

A Plan for Homeland Security

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Executive Summary

After the tragedies of September 11, 2001, the United States of America was awakened to the fact that our existing view of the world was no longer accurate and that the US would need to re-examine the paradigm with which it viewed the world in order to accurately be able to defend our homeland against a threat which did not fit our established patterns. In order to effectively understand the new threat and how we need to adapt in order to meet it, we must first understand the new threat, and second, place our resources in such a way as to effectively meet it. Since we cannot be everywhere at once, nor can we truly know everything, we must find another route to protecting ourselves. Since the threat can be modeled as a virus and our nation (or community) as a body, we can effectively meet the threat by building up the blocks on which the nation (or body) will prepare, meet and mitigate an attack. In other words, we need to vaccinate the country against further attacks of this type. This paper explains a new view of the war we are facing, discusses how to model a community from the perspective of its internal wholeness, and suggests ways by which resources might be applied to improve the internal strength of a community, and therefore, the nation.

Introduction & Background

Since September 11, 2001, many different individuals, organizations, agencies, & groups have been grappling with the issue of terrorism and how we as a nation should respond to the threat. As a nation, the issue is so complex and encompassing that very few individuals or organizations can truly get a handle on the problem. Without a true understanding of the problem, there can be no true solution and all solutions proposed by groups or individuals which do not fit in with an overarching strategy are merely partial solutions which may treat the symptoms of these problems or even portions of the cause, but can not truly improve the situation of the nation. In fact, these partial solutions merely spend a lot of money and cause the terrorists to find another target. The terrorists success will primarily result from their ability to be flexible and mobile. Our success in defeating them will be largely due to our ability to a) counter them on every front and b) prevent their flexibility and mobility.

The first part of this article is intended to present a view of the "New War" and both why and how we are vulnerable to the terrorists. The second part of this article presents a metaphor of the nation and the asymmetric threat in a view which is familiar to each of us – our own bodies. The third and final part of this article describes a method for modeling a community in terms of its existing strength which could show a community planner where they should expend resources in improving a community.

I. The New War

In the Middle Ages, the mounted Knight was equivalent to the “tank” of today’s army. These Knights were practically invincible when confronted with the military technology of the day.

Usually, the Knights would attack the opposing army's foot soldiers and, against those weapons and armor, they could not be defeated. A paradigm change began occurring in the mid-eleventh century, characterized by the use of longbows to allow foot soldiers to kill these Knights without coming within range of the Knight's weapons. The classic example of this shift in warfighting is the expanded use of bowmen in the Battle of Fallkirk in 1298.

Other historical examples of military paradigm shifts include:

- The use of light infantry and cavalry to screen columns of soldiers in Napoleonic Warfare
- The use of guerilla warfare by the Colonies against the British during the Revolutionary War
- The use of ironclad ships during the American Civil War
- The use of aviation for combat during WWI
- The German use of U-boats during WWII
- The transition from Naval Gunfire to Missile Warfare in the 1960's and 1970's

In most cases, the side that changed the paradigm was successful in (if not winning the war) at least changing the nature of warfare from that point on. In fact, from the list above, the only example of such a side being unsuccessful in winning the war was when the opposing side was able to adapt, respond and change the paradigm again, such as when the US and British Navies used the "convoy" technique to respond to the German U-boat threat. The Germans were using their U-boats to attack merchant shipping. The US and British Admirals responded by creating "convoys" of merchant ships, escorted by military ships – specifically destroyers and destroyer escorts which had a capable anti-submarine warfare mission.

In today's environment, most countries realize that they cannot defeat us on the battlefield. Specifically, terrorists and terrorist organizations have realized that they will be unable to accomplish their objectives using conventional warfare techniques and so they are attempting to change the warfare paradigm. The conventional buzzword today is "asymmetric warfare" which means that rather than applying significant resources to conventional targets, terrorists will apply fewer resources to targets of opportunity. According to Dr. Robert Bunker of California State University, San Bernardino, the current purpose behind the terrorist attacks is no longer to attempt to defeat our military, industrial might, or attack our governmental leaders – which were all previously targets during a military campaign. Similarly, although recent targets have focused on the populace (World Trade Center: September 2001, Saudi Home Complexes: May 2003), the intent is not actually to defeat the populace. The intent of these attacks is to break down the bonds between our civilians, military, and government (For purposes of this article, we shall assume that the "military" at the local level, is law enforcement and emergency response.). [Bunker, Robert J., PhD. "Higher Dimensional Warfighting", *Military Review*, September-October 1999.] To these groups, I will also add industry, resulting in the relationships depicted in Figure 1.

