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SCIENCE AND TECHNOLOGY

ON

ENSURING OPERABILITY DURING CATASTROPHIC EVENTS

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INTRODUCTION

Chairman Reichert, Ranking Member Pascrell, distinguished members of the Committee, thank you for inviting me here today to discuss the subject of ensuring operability during catastrophic events. As the acting Assistant Secretary of Defense for Networks and Information Integration (NII)/Chief Information Officer (CIO) of the Department of Defense, I am responsible for enabling the warfighting, business and intelligence processes of an enterprise by ensuring agility, situational awareness, and effective corporate decision-making through the use of information and communications technology (ICT).

Warfare in the 21st Century, the core business process of the Defense Department, must be net-centric, meaning so well connected that well-trained professionals can self-synchronize their behavior with many others across vast distances, with devastating effect. Victory is dependent on discovering the enemy, accessing data, making decisions, and executing operations more rapidly and effectively than your adversary. Let me begin by saying that the communications and command and control (C2) lessons we are learning from the Federal, state, local, and commercial responses to Hurricane Katrina appear consistent with the lessons DoD has learned in the conduct of Humanitarian Assistance and Disaster Relief (HADR) missions across the globe. Moreover, these lessons appear consistent with those lessons learned during stabilization and reconstruction operations in Afghanistan and Iraq. All of these situations involve high-levels of complexity, large populations, and the destruction of basic information and communications infrastructure. There is also a commonality of purpose that must be

organized, coordinated, deconflicted, and executed as efficiently and effectively as possible, using multiple sources of support – some of them totally unfamiliar with one another.

Communications – particularly wireless communications – are *the* critical enabler of all other functions in any disaster relief operation, along with the sensors to let you know what's happening and share the information and the ability to command and control those functions and information. These are all mission-critical functions. Hurricane Katrina was no exception. Without effective communications, every operation will suffer debilitating inefficiencies, some leading to ineffectiveness. My experience indicates that the first priority in both international and domestic situations is the establishment or restoration of wireless communications. Establishing or reestablishing communications has become a first-order requirement that must occur contemporaneously with rescue operations. Communication and information, when used appropriately, synergize the rescue response. It is imperative to take advantage of everyday technology to rapidly coordinate the rescue of our citizens across the entire spectrum of the crisis until its conclusion.

By now, the members of this Subcommittee recognize that the Department of Defense and civilian responders from across the spectrum of Federal, state, and local authorities have matured into the post-September 11 world with different lexicons. The mission of fighting and winning this nation's wars is very different from responding to catastrophes spread across vast distances, regardless of their cause. Different lexicons are to be expected. America has a long tradition of carefully separating military and civilian

functions, especially in our homeland. My experience, however, tells me that when Mr. Canterbury of the Fraternal Order of Police testified before this Subcommittee on September 29, his reference to command and control is the same concept that General Pace, Chairman of the Joint Chiefs of Staff, refers to using the same words. The ability to lead a complex organized operation requires situational awareness and the ability to communicate with everyone participating in that operation. The planning process establishes the social networks and procedures that give people the agility to adapt and overcome the unanticipated.

CATEGORIZING CHANGE

From my experiences since September 11, I have come to use a three-part construct to describe the actions necessary to ensure operability in catastrophic events internationally and domestically. These categories include: 1) technical capacity development; 2) "social network" development through planning, interaction, and collaboration; and 3) doctrinal changes and training.

TECHNICAL CAPACITY DEVELOPMENT

During the past 10 years, the U.S. military has honed its C2 skills in multiple deployments involving a mixture of war-fighting, civil affairs, humanitarian assistance, disaster relief and stabilization and reconstruction operations. The 1990's saw such deployments in Haiti and the Balkans, and they have only accelerated since the 9-11 attacks, with deployments in Afghanistan and Iraq. More recently, U.S. forces have been instrumental in providing key elements of the initial humanitarian responses to global disasters, including the tsunami in Southeast Asia, the recent earthquake in Pakistan and

the subject of today's hearing, Hurricane Katrina. All of these deployments have highlighted the increased need in the Department to communicate, collaborate, translate, and cooperate outside the closed networks required for military operations. Unlike the military, which always travels with its own power and infrastructure, civilian responders encountered command and control issues at the operational and tactical levels due to the devastation of the civilian-response infrastructure. Technology designed to operate without stable power sources in the austere environments of developing countries, is available today. Working with industry, these innovations can help to increase the survivability of tactical civil responder systems.

As stated earlier, when forces assigned to U.S. Northern Command and National Guard units deployed with military communications, they were once again ill-equipped to communicate with civilian responders struggling with a lack of communications infrastructure. Therefore, the Federal government must expand its capability to rapidly deploy commercial-off-the-shelf networks making use of satellite links, wireless local area networks (LANs), laptop computers and "plug-and-play" equipment to bridge the gap created by a devastated civil infrastructure.

The lack of interoperability of first responders' communication equipment also hindered the effectiveness of operations. This problem won't be resolved by everyone buying the same product. It will likely be solved through collaborative efforts involving spectrum allocation and agreement both within industry and in the first responder community on common data standards. In the near term, we must continue to encourage the development and purchase of technology that bridges these disparate systems.

