



## 7.5 ENERGY SECURITY, CLIMATE CHANGE, AND NATIONAL SECURITY

Vice Admiral Dennis McGinn

This has been a very information-intensive conference, so I am going to try to avoid going over topics that have already been

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*Vice Admiral Dennis McGinn (Retired) took the helm at RemoteReality in January 2008 after 5 years with Battelle Memorial Institute, where he was a corporate officer and led the energy, transportation, and environment division. Additional assignments with Battelle included serving as Vice President of Strategic Planning and National Security Business Development and as a Director on the Board of Brookhaven National Laboratory. Prior to joining Battelle, Admiral McGinn served 35 years with the U.S. Navy as a naval aviator, test pilot, aircraft carrier commanding officer, and national security strategist. His last assignment was Deputy Chief of Naval Operations for Warfare Requirements and Programs at the Pentagon, where he led the development of the U.S. Navy's future strategic capabilities. As Third Fleet Commander, he was recognized for leading great advances in operational innovation, the rapid prototyping of sea-based information technology, and international naval force experimentation and coordination. Admiral McGinn serves as a Director on the Board and Strategic Architect of the National Conference on Citizenship and as a Senior Policy Advisor to the American Council on Renewable Energy, is a member of the Center for Naval Analyses Military Advisory Board, and is a senior fellow for international security at the Rocky Mountain Institute. He is actively engaged in national forums to highlight the close link between energy and international security and the imperative for innovative government policies, focused investments, and effective deployment of technology to create a high-quality, sustainable global environment. Admiral McGinn previously served as Chairman of the U.S. Naval Institute Board of Directors and served for 3 years as a commissioner on the National Commission on Disabled Veterans' Benefits. He received a B.S. degree in naval engineering from the U.S. Naval Academy, attended the national security program at the Kennedy School of Government at Harvard University, and was a Chief of Naval Operations strategic studies fellow at the U.S. Naval War College.*

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discussed, although I may touch on a few of those just to put some of my remarks in context. As Rear Admiral McDevitt has said, we want to get to your questions, hear your ideas, and have a real discussion so that we can all leave here with a mutual understanding of the imperatives that climate change and energy impose on our nation's naval forces.

I am a member of CNA's Military Advisory Board. Although I will not reprise all of General Wald's excellent presentation, I would like to reiterate the fact that energy security, climate change, and national security—international security, really—are inextricably linked. One cannot develop plans or strategies for any of those factors separately without carefully considering all three in a comprehensive way. It is critically important that we think about how things done in one area affect what happens in the other areas.

Let me give an example. I would say that one of the key takeaways from this conference is that business as usual is not an option for dealing with the imperatives that climate change and energy impose on the way that we organize, equip, deploy, and employ our naval forces, whether in the Pacific or elsewhere. If we continue to operate on the same old assumptions about the availability of fossil fuel, the relatively cyclical nature of the weather, a reasonably stable climate, and mission sets that continue to be dominated by kinetic warfighting scenarios, we are going to be setting ourselves up for some real serious problems down the road.

Because we have to plan so far in advance to develop our future capabilities and then use those capabilities to build out the capacity to meet future mission needs, we have to start thinking about those things and acting on them now. Business as usual is not an option. That is not a comfortable thing to hear because we like stability. We like the fact that the assumptions that have served us so well in the past, that have served as the basis for building the capabilities now extant in our naval forces—Navy and Marine—are adequate to the task. But we need to challenge those assumptions, and we need to act on those challenged assumptions.

Let's begin by talking about mission capabilities and capacities in the context of what I have just said. The mission of our naval

forces is going to change in two ways. I will go from the relatively low end of the mission spectrum, if you will, to something a little bit higher. On the low end, because of the effects of climate change, many of which were covered very well by Commander Cole and in Roundtable 1, we are going to see more humanitarian assistance and disaster relief scenarios. In addition to increasing in frequency, we can expect that an increase in scale will be needed to accommodate the greater intensity of the underlying weather events. This will mean that the United States and U.S. naval forces are going to be forced into a higher operations tempo trying to deal with these humanitarian assistance and disaster relief scenarios, or else we as a nation will choose not participate to because we are capability limited or capacity limited.

I think that, given our history, our tendency is going to be to continue to try to meet the need. Admiral Keating talked about some of the wonderful responses—those that were actually executed and those that were offered but turned down for whatever reason. He talked about the aftermath of Katrina. He talked about the aftermath of the terrible tsunami and various other weather events on the mainland of Asia. Such events give us a sense of the large scale with which we can be confronted.

