

Surface Warfare

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Vol. 25, No. 5

Maritime Dominance

Inside:
SECNAV

The SWM interview with the
Honorable Richard Danzig

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Maritime Dominance

Maritime Dominance. Two simple words, one enormous achievement. Since the days of Antiquity, many have laid claim to positions of maritime dominance. Consequently, history books are replete with documentaries of the rise and fall of great naval powers. Today, our great Navy takes center stage and it is factual, not conjectural, that ours is the only Navy that can dominate the surface of the world's seas. It did not happen overnight. Over the course of two hundred twenty-five years, hundreds of bloody engagements, and countless lives lost in combat, our Fleet attained its current preeminent position in the world's history.



Yet the price of supremacy remains high. High in the cost of building and maintaining the most sophisticated Fleet the world has ever seen. High in the cost of providing uninterrupted forward presence to the four corners of the earth. High in the strain on the fantastic Sailors who man these extraordinary warships. High in the amount of separation time from families and friends. We realize this is arduous work and the cost of liberty requires sacrifice, therefore we do not shy away from the demands of our livelihood. However, the cost of Maritime dominance reaches its breaking point when we preserve the mismatch between fleet size and forward presence commitments and the delta between budgetary resources and requirements. In fact, as the Surface Navy continues to evolve into the mission areas of Land Attack and Theater Air Dominance, the strain becomes all the more acute. Operations over this past decade proved that success is a double-edged sword. The more relevant you are, the more you are in demand. A positive side effect of these realities is it forced us away from a conscription mentality in terms of manpower and the way we build ships. We are now firmly committed to devoting money and brains, not throwing muscles and bodies, at our challenges. DD 21, Smart Ship, and Cruiser Conversion reflect this commitment and will provide us the means to maintain a Fleet that commands mastery of the seas throughout this, our Maritime Century.

I see Surface Warfare as the perennial powerhouse team in baseball. Everyone wants to knock off the top team, especially our adversaries overseas. As a large market team, our fans the American people expect a winning franchise. To deliver on this demand and field a winning ball club, we require a state-of-the-art ball field fielded with multi mission surface combatants. We also need, most importantly, for the owners to pay our players well, including going after the best free agents on the market with Congressional pay raises and bonuses. Winning, then, is up to us as leaders, and we will deliver!

As Sailors of the United States Navy, you have done what every father expects of his offspring; to grab the mantle of success handed to you and improve upon it. I applaud your devotion, dedication, and perseverance. I am also appreciative of the 28 months I've enjoyed as your Director of Surface Warfare. While I'll miss the daily commute from Annapolis, carefully watching the 10-year Pentagon renovation project, and visiting my POAC locker, I'm thrilled to return to the waterfront as Commander Second Fleet. Fair winds and following seas.

Mike Muller

Surface Warfare

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Focus:

Maritime Dominance

► On the Cover: USS *Sides* (FFG 14). (PH1 Spike Call/USN)

2 The SWM Interview with the Honorable Richard Danzig, the Secretary of the Navy

Surface Warfare Magazine's Acting Editor, Robert James, and Military Editor, LT Chris Jennings, recently sat down with the Navy's 71st Secretary, Mr. Richard Danzig, and discussed his role as the Navy's top civilian, the role of the United States Navy in the 21st Century, Maritime Dominance, and the greatest strengths of the Surface Warfare community...the people within it.

8 The SWM Interview with RADM Mike Mullen

As RADM Mike Mullen departs as Director Surface Warfare, he shares some of his thoughts on retention, leadership, and the future of the Surface Warfare Community.

12 A Fleet Perspective on Theater Air Warfare and Where we are Headed

To meet future threats, the Navy will need to integrate CEC, AADC and future Land Attack OCMD weapons systems to ensure that ordnance is delivered on target. *by LCDR Gary A. Gotham and CAPT Alan B. Hicks*

20 Environmental Characterization of the Battle Space Enhances Maritime Dominance

Knowledge of the environment and the weather is as relevant today as it ever was, and it significantly enhances the Navy's ability to fight and win. *by LCDR Paul Matthews and Cathy Willis*

27 Environmental Characterization of the Battle Space: A Historical Perspective

The lessons of the 20th century are helping Navy Oceanographers support planning, preparation and conduct of Surface Warfare in the 21st century. *by Alexander Molnar Jr. and Cathy Willis*

30 The USS Kitty Hawk Battle Group's New Top Gun

Surface Warfare Magazine's Military Editor, LT Chris Jennings, recently had the opportunity to sit down RADM Robert Willard, the newly selected Battle Group Commander of the USS *Kitty Hawk* Battle Group.

36 Blue/Gold

The USS *Lake Erie* (CG 70) has implemented an innovative system called "Blue/Gold," and as a result, has created a system where the crew is always combat ready and also well rested. *by LCDR Brian Fort, USN*

Quarters

42 SITREP

Navy Commissions USS *Oscar Austin* (DDG 79) *page 42*;

CNP Stresses Importance of FITREP/EVAL Guidance *page 43*;

Navy Surface Spouses Website *page 43*;

CPO Selection Board Reports Outstanding Opportunity *page 44*;

Navy Christens USS *Bulkeley* (DDG 84) *page 44*;



► Back Cover: USS *Shiloh* (CG 67) steams full speed in response to a distress call. (PH1 Chris Desmond/USN)

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THE SWM INTERVIEW WITH THE HONORABLE RICHARD DANZIG

Secretary of the NAVY

SWM: Could you describe your job as Secretary of the Navy and highlight the most challenging and rewarding aspects of your job?

SECNAV: One of the most important aspects of the job is trying to represent the Navy and Marine Corps to the public, not only in terms of resources, but also in terms of enhancing public understanding of the nature of our missions. The other side of the portal is making sure that the Navy and Marine Corps are conscious of the American

public's priorities and sensitive to the values of society. So the service secretaries serve as a bridge between both.

A second function apart from that bridge is to take a look at the organization as an outsider and try to, from a synthetic viewpoint, bring a freshness of view into the organization. In what areas are we especially strong? In what ways should we be different? Where are the opportunities? Where do our priorities need reinforcement? That is a second function.

I would note that the Secretary of the Navy has an unusual third function in that it is the only department that has two services. I tend to the needs of both the Navy and Marine Corps. A big priority is seeing to the synergy between those two services.

SWM: And the challenges?

SECNAV: The challenges are both wonderful and numerous and cover almost any kind of issue you can think of. There are issues of technology, obviously, and where should we be investing—innovations like electric drive and Smart Ship. There are

issues in which we are looking at how we best use our manpower, fighting the psychology of conscription and better utilizing civilians. Through the use of contractors, we are finding how to better apply our military personnel to advance the philosophy of power projection from the sea. There are issues concerning the smart running of a business, which, after all, is what the Navy is. There are so many efficiency issues and propositions on how we can do business better.

The challenges arise from the multidimensionality required to move the organization forward as a whole. There is not just one particular aspect that you can pick out to measure accomplishment. Success is determined through the advancement of the whole organization.

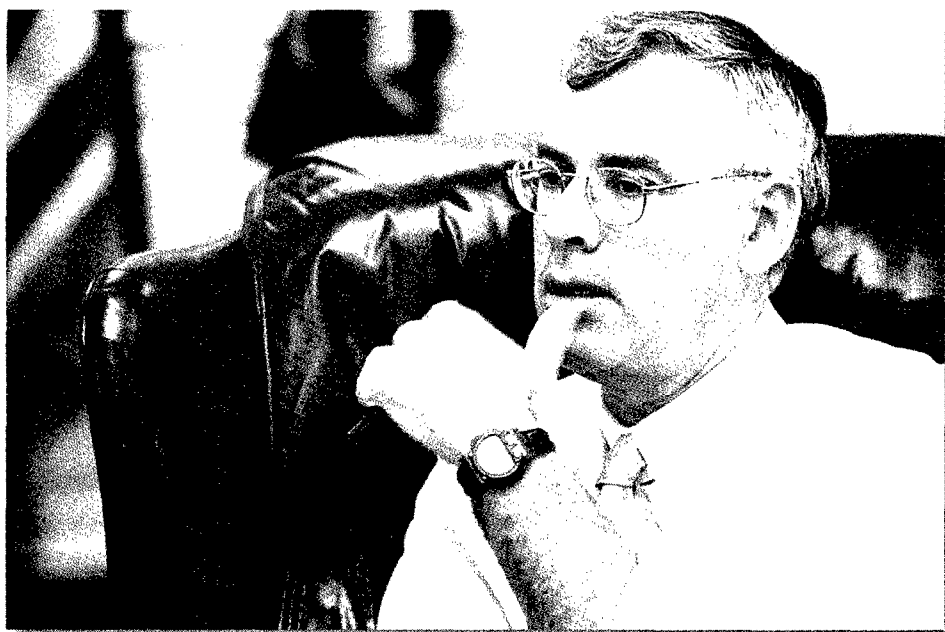
SWM: In advancing the organization as a whole, what are the measuring sticks for success?

SECNAV: As I said, along several different dimensions. Obviously, first and foremost, are we getting the job done? When you see, for example, Navy presence in the Persian Gulf,

the way we conducted operations regarding Kosovo, where we are and what we do in Asia, you have to think that is an extraordinary measure of success of bringing our capabilities to bear in an operational environment.

The second measure of success is what is the evolution of the well-being of the organization. Are we wearing ourselves out? Are we getting stronger? Are we losing ground? In the time that I have been in office I would have to say that we have gained ground in those areas. The pay triad, the rollback of redux, increased pay, and increases to BAH are areas in which I am particularly pleased. Another area in which I am very well pleased is closing the number of gapped billets at sea—particularly regarding the Surface Warfare community where the number has been reduced from 16-18,000 gapped billets to 6,000. I'd like to get it down towards zero. We'll continue to work on that. I think that a two-thirds reduction over 18 months is something to be proud of. You see that in battle group fills. For instance, the battle group is deploying with 95-percent manning. We *were* in the high 80s.

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Another dimension to measure is the physical well-being of the fleet.

Where are we in aviation spare parts? Not as strong as we'd like to be, but better than we were two years ago. Where are we in surface ship maintenance? We are stronger than we used to be.

And a final dimension that bears mentioning is: are we making the capital investments and building the architecture for the future? How do we go about recapitalizing? Again, I think we're stronger than we were a year-and-a-half ago. Eighteen months ago, the F-18 E/F was a controversy. We got through that and we have a healthy acquisition program. DD 21 had some fundamental uncertainties. We've resolved those and funded the program in our POM and decided the direction where we are going to go. Regarding missilery, we're well up on the curve regarding Tomahawk. We've improved our shipbuilding plan. We're not where we ought to be, but we are building at a higher rate. Regarding information technology, the introduction of IT-21 in the conflict over Kosovo and bringing the Navy/Marine Corps Intranet to

fruition, I think, are two very big steps forward.

Those are the ways, when I look back over my tenure here, that I can see that we are moving forward. I'm not satisfied yet with where we are. We still have a ways to go. We still have those 6,000 gapped billets at sea. We still have DD 21 issues. We still have the issues concerning getting our information systems fully integrated. We need to buy more F-18 E/F. We need to do for our support aircraft what we've done for our fighter aircraft. So we're not there, but we are in a much better position than where we were.

SWM: The Navy responds, if you average it out, to a crisis somewhere in the world every 4 months. In this kind of environment, with such diversified missions, how do we define the "mission" of the Navy?

SECNAV: Quite clearly there are three major priorities in our mission. First is our traditional ability to maintain maritime dominance. Obviously, continuing that capability is crucial. We have it. We powerfully have it. Now we need to maintain it.

Secondly, we've stressed how the many critical Navy missions in the present environment are to project power from sea to shore—the doctrine that was first executed in ...*From the Sea*. And we've fully subscribed to that. That's what you've seen in Kosovo or Iraq, where we've launched Tomahawks into Afghanistan in retaliation for the attacks on the American Embassies in Africa. That's a powerful capability that the Navy brings to the nation's arsenal. A point that I've been making is things like the Afghanistan and Kosovo operations involve Naval actions against inland countries. For the first time in history, we are using naval power to influence events inland. The Tomahawk missile capability is a thousand miles inland. Innovations in munitions like ERGM [Extended Range Guided Munition] give us that kind of potential as well.

Third is that the Navy, by its presence—and the surface fleet is crucial to this—generates an ability to project political influence without waging war. I think that capability is fundamental in keeping peace, especially in places like Asia, with

the potential for conflict between those countries. Those three things together I think are special to "missions."

SWM: Maritime dominance is a common thread through these mission areas. How do we maintain that dominance into the future?

SECNAV: You're asking the right question, and technology investments are critical in that regard. But before we get to technology, there are two prior things that tend to get skipped over. Number one is people. The most critical variable for us is the ability to recruit and retain the extraordinary quality of people we need to support and maintain the Navy in these mission areas. So, given a choice in the margin between a technology investment and a people investment, I'll always start with the people.

The second thing is a point that I've been trying to stress with people. The discussions about the Revolution in Military Affairs needs to really be a discussion

about changes in how we are doing business, our ideas and doctrines, and changes in how we view the world. That's what revolutions are about. They are about how people think. They're not simply about technology.

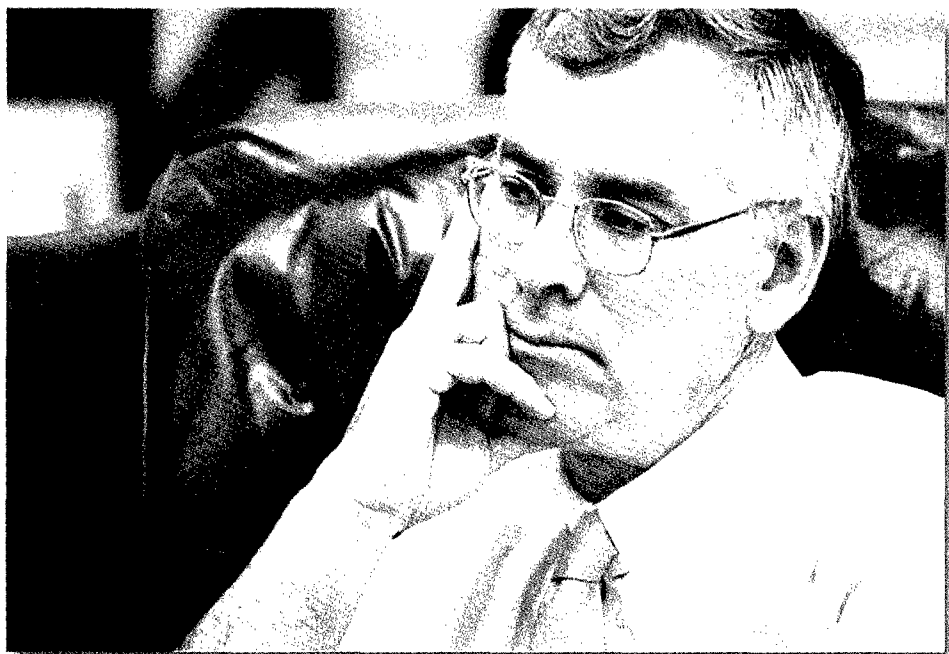
When you do get to the technology, I think that we put together a plan that makes sense and is broadly accepted within the Navy and within the nation. That plan really does involve a technology transformation. It involves advancements like DD 21, as well as advancements in other arenas such as aviation, the submarine community, and the way we staff our shore establishments, all moving towards both greater efficiency and greater effectiveness.

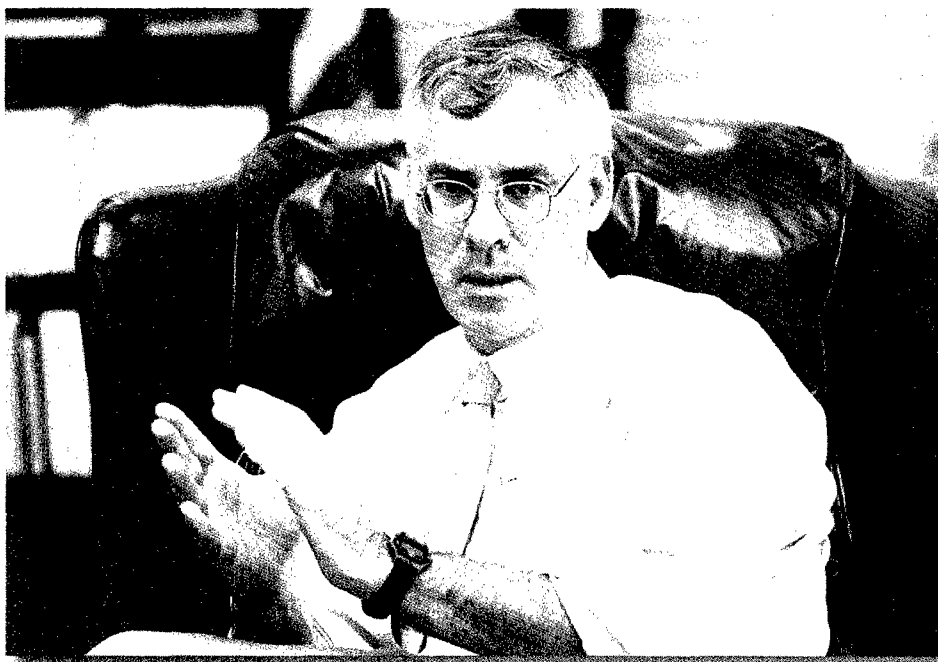
DD 21, for instance, is a dramatically different acquisition strategy and product. We're looking at taking a platform where the optimal crewing is 95 Sailors and making it not only comparable, but also exceeding the capabilities of what we have currently in the fleet with DDG 51 and a crew of 350 Sailors. How do we do that? We

do that through automation and designing it from the hull up. If we have an integrated power system and a design built around manpower, then we get enormous gains in several dimensions. One is that we put fewer souls at risk. Second, we generate a ship that, in its professional domain and in its living situations, is vastly different from previous ships. Third, we save an enormous amount of money. We estimate that DD 21 will cost a third in its life cycle costs of what a comparable ship would cost. Over a 32-ship class, we are saving 30 billion dollars. That savings frees up an enormous amount of money to allow us to go out and build more ships and continue constructing the Navy of the future.

Once you have those ideas, you can apply them, and we are applying them, to existing ships and ship classes. We can migrate electric drive to a submarine force. We're moving to Smart cruisers and Smart destroyers now, and we are achieving Smart carriers over the next three carriers. And those give us some of the same kinds of

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benefits. If we can reduce the compliment on board a carrier by 1,200 to 1,500 Sailors, then you generate a ship that is safer and better to operate, more advantageous, and saves money. We're doing this throughout the Navy. So that is a key way that we are moving forward.

SWM: Will projects like DD 21 effect how we buy ships in the future?

SECNAV: I think it is premature to make any judgments, but I can give you my own opinion on the competitive procurement procedures for DD 21. We have two teams, Blue and Gold, who are independently working on the design of the ship, what it will look like, based on some functional criteria instead of designing the ship top to bottom. My view is that this process is highly successful. My successors will have to make that ultimate judgment.

SWM: How are we addressing the manning issues within the Navy? Do we have the caliber of people we need and are we recruiting and

retaining the people we need?

SECNAV: What I see is quite positive. For instance, you look at the department head fill rate, and we've filled all those seats. The SWO continuation bonus is a positive step in the right direction to retaining the people we need. Again, I think we have to look back to where we were a year-and-a-half ago. We had a lot of vacancies and we were very concerned about that. Now, we have department head tours down to the appropriate ranges. Also, the changes within the schools and community, with an increased emphasis on mentoring and fostering those kinds of relationships, is having a positive impact on our retention of the junior officers we need to retain.

When I look at the retention data provided to me from the SWO community, we have a movement up from the historical retention rate of a couple years ago—when we were at 24 percent—to 27-28 percent today. More strikingly, however, is the trajectory that will put us into the 33 percent range for retention, based on the take

rate we now have for bonuses. So I am hoping that 6 months from now, when we have a change in administrations, that I will be able to report that we have achieved our goal of retaining 33 percent of our junior officers. I think we're close to there.

SWM: What would you say to the Surface Warfare community regarding your priorities.

SECNAV: I would say that the greatest strengths of the Surface Warfare community are the people within it. The skills that SWOs have are widely recognized in their interactions with their junior officers and their crews. That said, when I came into office, my greatest concern regarding the Surface Warfare community was that we were not as desirable as we should be in retaining junior officers or how we treat the crews of our ships. We needed to rethink and reinvigorate a lot of those relationships. I feel as if the community has done a lot of that. This is a continuous and long-term process. It is an evolution, and its success has to build upon the successes of

today, year after year, over time. That's true about pay raises, in that the money builds upon the raises given in the past. It's true about ship maintenance when we talk about civilian contractors painting. But the test is, do we expand it? Do we build on that and keep growing? We can implement bonus programs and get department head tours down to appropriate levels, but do we maintain that and build on it? So, it's a marathon that we are running. I believe that the leg of this race that I have seen over the course of the past 18 months has been very successfully run. The question is do we continue to run at that pace and with that same level of success? The crucial variable in this equation is not the Secretary of the Navy, it is the people in our ships. Our center of gravity really is our commanding officers, and we need to free them from excessive regulations and restrictions and really empower them. Then the important thing is to use that empowerment to make this a better Navy for our Sailors, and a more effective Navy for America.

SWM: Is there anything else you'd like to include?

SECNAV: I think that when it's well structured, the Navy/Marine Corps is one of the greatest jobs our society has to offer. To be able to go out and represent America all over the world. To see the places that you get to see, to have this responsibility at a relatively young age, to have the opportunities for growth and control capital equipment worth hundreds of millions of dollars, is phenomenal.

We, in leadership, need to be asking what are the ways, organizationally, that we might make this experience less than what it should be? There are four things that come to mind that we haven't done very well.

One is, having given these people such tremendous responsibility, making them afraid to exercise it. From my standpoint, the campaign against the zero defect mentality is so important. We have to be able to say, "I don't want immaculate records. I want the best people." Let them make mistakes. I'd like to think we are changing that envi-

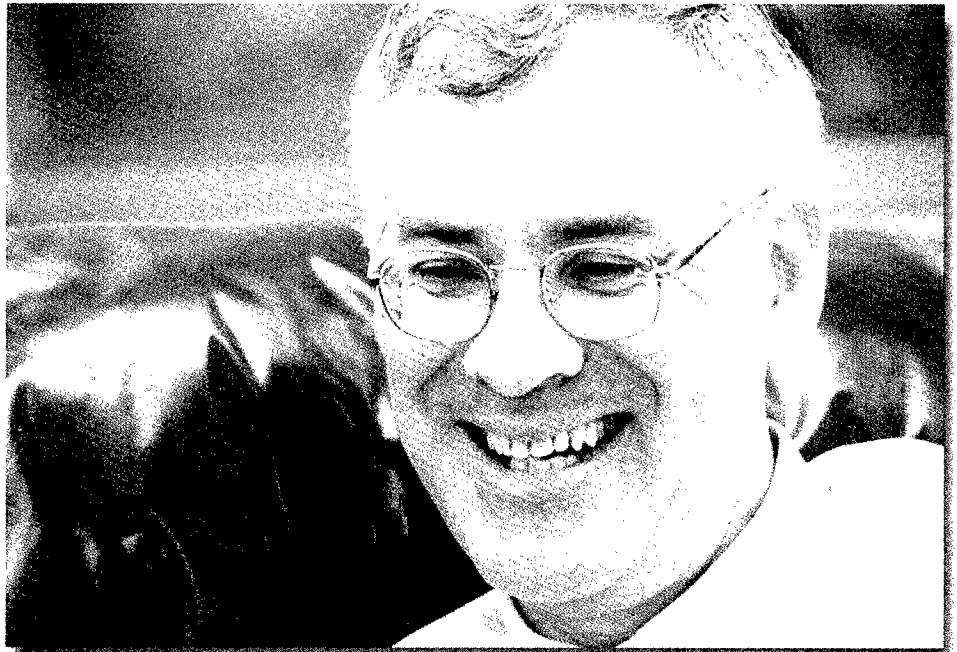
ronment. We're closer to getting this right.

