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Report on the Sixth International Law Enforcement Forum for

MINIMAL FORCE OPTIONS

and Less-Lethal Technologies

Orlando - May 2008

COUNTERING TERRORISM
through Technology, Minimal Force and Less-Lethal Options

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Report Editor

Lieutenant Colonel Edward L. Hughes, U.S. Army-Retired

Acknowledgements

The delegates of the 2008 International Law Enforcement Forum wish to thank Sheriff Kevin Beary and his staff for their gracious hospitality. Additionally, the delegates wish to thank Mr. John Gnagey and his staff at the National Tactical Officer Association, in particular Ms. Laura J. Gerhart, for their superb efforts in coordinating the logistics for this event. As always, delegates thank Ms. Amanda Brooks for her continuing administrative support to both the Workshops and report development.

The Sixth International Law Enforcement Forum on Minimal Force Options was co-hosted by the National Institute of Justice (NIJ), and the Orange County Sheriff's Office. The forum was organized and conducted by the Institute for Non-Lethal Defense Technologies (INLDT) of The Pennsylvania State University and the National Tactical Officer Association (NTOA). The workshop was held in Orlando, Florida on May 20, 21 & 22, 2008.

It remains our view that the pursuit of minimal force options, the policy and legal aspects of developing and employing such technology, and the surrounding debates, should be conducted openly and on the basis of informed scientific and medical assessment set against clearly articulated operational requirements by professionals who have experience in policy, command, operational theaters of use and tactical deployment.

The content of this report is not intended to represent any policy and/or official position of ILEF, The Pennsylvania State University, the governments of the delegates in attendance, or any of their affiliated agencies. Although the conclusions and recommendations are based upon a general consensus of the participants, they do not necessarily reflect the views of all of the participants and/or the agencies which they represent.

COMMENTS PERTAINING TO THIS REPORT ARE INVITED AND SHOULD BE FORWARDED BY POST TO THE DIRECTOR, INSTITUTE FOR NON-LETHAL DEFENSE TECHNOLOGIES, APPLIED RESEARCH LABORATORY, THE PENNSYLVANIA STATE UNIVERSITY, P.O. BOX 30, STATE COLLEGE, PA 16804-0030 OR BY ELECTRONIC MAIL TO: INLDT@PSU.EDU.

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Preface

The first two meetings of the International Law Enforcement Forum (ILEF) on Minimal Force Options held at The Pennsylvania State University in April 2001 and October 2002 were extremely successful in focusing on less-lethal weapons (LLW) and minimal force concepts, technologies and deployment at the expert practitioner level.

The United Kingdom's Police Scientific Development Branch (now the Home Office Scientific Development Branch) hosted the third meeting of ILEF in February 2004 on behalf of the UK government's steering group on less-lethal technologies. The event included a consultative forum with research and evaluation organizations, police oversight bodies, academic and political research groups, government departments and non-governmental organizations (NGOs).

The Royal Canadian Mounted Police (RCMP) hosted the fourth meeting of the Forum in 2005. This 2005 Forum included a day dedicated to discussion with less-lethal manufacturers and distributors. The 2006 Forum was conducted in Fairfax, Virginia and was hosted by the Washington, DC Metropolitan Police Department who provided an informative tour and information briefing in their state-of-the-art command center.

This year's Forum in Orlando, Florida brought together persons involved in the development, use and monitoring of less-lethal technologies and included representatives from the United Kingdom (UK), the United States (US), Canada, New Zealand, Sweden and Israel. Delegates examined the integration of less-lethal technologies and use of force in countering terrorism.

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Participation in this forum, as in previous years, was by invitation and assembled internationally recognized subject matter experts, chiefly practitioners from law enforcement, together with technical and medical experts and those with specific interest in policy development primarily from the United Kingdom, Canada, and the United States. As in previous years, delegates from military agencies who are involved with the development and use of less-lethal technologies also participated. These included the US Joint Non-Lethal Weapons Directorate, the Canadian National Defense, and the US Department of Homeland Security.

This report is a summary of the Forum discussions, the associated conclusions, and recommendations for further work derived from the sessions. The forum makes specific recommendations in relation to best practices in active shooter response, critical incidents, acoustic devices, conducted energy devices (CEDs), pursuit management and command/control related to counter-terrorism operations.

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Executive Summary

Policing involves patrol officers being placed in situations where they are required to respond rapidly and appropriately. The circumstances might be confronting a violent or aggressive individual, maintaining public order, or dealing with terrorists. The officer must observe the potential threat, evaluate risks to persons and property, consider consequences of any action or inaction, determine the appropriate response, and respond with the appropriate level of force – often in a matter of seconds. Less-lethal technologies continue to provide officers with the capability of a variety of force options which reduce the need to resort to lethal force. While generally there are different views regarding the role of these devices and related techniques, when operating in such ambiguous and uncertain situations, there are often many more similarities in approach.

The 2008 Forum addressed many issues related to best practices in active shooter response, critical incidents, acoustic devices, conducted energy devices (CEDs), pursuit management and command/control related to counter-terrorism operations.

Delegates from represented countries, disciplines and police departments also examined less-lethal weapons (LLW) and issues in counter-terrorism. There were eight distinct workshop sessions in which the delegates participated:

- Active Shooter – Schools and Institutions;
- Technology Gaps for Critical Incidents;
- Acoustic Devices, Applications and Requirements;
- Conducted Energy Device (CED) Employment & Techniques;
- Pursuit Management & Vehicle Stopping;
- Community Impact & Public Order Considerations in CT Operations;
- Critical Incident Command and Control Issues; and
- Urban Crowd Control Concepts.

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The major recommendations are:

1. **Less-Lethal Tools in Active Shooter Situations.** The ILEF should work with the NTOA and other organizations to ensure the integration of less-lethal considerations into Active Shooter tactical planning. These should include:
   - ✓ Officers should incapacitate an active shooter at the earliest possible opportunity;
   - ✓ Currently, less-lethal weapons cannot produce predictable and reproducible incapacitating effects, particularly at distance;
   - ✓ Lethal force remains the most effective means of completely stopping a threat. Officers should not place themselves or other at risk by substituting less-lethal weapons for lethal weapons in lethal force confrontations;
   - ✓ Less-lethal weapons may assist in facilitating a successful resolution. LLWs should be considered complementary tools in a team tactical response kit.
2. **Active Shooter Response Training.** Police departments should evaluate the concept of training officers to deploy in one and two person contact teams. Police departments should continue to work with schools and institutions in preparation for an active shooter scenario.
3. **LLW Requirement for Active Shooter Situations.** Manufacturers and government entities tasked with technology R&D should continue to research and develop complementary tools that will assist in the rapid intervention of an active shooter incident. ILEF should forward less-lethal technology requirement to NIJ, HOSDB and CPRC.
4. **LLW Requirement for Critical Incidents.** Manufacturers and government entities tasked with technology R&D should work to design LLW technologies capable of being delivered across greater distances with the capability for variable periods of incapacitation. ILEF should forward less-lethal technology requirement to NIJ, HOSDB and CPRC.
5. **Weapon Recognition System.** Manufacturers and government entities tasked with technology R&D should work to design weapon recognition systems to enable deployment of LLW technologies. ILEF should forward this less-lethal technology requirement to NIJ, HOSDB and CPRC.
6. **Community Engagement.** ILEF should encourage members and affiliated agencies to promote and exercise community engagement as this builds community confidence and trust in many aspects of policing from use-of-force issues to intelligence gathering.
7. **LLW Requirement for Acoustic Devices.** Acoustic devices must be capable of achieving the desired effect such as delivering intelligible voice commands and deterrence at the desired range. The device must be safe

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for both the operator and target alike and must also be fiscally viable. Some additional requirements are that the device be modular, portable and scalable to accommodate a wide range of constraints (e.g., size, weight, power requirements, etc.). ILEF should forward less-lethal technology requirement to NIJ, HOSDB and CPRC.

8. **CED Standards.** ILEF should promote and participate in the development of standards for CEDs in terms of performance, test protocols and independent testing groups to verify these technical standards for Law Enforcement.

9. **Long-Term CED Effects Study.** ILEF should encourage NIJ, HOSDB and CPRC to conduct extended (long term study) research that would identify and monitor a sample population for indication of any long term effects from CED exposure.

10. **CED High Risk Population.** ILEF should encourage NIJ, HOSDB and CPRC to continue and expand research to determine if any group within the general population is more vulnerable to CED exposure than others.

11. **CED Research Review.** ILEF should encourage NIJ, HOSDB and CPRC to conduct a comprehensive (perhaps cooperative) review of the body of medical and engineering research that has been accomplished with a goal of providing the community a report that compiles the results into layman's terminology in any easy to understand format.

12. **Pursuit Policy Guidelines.** ILEF should work with NTOA, ACPO and other associations on developing and refining recommended pursuit policy guidelines to reflect specific environments and scenarios.

13. **Pursuit Command and Control.** Jurisdictions must be aware of the danger associated with overloading the officer during a pursuit – too much gear and too much information to process equals much higher risk. ILEF should encourage NIJ, HOSDB and CPRC to conduct a cooperative examination of best practices regarding command and control for pursuit management in order to develop recommended standard techniques and procedures that give the pursuing officer a better ability to focus on his pursuit TTPs.

14. **Cooperative Technologies.** That ILEF encourage NIJ, HOSDB and CPRC establish common objective system requirements and work with manufacturers to ensure that emerging cooperative technologies:
    - ✓ Do not damage auto electrical systems;
    - ✓ Allow police to control the vehicle (stop or slow it down);
    - ✓ Allow a suspect the ability to bring the vehicle to a controlled stop;
    - ✓ Provide police with positive identification of the target vehicle; and
    - ✓ Provide a unit modular capability.

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15. **Video (CCTV) Mapping.** Police command knowledge of, and ultimately access to, commercial and security CCTVs in their jurisdiction can markedly improve situational awareness for critical incident management. Imaging/camera systems in particular are important as they can provide real-time information collection, analysis, and threat assessment that will enable more effective command decisions. ILEF should encourage DHS, NIJ, HOSDB and CPRC to facilitate video mapping for local jurisdictions.

16. **Incident Command SOP.** Incident command procedures are more standardized in the UK than in the US/Canada. ILEF should encourage NIJ and CPRC to conduct a cooperative review of best practices and develop more standardized (and perhaps common to or consistent with UK) guidelines for equipment and procedures. These could be proliferated in the US by tying their adoption to federal funding.

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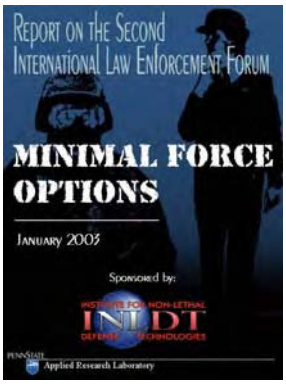
Introduction

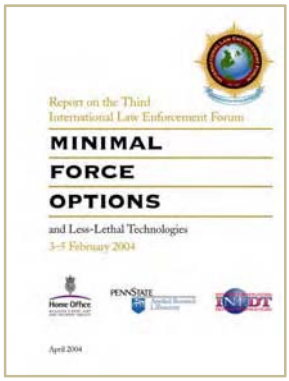
Background

In 1999, the Pennsylvania State University (Penn State) and the Los Angeles Sheriff's Department hosted the International Commission on Policing in Northern Ireland, chaired by Mr. Chris Patten. It was evident that the issues associated with acceptable and effective less-lethal technologies would benefit from a meeting of subject matter experts.

The first official meeting of The International Law Enforcement Forum on Minimal Force Options (ILEF), was held at Penn State in April of 2001. The meeting brought together a small group of US and UK personnel who had been active in researching and developing issues in respect of police use of less-lethal technologies. Penn State had already been involved with the US military program through its Institute for Non-Lethal Defense Technologies (http://www.nldt.org) and had developed meaningful contacts with US Law enforcement. The first meeting served to confirm the value of international cooperation, which had a law enforcement focus, on the use of less-lethal technologies and to work through principles associated with minimal force options and to capture common operational needs.



The second ILEF meeting was also held at Penn State. It was conducted in October 2002 and identified a number of issues that required some action. The more urgent of these included the development of a less-lethal weapon/technology database, the development of an injury database, the characterization of operational needs and the development of standards for development, testing, and training. Shortly after this second meeting of ILEF, the UK Steering Group chaired by the Northern Ireland Office, in consultation with the Association of Chief Police Officers, issued its Phase 3 Report (December 2002) on Patten Commission Recommendations 69 and 70, relating to public order equipment. This report included a summary of the ILEF meeting and its recommendations. The 4th report of the UK steering group likewise referenced ILEF and its ongoing work to develop international standards for testing and training.



The 2004 ILEF meeting (Third ILEF), held in the UK and hosted by the Association of Chief Police Officers and the Police Scientific Development Branch, included policymakers, researchers, and medical experts versed in various aspects of less-lethal technologies, their applications and their effects. The delegates examined gaps in capabilities and medical assessments, information sharing, and the development of common standards for less-lethal weapons development, testing, training and use. The event included a consultative session with research and evaluation organizations, police oversight bodies, academic and political research groups, government

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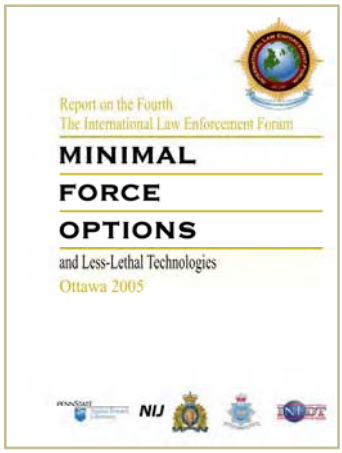
departments and non-governmental organizations (NGOs). It was important in promoting engagement between practitioners, interest groups, and other non-government actors and provided an opportunity for a greater appreciation of the issues and concerns surrounding use of less-lethal technologies.

Under the auspices of ILEF, a delegation from the UK visited Washington in the week commencing August 16, 2004 to discuss various matters relating to less-lethal technologies. One of the main objectives was to peer review the approach and methodology used by the UK Steering Group on alternative approaches to the management of conflict and development of less-lethal weapons with the assistance of Penn State and key American ILEF personnel. The peer review concluded that the UK's structured approach needed to serve as the foundation for approaches on an international basis. It was acknowledged that ILEF had an important role to play in assisting the development of best practice and in the assessment of new technologies. It noted the importance of information sharing continued in this regard and that the peer review process had demonstrated the utility of having a resource pool of subject matter experts upon whom it could call.



The 2005 International Law Enforcement Forum on Minimal Force Options (Fourth ILEF), hosted by the Royal Canadian Mounted Police in Ottawa, brought together persons involved in the development, use and monitoring of less-lethal technologies and included representatives from the United Kingdom (UK), the United States (US), Canada, New Zealand, and Sweden. The participants included senior practitioners, researchers, and medical experts versed in various aspects of less-lethal technologies, their applications and their effects. The delegates examined gaps in capabilities and medical assessments and the development of common standards for less-lethal weapons development, testing, training and use. The ILEF delegates had the opportunity to attend and participate in a consultative forum with manufacturers and distributors of less lethal weapons. This consultative event was important in promoting engagement, between practitioners, law enforcement associations, manufacturers and distributors.

The 2006 International Law Enforcement Forum (Fifth ILEF) was hosted by the Washington, DC Metropolitan Police in Fairfax, Virginia. The Forum once again brought together persons involved in the development, use and monitoring of less-lethal technologies and included representatives from the United Kingdom (UK), the United States (US), Canada, New Zealand, and Sweden. Delegates examined best practices in controlling aggressive individuals, maintaining public order, conducted energy devices and less-lethal applications and issues in counter-terrorism.

