NCTC InSight

22 May 2008

(U//FOUO) Lone-Actor Terrorists With Biological Expertise: A Potential Threat With Limited Indicators

(U) Results of an Unclassified Workshop

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(U) In Brief

(U//FOUO) Elements of the U. S. government hosted an interdisciplinary, unclassified workshop to better understand the potential threat from independently acting terrorists with biological expertise. Such lone-actor terrorists have the potential to carry out high-impact biological attacks while generating few signatures, making detection or disruption of their efforts challenging. The one-day workshop explored the possible motivations, intents, and objectives of lone-actor terrorists who might consider conducting biological attacks; examined scientific infrastructure vulnerabilities that these individuals could exploit; and identified strategies to mitigate this potential threat.

- Panelists with backgrounds in academia, law enforcement, and elsewhere, including professionals in psychology and psychiatry, former government officials, a biologist, and a security expert participated in the workshop. Prior to the workshop, the panelists received an unclassified threat briefing and wrote position papers to help focus the discussion.

(U//FOUO) At the end of the workshop, the panelists and other attendees reviewed the day's discussion and identified key findings, themes, and gaps. This paper, ***which is not necessarily representative of the U. S. Intelligence Community's views***, discusses some of the more interesting conclusions and their implications.

- Panelists argued that introversion and other personality characteristics of lone-actor terrorists frequently also occur in scientists, raising concern that a lone-actor biological terrorist might emerge from the ranks of scientists with relevant expertise for such an attack. Common personality characteristics create challenges in identifying personality-based indicators of potential lone-actor biological terrorists that are not found frequently in the broader scientific community.

- A vulnerable individual usually requires a traumatic life event, or "trigger," that pushes him into an act of lone-actor terrorism, according to the panelists. The convergence of professional and personal stressors that limit an individual's ability to cope may provide identifiable triggers that might indicate the potential for conducting a bioterrorist attack.

- Prospective lone-actor terrorists frequently self-identify as being part of formal, virtual, or imagined communities, and panelist discussion suggested that a lone-actor terrorist's attempts to reach out to such communities might present detection opportunities for intelligence and law-enforcement personnel.

- Panelists identified physical and procedural protections on high-risk biological agents and facilities, along with outreach programs to raise awareness within the scientific community of the potential threat and needed counseling for troubled employees, as elements whose sustained implementation may help mitigate the potential biological lone-terrorist threat.

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(U) Scope of the Workshop

(U//FOUO) The conference sought to address questions in four areas relevant to lone-actor biological terrorism:

- **Motivation:** What are the psychological characteristics and motivations of lone-actor terrorists? Which of these elements are prevalent among individuals with scientific expertise? What sorts of events might compel a vulnerable scientist to become a lone-actor terrorist?

- **Intent and Objectives:** What might be the likely objectives of lone-actor biological terrorists? How important are considerations of casualties, economic damage, psychological impact, societal disruption, and personal glorification?

- **Vulnerabilities:** What scientific infrastructure vulnerabilities might lone-actor biological terrorists exploit in the US and abroad? What are the vulnerabilities associated with knowledge, training, and access to pathogens and facilities?

- **Mitigation:** How can the law-enforcement and Intelligence Communities mitigate the potential threat from lone-actor biological terrorists? Are there behavioral indicators that might identify potential lone-actor biological terrorists? What can the government do to enhance the security of biological agents and technologies?

(U//FOUO) Lone-Actor Terrorists and Scientists Often Share Traits

(U//FOUO) Panelists argued that many of the personality characteristics of lone-actor terrorists are commonly found among scientists, highlighting concerns that a scientist with biological expertise might apply that expertise to lone-actor terrorism. There is no reason to conclude, however, that scientists are more prone to violence than any other group.

- Most lone-actor terrorists, like many scientists, are introverted and have less developed interpersonal skills, according to the panelists. Introversion may allow many scientists to engage in long hours of solitary work, but, in some very rare cases, it also could foster a lack of empathy that may make terrorism as a means to an end seem more palatable.

