8.2 THE WHO, WHAT, WHERE, AND WHEN OF CLIMATE AND ENERGY

Dr. Ed McGrady

I have the unenviable challenge of trying to synthesize a diverse group of opinions and provide an integrated view of how the Navy is going to train, plan, equip, and operate in the future; and I have to do it in 10 minutes. Whenever I have that kind of problem, I always think of the basic law enforcement investigative

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Dr. Ed McGrady is a senior research analyst at CNA. He develops games and conducts studies on a wide range of topics from force structure and planning to operational deployment of medical forces. He is currently working on projects related to the effect of climate change on U.S. military involvement in humanitarian assistance and disaster relief operations. Dr. McGrady's research work includes studies of humanitarian emergencies, disaster response operations, the role of naval and other military forces in medical humanitarian missions, cooperation between military forces and nongovernmental organizations, and the role of military forces in domestic disaster response. He has led studies examining recent hospital ship deployments, including the tsunami relief efforts and follow-on humanitarian medical assistance operations in the Pacific. During the Katrina response, he led a group of 10 analysts examining the full spectrum of disaster response operations, from military support to civil authorities to internal Navy disaster response. He has also examined the role of military forces in complex emergencies, such as occurred during the U.S. intervention in Haiti. As part of that effort, he deployed with U.S. forces onboard the USS* Enterprise. *Dr. McGrady has written extensively on the role of military forces in humanitarian assistance and disaster relief operations, authoring papers on such diverse topics as the role of naval forces in providing emergency communications support, the nature of these operations and their impact on national security objectives, and the types of emergencies that military forces typically are called upon to support. He holds a B.A. in chemical engineering from the University of Florida and a Ph.D. in chemical engineering from the University of Michigan.

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process in which one tries to identify who, what, where, and when, but in this case, I am not going to talk about why. But that is how I am going to try to organize things.

I am going to talk about the time frame, I am going to talk about what you seemed to be interested in as you talked, I'll talk a little bit about where these kind of things seem to be happening, and I'll talk a little bit about some of the other issues that I see.

Let's begin with the "who" question. I tend to think of things in terms of audiences. Who are the audiences that have been talked about over the last few days? In our case, I think there are three. First, there are the peers—the people you see as more or less equivalent to the United States. They face many of the same kinds of problems and the same kinds of challenges, and they have the same kinds of requirements strategically and nationally that we have. This group includes Russia, China, and Canada. Discussion about this group really focused on the Arctic; we heard about the challenges of managing and competing for resources in the Arctic. In fact, competition really factors in a lot when you start talking about peers and peer developments.

At the same time there is another group—what I would call populations at risk. These could be overseas, or they could even be domestic—Phoenix, for example, or New Orleans. The stability of these groups may be affected by climate change or by changing energy prices. It is not so much that these groups or countries are going to suddenly light their hair on fire and start running around and doing crazy things but rather that the pressures are going to mount as time goes on. Those pressures include the effects of climate change and changes in energy but also things like water, food, sea level rise, and disasters.

The third group is our own forces—our own Navy, Marine Corps, and Coast Guard. How do we do better with energy, how do we save money on energy, and how do we move to alternative fuel sources so that we are not so strategically reliant on specific sources and so that we can take care of our own mission and the problems within our own lifetimes?

I also think that you can divide up the "what" question into three different categories. The first "what" really talks to that group of peers with whom we are competing. That is the question of security: of certainty in the supply chain for oil, of sovereignty issues over the Arctic, of the cost of operations, as well as how do we deal with the tactical logistical problem of reducing the amount of fuel we send to our forward forces. But then there is also the whole stability issue for the populations at risk. As climate changes and as energy problems become more pronounced, those groups are going to be under more pressure from factors such as water, migration, and food, and that can ultimately result in the need for humanitarian assistance and disaster relief (HA/DR) responses.

There are projections that climate change may affect the number and severity of storms, including hurricanes, which will increase the demand for HA/DR responses. This, in turn, will place more stress on the security aspects of the overall mission. Well, if you look at what the U.S. Navy actually responds to, it responds very frequently to higher-category hurricanes. So as you start comparing what the Navy does to what is going to happen in climate change, many of these missions begin to overlap. You begin to see that stresses could be placed on the forces to take on a larger HA/DR role. I'll talk a little bit about HA/DR in a minute.