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Proceedings

The Sixth International Law Enforcement Forum on Minimal Force Options was held in Orlando, Florida in May of 2008 and was hosted by the Orange County Sheriff's Office and the National Tactical Officers Association (NTOA). The Forum once again brought together persons involved in the development, use and monitoring of less-lethal technologies and included representatives from the United Kingdom (UK), the United States (US), Canada, and New Zealand. Delegates examined the integration of less-lethal technologies and use of force in countering terrorism. The specific objectives of the 2008 Forum were to:

- Examine issues surrounding tactics, policies, training, and incident management and technology limitations related top police response to actives shooter in schools and institutions;
- Examine the relevance of less-lethal options and the strategic, tactical and policy considerations when deploying police officers in counter-terrorism operations and critical incidents;
- Examine the community impact issues with respect to the deployment of less-lethal weapons where a counter-terrorism policing operation is being conducted;
- Examine the public order issues in the aftermath of a terrorist attack including the emergence of hostile crowds that threaten public order, aggressive individual control or isolation, crowd containment or dispersal, officer and public safety and minimizing the potential for escalation;
- Discuss and identify the basic requirements for projecting acoustic/ audible messages or tones out at distances in support of public order scenarios;
- Examine the policy, training and incident management impacts as well as the technical effectiveness concerns and medical/psychological issues surrounding the use of acoustic devices;
- Identify and discuss the basic requirements for employing conducted energy devices (CEDs) in support of public order scenarios;
- Examine the tactics, policies, training, and incident management issues that need to be considered relative to employing CEDs in response to a critical incident or counter-terrorism event;
- Examine the use of vehicle stopping technologies in dense urban environments, open highway and rural road situations;
- Identify and discuss the issues in relation to policy, tactics, training, arrest, and post-incident management regarding vehicle stopping and other pursuit management technologies;

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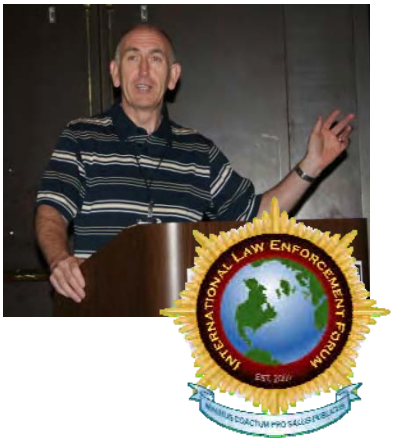
- Describe and discuss the scope and extent of community impact that should be considered in planning, executing a post-terrorist event;
- Examine techniques for informing or educating the community affected by a counter-terrorism operation in terms of planning and preparation for a counter-terrorism operation or response to a critical incident;
- Examine issues involving command and control (and communications) surrounding a response to a critical incident including transition of "command" protocols, critical elements of information, and employing minimal force options against both individuals and or crowds in such scenarios; and
- Examine the characteristics of crowd or riots protocols for identifying and responding to specific "triggers," police use of minimal force options, the response to petrol/fire bombs employed against police and counter-measures.

Workshop Presentations

The ILEF workshop took place at the Wyndham Orlando Resort in Orlando, Florida on May 20, 21 and 22, 2008. It began with opening remarks and an outline of the program provided the chair of the ILEF Advisory Board, Mr. Colin Burrows, QPM. Canada, New Zealand, the United States and the United Kingdom each provided the group an update on less-lethal weapon initiatives.



Opening Remarks. Colin Burrows welcomed all of the participants and in particular those who were co-hosting the forum with Penn State including the National Tactical Officers Association and the United States National Institute of Justice. He also extended a special word of welcome to Sheriff Berry and Orlando Sheriff's Department in whose jurisdiction we were meeting.

Mr. Burrows began by reminding delegates of a number of the key international terrorist incidents that had occurred throughout the world since 11 September 2001 (9/11). While terrorism was not a new phenomenon, there was no doubt that in terms of scale of casualties, method of attack and consequence, 9/11 had shaken not only the United States but also the whole of the western world.

Four years later, on 7 July 2005 (7/7), coordinated bomb blasts carried out by Islamist extremists hit London's public transport system The bombings killed 52 commuters and the four suicide bombers and injured 700 people. The series of suicide-bomb explosions constituted the largest and deadliest terrorist attack in the UK in its history. The casualty figures surpassed those that occurred in the Omagh car bomb attack in which 29 people died and approximately 220 people were injured. This attack had been carried out by the Real IRA (RIRA), a splinter group of former Provisional Irish Republican

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Army members opposed to the Belfast Agreement, on August 15, 1998, in Omagh, County Tyrone, Northern Ireland.

While the United Kingdom was well-experienced in dealing with the aftermath of Irish Terrorism both in Northern Ireland and across the UK, 7/7 brought home the reality of the major threat which the UK together with other western nations now face from international terrorism. Groups inspired by or with links to Al Qaida are intent on causing indiscriminate death injury and who were prepared to engage in what is now called Suicide Terrorism.

In common with police forces through the Western World, the UK Police Service had reviewed their strategies to combat the increased threat of suicide bombings following the 9/11 terrorist attacks in the USA. Research was conducted throughout the world to determine tactics to counter the threat of a suicide bomber. The approach, which has been adopted within the UK, has been the creation of strategies that incorporate, in defined circumstances, the possibility of an interception and immediate critical head shot in order to protect both the public and the officers engaged in the interception. Operations of this kind were code-named operation KRATOS.

On 21 July, two weeks after the 7/7 attacks, the UK transportation system was hit again with attempted explosions on three more Tube trains and another bus. It appeared that Britain was going to experience protracted and repeated terrorist attack. However, if the events of 7/7 and 21 July shook the UK, the events which occurred on 22 July 2005 were to also shake the British Police Service and in particular London's Metropolitan Police Service (MPS). They would also cause Operation Kratos to become the subject of public and media debate.[1]

At 1006 hours on Friday, 22 July 2005 (a day after a failed bombing attempt in London) during the course of a major Metropolitan Police anti-terrorist operation, a number of undercover surveillance officers and armed firearms officers followed Jean Charles de Menezes onto the northbound Northern Line platform at Stockwell Underground Station. As Mr. de Menezes stepped into the third coach of a stationary train, two MPS officers believing him to be a suicide bomber discharged seven shots resulting in the death of Mr. de Menezes. However, it was determined that he was unarmed and was not carrying an explosive device.

Issues relating to intelligence, communication systems, command, control, tactics equipment, ammunition and less-lethal weapons all became the subject of intense media debate and legal proceedings.

However, Mr. Burrows asserted that if the lethal shooting of Jean Charles de Menezes shook the MPS and British policing, the arrest of one of the bombers

[1] Kratos was the code name given to a policing tactic developed in the UK for dealing with a person-borne explosive device in a scenario involving suicide terrorism.

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(Yasin Hassan Omar) of the failed bombing attempt shook the paradigm that only lethal force was appropriate in dealing with suicide terrorism.

On this occasion, West Midlands Police officers had used a TASER© to arrest the subject believed to have explosives on his person. West Midland officers asserted that in this particular situation the use of TASER© was appropriate. However, the Commissioner of the Metropolitan Police later cautioned that officers using a TASER© on a suspected suicide bomber ran an "incredible risk" of detonating a bomb.

Considering the wider implications, Mr. Burrows made the following observations. If there is a risk of detonating volatile explosives using TASER©, what would the effect of muzzle blast from a conventional firearm be? If a directed head shot creates instant incapacitation, what would the consequences of "release button activated device" be? What if the device was armed with the so called "dead man switch?"

The issue arose of whether LLWs should even be carried in such a terrorist arrest operation, however Mr. Burrows pointed to a number of situations where individuals claiming to have a bomb had been apprehended using LLWs and they turned out after the event to be emotionally disturbed persons. He cautioned about labels and preconceptions conditioning the tactical response. He stressed that many counter terrorism (CT) operations are low threat and low risk in nature and can be conducted in a manner that minimizes threat and risk to life. Commanders and tactical officers need to ensure that this is not lost or diluted during the planning and briefing stages of an operation. They must ensure that less-lethal options are equally valid in CT operations as they are in more routine armed deployments.

Mr. Burrows also asked if it was time to revisit the concept of tunable/ scalable effects where the terms non-lethal/less-lethal may not be the best descriptors but which could be more advantageous than conventional firearms in situations of heightened risk where the consequence of mistaken identity were enormous. Were there, for example, high potential technologies that while not meeting the normal criteria for NLW/LLW definition might be appropriate? He then posed the following questions:

- How much punch could a blunt impact round safely deliver?
- How quickly could a chemical incapacitant work?
- How quickly could an anesthetic/tranquillizer (calmative) take effect in situations of heighten risk alternative to almost administration of certain death (directed head shot)?

While this issue would prove difficult to gain consensus, Mr. Burrows suggested a number of advantages, which would flow from it including "martyrdom avoidance" and a "We tried" accolade. When set against the reality of imperfect intelligence, communication failures, mistaken identity

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and the operationally difficulties in "calling-the-shot" in cases of suspected suicide bombings, the issue should at least be seriously debated.

Mr. Burrows then reminded the group of the broader policing objectives, which included the protection of life, prevention of crime, as well as the arrest and processing of offenders. Key to securing conviction was the issue of evidence. There were important issues with respect to evidential trails of LLWs which need addressed, including audit trails of when and where used and by whom. Weapons such as the TASER© were partly addressing these issues by information technology (IT) capture and use of the microdot confetti-like tags, but these types of issues also need to be addressed by other manufacturers. He then addressed the concern of cross-contamination and scene preservation commenting that technology manufacturers needed to think evidentially not just tactically.

He challenged simplistic mantras like "LLWs have no place at a gunfight," illustrating the point with a slide of troops in Iraqi holding back a group of protestors when suddenly a person appears within the crowd with what is believed to be a gun. This is not a dilemma faced only in places like Baghdad, but in dealing with crowds whether in Belfast, Birmingham or Boston. The operational challenge was to avoiding spiral of increasing violence (increase in retaliatory violence) in a way which peace officers (military or law enforcement) were able to achieve the intervention without making the situation worse. This would thus keep the peace while securing public confidence and Trust.

Referring to the less-lethal dichotomy, Mr. Burrows asserted that conventional firearms capabilities and contingencies are underpinned by concepts of "last resort" tactical doctrine, which is largely similar across international boundaries and jurisdictions. Whereas use and tactics associated with less-lethal devices vary across jurisdictions, tend to be developed and driven by individuals, and lack common standards of testing or training – an area that ILEF is attempting to address.

What of a strategic response to terrorism? The European Union had adopted the UK Counter-Terrorist Strategy (CONTEST), which was based around the Four "Ps" of *Prevention, Pursuit, Protection* and *Preparedness.* "But where," asked Mr. Burrows, "does NLW/LLW fit in?"

Addressing and developing each of the strands, he suggested that *Prevention*, which largely deals with the underlying causes of terrorism, also requires ensuring that equipment, tactics and methods do not become an unintentional basis for continued conflict or loss of public confidence. Mr. Burrows asserted that the best way to address this issue was developing a "*systems approach to LLWs with independent testing, medical evaluation, injury modeling, operational guidance and operational review,"* which was the focus of previous ILEF workshops.

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Each of the objectives gave rise to opportunities to develop interoperability both within and among nations in terms of "LLW capability sets" to address a multitude of areas in public order policing. These include arrest operations such as method of entry, vehicle stopping and border security at airports, along coastlines, and at border crossings. They also include the protection of planes trains, boats, ports security and addressing areas such as marine interdiction and hijacking.

Protection included ensuring reasonable security precautions are in place from physical measures such as increased checks at airports to having counter-terrorism security advisors provide guidance on protective security to sites holding potentially dangerous CBRN materials. Colin asked delegates to think about the extent to which LLW had a role in close protection support and extraction from hostile situations. Consider key sites on which law enforcement and government agencies provided protection there were issues in determining whether an intruder was a prankster, protestor or terrorist. Once again, Colin Burrows posed the question as to whether there was a role for LLW at nuclear/chemical sites, where in certain areas the use of a conventional firearms or explosive devises by security force could cause an equipment malfunction. Returning to the issue of terrorists using volatile explosives, the key question remained: "What is safe to use?"

The LAST of the Four "Ps" is *Preparedness* – making sure the people and resources are in place to effectively respond to the consequences of a terrorist attack. Delegates were asked to consider the issues with respect to mass evacuation and dealing with those who will not move. To what extent could LLWs assist with containment as well as preventing contaminated persons from returning home or forcing their way in hospital or even with the process of decontamination?

Preparedness would require interoperability and understanding of respective capabilities between and trained police and military (all services and special forces), as well as emergency and medical services, across areas such as contingency, rehearsal, trialing and planning. Resources, including respective capability sets, would need to be matched to actual or envisaged threats and designed to provide tactical advantage.

In conclusion, Mr. Burrows suggested that this would require rethinking and revisiting threat and risk assessment, new horizons, old problems challenging established concepts, and technology transfer between and across the military and police. There may also be a requirement to reconsider acceptability of affect and cease to think of NLW/LLW and conventional firearms as "either/or" technologies but part of a scalable intervention capability.

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Host Agency Welcome. Sheriff Kevin Beary of the Orange County, Florida Sheriff's Office welcomed the ILEF delegates. The Sheriff thanked the group then briefly discussed some of the local community engagement initiatives and programs established for counter-terrorism. Orange County has established a Council of Arab Community Leaders. Beyond serving as a forum of cultural understanding and breaking down stereotypes, the Sheriff pointed out that this effort has yielded substantive intelligence enabling a more thoughtful, deliberate and focused approach to identifying potential terrorist threats. Orange County has also created a Radical Islam course for patrol officers, hostage negotiators and SWAT officers, which will be unveiled in July of 2008.

In 2007, Orange County was able to pull 2,100 illegal firearms off the street. Sheriff Beary stated that these were principally large caliber handguns and quantities of fully automatic weapons such as AK-47s. He emphasized that police are closely scrutinized for any use of force, yet are required (and challenged) to provide for public safety in this environment without losing the support of the community. While it is critical to protect tactical and emergency plans from the public record so that they are not available to those who would do our communities harm, Sheriff Beary stated that this should not prevent us from actively engaging the communities we all serve.

Co-Host Welcome. Mr. John Gnagey, Director of the National Tactical Officers Association (NTOA), welcomed everyone one behalf of the NTOA and thanked the delegates for attending. He then presented an overview of the NTOA. The NTOA is a not-for-profit organization, which has over 30,000 members. Although the number of existing tactical teams across the country is not known, there are 1,832 units that have NTOA SWAT Team Memberships. At its core, the NTOA provides information and training to organizations and individuals. Mr. Gnagey stated that over the last several years the NTOA has been providing training to the Department of Homeland Security Office for Bombing Prevention (OBP), the International Association of Bomb Technicians and Investigators (IABTI), the National Bomb Squad Commanders Advisory Board (NBSCAB), and the National Association of School Resource Officers (NASRO). Further he said the organization is working with these organizations and the National Institute of Justice with a goal of making the work of first responders easier and safer with regard to tactics, standards, and guidance. Mr. Gnagey thanked the group for bringing the NTOA into the ILEF. He complemented the group for its work in reaching across international boundaries to discuss these extremely important issues and offer pathways ahead.

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Keynote Address. The Keynote Address was presented by Dr. John Morgan, the Deputy Director for Science & Technology at the National Institute of Justice (NIJ) of the United States. The address included an overview of general NIJ technology programs relative to critical incident response. Dr. Morgan also discussed, with some specificity, NIJ health and safety studies related to conducted energy devices (CEDs).

He began by describing the NIJ as the research arm of the Justice Department whose mission it is to enhance the criminal justice system and to increase public safety through research. The NIJ Office of Science and Technology, in particular, was chartered in part to bring some focus to law enforcement in counter-terrorism including the collection of associated operational requirements. Dr. Morgan pointed out that the NIJ has a complex customer base including 19,000 law enforcement agencies with over 750,000 law enforcement officers; 4,451 corrections agencies (with some overlap with law enforcement agencies) including some 430,000 corrections officers; 351 crime laboratories; as well as countless court, probation and parole officer practitioners. The customer base also includes policy makers at all levels of government, researchers and the American public.

When compared to the US Defense industry, Dr. Morgan asserted that, although the customer base is nearly the same in size, the Justice Department exerts barely 1/1000th of the research capacity to meet the needs of the law enforcement sector. This is not only a challenge, but there is a need for law enforcement to be able to access new technologies and new capabilities at the same level as what we see in other public sectors (e.g., military, health care) where there is a much stronger research and development infrastructure that transitions new ideas and new technologies into practice.

According to Dr. Morgan, the NIJ thus works closely with these other US agencies to leverage their research capacity in support of criminal justice. Additionally, the NIJ works closely with the Technical Support Working Group (TSWG), has extensive agreements with military and DHS agencies, has established formal international agreements and continues to expand informal relationships through forums such as ILEF.