The second thing is that we can so underpay people that it distracts them from the joy of their jobs. It can create too many problems for families. I think that securing the financial situations of our Sailors is critical and we are moving forward in that.

The third thing is that we can under-support our fleet. We can create an environment where there are not enough parts or tools to do the jobs that need to be done. I think we're doing better in getting that part right.

The fourth thing is that we can under staff. Meeting our recruiting goals, retaining enough Sailors, reducing gapped billets...these areas are all crucial in making sure our people aren't having to do two or more jobs at once. My hope is that in getting these four things right, we can liberate people and give them the opportunities to really enjoy their jobs and experience the fulfillment of all the Navy and Marine Corps has to offer. ■

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JOINT OPERATIONS

THE SWM INTERVIEW WITH RADM MICHAEL G. MULLEN

SWM: How do you feel now that you are at the end of your tour?

RADM Mullen: I feel good. It's been a particularly demanding environment. We struggle mightily with the current fiscal constraints and that's a concern of mine long term. I have been very fortunate to serve with some great military and civilian personnel who really dedicated themselves to make sure we are headed in the right direction. DD 21 is in good shape. Theater Ballistic Missile Defense is an emerging mission. We've come a long way in land attack—which is on the back of DD 21. In the time I've been here we've had great success with Tomahawk over Kosovo and in Desert Fox, and that's because so many folks have worked so hard over the years.

Probably the biggest achievement is that we recognized the crisis in JO retention. We decided to do something about it and some of those efforts are starting to bear fruit. We still have a huge challenge ahead of us. I still

describe it as a crisis, because it took us 20 years to get here and it will take us more than 20 months to get out of it, but the signs are good. In my travels, junior officers are no longer asking the kind of focused, really difficult, retention type of questions. They are asking more climate and cultural types of questions. They are now focused, for the most part, on the future, career opportunities, challenges, leadership opportunities, etc.. I give a lot of credit to our commanding officers because they allowed that to happen the past couple of years...more so than at any time in the past.

SWM: What goals did you bring when you came into this office?

RADM Mullen: That's a hard question. Certainly in every job I have a set of goals. Probably a big goal I had at the time was retention because I felt like I came from a waterfront where JO retention was a crisis, so I really made that my lead issue. The other thing that's difficult about this job is that a

great deal of it deals with the future, and the one true joy in dealing with this JO retention issue is that it is operative. This is the here and now. That's kept me connected with what's happening on the waterfront right now.

SWM: In dealing with future issues, how do you measure success?

RADM Mullen: There are objective and subjective measures with regard to the "goals" you mentioned. For instance, with JO retention, you can look at the department head classes and see that they are full. When I first started this job, the class had 33 students. And when I was there last week, the class was full. That's 66. So that's something quantifiable.

Dealing with the resources side, you measure success by the continuation of important programs. We've had some pretty good luck with respect to that. A specific one, that captures what the whole institution is about, is, when I first came here, we had a nightmare on

our hands with *Hue City* and *Vicksburg* and CEC. We were trying to get it out there too fast. We needed to do a lot more work and engineering, which we have done, and we've had much more success in the recent weeks. We're not out of the woods in that at all, but we've had a fair amount of success.

We've been able to move the Navy's DD 21 down the road the past couple of years in a very positive way. It's a solid program right now. Of course there's a big date with the [down-select] (???) next spring, which will be a huge milestone for that program and for the Navy. Naming it after an officer I think the world of, who had a lot to do with me staying in the Navy, means a lot. It gives the ship and its class a life unto itself, if you will, particularly imbued with his spirit. We fought through some tough challenges regarding [cross resource sponsors] (???). Challenges like precision targeting, which is N6, N88, N86 and N2. We put together a group of people led by these flag officers which are starting to work that problem very hard.

Another measure is the ability to, in great part, move your programs forward. We've spent a lot of time working issues like depot maintenance, which was not in good shape when I first got here. We'd done a poor job defining the maintenance requirements, and we've worked that issue hard the past couple years. Starting at the beginning of '01, we'll do a much better job of defining the requirements and beginning in '02, we'll be able to resource at a higher level. That fits right in with the new CNO's desire to take care of current readiness. That's his number two priority after manpower. There are a bunch of efforts like that in which we've been successful, although the overarching environment of reduced resources and more demand makes it ever more challenging. We produced a force-level study

"The emergence of the community in a land attack role—where is a ."

that says 116 surface combatants isn't enough. We need between 134-138 ships. That will be an important study when we enter QDR next year. We've prepared for that.

The emergence of the surface warfare community in a land attack role—a strike role—where Tomahawk is concerned is a big success. The movement, the innovation, the leading edge of ideas that come with Smart Ship, that has lead to ideas in other classes of ships throughout the Navy.

How we measure our success within the surface community is mission success. The surface community has performed around the world in a very demanding time, as well if not better than it ever has. There's mission accomplishment. Then the underpinning of that mission accomplishment is the people. We're doing all we can to make sure that our people have a good career path, balanced life, they're given leadership opportunities, they're performing the operational challenges on deployments, they're seeing the world. Mission and people are the two biggest factors.

SWM: You talked about the varying missions. How do we define Maritime Dominance and how does the Surface Navy fit into that definition?

RADM Mullen: Maritime dominance is our core competency. It includes the ability to fight through and dominate whatever maritime environment we are talking about. It becomes the principle enabler for any-

thing else we do. Clearly it would be an enabler for land attack. It would be an enabler for theater ballistic missile defense. We can never lose sight of our responsibility to ensure sea control, our responsibility which includes undersea warfare, mine warfare, amphibious requirements—making sure we provide a secure environment in which we conduct our operations—air defense, ship self defense. We have to make sure that from a training standpoint, from a production standpoint, from a warfighting standpoint, and from a resource standpoint, we continue to develop those facets of maritime dominance.

Maritime dominance is what we do to get us there. The other missions are what we do when we're there. What the Navy brings is access. And what it needs to be is "assured" access. It needs to be sustained. We need to get there and be able to stay there. That's what the Navy does. And that's what the Surface Navy does in its maritime dominance role. We have the most potent Navy in the whole world. I'm very comfortable we can do that. From a resource aspect, we have to balance between what we need now and what we need to continue with that potency in the future. We have to make sure we get that balance right.

SWM: You spoke about ADM Zumwalt was influential to you. What are the qualities that make up a good Sailor in today's environment and how does Navy leadership help foster those skills?

RADM Mullen: One obvious quality I attribute to Sailors I have seen is incredible dedication. ADM Clark, our new CNO, talks about service to

alike. We're all in a leadership position to some extent. So I don't want to say "leader" in reference to someone who has been around for a long time. A

excitement for those of us more junior people who were looking for fun and zest, challenge and opportunity. He certainly provided that in my life. He was a revolutionary man, and that's why we are naming this revolutionary ship [DD 21] after him. He was a revolutionary surface warfare officer. That's why this name is so special.

SWM: Does one particular tour stand out as a favorite?

RADM Mullen: No. They've all been great. One of the principle reasons I've stayed Navy from day one is the spectacular people with whom I've been able to associate. That's been a constant since I was a midshipman, June 30th, 1964 to this day. That's how it has been in every tour. The Navy has always provided me a wonderful path to grow personally, in which to see the world and, certainly not in the least, to serve my country. And I did all of these things in a way in which I was able to associate with these incredible people and be provided positions of responsibility. I have gotten to see things 99.9 percent of the people of the world will never see. I got to participate in them. From Vietnam through the Cold War, and to come to understand what service to the country is. That concept was something I didn't understand when I was young. I understood it later on.

So each tour has been very special. But I wouldn't single one out, including my most recent as battle group commander, and that was a remarkable tour. They've all been different.

SWM: What will you take from this tour personally and professionally?

RADM Mullen: It hasn't "furthered" me. I don't like to talk about it in that sense. It has provided me with a wonderful opportunity to learn and grow. That's why I've stayed in. I think it's important, as frustrating as it sometimes is, to be exposed to

"We can lose sight of our to ensure ..."

the country, which we need to talk more about, because it is a higher calling. It is a meaningful calling. A group of young men and women who are willing to serve, and, by extension, willing to die for their country is something we should never lose sight of. It calls for a steadfastness of character. It calls for perseverance. It calls for people who are willing to take risks and sometimes fall, get up, and press on. I've learned many of my life lessons by virtue of missing the mark as well as hitting the mark. Not that I would advocate that as a way of life, but you do learn a lot when you get it wrong. We need to have the courage to take the risks that will allow us to fail on occasion to learn those kinds of lessons. That's vitally important. And our young people today thirst for that.

In my view, there is a direct connection between the success of our youth,

leader is someone in a position to lead, whether it is a leading seaman, an E-4 petty officer, a chief, an ensign, a commanding officer or an admiral. Everybody has a responsibility to set a good example. I think we need to do more in the area of mentorship. We need to make sure we are bringing along those that come behind us. If we don't do that, then we won't grow as an organization.

SWM: Who was your example?

RADM Mullen: The individual who influenced me the most was CAPT George Sullivan. He was my CO when I was a LTJG in the Mod Squad under ADM Zumwalt. I had the good fortune of serving under CAPT Sullivan. He's the reason why I stayed in the Navy. I was fortunate, many years later, to be his XO when he had command at the O-6 level. He

We have the potent in the "

officer and enlisted, and the willingness of leadership to delegate, to take risks, to accept success and failure, to learn from that, and then to press on. In the long run, I fundamentally believe that we are a much stronger organization if we do that.

There also are the classic characteristics of integrity, honor, courage, commitment—those things that are expected of everybody, both junior and senior

sought command as lieutenant. He had it as a lieutenant commander. He had it as a commander. He had it as a captain. He sought command at every level. That is my model. While I didn't achieve it at every pay grade, I got close.

I talked about ADM Zumwalt earlier. He influenced me a great deal. When I was a JG, he came in as CNO. He created, at the CNO level, an incredible

Washington and how we operate. I have gotten to work with a tremendously dedicated group of people, civilian and military, from all the services, who I think the world of. They are typically focused on what they want to get done, they work hard, they believe in what they are doing, and they are fundamentally serving their country. I found that focus on Capital Hill, I found that focus in OSD, I found that focus on the Joint Staff. So I have been able to grow immensely because of that.

I also have watched and learned how senior leadership gets things done in a sometimes-crazy environment. From that point, I've taken away a great deal.

Another thing that I have learned: I think I have actually underestimated the ability of Admiral Giffin, Admiral Moore, myself and the other surface warfare flag officers to so quickly impact on this JO retention issue. I say that because my position is one

SWM: Advice to your successors?

RADM Mullen: Get a very good night's sleep before you take over this job. Whoever it is will be well prepared by virtue of where they have been and continue to press forward along the lines that we have. I fundamentally believe that the relevance of the surface warfare community and the relevance of the Navy will only increase over time. With TBMD, maritime dominance, land attack—all those missions extend back to the Navy/Marine Corps team. I believe that, as there are more and more pressures to become isolationist, the one touchstone that the United States has to reach out is the Navy and Marine Corps. That's because of what we do and where we can go, all of those classic mission areas the Navy offers. So while the rest of the world recedes back within its own borders, my view is that we need to push out harder with the Navy and Marine Corps to make sure that we are connected globally and not go the other way.

really here for. So I worry about optimizing for those lesser-included missions and forgetting what it's really all about. To me, the more that mentality sets in, the more probable a disastrous outcome could occur.

SWM: And what do you want to say to the men and women of the surface Navy?

RADM Mullen: It's a great career path. Stay SWO. We are embarking on a dramatic cultural change within the Surface Warfare Community. There is excitement out there. We have new ships, we have relevancy in the future. We have command at every pay grade. We have wonderful responsibilities and opportunities that will equip you for life. We talk about "skills for life." You get them here. And you get them fast. Of that, there is no question. One very vivid picture in my mind is last Monday when I was at Surface Warfare Officer School speaking to 195 ensigns, and they are fresh, bright-eyed and raring to go. They'll all be reporting to their ships within the next few months. My responsibility as a leader of this community—and anybody in a leadership position—is to make sure we bring them aboard, provide them the opportunities I spoke about earlier, and work to make it right for them. If we do that, the long-term health of the community is virtually assured. If we don't do those things, then it is not.

I'm excited about this community. I've believed my entire life that it's not just a great community, but that it's the *best* community. And I still feel that way. Lots of people are doing great things and achieving mission success through hard work and dedication. We have some tremendous people as part of our profession. That's not going to change. ■

"We are embarking on a cultural

within the

Community."

heavily involved in it. We were dedicated to change and we did that. Had I known what we could do, I would have done more. I'm not sure what it would have been, but I certainly would have done more had I understood our capabilities ahead of time. We have made some significant changes in a very short period of time. When you go around the community and talk to the junior officers and how we've impacted their lives, I really underestimated what we were going to be able to do. So if I could change one thing in this tour, I would try to do more and do it faster than we have.

The other thing that I worry about is that I've started to see too many people talking about the military in terms of sizing it, equipping it, training it for many of the lesser-included missions which are important, but we're talking about optimizing ourselves toward those. Lest we forget that there is a requirement still for a two MTW response and we can have a healthy debate about that. But clearly there is a requirement for two major theater wars to be fought simultaneously. That takes lots of forces, people and resources. Lest we forget what we are

A Fleet Perspective on Theater Air Warfare and Where we are Headed

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**By: LCDR Gary A. Gotham
and CAPT Alan B. Hicks**

Introduction

The time is approaching when the Surface Navy will bring to the Joint Operating Area (JOA) of the 21st century formidable distributed offensive firepower in Land Attack and Theater Air Warfare built on the principles of Network Centric Warfare (NCW) and Joint Warfare. Experience in USS *Cape St. George* (CG 71) over the past six years has repeatedly demonstrated we are in the midst of another leap forward in warfighting capability such as that seen when Tactical Towed Arrays, Tomahawk, SM-2 and AEGIS arrived in the Fleet in the early 1980s. The Air Defense Team within USS *Eisenhower* (CVN 69) Battle Group (IKEBATGRU) recognized the necessity for pushing the envelope to take advantage of Cooperative Engagement Capability (CEC), Tactical Data Information Link (TADIL) J/Link 16 and IT-21. This knowledge has led to the belief there exists a window of opportunity for Navy to exploit these new warfighting capabilities and influence the shaping of the future battlefield for our Joint Task Forces.

We are in the midst of a renaissance of how our Navy will influence future conflicts in Air Warfare and Strike Warfare. A roadmap must be developed which integrates not just the combat systems but also the training, doctrine and tactics development for

land attack, air warfare and Command, Control, Communications, Computers and Intelligence (C4I). We can no longer afford to field new capabilities without correctly integrating them - the complexity of these new systems and the training required for operating and maintaining them mandates we do so. This will become even more critical if we are to achieve the goal to reduce manning in DD 21 and as we integrate Smart Ship technologies and drive down our manning requirements.

Each of the services is developing a commensurate capability in this future "plug and fight" architecture of information grids and sensor-to-shooter real-time networks of distributed collaborative planning and self-synchronization. This network architecture is being developed in stovepipes and will not necessarily bring capabilities integrated from a system-of-systems technical or tactical perspective. The Navy will continue to expand the capabilities of surface combatants in Land Attack, Theater Ballistic Missile Defense (TBMD) and Battle Management, C4I (BMC4I). Fortunately, a clear path of guidance has been driven in many of these systems to support and meet the needs to operate in a Joint environment. The Surface Navy should leverage on this work to sustain a plan which, will prove we can lead in a Joint environment, such as currently seen with the Army and Air Force moving forward in their efforts with CEC.

This future will require technology and doctrinal responses in order to deliver coordinated Joint Fires by theater air defense forces from multiple services that are integrated, interoperable and seamless—something not yet achieved on the modern battlefield. As mentioned earlier many of the current modernization programs are being developed not in concert as a system-of-systems but as individual systems. Given the new trends and realities outlined below, it is prudent to move ahead using a roadmap that calls for parallel and integrated development of Land Attack systems in concert with Air Warfare systems. Concurrently, the fleet must develop the tactics and doctrine for employing these systems in a coordinated and seamless BMC4I architecture while challenging the existing Command and Control (C2) Doctrines of Composite Warfare Concept (CWC) and Joint Task Force (JTF). The over-arching goal should be to flatten the C2 and empower the Unit Commander and the Air Warfare Commander (AWC) to be capable of performing real-time battle management coordinating joint fires within the JOA during initial crisis response and build-up as forces transition from a Navy (CWC) to a Joint (JTF) and/or coalition force. Doctrinal development must occur simultaneously with technological gains. Real-time battle management should include area air defense planning, force weapons coordination, force inventory management and air space

coordination and deconfliction. This process needs a new term – **deconfliction** is only half the story. In the self-synchronization paradigm, the guy doing the deconflicting will actively **change** the picture, not just raise his hand when something doesn't work and send it back to the brokers. The time has come to answer some important questions:

Who or what agency will de-conflict the battlespace for offensive/defensive Joint Fires?

Who will prioritize these Joint Fires and how will they do it?

Who will direct (coordinate?)

Theater Ballistic Missile (TBM), Time Critical Targeting (TCT) and Overland Cruise Missile (OCM) engagements throughout a theater?

We must lean forward in addressing the link-up of Strike planning and execution to Air Defense and Airspace deconfliction – it's time to break the use of the 72-hour ATO cycle and calls for fire via voice circuits.

A cornerstone of this roadmap must be to continue to work toward achieving the ability to build a Single Integrated Air Picture (SIAP) in real-time using fire control quality data in

sensor and engagement grids shared among weapons and sensor nodes across the entire JOA for theater-wide situational awareness (SA). The overarching goal should be to coordinate Joint Fires across the family of Air Defense, Land attack, TBMD and Overland Cruise Missile Defense (OCMD) systems. We must reduce the probability of fratricide, coordinate Land Attack loitering weapons, expand the battle space into the enemy's capability envelopes and support a layered air defense umbrella that expands as each weapon system is plugged into the architecture.

New Trends & Realities

Realities call for a redirected effort in both weapons systems acquisition and tactical thinking. The threat naval forces will likely face is changing. The proliferation of missile technology is challenging our current ship's self-defense and area-defense systems. The technological stressors to our ship-board weapons systems include high-speed, low-altitude sea skimming and high-altitude diving targets employing jamming techniques such as Terrain-Bounce, radar reducing signature technology, counter measures and high G-Force terminal maneuvers fired in coordinated multi-axis stream raid tactics. CVW training, manning,

and outfitting is oriented toward the strike mission. Because of this, AEGIS surface combatants are called upon to provide High-Value Air Asset CAP (HVAAC) protection for Airborne Early Warning (AEW), tankers and combat identification (CID) platforms. The net result is an increasing reliance on Surface Combatants to build the air picture and execute the Air Defense mission.

Naval forces, likely the first forces on the scene, will provide protection of airfields (APODS) and embarkation ports (SPODS) in a hostile environment. As Marine and Army forces arrive, early incorporation into the sensor/weapons grids is a must. We cannot assume we will have achieved warfare superiority or supremacy in any mission area. Successful integration will allow sufficient protection during the build up and transition of forces ashore by other service forces. Navy Area Defense (NAD) CONOPS call for Surface Combatants to position close to SPODS, APODS and assets on the JTF Defended Asset List (DAL) for point defense. Navy Theater Wide (NTW) CONOPS call for Surface Combatants to position closer to TBM launch points to detect Theater Ballistic Missiles (TBM) launches and enable ascent phase and future boost phase intercepts of TBMs. Employment of Land Attack weapons such as Extended Range Guided Munitions (ERGM), Land Attack Standard Missile (LASM) and Tactical Tomahawk (TACTOM) also call for Surface Combatants to possibly operate within associated enemy weapon engagement envelopes. The land-sea interface environment is extremely challenging for radar detection: terrain masking, clutter, radar height-of-eye challenges and density of commercial merchant and air traffic. In addition, the Land Attack Destroyer and Post-Conversion AEGIS Cruisers will be capable of delivering firepower not

NEW DEVELOPMENTS

In Land Attack the Navy is marching forward with Land Attack Standard Missile (LASM), Extended Range Guided Munitions (ERGM), Tactical Tomahawk (TACOM), Advanced Land Attack Missile (ALAM) and the Land Attack Destroyer (DD 21).

In the area of TBMD it has made great strides in Navy Area Defense (NAD), Navy Theater Wide (NTW). The Navy is also moving ahead in developing a new capability in Overland Cruise Missile Defense (OCMD). Standard Missile improvements will field the SM 2 BLK IVA (NAD), SM 3 (NTW), SM 4 (LASM) and SM 5 (OCMD). In addition to fielding these capabilities on existing DDG/CG assets, they will also be fielded on the next generation CG 21.

To support new roles and missions the Navy is committed to increasing capabilities in Battle Management, Command, Control, Communications, Computers and Intelligence (BMC4I). The Navy is fielding the Cooperative Engagement Capability (CEC), Area Air Defense Commander (AADC) and Link 16. In addition, the Navy is committed to assured delivery of Overhead Non-Imaging Infrared (ONIR) from the existing Theater Event System (TES) - Army/Navy Joint Theater and Ground Station (JTGS), USAF ALERT and USN TACDAR, via TRE Data Distribution System (TDDS) and assured delivery of direct down-link from the future Space Based Infra-red Systems (SBIRS).

LEVERAGING SUCCESS (1994 – 2000)

C6F/C5F Deployment	Oct 94 - Mar 95	ASCIET 95	Sep 95
ASCIET 96	Sep 96	CEC IOC	Nov 96
UK-USN PASSEX	Jun 97	CENTRAL ENTER	Jun 97
ASCIET 97	Aug - Sep 97	USMC CEC MISSILEX	Sep 97
JTFEX 98-2/FBE C	May 98	C6F/C5F Deployment	Jun - Dec 98
JTFEX 99-1	Dec 99	VANDALEX	Nov 99
FBE G	May 00	C6F/C5F Deployment	Feb - Aug 00

envisioned since modern Battleships led the way early in the 20th Century. This will cause a shift in thinking as Surface Combatants complement to a greater degree the CVW as a power projection asset.

Leveraging off Success

Over the course of events from 1995 to 2000 the IKEBATGRU has fielded the Navy's CEC within three separate Battle Group configurations. Each configuration included various AEGIS Weapons System (AWS) and Advanced Combat Direction System (ACDS) software baselines, various

TADIL capabilities and software variants of TADIL A/Link 11 and TADIL J/Link 16 Model 5 and Model 4 C2P versions. Each configuration also used several different automated ID systems such as ACDS ID, AWS ID and CEC Composite ID. The reality is that even with this advanced capability, numerous software incompatibilities caused TADIL designers to frequently dumb-down system capabilities to overcome the common ID, tracking and TADIL detractors such as dual tracking, ID and IFF swapping, and track database inconsistencies, among others. The net result was

the achievement of a distributed Coherent Tactical Picture (CTP) but not a Single Integrated Air Picture (SIAP). However, across the board of exercises and operations the ability to exploit the CTP paid tactical dividends for the Air Defense Commander (ADC).