Before I do, however, I'd like to talk about the entire resource issue. And by resources I do not mean more aircraft carriers; I mean things like oil and other resources that the peer competitors compete over. We heard a lot about that in terms of supply (for example, developing new oil fields and methane hydrates) as well as the price and the effect that price has both on the security mission and on stability.

Then there is a fourth area that I call the policing and the fairness of the commons. I think it is very interesting that we brought this up in terms of geo-engineering. But there is also a question of mitigation in emissions that revolve around this issue. If you have a situation where lack of carbon in the atmosphere becomes a resource, and as an industrialized nation or even a developing nation, the more of that negative resource that you capture, the better your economy will do, you've now set up an immediate

competition over how much you are going to be able to emit. And if by emitting you are affecting other countries, you may encounter security issues. If someone unilaterally initiates geo-engineering activities for whatever reason, that may affect the commons and trigger a security response.

So I think that this is a very interesting area that I have not heard much discussion of, but it was very interesting that it was brought up here. I think that all three of these work with the different audiences to pull apart what different impacts and what different missions the Navy is going to potentially face.

There is also the question of "when," and I think this is really important because one of the things it is very easy to do is get the dynamic element of climate change ahead of ourselves. Climate change is a process. It is not something that is going to suddenly happen tomorrow, it is almost like boiling the frog. Things are going to get hotter, the mean surface temperature is going to go up, and therefore things are going to change. But they are going to change over a relatively long period of time.

There are things that we are talking about in this conference that occupy the "now" time frame. Those are the things that the Navy actually has control over for the most part. The Navy does not necessarily have a lot of control over climate change. Sure, they can turn off the lights or move to compact fluorescent bulbs on their ships, but that is not going to stop climate change, as we heard in Professor Lewis' presentation.

Instead what the Navy is focused on are things like alternative fuels, energy security, and trying to decouple the Navy's combat capability from the need to continue to have a fuel logistics train. There is also the question of the Arctic. The Arctic sea ice is withdrawing; it is moving even faster than a lot of the other issues with respect to climate change. And that triggers things that the Navy is accustomed to dealing with, like sovereignty issues and freedom of navigation.

Those things are relatively easy to deal with now because we have the framework both intellectually as well as physically and resource-wise. However as you begin to go to the later effects

and as the stress from all of these various climate effects begins to mount, there are other things that come online. The stability issue becomes more and more important, and then the question becomes, what are the tactical and operational impacts for increased instability around the world for the Navy and the types of missions it might have to engage in? And that is where things like HA/DR become more important.

But the other question is, where would this happen? This question actually stimulated this whole briefing in that I saw different geographical groupings for the topics addressed at this conference. We started off in the north dealing with our peer competitors, who are mostly focused on the north, mostly toward the North Pole. Issues regarding security, fuels, and the Arctic all tend to be northern peer competitor issues. Then you go to the central band, where you have a lot of the more stressed states; moreover, many of these states are far less robust than are the states in the north. In those areas, concerns over climate and energy tend to be more in the future in some ways. Sure, they are having HA/DR operations now, but most of these countries are under some form of development regime. In the future, climate change will impact these countries more than those in the north given their overall lack of resilience. As a result, many of the Navy's HA/DR and security assistance missions are likely to occur in the center. It is interesting to note that the state fragility index shows that the countries in the center have the highest index values. And they are the ones that may be impacted more severely by climate change.

Then our last session focused on Antarctica, Australia, and New Zealand. As the climate continues to warm, it is conceivable that what is happening in the Arctic now could become an issue in Antarctica as well.

So I think the conference moved from the north through the central band, where we were talking about HA/DR, and then finally wound up in the south. We also tended to move from issues that matter to us now to issues that will matter for us in the future.

