Increased Vulnerability to Nuclear-based Terrorism in the Continental USA

A Brief Examination of the Situation, July 2007, encompassing:

Fundamental Limitations and Failures of Scanning Shipping Containers
Fundamental Gaps in Estimating Non-conventional Nuclear Terrorist Threats
Fundamental Flaws in Reporting by U.S. Agency Management
Ramifications and Consequences for Other Nations and Global Commerce
Simple Solutions Deliberately Ignored by the White House Administration
Simple, Effective, Economical Solutions that can be Implemented Today

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Preface

This brief memo is intended to serve as a synopsis of what can be found in several other reports and papers and in results from research extending from 1994 to the present by not only the present author but others involved with issues of radiation counterterrorism.[1] This summary is directed at a non-technical, non-specialist audience but a readership that nonetheless is in all likelihood quite intelligent and aware of the current general situation with respect to terrorist threats, resurgence and renewed strength within al Qaeda and a variety of collaborative terrorist organizations and sympathizers. The intended audience has quite likely also an understanding of the history of counterterrorism programs – especially within the USA - that have been promoted, developed, fielded, and in many cases that have failed to meet expectations or requirements.

The principle arguments made and the principal claims presented are neither obscure nor highly technical and understanding their measures does not require advanced scientific knowledge. The reasoning herein is based upon common-sense everyday logic. Thus it is hoped that, beyond criticism for the length of this "brief" or some considerations of its style, there will be few questions in readers' minds with regard to what is being said, what are the claims, and what are the cost-benefit considerations to consider today, now that it is nearly five years after the 911 attacks and (if the basic argument herein is found plausible) there is still quite an open door to nuclear-based attack upon the continental United States.

This last statement leads to the second and ulterior motive for this paper, one that goes beyond being an easy-reading synopsis of a complex issue in terrorist planning, homeland security and counterterrorism. The author is hopeful that finally, but not too late, enough people with enough "clout" – be they in Congress, government agencies, the press, or the general public – can make use of this information in an honest and rational manner to effect a necessary and dramatic shift in how things are done about nuclear-based terrorism, and CBRNE terror threats in general. There is still time. Whether one hour or one year, it is not clear. Better for people to acknowledge that things have been done very poorly and even foolishly up to the present, and to immediately change course, than to keep sailing blindly in the hopes that the enemy will not notice that the ship has no captain, nor compass or rudder.

[1] The brief bibliography at the end of this paper is provided not as a complete reference list but as a sampling. This memo is intended as a pre-publication synopsis of a longer work still in preparation.

Nuclear-based Terrorist Threats

There are three basic types available to terrorists. Whether or not they can successfully execute each of these is a separate issue, but there are three types of delivering an action to harm or destroy lives and property and to serve the political and mass-psychological purposes of modern-day terrorism.

1. A fission weapon – the classic "atomic bomb." A very definite and real threat, albeit more limited in scope that those (cf. types 2 and 3 below). The claim is made here that all – ALL – of the present schemes and dreams for inspecting a selected percentage of shipping containers are (a) ineffective from an operational counterterrorism perspective and (b) an indirect and unintentional aid to terrorist operatives for using more practical alternatives.

2. A "dirty bomb" – a device that employs a conventional explosive for the dual purpose of (a) destruction and damage by its own nature and (b) the wide-area dispersion of radioactive material through air, water, dust, debris, contact with humans and vehicles, for the purpose of creating a large-area, high-victim-count effect of radioactive contamination. Clearly (b) is the principal goal and the end result will be a combination of death, injury, and fear among the population, resulting in residual and long-term social and economic costs as a result of contamination and consequent needs for cleanup.

3. A PRED – a Passive Radiation Exposure Device – a weapon that may be employed with or without any "dirty bomb" component and most likely without such. A PRED serves to contaminate people and areas (buildings, stations, malls, neighborhoods) with radiation that may range in effect from lethal to negligible and essentially harmless. A key strength of the PRED tactic is that potentially massive numbers of people will be either directly exposed to the radiation from the PRED device, or indirectly exposure through contact with other people and objects (including vehicles) that have been exposed, or they will be in a situation of thinking that they may have been exposed. The same applies, beyond human beings, to animals, food, vehicles, buildings, and simply, objects of everyday life.