During ASCIET '97, *Cape St. George* and USMC TPS-59 with CEC were employed in the littoral, where they demonstrated the benefits of distributed sensor netting & cueing. The TPS-59, while maintaining a CEC Data Distribution System (DDS) network with *Cape's* sensors, was repositioned inland to provide sensor cueing to PATRIOT firing units using AEGIS and TPS-59 CEC coherent and composite tracking. This resulted in an expanded battle space for the PATRIOT firing units, which prosecuted engagements at ranges significantly greater than in a standalone or link configuration.

"The impact of CEC on my ability to direct air defense operations

in a battle group, joint or combined scenario over a large area cannot be overstated. I stress that the impact is here and now, ... the fusion of data by the CEC sensor grid to develop a composite track of engagement quality can give today's commander battle space awareness that greatly surpasses whatever can be created with current stand-alone sensors, ... during JTFEX 98-2 the CEC network provided a real-time, correlated air picture from mid-Florida North to approximately Philadelphia, about 700nm.

"What this correlated CEC picture, available and identical to both the Battle Group Commander and the Air Defense Commander, really did was buy back time – time to evaluate, time to communicate and time to engage with the optimal platform at the optimum range. CEC track continuity made possible immediate post-merge sort following CAP engagements. This rapid and accurate sort in turn enabled extended range SAM engagements in the Joint Engagement Zone (JEZ). The Real improvements provided today in track accuracy, continuity, and ID consistency, sensor cooperation, and precision cueing combine to provide an extraordinary expansion of the battle space that has made our air defense plan a successful reality."

RADM (Sel) John C. Harvey Jr., former Commanding Officer USS *Cape St. George*.

THEATER AIR WARFARE ARCHITECTURE

- **Joint Composite Track Net (JCTN), real-time**

- Engagement & Sensor Coordination
- Single Integrated Air Picture (SIAP)
- Cooperative Engagement Capability (CEC)

- **Joint Data Network (JDN), near real-time**

- Tactical Command & Control (C2)
- Coherent Tactical Picture (CTP)
- TADIL J/Link 16

- **Joint Planning Network (JPN), non-real-time**

- Force Command & Control (C2)
- Common Operating Picture (COP)
- GCCS-M

Real-time is defined as sub-seconds, near-real time is defined as seconds and non-real-time is defined as minutes.

During JTFEX '98 and Fleet Battle Experiment (FBE) Charlie, IKEBATGRU participated in employing the prototype Area Air Defense Commander (AADC) capability and built a robust CEC sensor and engagement network throughout the JOA. The AADC module, located at John Hopkins University/Applied Physics Laboratory (JHU/APL), conducted Joint Theater AD planning and real-time AD execution and battle management using the CEC sensor and engagement nets. The USMC MACS II with TPS-59 and *Cape* were designated as Regional Air Defense Commanders (RADCs) under the AADC with *Cape* designated as IKEBATGRU ADC.

During JTFEX '99, IKEBATGRU employed the AADC Capability with the module embarked on the Command ship USS *Mt. Whitney* (LCC 20) underway in the JOA. USS *Anzio* (CG 68) was designated Sector Air Defense Commander

(SADC) for the Amphibious Readiness Group (ARG) under *Cape* designated as RADC and IKEBATGRU ADC. The ARG Commander delegated air defense responsibilities to the IKEBATGRU ADC and SADC.

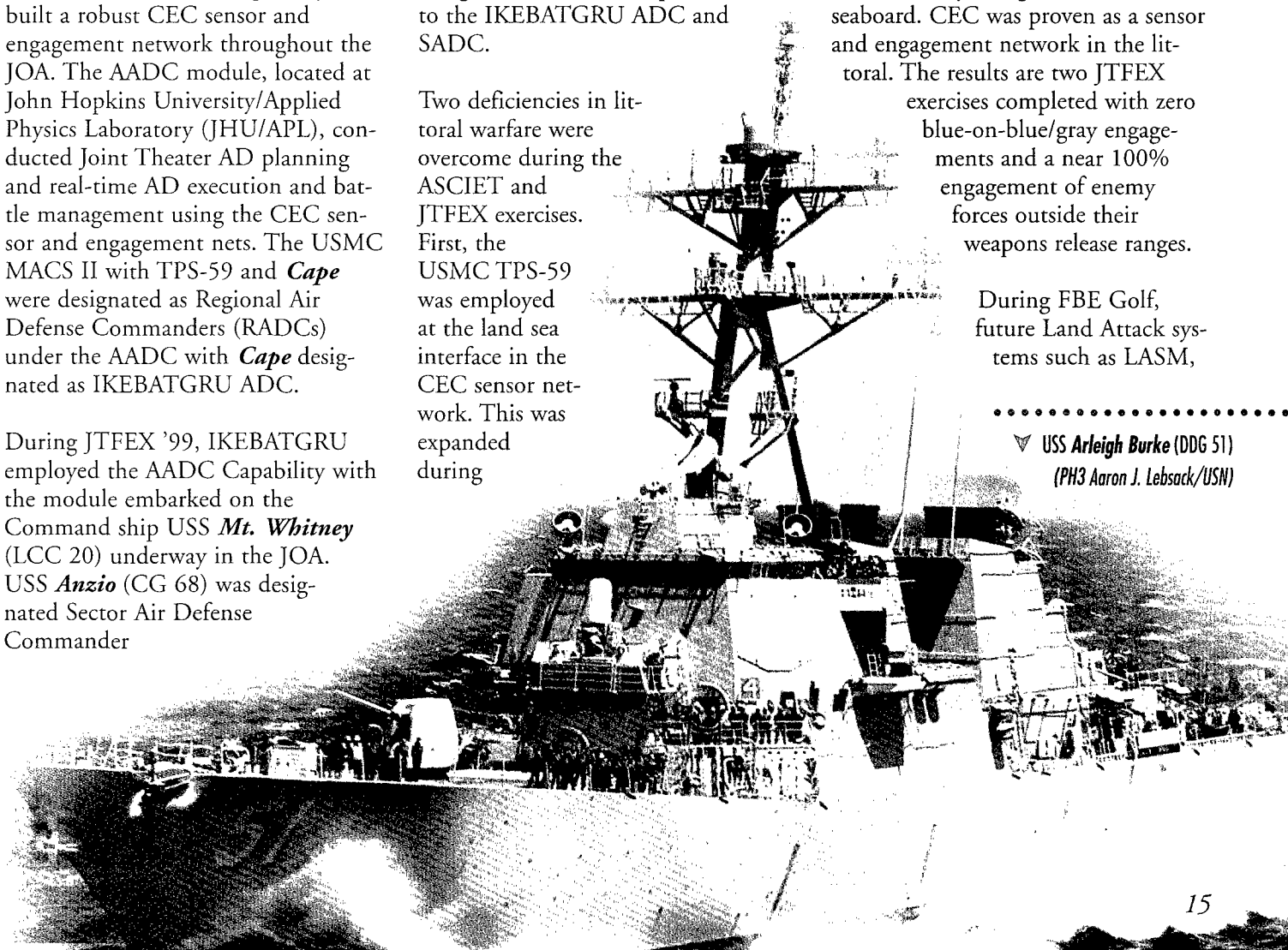
Two deficiencies in littoral warfare were overcome during the ASCIET and JTFEX exercises. First, the USMC TPS-59 was employed at the land sea interface in the CEC sensor network. This was expanded during

JTFEX '99 with *Anzio* and USS *Wasp* (LHD 1) producing a seven-node DDS net providing both large area coverage and detailed situation awareness of the seams between the ARG/SADC Amphibious Operating Area (AOA) and the RADC's JOA. Those problems in the littoral Land Sea interface associated with radar search, detection & tracking, were overcome by the positioning and integration of CEC sensors in a deliberate manner. The second was the Navy Research Laboratory (NRL) P-3 with CEC DDS relay antenna and the future E-2C with CEC. Airborne assets employing CEC expanded the breath of the CEC sensor net and provided the look down capability to assist in search, detection & tracking of low-altitude, high-speed maneuvering targets. The net result was a near SIAP from the tip of southern Florida to New Jersey along the eastern U.S. seaboard. CEC was proven as a sensor and engagement network in the littoral. The results are two JTFEX

exercises completed with zero blue-on-blue/gray engagements and a near 100% engagement of enemy forces outside their weapons release ranges.

During FBE Golf, future Land Attack systems such as LASM,

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▼ USS *Arleigh Burke* (DDG 51)
(PH3 Aaron J. Lebsack/USN)



SIAP REQUIREMENTS

- Real-Time (sub-seconds)
- Single Track & Single ID
- Coherent & Composite Sensor Sharing & Tracking
- Single Track Database
- P-FID & P-HID Systems Integration

ERGM, TACTOM, Land Attack Weapons System (LAWS), Joint Targeting Workstation (JTW), GISRC and the prototype GCCS-M systems were employed in concert with USN Area Defense, USAF Air Borne Laser (ABL), USA PATRIOT and THADD. The AADC Capability was employed to provide distributive and collaborative theater air defense planning in support of the JTF Commander and Joint Forces Air Component Commander (JFACC) coordinating theater air defense forces for Joint Theater Air & Missile Defense (JTAMD) and TBMD from all services in a truly collaborative and joint synergistic manner.

The scorecard of success from the Fleet in exercises/operations with employing JTAMD systems and advanced NCW tools is significant. The above events occurred in parallel with developments in Tactics, Techniques and Procedures (TT&P) for Joint Combat ID, Joint Engagement Zone

USS Hopper (DDG 70)
(PHC Greg McCreash/USN)

(JEZ), Joint Interface Control Officer (JICO) and coincided with Naval aviation's shift in focus from open ocean blue water air warfare to medium-range AAW, to JADO-JEZ, to Strike Warfare.

Theater Air Warfare Dominance: Roadmap to Success

JTAMD and the JOA airspace of this 21st century battlefield are recognized by all services as extremely complex. The density of friendly forces will increase significantly and will include UAV(s), loitering Tomahawk, combat helicopters, SEAD support aircraft, loitering tactical aircraft and strike aircraft carrying AIM-54, AIM 120, Joint Direct Attack Munitions (JDAM), Joint Stand-off Weapon

(JSOW) and Laser Guided Munitions (LGM), along with a host of CIDS and AEW assets. It will require ingress/egress routes, Return to Force (RTF) and Minimum Risk Routes (MRR), Air-to-Air

Refueling (AAR) routes (*already does*). There will be airspace de-confliction corridors for SM 4 LASM, ERGM and Advanced Gun System (AGS) along with future OCMD weapons. Lower Tier weapons such as Navy SM 2 BLK IVA and Army PATRIOT PAC 2/3 will be employed in concert with Upper Tier Air Force Airborne Laser (ABL), Army Theater High Altitude Area Defense (THAAD) and Navy SM 3 LEAP TBM weapons conducting boost, ascent, midcourse and descent phase TBMD intercepts.

For the Navy to lead in Theater Air Warfare in the 21st Century, the Roadmap to Success must include a Single Integrated Air Picture (SIAP), Real-time Battle Management (Force Weapons Coordination, Force Weapons Inventory Management), and Integration of Land Attack and Air Warfare Systems. Additionally, new relationships between the ADC and Strike Warfare Commander (STWC) in the Navy's CWC and Area Air Defense Commander (AADC) and the JFACC and Airspace Control Authority (ACA) in the JTF structure must be developed and refined.

Single Integrated Air Picture (SIAP)

The number one requirement of any future BMC4I architecture is the Joint Composite Tracking Net (JCTN) as a real-time fire control quality composite and coherent tracking and identification network. In order to operate in the JTAMD environment presented above, the JCTN architecture must produce a Single Integrated Air Picture (SIAP) within the weapons engagement and sensor grids for force-wide Situation Awareness (SA). The SIAP must be distributive and coherent across each of

the nodes within the weapons engagement grid with a single transparent track database and it must be a distributive, shared composite of all raw sensor measurement data available within the sensor grid.

The SIAP requirement is not just a single track for each vehicular body; it must also include a single identification for each vehicular body across the sensor and weapons engagement nodes. Current legacy Positive Friendly ID (P-FID) systems such as Mode IV Identification Friend and Foe (IFF) must be replaced with a P-FID system that has the bearing resolution accuracy approaching that of current AWS SPY detection & tracking radars. It must be an integral component of the JCTN CEC Composite Identification (COMP-ID) sub-component. CEC COMP-ID is a fourth generation automated ID system built on the AWS ID and

THE EVOLVING THEATER

Phase I - Sea-Based Crisis Response and Initial Defense

Phase II - Force Build-up and Initial Lodgment Ashore

Phase III - Transition to, and Conduct of, Decisive Combat Operations

to complement current Fleet weapons and sensor capabilities, forcing ships and aircraft to rely on procedure to ID hostile or potentially hostile aircraft. Fleet assets must employ a time-consuming series of logic flow gates to eliminate friendly aircraft and focus on the known variables of the contact of interest (i.e., country of origin, electronic emissions, communication intercepts, relation to commercial airways, flight profiles, closure rates, speed, etc.) to get a subjective level of fidelity prior to declaring a bogey/bandit aircraft hostile. The time it takes to work the flow gates translates directly to a loss in battle-space, as the airspace is col-

lished and the buildup of forces takes place. It is essential that the transitions between the phases presented above are seamless and transparent to the momentum of effort. There is not enough time to re-group, reestablish threads of command and control (C²) during the transition of each new phase. Three mission areas under development require a renewed effort for integration, Area Air Defense, Theater Ballistic Missile Defense and Land Attack. These mission areas have significant implications to the Joint war fighting efforts in the future plug-and-fight architecture given the trends and realities and the TBMD, JTAMD environment presented above.

“Success in tomorrow’s air defense environment will depend on technologies and procedures that routinely allows, for example, the execution of missile launch orders by a ship, as [may be] directed by a land-based commander, with control of the in-flight interceptor handled by an airborne sensor platform, all from different services.”

AADC CONOPS, AADC Requirements, May 99.

CV Auto ID systems. The current Mode IV IFF system is used as a tracking sensor within the coherent tracking algorithms; however, TADIL J/Link 16 PPLI is not. TADIL J/Link 16 PPLI has proven itself as a P-FID system for those carrier air wing aircraft that are fielded with TADIL-J/Link 16. Fielding TAIL-J/Link 16 in our tactical aircraft will assist in solving the P-FID problem, the final solution is an automated and integrated P-FID system integrated with the JCTN/CEC/SIAP.

The second part of the identification equation is Positive Hostile Identification (P-HID) systems. Today’s Fleet lacks a P-HID system

lapses in on the defended asset. The current TT&P of Joint Combat ID and JEZ provide interim solutions to this problem; however, in the 21st JTAMD, automated P-FID/P-HID systems should be fielded and integrated into the JCTN/CEC/SIAP.

Real-time Battle Management & Integration of Land Attack and Air Warfare Systems

The 21st century battlefield is Joint and will require Joint coordinated fires. The Navy will be the first forces to arrive in theater providing a Sea-Based Crisis Response and Initial Defense. Naval forces, likely the first forces on the scene, will provide protection of airfields and embarkation ports as the Joint Task Force is estab-

The services have been working to define a common definition of functions that the AADC must perform regardless if it is sea-based or land-based or which service performs those duties. The Navy has moved ahead in this area by fielding the JHU/APL prototype AADC Capability. Our experiences with the employment of the AADC module has clearly demonstrated its unique functionality to integrate sea-based and land-based air defense forces and execute real-time battle management in the JOA. During FBE G IKEBATGRU integrated Coalition JTAMD, TBMD and Land Attack mission areas further demonstrating the unique opportunities in employing the AADC Capability with CEC.

AADC CAPABILITY

• Force Planning

- Order of Battle/Situation Awareness
- AD Plan Development
- Coordination [Distributive Collaborative Planning]

• Tactical Operations

- Maintain Situation Awareness
- Conduct AD Operations
- Coordination [Joint Coordinated Fires – JTAMD, TBMD, Land Attack]

The real-time battle management (AD Execution) functionality of the AADC Capability should be a high level requirement for future CG installation. In future Operations, the Battle Group Air Defense Commander (ADC) will increasingly be called upon to function as a RADC and then AADC to support the JFACC. With the expanding capability in Land Attack and TBMD, the ADC's role within the Battle Group and the JTF needs to expand to include the functionality of the ACA and AADC to ensure successful coordination of Joint Fires. As the theater evolves and the Command ship arrives the integration of the Command Staff is transparent as they were active participants in the Distributive Collaborative Planning (DCP) effort and force buildup of the theater. As the services incorporate the AADC functionality, the transition ashore will again be transparent, as they also will participate in the DCP efforts. With each transition of the evolving the theater, the ADC can be incorporated into the JFACC/AADC architecture as a RADC.

The requirements evolving in the Land Attack TT&P call for flattening the C2 architecture and empowering the Unit Commander as the Maritime Command Center (MCC) capable of planning and executing time critical targeting weapons in the JOA in the Land Attack mission. The MCC may be launching and controlling loitering Tactical Tomahawk (TACTOM) while coordinating its organic vertical take-

off UAV in concert with national sensors. The MCC will conduct its own target mensuration via Joint Targeting Workstations (JTW) and strike planning using Land Attack Weapon Systems (LAWS) and the commander's guidance of prioritized targets. The AADC Capability with CEC can support the situation awareness required to prevent fratricide and delivery ordnance on target. This capability will provide the integration required to perform the real-time air space coordination and de-confliction of loiter boxes for TACAIR, TAC-TOM and corridors for ERGM, LASM and Advanced Land Attack Missiles (ALAM) in addition to the significant in theater friendly air forces conducting reconnaissance, surveillance and strike missions.

Focusing our efforts: Challenges to Meet—Engaging the Waterfront in Development Efforts—Partnering the Acquisition Community with the Fleet

Where next? The road if we choose to take it is daunting – but the successes we have had with Tomahawk – CEC—Standard Missile and C4I have shown we can achieve our goals. What we did not do well in all four was engage the Fleet as we developed these systems—CEC was probably our best attempt with IKEBATGRU but the learning curve on integration issues was steep and time was against us. We have learned some valuable lessons that should not be lost, we do not

have the resources in either or people to waste. These should include a focused effort to stabilize our combat systems core command and decisions development efforts and better target introduction of new warfighting capabilities. We should as feasible determine core capabilities to have in our command and decision systems – such as track, link management and identification management. This will attempt to achieve a single standard and allow for us to better manage the complexities of software and hardware integration. We have learned painfully across many of our systems that software integration is neither easy nor cheap. An advance in weapons and sensors we cannot successfully integrate is not success but a burden to hand the fleet to overcome.

Systems in development must have strong Fleet input to determine the level of integration required—time and money may not allow us to get what we need—as we have found with CEC – the level of data throughput with CEC can overwhelm the Link 16 network configuration and degrade the link picture—the Fleet has been the driving force to get the engineers to address this issue. We need to be engaged earlier in the process and leverage off the efforts and success we have had with testing systems in the Distributed Engineering Plant ashore. This needs to expand to support integration testing at earlier phases of development. This will also allow the Fleet to better oversee the development efforts and assess whether we are indeed meeting the warfighter's need.

Further, we need to develop lead command within our current organizational structure and assign responsibility for determining the who's and answering the why for when we have to answer the questions such as; who determines joint fires prioritization; who will direct TBM engagements in a theater; and who and how will we deconflict the battlespace. These are

not questions needing answers in five to ten years, but rather they need to be addressed for our Battle Groups deploying now. We need to be prepared to receive these new capabilities while remaining in a position to influence their development both from a doctrinal, tactical and technical perspective. The Surface Navy has shown with land attack missions with Tomahawk and CEC the ability to change the way we do business—more change is coming, its time to do a chart shift and plot a course to success.

Final Thoughts

This is an exciting time in the Surface Warfare community. We are at a pivotal juncture and have a unique opportunity to meet the future war fighting requirements of the 21st century and for years to follow. To enable forward deployed Naval forces to operate in the littoral conducting CJTAMD, TBMD, Land Attack and OCMD, the requirement for a SIAP built with the Navy's CEC is the cornerstone of future success. To de-conflict and coordinate all service air platforms in a constrained battle while coordinating joint fires across all spectrums of the JOA space will require a single, coherent and composite ID and tracking system using

distributive fire control quality raw sensor measurement data.

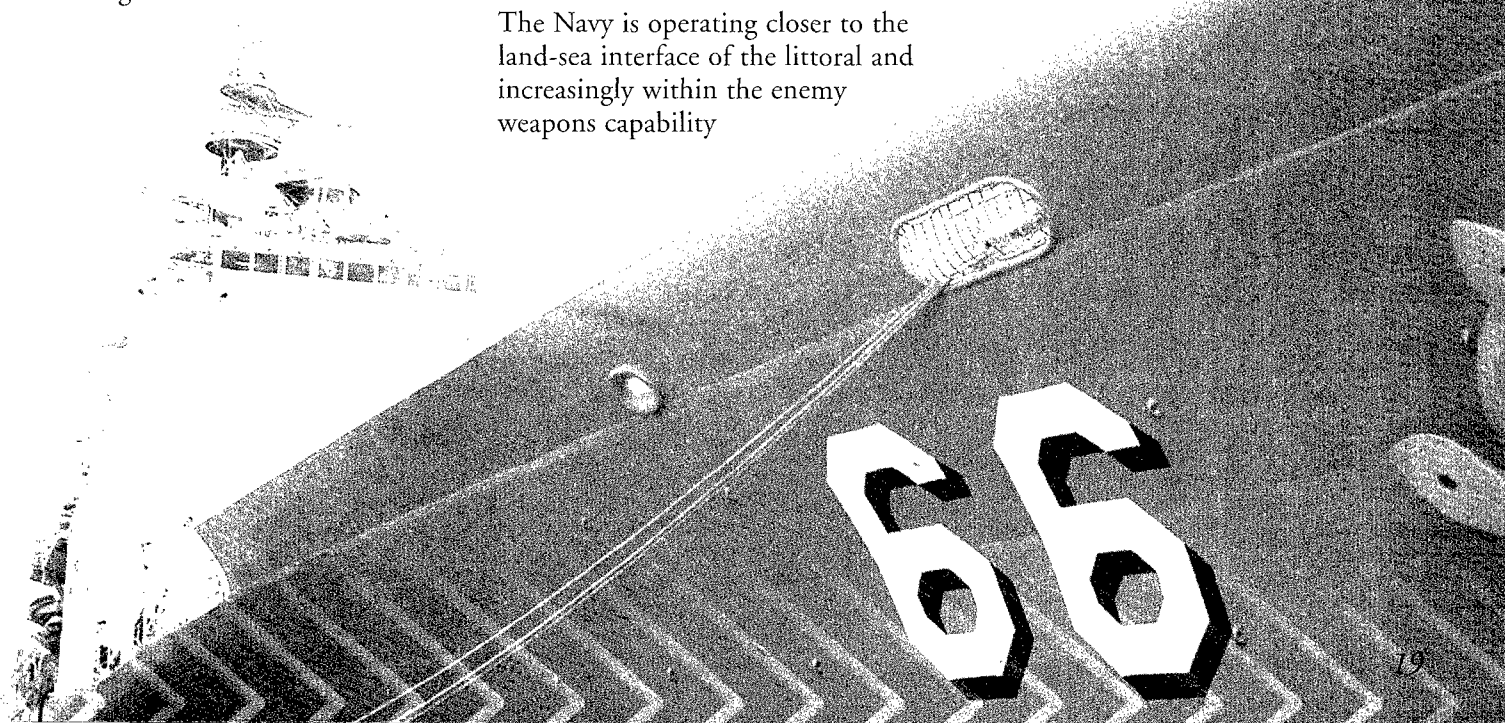
To perform CJTAMD, TBMD, Land Attack and future OCMD missions will require not just a SIAP, but also the means to conduct DCP and most importantly real-time battle management during the transitions and build up of forces in the evolving theater. The AADC Capability installed in Cruisers to support DCP and AD coordination and execution will provide the Battle Group Commander and the JTF Commander a force multiplier building on the existing Air Warfare expertise resident in AEGIS Cruisers. This requires a rethinking of Navy CWC and JTF doctrine to support flattening the C2 and empowering the Unit Commander to execute JTF TCT requirements in concert with expanded efforts for AADC and ACA onboard AEGIS Cruisers during the initial Sea-Based Crisis Response phase. With the increasing cost of future weapons such as Army PAC-3 and THADD, Navy SM-2 BLK IVA, SM-3 and SM-5, the requirement to coordinate joint fires across the systems to conserve force weapons inventories and coordinate firing salvos to increase P_H/P_K requires a real-time battle management capability resident in AADC and integrated with CEC.