According to Dr. Bunker, the terrorists believe that if they can break these bonds, then the nation will be unable to stand under its own weight and will collapse. They will attempt to break these bonds by causing events which result in distrust (usually based on fear) between the different groups. For example, an attack on an industrial facility, which results in harm to the public, could result in distrust of the company by the public and local government officials, fear on the part of the company of increased regulation and restrictions on business, etc. Since at the local

level, the military is police and fire, then this event could also result in distrust by the public and government that the law enforcement and fire agencies are unable to handle the mission.

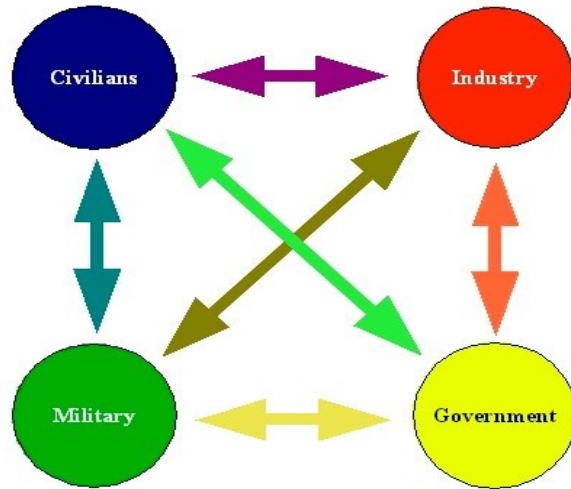


Figure 1: Bonds Between Community Groups

If it is truly the intention of the terrorists do destroy these bonds, then the solution to the problem is for us, as a nation, to strengthen existing bonds between these groups and to build new ones. It sounds like a simple solution, but there is no easy way to convince one person or group to trust another. There will always be environmental groups that hate the chemical and petroleum industries, racial and religious groups that hate everyone not of their kind, and economic/class warfare will, no doubt, be with us through eternity. Faced with the momentous task of trying to build trust in spite of the inherent difficulties, we may have the desire to give up in despair. However, as always, the answer to the question: “How do you eat an elephant?” is the same: one bite at a time.

One of the problems with today’s view of anti-terrorism is that much of the response is based upon the past view of warfighting, i.e. it is resource-based. The SAND Report, SAND2002-0087, Apr 2002 states:

This study’s tools and insights are based on Sandia National Laboratories’ many years of experience in risk, consequence, threat and vulnerability assessments, both in defense- and critical infrastructure-related areas.

These years of experience, however, are based upon the warfighting mindset that was developed during the Cold War, and may or may not address a threat which intends to defeat current thinking.

Most of the methodologies which have been developed (to date) to determine the vulnerability of a given infrastructure (facility, road, power line, etc.) are asset based. This means that they are prioritized based upon which target might result in the most impact. While the prioritization methodologies include the concepts of disruption, panic, etc, few, if any, quantify the effects that a given event will have on the surrounding community.

In order to become more successful at fighting the true enemy, we need to understand what our true weaknesses are and be able to address those weaknesses, rather than merely assuming that a terrorist would attack a specific target based upon the results of an impact at a given facility. As an example, rather than asking the questions: “Will an impact at this facility result in deaths to the neighbors, attract national media coverage, etc?”, we should be asking the questions: “How will an impact at this facility affect the level of trust between government and industry, between industry and the military, etc?”