Lest any reader for a moment think that a PRED attack is not a very sound method of terrorism, please reflect upon a recent incident that was apparently not a PRED attack and not connected with al Qaeda but an act of assassination, directed at one single target, one human being, namely Alexander Litvinenko. Consider the consequences and the nerve-racking, disturbing, disruptive, and very costly effects in terms of medical examinations for hundreds and cleanup for tens of physical sites in the UK plus others in Germany, plus several commercial aircraft.

Whoever was involved in the Litvinenko assassination quite likely did not intend to do anything except to put one concentrated amount of Polonium into one cup of tea for one individual, yet Polonium that appears to be directly linked to that episode seems to have been all over London and a few other sites in Europe. This is a simple illustration of how an ill-prepared and ill-managed handling of a very small quantity of a particular radioisotope (one that is weak as a candidate for PRED use, by the way, since it must be ingested to have any significant effect) can turn into a huge mess. From the standpoint of an al Qaeda planner, such a huge mess is spelled, "big success." From the same standpoint, an operation that would be very similar to the Litvinenko assassination, done with Americium or several other PRED active constituents instead of Polonium, and conducted not against a single individual but simply as a deliberate dispersion tactic, would be spelled, "huge success." Further, again from the standpoint of the terrorist planner considering choices for a next "spectacular" strike against The Infidel Society, the Litvinenko episode was a tremendous, truly unparalleled free gift of a "trial run" with a full run-down, mostly well-publicized, of every step taken in response. There have been many public simulations of emergencies and "war games for first responders"; the Litvinenko episode was one of the best for any terrorist cadre to study, and one can assume that it has been a "required course."

Nuclear Weapon Supply Chain, Manufacture, Distribution and Delivery

It is easy to get "hung up" on the seemingly unusual, arcane and mysterious aspects of nuclear devices (types 1, 2, and 3 from above), or the protocols that have characterized nuclear materials handling, processing and weapons production from the original days of the Manhattan Project through the Cold War to contemporary times. al Qaeda is not going to operate like Oak Ridge nor like formal operations in Russia, China, North Korea or Iran. This may be acknowledged, but it seems to be not really understood, and the reasons for intelligent and experienced people failing to properly understand may have much more to do with simple human psychology than with anything as exotic as politics – it is the classic problem of prejudice, clan thinking, memes, and pure and simple habit. Some of the other works referenced in the Bibliography address this point well, particularly the paper by Posner and Garicano [x].

Let us consider the real basic phenomenology of nuclear-based terrorist weapons of mass effect (WME; i.e., a weapon with or without mass (rapid) destruction but certainly long-term mass effect, physical and psychological). It can be valuable to simply examine the basic required operations and assuming for the moment that all the "black box" details are within reach of any group that wants seriously to understand and to take action. As an anecdotal reminder that a PhD in nuclear physics and a $100M lab with visible signs of high-tech activity are not required to build a nuclear-based weapon of value to terrorist actions, there is the story of "The Radioactive Boy Scout" [x]. In the mid-1990's, a high school student living near Detroit, Michigan was quite effective in building a rudimentary breeder reactor apparatus with little more than household goods and a toolshed as his laboratory. To think that this cannot be replicated in an upscale suburb of Silicon Valley, Los Angeles, Miami or New York in the years since 911 could be a costly mistake.

1. Fission weapon
Assemble or steal a fully-engineered, ready-to-use product
OR
Build it yourself

Both could be done, logically speaking, either onsite (e.g., in the country of eventual use, such as the USA) or offsite (e.g., somewhere in Eurasia, and thereafter, delivery to a place like the USA)

Both have obvious challenges for even as well-organized and well-funded an opponent as al Qaeda, and both are clearly, among many types of WMD threats, within the more manageable for circumvention and prevention by intelligence and security forces.

Consider briefly the challenges of shipping components to the target (intended victim) country. It could conceivable come as a full device, or as a set (in sequence as well) of parts, including the weapons-grade fissionable materials. There are so many challenges in terms of transportation, packaging, intermediary storage, transport from a port of entry (e.g., Hampton Roads or Long Beach), testing, final assembly, and final delivery.

A fission bomb would make for a dramatic and powerful terrorist action, but there are far easier ways to create a broader outreach of effects on people, property, economies and social/political psychologies than to take the long, hard road of a nuclear fission WMD.