The Navy is operating closer to the land-sea interface of the littoral and increasingly within the enemy weapons capability

envelopes at a time when emphasis on area air-defense has diminished. A renewed effort is required for rebuilding the layered air defense concept that meets the future cruise missile threat in the littoral. That threat is both proliferating and increasing in its exploitation of stealth and low observable technologies, maneuver and complex ECM capabilities. Bottom line, the surface Navy assets are growing in power projection capability while continuing to operate within enemy ranges and with diminished capacity to defeat the threat. To meet this future threat, integration of CEC, AADC and future Land Attack and OCMD weapons systems is called for to ensure that ordnance is delivered on target conserving force weapons inventories, coordinated across service sensor and weapon systems with reduced probability of fratricide to friendly fire. ■

Editor's Note: LCDR Gary Gotham is the Standard Missile Program Sponsor at N865. CAPT Alan B. Hicks is Commanding Officer, USS Cape St. George (CG 71).

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▽ USS Hue City (CG 66) (PHC Greg McCreash/USN)



Environmental Characterization of the Battle Space Enhances Maritime Dominance

**By LCDR Paul Matthews
and Cathy Willis**

CTF 73 - BHR Amphibious Ready Group conducting exercises in the Indian Ocean receives a warning order to transit at best speed. A coastal nation, recently devastated by two typhoons, also is experiencing a rebel insurgency in its central region. Their mission is to evacuate two small groups of U.S. Forces trapped by the insurgents and conduct humanitarian operations for two million homeless residents stranded by the storm. Communications are down. Food supplies are low.

The ARG is made up of one **Wasp** Class LHD, one **San Antonio** Class LPD, one **Whidbey Island** Class LSD, one DDG-51 Flight IIA, and one **Zumwalt** class 21st Century Land Attack Destroyer (DD 21) on its first operational deployment. The Air Group is made up of MV-22 Ospreys, CH-53 Sea Stallions, AV-8B Harriers, UH-1 Hueys, AH-1 Cobras, CH-60 and SH-60R Sea Hawks. Surface assault craft include LCACs, AAVs, LCUs and RHIBs.

The LHD and the destroyers take the southern operating area and conduct the evacuation. The amphibious assault ship's robust lift capability and the destroyers' ground attack firepower will ensure the safety of U.S. forces during the evacuation operation. For humanitarian assistance to the north, the LPD and LSD will take four MV-22s, two Cobras and one CH-60 (for search and rescue and mine countermeasures if needed). While the threat in the northern operating area is considered low, the force is prepared and equipped to protect itself with the advanced capabilities of the LPD and organic assets of the Marine Expeditionary Unit.

The entire operating area covers over 600 miles of coastline – much of it damaged by the storms. In order to support two littoral penetration areas, hydrographic surveys will have to be conducted to update navigation charts and identify suitable littoral penetration points. Due to the impact of the typhoons, coastal and river currents are disrupted, making it difficult to predict the drift of mines that Intelligence indicates are in the area.

In the evacuation area, a bathymetric and topographic system payload installed on a vertical takeoff unmanned aerial vehicle digitally transmits data and video imagery to the LHD joint intelligence center where the staff METOC officer and terrain analysts determine potential littoral penetration points for landing craft and amphibious assault operations. Because of thunderstorms, terrain-induced turbulence and high winds in the area, the unmanned aerial vehicle (UAV) operators receive a comprehensive weather briefing to optimize their flight profile. While airborne the vehicle will deploy weather and ocean sensors, dropsondes and surface observation equipment. UAVs also serve as a communications relay for setting up contact with the stranded U.S. forces.

Autonomous underwater vehicles and airborne laser mine detection systems collect oceanographic information and transmit it back to the surface ships for assimilation into on-scene drift models and acoustic tactical decision aids. The same data is relayed to the Warfighting Support Center at the Naval Oceanographic Office at Stennis Space Center, Miss. There, coastal oceanographers analyze and assimilate the data into high-resolution coastal models running on their supercomputer. The value-added information is returned to the C4I system in a matter of hours.

As the evacuation operation unfolds, the insurgents react and begin to advance in force upon the U.S. Forces in the area. The ground commander makes a call for fire from the Navy Surface Combatants. Both Land Attack Standard Missiles and Extended Range Guided Munitions will be used. While both of these weapons systems are "all-weather," critical atmospheric information is needed for them to achieve maximum effectiveness over their 100-200 mile flight path. The environmental information (temperatures, winds, humidity, air density), is provided digitally into the Naval Fires Control System from on-

scene sensors (the ones deployed by the UAV) and numerical weather prediction models. Accurate environmental data ensures that the weapons hit their targets at the right time and minimizes the circular error probability.

To support the air assault and evacuation mission in the south the OA Division provides aviation weather support over an area covering 60,000 square miles. They provide strike weather information for the Naval Fires Control System and Close Air Support at several target sites. These strike packages include predictions of the tactical impact of the environment for Ballistic Winds, night vision goggles, precision guided munitions and electromagnetic propagation, as well as standard METOC parameters.

Since there are no on-scene METOC personnel to support humanitarian operations up north, all environmental support comes remotely from the LHD's OA divi-

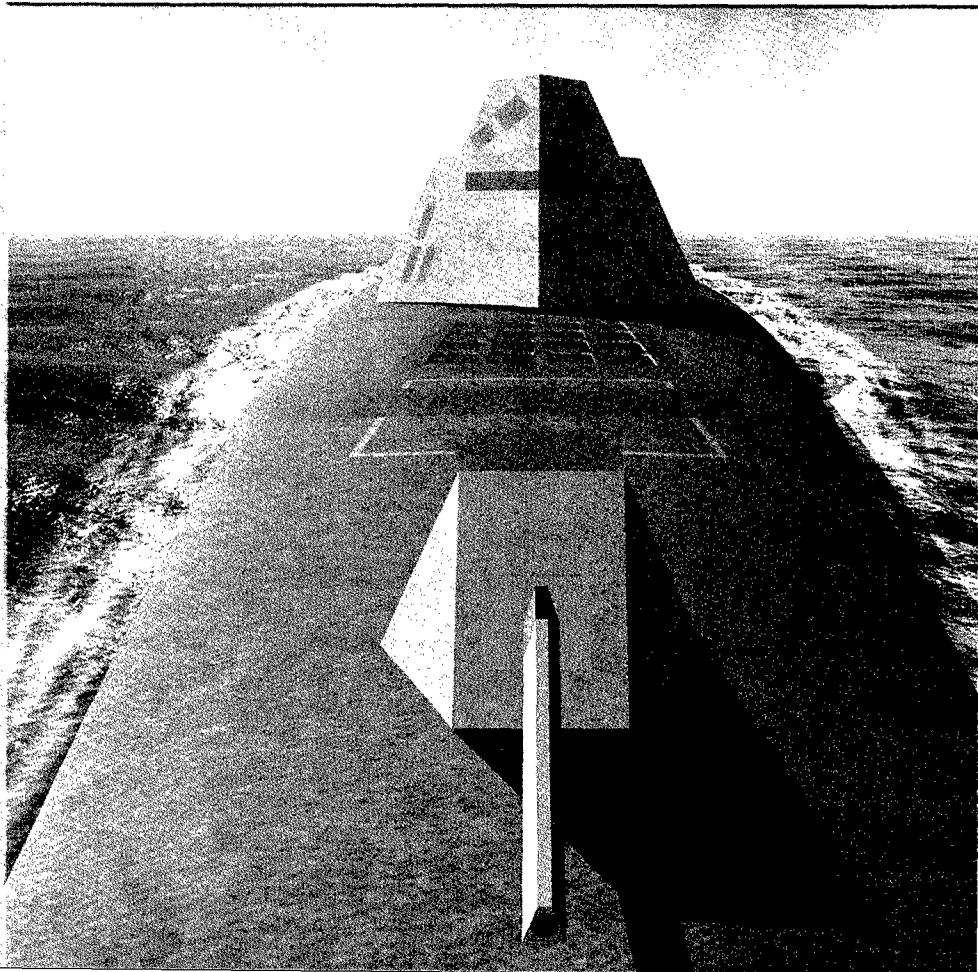
sion 600 miles away, and from meteorology and oceanography centers in the Pacific Ocean and CONUS. This network digitally transmits forecasts, analyses and environmental information for tactical decision aids and conducts regular briefings via video teleconference.

The bathymetric and topographic system conducts more hydrographic surveys. During its flight the vertical take-off UAV dispenses remote METOC sensors which send data back to the Naval Pacific Meteorology and Oceanography Center in Yokosuka, Japan, to be turned into tactical decision aids for the two operations. Fleet Numerical Meteorology and Oceanography Center in Monterey, Calif. also receives the information and FNMOC assimilates the on-scene data into its global METOC model.

A glimpse into the future

reveals that Surface Warfare of 2010 will be net-centric and rely on many autonomous systems. The same can be

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▽ Artist's rendering of a DD 21 Land Attack Destroyer Concept (US Navy concept drawing courtesy of United Defense)



said of the organization that provides its meteorology and oceanography services.

As technology races ahead and the Navy incorporates smart ships, long-range weapons, unmanned vehicles, and organic mine warfare, one challenge remains constant, the ability to fight effectively under all weather or ocean conditions.

"Even 'all weather' systems are affected by the weather," said RADM Kenneth E. Barbor, Commander, Naval Meteorology and Oceanography Command.

The Naval Meteorology and Oceanography Command is staging its own technology revolution to keep deployed forces working safely, effectively and efficiently, especially in that most dynamic of environments — the littoral.

The same electronic gadgetry that will provide operational commanders with their intelligence and logistical data in the year 2010 — remote sensors, satellites, improved computer models and simulations, autonomous underwater and aerial vehicles, and broadband networks — also will be the

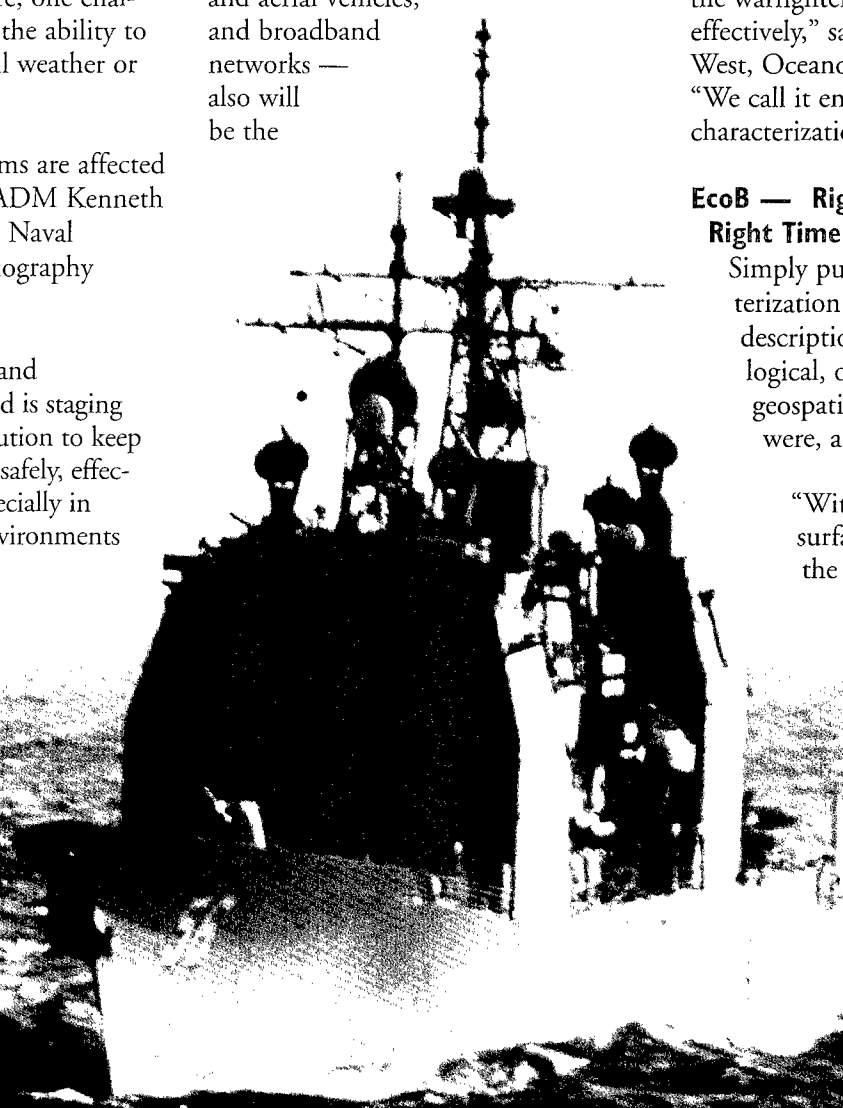
cornerstone of the future meteorological and oceanographic (METOC) services.

"Our goal is to characterize the battle space environment in a timely, seamless, and relevant manner, to ensure the warfighter trains safely and fights effectively," said RADM Richard West, Oceanographer of the Navy. "We call it environmental characterization of the battle space."

EcoB — Right Job, Right Time, Right Place

Simply put, environmental characterization of the battle space is a description of the area's meteorological, oceanographic and geospatial conditions as they were, are, and will be.

"With that knowledge, the surface warrior can better do the right job, at the right



time and the right place," RADM West said. "Missiles hit their targets when they're supposed to. Marines hit the beach at the right time. Special operations teams are able to get in and out quicker and safer. Mine countermeasures units can locate and sweep mines more effectively and safely without risking ships or lives."

Last year's operations in Kosovo amply demonstrated the challenge of a volatile littoral environment and its ability to drive military decision-making. NATO-launched air strikes were delayed or cancelled several times due to dynamic weather patterns moving in over target areas. As these setbacks mounted, questions arose as to whether air strikes alone would accomplish the NATO objective or whether the United States and its Allies were headed for an all-out land offensive.

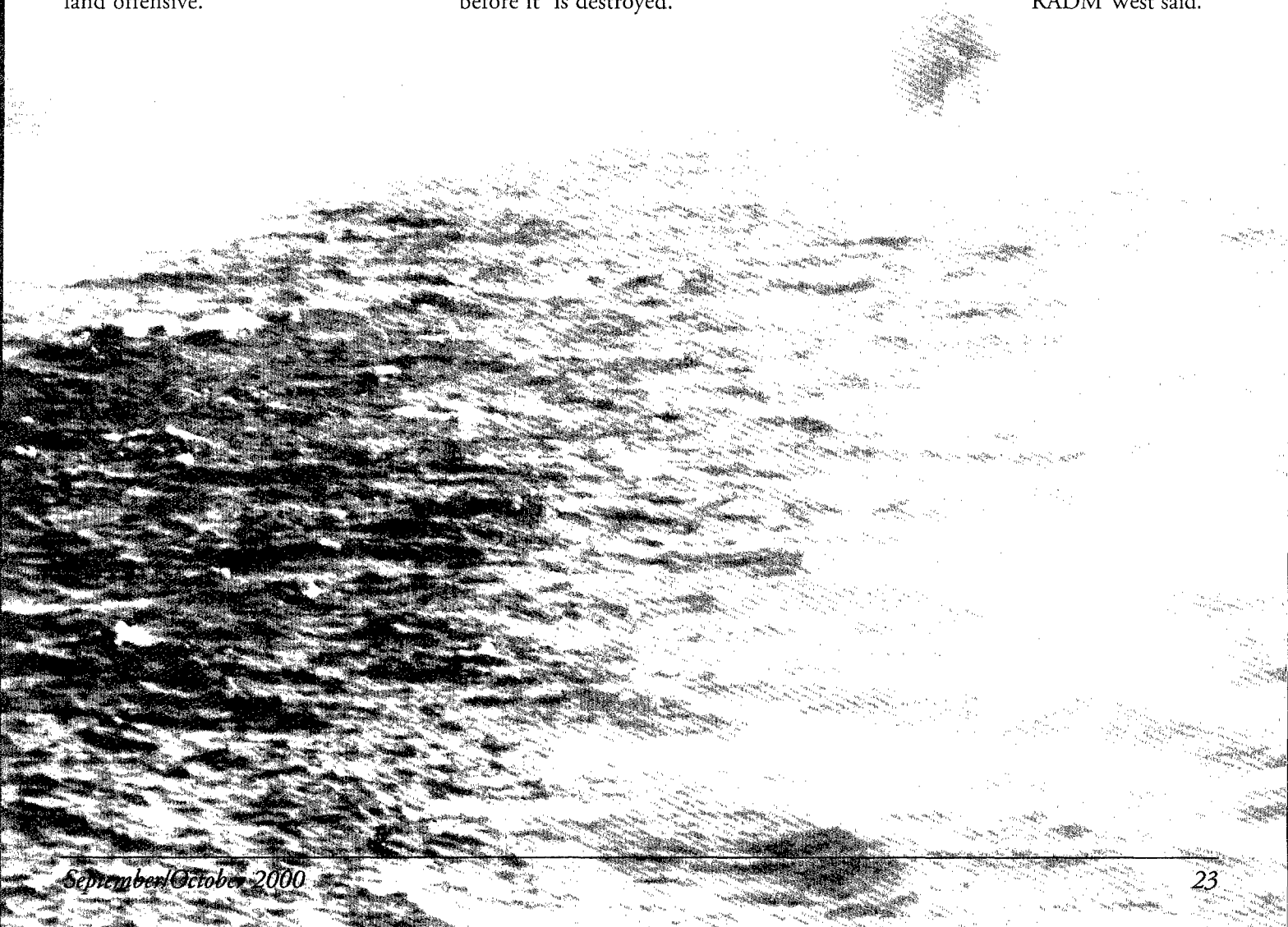
Even "smart" weapons of 2010 can be hypersensitive to the environment. Longer-range missiles such as the Land Attack Standard Missile and the Extended Range Guided Munition are more likely to encounter a significant change in weather conditions from launch to target point than weapons of today with a range of 13 miles or less. Wind speed at altitude can cause a missile to make target a minute more or less than planned.

A missile that makes target too soon may land on friendly forces before they can evacuate the target area and result in heavy loss of life. On the other hand, if the missile is intended to deter enemy forces from advancing across a bridge, a one minute delay in the missile's arrival could give the enemy time to cross over the target before it is destroyed.

"The missile probably would still make target, but the objective would not be met," RADM West said. The effects of ice, fog, clouds, dust, light-scattering aerosols and wind are all exaggerated on small unmanned aerial vehicles like those that will be used for reconnaissance and intelligence gathering. Smart bombs are susceptible to clouds and fog.

Environmental impacts are not always detrimental to surface warfare; they can also be used for tactical advantage.

"There are times when Navy SEALs, for example, may want to go in obscurity, with lots of rain or fog to shield their actions; other times they may want the maximum illumination of moonlight on a target to accomplish their mission," RADM West said.



If Kosovo was a lesson in the littoral, it was also one of the Navy's first IT-21 success stories. The experience demonstrated a shift in how weather information is collected, analyzed and delivered to the Fleet.

Prior to IT-21, deployed mobile environmental teams (MET) had limited access to the network of vast data bases and information holdings at the shore-based METOC centers. Most MET data was collected from slow HF facsimile and text broadcasts and was limited to a rigid schedule of products. Changing the schedule to meet one customer's request could have an adverse impact on other users of that data. Dial-up data access via INMARSAT, while more flexible, was very expensive; therefore, METS were limited fiscally as to the amount of data they could retrieve.

In contrast, IT-21, which was deployed on surface combatants in the Kosovo Operations, allowed the METs digital integration with the rest of the METOC community, both ashore and afloat. The secure, robust communications allowed them to retrieve more and higher resolution METOC information than was previously possible. Deployed METs could combine all of the satellite imagery, high

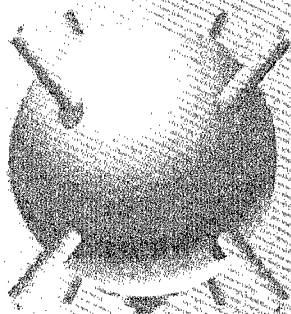
resolution numerical weather predictions, climatology, and specialized products available from the web, with on-scene data and knowledge and formulate accurate tactically significant products and briefs. These integrated products gave the environmental edge to the Warfare Commanders in planning TLAM, USW, and MCM missions while in the theater of operations. The information available from the METOC web, in particular, benefited mission planning in the 24-72 hour window of operations.

