Comments Provided for the
Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia
of the
US Senate Committee on Homeland Security and Government Affairs
Regarding the Status of US Response Following a
Nuclear or RDD Attack
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Thank you for the opportunity to comment on US capabilities in nuclear forensics and attribution in the aftermath of a nuclear or radiological attack. I am an Associate of the Managing the Atom Project of Harvard University's Belfer Center for Science and International Affairs and of Booz Allen Hamilton, where I consult on strategic planning. I provide these comments, however, in my personal capacity, and my views do not reflect the views of any organization with which I might be affiliated.

Preparing the Public

I restrict my comments largely to nuclear attribution capabilities and do not focus on non-fissile materials. Although the likelihood of an attack with a radiological dispersion device (i.e., non-fissile) may be higher than with a crude or intact nuclear weapon, the potential effect from a nuclear blast is so large that I consider it of utmost concern. So many potential sources of non-fissile radiological materials exist with minimal if any controls today, that they would be hard to attribute – although identifying the type of material itself would not be highly difficult. The key problem with a radiological dispersion device is in controlling the public's risk perception and establishing effective communications. This can best be done by engaging the public now so that they are prepared with the appropriate immediate response when an attack occurs.

One way to engage the public now would be to underwrite an innovative public awareness campaign on the best ways to respond to any weapon of mass destruction or disruption (WMDD). If one considers the popularity of CNN when it is covering disasters and of National Geographic adventure shows and the Weather Channel in general, it is clear that the public is fascinated by disasters.

Possible Congressional Action:
Capitalizing on this natural tendency, Congress should consider supporting commercial television programming that looks at attacks by WMDD and even

natural disasters and then focuses on the appropriate responses; such programming would consider who survives well and how. The more the public is prepared in advance, the more the effects of any disaster can be minimized.

Why Nuclear Attribution?

Although I was asked for specific details of what is needed in the aftermath of an attack, I suggest that *Congress first consider requiring the Executive Branch to develop a larger strategic framework for nuclear and radiological attribution.* I believe this larger consideration also falls under the purview of congressional oversight of government management and therefore within the Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia.

Even if the US had a foolproof attribution capability, the capability would prove of limited value unless it was decisively framed within a larger policy context. Gaps do exist on the hard science side and many of them have been enumerated by others, however, the policy gap is also large and must be filled. By filling the policy gaps on attribution, the US would be better able to determine the relevant scientific gaps and the best ways to address them.

Thus, I begin with the "why" question because I believe the reasons to pursue nuclear attribution have not been fully appreciated and certainly have not been well articulated within the government. I then follow up with "what" capabilities are needed. Again, my focus is on fissile materials, as these are the ones I fear the most.

The US, in concert with other nations, requires a nuclear attribution ability in order to ensure a reactive capability sufficient to deter a nuclear strike in the first instance and in order to prevent/mitigate the effects of a second attack.

1. Nuclear attribution to deter a first strike

The Goal:
To deter a first strike, attribution capability has to be part of a larger policy initiative that articulates consistently and persuasively the existence of a reliable attribution capability and that informs potential perpetrators of a nuclear strike – including those that may have inadvertently assisted in the strike by not locking down their nuclear materials – that they will be held liable for the strike. The potential penalty must be of sufficient magnitude and credibility so that perpetrators and their perhaps unwitting allies would find initiating an attack to be of questionable expected positive value to their cause. Such a calculus must be applied across all actors involved in perpetrating the attack.

Countries must believe that the expected US and international response will cause them such a high degree of harm that they need to protect their fissile materials from diversion. Reprisal can range from the physical to the monetary, with assets being blocked and financial liabilities being assessed. Clear international support for a potential US or international response would help bolster attribution's deterrent value.

The third-party traders in the material – from nuclear facilities' scientists and guards to commercial shippers – must be held financially and criminally liable for their part in a nuclear strike. These traders must believe that a high likelihood exists of being detected and must be held accountable with consequences unbearable to themselves (and which might therefore include consequences outside the individual perpetrator and include consequences to whatever the perpetrator holds dear). The expected consequences must outweigh the expected gains from their participating in the attack or not thwarting the attack. I use the term "expected" here but believe a game theory analysis of the range of expected outcomes and their perceived outcomes must be part of this.