- Lone-actor terrorists and scientists both tend to be intelligent and have a strong affinity for the world of ideas. This affinity helps scientists thrive in understanding and developing concepts as part of their work, but it also can enable lone-actor terrorists to develop an intense connection to an ideology. Such an intellectual connection could facilitate acts of terrorism in the service of that ideology, without reinforcement or encouragement from an immediate network of fellow believers.

(U//FOUO) The two groups' common characteristics create challenges in identifying personality-based potential indicators of scientifically skilled lone-actor terrorists that are not also common in the broader scientific community. This renders it problematic to apply many common traits of lone-actor terrorists as indicators by themselves. The application of such personality-based indicators would yield excessive false-positives, as very few scientists have turned to lone-actor terrorism.

- Lone-actor terrorists to date have been overwhelmingly male but have varied widely in age, birth order, number of siblings, parents' child-rearing styles, and levels of education. Lone-actor terrorists' most notable distinguishing characteristics are instead the traits that overlap most with scientists—introversion, a "quiet" personality, and normal to above-average intelligence.

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(U//FOUO) Ted Kaczynski: A Technically Trained Lone-Actor Terrorist

(U//FOUO) Ted Kaczynski, a mathematician, may be the most notable technically educated individual to have become a lone-actor terrorist. Kaczynski from 1978 until his arrest in 1996 mailed or placed 16 conventional bombs and remains widely known as the "Unabomber." He exhibited many of the distinguishing personality characteristics that panelists identified in their discussion of other lone-actor terrorists.

- Kaczynski is highly intelligent. He obtained a mathematics Ph.D. from the University of Michigan in 1967 and then taught at the University of California at Berkeley until resigning in 1969, without explanation.
- Kaczynski is very introverted. He had few friends as a child, was viewed as standoffish and withdrawn by his Berkeley colleagues, and in 1971 moved to a remote shack in Montana.
- Kaczynski committed violence apparently in the service of an ideology. He claimed that his actions were necessary to attract attention to what he viewed as the dangers of modern technology. He targeted sites and individuals that advance technology, including universities and their faculties, airlines, and computer stores.

(U//FOUO) Trigger Event Usually Precedes Violence

(U//FOUO) A vulnerable individual usually requires a traumatic life event to push him to pursue lone-actor terrorism, according to the panelists. Major stressors in a vulnerable individual's personal or professional life can expand his predisposition into a fully developed will to commit violence.

- Profession-related triggers that could push a vulnerable scientist into pursuing violence include failing a doctoral examination; denial of tenure; and research failures resulting from budget cuts, insufficient funding, or simply limitations in the scientist's own abilities.
- More general life stressors could also be factors. A divorce, dismissal from work, death of a loved one, or another traumatic experience could each drive a vulnerable scientist toward terrorism.

(U//FOUO) Identifying stressful events in the individual's life is critical to head off the possibility of a scientist becoming a lone-actor terrorist. Triggers have the greatest value as potential indicators of violence when they compound each other to such an extent that they limit a scientist's ability to cope. Simultaneous, multiple-scope stressors are a more valuable predictor of a vulnerable individual's potential to slide toward violence than any single stressor. Personal problems can limit an individual's ability to cope with professional stressors—and vice-versa.

- Coping mechanisms in one part of an individual's life can help him deal with trauma in another part. When an individual faces professionally trying circumstances, support from his spouse can help him manage this stress. Similarly, when an individual is undergoing a traumatic divorce, a stable job can help him get through it.

