included USS Fox (CG 33); Operations Officer, USS Charles F. Adams (DDG 2); Executive Officer, USS Edward O. McDonnell (FF 1043); Chief Staff Officer, COMDESRON FOURTEEN and Commanding Officer, USS Nicholas (FFG 47).

Shore assignments included Aide and Flag Lieutenant, COMNINE, Great Lakes, Illinois; Defense Satellite Communications Project Management Office, Defense Communications Agency, Washington, D.C.; Command, Control and Space Directorate (OP 94D) in the Office of the Chief of Naval Operations; U.S. European Command C3 Directorate Staff in Stuttgart, Germany; Commanding Officer, Naval Computer and Telecommunications Area Master Station, Eastern Pacific in Wahiawa, Hawaii; Assistant Deputy Director for Defense-Wide C4 Support in the Command, Control, Communications and Computer Systems Directorate, the Joint Chiefs of Staff, Washington, D.C.; Commander, U.S. Naval Forces Korea; Director, Fleet and Allied Requirements Division (N60) in the Director, Space, Information Warfare, Command and Control (N6) Directorate; followed by Deputy Director and Fleet Liaison (N6B) and then Director, Space, Information Warfare, Command and Control (N6). He is the Navy's first Commander, Naval Network Warfare Command.

Vice Admiral Mayo is a distinguished graduate from the U.S. Naval War College, College of Naval Warfare and he attended the U.S. Naval Postgraduate School in Monterey, Calif., graduating with highest honors. He holds a Masters Degree in Telecommunications Management.

His personal awards include the Distinguished Service Medal, Defense Superior Service Medal (with Oak Leaf Cluster), Legion of Merit (with Gold Star), Defense Meritorious Service Medal, Meritorious Service Medal (with two Gold Stars) and the Navy Commendation Medal (with Gold Star). He was also awarded the Order of National Security Merit Cheonsu Medal by the Republic of Korea in December 1997.



Vice Admiral Richard W. Mayo, Commander, Naval Network Warfare Command, in his office Feb. 26, 2003.

tivity from their machine or from their local area network. We will have significantly improved configuration control through NMCI. We will have the capability to deny users the ability to load any kind of software that they might bring from home that might have malicious code.

So NMCI is really going to help us in this regard. We need to re-think how we protect our networks and assure our information. Defense in Depth also has to be defense in new and better ways, which we are indeed working into our system. Our Navy's strategy is Sea Power 21, which includes the ultimate answer in ForceNet but also in Sea Shield — which correlates to our network defense — our defense will not be crouched down and waiting for the next casual or determined potential adversary to effect our operations. Our combination of Defense in Depth, Information Operations, and a coherent network will be a threat to them — they are the ones who better worry.

CHIPS: Can you explain what you mean by "INFOCONs?"

Vice Adm. Mayo: You can compare INFOCONs to raising or lowering the physical security conditions on the base. During different levels of threat conditions, we take additional security precautions for access to our base and we force vehicles to drive through a serpentine path through the gate. We do the same thing on our networks through what we call INFOCONs or information conditions. We have a rising level of information conditions: A, B, C and D and various measures within them. At different levels use of the Internet, certain Web sites, e-mail, networks and various other communications is restricted. At the same time INFOCONs could also deny interaction between Naval and non-Naval personnel. For example, Naval personnel may be restricted from using the Internet under certain conditions. We can ratchet up our use of INFOCONs and therefore reduce our exposure to our adversaries.

CHIPS: These are defensive measures, but do you see the Navy taking a more offensive approach, engaging in information warfare on those who would do us harm?

Vice Adm. Mayo: It is clearly a Naval warfare mission area. In fact, NETWARCOM has been given the mission of helping to develop IO — information operations, as a Naval warfare area. We have done things in support of joint force commanders with ongoing activity to support IO. Information operations involve much more than just computer network defense; operations include elec-

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tronic warfare, military deception, operational security and computer network attack. The actions that we took with the Navy Web sites that I mentioned earlier relate to improving our OPSEC. The U.S. Navy helped our Combatant Commander in Southwest Asia drop leaflets over Iraq. In this case Navy planes dropped leaflets, which warned the Iraqi people not to take up arms against U.S. servicemembers. This is clearly psychological operations, what we call PSYOPS, another of our five areas of mission operations. So Navy is very actively engaged today helping develop IO as a warfare area.

CHIPS: In your remarks at NETWARCOM's stand up, you said that headquarters would be lean with 60 personnel when fully stood up, but that you would be leveraging the talent of the subordinate and affiliated commands which comprise NETWARCOM.

Vice Adm. Mayo: We initially planned about 60, but other billets were identified as supporting functions assigned to NETWARCOM headquarters and transferred to us. Currently we have 63 people on board at NETWARCOM headquarters, 26 at our Nebraska Avenue Complex in Washington, D.C., and 8 in Dahlgren, Va. We really do use our subordinate commands: the Fleet Information Warfare Command, Naval Component Task Force for Computer Network Defense and the Naval Network and Space Operations Command. Then we have affiliations with the Space and Naval Warfare Systems Command, SPAWAR, and the Naval Security Group. We use these connections, and gain some assets and resources to work problems and issues.

CHIPS: Is NETWARCOM still growing?

Vice Adm. Mayo: For today we are not getting bigger — we are just achieving our authorized manning level, however, as our roles and missions evolve, Navy will continually realign to best meet fleet requirements.

CHIPS: The new officer community of Information Professional started on October 1, 2001. What will be the scope of their work? Did you participate in the planning of the initial requirements for this new community? Will these officers spend time in the NMCI NOCs (Network Operations Center) or will they work strictly with the fleet?