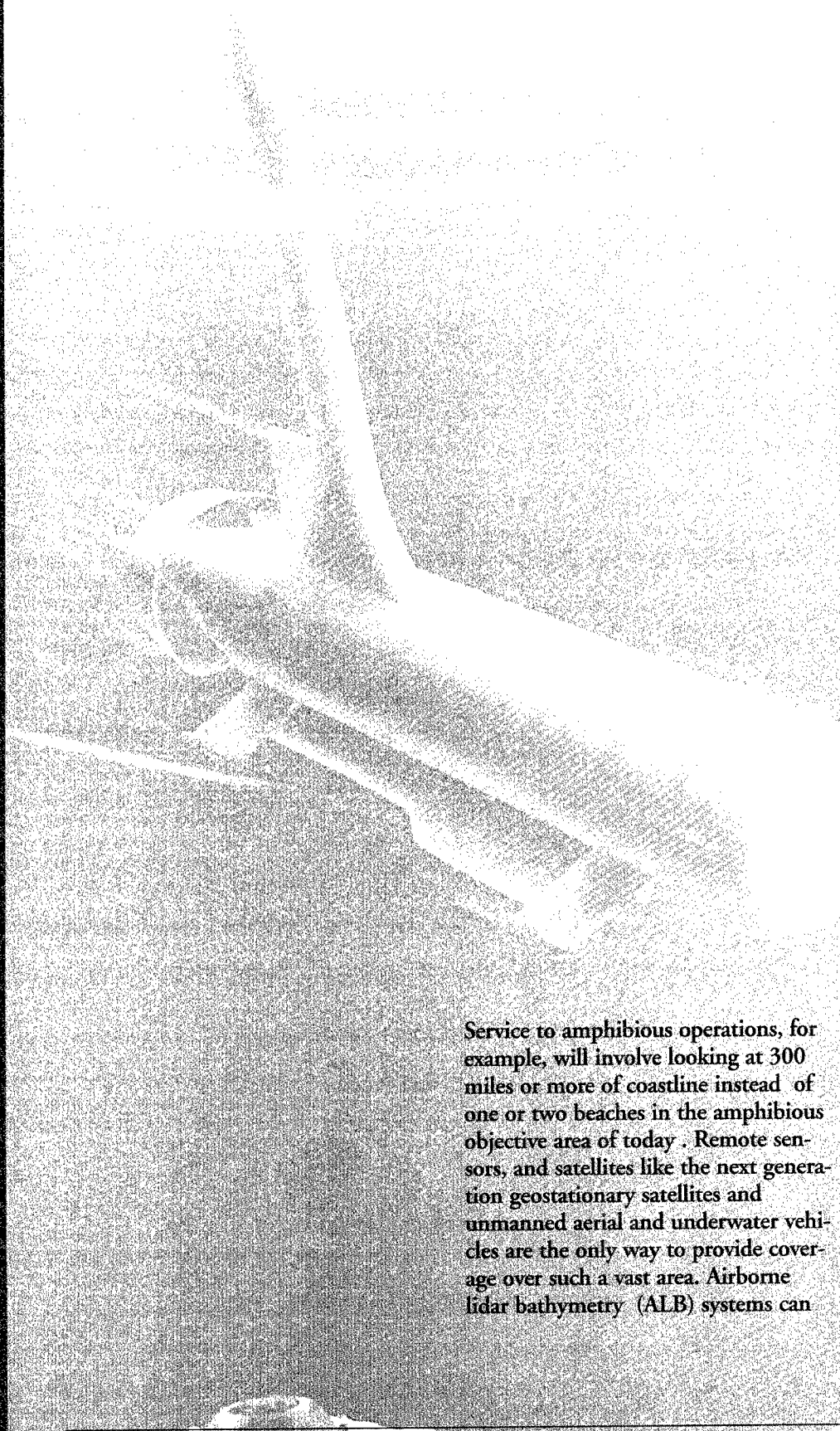
Late 20th century METOC modeling technology increased the accuracy of prediction during that period. Today Navy forecasters and researchers are focused on increasing the accuracy of

predictions for the one to six hour window of operations and also to six days and beyond.

"The Navy's METOC capabilities must accurately address both the high resolution, short range forecast needed for mission execution and the long range forecast required of mission planning," RADM Barbor said.

To achieve these goals, the Naval Meteorology and Oceanography Command will automate and facilitate delivery of tactical impact assessments into the hands of operational commanders.





quickly summarize a piece of beach and help commanders determine if the area is suitable for a landing. By 2010, these systems may include mission-planning systems. Unmanned airborne vehicles will also host modular ALB systems which will be able to transmit data directly to Navy platforms, a useful capability during ongoing operations in hostile or denied areas.

Autonomous underwater vehicles will not only be used for clearing mines, but will also be able to collect information about the water column, the coastline and the ocean bottom. The Naval Meteorology and Oceanography Command and Office of Naval Research annually co-host a demonstration of autonomous underwater vehicles. The events evaluate the limits and capabilities of various instruments designed by the Navy, academia and marine science organizations in a real-world setting. The goal is to demonstrate and exchange information about maturing AUV technologies and the evolving needs of the operational Navy.

Service to amphibious operations, for example, will involve looking at 300 miles or more of coastline instead of one or two beaches in the amphibious objective area of today. Remote sensors, and satellites like the next generation geostationary satellites and unmanned aerial and underwater vehicles are the only way to provide coverage over such a vast area. Airborne lidar bathymetry (ALB) systems can

The METOC community's conduit for getting environmental information into the hands of the warfighters in 2010 will be the Naval Integrated Tactical Environmental Subsystem or NITES. NITES is a set of meteorology and oceanography forecasts, databases and decision aid tools, tailored for specific platforms and uses. Several versions are being developed for use by mobile environmental teams, shore-based centers and ship-board OA Divisions.

An Automated Era

In an era that will see fewer people at sea, both in the surface and METOC communities, automation will be a critical element in environmental data gathering. By the year 2002, instead of a person taking 10-15 minutes to measure a surface wave height, these measurements will be made by a surf buoy. Atmospheric measuring devices and deployable buoys aimed at the mine warfare community are also on the way.

Automated observations will be fused on-scene into increasingly sophisticated models of the atmosphere and oceans running at Fleet Numerical Meteorology and Oceanography Center and the Naval Oceanographic Office.

The Coupled Ocean/Atmosphere Mesoscale

Prediction System, the METOC community's newest mesoscale numerical model, already has demonstrated great ability in detecting littoral specific factors such as cloud cover, fog banks and isolated areas of precipitation. It has also proved its mettle in predicting dynamic wind events like the Middle East shamal and Mediterranean mistral.

"Our goal is to fully couple atmospheric observations with remotely-sensed observations and oceanographic observations to create real-time environmental characterization of the battlespace anywhere," said Bill Burnett, head of the planning and programs division at the Naval Meteorology and Oceanography Command headquarters.

This effort will involve increasing the power of the two main supercomputers as well as upgrading modeling capabilities at the command's regional centers collocated with the numbered Fleets worldwide so that they can update hourly.

Thanks to lower costs in the high-performance computing industry, supercomputing is becoming more affordable ensuring continued upgrades that make the goal of extended long-range forecast to 10 days and beyond an achievable possibility.

The Human Element

People at sea will be a valuable, but scarcer, resource in 2010. Shipboard OA divisions will likely become smaller. Even mobile environmental teams, currently the METOC community's on-scene workhorses for operational requirements, may not be able to deploy on board a fully staffed DD21. Communications will be key.

Communications capabilities, once the bottleneck in warfare, will now be the

If all this seems a little Orwellian, consider that five years ago, web-based METOC support was in its fledgling stages. Today, every METOC center has an operational support site with updated satellite imagery, forecasts, and special support products that the Fleet can use.

"Now in addition to focusing on the environment and its tactical aspects, we are also focusing more on how to relay knowledge and assessment to the on-scene commands," Meyer said.

Know the Weather

Since its earliest days, the goal of naval meteorologists and oceanographers has remained unchanged: To provide the warfighter with the best information to do their mission effectively and safely at the right time and right place.

While the future holds great advances in technology, including "all weather capable weapons", the environment will always impact military operations,

whether a full-blown amphibious assault or military operations other than war.

The Chinese philosopher Sun-Tzu's included knowledge of the environment in his military treatise, "The Art of War." His observation holds as true today and for the future as it did in 500 B.C.

"Know yourself, know your enemy; your victory will never be endangered. Know the ground, know the weather; your victory will then be total." ■

Editor's Note: LCDR Paul Matthews is the emerging systems requirements officer for the Naval Meteorology and Oceanography Command. Cathy Willis is the command's assistant public affairs officer.

**"Know yourself, know your enemy;
your victory will never be endangered.
Know the ground, know the weather;
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—Sun Tzu, The Art of War

enablers. By 2010, they will provide virtually instantaneous retrieval of data from the battle space characterization network. On-line video teleconferencing capability, made possible by digital broadband networks, will allow decision-makers, logisticians, intelligence, and METOC personnel to meet via on-line video even when they are dispersed physically around the globe.

"In the DD21 era, there will still be a METOC briefer in the loop; however, that person may be located physically in the OA Division of a ship 200 miles away or may interactively support the ship from a theater shore station," said John Meyer, director of the fleet systems division, Naval Meteorology and Oceanography Command headquarters.

Environmental Characterization of the Battle Space

By Alexander Molnar Jr.
and Cathy Willis

In today's era of satellites, supercomputers and the Internet, it is hard to believe that taking to the sea in ships once entailed an enormous leap of faith. Entire fleets could be, and often were, destroyed when they sailed into an unexpected storm or fog bank.

The Spanish Armada set sail to conquer England in the 16th century, but also battled violent storms in the English Channel. They lost 32 ships, nearly 40 percent of their fleet, to the winds and waves. Even Queen Elizabeth I of England acknowledged, "The weather has fought for us."

It was the second time that weather had protected that island nation from enemy attack. In August of 55 BC, Julius Caesar's ships twice ran into gales en route to invade Britain.

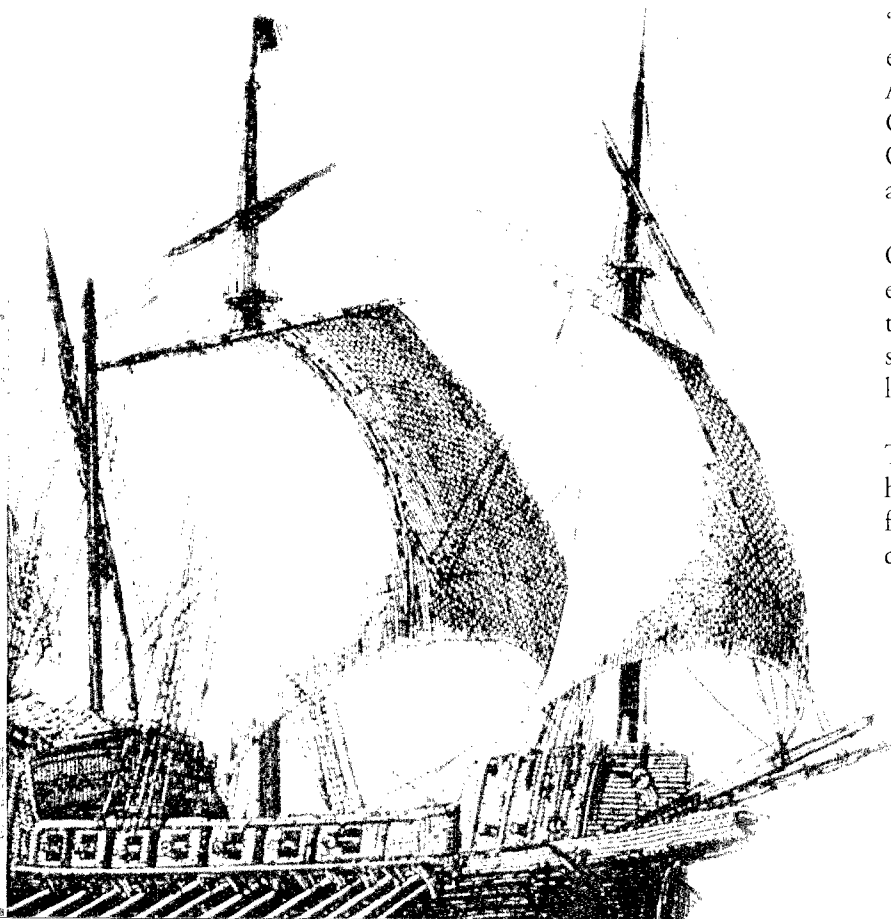
While naval warfare has changed dramatically since those times, the weather and ocean environments have not.

"The marine environment remains an extremely dynamic one," said Rear Admiral Kenneth E. Barbor, Commander, Naval Meteorology and Oceanography Command. "It can be an ally to those who know how to use it."

Gaining that ally has taken centuries of ever-advancing technology (most of it in the last 100 years), experience, and some occasionally painful lessons learned along the way.

The following are just a few examples of how the environment affected naval warfare and made an impact on maritime dominance in the 20th century. These events not only shaped the course of history, but also helped drive the pace of technology and led to the creation of prediction tools that keep the Fleet working safely and efficiently today.

A Historical Perspective



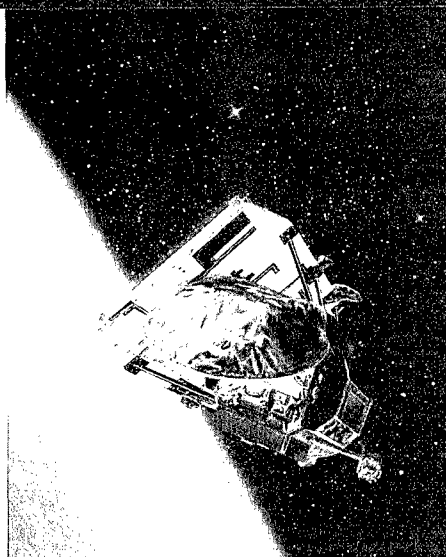
"Now we provide surface warriors with environmental characterization of the battle space – a snapshot of meteorological and oceanographic conditions in the operating area as they were recently, exist now and will be in the coming hours and days," RADM Barbor said.

Battle of Dardanelles, 1915 – The Most Notorious Amphibious Operation of World War I

During the Battle of Gallipoli in 1915, when the German Navy blockaded the Dardanelles, also known as the Turkish Straits, currents had a huge impact on British and Allied minesweeping operations and amphibious landings. Minesweeping operations were delayed because ships were unable to move against the 4-5 knot current in the Straits. In addition, the currents often washed mines with broken mooring directly into Allied ships causing them to explode and sink. A strong current flowing parallel to the shoreline threw amphibious landings off course and placed troops on beaches with 200-foot cliffs.

On the other hand, bioluminescence, light emitted by living organisms in response to agitation like a ship's wake, helped the first amphibious landings. The glowing waves helped the landing craft keep sight of each other and maintain distance direction to the targets as they departed in the darkness of the early morning.

But trouble waited ahead. On "W" beach, a thick belt of heavy barbed wire ran along the beach and into the bay waters. The craft snared on the wire, forcing the heavily laden men to jump into deep water. On Sulva's "A" Beach, the shoaling water 50 – 150 yards from the shore hung up the landing craft in each wave. Once men arrived on Sulva Beach, they sank up to their ankles in the fine, powdery sand. These environmental delays allowed hostile fires to rake the incoming troops, who were killed by the hundreds.



▲ Geosat Follow-On (GFO) (USN)

Weather created additional problems. Twenty-four hours of violent thunderstorms, heavy rains and hurricane-force northerly winds brought flooding, caved-in trenches and small-craft accidents. Cold temperatures, snow, sleet and frost followed the rains. Winds blowing from the shore to the sea at Cape Helles caused a vast cloud of dusty haze to cover landing zones and cut visibility. Two hundred were killed, and 10,000 more were injured.

During World War I, there were no supercomputers, no numerical models of the atmosphere, no satellites or remote sensors. With aviation in its infancy, there was not even much in the way of aerial reconnaissance photography to provide information about beaches, approaches, reefs, tides and navigational hazards.

"The operation in the Dardanelles might have gone differently had the planners had access to today's technology," said CDR Rich Kren, director of the Warfighting Support Center at the Naval Oceanographic Office. "Our annotated satellite imagery of the beaches and approaches as well as wave and tidal predictions derived from mathematical computer models of the ocean could have given them an accurate picture of the expected environment in the straits."

Weather models, like the Navy Operational Global Atmospheric Prediction System (NOGAPS) and Coupled Ocean/Atmosphere Mesoscale Prediction System (COAMPS) run at

the Fleet Numerical Meteorology and Oceanography Center today can help predict troublesome weather and haze such as that which plagued the Battle of Gallipoli.

"In a Joint military operation today, these model forecasts are combined with value-added products from a meteorology and oceanography center in-theater and observations collected on-scene by mobile environmental teams or an OA division," Kren said.

Tarawa – A Tragedy of the Tides

In 1943, the Allied Forces' mission was to capture the Tarawa, Makin and Apamama Islands. Their D-Day was set for Nov. 20, 1943 with H-Hour to commence at 0441 hours local time. While, planners did have good intelligence collection, they lacked accurate data on tides that influenced the target area. U.S. Marines at Tarawa hit an unanticipated low water tide over the barrier reef stranding an entire wave of landing craft several hundred meters short of the beach. Of the 125 landing craft used, over 90 were destroyed or damaged. The majority were stuck on the fringing coral reef. Heavily laden men had to wade to the beach in chest-high water, their weapons held over their heads. Around them the water was filled with the bodies of their dead or dying comrades. More than 1,000 Marines and Sailors drowned or were killed by enemy fire in the water en route to the beach.

By World War II, aerial reconnaissance supplied considerable information about reefs, beaches, approaches to both and the correctness of existing nautical charts. However, due to the lack of processing facilities, the long distances involved and the courier systems used, the photos and information often were received late or not at all and coverage information was often sketchy or incomplete.

At Tarawa, mission planners had fairly good intelligence collection; they just

lacked information on tides, and therefore, underestimated their impact. To get this information, they questioned 13 British, New Zealand and Australian officers who lived on the islands about expected tide states. Twelve of them agreed that tides should be above the necessary 4 feet. As it turned out, the 13th officer was correct

"Timing is crucial when making operational decisions," Kren said. "It spells the difference between success or failure."

Again model data indicating the expected tides, currents and wave height ranges for the day of the planned operation could have been posted to Secure Internet sites. Web-based visualization tools could have provided a graphical frame of reference.

"Combat planners who received accurate information about the tides in a timely manner probably would not have made the tactical decision that they did," Kren said. "The Naval Meteorology and Oceanography Command routinely supplies model information and makes a host of tactical decision aids available to mission planners in theater. Tragedies like Tarawa are much less likely to happen now."

Desert Storm, January 1991

Military air defense forces from the United States, Great Britain, Saudi Arabia, Canada, Italy, France and Kuwait sweep into Iraq under cover of clear, dark night. By the light of a brand new moon, the Allies drop "smart" bombs with surgical precision. After launch from warships in the Arabian Gulf and Red Sea, Tomahawk cruise missiles, unhampered by fog, clouds smoke or dust almost effortlessly rendezvous with their targets at the Defense Ministry and presidential palace in Baghdad. Thirty-six hours after the first attack, the weather clouds over and jets are advised to return to base.

METOC products available to mission planners during Desert Storm included



▲ Tarawa Island, 1943 (USN)

special products such as high-resolution wind, drifting mine and oil dispersion models.

The Tomahawk Mission Planning Program alone required hourly visibility/ceilings hourly temperature forecasts and time on target correction factors for multiple points along each proposed missile route. In all there were 77 target correction factor combinations. The time on target correction factors for missile forecasts were essential because most of the missions were planned during the intense heat of a Middle Eastern summer while actual missile launches occurred during the winter months when temperatures reach the other extreme.

On Jan. 25, Iraqi forces opened the valves on Kuwait's Sea Island Terminal, a supertanker loading dock station connected by underwater pipelines to the Al Ahmadi refinery complex, the largest in Kuwait. Their objectives were to foul Saudi desalination plants and complicate an expected amphibious landing. The resulting oil slick was more than 10 times larger than the infamous Exxon Valdez spill of 1989.

"While the slick probably would not have stopped an amphibious assault on Kuwait, it might have fouled the vents atop the assault tractors and required personnel to manually clear the vents from vulnerable positions," Kren said.

In response, the Naval Oceanographic Office, on short notice and for the first time, employed an on-scene oil spill model which predicted the dispersion of oil spills by taking high-resolution wind-field observations and running the circulation models on a large-scale supercomputers. These oil spill predictions proved

to be the sole source of guidance for many of the in-theater assets including those involved in mine warfare, special operations and amphibious operations. Other models that were already under development, including those to support chemical dispersion and electro-optical decisions, were also rapidly implemented and distributed.

We've Learned the Lessons

Normandy. Peleliu. Grenada. Kosovo. The weather and the ocean environment have been factors in this century's epic battles. In many cases, the battle space environment actually shaped the course of history.

For years, military commanders, their battle staffs and the individual warfighters went into battle lacking current and accurate information about the coastlines and oceanographic factors of the target areas. They lost ships, vehicles, equipment and personnel due to heavy surf, high tides, water temperatures, strong currents, underwater obstacles, dangerous marine life and severe weather.

The battle space environment remains complex, but today's technology, born of the lessons learned from past tragedies and successes, is providing warfare communities with descriptions of the operating environment, as it was, is now and will be – a concept known as environmental characterization of the battle space.

"The lessons of the 20th century are still helping us support planning, preparation and conduct of surface warfare worldwide," Barbor said. "We know how important environmental characterization of the battle space is to successful military outcomes." ■

Alexander Molnar Jr. is a senior intelligence analyst at the Naval Oceanographic Office and author of the historical suspense novels, Mission: Hong Kong, Mission: Alpine Redoubt and The Land Beyond Time. Cathy Willis is the assistant public affairs officer of the Naval Meteorology and Oceanography Command.



The USS *Kitty Hawk* (CVN 63) Battle Group's New

Surface Warfare Magazine's Military Editor, LT Chris Jennings, recently had the opportunity to sit down with his old Commanding Officer, and newly selected Battle Group Commander of the USS *Kitty Hawk* Battle Group, RADM Robert F. Willard. RADM Willard was then Deputy Director for Operations (J38) on the Joint Staff in Washington D.C.

TOP GUN

On working for the Joint Staff and impacting the Fleet...

I'm one of several Deputy Directors within the J3 organization, and I have five principle areas of responsibility. They include Strategic Nuclear Operations; worldwide Reconnaissance Operations; Interoperability, Missile Defense

and Space Operations; Readiness; and Counter Narcotics.

Each of the division chiefs is an O-6 from their respective service. Because of the focus on Strategic Nuclear Operations, Defense and Space Operations, and Reconnaissance Operations, this particular deputy directorate tends to be biased more toward the Air Force than other services. In fact, we're heaviest in Air Force and Navy. The Readiness and Counter Narcotics Divisions tend to be a more balanced cross-section.

To an extent, The Fleet is impacted in each of the division areas. Recall that the Joint Staff supports the Chairman of the Joint Chiefs of

Staff. We are focused on staffing various operational issues in order that the Chairman is equipped to advise the National Command Authority. So, much of the work that we do is the preparation of deployment orders, or issue papers that are in direct support of the Chairman. We also support the CINCs (Commanders-in-Chief), and we're in dialogue with the various CINCs' staffs, as related to the five areas we're responsible for. The Navy plays a role in each of them. When you consider Strategic Nuclear Operations, the Navy represents one corner of the Nuclear Triad. When you consider worldwide Reconnaissance Operations, some of those reconnaissance assets are Navy assets. The J38 organization is impacting the Navy, as well as the other services, in virtually every area that we're responsible for.

On negotiating a treaty with Russia...

As part of our responsibilities in the Interoperability and Space Division, we oversee Shared Early Warning operations with our allies and other nations. Shared Early Warning is the sharing of ballistic missile launch information from satellite and radar assets. For the past couple of years, we've been negotiating a Shared Early-Warning agreement with Russia to establish a Joint Warning Center in Moscow. This Joint Warning Center will be manned by both American and Russian operators in order to mutually share early warning information, and eliminate any chance of ambiguities or false warnings of ballistic missile launch, resulting in an adverse response from either side.

We began the discussions shortly after President Clinton and President Yeltsin agreed to enter into these negotiations back in 1998, and we concluded them just prior to the recent President Clinton and President Putin Summit, where the two actually signed the memorandum

of agreement between the two nations. We're now in the process of implementing the Shared Early-Warning arrangement with Russia.

Last year we were concerned with the possible impact Y2K might have on Russia's early warning systems. As an interim measure, we developed what was termed the Center for Y2K Strategic Stability at Peterson Air Force Base in Colorado, and we invited the Russians to sit side-by-side U.S. space operators and view ballistic launch displays over the century rollover. So, for some days in December and a few days in January, the Y2K center at Peterson AFB was operational. We actually constructed the facility not only to accommodate the century rollover, but also to provide for a training base for the space operators that will participate in the Joint Warning Center in Moscow.

The most challenging aspect of your job is...