Right now we have foremost in our mind the terrible aftermath of the earthquake in Haiti. Although this catastrophe was not caused by climate change, it gives us a sense of the scale for future humanitarian assistance and disaster relief operations. We have heard Bangladesh mentioned several times. So imagine, if you will, that this country, which over centuries has been battered by typhoon after typhoon in the Bay of Bengal, is confronting more frequent and more intense typhoons.

Let's put aside the issue of sea-level rise for the present and focus on the temperature of the ocean. Rear Admiral Titley, the Oceanographer of the Navy and the Head of Task Force Climate Change, can tell us that the intensity of typhoons and hurricanes is directly related to the amount of energy in the water. Assuming that there is no sea-level rise but assuming a much greater intensity of cyclonic activity, tidal surge, and wind damage, we are looking at a scenario in which literally millions of people who subsist

on coastal irrigation-fed farms and rice paddies, or who subsist on fisheries that require that they have fishing boats and nets and structures available to catch fish, are wiped out not for weeks or months, as has been the case in the past several hundred years in Bangladesh, but literally for years.

So then you have literally millions of environmental refugees who need the basics of life. Where are they going to go? Having them tramp off toward India will ratchet up tension in the region and put a tremendous burden on India as well as the people displaced from Bangladesh. It is interesting, too, that although I used Bangladesh for my example, I could have just as well chosen the Philippines, Indonesia, Vietnam, Taiwan, mainland China, or all of the islands of Micronesia.

So let's talk about some things that really get nations fighting mad. Such as, where is my oil going to come from? We have a very energy-intense global economy. We learned from Admiral Keating that a large percentage of the oil used by Asian nations passes through the Malacca Strait. Well, let's fast-forward 10, 20, 30 years, and imagine what the supply-and-demand curves for this essential lifeblood of the global economy are. I will tell you this: It will not be more supply and less demand.

No, it will be just the opposite. The supply-and-demand curves for petroleum are diverging. How does the market respond when demand exceeds supply? Prices go up. Eventually, you are going to get to a point at which the issue is not one of price but rather one of availability. Can we get the oil we need? And then you start getting into some really nasty nation-on-nation or region-on-region scenarios in which we are literally, as the effects of climate change go on in the background, focused not on competition, but on conflict over energy resources. And then you really get back into the kinetic mode of strategic planning in which we feel so comfortable.

So what are the capacities that we have now that are relevant to the kinds of scenarios that I just mentioned, or the kind of mission changes that we should anticipate? As Admiral Keating made clear, our response, our presence, and our being there are extremely important. Thanks to our tremendous lift

capability—both air and sea—and our tremendous medical capability, our ability to support such operations is first rate. But those capabilities are not perfectly suited for the kinds of scenarios in the numbers (in terms of people) that may be affected by future climate change-induced catastrophes.

So we need to think carefully about what kind of lift we have, what kind of supplies we have, and what kind of afloat prepositioning capabilities we have to deal with more intense, more frequent, and more widespread humanitarian assistance and disaster relief operations. We also need to think about what the likely scenarios are if in fact my prediction of intense competition over oil comes true. What is that going to do? What do we need to be doing in terms of working with allied nations? What kinds of kinetic capabilities do we need to develop?

We also need to identify nonkinetic capabilities that will preclude the need to have to get into a shooting war over oil. Capacity is probably the toughest challenge because, if we feel that we are not adequate to be everywhere that we would like to be, can you imagine what it might be like in the future that I have highlighted? So what do we do about it?

We need to think carefully in two terms. One is, what can we do to mitigate the effects of climate change? Do we need to change how we equip and employ naval forces? Second, we need to identify the best ways to adapt to the conditions that we are not going to be able to mitigate.

To address these issues, we need to make our naval forces less reliant on fossil fuels. We also need to become more energy efficient from the installation side. I am assuming that the great efforts that have been ongoing for a number of years in trying to improve energy efficiency will not just continue but accelerate. We should benefit from the broadened portfolio of energy sources that are being developed for the commercial sector. In addition, we need to make changes the pointy end of the spear along the lines proposed by Colonel Charette. What can we do in terms of ship design, operational patterns, and protocols—the basic technology

of what we do as sailors and Marines—to become less reliant on fossil fuel?

What can we do to broaden the sources of fuel to power our naval forces? Secretary Mabus discussed his goals of deploying a “green” battle group by 2016. That certainly is a very high mark for everyone to shoot for. That goal, along with that of reducing energy consumption by 2020, is an excellent example of a broad and long-range goal that will lead to changes in how we design, build, and employ our naval forces. But those are top-down goals. We also need to start thinking from the bottom up and see what additional changes we can make.