In the area of technical standards, one of the critical waveforms that DoD and DHS have agreed upon as essential to become interoperable under DHS's SAFECOM Program has been the Association of Public Safety Communications Officials (APCO) Project 25 (APCO-25) standard. The primary objectives of APCO Project 25 are to: (1) enhance functionality of equipment and capabilities focused on public safety needs, (2) ensure competition among multiple vendors through an open systems architecture approach and (3) achieve effective, efficient and reliable intra-agency and inter-agency communications. Our two agencies have mutually agreed that this is the best approach at this point in time. Although DoD is making efforts to adopt and implement APCO-25, SAFECOM has had success in influencing the public first responder community to implement this standard.

From a DoD perspective, we believe the APCO-25 implementation is an important step to solve some of the current interoperability problems in the first responder community. As an example, DoD is complying with National Telecommunications and Information Administration (NTIA) narrowbanding mandate by implementing APCO-25 in DoD Land Mobile Radios (LMR). In addition, DoD is examining the development of an APCO-25 waveform that will work in the Joint Tactical Radio System so when our military deploys to support homeland security missions, no matter what they are, we will have an immediate communications capability with First Responders.

SOCIAL NETWORK DEVELOPMENT

Much of the work that needs to be done at the strategic level in the wake of what we have learned revolves around social networks rather than any lack of technology.

Hurricane Katrina showed us that a key source of the problem stemmed from a lack of familiarity with each other's operating practices – what DoD calls tactics, techniques, and procedures. What was lacking was familiarity with the National Response Plan, a shared understanding of how NORTHCOM was to support that plan, and experience gained through exercises between US military and Federal, state, and local responders. A nationally focused effort to generate a truly collaborative information environment is feasible through coordinating the resolution of legal, policy and technical issues across all agencies and all levels of government. Ideally, there would be full interoperability among systems for command and control, communications, computers, intelligence, surveillance, and reconnaissance (known together as "C4ISR"). In addition, there needs to be broader, more fully articulated planning for multiple kinds of disaster events, ranging from natural disasters such as Hurricane Katrina up through a nuclear strike. Command and control, which is a social process augmented by communications and information, must extend to all appropriate locations, from a local sheriff's car to the White House. Moreover, we must exercise and train in a common environment to be better prepared to respond to such crises in the future.

Multiple efforts have addressed, or are addressing, segments of the need for a national response capability. These include:

- National Security Telecommunications and Information Systems - Developing plans and programs, including the development of architectures, to ensure security on National Security Systems;

- Continuity Communications Enterprise Architecture – Architecture to enable the Federal Executive Branch to execute mission-essential functions under all circumstances;

- Intelligence Community Architecture – Architecture to enable the intelligence community to share information;

We must vigorously support collaborative planning and interoperability at all levels of government, ensuring that decision-makers have unencumbered access to the best available information and enabling interoperable command and control operations. The Federal government must have command and control capabilities, supporting facilities, and infrastructure to ensure uninterrupted connectivity and coordination in support of essential functions in accordance with constitutional authorities. Our goal should be to provide assured services across government by:

- Making information available on a network that is dependable and trusted,

- Providing the available and appropriate bandwidth, frequency and computing capabilities within the spectrum management process,

- Assuring appropriate and effective collaboration capabilities and other performance support tools,

- Supporting secure and assured information sharing, without disadvantaging the responder lacking a security clearance,

- Continuously refreshing the information content of a shared situational awareness capability,

- Promoting infrastructure transparency (to the user),
- Assuring independence of information and data for consumers and producers,
- Considering that all users of information are also suppliers (and therefore encouraging parties to contribute data rather than just downloading it),
- Supporting information transactions that are asynchronous in time and place,
- Supporting the disadvantaged user with intermittent access to limited data services, and
- Applying federal data tagging standards and information assurance policies.

I have learned a great deal about "social networks" in the international context in the past three years. It is critical to develop purposely professional and personal links among experts and practitioners from multiple fields and sectors in humanitarian relief, disaster relief, and stabilization and reconstruction operations. These ties, built up over time and through enormous effort, are absolutely vital to organizing an effective response when catastrophic disasters occur. Unless working arrangements to communicate and share information among all of these types of entities can be formulated, the success of any operation can be compromised, with results that can prolong or even exacerbate the effects of the disaster. Extensive planning and training is essential before the crisis.

DOCTRINAL CHANGES AND TRAINING

In the area of doctrinal change in the international context, DoD is embracing the concept of "integrated operations." This reflects a new battlespace management concept

that will transform our military competencies from joint operations to operations that are fully integrated and coordinated with those of the military's partners in an operation. In the case of humanitarian assistance activities, these partners may include other U.S. agencies, allied militaries and governments, nongovernmental organizations, local populations, and private industry. And to maximize our effectiveness, DoD will integrate from planning to execution and then on to the transition to a restored local authority. Employing a coherent strategy that uses all instruments of the state in concert will ensure success in relief operations over the long term.

This doctrine also better prepares DoD to fulfill domestic response missions, bringing together civilian responders and military planners to synergize their efforts. Within the United States, DoD has conducted many scenario-driven exercises designed to prepare the military to support humanitarian assistance across a broad range of natural disasters – and also with regard to protecting potential terrorist target sites. Exercises and training opportunities between the U.S. military and civilian responders are critical to achieving this level of integration.

Thank you for the opportunity to address the Subcommittee.