I think its developing the very best support for the Chairman through Vice Admiral Scott A. Fry, Director of Operations, J3, that we possibly can. Some of what we do is very short-fused, which means that the action officers have to work very hard to staff quality packages that can go forward to support the Operations Directorate and the Chairman. So, sometimes it is those short-fused demands that require the very best of the officers here in order that the quality of the packages are truly Chairman and NCA-level.

The most interesting job you've had is...

My naval career has been pretty wonderful. I've had a series of spectacular jobs along the way, every one of which was rewarding in its own way, and every one of which I look back on with fond memories. I think when you consider the scope of responsibility and overall challenge, command of the aircraft carrier is certainly a high

point in any naval officer's career who is given the opportunity to support our Navy in that way. And so, command of the USS *Abraham Lincoln* (CVN 72) would probably rank as one of the most challenging and truly satisfying jobs of my career. But again, command of a fighter squadron, command of the aircraft carrier, command of USS *Tripoli* (LPH-10), which allowed me the opportunity to learn about the amphibious warfare mission, and even the Pentagon, and the J3 staff, which taught me new areas of responsibility that, frankly, I was unfamiliar with when I arrived here, have all given me great satisfaction.

Life in the Beltway...

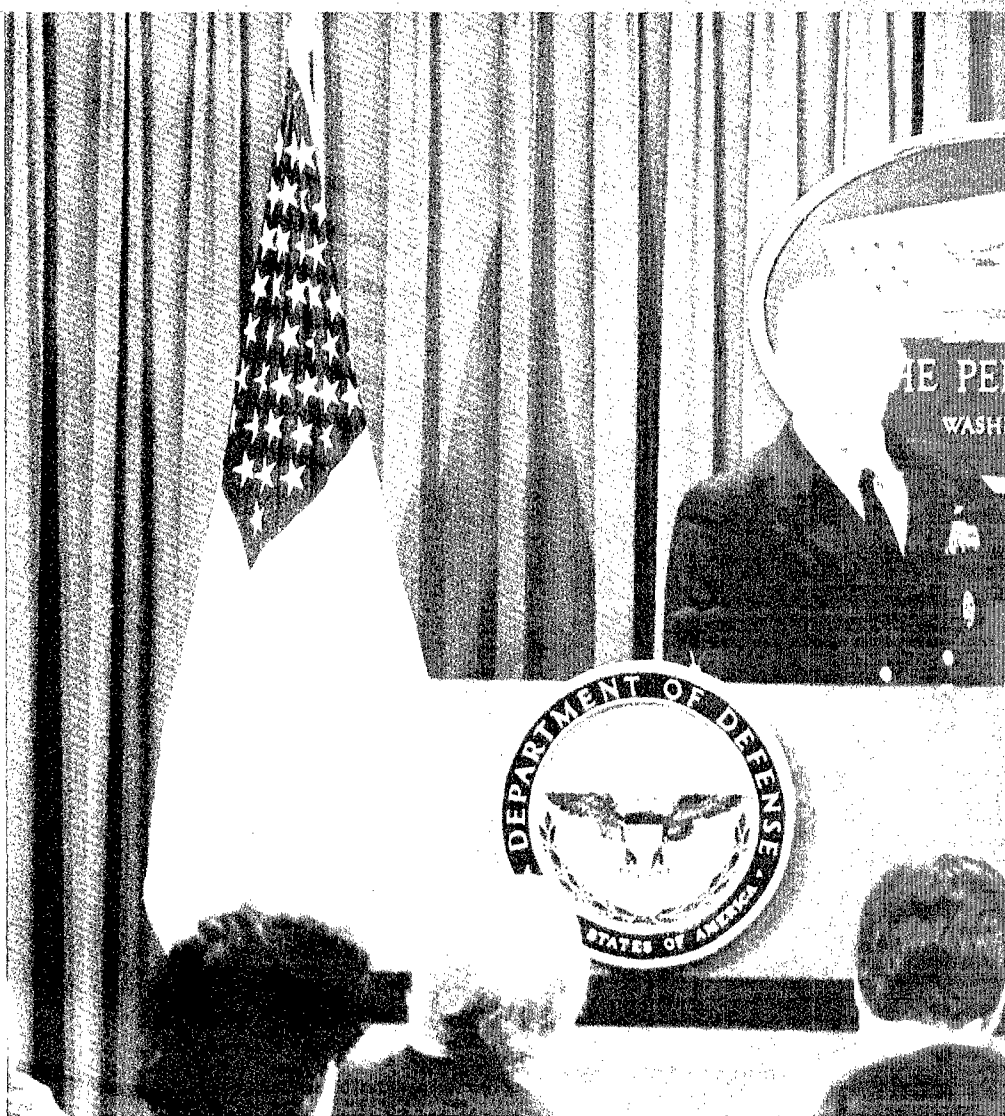
There was certainly a learning curve. Just learning the language of the Pentagon was a challenge. Being temporarily assigned to the Navy Staff while I was awaiting this particular Joint position was invaluable. I was able to see the Navy Operations Director in action for several months, and during that time I closely observed Navy Planners. A lot of the issues that were the ranking issues within Washington D.C. and the Pentagon at that time crossed the Navy Planners' desks, and I had the chance to be exposed to them and become familiar with the vernacular of the Pentagon. The Joint Staff has certainly been unique. There was a tremendous learning curve as well...learning the other services' major issues, and the issues that are most important to the Chairman, the CINCs, and the Joint services. As we find in all aspects of our careers, the support of the people around us is terrific. I have such a fine group of officers and enlisted personnel that work for me here on the Joint Staff. Their ability to maintain continuity as I learned a new job and their ability to bring this officer up to speed in his areas of responsibility made my assignment to the Joint Staff immensely rewarding.

On Leadership...

There's a lot that goes into leadership. I trust my peers and my subordinates. I think freeing them up to do their jobs is an effective way to work with the quality people we have in the Navy, and in the Joint arena as well. I think that as Commanding Officer of *Abraham Lincoln*, I tried to impress on my crew their degree of self-sufficiency—our sailors' ability to maintain, repair, upgrade, and sustain operations within that ship, without always looking for help. **You know what—they did it!** I felt that the ship made great strides in becoming more self-sufficient, and as a result, it was better able to handle its own problems, and to assist in other battle group issues as well.

Flying an F-14 or Driving the Ship

I think there are a lot of similarities that can be drawn from flying and driving a ship, regardless of the size of the ship. And really, regardless of the situation you're in. Certainly, both are demanding. The difference is an obvious one—in flying, events are happening very quickly, so there are often just seconds to react to situations, and as a result, your sense of timing must match that increased pressure to stay ahead of the airplane. In a ship, there are similar challenges—relative motion, many sensory inputs, and your need to keep up with them, and stay ahead of them, and not be overloaded, move-counter-move—again, there are a lot of analogies that can be drawn. And both can be routine, both can come with rare moments of crisis, both can be incredibly rewarding when an operation is executed well, and both can be frustrating if operations in the aircraft or operations within the ship are executed badly. If there's a fundamental difference between flying an F-14 and driving the aircraft carrier, it's the fact that within the F-14 there are two crewmembers who are executing their responsibilities in the aircraft as a rel-



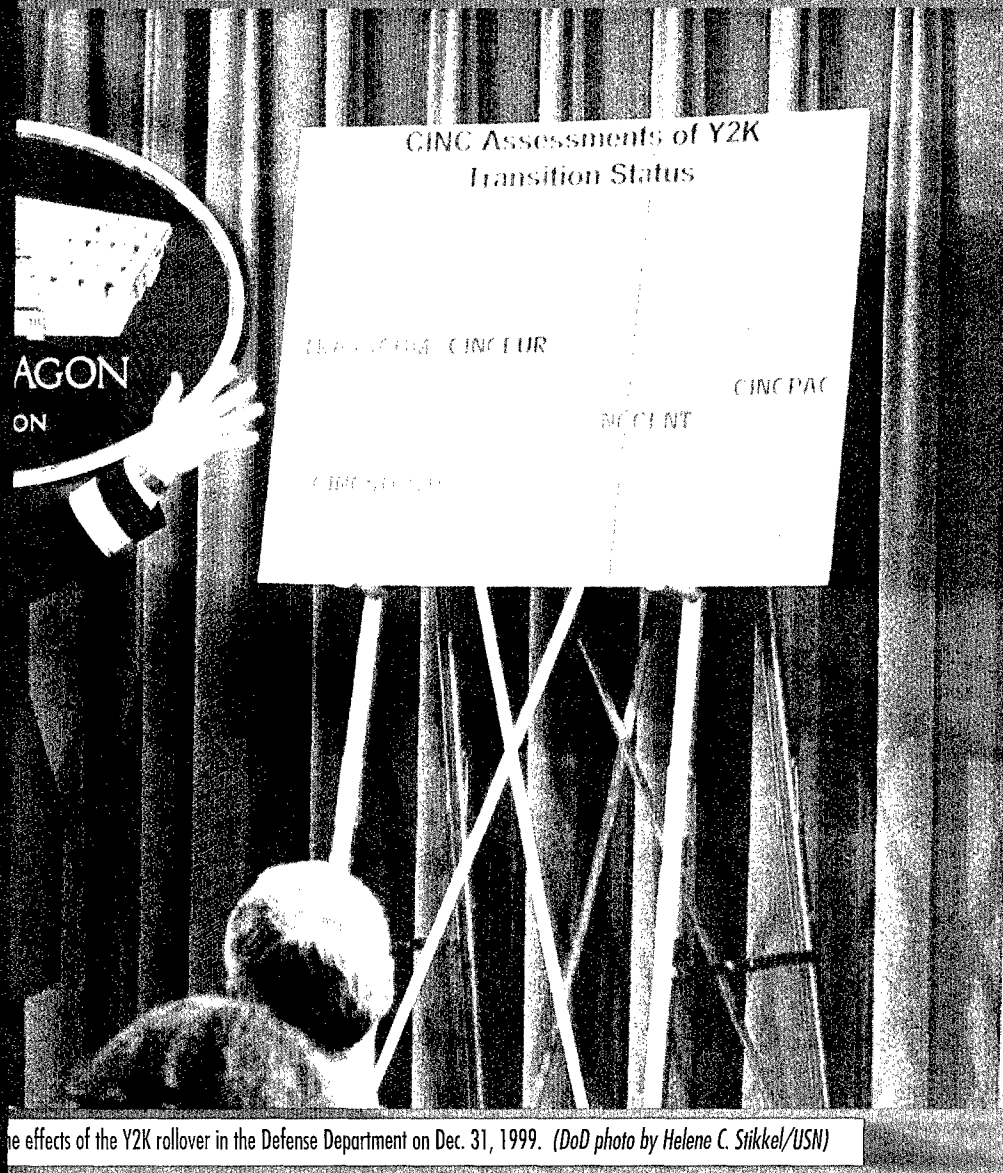
RADM Robert F. Willard, U.S. Navy, Joint Chiefs of Staff Y2K Task Force, conducts a press briefing in the Pentagon about

atively small team. In the aircraft carrier, there's a much larger team involved. It's really the collective ability of the entire team on the bridge of the carrier or in the conduct of flight operations, the entire air department, combat systems, reactor, and engineering departments that make complex shipboard operations successful. If I were to capture the real difference, flying is relatively individual, and driving that ship required all of us to work together as a well-oiled machine.

How being an aviator helps ship handling, and ship handling helps aviators ability to fly

I think that experience in aviation helps in ship handling from the standpoint that aviators are

required to develop a sense of relationships between moving objects in three dimensions, and a sense of spacial orientation, and the same thing is required of a ship driver. So, from the standpoint of relative motion and spacial orientation, there's a similarity that can be drawn between aviation and driving ships. I think that to take it the other way, the education process that went into preparing for command of the aircraft carrier that included nuclear propulsion training taught me a great deal. I think the exacting training in engineering and theory could be applied in aviation. Had I been educated to that same level as a young pilot, I think I would have been better prepared to understand and cope with my



the effects of the Y2K rollover in the Defense Department on Dec. 31, 1999. (DoD photo by Helene C. Stikkel/USN)

F-14. There are certainly strengths in the training approach to Surface Warfare that could be applied to other disciplines, like aviation. The combination of various warfare disciplines and the complexity of the engineering systems that support those warfare disciplines, and the level and depth of knowledge required to be proficient as a shiphandler, I think translates well into aviation.

Lastly, there are issues unique to ships, such as navigation and environmental factors that influence the way a ship moves at slow speeds and so forth, that are new to aviators and need to be learned, and we generally learn them from Surface Warfare Officers.

A Carrier Battle Group Command

I'm thrilled to be going to the job, and I can't wait to get there. As we all know, the *Kitty Hawk* Battle Group is unique because it's forward deployed to Japan. It's got some operational responsibilities that make it unique among our twelve carrier battle groups. It is not on the same cycle as the other twelve as far as deployment and the inter-deployment training cycle go. It is maintained at an operational state of readiness, so that it may be on-call the majority of the time. It tends to be a very operational battle group, and that is very exciting to me. The forces that make up that battle group are, by in large, co-located, and as a result, the reputation of a forward deployed battle group, which is now *Kitty Hawk* Battle Group, is that of being very

close-knit, from a personnel standpoint, and I'm looking forward to that. So, if I have an expectation, it's that I will step into a battle group that is accustomed to working closely together, very operational, and very well maintained and ready.

The Importance of the Carrier Battle Group Today

I think there's an argument for saying that the carrier battle group has increased in its importance. The world has clearly changed since 1989, and certainly the use of the carrier battle group (our operations tempo) has not decreased. On the contrary, in many instances, it has increased over time. I think we're all aware of the issues. The Nation and the Department of Defense have assumed the responsibility to shape the world environment, and in so doing, we forward deploy, and we engage overseas very frequently. The Navy has traditionally been that engagement force overseas and despite hot spots like Iraq and North Korea that have existed now for a number of years, the Navy has commitments all over the world in support of that shaping responsibility. In addition, the Navy is a key component to the Nation's Strategic Deterrence. One of the ways that the U.S. continues to influence world peace is by having forces strategically located around the world. Many of the forces, if not most of those forces, are naval forces. So the importance of the carrier and the carrier battle group cannot be overstated. As the world continues to evolve, and the commitment of this superpower around the world continues to evolve, the aircraft carrier and her battle group will have ever-increasing importance.

How Technology has impacted the effectiveness of the Carrier Battle Group

I think the situational awareness of individual commanders and all subordinate commanders within the

various warfare disciplines has increased. As our knowledge of the battle space increases, our effectiveness in terms of decision-making improves, and I think that is the fundamental evolution we're in right now. We are all recipients of more information than we had before. The technology that we're implementing now will allow the ships in the battle groups to take all the data and make it into meaningful information that can be readily shared. This will allow us all to basically decision off of the same rule set, have fundamentally the same level of knowledge, and together with quick lines of communication, make the right war-fighting decisions, at the right time.

Russia, China, North Korea, and Taiwan

There has been a shift, certainly in the posture of what was formerly the Soviet Union, as far as influence is concerned, both on the high seas and elsewhere around the world. However, Russia remains a significant naval power, and a significant world power, where the Russian military is concerned. In terms of influence though, certainly changes have occurred, and our relationship with the Russians has changed. I don't think that anyone would discount the influence that Russia retains, to include her influence in the Pacific. At the same time, we've seen the emergence of China, in terms of relationships with the rest of the world. We've seen the opening of China in many ways, and we've even exchanged with China. If you recall, when we were on the carrier, we had a Chinese delegation come on board *Abraham Lincoln* to witness fixed wing flight operations during an UNREP. So we're in a dialogue with the Chinese. China certainly has a formidable standing army, and China has a relatively modest naval presence, but it is growing. So as China has emerged and as its military continues to grow, including

their Navy, China will enjoy more influence in their part of the world. In the exchanges that have occurred and no doubt will continue to occur with China, our country's relationship will, hopefully, be one of a developing partnership.

I think we're all encouraged to see the recent summit occurring in North Korea with the South Korean President, and what that may portend in terms of the Korean peninsula. That said, it is still regarded as a pretty dangerous place, and it is the intention of the U.S. to maintain a formidable presence there, as we watch the events unfold. It is doubtless everyone's hope that the dialogue will lead to the easing of tensions on the peninsula and that part of the world.

As you well aware, we continue Operation Northern and Operation Southern Watch in Iraq, enforcing U.N. sanctions in our peacekeeping role there. I think both North Korea and Iraq remain examples of some of the dangers that still exist and will exist in the world in the coming years. We heard in recent press reports much ado about Taiwan. The U.S. supports a one China policy, but insists that Taiwan/China issues be resolved peacefully. We have a long-standing relationship with the island of Taiwan, and the government of Taiwan, and we continue to assist them and encourage the Chinese to engage with them, with the ultimate goal being peaceful resolution of that very formidable issue.

The Biggest Influences

A couple of people that are very close to me have had a big influence on my career. First I would say that my father continues to have a tremendous influence. He has maintained a great interest in the Navy. I regard my Dad as a great leader in his own right. He was a leader in industry before he retired. I have

always considered his advice first. My wife had been a great influence on my career and me. She has been very involved every step of the way. She has been very supportive, and very much engaged in the Navy, the Navy family, and the Navy's programs. To have the support and advice of my Dad and the tremendous support and engagement of Donna over the years have both been greatly influential. And then along the way, as we move from assignment to assignment, we all can look at individual leaders that have influenced us. I've got my handful that I could name, and will never forget. Without going into great detail, my first commanding officer VADM (Ret) Jack Ready was a great influence on me when I was a young pilot in the F-14 community. I think Donna would say the same about his wife, Judy Ready. My Air Wing Commander, VADM (Ret) Lyle "Ho Chi" Bien, was a role model. When discussing the assignment to the Joint Staff, "Ho Chi" was very encouraging and had advised me to regard my responsibilities as a newly assigned Staff Officer as highly as I have my assignments in Operational areas. When I was XO of USS *Carl Vinson* (CVN 70), CAPT John Payne was a terrific role model. When I entered the Joint Staff, ADM Vern Clark, was at the time the J3, so I was able to witness his awesome leadership ability, and see him go on to the tremendous heights he has attained. I really don't know how any of us, given the quality of people we have worked around or worked for over the course of our careers, could not look back and start fingering the many influences that have directly affected us. I've got my set, and I'm sure you've got yours. It's one of the real treasures of having made this a career.

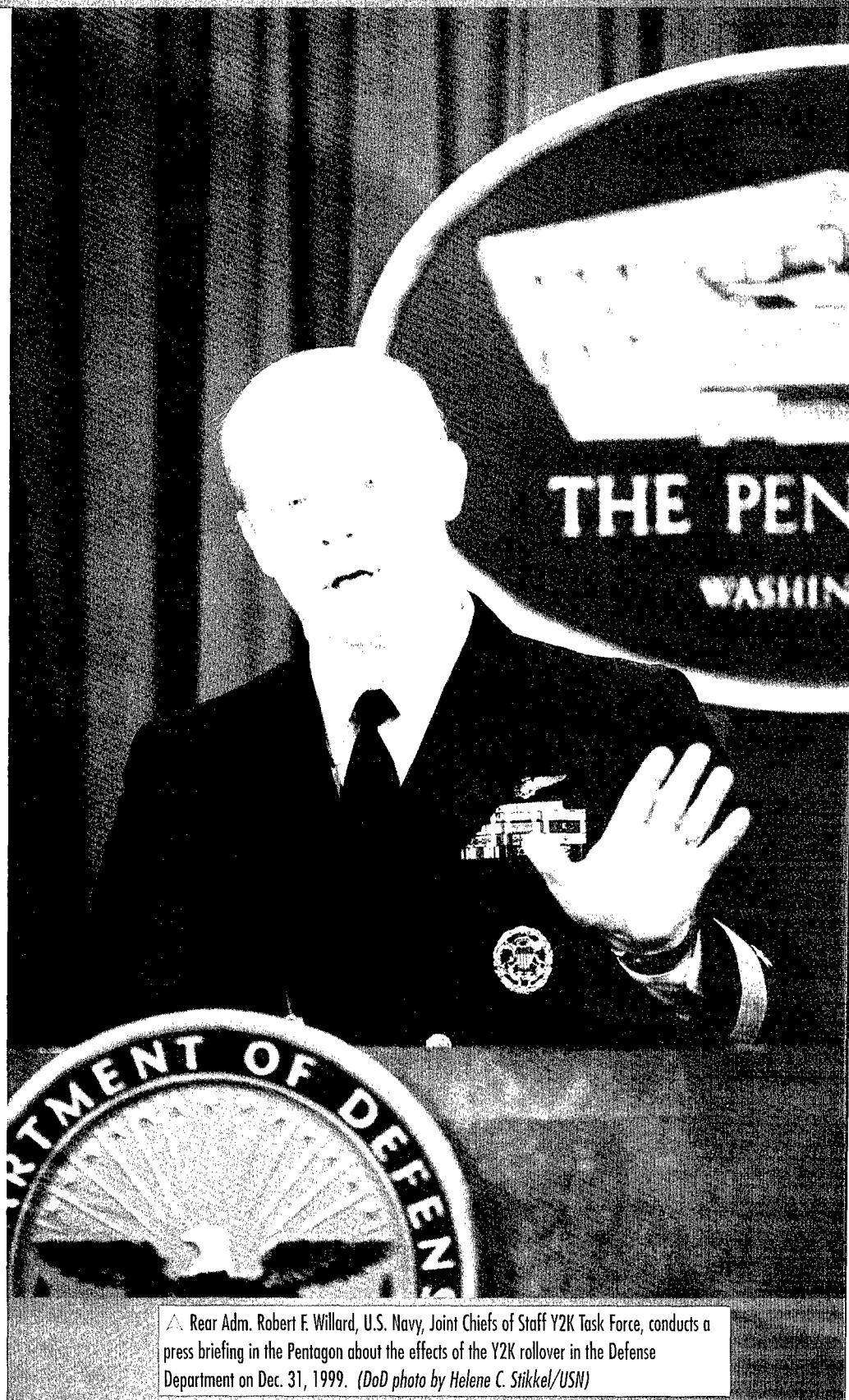
The Navy's Biggest Concern

I would argue that it's our ability to balance recruitment and reten-

tion of the right people. In the 21st century the retention challenges are likely to be greater than ever. I think that the wonderful economy and the changes in the world order that we've seen will cause the outside (the civilian lifestyle) to continue to be a draw. We'll have to compete with that. That said, I had the opportunity fairly recently to preside over a graduation ceremony at Great Lakes, and witness some of the events leading up to that graduation ceremony, and it was awe-inspiring. To see young recruits with that much enthusiasm, the leadership of some of the recruits, the pride of the families that were participating in the graduation, the ability of those young, several week-old sailors to demonstrate our Core Values during boot camp, and then to see the pride in their faces when they graduated, makes me believe that we're better-off than ever.