II. The "Body Metaphor"

In order to build the bonds described in the first section, we need to understand the nature of the threat, and the nature of the nation. The nature of the nation can be illustrated through the use of a metaphor comparing it to a living organism. If we think of the nation as a body, then our cities and counties become vital organs; our roads, rivers, railways and airways become the circulatory system, our telecommunications and power systems serve as the nervous system, our borders and coasts become the body’s skin, and so forth. While the metaphor is not perfect (for example, there is no central “brain” to control all of the body’s activities), it serves well when addressing the nature of the threat and the solution.

Inside the Body

If the nation is modeled as a “body”, then the health of that body is modeled by the strength of those bonds between the various groups mentioned above. Crime, fear, protests, over-regulation, etc. would all damage the “health” of the “body”. The terrorist threat resembles most closely the behavior of a virus. The virus can strike anywhere, we cannot truly see it until it strikes, it breeds within the “body’s” own cells, etc. One point of note, the way that a body fights a virus is by having sufficient white blood cells present at the time and point of infection (i.e. when the virus strikes) to be able to suppress the infection and by having sufficient blood flow to the area to promote healing and regrowth.

The same thing can be said by stating that the only way that the nation can fight the terrorist threat is by having sufficient “white blood cells” present at the time and point of a terrorist attack to be able to suppress the attack (through intelligence and response) and by having sufficient flow of resources to the area to promote social healing and rebuilding.

In this metaphor, the “white blood cells” are the police, fire, health, Red Cross and other response officials. Other response personnel could include Citizens Band or Ham Radio Operators, private contracting companies, Community Emergency Response Teams (CERTs), or any individual or group which could work to prevent or mitigate an event. The blood flow

includes food/clothing supplies, water, power, and even the flow of funding from other parts of the “body” to help restore the damage after an incident.

To continue this metaphor, it does little good to send white blood cells to the incident after things settle down – the “white blood cells” need to be at the point of attack when the events happen. What this means, in terms of making the nation safer, is that each city/county or “vital organ” needs to have more “white blood cells” present within them in order to be able to detect, respond and mitigate an attack when it happens. Since there is a limited amount of funding available for specialized responders (police, fire, etc), a solution which does not increase costs exponentially is required.

The only true solution to improving the “body’s” defenses involves the citizens of the nation taking a stronger role in the defense. That means, essentially, implementing programs such as industry trade associations, town hall meetings, Reserve Police, Fire and Military, and most especially, the Citizen Corps program (www.freedomcorps.gov) to help strengthen and rebuild the bonds on which our nation rests.

Just as the military is stronger when more of the nation’s citizenry are serving or have served in the military, and just as the elected government officials are of a higher caliber when more of the people take an informed interest in the affairs of government, so too will the security of the nation be stronger when every individual knows how to respond and to whom vital information needs to be reported.

The Body’s Skin

The first layer of defense in any organism is its skin. If the virus cannot penetrate the skin, then the virus cannot damage the cells within the organism. Border, Coast and Information security will be essential in defending our nation against attacks. Unfortunately, there is no way to truly tighten up the border, without a severe curtailment of Civil Liberties. As a result, we have the monumental task of trying to keep a sieve from leaking.

Once again, however, the approach to a monumental task is to tackle it one piece at a time. And while we cannot make our borders impervious to inimical influences, if we once again enlist the aid of our citizenry, we can greatly increase the chances that anyone attempting to cross illegally will be caught. The Coast Guard, the Border Patrol and the Immigration and Naturalization Service, under the auspices of the Department of Homeland Security, are responsible for protecting our borders and coasts – our “skin” – from being penetrated without our knowledge. Unfortunately, they cannot be everywhere at once, nor can they see their jurisdiction if an adversary attempts to cross in an area where they are not located at a given time. If they enlist the aid of a trained populace, however, then their eyes are multiplied exponentially and we stand a much better chance of being able to prevent illegal crossings.

In order to begin this task, however, we will need to establish which civilian groups and individuals are at the borders and coasts, determine what purpose we would like these groups to play (identification of suspected illegals) and train them on what procedures to take. To guard the borders, we will need to enlist the aid of personnel at welcome booths and border stores,

freight haulers who deliver internationally, and even campers and park rangers at parks and campgrounds near the borders. To guard the coasts, we'll need to enlist the aid of boaters and fishers, divers and residents along the coast. In addition, the Coast Guard Auxiliary has a mission to assist the Coast Guard in Maritime Security. Increasing the use and visibility of these members would help to improve their ranks, which could lead to more eyes on the waterfront for the Coast Guard. The program could start as simply as a ½ hour additional training in observing and reporting unusual incidents to the Coast Guard added to a safe boating class.