Moreover, is a shipping container the most likely path that a terrorist organization would employ, taking into consideration not only all of the engineering and security challenges but the basic model of organization and execution used by virtually all terrorist groups and supporters? It is more likely for the organization to choose a WMD or WME that fits its organizational model and thinking rather than to change over 1,300 years of behavior and tradition.

2. Dirty Bomb
Build and ship a finished product, ready to use

OR
Build it onsite

Here we begin to peel a layer of the "onion skin" that probably is hard for many Americans (and Brits, and perhaps others) to willingly grasp and accept, namely that the whole operation could be done inside, onsite, within the USA (or UK, or another country) without any single box, crate, or envelope having to come from overseas, much less in a shipping container on a cargo vessel.

An effective dirty bomb could be made using nuclear materials that have been obtained exclusively from within the USA and certainly from within the Western Hemisphere. Am, I, Cs, Co, Ra, Th, U, and a dozen more isotopes are available by any of the following means:
direct purchase of commercial objects that contain radioisotopes
misleading, deceptive, illegal but otherwise surreptitious purchase of such materials
and of course, theft

Now consider the amounts of radioactive material that have been acknowledged to have been stolen, or that have gone on record simply as "missing" (generally in shipment or from official sites, but without any recovery, it is hardly defensible to claim that such materials are still simply "lost" and not in the hands of either a pro-terrorist group/individual or someone who would willingly sell such materials). The last known locations, of those various items listed by the IAEA and other organizations formally and publicly (which alone would be ample for several wide-area dirty bombs), range around the entire globe. Transportation by automobile or truck through Europe, Asia, and Africa without any risk of detection is and has been virtually 100%. Those border locations where there are risks of detection by physical or sensor inspection are simply the places to avoid when planning a transit route.

Since the USA is the accepted #1 target for any WMD or WME, the finished device or its components including any radioactive ingredients not originating in the USA must be brought into the country. Let the reader simply think through the answer to the following question:

"Should we ship it through the port of [NY, Newark, Miami, Mobile, etc.] or take it first into Latin America and thence through Mexico into the USA, save on the risks of detection for both goods and agents [which cannot travel well inside shipping containers], and also quite likely save on transportation costs as well?

3. PRED
The considerations for a PRED are virtually the same as for a Dirty Bomb, only that with the PRED, there is no "boom" but rather a greater need for "brain" – and of course, for time and subtlety in both concealment (at time and place of actual weapon deployment) and communication (namely, to the victim population that they are and have been exposed, are eating/drinking/breathing radioactive compounds, etc.).

The components are essentially the finished weapons, and they also can originate
Over There (wherever)
OR
Over Here (e.g., USA)

What is unique about the PRED is how it is used, not so much what goes into it, or how what goes into it got to be with the final team assigned to do the deployment(s). This will be discussed more in an upcoming section of this paper.

The point about all three weapon types is that in terms of the overall supply chain, as well as all issues and considerations of purchase, manufacture, transportation, delivery, concealment, know-how, self-protection for the perpetrator team, the most challenging and risky of the three is the Fission Bomb, the next is the Dirty Bomb, and the easiest by far is the PRED.

Shipping Containers, other Big Things, and Simpler Methods of Transit

The previous section being what it is, there is really not so much that needs to be said here about shipping containers. This is in spite of their being so much in the news, in the verbage from various administration bureaucrats, and in the taxpayer gift-spending for major corporations that have benefited from billions of dollars spent on apparatus focused upon individual shipping containers handled as complete wholes; i.e., inspected as containers, prior to land shipment by truck or rail to their eventual destinations. It is obviously important to inspect shipping containers. However, there are many other important pathways of transportation for nuclear terrorism. A shipping container may in fact be simply the wrong way to move nuclear material into the USA, if in fact any needs to be moved there (which is questionable for PREDs and Dirty Bombs). Great sources in Canada and south of the border, and great ways to get things into both Canada and Mexico, but especially the latter, and one will never run into a pulse neutron beam.