The direct perpetrators of the attack must believe that their underlying cause for the attack will not be achieved. This group will be the least deterred by attribution. However, the establishment of more vociferous policy norms that malign nuclear attacks (which would take new administration policies to achieve) could lead public opinion to similarly recognize and abhor – even more - such attacks. This in turn could persuade vengeful actors to pursue non-nuclear lines of attack that would be more targeted (e.g. cyber attacks on the financial services sector) and that might better achieve perpetrators' larger policy goals while not being overwhelmingly offensive to the Muslim and general public. Establishing an international norm against nuclear use could also persuade those with foreknowledge of the attack but not directly supporting the attack to inform authorities of the attack or otherwise deter / dissuade the attackers.

In summary, to deter a first strike most credibly, the US would need to develop and publicize these policies with other state partners and / or within a supportive international regime. A communications strategy would need to be developed for ensuring the policies are heard and believed in even remote areas of the world. The belief would, of course, rest on acceptance of the capability of attribution, which needs to be fortified.

Where We Are Now:
The present condition is that no such articulated, credible policies are known to exist, outside of occasional, vague statements by President Bush and other leaders. In addition, the attribution capability is questionable, at best.

Possible Congressional Action:
Congress could consider asking the Executive to provide additional support for the development of better attribution capabilities and to develop a strategic framework for nuclear attribution including articulated, credible policies that would deter these classes of actors from initiating a nuclear incident.

To bridge the gap between the present condition and desired capabilities for preventing a first strike, the US needs to develop and frame various detailed policy options in cooperation with allies, then rally support for selected policies, and finally undertake a major initiative to persuade the rest of the world of the credibility and even desirability of such policies. This could start with a major initiative related to UNSCRs 1540/1673 as well as exploration of the suggestion put forth by Princeton Dean Anne-Marie Slaughter for making transfer of fissile material a crime against humanity (which the US could support without joining the International Criminal Court). Mechanisms for allowing and even encouraging informants to alert authorities of illicit nuclear transfers/impending attacks would also need to be developed.

Some negative drivers do or might exist for such a scheme within the US government:

- Current US policy embraces nuclear options as central to US defense. This policy reduces the viability of making the use of nuclear weapons abhorrent to direct perpetrators of a nuclear attack.
- US nuclear materials, both in possession and of origin, may not be sufficiently locked down. Some materials in others' arsenals and in experimental reactors have been sourced in the US, which could force the US to be held accountable. The extent of this is classified information which I do not know.

However, neither of these constraints is insurmountable.

2. Nuclear attribution to prevent/mitigate the effects of a second attack

The Goal:
In terms of the benefits of nuclear attribution in preventing a second strike, a framework for decision-making and standard operating procedures are needed

to support a reliable, fast attribution capability that could lead to information on where a second strike might occur and the actions to follow. Timely attribution knowledge could lead to prevention but would more likely lead to better advance planning for event mitigation.

Where We Are Now:
A reliable, fast attribution capability does not exist – either by the US, IAEA, the Russians, or the Europeans' individually or jointly in the Institute for Transuranium Elements (ITU). If a first incident occurs, the ability of the US or others to prevent a second strike would likely depend more on alerts from informants. Given this would be evident to the perpetrators, they would likely have planned a cotemporaneous or very quick follow-on second strike, if one were planned. However, the likelihood also exists that tentative foreknowledge of a potential second strike would lead to some actions that would be disruptive, e.g. some cities being evacuated unnecessarily, which also would fit the goals of the perpetrators.

The extent of war gaming of these situations and of scenario policy options planning is not known in the unclassified realm.

Possible Congressional Action:
Congress should consider requiring the Executive Branch to detail the range of possible scenarios resulting from attribution, the optimal operating procedures attendant with them, and then what, if any, aspects of the procedures need to be codified and communicated in advance.

What Capabilities Are Needed for Attribution?

Discussion:
Given the above context, the US would determine the extent to which independent or cooperative attribution capabilities are required. Although some standard operating procedures have been developed domestically, the respective roles of DOD/DTRA, DHS/DNDO, DOE/NNSA and the national labs, ODNI, DOJ, etc. are complex when it comes to attribution. Are they perhaps so complex, with budget authorities so diffuse and line authorities so parsed, that responsibility for development of a significant forensic capability cannot be adequately prioritized? To this lay observer, it is not clear whom the president could confidently turn to and say, with an expectation of firm response, "Find out who did this."