The NIJ organizes its efforts across a broad range of Technology Investment Portfolios. These nineteen areas provide focus of effort. Dr. Morgan pointed out that the regional centers throughout the country are set up to assist any agency in the adoption of new technologies. Additionally, he said that there are test and evaluation activities and centers of excellence. The portfolio areas are:

- Aviation
- Biometrics
- Body Armor
- Communications
- Community Corrections
- Court Technologies
- DNA Forensics
- Electronic Crime

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- Explosive Device Defeat
- General Forensics
- Information Led Policing
- Institutional Corrections
- Less-Lethal Technologies
- Modeling and Simulation
- Operations Research
- Personal Protective Equipment
- Pursuit Management
- School Safety
- Sensors and Surveillance

NIJ's RDT&E Process

Phase I
Identify Technology Need

Phase II
Develop Plan to Address Need

Phase III
Conduct R&D to Address Need

Phase IV
Demonstrate, Test, Evaluate, and Introduce into Practice

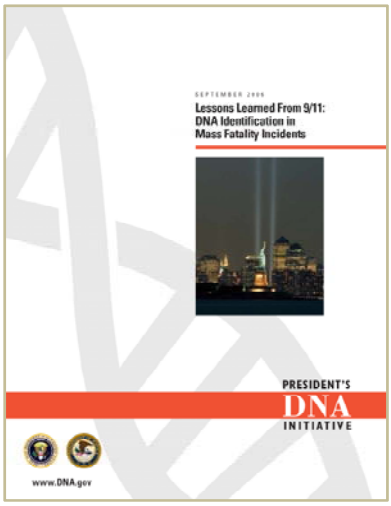
Phase V
Build Capacity

Dr. Morgan outlined the NIJ's phase-step Research, Development, Test and Evaluation (RDT&E) Process that is used to introduce and transition new technologies. Investments are focused on the operational gaps and the highest potential payoff including dual-use and day-to-day technology needs to combat crime.

The NIJ is investing research in *Biometrics for p*ositive identification of suspects through the Justice Department Fast Capture Initiative. Additionally, the National Law Enforcement Telecommunications System (NLETS) Interstate driver's license and photo exchange effort has ten (10) states already on board. The NIJ is also looking at the use of in-car video and have worked with the International Association of Chiefs of Police (IACP) in the establishment of associated standards for these systems.

Beyond interoperability, Dr. Morgan stated that the NIJ's main effort with regard to *Communications* technologies is to enhance public safety radio systems to allow them to do what public cellular telephones already do – that is, exploit a wider range of frequencies and capacity. They are also looking at position location and asset tracking systems for both location tracking of officers in an urban environment and the tracking of offenders.

In the area of *Explosive Device Defeat,* the NIJ has been working on improved robotic tools. The Backscatter X-Ray System is a joint effort with the Department of Homeland Security (DHS) and the Technical Support Working Group (TSWG) to image inside a panel truck in one pass and be adaptable to most in-service robots. Additionally, Dr. Morgan stated that NIJ is looking at a cross-platform cutting tool for removing a bomb vest or belt from suicide bombers. Other efforts include improved vehicle bomb disablement by using thermobaric projectiles and vehicle bomb disablement tools.



Dr. Morgan pointed out that the largest programs at NIJ are in *Forensics*. In the last five years, the ability of criminal justice activities to use DNA technology has roughly doubled and the demand has grown even more rapidly. He said that pilot programs have demonstrated that aggressive DNA forensics result in significant reduction of unsolved burglaries. These efforts have also resulted in a corresponding reduction in violent crimes in those areas. Dr. Morgan stated that there are between 13,000 and 40,000 missing and unknown dead across the United States. The National Missing and Unidentified System (NamUs) allows the sharing of information at the national level in order to help identify the missing and the dead.

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In the area of *Sensors and Surveillance*, the NIJ is focusing on both concealed weapons detection at a safe distance and through-the-wall location and tracking. These efforts are examining the use of millimeter wave technology, acoustics and portable radar.

In the area of *Personal Protective Equipment*, the NIJ has been working with the National Tactical Officers Association in developing a standard for law enforcement personal protective equipment (PPE) for Chemical and Biological Weapons of Mass Destruction (WMD) response as well as methamphetamine lab response. Dr. Morgan stated that although protective equipment is available in its traditional form, it often does not lend itself to tactical response. Existing systems do not adequately support post incident forensics in hazardous environments nor do they support perimeter protection and security in a hazardous environment. The NIJ has established a scientific technical committee and an advisory working group in this regard. According to Dr. Morgan, the NIJ expects that the standard will be ready for public review and comment sometime this fall (2008).

Another area of research is *Conducted Energy Devices (CEDs).* The NIJ is conducting a medical review of CED-associated deaths. Additionally, NIJ has funded research to:

- Estimate the ventricular fibrillation (VF) probability on humans directly caused by CED exposure;
- Examine the effects of a single TASER© exposure on cardiovascular (CV) and blood parameters in human subjects;
- Examine the effects of a single TASER© exposure on respiratory and ventilation functions in human subjects;
- Evaluate cardiac rhythm changes during TASER© activation; and
- Describe both the incidence of injuries associated with conducted energy devices and their severity.

While exposure to CED is not risk-free, Dr. Morgan stated that there is no conclusive medical evidence within the state of current research that indicates a high risk of serious injury or death from the direct effects of CED exposure. Field experience with CED use indicates that exposure is safe in the vast majority of cases. Therefore, he asserted, law enforcement need not refrain from deploying CEDs, provided the devices are used in accordance with accepted national guidelines such as the model policy of the International Association of Chiefs of Police.

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International Delegate Presentations

Canada (CA). Steve Palmer, Executive Director of the Canadian Police Research Center (CPRC), conducted a review and update of less-lethal force options in Canada. He began by discussing some of the activites of the CPRC and some of the challenges being encountered. Many of thse challenges we have encountered before. Mr. Palmer pointed out that the mission of the CPRC has been to harness science and technology knowledge to strengthen police services across Canada. The mission has now grown to include fire and emergency medical services as well.

Mr. Palmer then reviewed some of the efforts with which the CPRC has been involved.

- Low-Cost Nuclear Detection Web for the Rapid and Accurate Detection of Radiological/Nuclear (RN) Materials;
- Air Management Study;
- Crime Scene Modeler;
- Ballistic Helmet Performance;
- Multi-Hit Standard for Police Soft Body Armor;
- Radio Interoperability;
- Remote Drug Detection; and
- Technology Enhanced Skills Acquisition Pilot Project;

In the area of less-lethal technologies, Mr. Palmer stated that independent testing needs to verify whether these devices are doing what manufacturers claim. One of the CPRC guiding principles was underscored by the Police Executive Research Forum (PERF) in 2006. At that time, the PERF stated that technologies, especially those that have the potential to cause serious injury or death, must be assessed carefully. That assessment can help law enforcement agencies develop effective policies in their own jurisdictions and at the same time foster accountability by addressing apprehensions of the public. The CPRC (and by extension similar organizations in other countries) needs to be able to respond to the communities it serves in order to be able to say that these devices have been tested in a steady and organized manner and they are "fit for purpose."

Mr. Palmer stated that the CPRC is in the process of responding to requests from the Canadian Association of Chiefs of Police (CACP) and others on CEDs in determining whether they are safe. Those communities want the CPRC to provide a plan for how these and other less-lethal technologies should be evaluated. The law enforcement community wants to be proactive. As new technologies roll out, Mr. Palmer asked, how do we know they are safe? How do we know we are looking at the right things? According to Mr. Palmer, that is where the Canadian Police Research Centre hopes to help. The CPRC values the international dialogue with groups such as ILEF on standards and testing.

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Mr. Palmer stated that the experience Canada is having is similar to that of other countries with regard to "in-custody" deaths. The CPRC just completed a two-year study in Calgary, which is a city of one million people. The police tracked every use of force incident and had only 550 incidents in those two years when force was used. Of that, 207 included the use of TASER©s. Mr. Palmer pointed out that the injury rate was very low when TASER© was used compared to other uses of force. When TASER© was used, only one percent of the incidents resulted in the subject being taken to the hospital. The rate for other types of force was four percent.

Moving back to the subject of test protocols and standardization, Mr. Palmer stated that it is important for the effort initiated by ILEF on operational test criteria be continued and perhaps expanded. He said that there needs to be a coordinated international effort to develop common frameworks for evaluation that are complete, accurate and defensible.

Finally, Mr. Palmer highlighted a restraint study that CPRC is conducting with the Canadian Coroner's office. This is a prospective study of individual and situational characteristics and risk of sudden death proximal to police restraint.

The United Kingdom (UK). Following on from this, the UK presentation was made by Mr. Graham Smith of the Home Office Scientific Development Branch (HOSDB). His presentation discussed both less-lethal technology work and the methodology used to introduce and monitor such equipment in the UK.

Mr. Smith began by pointing out that the HOSDB is a full UK government partner that provides independent advice to police and government. The HOSDB has no commercial interests and no need to generate income, therefore the advice they provide is completely independent.

The methodology used in the United Kingdom follows nine points:

1. Develop Operational Requirement. Developing operational requirements is accomplished in conjunction with the Association of Chief Police Officers (ACPO). For less-lethal, this means broad and general requirements.

2. Evaluate COTS Products. In addition to testing by the manufacturer, Mr. Smith stated that there needs to be independent testing to verify manufacturer claims and then to provide necessary information to police in order that they can properly assess the risk of using these devices and develop associated guidance. Evaluations include market reviews/surveys, controlled physical testing and limited handling trials. One might ask why such an in-depth evaluation is required.

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RESTRICTED - COMMERCIAL

PSDB Evaluation of Taser Devices

Home Office

POLICE SCIENTIFIC DEVELOPMENT BRANCH

Tara Donnelly
Karen Douse
Michelle Gardener
David Wilkinson

Publication No 0952

POLICING AND CRIME REDUCTION GROUP

RESTRICTED - COMMERCIAL

First, many mistakenly believe that the entire kit has been tested. Since many of these systems are used in America and other places, they surely have been fully tested already. This is just not so. While many have been demonstrated, very little independent evaluation has been conducted. Much work that has been done through the manufacturers does not stand up to scrutiny.

Second, it is not good enough merely to believe that an option is less lethal than a firearm or that it has been used hundreds of times in the US without any problems. This information is, of course, useful but does not present the whole picture. In order for the police to provide a proportionate response, there needs to be an understanding of what the option is capable of and what the outcomes are likely to be. That is, officers need to know how *effective* the option is likely to be and what the potential *risks* are when it is used against humans. If these things are not known, then officers and the public may be at risk.

Finally, and very importantly, someone may well die as a result of the deployment of a less-lethal option. Use will be criticized and questioned by others. There is a need to have the answers to all of the questions that will be asked.

3. Modification/Development. If there are no commercial options that meet the requirement, the HOSDB then moves on to developing their own solution. The discriminating irritant projectile (DIP) is an example of one of those efforts.

4. Establish Develop Guidance for Use. Guidance is developed prior to deployment of a particular device. It is based on information from the HOSDB evaluation and handling trials as well as experience from use in other countries (if available). Input from manufacturer recommendations (if available) is also considered. The guidance is part of the package that feeds into the medical assessment.

5. Perform Medical Assessment. These are conducted by an independent group called the Defence Scientific Advisory Council on the Medical Implications of Less-Lethal (DOMILL). The DOMILL takes the trial results, technical assessments, guidance for use and any medical testing that has been done in the UK and elsewhere. HOSDB also passes to them any information on operational use of the device in question. After the review, the DOMILL issues statements on the device.

6. Independent Review by Medics/Ministers. The Government Ministers then conduct a review and make a decision on whether this equipment will be used in the UK. When the medical implications of the use of the TASER© X26 were examined by DOMILL, it was concluded that "the risk of a life threatening event from the direct interaction of the currents of the X26 TASER© with the heart is less than already low risk of such an event from the M26 Advanced

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TASER©. The DOMILL and PSDB reports led to the Home Secretary supporting the use of the X26 in the UK.

7. Operational Trial. The next step in the methodology is the operational trial for a limited time period. In the case of the X26 TASER©, the Ministers authorized a one-year operational trial of TASER© use by non-firearms officers beginning in 2007. The initial trial was with only ten police forces and was then extended to use in all police forces. All deployments are fully recorded. This includes drawn, aimed, red dot, arced, drive stun and discharged deployments.

8. Full Deployment; and

9. Monitoring and Feedback. The feedback forms are critical in that they provide the means to obtain the empirical and statistical evidence to support ACPO in their expansion of TASER© use. The forms provide an audit trail for any investigation following a death or unexpected injury. The data dispels the "urban legends" (TASER© is not used as punishment tool) and provides local and national information which aids in tactical decision-making. A database allows information to be sorted and extracted more easily and on demand.

HOSDB will continue to evaluate new CED products and any other promising products against the agreed Operational Requirement and will continue to provide technical support following TASER© or other less-lethal deployments where performance has been an issue.

The United States (US). The US presentation was made by Mr. Joe Cecconi of the National Institute of Justice. Mr. Cecconi began by making the point that when compared to firearms, less-lethal devices are intended to reduce the possibility of a bad outcome for subjects, officers and bystanders alike. Initial data has shown that less-lethal devices are approximately 99% safer than firearms. The thought of less-lethal devices being "non-lethal" is at this time a future a goal for the program. The primary focus of the NIJ program is to look at devices that incapacitate (involuntary compliance). The second focus is to look for device that provide an advantage to law enforcement in their ability to produce voluntary compliance (repel, dissuade, distract, deter). These traditionally have leveraged pain. The third new area of research is to stimulate the reflex response to gain an advantage over the suspect. Although a short response, it is an involuntary reaction that can be exploited.[2]

In the area of directed energy, Mr. Cecconi stated that NIJ is looking at infrared (IR) and radio frequency (RF) devices to leverage the effects of reflex response to change behavior. The Defense Department's Active Denial

[2] Reflex response is "an involuntary and nearly instantaneous movement in response to a stimulus." Purves (2004). *Neuroscience: Third Edition*. Massachusetts, Sinauer Associates, Inc.

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System (ADS) has law enforcement implications, if this technology can be scaled and made more portable to meet criminal justice requirements.

The NIJ is also looking at advanced riot control agents. Mr. Cecconi stated that this includes examining the potential of calmatives. He said that this Forum was one of many sources that have driven the operational requirement to more closely examine the potential and scrutinize the risks associated with "operationalizing" calmatives.

There is a need to understand the outcomes of less-lethal incidents. The NIJ has initiated a pilot study to collect these incidents by medical doctors who are at the scene. This gives NIJ a third party-collected source of data, the source of the data is the general public (not the 90 percentile cop who volunteers to be exposed). Since medical doctors collect this data, they bring access to the medical outcomes of these events and familiarity with scientific data collection for reports. Additionally, since it is funded by NIJ and the grantee has to have their IRB and privacy forms approved by NIJ, this data cannot be used in litigation. This is very important to the agency since this collected data cannot be used against them but can be used to help them; it is neutral data and can only be used by researchers. To date over 1,000 incidents in the general public have been captured. When fully funded, this study will also provide an entrance point for new less-lethal devices. Should a new device come to the market, manufacturers can go to one of the data collection sites and if the agency agrees, use it there under medical supervision. There needs to be a formal method such as this to introduce new less-lethal devices, collecting data and reviewing data to better understand outcomes.

This same concept can also be used for understanding the medical outcome of an officer that is shot while wearing body armor. The NIJ has dedicated funding to see if the necessary medical data can be obtained and reviewed.

There also needs to be a better way to stop dangerously driven fleeing vehicles. Research has been ongoing in using high power microwave (HPM) to either damage or confuse electronics in a vehicle. However, new vehicles are being produced with advanced computers on board and the ability to communicate via the on-board cellular phone. OnStar is one of many systems that is being provided to car buyers. To see if law enforcement could get the same access as the car manufacturers, we have initiated a program to see if law enforcement could also get access to the cellular phone and computer systems either in a cooperative manner or in a non-cooperative manner. If it were possible to communicate with the vehicle cell phone, law enforcement could potentially disable a fleeing vehicle.

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New Zealand (NZ). Superintendent John Rivers presented the New Zealand Police update. Police officers around the world have an incredibly demanding job. Often as police lawfully and legitimately use force, some choose to blame the police for an undesirable outcome. Even in a country as small as New Zealand, according to Superintendent Rivers, there have been rare occasions of fatalities following the use of pepper spray and the restraint of suspects. The New Zealand Police (NZP) have conveyed to the public they serve that the use of force, albeit it lawful and legitimate, can often have unforeseen consequences. Given the extent of scrutiny around New Zealand's deployment of TASER©, the Superintendent stated that the NZP were very deliberate in reference to "less-lethal" weaponry. They avoid the terms "non-lethal" or "less-than-lethal," since on very rare occasions any use of force may result in unforeseen consequences including serious injury or even death.

