

From: Thomas Tierney
PO Box 1349
Los Alamos, NM 87544

To: Government Fellows Committee
September 10, 2008
Re: Placement Report

On 11 September 2001, America arose to the reality of the destructive and murderous nature of select terrorist groups—a reality that the world's most deadly terrorist attack happened on U.S. soil. Given the resolve of some terror groups, it is remarkable that the United States has not experienced substantial domestic terrorist attacks since 2001. This is most certainly due to the outstanding work law enforcement and many Government agencies have done in obtaining, analyzing, and acting upon threats by terrorist groups and independent actors. The United States invests over \$60B each year in a wide variety of programs that are focused on countering terrorism; nevertheless, there are insufficient resources to monitor every terrorist using intelligence and data mining.

The critical step in preventing terrorism is to address the causes that motivate people to consider becoming terrorists. Stop everyone from seeking to be terrorists and terrorism will stop. In some cases, this means improving the human condition and improving the standard of living in developing nations. This is sometimes done through technology by providing access to clean water, abundant energy, health systems, and other elements of infrastructure. Yet, some have ideological disagreements that they deem is in inexorable conflict with the Western solutions.

So how do the most advanced and capable countries of terrorism with a measure of effectiveness in these cases? A multidimensional approach is required that (1) deters, (2) detects, (3) disrupts, (4) defeats, and (4) manages the consequences of an attack. Deterrence is achieved by convincing the terrorist that violence will fail to accomplish their goals. Detection programs are now creating multiple defensive layers with initiatives like MegaPorts, 2nd line of defense, and portal monitoring. Disruption includes limiting a terrorist's access to resources such as funding and technology as well as interfering with their action plans. Defeating a terrorist requires antiterrorism protection of critical sites as well as technologies to capture or take other actions upon the terrorists. And finally, the ability to respond to and mitigate the consequences of an attack helps save lives and reduces the gloating motivation factors for future terrorist attacks.

Most of these efforts require programs that gather data that identifies who the terrorists are and what they are doing. International coordination and intelligence have proven their value by providing preventative opportunities for terrorist interdiction, financial disruption, or other measures. Intelligence requires the use of cutting edge technologies to intercept signals, track movement, and analyze trends. The weak spot in intelligence is having knowledge of where to look and access to the required resources.

This tends to be difficult in the context of lone actors and splinter groups. How might the United States identify and interdict lone actors like Unabomber Theodore Kaczynski who generally avoided all modern communication methods? There were minor clues in leading up to Oklahoma City's most despised murderer, Timothy McVeigh, including his large purchases of ammonium nitrate fertilizers. Considering the strong agricultural economy in Oklahoma, were those clues adequate to provide a legal basis for action? And finally, were there warning signs that could have prevented the anthrax letter attacks, otherwise known as Amerthrax, in 2001? In these cases, the only prevention mechanism is to complement intelligence and operations with programs that provide technologies that can assist in countering terrorism or preventing extensive injuries due to terrorist acts.

Scientists associated with the Institute for Electrical and Electronics Engineers (IEEE) have played a significant role in providing these increasingly valuable tools for the fight against terrorism. These technologies include:

- Novel detectors help identify and enable interdiction of explosives, toxic chemicals, biological agents, and nuclear materials;
- Computers, electronics, and associated software help protect vital and critical U.S. infrastructure from malicious attacks;
- New robotic and pulsed power solutions are being applied in defeating and disposing of improvised explosive devices;
- Technology advances in the capabilities of personnel protective equipment, such as suit environmental controls, allow first responders to deal more comfortably with uncertain hazards; and,
- The critical tools required to decontaminate areas and perform forensics of a catastrophic event.

A sizeable fraction of the technologies that are deployed to soldiers and first responders were developed under the Combating Terrorism Technical Support Office (CTTSO). With this office, the U.S. Department of State's Office of the Coordinator for Counterterrorism (S/CT) co-chairs a technology development program with representatives from the Department of Defense and Department of Energy. This interagency program is operated under the guise of the Technical Support Working Group (TSWG). Any U.S. Government department or agency is allowed to solicit and perform peer review of proposals that seek to develop commercializable products for counterterrorism.

In evaluating opportunities at the Department of State, one of my criteria was to identify a position that draws upon the core competencies of the IEEE while at the same time permits me to exchange valuable insight from my past research experiences. In my work, I will provide scientific advice and policy guidance for the Programs Directorate, led by Deputy Coordinator for Counterterrorism Gina Abercrombie-Winstanley. In particular, I will participate in the Technical Support Working Group (TSWG). In this capacity, I will help coordinate efforts to enhance liaison between Department of State Bureaus and Offices and TSWG functional subgroups, in order to facilitate technical requirements identification and validation. I will build upon my past experiences with international

technical collaborations by helping facilitate international counterterrorism technical research and development (R&D) and in conjunction with other interagency partners and programs.

Because the Office reports to the Secretary of State, this assignment should provide me with the flexibility to interact throughout the entire State Department while at the same time allows me to obtain some perspective on how science can drive policy. In conjunction with specialized work involving nonproliferation and counterproliferation programs in the Bureau of International Security and Nonproliferation, State's S/CT coordinates most of the USG's counterterrorism programs that involve international foci. I'll be able to liaison with the Department's Bureau of International Security and Nonproliferation Office of Weapons of Mass Destruction Terrorism (ISN/WMDT) in support of the Nuclear Trafficking Response Group, nuclear forensics science and technology (S&T) issues, and other related activities. I'll be able to interact with State's Bureau of Intelligence and Research (INR) as well as Bureau for Verification, Compliance and Integration (VCI).

I will also have opportunities to participate in interagency working groups that impact counterterrorism research and development (R&D), including the Interagency Coordination Group for Weapons of Mass Destruction Terrorism. I will provide science and technology support, in coordination with the S/CT Homeland Security Directorate to S/CT and Department Principals in preparing for policy-level discussions with the National Security Council, Homeland Security Council, and other CT-related Departments and Agencies across the interagency process (DOE, DOD, DOJ/FBI, DHS, USDA, HHS, and the Intelligence Community).

The Department of State appears to provide an exceptional vantage point from which one can observe the Government's counterterrorism activities. The Office of the Coordinator for Counterterrorism provides an additional aspect of dependence upon and involvement in defining technology for counterterrorism applications. I look forward to the interactions the IEEE has enabled through the Government Fellows program.