Vice Adm. Mayo: Yes, I was part of the planning when I was N6 on the Chief of Naval Operations Staff, as the Director for Space, Information Warfare and Command and Control. The community stood up about 17 months ago. We have had one re-designation board where former fleet support community officers were re-designated into the Information Professional (IP) community and transferred about 330 officers. And from that time we have had three additional lateral transfer boards. We have about 370 officers in the IP community. One of the near-term six-month goals we were successful in accomplishing was to increase the number of sea billets for these officers from 40 to 120. This is a significant increase which means that one third of these officers are ultimately going to be stationed at sea. That is important because the fleet really values these officers' skills and wants them at sea. So this is really a success story. They will continue to have network kinds of jobs both afloat and ashore. They are a restricted

line community, which means they are the network experts. In fact, the mission statement for the Information Professional community states that — IPs own the network. This means they are responsible for running it and when required fixing it or making sure it gets fixed. Everybody looks to the IPs to make sure that the network is running properly. And yes, some of them could very well spend time in NMCI NOCs.

CHIPS: The CNO's vision for the Navy's Revolution in Training, includes, among other initiatives, the encouragement of enlisted personnel to obtain degrees in two- and four-year programs.

Vice Adm. Mayo: Let me go back to the IP community for a moment, one of the hallmarks of the IP community will be continuing education. We will provide opportunities for distance learning, a master's degree, or an additional certification if needed. On the enlisted side, I have an advocacy role for the Information Systems Technicians — our ITs. There are 11,000 ITs in the Navy. We have paid a lot of attention to the IT rating over the last couple of years with the CNO's Revolution in Training. We have laid out a career path for our ITs — from apprentices, to journeymen to masters. Clearly one of the steps that we will be taking in the future is to send more ITs to master's level educational programs. We have identified nine billets where an IT with a master's degree in information systems security will be required. These will primarily be at the fleet level.

Now we are in the process of canvassing for specific IT personnel who could be sent to the Naval Postgraduate School. The Superintendent of the Naval Postgraduate School loves it. Our ITs are going to love it. I'm going to like it a lot because it just speaks to the professionalism and brilliance of our ITs, and how good they are. We need to obtain legislative authority to do this, but that is in the works and then we are going to do it.

But this is great; because as we improve the professionalism of our 11,000 enlisted Information Systems Technicians it is going to help our IPs accomplish their goals and their missions. Then as we improve the professionalism of our IPs they are going to be able to provide better leadership to our enlisted personnel. So I see a convergence of professional missions. I see a dependence and mutual benefit between the enlisted ITs and the officer IPs because they are specialists making sure that the network runs and provides critical information to our ships and command centers. I can foresee this partnership becoming almost like the nuclear Navy where you have both enlisted personnel and officers trained in nuclear engineering to operate the reactors on our nuclear powered ships. I think over time we are going to see the same kind of expertise with ITs and IPs running and operating our networks, and I think it is going to be a wonderful development.

CHIPS: What is on your IT wish list for the Navy?

Vice Adm. Mayo: If I had a Christmas list of the things I would like to get under the tree and share with everybody in the Navy ... I wish we had twice as many IP officers. I think this will be a growing community and it needs to grow fast. These officers are in high demand and will continue to be in high demand. I wish I could provide more bandwidth to ships at sea because they need it and we are moving fast in that regard. I mentioned some efforts that will increase bandwidth within the next two years, but getting increased bandwidth now for our ships at sea is on my

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wish list. Then slam-dunk, airtight network security where we can know what is going on in every machine connected to the network — and we are working toward that with NMCI. ... Less complex and more user-friendly information systems, which would encourage the spread of using network and information technology even further to provide more capability than we have today ... And Web-enabled services throughout the Navy.

CHIPS: Will ForceNet help provide the items on your wish list?

Vice Adm. Mayo: In the CNO's Sea Power 21 vision, ForceNet is the glue that really brings the operational pillars of Sea Strike, Sea Shield and Sea Basing together. It is more than just connectivity. It is about an information architecture that will continue to evolve to allow more capabilities from a network and IT standpoint, but more importantly from an operational standpoint. We will come together linked through situational awareness and our ability to act quickly with precision worldwide to deliver lethal effects when required either kinetic or non-kinetic. ForceNet is going to be absolutely key to Sea Power 21. The building of ForceNet is going to require a lot more time of NETWARCOM as we work to make sure that the fleet requirements for ForceNet will fit and be interoperable with joint forces. ForceNet is one of my three primary goals for the next year. My other two goals are information assurance — improving our network security, and information operations — continuing to develop IO as a warfare area.

CHIPS: Can you talk about joint, allied and coalition interoperability?

Vice Adm. Mayo: The Navy has made great strides over the last year to field the capability afloat whereby we can exchange information with allied and coalition ships at sea. This is happening today in the Arabian Gulf and we are utilizing the capabilities very well. We can exchange e-mail with attachments between allied and coalition ships. We can share Web pages and Web-based information, and we can do chat to some degree. So we have made great strides in allied and coalition interoperability and will continue to do so in the future. We must continue because that is how we perform Naval operations — jointly with other countries. We conduct exercises and are always at sea with allied and coalition navies.

“NETWARCOM is a joint component ...”

NETWARCOM is a joint component — the functional component commander to U.S. Strategic Command for networks and information operations. That is an operational hat that I wear and it just shows the important linkage between the Naval Service and the joint world as the mission areas of networks and information operations continue to develop. They really are joint and global in scope, and they need to come together to get the visibility at the joint level. We take our role as the Navy functional component commander to STRATCOM very seriously. □