During the last ILEF Workshop in 2006, Superintendent Rivers outlined the pending trial of TASER© in New Zealand. Although the NZP are a small organization by some international standards, they are a force of 11,000 of which 3,000 are staff and 7,000 are front line police officers all of which are unarmed. These officers do have ready access to firearms when the need arises, however. According to Superintendent Rivers, the NZP arrest about 110,000 people each year. Additionally, over 2,000 NZP officers are assaulted every year. Last year the NZP had 650 injuries, some of which were very serious.

With that as a backdrop, Superintendent Rivers described the preparation for the twelve-month TASER© trials. The NZP purchased 35 TASER© devices and had 180 trial participants. The trials were based on the best practices derived from the United Kingdom. The TASER© trial in New Zealand was controversial. Prior to the trials, Superintendent Rivers organized a practical demonstration for the Police Executive, the media and other stakeholders. The live scenarios that involved the use of pepper spray and TASER© were extremely valuable. Without exception, the Superintendent remarked that all were astounded by the amount of physical discomfort of pepper spray compared with the TASER©.

Superintendent Rivers stated that there were 114 incidents during the trial period. He said that 95 deployments involved presentation, laser painting, or arcing. The remaining 19 involved discharge of the TASER© weapon. Two-thirds of incidents involved offenders with weapons. Common weapon types were cutting/stabbing instruments (73), the majority being knives (44). Weapons were involved in 16 of the 19 incidents involving TASER© discharges. Mr. Rivers said that family violence events were the most common event type (39%) in which TASER©s were deployed. TASER©s were effective in de-escalating and resolving the majority (86%) of incidents.

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Although there was some concern about public support early on, a survey of 1,200 New Zealanders indicated that 83% were aware of the TASER© trial. Superintendent Rivers stated that 79% of New Zealanders support the use of TASER©s by Police, particularly in situations where police need to protect themselves and the public from violence and harm, and in situations where subjects have weapons. According to Superintendent Rivers, only 10% of respondents opposed the use of TASER©s by Police and gave reasons such as the TASER© might injure someone, they did not trust Police, or the Police might "overuse" the TASER©.

Police participants in the trial indicated that TASER© availability reduced the need to rely solely on firearms, thereby reducing the risk of fatalities. Officers felt that TASER©s "filled a gap" between options such as OC spray or batons and firearms.

There was extensive monitoring and evaluation built into the TASER© trial. Superintendent Rivers indicated that the report should be available soon. The NZP used their Tactical Options Report Database, which was rolled out at the same time as the TASER© trial, to capture, analyze and interpret data. Their hope and intent is that this system will enable the strategic review of tactical options and equipment, protective equipment as well as tactical training.

The NZP have just initiated a two-year program at the Commissioner's request called Tactical Options Deployment Review (TODR). The purpose is to provide some assessment of the both benefits and consequences to introducing new technologies *and* develop police effectiveness when responding to calls for service where weapons are believed to be involved. For example, when TASER© is deployed what will be the impact on the use of firearms and other portions of our kit? Does it reduce the necessity for the use of the Glock or Bushmaster? What "recalibration" of the firearms training program will be required? The Project Team will implement a program of activities over a two-year period that will include an environmental scan, the development of a different response model, an assessment of LLWs and the development of strategic options to reduce reliance on lethal weaponry.

The operating environment for front line officers is rapidly changing. Superintendent Rivers asserted that this is graphically demonstrated in the TASER© trials report. For example, officers have had to confront people suffering from mental illness with increasing frequency. There is a perception in some circles that police management of people suffering from mental illness is somehow deficient. If it is incumbent upon officers to intervene, provide a response and manage a violent situation, the fact that a person is mentally ill provides an explanation or an understanding of what is perhaps driving a perpetrator, but is of no consolation to the officer. Superintendent Rivers asserted that despite any issues around race, ethnicity, gender, mental illness, and/or under the influence of alcohol or drugs, the front line officers are still confronted with a situation that compels them to intervene – often

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using force. Although the NZP train in carrying out continuous risk assessments, pragmatically, officers cannot be expected to be able to decipher every possible detail of every incident and incorporate these details into his decision-making. This is an issue the NZP both acknowledge and with which they continue to grapple.

Featured Presentations

Colonel Jeff Miller, Commissioner of the Pennsylvania State Police presented a briefing on the West Nickel Mines Amish School Shooting as a backdrop to ILEF workshop discussions. After a moving video essay, Colonel Miller began by talking about the Amish in America. He then described the incident that took place on October 2, 2006. The profile of the perpetrator, Charles "Carl" Roberts, was unremarkable. The Commissioner proceeded to describe the incident timeline as reconstructed by the Pennsylvania State Police. Colonel Miller also discussed the response by first responders. His presentation included a thorough discussion of the events leading up to the assault, the vulnerabilities of the Amish community and a thorough reconstruction of the entire incident using 911 and police radio recordings; crime scene photos; and recordings of television news media reports. Colonel Miller also discussed and assessed the police response in terms of incident command, tactical initiative of troopers, media relations and post incident activities. The incident and response serve as a model for the challenges associated with responding to such hostage and active shooter incidents. The presentation demonstrated the spontaneity of these types of events, the compressed timelines and the very human effect such events have on officers and everyone involved.

Chief John Timoney of the Miami Police Department began by discussing the areas of technology and crowd control. His view is from the perspective of a chief, which he stated is sometimes different from officers on the street. The day he was sworn in, he stated that there were 13 police officers going to trial in federal court for a series of "bad shootings." The department at that time had a rather long history of police shootings. Over the last 25-30 years, the City of Miami has had more riots than any other city in America, according to Chief Timoney. Every single one of those riots began with a police shooting of a civilian.

The number one issue when Chief Timoney arrived in Miami was, therefore, police use of deadly physical force. While it was unfortunate that 13 police officers were going to trial in federal court, the other side was that Chief Timoney had the attention of the Department – they knew that serious change would be coming. Shootings across the country often involve stolen cars or fleeing the scene of some crime. Chief Timoney made it clear that

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going forward that there would be no shooting at motor vehicles, unless the people in the motor vehicle had a gun and were shooting at officers. He believes that that Miami currently has the most restrictive shooting policy in the country. The Department not only changed the policy but the entire underlying philosophy.

The Chief then implemented a series of "re-training" efforts for the entire department. Perhaps the most important step was issuing police officers TASER© devices. Chief Timoney clearly stated that he had no interest in TASER©, financially or otherwise, but that these types of products were effective.

One can look in city after city in the United States and find the most controversial shootings often involve police encounters with emotionally disturbed people living on the streets. On this subject, Chief Timoney asserted that often times these people are dangerous, but in fact, they do not carry guns. However, the police officers confronting these individuals often only have a gun or a night stick. Given the choice between a night stick or a gun against a baseball bat or a knife, the officer will often choose the gun. Chief Timoney emphasized that the TASER© becomes an ideal weapon in these situations. He went on to say that if one were to canvas the average American after a police officer shoots an individual who just held up a liquor store, most people don't care. But, when an officer has to confront a bipolar individual on the street, he really needs another option. In Brooklyn, there was an incident where a woman called the police when her bipolar son was beating her up. She said to the police afterward that had she known police were going to kill her son she would have not called them and let her son continue to beat her. The TASER© provides a better option.

The other important change here is that there is built in accountability. In the past, it was difficult to track use of force. If an officer fired a round or used his nightstick, it might not be reported. The TASER© products specifically have built in accountability through the Anti-Felon Identification System (AFID) and the port download after each shift. In the last couple of decades, the entire industry of less-lethals has grown. Some new things work and some do not.

Chief Timoney also cautioned about the use of blunt impact projectiles, including baton rounds. Their uncoordinated use particularly when fired indiscriminately at crowds had caused major problems for law enforcement and on occasions ended in tragedy. He did however commended the UK and in particular PSNI for the coordinated and highly trained approach which had been developed in recent years to the use of these systems, in situations where their availability and use by specially trained officers had undoubtedly averted the need to resort to lethal force and had saved lives.

If you look at the World Trade Organization (WTO) riots in Seattle a few years back, there were some problems. At most of these major events, police

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departments rely on mutual aid (assistance from outside agencies in crowd control situations). Assistance comes in the form of officers with a variety of preconceptions, experiences and training. Chief Timoney pointed out the importance of planning for an event and meeting with chiefs of the multiple supporting agencies to allow some common understanding of the "rules of engagement" for use of force, necessary force, and efforts at standardization. However, he stated, when "D-Day" happens, some officers inevitably act independently – and this can cause problems.

Chief Timoney asserted that in any major event there are three parts. The first part is the planning, which in some respects is the easiest part. The "game" itself normally goes according to the plan – more or less. The third part, he continued, is the "post game" event – which is the one police have been least prepared to deal with. This can last three or four years with all of the lawsuits looking at the actions of every individual officer. Thousands of hours of video and thousands of photographs taken by both the protesters and the media are reviewed over and over again. The problem with the less-lethal weapons growth over the last decade is that everyone has them, but there are neither clear, nor common, guidelines for when they should be used and, other than the TASER©, there are no inherent systems of accountability.

[Editor's Note: Chief Timoney hinted at the need for better debate on the philosophy underpinning police responses. Mr. Burrows agreed it has not yet been debated.]

Chief Constable Ian Arundale of Dyfed-Powys Police provided a presentation of the cooperation of police and military forces in counter-terrorism. He began by stating that the nature of policing in the United Kingdom is changing at this time. Although Northern Ireland has experience in dealing with terrorism, England, Wales and Scotland are now facing similar challenges. This threat is mainly Islamic-based terrorism and has brought challenges, which are driving revolutionary changes to the way the UK deals with certain policing issues. Multiple plots and fast-moving incidents up and down the country are now a major daily business in the UK. Many of those threats that police are facing are beyond the capability of standard police departments and are bringing forward challenges not seen before on the UK mainland.

The UK police participate in national counter-terrorist exercises, and conduct internal exercises as well. Mr. Arundale stated that the work in confronting terrorists in tactical operations is largely the exception. Most work relates to combating fraud (social security, benefits and credit card) that fund terrorist activities abroad. He said that the UK police have developed a special interoperability with the military to enhance the overall UK response.

Another thing that has affected many forces in the UK is that there is a need to monitor such things as the movement of fertilizer. Tracking these has allowed them to thwart a number of terrorist plots and led to the uncovering of a

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number of terrorist cells. Mr. Arundale stated that UK police have also countered plots to use chemical tankers and chlorine tankers, which has raised questions about how to stop such vehicles when they are traveling to population centers. They have accepted that on occasion, however, these situations may be beyond the capability of police. Additionally, the ability to call upon military special forces is limited and can only be used in extreme situations and at times there are great difficulties getting those officers and assets deployed.

Mr. Arundale went on to say that they have found that terrorists pose different threats at different times. Additionally, the application of the concept of less-lethal response and managing some practitioners has been an interesting dilemma. The use of the term "terrorist" often creates a mindset in officers that they have to use all of the weaponry available and "blow down doors and walls." They have found, however, that the vast majority of people they have dealt with are not the determined terrorists many think they are.

One of the issues the UK has considered is defining what "beyond the capabilities of police" exactly means. In other words, when is it appropriate to ask for special assistance? Mr. Arundale stated that the issue is not just about firepower, but more precisely about achieving a positive outcome. An interesting spin on less-lethal is that if the *best trained people* are sent in with the *best equipment*, there is less likelihood of mass casualties and a greater likelihood that hostages will be rescued.

Mr. Arundale concluded his remarks by stating that there are some challenges regarding language, culture, handovers and coordination in these very fast-paced and dynamic situations. Conducting joint training and working with the military forces, however, has allowed the UK police to break down some of these barriers and to gain a better understanding of boundaries. This has improved overall capability.

Chief Superintendent Peter Todd, Head of Specialist Operations Branch, Police Service of Northern Ireland (PSNI) offered a presentation on counterterrorism operations from a Northern Ireland (NI) perspective.

Chief Superintendent Todd opened by outlining the theme of the presentation: "To show the application of Command & Control to facilitate less-lethal responses to terrorism." He contextualized the current NI political position and the transitions made in policing as the community was coming out of conflict, but where there was still a significant terrorist threat from dissident terrorist groups and loyalist paramilitaries. The Chief Superintendent outlined the significant loss of police personnel (312 officers murdered) within the RUC and the 3,712 deaths suffered by police and the public during the troubles. He then extrapolated these figures to emphasize the impact on a small country as opposed to the USA where the equivalent figure per capita would have

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resulted in a death toll of 736,000 (or of 143,000 if the figures were applied to England).

In terms of terrorism, Peter outlined the differences and similarities (particularly around methodology and intent) between "home grown" and "international" terrorists – both of which had been encountered in operating in Northern Ireland. In developing this, he went on to articulate a number of key responses to terrorism. In particular, he discussed the "War Model (War on Terrorism)" and the "Criminal Justice Model".

Chief Superintendent Todd reflected on European Case Law, in particular the decision of the European Courts in the case of UK-v-McCann (brought by relatives of Irish terrorists killed by UK Special Forces in Gibraltar).[3] Peter articulated the principle set down by the court, which was now embedded in the UK policing approach to all situations where force is used that "it should be planned and controlled by the authorities so as to minimize, to the greatest extent possible, recourse to lethal force." It followed that any operation mounted under *the War Model* with the intention of killing terrorists would be contrary to the law. The legal position was clearly that the planning and control of the operation should be to minimize to the greatest extent possible, recourse to lethal force and arrest the subjects of the operation (*the Criminal Justice Model*).

He described the three-tier command model known as Gold, Silver and Bronze which is the approach taken across the UK to command operations where armed officers were being deployed. This model delineates Gold as being the Strategic Command level, Silver is the Tactical Command responsibility for the operation. Bronze commanders are responsible for operational coordination and direction at the ground level.

He also discussed the conflict management model, specifically the relationship of Information/Intelligence, Threat Assessment, Powers/Policy, Tactical Options and Actions. This model was developed by the Association of Chief Police Officers (ACPO) and is used nationally across the United Kingdom. Chief Superintendent Todd described the categorization of operations involving the deployment of armed officers on specialist operations in PSNI as Category 1, 2 and 3. He stated that the purpose of the categorization was to ensure that appropriate levels of dedicated and experience command are allocated to specific operations based on intelligence, threat and risk assessment. He commented that this approach reflects the principles of proportionality as enshrined in the European Convention of Human Rights.

Within the Specialist Operations Branch of PSNI, there is a devoted cadre of trained, accredited and experienced Gold, Silver and Bronze Commanders who work within a dedicated Operations Centre for covert operations. Peter explained the relationship between Surveillance, Aerial Support, Technical

[3] (McCann -v- UK 1995 - 21 EHRR 97).

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Support and Specialist Firearms Officers – all of which are under the command of one departmental head. This ensures that all deployments are mission critical. It is resilient with regard to command, control and knowledge sharing and is an effective and efficient use of resources to mitigate terrorist threats.

Peter then outlined the relationship of intelligence and operational delivery of arrest by way of operational case study. He stressed the importance of constant evaluation of intelligence both at the planning stage and as the operation develops. This accounts for both intelligence gaps and the implication of the intelligence being incorrect (plan for intelligence failure). Peter also highlighted by way of practical demonstration how planning consequence management, post incident management and community impact assessments were key elements of command.

In conclusion, Chief Superintendent Todd suggested that effective command by trained, accredited and experienced staff was key to successful operations. It ensures that Specialist Firearms Officers are not placed in positions where less-lethal options have not been considered. Additionally it reduces the possibility that operations are allowed to develop to the point that opportunities for disruption by less-lethal means are missed and the ultimate use of lethal force wholly avoidable.

Staff Sergeant Joel Johnston, Vancouver Police, Canada and Sergeant Bruce Stuart of the Royal Canadian Mounted Police provided a presentation on use of force in Canada. In Canada, there are approximately 63,000 police officers and a total population of about 30 million. Eighty percent of the Canadian population is within about 100 miles of the border with the United States. Sergeant Johnston stated that the problems they face are similar to those faced by officers in both the US and UK and that they have similar tools available to law enforcement. "Intermediate" weapons have been in Canada since policing began there in the 1800s. They have, however, evolved over time. Expandable batons were introduced as soon as they were available in 1990 and OC spray in 1991. The first conducted energy weapon was tested in Victoria, British Columbia in 1998.