One such alternative technique has been thus far soundly ignored by DHS and by program managers concerned with maritime domain awareness (e.g., the PANDA program managed by DARPA). Whether it is a case of discounting something because of the "not invented here" syndrome or simply because it sounds too "untechnical" the fact remains that one of the smuggling techniques that was employed very successfully (and profitably) during the Prohibition Years prior to 1933 is a very simple way to move goods into a territory by sea, and it does not involve shipping containers or formal ports of entry. The details of this and other techniques are obviously not meant for open-literature disclosure (it is hoped that readers will understand this point), but all of these alternative paths are simply instances of where one track of reasoning, spending, and implementation has and will always fail, and where on the other hand one type of solution can bring benefit. Such a solution is presented later in this memorandum.

Furthermore, there is an important point regarding perception and thinking about the ability of the enemy. Unless one believes that al Qaeda and similar organizations that may be contemplating and enacting a nuclear WMD or WME shipment to the USA are complete idiots, one must assume that they have been working diligently, assiduously, to counter every single model and algorithm employed for selecting shipping containers to receive "preferred treatment" inspection (for instance, with a neutron-based system, or for manual inspection of an individual container, etc.) Once again, a quick glance at recent events related to CBRNE, not all of which are of a terrorist origin, paints a clear picture demonstrating that (1) serious radical Islamist terrorists are taking a different approach that matches, or at least comes close to matching, the sophistication of conventional-thinking analysts and their algorithms, and (2) not everything must be like the way bombs and attacks have been in the past.

London and Glasgow, July 2007, were orchestrated by persons in respectable professions, living in respectable neighborhoods, and allowed into the country (UK) with exceptionally easy-going processes in some cases. Why should al Qaeda not have planned and established a deep-rooted infrastructure in the USA and elsewhere, with a solid cover of respectability and immunity from the standard profiles? On another note, the exploding steam pipe in midtown Manhattan (18.July.07) was evidently not connected to a terrorist nor to any individual, but it was an accident that is of a type that could easily lend itself to a very convenient PRED operation. The Litvinenko operation is again a historical case to remember. Something similar could be done very easily with an aim to maximize exposure by the public.

Profiling both human travelers and shipping containers is a good exercise for people in love with Bayesian probabilistic networks and other elegances that can be created with a few computers and a few tens of millions of dollars. However, how much real protection is offered, versus how much is just an impressive PowerPoint presentation? One thing is certain – we cannot inspect every shipping container, and we cannot partition off all of the possible suspects into one group. Reliance upon sophisticated algorithms and profiling schemes is tantamount, in today's world, with today's opponents, to the reliance that Isoroku Yamamoto placed upon the Japanese cryptographic codes in the early years of World War Two. The honorable Admiral realized the weakness of his nation's codes, and the fact that Americans were reading most of the

communications that went on between Japanese forces in the Pacific without great difficulty, probably rather early in the war. However, he came to truly under-stand the transparency of Japanese Naval codes only in a brief few moments flying over and literally smack into an island near Bougainville.

Acknowledging is easy, done with a quick nod of the head. It may not involve anything below the neck.

Under-standing is a visceral thing. When you understand, you Know.

Intermission and Reminder of the Mission

Briefly, there are a few comments that need to be made all together in one place, and a few alternatives that need to be mentioned, also all in one place, and together with the first comments. Virtually none of these statements, as well as most of what has preceded and also most of what will follow, in this paper, is individually all that new or unique, each having been probably voiced or written not once but often by many authors including many who are genuine experts. The author claims to be one of those genuine experts in his own somewhat interdisciplinary but mostly physics and mathematics sector, and to be (1) relatively aware and quick-thinking "from an early age" about the threat and what can be done about it, and (2) the inventor and designer (and Johnny-Appleseed promoter) of the Nomad Eyes™ architecture and toolset for doing something effective about CBRNE, including fission bomb, dirty bomb and PRED nuclear terrorism, with the main inspiration for all of this technology coming from that relative awareness of how terrorists think and operate, how non-terrorists in military and intelligence agencies think and operate, and how things happen in the real world aka The Street.

However, the most important point to be taken away, hopefully, by not a few readers of this paper, is that:

- regardless of any particular threat, and
- regardless of any particular counterthreat solution,
- we have a Critical Red Alert situation of a very real nuclear-based threat combined with a very real weakness in security and countermeasures, and
- the most important thing we might be able to do for rapid wide-area easy-deployment economical and easy-use protection of protection against a nuclear-based threat is to look at all of these issues together.