Once again, we cannot be 100% sure that our borders are secure, but by making every citizen responsible for homeland security, we increase our chances of recognizing adversarial actions before they can be implemented.

The Circulatory System

If we cannot get resources to an area when we need to during and following an attack, then we will be unable to prevent or mitigate the damage from the attack. In order to protect the roads, rails, airways, and rivers, we will need to ensure that there is sufficient redundancy to prevent a single point of failure. Similar to the way bypass surgery allows blood to flow around a clot and continue to get to vital organs, we will need to analyze each particular route for what the vital items are and make certain that there is at least one redundant route for a given item. It does no good to have plenty of roads, rails, etc, if the only route for an item vital to a region is through air. For example, if a town's livelihood is based on steel manufacturing, and all of the steel comes in by rail, then we cannot count the airlines or even the highways as secondary routes.

III. Modeling a Community, Region, State, Nation, etc.

If we stipulate that the bonds in a community are a measure of the community's strength, then the way to model the strength within a community must be predicated on measuring the strength of those bonds, and aggregating them into a whole. There are an infinite variety of ways to measure the strength of the bonds, however, nearly all of them will be based upon the subjectivity of the individual making the measurements. Borrowing from the Process Safety and Engineering fields, we can use techniques similar to Process Hazard Analyses and Failure Modes and Effects Analyses. For readers not familiar with these techniques, they require a group of experts and a facilitator who leads them through a series of questions to arrive at a team consensus and then assigns qualitative values to parameters, such as severity or probability. Similarly, we can assign parameters to a given community's bonds. The parameters are shown in Table 1.

Table 1: Parameter Names for Community Bonds

Bond between:	Parameter Name
Government – Industry	GI
Government – Military	GM
Government – Civilians	GC
Civilians – Industry	CI
Civilians – Military	CM
Industry – Military	IM

Once the parameters have been assigned, a team of experts can assign a value from -5 to 5 for each parameter. Most conventional methodologies only assign positive values, but in this case, a negative value would represent a bond which is already detrimental to the community, for example, a negative CI bond could represent a situation where a community has recently had a problem with a local manufacturer who has been accused of polluting the environment. True or not, if the community believes that the company could have been responsible, then the bond between that business and the community would start at a negative value.

Like any qualitative methodology, the team of experts needs to have sufficient information in order to be able to make a reasonable decision as to the value of a given bond. It is possible, that in order to model different bonds within a community, a different team might be required for each type of bond. For example, the bond between the military and the populace might require a team which includes representatives from fire, police, the local military installation, community activists, etc. while the bond between industry and the government might require local chamber of commerce representatives, trade organizations, elected and appointed officials, etc.

It is also feasible that large models might require different teams even from one side of the community to another. As an example, the bond between industry and the populace (CI) might be quite good in one part of town where there has been a lot of interaction between a local business and the neighborhood, but the CI bond on the other side of town might be quite poor if there has been a community activist group active which is exhorting the local populace to speak out against the business. Each community will be composed of lesser communities and will, in turn, make up larger communities. Like Finite Element Analysis, the more fine the “mesh” (or the more local the model), the easier it will be for a community to see its status.

One output of this methodology would be a computer program which could be used to graphically model a community by attaching points on the map to each other by colors of bonds. Red would represent a negative value, yellow a neutral value and blue, a positive value. The shades could be modified to show at a glance, how the community is doing with a particular bond. By layering the types of bonds on top of each other on the screen, a cumulative effect could show how the community as a whole is doing, and where the nation’s resources are best spent to strengthen the fabric of the country. Again, like Finite Element Analysis looking for the weak points in a structure, modeling the bonds within the country can show us where our resources are best spent to correct the holes in our communities. Table 2 shows some examples of programs by which a local community can help to build new bonds and strengthen the existing bonds within the community.