Sergeant Johnston stated that there are three primary deployment levels for less-lethal weapons systems in Canada. At the patrol officer level, uniformed officers are carrying batons or expandable batons, a variety of OC sprays and many agencies have also gone to a CED. Emergency response teams (ERT or SWAT) carry all of the same weapons as patrol officers. In addition, they carry extended range impact weapons (ARWEN, Sage, drag-stabilized beanbag, etc), chemical munitions and deploy ERT canines. Public order units also carry everything the patrol officers carry plus 36 inch straight batons and extended range impact weapons (including 40mm, FN303™ and PepperBall©). Some units also deploy water projection systems (water cannon).

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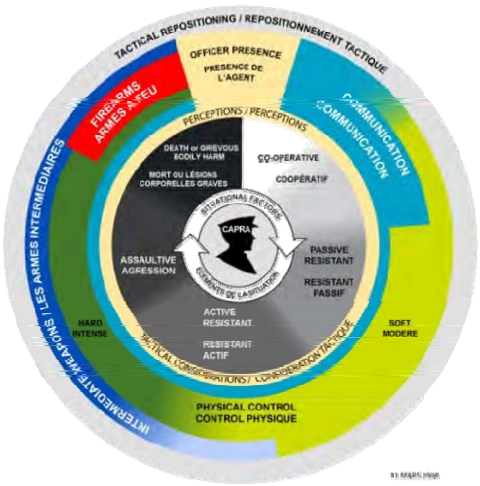
Sergeant Stuart began his portion of the presentation by stating that one of the challenges police face is how to deal with the media, especially when they portray a single, and often uninformed or incomplete, perspective. On October 14th, 2007 an arriving passenger at Vancouver International Airport was subjected to a TASER© and subsequently died. The Media showed the video footage repeatedly for days across Canada and around the world, providing media-narrated perspectives and limited information from the law enforcement community. The result, Sergeant Stuart continued, was anger directed against law enforcement in an unprecedented fashion. Numerous inquiries were initiated – sixteen at last count. Additionally, there have been calls for criminal charges of murder and moratoriums on CEDs. According to Sergeant Stuart, the "silver lining" might be that there is now support for an initiative that had been stalled, but which looks to address some of these concerns. These include national standardization of:

- CED training (non-vendor-based);
- CED Policy including threshold for use;
- Subject behavior-officer response reporting; and
- Use-of-force framework/model.

Sergeants Johnston and Stuart both believe that part of the solution lies in Canada's development of the Subject Behaviour-Officer Response Reporting (SB/ORR) system. This system will provide the accountability demanded by the public. By standardized reporting, it will allow the comparison of data such as aggregating frequency of force response, injuries associated with force response (officers & subjects) and providing comparative injury potential of force response options. Additionally, it will provide transparent and contextually appropriate accountability for the public and an immediate and accurate account of the types of behavior that police officers routinely deal with as part of their mandate. Sergeant Johnston stated that the system will assist in identifying existing and emerging trends in profiled behaviors and influence training to most effectively deal with those trends. It will also afford greater liability protection for police officers and law enforcement agencies and the data will support more effective lobbying for funding and resources. Sergeant Johnston also believes that the data will demonstrate that police officers use force very infrequently (likely less than one percent of all encounters).



In Canada, there is common legislation and one national framework for use of force. Most of the use of force models within that framework have now been aligned. Sergeant Johnson was clear that the models are neither law nor policy oriented – nor are they justification models. They are used in training and, perhaps more importantly, they allow officers to better articulate to the courts and juries, as well as at inquests, what officers did in a situation. They provide a graphical representation and a common language.

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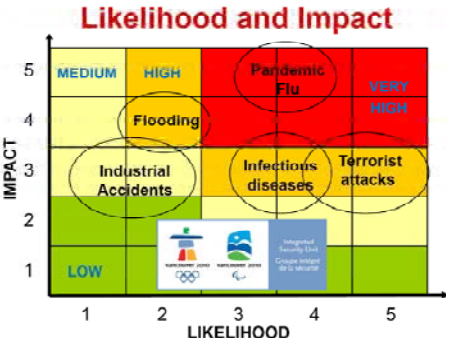
Sergeants Johnston and Stuart concluded by saying that they have been working to coordinate a common use of force model that is consistent with the National Use of Force Framework and the RCMP Incident Management Intervention Mode. The response of the Canadian Association of Chiefs of Police (CACP) to both the Subject Behaviour-Officer Response Reporting (SB/ORR) system and the standardized use of force model has been good. Additionally, although there will be public access to this data, the BC Federation of Police Officers, the Vancouver Police Union, and the RCMP Staff relations representatives have also been very supportive.

Staff Sergeant Chuck McDonald of the Royal Canadian Mounted Police, Canada, provided a presentation on preparations for the 2010 Winter Olympics. Staff Sergeant McDonald heads the Integrated Security Unit (ISU) for the 2010 winter Olympics in Vancouver.

During the Summer Olympics in Beijing this year, the Chinese will be deploying over 100,000 police. By comparison, for the 2010 Winter Games in Vancouver there will be a force of just under 10,000 police.

Vancouver is a large urban center on the West coast of Canada. The metropolitan area has a population of approximately two million people. It is situated near the delta of the Fraser River where it enters the Pacific Ocean, and at the foot of the Coast Mountain Range, therefore the name "Sea to Sky" country. Vancouver is Canada's main port for shipped goods from Asia and the airspace is a main corridor for trans-Pacific flights. It is home to some light industry and the financial center for British Columbia's resource-based economy. Tourism is another important economic driver for the area. Whistler is a world-class ski resort located two hours north of Vancouver.

In 2005, the Vancouver Bid Committee won the right to host the 2010 Winter Olympics. There will certainly be a significant impact to the region's policing community. There will be 117 venues (seven types) with more than 5,000 athletes and officials; 10,000 media members; 30,000 volunteers; two million ticket holders; 5,000 cultural performers; and at least 35,000 overnight visitors per day of the Games. The event will be televised to over three billion viewers and will require the accreditation or credentialing of approximately 130,000 individuals.



In the covenant with the Government of Canada, the RCMP was identified as the lead agency for security for the 2010 Games. Staff Sergeant McDonald stated that the RCMP subsequently formed the Vancouver 2010 Integrated Security Unit (ISU), the partner agencies of which also include the Vancouver Police Department, the West Vancouver Police Department, and the Canadian Forces. The ISU is also co-located with Emergency Management of British Colombia (BC), Public Safety Canada, representatives of the BC Ambulance Service, and representatives of the fire fighting community. The area of

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operations covers over 15,000 square kilometers, eight municipalities policed by three different agencies, dense high rise urban areas, deep water ocean, remote mountain terrain and is in close proximity to the US border.

Sergeant McDonald continued that planning for 2010 is intelligence-led and threat-driven with a view to historical experience. Current intelligence is essential using both open and protected sources of information. Major threats include terrorism, public order situations, organized crime, natural disasters, severe/extreme weather events and pandemics.

In many cases, security measures are already in place and need only be refined or enhanced for the Games (aviation). In other cases, measures must start from the beginning (accreditation). According to Sergeant McDonald, planning includes airspace design, tactical airlift, air surveillance and patrols, monitoring of marine traffic, security of waterside venues, freight rail, trucking and pipeline screening and security. Screening of employees in critical areas and criminal records and background checks of all employees are being accomplished in cooperation with the Vancouver Olympic Committee (VANOC).

Multiple, integrated electronic systems will be used to monitor venue perimeters. This will reduce the need for a physical security presence. Terrorism and extremism are of primary concern. Planning focuses on countering such threats. Sergeant McDonald concluded by stressing, however, that this is not a *security* event – it is a *sporting* event with a security overlay.

Mr. Charlie Payne of the US Department of Homeland Security provided a presentation on the Department's Office for Bombing Protection (OBP) and its functions within the interagency community. He began with a discussion of the Improvised Explosive Device (IED) threat.

The annual threat assessment from the Director of National Intelligence continues to single out explosives as the most significant terrorist threat. Common sense security measures and vigilance provide the foundation for protecting us from this threat.

Over the last several years, OBP has been engaging with interagency groups, departments, associations and groups such as ILEF to get a better understanding of the threat. Mr. Payne pointed out that this is not an insignificant task, given the diverse stakeholders OBP serves. These stakeholders include the SWAT community, bomb squad community, public safety dive teams and explosive detection canine units. The principal issues and challenges that cut across these stakeholders are:

- Homemade explosives;
- Terrorist use of the internet;
- Large vehicle bombs;
- Suicide tactics (including vehicle-borne IEDs);

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- Radio controlled IEDs;
- Electronic countermeasures;
- Multiple or simultaneous attacks; and
- Soft targets and critical infrastructure sites.

Suicide bombers have been around for decades. Terrorists have used this technique effectively in Iraq and Pakistan. They have gone to the length of using children, babies and the mentally challenged to bear IEDs to targets.

There is a significant amount of information being traded by terrorists on the internet. This includes training, manufacture of explosives, testing and target surveillance information. Terrorist groups have a fairly sophisticated test processes they use for developing these systems to ensure their effectiveness. Mr. Payne showed video of a number of terrorist attacks that have occurred in recent years – video being shared by terrorists. The level of attack planning is very sophisticated. These groups have significant capacity and resolve, which should not be underestimated.

In view of that threat, the OBP focuses on three mandates, which are designed to reduce vulnerability to, and risk of, attack:

- Coordination of national and intergovernmental efforts;
- Requirements, capabilities and gap analysis; and
- Information sharing and bombing prevention awareness.

These efforts included the development of the US National Strategy for Improvised Explosives Devices and Homeland Security Presidential Directive-19, which outlines an integrated national approach to safeguard the nation and our citizens, property, and critical infrastructure and key resources from terrorist IEDs. There are also multiple pieces of legislation which Congress has put forth to support and improve technical capabilities of first responders. The OBP oversees the implementation of these strategies and provides technical support for legislative efforts.

The Office also works with local emergency services and security partners in major cities to develop IED Security Plans, which includes requirements analysis and identification of capability gaps. Mr. Payne briefly discussed *TRIPwire* (Technical Resource for Incident Prevention), which is an online information-sharing network for bomb technicians and other law enforcement officials to learn about current terrorist bombing tactics, techniques, and procedures, including IED design and emplacement.

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Special Military Presentations

Colonel Kirk Hymes (USMC), Director of the Joint Non-Lethal Weapons Program, led the special military presentations. He began by thanking the law enforcement professionals of the forum for their service. He acknowledged that while many civilians have been gracious in extending gratitude to those that wear a military uniform, we more often than not forget about our police officers who are on the streets every day keeping our communities safe.

Colonel Hymes mentioned that an earlier presentation highlighted that when SWAT developed in this country, it was a great opportunity for law enforcement to learn lessons from the military. He said that the military is now in a position where they are looking to law enforcement for ways to apply different levels of force.

Colonel Hymes stated that the military does not currently face enemy combatants that are easily recognized. On the contrary, they are conducting counterinsurgency operations in an urban environment where they must be very discriminate and precise. Non-lethal weapons play a very important role in an environment that contains both combatants and noncombatants. The soldier must be able to determine intent by interrogating at a distance and has to be able to differentiate between "the tourist and the terrorist."

Colonel Hymes went on to point out the significant impact of the media, especially in these environments. He displayed a photograph of an Israeli tank pointing at a Palestinian youngster (who is throwing a Molotov cocktail). He stated that thirty years or more ago, this would not have been even newsworthy. However, the snapshot does not really tell the story, it merely supports the view or point that the media wants to make.

Less-lethal options provide flexibility. Colonel Hymes stated that without these capabilities, the "shoot or don't shoot" decision might produce a lethal effect on subjects later determined to be innocent. With less lethal options, the force commander can elevate or decrease his responses (detect, deny, delay, defeat) to suspected targets as the situation changes. The goal he said was not to look for a fair fight, but the capability to respond with an appropriate level of force.

Colonel Hymes discussed the challenges of consequence management after a WMD event. The need to cordon off or quarantine an entire city or a portion thereof is a real possibility. There will be individuals on the inside that want to leave the quarantined area. Additionally, there will be Individuals on the outside that want to return to their homes and protect their families. Although lethal force might become necessary, it is certainly not the first level of force appropriate for enforcing such quarantine. Non-lethal systems are critical in such a situation.

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In terms of the technologies, Colonel Hymes briefly discussed some of the fielded technologies, which were familiar to the delegates including impact munitions, the FN-303, TASER©, Laser Dazzlers, and Acoustic Hailing Devices. He then presented some of the higher profile developing systems.

Through Penn State's Applied Research Laboratory, the US Defense Department is developing an improved acoustic hailing device capable of producing directional sound beams to project warning tones and intelligible voice commands to distances of 300 meters from the device with background noise present at the target's location. This array is being coupled to a light and dazzler array.

The Joint Non-Lethal Weapons Program office is also continuing to prepare the Active Denial System (ADS) for fielding. The system uses electromagnetic millimeter-wave energy to stop, deter and repel an advancing individual or crowd. Beam dimensions are classified but it has an unclassified range of 500 meters. Effects on individuals include intense rapid heating sensation and involuntary response to move away from the beam.

Colonel Hymes also briefly discussed the non-lethal MK19 (40mm) round, which will have an effective range of 10 to 100 meters (threshold) and 150 meters (objective) with danger close being zero to ten meters.

He also said that in the area of conducted energy devices, or human electro-muscular incapacitation (HEMI), in defense terminology, they were looking to extend shotgun versions with a 40mm version of the "tetherless" systems.

The Radio Frequency Vehicle Engine Stopper looks to disrupt or stall a vehicle's engine with a short-term (one to five seconds) exposure to high power microwaves. The goal is disruption of vehicle electronics, including the electronic control unit (computer), to cause effects from temporary disruption (computer re-boot) of the electronics, or destruction of the electronic components.

Beyond the technology challenges in developing and deploying some of these systems, there are also legal, policy and treaty challenges that have to be addressed. The aspect that transcends all of these challenges is human effects. He concluded that whereas a lethal system requires achieving a single threshold to be effective, a non-lethal system requires achieving an effectiveness threshold without crossing the threshold of serious injury or death.

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Presentation from the United Kingdom Special Air Squadron (SAS), provided by the Counter Terrorist Wing Squadron Sergeant Major.

The presenter explained that within the SAS, one Squadron is always on standby to respond to a terrorist incident in the UK or anywhere around the globe. Considered by many to be the world's premiere anti-terrorist special operations unit, the SAS counter-terrorism wing is known as the SP (Special Projects) team. It was the fact that the squadrons constantly rotated from operational deployments including those in areas such as Afghanistan that ensured that they were operationally ready and remained combat experienced. This was one of the areas which distinguished them from Police firearms tactical teams, who were extremely well trained and resourced but had limited experience in countering aggressive battle hardened terrorist groups. UK Government are involved in setting the overall Counter terrorist Strategy and in coordinating response. In terms of UK operational response Chief Constables have primacy for what happens in their police areas and military assistance is available where the threshold for that is met and approved by a Government minister.

The presenter explained that there are special arrangements of the deployment of British Armed Forces within the United Kingdom, which are referred to as Military Aid to Civil Power (MACP). The operational deployment of Armed Forces in Northern Ireland from 1969-2007 was conducted under MACP arrangements, which included the deployment of both regular service personnel and special forces. It was explained that while domestic terrorism related to Northern Ireland principally from dissident Irish republican and loyalist terrorist groups remained, a very different threat associated with international terrorism now existed. However, much of the planning methodology, systems of operating and street craft learned in the very dangerous conditions of Northern Ireland have severed the Regiment well when working in other theaters.

The current understanding of how terrorist groups are structured is that they are networked cellular structures, distinct from hierarchical organizations. If this is true, then successful action against a key agents of cells should not necessarily affect the cells' capacities to propagate. This was a system that the provisional IRA had successfully operated and which was now been seen on a global scale. They were also well financed and resourced through international networks. While radicalized individuals with little combat experience were often involved in terrorist acts, there were many who were going to international training camps and volunteering for active duty in war zones. There was a concern that should they become involved in terrorist action at home that they would be prepared to actively take on security forces in a way that British Police officers, outside of Northern Ireland had yet to experience.

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Within Britain, the following characteristics were evident in respect of terrorist operatives in that their activity tends to be:

- Nationwide with operations crossing policing boundaries;
- Fluid and dynamic;
- Networked and cellular; and
- Characterized by good internal security.