Three Words: Joint, Joint, Joint

You know, I can certainly speak in support of the exposure to the Joint environment. In my capacity within the Joint Staff, I've had the opportunity to work with officers and enlisted from all four services. There is very little difference between us. The officers across the board in J38 are absolutely top notch. Their level of knowledge of their respective service's warfare science is absolutely outstanding. And the sharing of that as these young officers sit along side one another in their day-to-day responsibilities in the Joint Staff can't be overestimated, in terms of the benefit that they derive from that interaction. We conduct Joint Operations and coalition operations when we employ forces around the world. It's what we do, so I would argue that we, the Navy, have to be very, very good at it. In order to be good at it, we have to be very committed to it. The willingness to learn the Joint war fighting sciences, to



▲ Rear Adm. Robert F. Willard, U.S. Navy, Joint Chiefs of Staff Y2K Task Force, conducts a press briefing in the Pentagon about the effects of the Y2K rollover in the Defense Department on Dec. 31, 1999. (DoD photo by Helene C. Stikkel/USN)

read Joint Doctrine, to educate ourselves as to what responsibilities the Navy has in conducting Joint operations, to be willing to assume Joint jobs and Joint roles, and then to

dedicate ourselves to Joint operations whenever we're involved in them is a paradigm shift that each of us, as Naval Officers and Sailors, needs to make and confront. ■

BLUE GOLD

by LCDR Brian Fort

Surface Warriors take justifiable pride in our ability to operate at the "tip of the spear" 24 hours a day, seven days a week, but how many of our ships are fully combat ready every hour of every day? When the tempo of operations demands, Surface Warriors take perverse pride in standing long watches with only a few hours of sleep. We joke about our aviator shipmates who consider "crew rest" a core readiness concept and who choose not to function with inadequate rest.

With all of the operational demands on a ship at sea, is it possible to create a system where the crew is always combat ready and also well rested? USS *Lake Erie* (CG 70) has implemented a system called "Blue/Gold" which does precisely that.

Since prior to World War II, Naval vessels at sea steaming in Conditions IV, III or II have operated in a three section or a port and starboard watch rotation. The Blue/Gold system implemented in *Lake Erie* differs significantly from those traditional watch routines and also differs from more recent innovations such as Core/Flex. In Blue/Gold, officers and crew are divided into two equal teams underway, each of which stands a twelve-hour period of duty. Superficially, this may seem similar to a standard port and starboard rotation; however, Blue/Gold is completely different in effect. Short of General Quarters (GQ), the on-duty Team is totally responsible for operating the ship, standing all watches, and completing all special evolutions which occur during its 12 hour period. The off-duty team is free for twelve hours to sleep, take PACE classes, work out, study for advancement, or simply relax. In *Lake Erie*, the Blue and Gold Team Leaders each have approximately 190 men assigned and a mandate from the commanding officer (CO) to conduct the ship's business. The Team Leader can organize his people to accomplish tasks in any way he chooses as long as it is in compliance with governing directives and no person is assigned a task for which he is not Personnel Qualification Standard (PQS) qualified. The result is that *Lake Erie* can man a Condition III watch and perform underway replenishment

(UNREP), flight operations, visit board search and seizure (VBSS) operations, routine maintenance, train new watchstanders, and accomplish administrative tasks twenty-four hours per day, seven days a week for an indefinite period. At the same time, with rare exceptions, every man in the ship gets at least eight consecutive hours of sleep every day.

THE BLUE/GOLD PROCESS

Blue/Gold manning in *Lake Erie* is the latest iteration in a process which started in USS *Reeves* (CG 24) after the attack on *Stark* and has evolved in the years since. The surge of forces to the Arabian Gulf after the attack on *Stark* was the first significant attempt to operate a large naval force continuously in a potentially hostile littoral theater.

Reeves was among the first ships to arrive in theater and was tasked as the Air Warfare Commander. *Reeves* also participated in the first ten EARNEST WILL convoys and played a significant role in the capture of the minelayer IRAN AJR. While performing those varied missions under constant threat of deliberate or inadvertent attack, *Reeves* observed that the traditional World War II derived Watch, Quarter and Station Bill was inadequate in many respects and dangerous in some. The problem was that key individuals were overworked to the point of becoming ineffective and that fact engendered a reluctance to react early to potential threats.

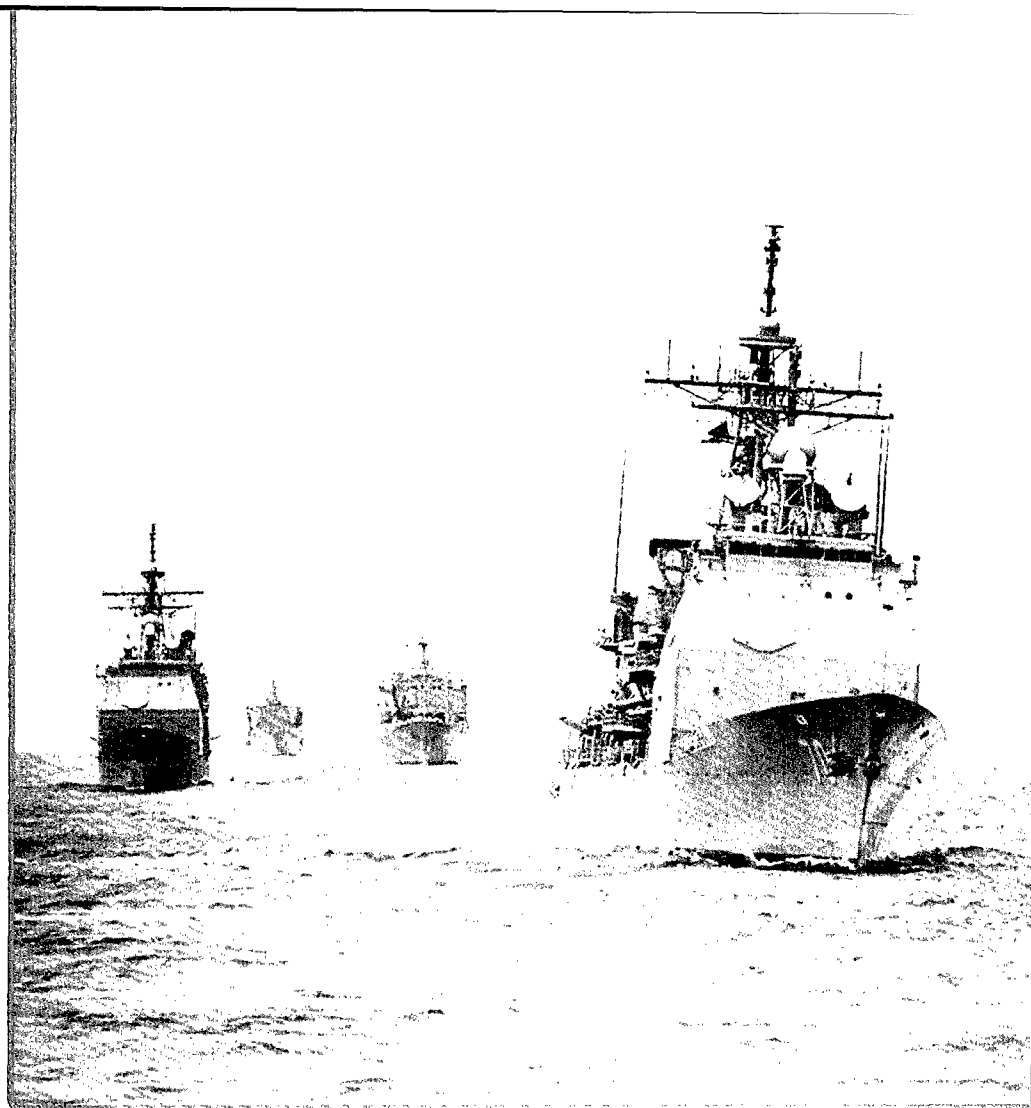
In the case of *Stark*, inadequate manning in Combat Information Center (CIC) and at other weapons stations was a contributing factor in the death of 37 sailors. Why was the ship not at GQ? Why weren't even Condition III stations fully manned? The assessment by the senior leadership in *Reeves* was that the crew was exhausted and the CO was reluctant to flex them for a threat that, until then, had always passed them by in search of other targets. Captain George Chapple was adamant that *Reeves* would not fall victim to this same overworked, vulnerable condition. The root of the problem was an outdated organization that was unsuitable for the challenges of a typical day in the Gulf. For example, ships were at GQ for ten hours during Strait of Hormuz transits with some of those same people then standing the next Condition III watch. By the end of that watch, the ship would either station the Sea and Anchor Detail and proceed to Sitrah anchorage for refueling or continue north towards Kuwait. Several times per day threatening air or surface tracks approached the ship. Iraqi F-1 Mirages carrying Exocet or B-6 Badgers on bombing runs were common. Iranian SAM frigates and Revolutionary Guard Corps small boats attacked merchants within visual range. With the extra watches required for small arms teams, mine watches, control of shipping, queries, challenges, and deconfliction and the need to frequently rotate personnel to avoid heat stress, *Reeves* peacetime manning did not support a three section watch. Most of the men were port and starboard and the special details and GQ requirements meant that often they were port and re-port. At the same time, nearly 40 percent of the crew were day workers who stood no regular watches and contributed little except for special details. *Reeves'* answer: Blue/Gold.

Blue/Gold is new, but it is also very old. The concept would be very familiar to the CO in USS *Constitution*. Whereas *Reeves* developed Blue/Gold because of

the near continuous air and surface threat which surrounded ships in the gulf, *Constitution* used a "Blue/Gold" watch routine because of the near continuous need to manage the sail plan. Sailing free on a transit, most of the watch on deck was engaged in cleaning, maintenance or training. If an unexpected squall bore down on *Constitution* in the middle of the night, half the crew was ready to respond. Although only four or five men were actually at a watch station, the remainder were dressed, awake and situationally aware and probably were jumping into the rigging before the order was given. If necessary, all hands were called (GQ), but for most routine sail changes the team on duty conducted the evolution. The same principle was applied in *Reeves*. The crew was divided into two teams: Blue and Gold. One team or half of the crew was

always "on deck." In a low threat environment, only 40 of the 180 team members were at a watch station. The rest were cleaning, performing PMS or training. At the first sign of a threat, the posture was changed by manning additional watches to ensure that the capability to respond always exceeded the adversary's capability to threaten. If the threat increased further or the threat approached a specified weapons release line, the ship went to GQ.

Otherwise, all routine evolutions were conducted by the team on deck. No special details were called for UNREP, flight quarters, sea detail, anchoring or any other routine evolution. Although port and starboard six hour watches would usually be considered arduous, when the need for off watch personnel to man special evolutions was eliminated,



△ (Foreground to back) USS *Lake Erie* (CG 70), USS *Chosin* (CG 65), USS *Mount Hood* (AE 29), and USS *Cimarron* (AO 177). (USN)

port and starboard was not only tolerable, it was less difficult than a traditional three section watch. In the end, *Reeves* had a very successful deployment using Blue/Gold. Blue/Gold was further refined by *Reeves XO*, Captain Lenny Capello during Command tours in USS *Cushing* (DD 985) as the flagship of the UNITAS 33-92 Task Force and USS *Cimarron* (AO 177) in preparation for a successful OPPE and participation in RIMPAC 94. The major drawback to Blue/Gold as developed in *Reeves* was the six-on/six-off Team rotation which allowed, at most, five hours of sleep between duty periods. During peacetime Condition IV steaming, with no threats and infrequent special details, keeping half the crew awake all night long did not pass the common sense test.

USS Lake Erie (CG-70) BLUE/GOLD

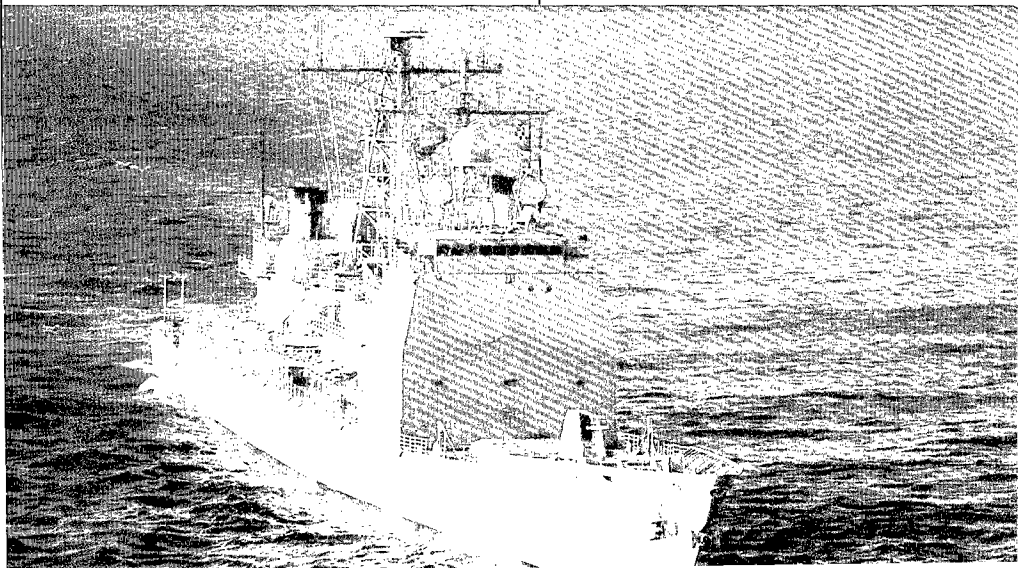
In *Lake Erie* the six-on/six-off problem was solved by assigning Teams a twelve hour period of duty, either noon to midnight or midnight to noon. While twelve hours may seem like a long period, no one stands a continuous watch for the entire period. On the contrary, every watch is tailored to the situation and the number of qualified watch standers. Within each Team, watches are manned using methods very similar to the Core/Flex system used in several

Atlantic Fleet ships; however, in Blue/Gold the crewmembers who will man the "flex" watch stations are always awake, alert, and situationally aware. Another critical difference from Core/Flex is that the Team Leader, a senior Department Head, always is responsible for the performance of his Team. The decision to flex is based on his mature judgment of the situation not that of a junior OOD or CICWO. The Team Leaders are empowered to rotate their qualified watch standers in a manner best fitting the current situation. Most watch standers have come to prefer a three hour watch rotation within their twelve hours of on-duty time, however, if the team is scheduled to UNREP, for instance, the watch rotation is adjusted as necessary to accommodate the additional deck and ship control watches. If the threat level is low, officers who normally would stand CIC watches such as AAWC or SWC can be assigned to bridge watches or special details. For example, during a Malacca Strait transit, when the principal threat to the ship was collision or grounding, bridge watches were augmented with more experienced officers. Other officer and enlisted watches are adjusted similarly to ensure that the challenge and the talent are balanced. Blue/Gold Teams switch duty periods (noon to midnight and midnight to noon) during an in-port periods (generally about once a month).

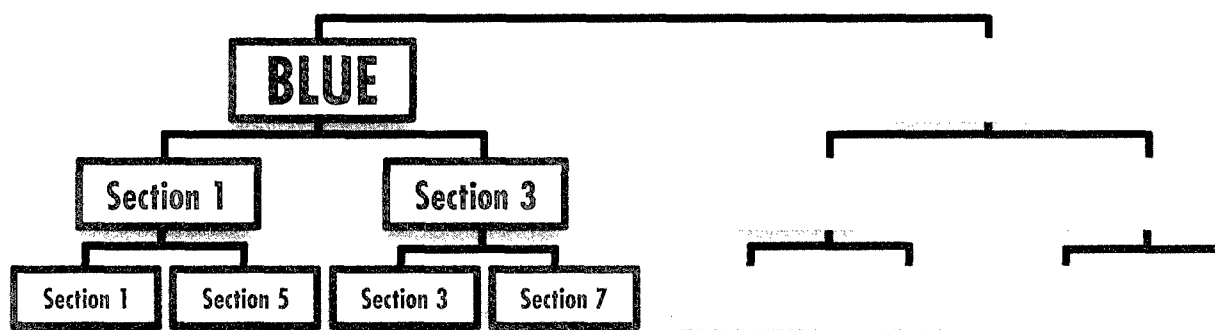
A. Organization. As noted above, in Blue/Gold the crew is divided into two teams. As nearly as possible, each team is given an equal mix of talent and numbers of personnel. Skill positions that require formal, off-ship schools are the critical path to achieving balanced Teams. For example, each team will need an LSE, LSO, Oil King, AIC, ASTAC, GLO, etc. The next priority is to distribute equally other watch skills that require PQS Qualification, e.g., OOD, EOOW, Rig Captain, Repair Party Leader, etc. Personnel with the same NEC also can be split between the teams, but having a particular NEC in only one team is certainly not a showstopper. The remainder of the crew is divided as required to balance the leadership and watchstanding talent as equally as possible. The Blue/Gold Team Leaders are responsible for organizing their Teams to accomplish all assigned tasks. Each team has a Flight Deck Team, a VBSS team, a SCAT team, a boat crew, two UNREP station teams, a Sea and Anchor Detail and sufficient personnel to man Condition III underway watches. In the event that the at-sea fire party is needed or heightened damage control is required, the Blue Team mans Repair Two while the Gold Team mans Repair Three. Watch bills are living documents and are dynamically changed to reflect the tactical situation and current tasking. For example, if the USW Threat is low, then personnel from that division are made available for line handling, SCAT teams and other general duties. If the USW threat increases, other divisions provide a proportionately larger share of the manpower for general duties.

B. Watch Stations. Underway watch stations are manned in accordance with the EDORM and the CO's Battle Orders. Engineering watches are augmented as required by the threat or ship's employment to ensure the necessary degree of redundancy and reliability. Deck, Combat Systems and Operations watches are manned in accordance with a matrix in the Battle

USS Lake Erie (CG 70), (USN)



USS *Lake Erie* (CG 70)



Naval Reserve CINCPACFLT DET 420.

Orders which is tailored to the extant threat in each warfare area. As threats are detected or the ship enters a high threat area, the TAO assesses the available response time and adjusts the watch station manning to ensure that detection and engagement capabilities are adequate. Because all of the additional watch standers are drawn from the team on deck, the TAO does not hesitate to increase readiness regardless of the time of day. In fact, he normally will flex earlier than would an OOD who must wake several people to man the required watches. When the TAO increases the threat warning level, the EOOW also adjusts Engineering readiness using additional watch standers from his team.

C. Ship/Watch Routine. In the Blue/Gold system, the routine of the ship continues twenty-four hours per day. Four meals are served, with breakfast and dinner options available at the noon and midnight meals. Team turnover occurs at noon and midnight. Officer's call occurs at 1230 followed by quarters, which takes advantage of the period when the entire ship is up and about. Some divisions choose to hold a second, less formal quarters at the midnight turnover in order to improve connectivity between Blue and Gold Teams. Reveille is not sounded. In fact, a NAVSEA approved modification was made to the IMC system that puts the berthing compartments on separate circuit. That modification (which required

only three days to implement), permits "the word" to be passed without disturbing the off duty Team. As a result, the IMC is used more frequently (and 24 hours a day) as a tool to increase situational awareness among the on-duty Team. Berthing compartments are cleaned daily from 1100 to 1330 and a randomly selected compartment is chosen each day for the XO's berthing inspection, which is held at 1400. That scheme permits a majority of the off-duty Team to hit the rack by 1400 while the random selection keeps the standards high.

D. Inport Duty Sections. The Blue/Gold underway watch teams are divided into four overseas duty sections (which expands to eight sections in U.S. ports). As a result, the people in each section work together both at sea and in port. When threatcon requires fewer sections, two sections combine. If the threatcon may require the duty section to get the ship underway, an entire underway team will have duty. Because they always have worked together underway, the team is capable of not only getting underway, but also of fighting the ship. Each In-port Emergency Team (IET) consists of one half of either Repair Two or Repair Three augmented by engineers and Repair Five personnel (Repair Five is manned only at GQ using both Blue and Gold personnel). For the most part, members of the IET will have worked together in the same role in an underway repair locker and hose teams,

electricians, investigators and scene leaders are identical subsets of underway teams. On days when the ship will get underway in the morning, the duty section may be augmented by additional sections from the same team in order to accomplish all preparations. For example, in homeport, if Blue Section 1 has duty, Blue Section 5 may report at midnight to prepare the ship for underway. Blue Sections 3 and 7 report at normal expiration of liberty and the Blue Team gets the ship underway. The Gold Team then relieves the Blue Team at 1200, but has no role in getting the ship underway. Entering port is the reverse process. If Gold brings the ship in, then Gold Team members assist as necessary in securing the plant, rigging services, etc and then turn the ship over to a duty section.

SUPERIOR TACTICAL READINESS

Illustrating the advantages of the Blue/Gold system with respect to tactical readiness is best accomplished by using actual events and contrasting Blue/Gold versus traditional watch standing routines. Actual data from *Lake Erie's* WESTPAC 99 deployment is used as the baseline for comparison. From 5 -12 September 1999, *Lake Erie* was on station in the North Arabian Gulf (NAG) conducting intensified Maritime Interception Operations (MIO). This was *Lake Erie's* first week on station in the North Arabian Gulf

and her first opportunity to conduct real world littoral operations in the Blue/Gold organization. In addition to conducting VBSS, routine flight operations, connected replenishment (CONREP), vertical replenishment (VERTREP), and an anchoring evolution, *Lake Erie* was assigned duties as Air Defense Commander (ADC), Force Over-the-Horizon Track Coordinator (FOTC), and exercise Launch Area Coordinator (LAC). To conduct intensified MIO, USS *Lake Erie* also embarked a SEAL Team from the *Peleliu* (LHA 5) Amphibious Readiness Group (ARG) from 8-12 September.

The morning of 5 September, *Lake Erie* arrived on station in the NAG and began what would become a typical daily routine. The motor vessel (M/V) *Feng Kang Shan* required a compliant boarding to verify cargo. *Lake Erie's* Gold VBSS Team was on duty when the boarding commenced just before 1100. Following the noon Blue/Gold turnover the two VBSS teams were swapped, and Blue continued the inspection until 1700.

Lake Erie's Blue Team then prepared to conduct an UNREP at 1800. Numerous delays pushed the UNREP back to 2000 and then again until 2200. Because UNREP is a routine part of Blue Team duties, the Blue Team Leader easily adjusted watches to accommodate the dynamic alongside time. The repeated UNREP time changes would have had a more deleterious effect on NOT BLUE/GOLD's special replenishment detail. Regardless of the watch rotation used, the unanticipated time changes for the UNREP would have repeatedly interrupted the off watch time of a significant number of the crew.

Throughout the first day on station, HSL-37 Detachment 9 had carried out routine flight operations to support the MIO effort. At approximately 2230, after *Lake Erie* had manned two UNREP stations, Easyrider (ER) 64

experienced a computer failure. While an after taps, no-notice recovery in the middle of an UNREP might be a significant challenge in NOT BLUE/GOLD, *Lake Erie's* on-duty Blue flight deck team provided a green deck in only 5 minutes and safely landed ER-64 while *Lake Erie* commenced her approach on the Oiler.

Because of an electrical problem in the Oiler, the UNREP extended past midnight. The Gold Team relieved the Blue Team alongside and continued the UNREP while the Blue Team hit the rack. In NOT BLUE/GOLD, the Special UNREP detail pressed on in spite of the fact that most of the detail had not slept since 0600 reveille. Immediately following the UNREP at 0030, the flight deck crew shifted to the forecastle and received 17 pallets by VERTREP. The Gold Team finished stowing stores at 0300. In the other cruiser, three section watch standers who had been awake all day, had stood the 1800-2000 watch, manned the Special UNREP detail until 0030 and manned the Special VERTREP until 0300, now had to stand the 0400-0800 watch.