Table 2: Sample Programs to Build New Bonds and Strengthen Existing Bonds Within a Community

Bond between:	Sample Programs
Government – Industry (GI)	Chambers of Commerce Governmental Business Councils
Government – Military (GM)	Local Emergency Planning Committees (LEPC) (Fire and Police) Community Awareness and Emergency Response (CAER) Groups (Fire and Police) Medical Reserve Corps (MRC)
Government – Civilians (GC)	Town Hall Meetings Government Leaders Attending Community Functions Frequent Cycling of Elected and Appointed Officials Actively Seeking the Broadest Perspective of People to Serve as Leaders Neighborhood Watch Programs (NWP)
Civilians – Industry (CI)	Community Awareness and Emergency Response Groups Chambers of Commerce Business Fairs Future Scientists and Engineers of America 4H clubs Junior Achievement
Civilians – Military (CM)	Community Emergency Response Teams (CERTs) Volunteers in Police Service Citizen Police/Sheriff/Fire Academies Military Reservists and National Guard Volunteer/Reserve Police/Fire/Sheriff Civil Air Patrol, Coast Guard Auxiliary, Young Marines, Sea Cadets, etc. Scouting Organizations Navy League
Industry – Military (IM)	Defense Contractors Terrorist Information Prevention Service (TIPS)

Controlling the Modeling and Resources

This model will serve at a local level, however, in order to incorporate the factors across multiple communities, a controlling body would need to set the standard for each community to use and provide training to each community on how to measure their existing status. A national database could then be developed, with standard measures for each community which could combine the overall strength of communities in regions to provide an indicator of how a given region. Additionally, the methodology would need to be enhanced to include not only the bonds within a community, but also the bonds between communities. The graphical representation would begin to look much like a network diagram across the country.

This graphical representation could be described as an “umbrella” diagram, with each level having a series of lines representing the bonds between the sectors and across the type of critical infrastructure. So if the viewer wanted to see the strength of the IM bonds across a region, The software could isolate and present those bonds. Figure 2 shows a simplified example of bonds across multiple communities.

A natural choice for this controlling body would be the Office of State and Local Coordination under the Department of Homeland Security. This Office would be responsible for building the models at the top level and working the level of detail down to the community level. Additionally, the Office would be responsible for incorporating the information and providing the information to the Secretary of Homeland Security so that he/she would understand the requirements for improvement. Lastly, this Office would be responsible for making recommendations to the Secretary of Homeland Security for improving those bonds (i.e. developing programs, budget requests, etc.)

Conclusion

In conclusion, we need to build up the strength of our country from within by increasing the number and strength of the bonds that hold our communities together. By doing so, not only will we improve the nation’s resistance to terrorist attacks, but by focusing our energies within our boundaries on positive, building actions, we will be able to create an environment which is less hospitable to crime, fear and distrust, and improve the overall quality of life for our citizens. By measuring the strength of these bonds, we can model an existing community and determine how and where to focus resources to improve the baseline condition. By controlling the models through an “umbrella” type organization, we can focus the efforts at a regional and national level, rather than relying on each community to improve themselves.