Al Qaida is not a monolithic organization, nor is it merely a "brand name". It is a movement that is a "network of networks." Key features were described as:

- A network of terrorist networks;
- Bin Laden and leadership comprise the core;
- Linked networks have occasional contact with the AQ core; and
- Inspired networks and cells are motivated by AQ ideology.

Concluding this part of the presentation the audience were reminded that:

- The terrorists were for a large part unknown;
- Their likelihood of success was high;
- The CBRN threat whilst small was significant; and
- You can disrupt, and prevent terrorist threats of this nature but they are difficult to eliminate.

It was also emphasized that the threat was global in nature and that given technological advances and use of IT, It was therefore necessary to ensure interoperability between police and military agencies both nationally and internationally. The need for leadership and training skills to be underpinned by effective polices and strategies was a theme that run throughout the entire presentation.

There was however a need for resilient leaders who demonstrated the following qualities:

- Recognize the problem;
- Use inclusive problem solving strategies;
- Have clarity of purpose;
- Have awareness of organizational cultures, values and approaches of the organizations with whom and for whom you work;
- Mentally rehearse the key issues the responses likely to be encountered and prepare for any challenges that might arise;
- Maintain leadership presence, including an ethical, consistent approach to decision-making;
- Adapt quickly to the situation at hand; and
- Identify and communicate the end state required and inspire others to do all necessary to achieve the relevant objectives.

In concluding the presentation, he emphasized the importance of training, and knowing your on skills limitations and those of your colleagues, other agencies with whom you would be required to work and of those individuals and organizations that you would be required to go up against.

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Major Stephane Dufour, Department of National Defense, Canada presented a summary of less-lethal technology interests and research in the Canadian military. He stated that because crowd control is a complex problem, Canada has broken the concept into several types of operations in order to better understand the challenges; better field equipment; and develop better tactics, techniques and procedures (TTPS).

Crowd control is a subset of what the Canadian military refers to as "Crowd Confrontation Operations." Major Dufour stated that there remains a need to be able to monitor crowds, avoid crowds, disengage from people, exercise limited control, disperse groups, and to maneuver them to other locations. It is within this construct that Canada organizes and trains for these situations.

Canada's NLW capability set supports an infantry company group (150 people) plus attachments. It includes four types of equipment:

- Personal protective equipment (PPE);
- Non-lethal ammunition and launchers;
- Ancillary equipment; and
- Training equipment.

Major Dufour pointed out that Canada has deployed their military crowd control capability domestically in the past. When deployed, they are in support of law enforcement. For many years, Canada did not train on this capability, but when troops were deployed to the former Yugoslavia, Major Dufour stated that they discovered they once again needed the capability to deal with noncombatants and crowds. The Canadian military has re-introduced the capability and have re-worked their TTPs.

Much of the Canadian view of less-lethals is limited to the shielded baton line. However, this accounts for only about 15 percent of operations according to Major Dufour. The majority of operations are those that require interacting with local populations and using intermediate levels of force. He remarked that it is a challenge to change that mindset.

Major Dufour asserted that there is much scrutiny with both the government and the media. Research, therefore, is focused first on understanding how systems affect the human body. In this regard, Canada is working with NATO on a standard test protocol for blunt impact weapons.

Canada Defense Research and Development Crowd behavior research, conducts research for the military. They are currently working a number of projects related to non-lethal weapons. First, they are developing a mission planning, war gaming and rehearsal software tool for commanders in the field for crowd management and control.

Additionally, they are investigating the influence of NLWs on people. They try to determine if there are basic human responses to these systems common to everyone despite differences in culture, education, race, national origin or

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religion using modeling and, if so, how this applies to both individuals and groups.

Canada is also working on the fielding of a laser dazzler system for warning at long distances to assist with the force escalation challenges. The system is similar in many respects to the work being done in the US, but the approach is different as Canada is signatory to different treaties than the US. Final approval now rests with elected Canadian officials.

Canada intends to stay with existing calibers of weapon systems (12 gauge and 40mm) for the foreseeable future, since they are fielded and the training is in place. Canada also uses flash-bangs, shields batons and protective equipment that supplement Canada's current military PPE.

Basic System Requirements and Concerns:

- Simple and robust systems;
- Solve the intermediate and longer range gaps;
- Interoperability with law enforcement and coalition force; and
- Need to grow cooperation and information-sharing internationally.

Special Academic and Research Presentations

Mr. Matthew Symons of the UK Home Office Scientific Development Branch presented an update on the less-Lethal database. He began by presenting some of the history surrounding the database. The database was designed in response to one of the major recommendations resulting from the ILEF Forum in 2002. At the subsequent ILEF meeting in Ottawa Canada, a beta version of the ILEF International Less-Lethal Weapons Database was launched on the domain name www.ilef.org. The database was designed and is currently being hosted and administered by HOSDB. The database is free to access for official government, law enforcement, military and research agencies that provide information on their experience of less-lethal weapons. Presently, the database remains in beta version. As of May 2008, the database had 83 users from over 60 international agencies, representing 20 different countries.

The database contains four main sections relating to different aspects of less lethal weaponry: Use, Evaluation, Deployments and Research. The "Use" section provides information on the types of less-lethal weapons in operational service with law enforcement and military organisations internationally. To date, this section of the database contains 49 Records. The majority of the records in this section have been provided by US and UK agencies.

The "Evaluation" section provides information on technical and medical evaluations conducted internationally of commercially available off-the-shelf

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less-lethal weapon systems. Fifty-nine (59) records have been added to this section of the database. Most of the records have been added by UK.

The "Deployments" section provides information on when less-lethal weapons have been deployed and used operationally by law enforcement or military organizations. Once again, all 109 records in this section of the database have been supplied by UK.

The "Research" section of the database provides information on research and development projects being conducted internationally into less-lethal technologies or systems. The 29 records that have been added to this section are a good mix of information from a number of countries.

There has been a rather limited uptake within the less-lethal community, with most users only supplying one piece of data to gain access to the database. This has been contributed to the slow access times of the database, its non-initiative design and its lack of information. The database relies on users to populate the database to make it a useful tool to all. Unfortunately, this has not yet been realized.

Another drawback to the database is its inaccessibility from less-lethal weapon manufacturers and conference organizers, who could provide lots of very useful information on their available and near market products.

The HOSDB believes a number of improvements are in order to make the database a more useful tool for the LLW community:

- Update the database to v1.0;
- Design a more intuitive structure with improved sections; and
- Establish multiple access levels.

These improvements will provide an improved ability for users to modify existing data with automatic email reminders and the ability for automatically provided login details for users that have forgotten their details.

The database structure should retain the best performing sections from the beta version, which were the USE, EVALUATION and RESEARCH sections. As the DEPLOYMENT section has received no data from users he proposed that this section be excluded from the new database. Mr. Symons also proposed the addition of seven new sections:

- Commercially available Less Lethal Weapons;
- Near market Less Lethal Weapons;
- Less Lethal Weapon Conferences;
- Published Reports;
- Conference papers and presentations; and
- Weapon problems/failures.

The first two sections are aimed at manufacturers and will allow them to add information about their current and near market products. The third section

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is aimed at conference organizers and will allow them to add information about upcoming conferences in the area of less-lethal. The next sections are aimed at scientific and operational agencies and will allow unrestricted reports, papers and presentations to be added to the database and restricted reports, papers and presentations to be referenced. The last section is primarily aimed at operational agencies. It will allow reports of weapon problems or failures to be added to the database.

For the next version of the database, he proposed that there are two access levels for users: *Open* and *Limited*. The open section would be available to anyone, for example LLW manufacturers, conference organizers and the public. The limited section would only be available to official government, law enforcement, military and research agencies. Users supplying data for inclusion in the database will be able to choose the access level for their information (i.e., open or limited). All information already supplied to the database would be classified as limited access.

Mr. Ted Mellors, Director of Penn State's Center for Community and Public Safety**,** discussed the online Less-lethal Weapons Certificate Course developed at Penn State. He presented some highlights of the course and some of the improvements being made.

The course was conceived in 2004 through a contract for the Joint Non-Lethal Weapons Directorate at Quantico. The intent was to develop two distinct formats for the certificate course: one for the military and one for law enforcement. There is about 25 to 30 percent commonality between the course – mostly in the areas of technologies, weapons platforms and TTPs.

Course development required one year of research, interviews, filming course writing, test development and other curriculum development activities. The courses are all online and require about 62 hours of work. Students have six months to complete the courses once enrolled. The courseware is media rich with over 200 hours of video footage; 2,500 images and graphics; and 10,000 pages of documentation available. There are a variety of registration methods including mail, facsimile, online, email and telephone. Currently there are 2,200 military and 200 from the criminal justice community enrolled in these courses.

There are currently seven modules to the course.

- *Module 1: Introduction & Theory*. This module provides general information; a discussion of tactics, techniques and procedures; relevant conventions, statutes, and treaties; less-Lethal technologies and their role in the civilian law enforcement; as well as medical, political, legal, tactical, and ethical considerations;

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- *Module 2: Kinetics*. This module introduces direct impact weapons and explains various kinetic weapons, their use and launching platforms. It also provides medical and tactical considerations;
- *Module 3: Riot Control and Related Technologies*. This module discusses tactics and procedures in the use of riot control agents. Some mathematical calculations are used to describe the effectiveness of agents such as CS gas and medical and tactical considerations are also discussed;
- *Module 4: Maritime and Land Vehicle Stoppers*. This module examines the technologies used to stop vehicles at sea and on land and discusses how and why these devices may be used in various types of operations;
- *Module 5: Advanced and Emerging Technologies*. This module covers existing and conceptual less-lethal technologies;
- *Module 6: Less-Lethal Applications and Public Order*. This module covers current theories of crowd dynamics; the use of less-lethal weapons in crowd control; and the management of non-compliant persons;
- *Module 7: Integration of Less-Lethal Weapons in Decision Making*. This module is designed to test the practical application of the knowledge from the previous modules. It includes scenarios involving a crowd with non-compliant and innocent persons. Students must respond to scenarios using defined amount of manpower, less-lethal and lethal weapons as employment options.

Mr. Mellors concluded by demonstrating some of the interactive decision – making exercises imbedded in the courseware.

Dr. Viktor Bovbjerg (Epidemiologist and US Army Reserve Major) of the University of Virginia provided a presentation of research he conducted in cooperation with the Los Angeles Sheriff's Department (LASD) and Penn State. The work reviewed CED employment in Los Angeles by LASD.

Dr. Bovbjerg began by reiterating what other speakers had noted that the community is in need of accurate and quantifiable field data.

Although CEDs have been widely adopted, there remains a relative lack of independent, field-based, scientific exploration of the effectiveness and human effects. There continues to be debate over CED use which is dominated by reports of unexpected harm or spectacular operational success. There is little quantifiable field data to support tactics and training. The aim of the project, therefore, was to quantify the effectiveness and effects of CEDs in an operational setting.

The LASD is a very large organization with over 8,000 sworn officers (2nd largest in the US). The Department is comprised of more than 20 regional

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stations and a wide range of specialized bureaus (e.g., Aero, Special Enforcement, Emergency Operations). The Department presides over a 4,000 square mile area with a wide range of geography and a population of over 10 million people. The LASD has been a national leader in less-lethal weapon development, adoption, and doctrine.

LASD guidelines state that CEDs may be used in situations where a subject is threatening himself, an officer or another person and other means of controlling the subject are not reasonable or could cause injury to the officer, the subject or others. The Department uses a written and hands-on certification course for officers.

The Department collects data on use of force electronically. This data was supplemented with other associated hard copy reports that provided more detail by a team of reserve deputies. Additionally, identifiers were cleared before shipment for analysis.

Some of the interesting results showed that 96.9% of CED incidents involved a single suspect, compared to 85.6% amongst all LASD uses of force. In one incident, the suspect wielded a knife and "demanded" that deputies shoot him. There were 11 incidents (2.4%) involving active suicidal or self-harm behavior. In 72 instances (15.7%), suspects were perceived as intending to commit suicide or harm themselves.

In tactical settings, most engagements took place well within maximum range. In 220 of the 459 uses (47.9%), the CED was the first recorded use of force. Additionally, nearly all darts struck low risk areas of the body. Countermeasures were taken or attempted by suspects in approximately one-fifth of CED employments. One suicidal and assaultive suspect pulled the darts from his body and yelled at deputies, *"Ha ha, no more power!"* He then successfully defeated one of four ARWEN rounds with a mattress. When darts adhered, some level of effectiveness was achieved in nine out of ten uses. In 231 of 459 CED uses (50.3%), no use of force greater than cuffing was recorded after CED use.

There were 335 direct injuries recorded. Of those, 318 (95.5%) were puncture wounds—an *expected* result of current CED technology and 13 (3.9%) had other descriptions (abrasions [2], bruise [1], lacerations [3], redness or red marks [4], pain [1], "electric shock to shoulder" [1], and "contact burns" [1])—also within the range of injuries to be expected with current CED. Secondary injuries were few (4.4%), and very rarely had the potential for serious medical injuries. There were no post-CED fatalities or life threatening conditions.

Dr. Bovbjerg summarized by stating that CED use has expanded exponentially with the introduction of new technology. It is used well within maximum range, in close contact, and does not often achieve the "standoff" goal of LLW. The data show that CEDs are highly accurate and very likely to strike the intended target(s). Additionally, CEDs are often effective, but do not

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eliminate post-CED use of force and close contact (which may be considerable).

Workshop Syndicate Sessions - Major Issues, Discussions and Recommendations

After completing an ILEF overview and briefings on the first day, the group participated in four breakout sessions. These sessions addressed Active Shooter in Schools and Institutions, Technology Gaps for Critical Incidents, Acoustic Devices Applications and Requirements as well as CED Employment & Techniques.

On the second day of the workshop, four separate breakout groups addressed a series of questions related to Pursuit Management & Vehicle Stopping, Community Impact & Public Order Considerations in CT Operations, Critical Incident Command and Control Issues as well as Urban Crowd Control Concepts in counter-terrorism situations. Each group focused on a different set of three questions, then addressed others as time permitted. Additionally, each was asked to discuss what should be transmitted to manufacturers with regard to less-lethal technologies and counter-terrorism applications. Detailed summaries of these workshop session discussions appear in the sections that follow.

Less-Lethal Consultative Forum

As counter-terrorism operations bridge the operational chasm between law enforcement and the military, ILEF members had the opportunity to engage with international military experts involved with these operations. The purpose was to address questions regarding less-lethal weapons and associated technologies in terms of how law enforcement might better address these threats, identify capability gaps and apply new technologies.

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Summary and Conclusions

The 2008 Forum addressed many issues related to best practices in active shooter response, critical incidents, acoustic devices, CEDs, pursuit management and command/control related to counter-terrorism operations. The major recommendations are:

1. **Less-Lethal Tools in Active Shooter Situations.** The ILEF should work with the NTOA and other organizations to ensure the integration of less-lethal considerations into Active Shooter tactical planning. These should include:
   - ✓ Officers should incapacitate an active shooter at the earliest possible opportunity;
   - ✓ Currently, less-lethal weapons cannot produce predictable and reproducible incapacitating effects, particularly at distance.
   - ✓ Lethal force remains the most effective means of completely stopping a threat. Officers should not place themselves or other at risk by substituting less-lethal weapons for lethal weapons in lethal force confrontations;
   - ✓ Less-lethal weapons may assist in facilitating a successful resolution. LLWs should be considered complementary tools in a team tactical response kit.
2. **Active Shooter Response Training.** Police departments should evaluate the concept of training officers to deploy in one and two person contact teams. Police departments should continue to work with schools and institutions in preparation for an active shooter scenario.
3. **LLW Requirement for Active Shooter Situations.** Manufacturers and government entities tasked with technology R&D should continue to research and develop complementary tools that will assist in the rapid intervention of an active shooter incident. ILEF should forward less-lethal technology requirement to NIJ, HOSDB and CPRC.
4. **LLW Requirement for Critical Incidents.** Manufacturers and government entities tasked with technology R&D should work to design LLW technologies capable of being delivered across greater distances with the capability for variable periods of incapacitation. ILEF should forward less-lethal technology requirement to NIJ, HOSDB and CPRC.
5. **Weapon Recognition System.** Manufacturers and government entities tasked with technology R&D should work to design weapon recognition systems to enable deployment of LLW technologies. ILEF should forward this less-lethal technology requirement to NIJ, HOSDB and CPRC.

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6. **Community Engagement.** ILEF should encourage members and affiliated agencies to promote and exercise community engagement as this builds community confidence and trust in many aspects of policing from use-of-force issues to intelligence gathering.