The other thing I tried to do in the conference is look for feedback loops, things that would reinforce each other. I saw two that

I thought were interesting. One was this concept of "Yay, the ice is melting; we can go drill for oil in the Arctic." Well, let's just think about that response. If climate change is causing the ice to melt, which uncovers more oil reserves, which allows us to drill more carbon, which then allows us to burn more carbon and put more carbon into the atmosphere, then have not we created a feedback loop that will exacerbate the overall problem of climate change?

If you look at the area of the commons, eventually as you go from 2020, to 2030, to 2040, countries will start going under water. Eventually this may become as much of a national security issue as it is a climate change issue and may start changing the mission set for the Navy and the things that we see as an actual threat.

On a positive side, we had a feedback loop where the Navy is setting standards, the Navy is setting emission goals, the Navy is setting requirements, and then those requirements trigger industry to build the capability and then potentially create a negative feedback loop that decreases the overall problem. Still, a lot of questions remain. First of all, Climate and Energy—that is the title of the conference. They are related. At a strategic level, climate change and energy are obviously related.

But at the tactical level—the "do level" for the Navy—energy and climate change are different. Their issues arise on different timelines; they address different sets of problems. The Navy will need to develop specific climate-related and energy-related responses. In one case, it may need to potentially increase HA/DR and potentially change mission sets. In the other case, it may need to use alternative fuels and consider different ways to think about fuel. So one of the things that struck me is that a long time ago somebody said, "Oh, let's call it CBRNE—Chemical, Biological, Radiological, Nuclear, and Explosive." And that name stuck.

I cannot tell you the number of times I had to sit down with decision makers and explain to them that chemical is not the same as biological and is not the same as nuclear. So I think we need to be careful in associating the terminology of climate change and energy. Because if it sticks and it goes down the road 10 or 20 years from now, you could end up with a situation where things are

getting confused in the decision makers' minds. Particularly at the operational and tactical levels, we need to make it clear that some of the things that we'll need to do will differ between the two.

The other thing is that climate change is dynamic. There is a timeline associated with climate change; it is not going to happen at a defined event where the cameras can show up and you can put it on the evening news. What are the key decision points that will trigger some of the decisions that we have to make? We said one of the islands going underwater might be one of those key decision points. There are other things that might happen that might trigger important decisions. What will these decisions look like? I do not know, but that is, I think, something we need to be working on. We also need to think about what the Navy should be doing now because you have some time. That may not be the case with energy—there are things that we need to do now, but it may be quite a ways away before you are actually going to see the effects of climate change on much of the Navy's mission set.

But, we should still ask, what do we need to be doing now to change those mission sets or think about your mission sets? I think the big question is, what is the role of the Navy in HA/DR? I thought it was very telling that the senior officers who have recently been at the Combatant Commands spent considerable time talking about the Navy's incredible ability to provide phase zero engagement operations; that is, disaster response in environments like Katrina and Haiti where the Navy is flexible, is able to show up early, takes a lot of initiative, and has an incredibly good story to tell with respect to HA/DR. But for some reason, that story is not translating inside the Pentagon into "Gee, we've got to get some more of this HA/DR capability from the Navy."

Instead, a lot of the focus appears to be, at least from what I have seen, directed at improving our capability to deal with our peer competitors (the more classical threats) because that is what gets traction within the building. So I guess my question is, what is the story that the Navy needs to tell in order to capture the HA/DR mission as a phase zero capability that allows them to take advantage of it?

Finally, what are the questions that we really should be asking given that we've got a little bit of time on the climate change side? My first question is, what does that long tail in the distribution mean? Are we doing gaming? Are we doing modeling, simulations, and analyses to support understanding what that long tail means? I do not know. Also, I think the question becomes, and we've heard a lot about it here, how do we organize the interagency for true collaboration in dealing with a lot of these phase zero events? We need to begin collaborating now in an integrated way to make sure all of the capabilities are melded properly. If we can get that right, we'll be better prepared when climate change begins to provide additional stresses.

Finally, I think the Navy has a tremendous advantage in being present forward and being able to integrate not only with our own nation's interagency but also with the interagencies in other countries because it frequently visits those countries and works with their personnel. So how do we do a better job of integrating with foreign disaster response?

That is my attempt at organizing what I saw in terms of who, what, where, and when, as well as identifying some of the key issues that came out of the conference.