In addition to considering better clarification of the complex relationships among the federal-level agencies, Congress should consider that the roles of state and local authorities and the international community in post-blast and also in smuggling incidents require clarification and also strengthening.

The Goal:
The US should possess a nuclear attribution capability that is not only accurate but also recognized internationally. To achieve this, standard operating procedures (SOPs) must be agreed and enacted – both among different levels of government in the US and with the international community.

Agreements are needed internationally on how to attribute nuclear materials – pre- and post-blast. To do this, the US needs:

- Capable scientists and law enforcement personnel
- The infrastructure, e.g. equipment and space, to support the analysis
- Nuclear signature banks and ways to access them securely
- Research on ways to enhance material identification

You have already detailed a number of ways the gaps in these capabilities can be addressed; in particular, I suggest you emphasize prestigious fellowships and training programs in cooperation with selected universities but not exclusive to them. I am sure you have also noted the need for redundant capabilities and surge capacity regarding personnel, equipment and space requirements. However, I want to emphasize the importance of having international capacity and engagement in order to substantiate any conclusions the US might reach.

Thus the above-noted three points also apply to international needs. International accords for cooperation would not only lend credibility to attribution but also advertise such capabilities, thereby supporting deterrence.

Finally, one area of potential research stands out – material tagging. As downblending of weapons-grade materials occurs and as reprocessing goes forward, the possibility of adding more unique elements to identify material's source should be considered. One could argue that there is already too much untagged material out there to make this fruitful, and that tagging could be "gamed." However, any step that makes attribution more likely should be thoroughly evaluated. If the Fissile Material Cut-off Treaty (FMCT) ever goes forward, tagging could become more significant.

Where We Are Now:
It is not clear that federal agency budgets and responsibilities are optimally aligned. This would be classified information. However, based on public knowledge, I believe DNDO is making some headway toward developing SOPs

with states for certain events – although it is not clear the extent to which states and localities are prepared to comply with these.

Internationally, capabilities are not robust: the IAEA had noted in one of its own reports that it did not have qualified staff to use all of its equipment. The US government has helped isolated countries develop operating procedures consistent with IAEA nuclear forensic guidelines. Some bilateral SOPs are being developed, including some informally through the International Technical Working Group – I am not sure of the extent of these. And although in the Bratislava Initiatives, the US and Russia agreed to expand cooperation on nuclear detection, you must assess the true extent of this cooperation today. Innovative ways to provide for cooperation on nuclear signature databanks have not been developed, as far as I know. I don't know the extent to which material tagging has been discussed in an international forum.

Today's reality is perhaps best reflected by the frustration of a an international scientist who commented to me: *"I've been saying for sometime (mostly at ITWG meetings and at various briefings) that we need a new "international norm" that interdiction of nuclear materials should warrant a nuclear forensics investigation, because the significance of the case might be greater than a matter of the local laws that were broken. If far more of these incidents had a forensics investigation performed (and results were appropriately shared) one could better detect patterns and potential new threats, as well as identifying the source of the 'leaks.'"*

Possible Congressional Action:
When everyone is responsible, no one is. Congress should consider requiring the Executive Branch to establish an individual manager – with some real budget authority – to be responsible for ensuring the nation's nuclear attribution capabilities.

Congress might consider reviewing the pace, depth and breadth of the federal-local engagements and consider additional funding to support these measures.

Congress also might consider directing the State Department to provide broader assistance to the IAEA and to more countries to implement the voluntary IAEA guidelines. Congress might also want to request a policy options analysis on ways these guidelines might evolve beyond the voluntary, e.g. through linkages to UNSCR 1540/ 1673.

Congress might consider: options for the establishment of an encrypted databank and process for effecting it that only goes live in a post-event situation; the formalization of part of the ITWG proceedings that would allow for the official establishment of a group of trusted scientists, law enforcement officials with experience in working together to manage the post-event

attribution internationally; material tagging possibilities and a resurrection of FMCT.

I say all this knowing that others will tell you about the impending lack of a competent workforce, the need for more equipment and facilities, the necessary support for more general research, and the need for better coordination between federal and state/local emergency managers. I hope this Congressional statement, however, provides special insight into the more specific needs of a broader policy initiative.