7. **LLW Requirement for Acoustic Devices.** Acoustic devices must be capable of achieving the desired effect such as delivering intelligible voice commands and deterrence at the desired range. The device must be safe for both the operator and target alike and must also be fiscally viable. Some additional requirements are that the device be modular, portable and scalable to accommodate a wide range of constraints (e.g., size, weight, power requirements, etc.). ILEF should forward less-lethal technology requirement to NIJ, HOSDB and CPRC.

8. **CED Standards.** ILEF should promote and participate in the development of standards for CEDs in terms of performance, test protocols and independent testing groups to verify these technical standards for Law Enforcement.

9. **Long-Term CED Effects Study.** ILEF should encourage NIJ, HOSDB and CPRC to conduct extended (long term study) research that would identify and monitor a sample population for indication of any long term effects from CED exposure.

10. **CED High Risk Population.** ILEF should encourage NIJ, HOSDB and CPRC to continue and expand research to determine if any group within the general population is more vulnerable to CED exposure than others.

11. **CED Research Review.** ILEF should encourage NIJ, HOSDB and CPRC to conduct a comprehensive (perhaps cooperative) review of the body of medical and engineering research that has been accomplished with a goal of providing the community a report that compiles the results into layman's terminology in any easy to understand format.

12. **Pursuit Policy Guidelines.** ILEF should work with NTOA, ACPO and other associations on developing and refining recommended pursuit policy guidelines to reflect specific environments and scenarios.

13. **Pursuit Command and Control.** Jurisdictions must be aware of the danger associated with overloading the officer during a pursuit – too much gear and too much information to process equals much higher risk. ILEF should encourage NIJ, HOSDB and CPRC to conduct a cooperative examination of best practices regarding command and control for pursuit management in order to develop recommended standard techniques and procedures that give the pursuing officer a better ability to focus on his pursuit TTPs.

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14. **Cooperative Technologies.** That ILEF encourage NIJ, HOSDB and CPRC establish common objective system requirements and work with manufacturers to ensure that emerging cooperative technologies:
    - ✓ Do not damage auto electrical systems;
    - ✓ Allow police to control the vehicle (stop or slow it down);
    - ✓ Allow a suspect the ability to bring the vehicle to a controlled stop;
    - ✓ Provide police with positive identification of the target vehicle; and
    - ✓ Provide a unit modular capability.
15. **Video (CCTV) Mapping.** Police command knowledge of, and ultimately access to, commercial and security CCTVs in their jurisdiction can markedly improve situational awareness for critical incident management. Imaging/camera systems in particular are important as they can provide real-time information collection, analysis, and threat assessment that will enable more effective command decisions. ILEF should encourage DHS, NIJ, HOSDB and CPRC to facilitate video mapping for local jurisdictions.
16. **Incident Command SOP.** Incident command procedures are more standardized in the UK than in the US/Canada. ILEF should encourage NIJ and CPRC to conduct a cooperative review of best practices and develop more standardized (and perhaps common to or consistent with UK) guidelines for equipment and procedures. These could be proliferated in the US by tying their adoption to federal funding.

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WORKSHOP SESSION 1:

Active Shooters: Schools & Institutions

Don Whitson, US
Mike Villa, US

The purpose of this session, led by Mr. Don Whitson of the National Tactical Officer Association was to address less-lethal weapon best practices and issues regarding active shooters in our schools and institutions. Mr. Whitson is an active police officer with the Fort Collins Police Department SWAT. The session was facilitated by Assistant Chief Mike Villa of the Tukwila Police Department.

The Active Shooter – Schools and Institutions discussion began with a brief introduction by Don Whitson. Mr. Whitson gave an historical snapshot of how law enforcement tactics have evolved with this relatively contemporary issue. The most significant change in US law enforcement tactics in response to an active shooter came shortly after the 1999 tragedy at Columbine High School in Jefferson County Colorado. During this incident a teacher and 12 students were murdered and many more wounded by two active shooters. The National Tactical Officers Association took the lead in developing the training course that has become the national industry standard for responding to active shooter situations. A basic tenant of that training is to form a four to five person contact team to immediately move into the crisis area, locate, and stop an active shooter or threat.

The group then discussed in the context of the West Nickel Mines Scenario (Amish School shooting), the related issues of employing less lethal weapons (LLW) against individuals in such scenarios. The group agreed first that this particular incident was a hostage situation until the shooting began. At that point, it became an active shooter and the State Police responded accordingly. There is a clear difference between the timing of tactics during a hostage situation and an active shooter. The purpose of our discussion was not to debrief or critique the incident.

The group considered other active shooter incidents in the United States and abroad to further identify and discussed challenges, strategies and tactics, and technologies. They came to a few recommendations they could agree upon before the allotted time expired. One conclusion was that this is a critical and complex issue that needs much more time to be fully addressed.

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Challenges in responding to an Active Shooter

Active shooters are usually determined individuals who plan their assaults well in advance. They choose the location, the time, and often the victims prior to their attack. The offender controls the timeline unless there is an intervention or interruption by the police. Because of this, the first challenge is to interrupt the execution of their plan to stop the violence and save lives.

The second challenge, directly related to the interruption of an active shooter's plan, is the amount of time it takes a team to respond and assemble prior to launching, locating, and stopping an active shooter. While in the process of forming these teams, seconds (or in some cases minutes) are being lost while the offender continues his aggressive actions.

A third challenge discussed was that of the presence of innocent bystanders or victims and the inability to apply indiscriminate uses of force to quickly end these incidents.

A fourth challenge is that a target of opportunity to use lethal force and thereby end a shooter's actions may not rapidly materialize. This may be due to the cover and concealment an offender has between him and responding officers.

A fifth challenge mentioned was the lack of accurate and timely intelligence prior to a team entering a stronghold and addressing a threat.

The sixth and final challenge addressed was the lack of school security, emergency planning, and corroboration that exist between law enforcement and schools in some jurisdictions.

Although this is not an exhaustive list of challenges, they were brought up during the discussion. Strategies, tactics, and technologies as they related to the above were also presented by members of the group.

Strategic and Tactical Considerations

It was agreed that the goal of an active shooter response is to stop the active aggression and save as many lives as possible. This often means that complete incapacitation of the aggressor(s) is necessary. Therefore, the shooter's actions are entirely interrupted and he is no longer able to continue executing his plan.

Given the first and second challenges, the group focused much of their attention on what tactics or technologies officers can deploy to decrease the time it takes to end these situations.

One suggestion was to train officers in one or two officer tactics for active shooter response. Some agencies have begun to conduct this training. In

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general, the group agreed that such training was necessary. They did not reach a consensus as to how much of an agency's dedicated active shooter training time should be allocated to those specific tactics. There are numerous factors that effect that decision. Agencies should evaluate their own training program and needs and have an active shooter training program that is balanced and realistic.

In active shooter scenarios, lethal force is the predominate level of force employed. It was recognized by the group as the most rapid and proven manner in stopping a lethal threat. Therefore, law enforcement agencies are training its members to deploy with long guns and side arms rather than with less-lethal weapons into these scenarios. One member stated there are "times for less-lethal weapons and times to leave it in the car." It was agreed that officers should not substitute less-lethal force for lethal force. However, the question was asked if there may be times in which LLW are a valid tool in reaching a successful and timely resolution.

Scenarios may present times when lethal force is not acceptable and yet LLWs provide an option that could lead to the resolution of an active shooter situation. The third challenge mentioned above was that of dealing with innocent bystanders or victims to where indiscriminate use of force could not be deployed. Orlando Police were confronted with an incident that demonstrated this possibility. A group of 200-300 individuals became agitated, physical confrontations erupted within the crowd, and gunshots were fired. The crowd did not disperse and Orlando Police deployed chemical irritants in order to move through the crowd and resolve the situation. In this case, lethal force was not an option. However, an active shooter needed to be confronted and stopped. The irritants enabled the officers to achieve this objective in a timely fashion.

An officer should possess options that allow him to apply force appropriate to the resistance met and the objective end state. That is, an officer's or team's tactical response kit would ideally include both LLW and lethal weapons. Additionally, these weapon capabilities should complement one another. Less-lethal should fill a gap that exists between presence, voice, and physical touch and that of lethal force. It should not replace the ability to deploy or follow up with lethal force.

Another challenge stated was that officers may not have a clear target of opportunity for lethal force; however, there may exist means to deploy LLWs. A shooter may have a fortified location in which target identification and incapacitation with lethal means could not immediately be affected; yet, LLWs could reach into the suspect stronghold to disorient, slow down, and disrupt the offender's aggressive actions and plans. The intent of the use of LLWs in this scenario is to slow down the offender's time line, in essence buy time for law enforcement to acquire an opportunity to end the aggression through higher levels of force if necessary.

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One of the components in successfully resolving these incidents is for officers to possess timely and accurate intelligence. It is understood that this would normally not be feasible unless a static situation existed prior to the offender becoming an active shooter. The group discussed two means of gaining intelligence. One is by officers establishing surveillance positions around the crisis area. Another means is by gaining access into closed circuit video (CCV) that may already be in place. Many schools, shopping centers, banks, and other private businesses run CCV. Law enforcement will need to collaborate with institutions to gain such access and establish appropriate policies to govern when and how the CCV would be used. Community relations and acceptance may also be an issue to address. Some communities do not look favorably to government monitoring of CCV. However, it would be extremely valuable to bring such intelligence into a command post and/or into the field for tactical operations.

The final challenge and concern voiced by members of the group was the need for school officials and staff to receive training on lock down and emergency procedures. Many law enforcement agencies have trained in response to active shooter; yet, not all schools acknowledge and act upon their responsibility for their own safety and that of their students. Agencies that have not already done so should be building relationships with schools now in preparation for a violent incident when the police and schools will inevitable come together.

Technologies and issues for Manufacturers

The group agreed that existing technologies, tactics, and techniques are not wholly adequate to address these threats. The ideal LLW in these scenarios would provide immediate incapacitation, for a controlled span of time, produce no injuries, have short or long range capability, and have reversible affects.

Given the critical issue of time, a suggestion that arose from one of the members was to develop or use a current technology that school staff can deploy within the first few moments of an aggressive act. Could a teacher use a CED to stop an active shooter? Could a school principal activate a school wide LL defense system to incapacitate or disrupt a shooters plan? The group held that there would be significant public opinion against schools deploying LLW or technologies as part of their emergency plan. Control and security of such technology would also be a challenge. Finally, even if such technology were developed, such a concept would be difficult to sell to school administrators given today's current political and social environment.

Manufacturers may want to look at technologies that disrupt an individual's senses and affect one's ability to complete an objective. Technologies that

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might slow one down and give law enforcement more time to reach a point of target acquisition upon an active shooter would be beneficial.

Recommendations

- **Less-Lethal Tools in Active Shooter Situations.** The ILEF should work with the NTOA and other organizations to ensure the integration of less-lethal considerations into Active Shooter tactical planning. These should include:
  - ✓ Officers should incapacitate an active shooter at the earliest possible opportunity;
  - ✓ Currently, less-lethal weapons cannot produce predictable and reproducible incapacitating effects, particularly at distance;
  - ✓ Lethal force remains the most effective means of completely stopping a threat. Officers should not place themselves or other at risk by substituting less-lethal weapons for lethal weapons in lethal force confrontations;
  - ✓ Less-lethal weapons may assist in facilitating a successful resolution. LLWs should be considered complementary tools in a team tactical response kit.
- **Active Shooter Response Training.** Police departments should evaluate the concept of training officers to deploy in one and two person contact teams. Police departments should continue to work with schools and institutions in preparation for an active shooter scenario.
- **LLW Requirement for Active Shooter Situations.** Manufacturers and government entities tasked with technology R&D should continue to research and develop complementary tools that will assist in the rapid intervention of an active shooter incident. ILEF should forward less-lethal technology requirement to NIJ, HOSDB and CPRC.

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WORKSHOP SESSION 2:

Technology Gaps for Critical Incidents

Charlie Hill, UK

Robert Blackburn, UK

The purpose of this session, led by Mr. Charlie Hill of the West Mercia Constabulary and the Association of Chief Police Officers, was to identify and discuss technology gaps for critical incidents. Mr. Robert Blackburn of the London Metropolitan Police facilitated the session.

What is a Critical Incident? The Association of Chief Police Officers (ACPO) in the UK uses the following definition:

> A Critical Incident is any incident where the effectiveness of the police response is likely to have a significant impact on the confidence of the victim, their family and/or the community.

The challenge for worldwide law enforcement is that failure to have an effective intervention capability will undermine public confidence and officer safety. It is important, therefore, to determine what the existing capabilities are, agree on what the objective capabilities need to be, and by doing so determine the technology gaps that exist.

The group used this as a framework for its discussions. The group agreed that there is a convergence between everyday policing and counter-terrorism. The two are inextricably linked. This means that technology and use of less-lethal technologies, which, for instance, applies to counter-terrorism, also applies to serious and organized crime as well as general policing.

The group had a broad discussion that arrived at a number of key areas where there is an operational requirement for less-lethal weapon to meet these technology gaps.

- Distance. There are some promising technologies on the horizon, but until those are deployed, the ability to incapacitate an individual at extended distance remains a technology gap.
- Cars. Shooting at cars was been discussed and the group generally agreed that the practice is no longer favored among law enforcement. There remains a gap in the ability to stop a fleeing vehicle safely. There are some emerging technologies including cooperative technologies such as that with the OnStar system. This offers the capability to remotely shut off engines and lock perpetrators in vehicles until apprehension.
- Automatic Detectors. There are a number of detectors for different things currently in use in both the US and UK. Metal detectors and explosive residue detectors are the most prevalent.

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- Suicide bomb detection. The group identified an issue with subway communications. In large cities like London or New York where there are expansive networks of underground mass transit systems, there are huge issues with the vulnerability to terrorist attack. Once detected, how does this information get to the front line police officer and others who would take the appropriate action?
- Length of incapacitation. The group also felt that there is a need for an ability to incapacitate individuals for longer durations. This would facilitate apprehension. Specific requirements need to be formally documented and transmitted to manufacturers.
- Capture of Evidence. Video devices might help with unobtrusively capturing evidence. Beyond the systems appearing on police vehicles, there is growing interest in body-worn devices. Beyond some of the lingering technical issues there are policy issues to be addressed regarding, among other things, collecting video after an incident and storing video.

The group also felt it critical to embrace and remain engaged with the local communities in explaining why this is important. This is a common thread for all of these technologies. It builds trust and confidence in the use of less-lethal weapons and technologies.

A comprehensive post-incident procedure is another important aspect of operations involving less-lethal technologies. Most incidents have a very structured (be it formal or informal) decision-making process. Perhaps, the group surmised, standard or generic statements of fact regarding these technologies and associated policies would mitigate against the system wrongly being brought into disrepute by the inevitable media attention.

Recommendations

- **LLW Requirement for Critical Incidents.** Manufacturers and government entities tasked with technology R&D should work to design LLW technologies capable of being delivered across greater distances with the capability for variable periods of incapacitation. ILEF should forward less-lethal technology requirement to NIJ, HOSDB and CPRC.
- **Weapon Recognition System.** Manufacturers and government entities tasked with technology R&D should work to design weapon recognition systems to enable deployment of LLW technologies. ILEF should forward this less-lethal technology requirement to NIJ, HOSDB and CPRC.
- **Community Engagement.** ILEF should encourage members and affiliated agencies to promote and exercise community engagement as this builds community confidence and trust in many aspects of policing from use-of-force issues to intelligence gathering.

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WORKSHOP SESSION 3:

Acoustic Devices, Applications & Requirements

Tim Brungart, US
Mike Hendrickson, US

The purpose of this session, led by Dr. Tim Brungart of The Pennsylvania State University, was to address issues surrounding the use of, and operational requirements for, acoustic devices in law enforcement. Mr. Mike Hendrickson of the Institute for Non-Lethal Defense Technologies facilitated the session.

The session began with a presentation by Dr. Tim Brungart detailing the use of acoustical devices for hail/warning and possible "weaponization." He noted that the sound pressure level of a message at a listener location should be approximately 6 decibels (dB) above the background noise in order to assure that the message is intelligible to the listener. In turn, the sound pressure level of the message at a listener location depends on:

- The sound pressure level emitted by the acoustical device;
- The propagation loss from the acoustical device to the listener; and
- The insertion loss of the structure surrounding the listener (e.g., ship cabin, automobile cab, helmet, etc).