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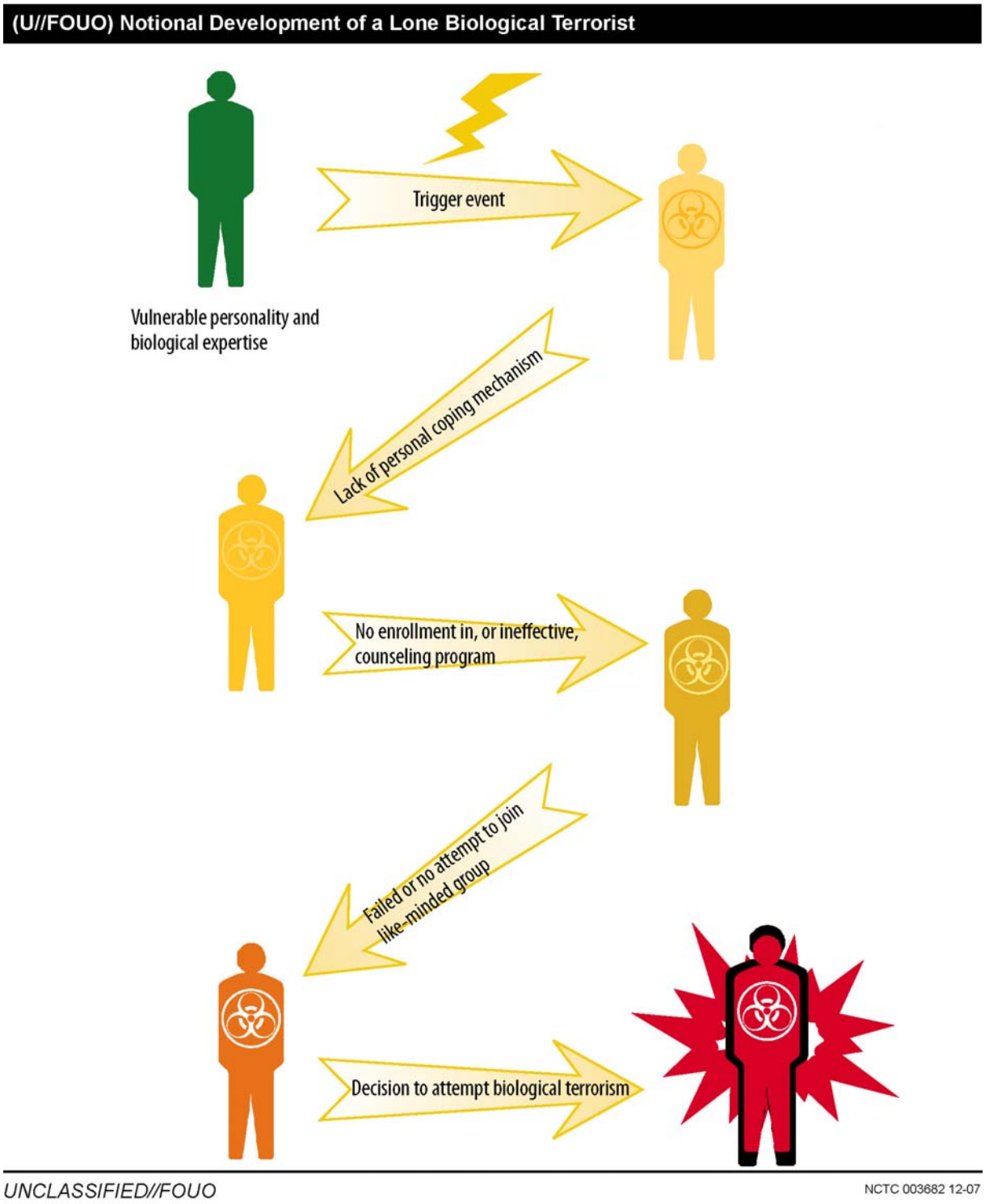

(U//FOUO) This diagram illustrates one potential progression by which an individual with biological expertise and a vulnerable personality could develop into a lone-actor biological terrorist. The progression shown here is a notional representation of the concepts developed by panelist discussion and does not denote the only path to lone-actor biological terrorism. The icon colors' position on the chromatic spectrum from green to red is also notional and represents general development on the pathway to lone-actor biological terrorism rather than specific degrees of progression along that pathway.

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(U//FOUO) "Reach-out" Attempts Could Provide Detection Opportunities

(U//FOUO) Lone-actor terrorists may initially prefer not to act alone, according to the panelists. Lone-actor terrorists have frequently attempted to fulfill their need for belonging by self-identifying as part of formal, virtual, or imagined communities of believers in an ideology.

- A review of lone-actor terrorists during the past 30 years suggests that solitary action usually has not been their first choice and that the decision to act on their own often has emerged only after failed efforts to join a group.