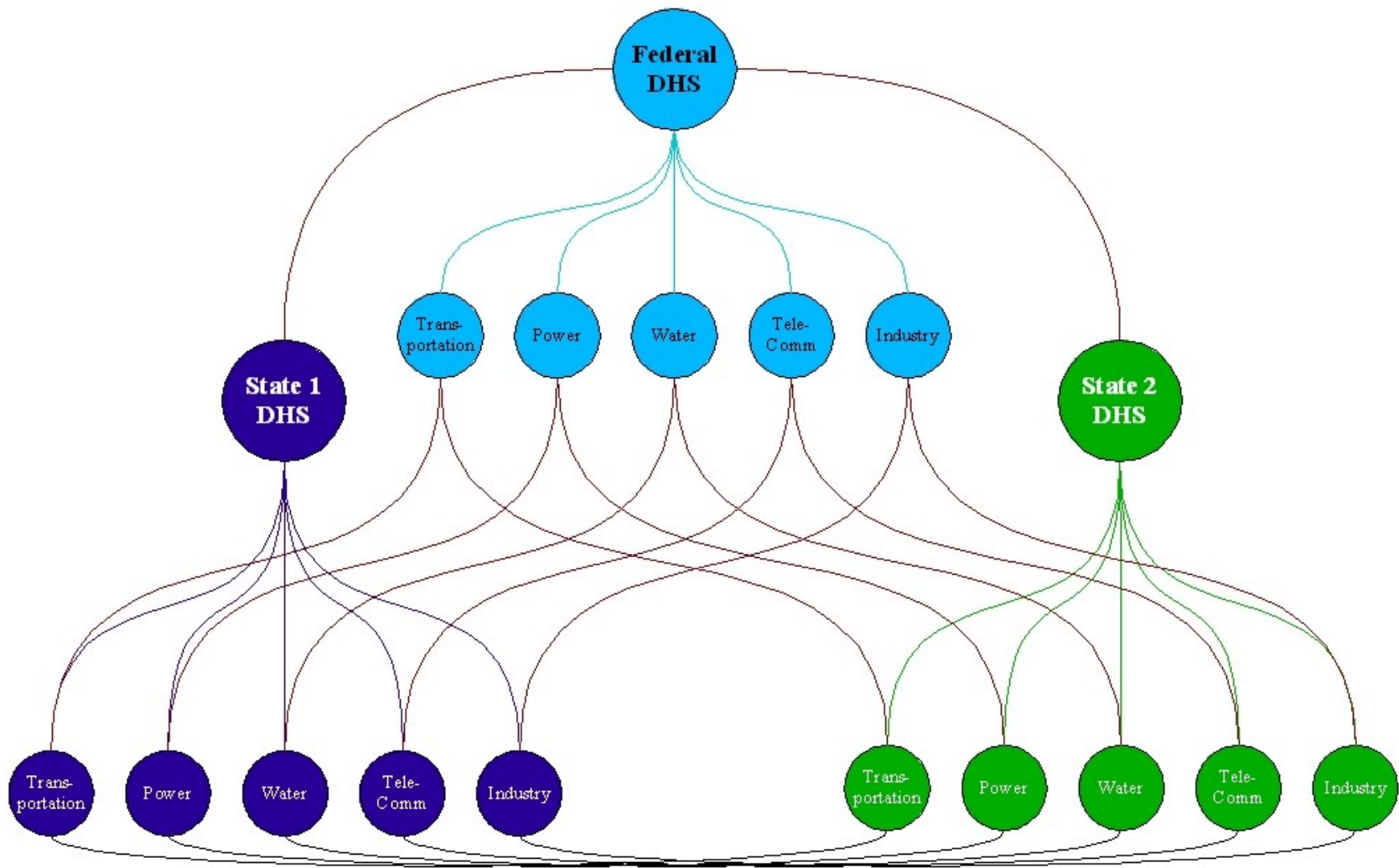


Figure 2: Sample “Umbrella” Organization Showing Bonds Between Critical Infrastructures at Different Governmental Levels

About the Author:

Stephen R. Melvin is the President of SRM Associates, Inc. He has been responsible for vulnerability assessments for water agencies with a combined population totaling over a million people and multiple chemical facilities. Additionally, he was instrumental in the development of Sandia National Labs' VAM-CFSM methodology for determining vulnerabilities of chemical facilities. He is a Professional Engineer and a Certified Safety Professional and has served as the Fire Safety Engineer for the Hazardous Materials Services Section of the Orange County Fire Authority and the Co-Chair of the largest subcommittee of California's Local Emergency Planning Commission Region I. He is CERT trained and also currently serves as the Homeland Security Representative to the largest geographical Local Emergency Planning Committee in California: LEPC Region VI which covers the counties of San Diego, Riverside, Imperial, San Bernardino, Inyo, and Mono. Mr. Melvin is a Naval Reserve Officer and currently serves as the Officer in Charge of the USS Curtts (FFG-38) Reserve Component. He has spoken at numerous conferences and seminars on vulnerability assessments and the impact of terrorism on communities. He has been a candidate for City Council twice.

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