Even if they are hard to swallow.

Non-Conventional Nuclear Threats (revisited)

Much has been written and many "pundits" have voiced their theories about fission bombs and dirty bombs. A few more remarks about PREDs are in order.

Here are some of the places where a PRED can be used effectively with or without dispersal of a radioactive material beyond the container in which it is employed. That container could be metal, masonry, plastic, wood, paper – in other words, virtually anything. A handbag, an artificial plant and planter, a book, a sculpture, the list goes on.

- Shopping mall
- Metro (subway) station, escalator, platform, train
- City bus or tram
- Sports arena
- Supermarket
- Food warehouse
- City water reservoir

The preferred location would be one that have the following characteristics:

- a large number of people transiting every day and passing very close, preferably with extended periods of time, near the location site of the PRED
- a large variety of people – both regulars and infrequent visitors, including one-time passers-by
- a large variety of objects that change hands and go places with people who buy or take them, such as with foods in a supermarket

Readers should think about these two brief lists. This brings into the picture a very large variety of places in cities and urban areas and not thousands but millions of potential exposed persons. This is one of the reasons that a PRED is more attractive for terrorist purposes than a "big" device or one that catches a huge amount of instant attention when it goes "boom." There is a fascination and even an addiction within the organizations and groups that, particularly more closed-in and closed-off by a mentality of "security clearance first, entry into the club second" behavioral practices, is riveted to the notion of "big" and "bang." Effective terrorism is about affecting large number of people and disrupting senses of security, community, and reliance upon everyday normalcy. The way to do this best can sometimes be with the opposite of what many are seeking to find and deter, something that in any case is harder to assemble and engineer in the first place, even if there were nobody and no machines at any border, watching.

Now consider the possible impact of the PRED to these people and locations.

- Medically harmful exposure to radiation that could possibly result in death or illness
- Modest exposure with no clear or definite health risk, nothing particular to do about it, and quite likely not much more exposure than a few x-rays or an extended stay at a high-altitude resort, or a few dozen plane flights

The main point is the indefiniteness, the non-specificity, the uncertainty, the unpredictability. Here we have the gist of the PRED value. It may or may not result in huge areas or huge numbers of persons being exposed sufficiently so as to require medical attention, and it probably will not kill anyone. However it will cause a range of effects and a very definite intensity of panic that will manifest in four important actions all of which are important to the terrorist cause:

- disruption of people's lives
- disruption of economic processes
- psychological disturbance
- political disturbance

Naturally, if the PRED is bigger in terms of radioactive materials and intensity, and in terms of dispersion into air, water, or the ambient environment, the effects will be stronger. Better, though, for the terrorists to spread out a given supply of Americium or Cobalt, for instance, through ten different PREDs than to put all their eggs into one basket. Better to hit at ten American cities rather than at just one.

Again, the reader should bear all of these points in mind when reading on about what's wrong, what does work instead but has been decisively and clearly ignored at DHS and a few other agencies, and what can be implemented right now, without fuss or delay. It turns out that all of the situations that are being described about PREDs (also applicable to Dirty Bombs), all the challenges, are simultaneously:

(a) why the past and present methods, pushed by the White House Administration and apparently mainly for the benefit of certain large corporate interests and profits, Do Not Work,
and
(b) why the proferred method, embodied by the Nomad Eyes™ system, Does Uniquely Work.

Hmmmmm. Maybe there is something here, like a Sensible Defensive Solution.

Flaws in Reporting by Agency Management (aka the Administration, Bureaucrats)
Names do not need to be mentioned in this memo. The fact is that the press and a few members of Congress and a few members of a broader community of scientists, engineers, and intelligent experts has collectively done a pretty fair job of bringing attention to the problems and the problem people. All that is needed here is a brief summary in the abstract. The Bibliography contains references to articles, papers and reports that, from the open unclassified literature alone, indicate the scope of the problem and that it is not only about nuclear-based threats and countermeasures. There is a very strong connection (one that should not require long deliberation) between pulse neutron inspection systems that trigger on shipments of cat litter and the mentality that "the levees will hold" followed by decisions to ship truckloads of bagged ice cubes all around the country and keep them in storage for two years, at a cost of more than $12M, only to finally let them melt into the sewer drain.