Upon completion of the UNREP, *Lake Erie* was detailed to patrol the northern MIO OPAREAS inside the Iraqi Seersucker envelope. Prior to crossing the maximum range boundary of the of the Seersucker, *Lake Erie's* TAO used the 1MC to inform his Team that the ship was entering the missile envelope and to "Set WEPCON Red Air." Within minutes, the game face of the entire ship was changed. Both gun mounts were manned by EP2 operators and magazine crews, and Weapons Control Console Operators (WCC1 and WCC2) manned their consoles. An AIC, ASTAC, MSS, and EW Supervisor also were added to the watch. All of those additional watch standers came from the on-duty Gold Team, all of whom had enjoyed eight hours of sleep before assuming the duty at midnight. Having anticipated the order, they immediately proceeded to

their stations when the word was passed. Additionally, the increase in weapons condition did not mean the end of watch rotation. Within each Team (Blue or Gold), those qualified to stand a certain watch established an equitable rotation cycle to ensure meal reliefs, permit manning special details such as Visit, Board, Search & Seizure (VBSS), Small Craft Action Team (SCAT) or UNREP/VERTREP. In NOT BLUE/GOLD, some very tired watch standers were awakened from their inadequate sleep period to man additional watches or, worse, the ship started down the same path as *Stark*.

In Engineering and throughout the ship, the tactical readiness posture also increased. When the TAO set WEPCON Red Air, the Engineering Officer of the Watch (EOOW) ordered the engineering plant from trail shaft to split plant, and because Gold Team was on duty, Repair Three mustered on the mess deck. In NOT BLUE/GOLD, all of the repair party personnel are sound asleep. At the discretion of the TAO, Repair Three may be stood down depending on the TAO's assessment of the actual threat, but they will remain awake and dressed. In accordance with the threat-response matching philosophy of the Blue/Gold system, the TAO may stand down other unnecessary watches as well. The operating philosophy is, "if the watch isn't required, don't man it," coupled with "when it is required, man it early and quickly using a member of the already-awake on-duty Team."

After departing the seersucker envelope, the TAO set WEPCON Air White, and proceeded south to the MIO operating areas and continued Gold VBSS team inspection of the *Feng Kang Shan*. At noon, a well-rested Blue team assumed the duty and the cycle of ops continued. Obviously *Lake Erie* did not UNREP every night, but intensified MIO ops with embarked SEALs were conducted every night on station. That mission required all night flight ops, boat ops and high speed maneuvers

with seldom more than two fathoms beneath the keel. Two months later, when **Lake Erie** departed the Arabian Gulf having continued that tempo of operations, including the capture of seven sanctions violators, the crew was just as well-rested and more combat ready than the day they entered.

COMBAT READINESS AND QUALITY OF LIFE

While Combat Readiness was the primary reason for developing Blue/Gold, the collateral Quality of Life effects are at least as important. Blue/Gold gives every crewmember control of his time for twelve hours each day. That is revolutionary! In addition to eliminating sleep deprivation, Blue/Gold reduces the inevitable stress that accompanies no-notice calls to duty. When a Blue/Gold Team member shifts into exercise gear or steps into the shower, he does so confident that he will not be called to perform an emergent task except in critical emergencies. Twenty percent of the crew enrolled in PACE courses. Classes convened at 1000 and 2200 to allow both Teams to attend during their off-duty period. ESWS training was no longer a choice between professional development and sleep. Morale soared. Retention increased more than 10 percent and more than forty sailors requested 12 month tour extensions. When the plan to implement Blue/Gold first was announced in October 1998, the most common reaction was skepticism, especially among senior Petty Officers and Officers. A year later after putting Blue/Gold to the test on deployment, the almost universal reaction was: Why did we ever operate any other way? Naval Reserve CINCPACFLT Detachment 420 was tasked by COMNAVSURFPAC to provide a Management Assistance Team (MAT) to study Blue/Gold in **Lake Erie** and report on its effectiveness and applicability to other platforms. Their report, which is available on the COMNAVSURFPAC and **Lake Erie** web sites

concluded that; "The Blue-Gold system has great potential to greatly increase sustained combat readiness and vastly improve quality of life aboard Naval vessels." After receiving a briefing on the MAT findings, VADM Moore, COMNAVSURFPAC, agreed that Blue/Gold has significant potential for use in other SURFPAC ships and stated that Commanding Officers should be informed that he supports the use of innovative manning concepts such as Blue/Gold and Core/Flex.

USS **Lake Champlain** (CG 57) was the second ship to implement Blue/Gold and is reportedly having good success on deployment in the Arabian Gulf. For other ships interested in Blue/Gold, **Lake Erie** has developed a how-to manual that also is available on the COMNAVSURFPAC and **Lake Erie** web pages. **Lake Erie** is working with Afloat Training Group Middle Pacific to determine how Inter-Deployment Training Cycle (IDTC) events will be conducted in Blue/Gold ships. Those lessons will be added to the web site as they are developed. Eventually, Afloat Training Group Pacific will become the principle source of information and expertise on Blue/Gold and will assist SURFPAC ships with implementation.

Blue/Gold is not just a new way to write watch bills; it is a way to organize every aspect of the ship's operations and administration to provide a flexible and robust response to any contingency. The benefits to war fighting, safety, training, maintenance and ship's service operations are too numerous to mention in this short article. The advantages start with the peace of mind experienced by a CO who knows that, at any hour of the day or night, during peacetime or in crisis, half of his officers, chief petty officers and crew are awake, alert and ready to respond to any requirement whether conducting MIO in the Northern Arabian Gulf or circling a buoy off Norfolk. The advantages continue down the chain of command all the way to the most junior seaman who, in exchange for his enthusiastic contribution to his team's success, has been given 12 hours every day to set and achieve personal goals. Combat readiness and quality of life! As Captain Lenny Capello, **Lake Erie's** CO, is frequently heard to say; "You don't have to suffer to be great!" ■

*Editor's Note: LCDR Brian Fort was Operations Officer on board USS **Lake Erie** (CG 70) when he wrote this article.*

▽ **Lake Erie** did not UNREP every night, but intensified MIO ops with embarked SEALs were conducted every night on station. (USN)



Changes of Command

SURFLANT

COMPHIBRON SIX

CAPT R. L. Chapman relieved
CAPT S. C. Jasper

USS Yorktown (CG 48)

CDR Robert Kerno relieved
CDR Jefferey C. Johnstone

USS Gunston Hall (LSD 44)

CDR Mark E. Donahue relieved
CDR Grace Mehl

USS Ross (DDG 71)

CDR M. D. Hawley relieved
CDR D. M. Thomas, Jr.

USS Klakring (FFG 42)

CDR Stephen F. Davis, Jr. relieved
CDR J. S. Maynard

USS Carney (DDG 64)

CDR Michael J. Jacobsean relieved
CDR Tony M. Kurta

USS Barry (DDG 52)

CDR W. Perry Bingham relieved
CDR John M. Chandler

USS Boone (FFG 28)

CDR Jeffrey L. Morman relieved
CDR David W. Costa

USS Oriole (MHC 55)

LCDR Jonathan Christian relieved
CDR Michael A. Strano

USS Lican (MHC 53)

LCDR Carol Hotenrott relieved
CDR Scott S. Gordon

USS Chinook (PC 9)

LT Francis X. Castellano relieved
LCDR Doug L. Edson

SURFPAC

COMPHIBRON SEVEN

CAPT Stuart B. Markey relieved
CAPT Robert H. Howe

USS Rodney M. Davis (FFG 60)

CDR Eldridge Hord III relieved
CDR Thomas E. Mangold

USS Jarrett (FFG 33)

CDR Clayton B. Kyker relieved
CDR Kathleen McGrath

USS Curtis Wilbur (DDG 54)

CDR Ronald P. Roane, Jr. relieved
CDR Edward J. Quinn

SITREP

Navy Commissions USS Oscar Austin (DDG 79)

Norfolk, Va. – In a dramatic nighttime ceremony at Norfolk Naval Station, the Navy commissioned the USS *Oscar Austin* (DDG 79), the first Flight IIA Arleigh Burke class AEGIS destroyer, on Saturday, August 19.

On hand for the evening were a number of special guests, including principal speaker Dr. John P. White, former Deputy Secretary of Defense ('95 – '97) and public policy/national security lecturer at Harvard University's John F. Kennedy School of Government as well as Mrs. Dianne Reason, the ship's sponsor and wife of Adm. (Ret.) J. Paul Reason.

"This is a fantastic ship. It's a ship with a proud motto – Honor and Sacrifice," said Dr. White. "It's so fitting that it should be named in the memory of a brave, selfless young Marine – Oscar Austin. His example is so fundamental, so profound, so selfless."

Cmdr. Paul C. Smith, the ship's first Commanding Officer, gave the order to recognize the spirit of Private First Class Oscar Austin, forever a permanent member of the ship's crew.

"Executive Officer, bong aboard the spirit of Private First Class Oscar P. Austin." A spotlight symbolizing the heroic Marine made its way up the brow to the forecandle of the ship. Eight bells were sounded, followed by the announcement, "Medal of Honor recipient Oscar P. Austin, United States Marine Corp, arriving."

Mrs. Reason closed the ceremony with the traditional call to "Man our ship and bring her to life." At her cue, *Oscar Austin's* crew boarded under cover of darkness and smartly manned the ship. With the last Sailor in place, the pier exploded in light to reveal the most technologically advanced destroyer in the Navy.

Guests saw a remarkable ship and a monument to a heroic man who gave his life in Vietnam to save a fellow injured Marine. What they didn't see, however, were the sacrifices and dedication of the Sailors who breathed the tremendous spirit into this warship.

Between the installation of the last rivet and a ship's first underway period are innumerable hours of training and testing. A new ship must pass a series of rigorous trials of all its systems, a feat which requires training each Sailor – some 80 percent of whom have never been to sea – to flawlessly perform his or her duties.

In addition, even senior Sailors are faced with a steep learning curve. As the first ship of its kind, *Oscar Austin* is equipped with the most advanced combat systems in the world. In addition to more missiles, the ship boasts an upgraded AEGIS weapons system that integrates the SPY-1D radar system and advanced computers that manage the missile bays and the Vertical Launch System. The ship also will carry two SH-60B helicopters, allowing it to perform both anti-surface and anti-submarine warfare with greater flexibility.

Meeting these training demands requires the total commitment of the ship's crew. Training and preparation begins while a ship is under construction. Sailors train in classrooms and on board other ships to earn needed qualifications and certifications. Once the ship is finished, exercises and drills are run around the clock to ensure readiness, and long hours are the norm. Much of the training must be performed underway, which translates to frequent and lengthy separations from family and home.

Most agree, however, that the sacrifices are well worth making.

continued on page 44

CNP Stresses Importance of FITREP/EVAL Guidance

Millington, Tenn. (NNS) — While errors in fitness report (FITREP) and evaluation (EVAL) submissions have decreased considerably in the past year, there's still plenty of room for improvement—overall, about one in five reports is rejected.

“Our goal must be zero defects in fitness reports and evaluations when the packages leave the reporting senior's desk. Our people deserve that, and as leaders, we owe them that,” said VADM Norb Ryan Jr., Chief of Naval Personnel.

Performance evaluations are being rejected primarily due to non-compliance, incomplete summary groups and missing signatures.

Non-compliance: this includes reports that exceed the forced distribution limits for early and must promote; a competitive category (summary group) with a large number of personnel split into smaller groups and mailed in on different dates in an

attempt to get more early promotes; officers within the same category being grouped separately; and handwritten comments.

Incomplete Summary Groups: all reports within a summary group must be submitted in one package; if not, the forced distribution cannot be validated. Packages with incomplete summary groups will be returned to the command without action for consolidation and resubmission. A copy of the rejection letter will also be forwarded to the Immediate Superior in Command (ISIC).

Missing signatures from either the reporting senior or the member. All reports must have the signature of both the reporting senior and the member or, if the member is unavailable for signature and the report is not adverse, “certified copy provided” must be written in the member's signature block. Many of the errors in the performance reports can be easily corrected with a

continual reemphasis on the importance of timely, complete and accurate submissions. “Regardless of one's role in the fitness report and evaluation process, we must make every effort to ensure that all our people are thoroughly familiar with the proper procedures,” Ryan added.

In fact, feedback from the most recent E-8/E-9 selection boards indicated that command-wide fitness report breakouts have far more validity than departmental rankings, and one-of-one early promote fitness reports carried little weight unless accompanied by comparisons to other crewmembers. The boards also looked hard at reporting seniors' recommendations for promotion and Block 41 remarks about potential for future assignment. For more information, please see NAVADMIN 126/00, or contact the Performance Evaluation System customer service desk at 901-874-3309 (DSN 882), via e-mail at p311@per-net.navy.mil. ■

by LT Ingrid Mueller, Navy Personnel Command Public Affairs

Navy Surface Spouses Website

A new web page has been established to assist Surface Warfare spouses and their families to access information about the Navy communities in which they reside or to which they may be relocating.

The Navy Surface Spouses web site (www.surfacespouses.navy.mil) is dedicated to providing the most accurate and current information on Navy communities around the world. Up and operating since late April the Web site currently offers eleven regional links to Navy communities including Bahrain, Hawaii, and the Pacific Northwest. An additional three regional links will be added to the site in the coming months. The web site offers direct access to information about employment, schools, housing, educa-

tion and healthcare, local spouses clubs, conferences, and volunteer opportunities. The web page contributors are the spouses of Surface Warriors living in Navy communities around the world who help to keep the site relevant and current.

“This Website is about surface spouses helping other spouses to help make the sometimes difficult transitions in moving said Mrs. Deborah Mullen who originated the idea for the Website. By logging on to this Website and clicking on Bahrain for example, you can access information from the embassy, schools, housing healthcare, information about the culture of Bahrain as well as two links to tourism, all in one place. We couldn't have put this site together without the efforts of surface spouses

working all over the world on this site. Captain Bob Conway, the Director of Surface Officer distribution was another tremendous help, without him, this would have been a terribly difficult evolution. LTJG Walt Burton and LTJG Lamar Walker are the officers responsible for the Pers 41 Website who developed and designed the Surface Spouse Website. Both of these web masters have been terrific - patient, supportive, and quick to get information corrected or added to the site.”

So far the Surface Spouse Website is still growing as more and more sites are developed. Requests have been made for adding other resource links to the site, among these are Navy customs and traditions, protocol and etiquette. Located on the PERS 41 homepage, the Surface Spouse Web page can be reached at www.surfacespouses.navy.mil ■

CPO Selection Board Reports Outstanding Opportunity

Millington, Tenn. (NNS) — Thousands of first class petty officers will pin on their anchors in September as 5,161 sailors were recently selected for promotion to chief petty officer. Advancement opportunity for the FY-01 active duty E-7 selection board was outstanding; overall selection to chief was 26 percent, vice 19 percent last year. In session for just over three weeks at Navy Personnel Command (NPC) in Millington, Tenn., the 112 enlisted and 28 officer board members reviewed the records of 19,848 eligible candidates.

"The results of the E-7 board send our people the signal that we truly value them, we recognize the awesome work they do, and we are striving to increase advancement opportunities at every turn to keep them in the Navy," said VADM Norb Ryan Jr., Chief of Naval Personnel.

After careful review of thousands of records, the following five factors were suggested by the selection board as being the most important determinants of success:

- Documented leadership. Numbers of personnel supervised; participation and active leadership in major command-wide collateral duties are weighted more heavily than departmental duties.
- Evaluated deck time at sea as an LPO (leading petty officer).
- Command-wide breakouts in fitness reports (FITREPs)/ evaluations (EVALs) were very persuasive. The reporting senior's recommendations for promotion, as well as qualitative Block 41 remarks regarding potential for future assignment are also very important.
- Well-rounded, proper sea/shore rotation is a must.

• Adverse performance (i.e. non-judicial punishment, failure of physical readiness test, etc.) is a detractor. Keep in mind that boards may look at FITREPs/EVALs as far back as E-5, so it's extremely important for young petty officers to prepare accordingly for chief petty officer.

One thing all Sailors eligible for a selection board can do is carefully review their microfiche and enlisted summary record (ESR) at least six months before the board convenes. Microfiche and ESRs can be ordered from NPC using forms available on the Internet at

www.persnet.navy.mil/selectbd/sbpre.p.html. Once completed and signed, the forms can be faxed to NPC at (901) 874-2664 (DSN 882). A signature is required to process each form.

Selection boards rely on complete, up-to-date records to choose those most qualified for advancement. Ensuring your record contains your current FITREPs/EVALs and reflects all of your qualifications and achievements gives you the best possible chance for promotion. ■

By Navy Personnel Command Public Affairs

continued from page 42

"A pre-commissioning is just about the greatest career opportunity a Sailor could have," said **Oscar Austin** Command Master Chief Dana Ross.

"It's a challenge, but it's one of the best ways to train," added OS2 Andy Fauss.

FCC Anthony Corona credits "the best leadership I've ever seen," with the ship meeting its training requirements and sailing through sea trials. The sentiment is returned.

"We have a great group of people," said Executive Officer Lt. Cmdr. Thomas Schwarz. "Every man and woman aboard this ship has worked hard to get us where we are today and I'm proud to serve with each of them."

IC1 Richard Cleveland best sums up the prevailing sentiment on the **Oscar Austin**.

"It's the best ship I've ever been on," he said with pride.

Constructed by Bath Iron Works in Bath, Maine, the ship was christened Nov. 7, 1998. ■

By ENS Christine Phillips COMNAV-SURFLANT Public Affairs Team

Navy Christens Destroyer Bulkeley (DDG 84)

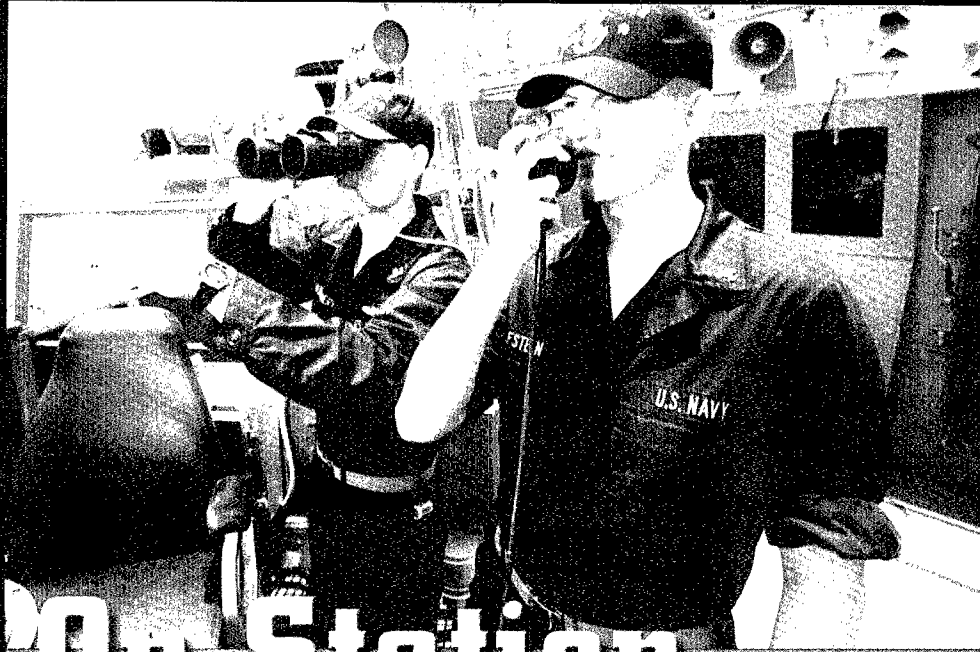
The newest **Arleigh Burke**-class guided-missile destroyer, **Bulkeley** (DDG 84), was christened Saturday, June 24, 2000 at Litton's Ingalls Shipbuilding, Pascagoula, Miss.

The ship is named in honor of the late Navy Vice Adm. John Duncan Bulkeley, (1911-1996). Bulkeley was the recipient of the Medal of Honor, Navy Cross, and numerous other decorations for heroic actions during World War II.

Former Kansas Senator Bob Dole delivered the ceremony's principal

address. Bulkeley's daughters, Regina J. Day, Joan I. Stade, and Diana J. Lindsay; daughter-in-law, Carol A. Bulkeley; and Commander, U.S. Pacific Fleet Adm. Thomas B. Fargo's wife, Sarah, are ship sponsors.

Bulkeley is the 34th of 58 **Arleigh Burke**-class destroyers currently authorized by Congress, and the 14th of this class to be built by Ingalls Shipbuilding. ■



On Station

USJFCOM

USNS *Apache* (TATF 172)
USS *Gonzalez* (DDG 66)
USS *Grasp* (ARS 51)
USS *Moosebrugger* (DD 980)
USS *Nicholas* (FFG 47)
USNS *Paxtuxent* (TAO 201)
USS *Stout* (DDG 55)
USS *Taylor* (FFG 50)
USS *The Sullivans* (DDG 68)
USS *Thorn* (DD 988)

USCENTCOM/5th Fleet

USS *Ardent* (MCM 12)
USS *Bon Homme Richard* (LHD 6)
USS *Bridge* (AOE 10)
USNS *Catawba* (TATF 168)
USS *Denver* (LPD 9)
USS *Dextrous* (MCM 13)
USS *Elliott* (DD 967)
USS *John C. Stennis* (CVN 74)
USS *Laboon* (DDG 58)
USS *Lake Champlain* (CG 57)
USS *Pearl Harbor* (LSD 52)
USS *Port Royal* (CG 73)

USS *Rentz* (FFG 46)
USS *Russell* (DDG 59)
USS *Samuel B. Roberts* (FFG 58)
USNS *Tippecanoe* (TAO 199)

USEUCOM/6th Fleet

USS *Anzio* (CG 68)
USS *Barry* (52)
USNS *Big Horn* (TAO 198)
USS *Cape St. George* (CG 71)
USS *Dwight D. Eisenhower* (CVN 69)
USS *Emory S. Land* (AS 39)
USNS *Kanawia* (TAO 196)
USS *Kaufman* (FFG 59)
USNS *Laramie* (TAO 203)
USS *La Salle* (AGF 3)
USS *Mahan* (DDG 72)
USS *Mount Baker* (TAE 34)
USS *Oak Hill* (LSD 51)
USNS *Sirius* (TAFS 8)
USS *Thunderbolt* (PC 12)
USS *Trenton* (LPD 14)
USS *Wasp* (LHD 1)
USS *Whirlwind* (PC 11)

USPACOM/7th Fleet

USS *Belleau Wood* (LHA 3)
USS *Blue Ridge* (LCC 19)
USS *Chancellorsville* (CG 62)
USS *Curtis Wilbur* (DDG 54)
USS *Cushing* (DD 985)
USS *Decatur* (DDG 73)
USS *Fife* (DD 991)
USNS *Flint* (TAE 32)
USS *Fort McHenry* (LSD 43)
USS *Frank Cable* (AS 40)
USS *Gary* (FFG 51)
USS *Germantown* (LSD 42)
USS *Guardian* (MCM 5)
USS *Hopper* (DDG 70)
USS *Jarrett* (FFG 33)
USS *John S. McCain* (DDG 56)
USS *Juneau* (LPD 10)
USS *Kitty Hawk* (CVN 63)
USS *Mobile Bay* (CG 53)
USS *O'Brien* (DD 975)
USS *Patriot* (MCM 7)
USNS *Rappahannock* (TAO 204)
USS *Safeguard* (ARS 50)
USS *San Jose* (TAFS 7)
USNS *Spica* (TAFS 9)
USS *Vandegrift* (FFG 48)
USS *Vincennes* (CG 49)
USNS *Walter S. Diehl* (TAO 193)
USNS *Yukon* (TAO 202)

SOUTHCOM

USS *Doyle* (FFG 39)
USS *Estocin* (FFG 15)
USS *John A. Moore* (FFG 19)
USS *Samuel Elliot Morison* (FFG 13)
USS *Valley Forge* (CG 50)