- The Internet's "virtual communities of hate" can help lone-actor terrorists feel socially connected despite the solitary nature of their actions. The Internet poses a particularly attractive social outlet for extremists who have been rejected from a more formal group and for those who have been unable to find such a group to join in the first place. One panelist noted that introverts are particularly likely to choose the Internet for self-expression.

- When a future lone-actor terrorist finds himself unable to connect directly to a group, he often instead forms an intense identification with the group's ideology. Action in the service of an ideology can become a means of avoiding the pain of social isolation or rejection, and conducting an independent attack becomes a perceived means of connecting to a formal, virtual, or imagined group and potentially getting recognition from society.

(U//FOUO) Panelist discussion suggested that there are opportunities to detect lone-actor terrorists when a need for belonging or a self-generated sense of connection to a broader community causes them to reach out socially. Such attempts to connect to extremist groups or other fellow believers leave a potentially detectable trail, even though the individual's eventual acts of violence lack the personnel links and communications that make traditional terrorist efforts vulnerable to detection.

- Lone-actor terrorists might attempt to reach out to known extremist groups, whether in person or through the Internet. These attempts might provide detection opportunities for the law-enforcement or Intelligence Communities collecting on or investigating the groups' activities.

- Panelists noted that it is important for intelligence or law-enforcement officials to monitor not only extremist groups' active affiliates but also those individuals who have left these groups after finding themselves unable to fit in or who have been rebuffed in their attempts to join.

(U//FOUO) Security, Outreach, Counseling May Help

(U//FOUO) Physical and procedural protections on high-risk agents and facilities, complemented by increased awareness of the potential lone-actor threat and counseling for troubled employees, may help mitigate the potential biological lone-terrorist threat, according to panelists. Material barriers and organizational practices are designed to help account for biological agents, protect them from unauthorized access, and limit the potential insider threat.

- Panelists identified the critical elements of physical and procedural biological security as formal recordkeeping by scientists of the microorganism stocks they share with colleagues; up-to-date, full-scope inventories by laboratory directors of their microorganism holdings; and effective access controls on buildings, individual laboratories, and storage facilities.

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- Security-oriented improvements in biological agent control and access control are especially important because lone-actor biological terrorists are likely to exhibit the same behavior and have similar backgrounds as their colleagues.

(U//FOUO) Outreach programs targeting the scientific community to raise awareness of the potential lone-actor biological terrorist threat will continue to be an important means of helping scientists recognize vulnerable colleagues or subordinates for referral to employee assistance programs, other counseling services, or law-enforcement investigation. The lack of clear indicators to distinguish at-risk scientists from their colleagues, however, would hinder peer recognition of potential lone-actor biological terrorists in the same way it encumbers identification by the law-enforcement and Intelligence Communities.

- Outreach programs provide scientists with greater awareness of the potential threat and of warning signs that a colleague or subordinate is at risk of crossing the threshold into terrorism. Introverted individuals may be less likely to identify at-risk colleagues, and awareness-raising outreach programs may be of particular importance for the scientific community.

- Nominations for counseling that such outreach programs generate are especially significant because the introversion of many potential lone-actor terrorists may make them reluctant to self-nominate for employee assistance or other programs.

(U//FOUO) Panelists argued that employee assistance programs may help ensure that insider scientists remain trustworthy at the same time that physical and procedural security measures limit their access to biological agents and maintain accountability. When a vulnerable scientist faces traumatic life events, participation in an employee assistance program or another counseling program may reduce the likelihood that those triggers will push him toward violence.

- Institutional employee assistance programs can offer help to scientists whose professional and personal stressors have rendered them at risk. A panelist noted that such programs must be staffed by professional counselors and offer help without negative repercussions—or perceived repercussions—for the careers of those enrolled.

- A panelist argued that for an employee assistance program to succeed, it must intervene soon after the critical stressor has occurred, before the scientist has reached a disaffected state.

- Many of the events that can act as triggers for a vulnerable scientist—including doctoral examination failure, denial of tenure, or termination of employment—would sever that scientist's affiliation with an academic institution or employer that offers an employee assistance program. This imposes some limitations on these programs in their current form.