Billions have been spent on CBRNE countermeasures that simply do not work, at least once deployed, with ample questions about their effectiveness even in the laboratory - chemical, biological, and especially radiological systems.

Inconsistencies in the operational accuracy of multiple pulse neutron systems for shipping container inspection employed and paid for by the US government are seemingly constant, and the latest versions of these systems are yielding only 17% - 45% accuracy, for the inspections carried out (which by all admission cannot extend to more than a few percent of the containers coming into US ports of entry).

Emphasis upon shipping containers and major ports, as well as upon airports, yields a false sense of security for the public. Leaving the rest of the country's borders and especially, even more so, its interiors, including all large places of congregation or transit for large numbers of people, totally unguarded with respect to radiation threats is not only leaving a clearly marked and well-lit path for terrorists to follow but also an unprotected country with respect to accidents and natural disasters with similar effects.

The cloak of "classified and secret" appears to be a very convenient way to have a "cover up" over inefficient or simply defective work and still get paid royally for it. This is also a guaranteed path toward "inbreeding" of the most dangerous variant. Today, unlike in decades past, particularly during the time of the Cold War, it is nearly impossible for an individual or a company to be given a job/contract in projects dealing with the "meat" of homeland security and counterterrorism without having, in advance, a level of security clearance that can only be granted as a result of having a job or contract in projects dealing with the "meat" of homeland security and counterterrorism… The circularity and redundancy in the last sentence is of course deliberate in order to drive home the point. This practice, coupled with serious questions raised through the past six years about the strong linkage between "political correctness" in terms of support for the Bush-Cheney Administration and opportunities to engage in the work of homeland security, questions raised by members of that administration, the CIA, the Foreign Service, the Military, and from within long-time members of Congress – all of this presents a case for the United States now having a serious disability in its most critical areas of intelligence and defense.

al Qaeda does not follow these practices. They welcome recruits from any culture, any nation, any race, any background. They certainly do not run credit checks first, nor look to see if a person at one time has consistently donated a sufficient amount to the right political party. They assuredly run their background checks, thoroughly, but on a very personal, detailed level, about what counts – loyalty, convictions, family, and intelligence. Generally, it seems from the evidence, they are more accurate in finding creative smart people, able to think "outside the box."

Until there are changes in how intelligence and counterterrorism is conducted by the USA in particular, there will remain and grow a gap in creativity and innovation. This gap is a killer. It was a killer in 1941 and a killer in 2001. Add to that the Greed Factor and the problem has now become more serious and more debilitating than ever before in US history.

Over four years ago the statement was made, not by a terrorist supporter (at least at that time, from all indications):

> "Grey suits in offices running a spy network will never be an effective measure to reduce the threat." [Ahmad Hmoud, Jordan, @ 2003]

Consequences for Other Nations and for Global Commerce
This is a brief list of what follows from a failure to provide a realistic and reliable solution to nuclear-based terrorist threats of the types described above.

1. Risk of such threats to Canada and the UK in particular but also to other nations in Europe especially.
2. Risk of additional and repeated thefts of radioisotope material within other countries for purposes of supply or sale to terrorists, especially given a growing perception that "the coast is clear" for transportation.
3. Education and planning by the terrorist communities in matters of nuclear and information technologies in particular response to those systems (e.g., port-of-entry inspection emphasis and computer-based profiling and selectivity for inspection) which are pin-pointable in their geographic operation.
4. Better counter-countermeasures training and practice in general among the terrorist operative community, given that thus far there are specific targets of counterterrorism activity, specific types that are localizable, whereas in a Nomad Eyes™ type of counterterrorism world, it becomes simply too difficult to second-guess where and who are the counteragents, the people or the devices that could detect and track their activities.

In a blunt manner of speaking, the USA has let down the world's safety and security by sticking to an old-fashioned, conventionalist model of threat analysis and countermeasure and becoming trapped by bureaucratic (mainly) quicksand that keeps "disruptive answers" from being even tested, much less implemented. If one was talking purely "apples and apples" here, about $1B and $5B or even $10M programs, and having to make choices on only that scale, this could be a reasonable argument in favor of going with the tried and true. But when we are talking about alternatives, innovations, potential breakthroughs, that would have cost only $1M or less four years ago, three years ago, even this year, and to find the closed doors and closed minds still pursuing a course of big, bigger, even bigger that a growing number of scientists, engineers, and end-users state is not working, then there really is a problem.