In terms of identifying the capabilities and capacities needed to deal with the effects of climate change, we should work closely with allied nations around the world and especially in the Pacific. We need to engage in serious conversations about the types of humanitarian assistance and disaster relief scenarios that might result from climate change. It might be drought in some places; in others, it might be inundation by water, either from sea-level rise or from the skies. We need to work with the nations and regions that will be affected to help them improve their ability to adapt to impending changes in both regional weather patterns and global climate effects such as sea level rise.

We need to start those conversations now. Then, working with the nations around the region, we need to start making appropriate changes in such areas as infrastructure and agricultural patterns. Does this sound like a naval force mission? If you think of sailors out in the fields with bags of seeds, no it does not sound like a naval mission. I am talking about conducting the discussions and then having our partner nations do what they do best, aided by us in what we do best. And that could be the introduction of technology.

At the tactical level, Colonel Charette told a particularly compelling story about solar-powered water-purification units. His example provides a usable model that we can apply to nations whose populations barely subsist, barely have enough water to get by. When you provide them with clean, renewable, and affordable

energy technology, through the State Department or the United States Agency for International Development (USAID), or, more likely, because we are there in more places more of the time, through U.S. naval forces, you introduce a whole new capability. Where you have clean, affordable, renewable energy, you have water, whether it be from purification of surface water, from pumping water from fractionated rock underground, or from desalinization, whichever is most appropriate.

Where you have energy, you have communication because you can use the energy to recharge your cell phone or plug in a computer to find out the latest things that can be done about the diseases that are in the area. By virtue of introducing suitable energy technology, you lift the quality of life and reduce the likelihood that climate change will have destabilizing effects.

As one last example, I would like to describe an exercise that we conducted in 2000, called Rim of the Pacific (RimPac). Before that time, our RimPac exercises had been gun-and-missile-type events. In RimPac 2000, we embedded a smaller-scale event called Strong Angel, in which we included real players from nations around the rim of the Pacific in order to couple the U.S. military with non-governmental organizations and other governmental organizations to conduct humanitarian assistance and disaster relief command and control. We worked with the United Nation's World Food Program, USAID, and representatives from all over in a very, very tasking scenario.

I think this exercise effectively illustrates the points that I have been making about trying to think in different terms. We had deployed on the side of a large lava slope on the big island of Hawaii. This is a part of Hawaii that you do not see in travel posters. It is more like the surface of the moon than it is the Hawaii seen in brochures. We are out there and we are setting up the command post tents. We have amphibious ships that are offloading. And at about the time 1300 rolls around, somebody says, "Hey, my computer is starting to wind down." Someone else chimes in, "So is my cell phone."

So, the next question is, “Where is the generator?” The answer comes back: “The generator is going to be offloaded the day after tomorrow.” And everybody is scratching their heads saying, “Oh man, how can you do a command post without a generator? What are we going to do, send out runners?”

Fortunately, while planning for the exercise, we had thought a little bit about introducing alternative energy into the equation. We had even brought along some flexible solar panels. Pretty soon, our technical wizards got it all hooked up. The lights go on in the command post. The computer batteries and cell phone batteries are charging. We called down to the amphibious ship and said, “It isn’t going to be the day after tomorrow; get that generator set up here right now.”

At the same time, we wanted to have good satellite communications capability, and there was a small mound 400 or 500 feet high in the vicinity of the simulated refugee camp. So, instead of going with the usual heavy diesel-powered generator set that we would normally use, we had brought along a small fuel cell. We took the fuel cell, put it up on top of the little hill, and hooked it up to the satellite communications terminal. We had superb satellite communications throughout the exercise.

And not one time did we lose power. Not one time was it necessary for a perfectly good sailor or Marine, who could do something more important, to drive a Hummer up the top of the hill to refuel a diesel generator set.

These two examples illustrate how the introduction of technology can change the way that we do things. We have to get away from business as usual but at the same time not totally forget that kinetic wars are still possible, and we have to be able to do those high-end operations very, very well.

We need to realize that as we prepare, organize, and equip our naval forces for that end, the other types of missions—be they for response, mitigation, or adaptation in increasing the resiliency of the region to the effects of climate change—they are not automatically included in that capability, and we need to think carefully about how we can increase the capability set and how we can

increase the capacity to deal with those types of scenarios. We need to do it because we know that the mission is going to change in significant ways as a result of the competition for fossil fuel and the effects of climate change.

It occurs to me there is one other element of mitigation that is very low tech. Those countries who are facing inundation should be talking to the Dutch. They should be going down and looking at New Orleans, which is 80 feet below sea level and figuring out how you construct dikes that do not leak. Those skills should be part of the toolkit we have available at the absolute opposite end of the high-tech mitigation solutions.