However, all is not lost. Now is an excellent opportunity for the USA to take the Lead in a number of restorations. Moreover, because of the nature of some of these "innovative disrupters," there is an opportunity to actually engage the American people far more directly, concretely, in their homeland security process, something that will also address many other social and political issues.

What has been Ignored by the White House and Administration
Again, a simple list:

1. Alternative methods, mindsets and approaches to modeling the threat, the perpetrators, and the technologies, that come from other than the "approved list" (whether that list is actual or virtual and implicit, it does not matter)
2. Specific solutions such as but not only Nomad Eyes™

What is so special, though, about these approaches, and in particular “Nomad Eyes?”

The answer is simple.

In the sections above have been presented the problems of a very viable threat from nuclear-based terrorist actions, including especially dirty bombs and PREDs. What is precisely the best hope against all of the above? More and more billion-dollar pulse neutron inspection machines and a point-centered, gateway-centered mentality toward security? No.

The answer is in having “eyes and ears” Everywhere (in this case, particular also, sensors, but also the visual dimension, not only radiation sensors). “Everywhere” is not to be taken literally. In many places, and in many unpredictable places and times – that is the key, that is the ability, and that is the one thing that is going to address the kind of radiation terror threat that is most common and easy to execute, as outlined briefly above.

Shipping containers all go someplace. On a train or on a truck. They are handled and moved all over the country. Cars and busses and trains also transit all over the country. When there are radiation sensors used in the type of architecture such as Nomad Eyes pioneered, on those Amtrak trains, in those warehouses, at those bus stations, in those Interstate rest areas (just to mention a few of the hundreds of types of locations where such sensors, costing perhaps less than $100 and operating virtually hands-free, minds-free), then one very important point emerges. The probability of moving and concealing a container with a few grams or a few tens or hundreds of grams of any radioactive material that could become part of a dirty bomb or PRED, or a PRED already placed into position, becomes much, much lower.

This is the crux, the kernel of the point about nuclear-based terrorist threats. There is ample opportunity to get around all of the high-end, gateway-oriented security systems upon which billions are being spent, even if they were to miraculously (don’t count on it) suddenly work at 955 accuracy and efficiency. But if there are thousands of simple, cheap, and admittedly low-accuracy sensors spread across many locations where things may be moving, or concealed, then the probability of finding those objects goes up dramatically.

What can be working if started Today – A Simple, Effective, Economical Solution

What is being advocated is not something that requires years or even many months of R&D. What is required is deployment. There is a lot written about architectures and systems like Nomad Eyes, but with all due respect to many look-alikes, the critical factor is in the analysis and synthesis that happens after radiation sensors, visual indicators, and a large body of factual and inferred knowledge comes together in a manner that is specifically addressing issues of false positives and fault-tolerance. This is not a utopian system, but for a few million dollars, far less than what goes into some of the epiphenomenal activities surrounding one pulse neutron shipping container inspection system, there could be a swarm (that is the technical term, as well) of Nomad Eyes devices acting as a collective monitoring network for a very large number of sites in the USA.

The model is designed to work in conjunction with, not against, the regular, everyday, ordinary consumer world which means that after a jumpstart, a catalytic spark that should come from both the US government and the private sector, there will be a self-perpetuating development based mainly upon how Nomad Eyes is offered to consumers.

It will sell itself and pay for itself in practically no time, and those who are moving it forward will even make a lot of money. This is not bad, is it, to have a universal, open, country-wide homeland security system that actually pays for itself instead of being a money-hole for taxpayer dollars? This sounds like good economic sense. This sounds like, “About Time.”

And with those words, this sounds like a good time to stop and allow the reader to think, to contemplate what we will do Next, as in “Right Now,” to stem the Increased Vulnerability to Nuclear Terrorist Actions that has the USA and other parts of the world in its grip.

A Brief Bibliography of References
(pertaining to these topics and sources of support for the claims argued herein)

This bibliography is available to those readers who find this memorandum to be worth giving a reply and who have a genuine interest in understanding more about the issues and how they can be positively, constructively addressed.

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