Dr. Brungart continued by presenting some misconceptions and myths concerning the use of acoustics as a non-lethal weapon as well as its potential and limitations. In his opinion, sound pressure levels between 120 dB and 140 dB are likely to have the greatest effect as a non-lethal weapon yet still provide an "acceptably" low risk for hearing damage. The range of such a weapon would likely be limited to less than 100 meters. It was surmised that an acoustical hail and warn device/weapon combined with an optical device such as a laser disruptor is likely to provide much greater hail/warn/weapon effectiveness than either an acoustical device alone or an optical device alone.

After the presentation, the group discussed possible scenarios, operational needs and requirements for acoustical hail/warn and weapon technology. The four scenarios and their operational needs and requirements are presented below.

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Scenario 1 - Manage a crowd in a disaster or public safety incident (hail/warn)

The desired outcome in Scenario 1 is to communicate effectively to a non-threatening crowd during a disaster or an incident that threatens public safety. This may entail broadcasting messages to maintain public order or to move people to a designated area such as a decontamination site. *An interesting point here is that the distances over which effective communication is required ranges from several hundred meters to distances of at least 1 km or more in the case of a weapon of mass destruction.* This requires an acoustical device with substantial projection authority. The propagation losses over distances of 1 km or more are substantial and the background noise at such a location is likely to be high (e.g., sirens, alarms, engines, screaming, etc.). Therefore, the acoustical device to be used must be able to overcome these losses and background noise in order to deliver intelligible messages to the listeners.

Scenario 2 - Manage a hostile crowd (hail/warn & weapon)

The desired outcome in Scenario 2 is to effectively communicate the intent of law enforcement authorities to the crowd (hail/warn application); interrogate the crowd for "hostile" intent/actors and to separate the "hostile" actors from those who are not intent on causing trouble (weapon application). The latter outcome may be accomplished by broadcasting an aversive sound at high sound pressure levels from the acoustical device to generate an unpleasant environment for the crowd. The thought is that those in the crowd that are bent on causing trouble will not be dissuaded to leave by the environment while those who are less motivated on causing trouble will be dissuaded to leave by the aversive environment.

Scenario 3 - Determine intent of approaching people, vehicles and vessels (hail/warn)

The desired outcome in Scenario 3 is to interrogate approaching people, vehicles and vessels to determine whether their intent is hostile or peaceful. For example, at an access control point, hail/warn messages will be broadcast to slow down and approach the access control point with caution to those approaching it both on foot and in vehicles. The concept is that most of those who comply with the message are peaceful while those that do not are hostile.

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Scenario 4 - Deter access to an area (weapon and hail/warn)

The desired outcome in Scenario 4 is to deter access to an area. The approach for achieving this is to ensonify [fill with sound] an area with an aversive waveform in order to generate an environment within the area that is sufficiently unpleasant to motivate approaching personnel to stay clear of it. An added effect is to generate sound pressure levels that are sufficiently high to preclude effective communication within the subject area.

Recommendation

- **LLW Requirement for Acoustic Devices.** Acoustic devices must be capable of achieving the desired effect such as delivering intelligible voice commands and deterrence at the desired range. The device must be safe for both the operator and target alike and must also be fiscally viable. Some additional requirements are that the device be modular, portable and scalable to accommodate a wide range of constraints (e.g., size, weight, power requirements, etc.). ILEF should forward this less-lethal technology requirement to NIJ, HOSDB and CPRC.

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WORKSHOP SESSION 4:

Conducted Energy Device (CED) Employment & Techniques

Chris Myers, US
Ed Hughes, US

The purpose of this session, led by Officer Chris Myers of the Seattle Police Department, was to address issues and techniques surrounding the employment of conducted energy devices (CEDs). Mr. Ed Hughes of The Pennsylvania State University facilitated the session.

The workshop group was comprised of delegates from the UK, Canada and the US. The group was very knowledgeable on the subject of conducted energy devices and what they do, yet had diverse backgrounds regarding personal experience and the research and investigation experience of their particular agencies with regard to device testing and deployment.

The group generally agreed that perhaps the most significant issue surrounding CEDs was that there are no specific standards (neither developed nor accepted) for this family of devices and perhaps there should be an independent body to address the development of such standards.

Additionally, independent agencies should use an agreed upon standard test protocol for determining if these devices perform the way manufacturers claim – and within an acceptable level of tolerance. As has been discussed in the past, independent bodies need to verify these claims. Results from such testing should be easily accessible by users.

The group also agreed that there are several levels of testing or evaluation requiring both technical standards and those that are performance based. This speaks to the differences between "effects" testing of measureable attributes) and "effectiveness" evaluation in an operational (or simulated operational) setting. The former focus is ***device output*** and the latter considers the multiple variables (physiological and environmental) in characterizing how well that output generates a ***desired human response*** (e.g., incapacitation). The latter is a much more difficult endeavor (human variability).

The group also considered the lack of information on any studies that examine the long-term effects of exposure to CEDs. Definitive studies to determine whether there is any concern for long-term health issues associated with CED exposure would seem to be consistent with similar studies in other fields.

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A large body of medical research exists on CEDs, but is largely unusable to the practitioner community. One suggestion from the group was to have an independent body evaluate the methodology and results of the existing data. The outcome of the research would be weighted based upon the validity of the testing method as it relates to actual CED use. A report might then be compiled that translates the results into an authoritative and easy to understand format.

Further, there have been a number of assumptions (not all valid) regarding vulnerable populations. Is there truly a population that is more vulnerable to exposure than the general population? This question cannot be addressed until there is definitive medical research that can account for and link associated deaths or serious physiological injury to CED exposure.

Recommendations

- **CED Standards.** ILEF should promote and participate in the development of standards for CEDs in terms of performance, test protocols and independent testing groups to verify these technical standards for Law Enforcement.
- **Long-Term CED Effects Study.** ILEF should encourage NIJ, HOSDB and CPRC to conduct extended (long term study) research that would identify and monitor a sample population for indication of any long term effects from CED exposure.
- **CED High Risk Population.** ILEF should encourage NIJ, HOSDB and CPRC to continue and expand research to determine if any group within the general population is more vulnerable to CED exposure than others.
- **CED Research Review.** ILEF should encourage NIJ, HOSDB and CPRC to conduct a comprehensive (perhaps cooperative) review of the body of medical and engineering research that has been accomplished with a goal of providing the community a report that compiles the results into layman's terminology in any easy to understand format.

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WORKSHOP SESSION 5:

Pursuit Management & Vehicle Stopping

Don Kester, US

Mike Hendrickson, US

The purpose of this session, led by Mr. Don Kester of the National Tactical Officer Association was to address the potential of current and emerging pursuit management and vehicle stopping technologies and the evolving law enforcement operational requirements. Mr. Mike Hendrickson of The Pennsylvania State University facilitated the session.

The session provided the opportunity for law enforcement practitioners and researchers to discuss the issues surrounding pursuit management and stopping vehicles during a pursuit. There were three general areas of discussion:

- Tactics, Techniques and Procedures (TTPs);
- Existing Technologies; and
- Emerging Technologies.

Tactics, Techniques and Procedures

The TTP application discussion covered the experience and policies associated with pursuit management and vehicle stopping in the United States (US) and the United Kingdom (UK). The application of these TTPs were further categorized by differing environments – rural, highway and urban. For example, a SWAT officer may use stop sticks as a precautionary technique to preclude a vehicle pursuit from even starting, while a rural patrol officer in Wyoming might only be able to rely on her backup deploying stop sticks five or ten miles further into the pursuit.

The discussion also highlighted the significant differences between pursuit policies in the UK and the US. In the UK, there is a national pursuit policy. In the US, one is fortunate to find homogeneity in pursuit policies across the jurisdictions of a single metropolitan area. This portion of the session culminated in a discussion over the reactions of criminals and officers to policy; criminals deciding to run because they know if they create a situation that is too dangerous, the police will break off the pursuit versus protecting the public through effective management of a pursuit using effective risk management in dangerous scenarios.

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Existing Technologies

The second topic focus of our discussion was the existing technology available for pursuit management. The group discussed the utility and limitations of tagging technology, the limitations of directed energy, license plate identification technology, stop sticks, spike strips and the PIT maneuver. The consensus of the group was that:

- Tagging technology was interesting, but the costs surrounding the integration of a car-mounted system would be difficult to overcome (especially for small jurisdictions with limited budgets);
- Hand-fired tagging technology had very little tactical utility;
- Aviation assets were as good as "tagging" and following a vehicle after the pursuit was terminated;
- Directed energy devices are still too large and too expensive;
- Stop sticks and spike strips are widely used but a better delivery device is needed that will provide an officer with greater standoff for increased safety;
- Any limitations of the PIT maneuver against vehicles equipped with driver assisted stability control technology was unknown; and
- Tactics must drive the use of technology – not all technology is useful in all environments or scenarios.

Emerging Technology

The last topic focused on future technology development. There was a rehashing of the limitations of directed energy devices, but the substance of the discussion zeroed in on "cooperative technologies" like *OnStar* and *LoJack*. Both US and UK practitioners were intrigued by the application of this kind of technology although the entire group was convinced that criminal counter-measures would be a significant challenge. Further, officers from rural areas discussed the limitations of cellular technology if "cooperative" vehicle stoppers would be tied to cellular towers. Lastly, the group consensus was that this technology appears to be the most promising pursuit management / vehicle stopping technology to date and that it is imperative to engage industry now, while the technology is still in the developmental stages.

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Recommendations

- **Pursuit Policy Guidelines.** ILEF should work with NTOA, ACPO and other associations on developing and refining recommended pursuit policy guidelines to reflect specific environments and scenarios.
- **Pursuit Command and Control.** Jurisdictions must be aware of the danger associated with overloading the officer during a pursuit – too much gear and too much information to process equals much higher risk. ILEF should encourage NIJ, HOSDB and CPRC to conduct a cooperative examination of best practices regarding command and control for pursuit management in order to develop recommended standard techniques and procedures that give the pursuing officer a better ability to focus on his pursuit TTPs.
- **Cooperative Technologies.** ILEF should encourage NIJ, HOSDB and CPRC to establish common objective system requirements and work with manufacturers to ensure that emerging cooperative technologies:
  - ✓ Do not damage auto electrical systems;
  - ✓ Allow police to control the vehicle (stop or slow it down);
  - ✓ Allow a suspect the ability to bring the vehicle to a controlled stop;
  - ✓ Provide police with positive identification of the target vehicle; and
  - ✓ Provide a unit modular capability.

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WORKSHOP SESSION 6:

Community Impact and Public Order Considerations in Counter Terrorism Operations

Joel Johnston, Canada

Marc Lefebvre, Canada

The purpose of this session, led by Joel Johnston of the Vancouver Police Department was to address public order considerations and the impact of counter terrorism operations on the community. Marc Lefebvre of The Royal Canadian Mounted Police facilitated the session.

After some initial discussion on the experiences of delegates, the group made a distinction between what it termed "preemptive" operations and those that were "reactive." Counter-terrorism activities would be those that largely fell into the realm of pre-emptive operations in that they are focused on preventing a terror event from occurring.

Many of the activities and considerations for dealing with a terror event should be ongoing. In other words, the procedures and systems should always be in place. This lays the foundation for coordinating an appropriate response, be that preemptive action or a post-event response. Beyond ensuring that lines of communication and procedures are in place, it helps build public trust in the organization and its ability to respond adequately and in an appropriate manner.

In looking at the impact of counter-terrorism operations on the community, the group first identified a number of events that were likely.

- Major Critical Incident (e.g., air crash, bus accident);
- Terrorist Criminal Action (e.g., bombing, mass shooting);
- Natural Disaster (e.g., earthquake, hurricane); and/or
- Pandemic (natural/accidental or intentional/terrorism).

The group then attempted to describe the possible impacts to the community. They determined that the impacts fall into a number of categories. There are psychological or emotional impacts that manifest themselves in fear, panic, and a profound sense of loss, among others. The concern for others, including family members, and the sense of a loss of control are often overwhelming. There are also physical impacts to the community in the number killed, injured and debilitated. Finally, there are functional impacts seen in the loss or scarcity of shelter, food, water, mobility, security and safety, and communications. More often than not, there is some loss of

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government function as a result of such events and the police are often looked to by the community as the means to restore order and some of that functionality, and by extension, public confidence.

It is important to define the community or group that has been affected in order to better understand all of the ethnic, religious and/or cultural dynamics that might influence any response.

There are some other public order considerations in a terrorist event that go beyond community impact.

- Containment/Access Denial;
- Scene Protection;
- Evidence Gathering;
- Facilitating the Distribution of Aid; and
- Movement of Resources;

The group also deemed public education important in effectively dealing with these situations. The purpose of this education is twofold:

- To inform the public of critical and relevant information, including coping mechanisms, access to resources/methods, response status updates, and information on family and loved ones; and
- To direct the public and re-establish stability through publication of orders and establishment of limitations.

Determining which information is critical for public release and which might be compromising is also important. Since these situations often bring reduced infrastructure, traditional communication channels may be limited. Methods for informing the public may include radio, door-to-door, loud hailers and even Blackberry-like devices, cellular telephones and the internet.

Recommendations

- No specific recommendations were identified.

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WORKSHOP SESSION 7:

Critical Incident Command and Control Issues

Trent DePersia, US

Ed Hughes, US

The purpose of this Session, led by Mr. Trent DePersia of the US Department of Homeland Security, was to address issues regarding critical incident command and control. Ed Hughes of The Pennsylvania State University facilitated the session.

Mr. DePersia opened the session by presenting a summary of the Control and Interoperability Division (CID) of the Science and Technology Directorate of the Department.

Control and Interoperability Division (CID) Overview

Through a practitioner-driven approach, the Command, Control and Interoperability Division (CID) creates and deploys information resources to enable seamless and secure interactions among homeland security stakeholders. With its Federal partners, the Division strives to strengthen communications interoperability, improve internet security and integrity, and accelerate the development of automated capabilities to help identify potential national threats. The scope of CID services is broad. Customers include local, tribal, state, and Federal emergency response agencies; Federal agencies that plan for, detect, and respond to all hazards; and private sector partners that own, operate, and maintain the Nation's cyber infrastructure. Managed by the Department of Homeland Security's (DHS) Science and Technology Directorate, the Division delivers on its efforts through the following five thrust areas.

The CID thrust area consists primarily of the Office for Interoperability and Compatibility (OIC), which was established in 2004 to strengthen and integrate interoperability efforts in order to improve local, tribal, state, and Federal emergency response and preparedness. With its Federal partners, OIC programs and initiatives address critical voice and data interoperability and compatibility issues.

The Cyber Security thrust area provides cyber security research, development, testing, and evaluation to secure the Nation's critical cyber infrastructure. This involves coordinated efforts to improve the security of the existing cyber infrastructure and to support the development of a foundation for a more secure infrastructure in the future.

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The Knowledge Management Tools thrust area provides knowledge management tools and capabilities to reduce the risk of terrorist attacks and to prepare for and respond to natural and manmade disasters. This thrust area is preparing new capabilities for the DHS information enterprise. The aim is the integration, management, analysis, and dissemination of actionable information from multi-type, multi-source data to our local, tribal, state, and national leaders and decision makers.

The Reconnaissance, Surveillance, and Investigative Technologies (RSIT) thrust area develops state-of-the-art operational and investigative technological solutions in support of DHS, other Federal agencies, and local, tribal, and state operational and investigative agencies and components.

The Basic/Futures Research thrust area provides technologies for synthesizing information and deriving insight from data sets that are massive, dynamic, diffuse, distributed, ambiguous, and possibly conflicting.

The group then addressed its workshop questions beginning with the identification of the important issues involving command and control (and communications) surrounding a response to a critical incident.

Session Discussion

The group began its discussion by identifying the most important issues involving command and control (and communications) surrounding a response to a critical incident and why they are important. First, there is a need to establish a threat assessment (pre-planned as well as spontaneous assessments) and a process that will guide the response. The threat assessment will determine the vulnerabilities and risks for the situation that in turn will determine an acceptable and feasible response or action to the situation.

Second, the use of a standard or common incident management system throughout the region or country is also important to ensure efficient and effective continuity in establishing, managing, working within, and handing off incident management when multiple response agencies are involved.

Finally, the ability to access information, particularly imaging/camera systems, in an incident area is important as it can provide real-time information collection, analysis, and threat assessment that will enable more effective command decisions.

The group then addressed the issue of command transition during incidents. Command relationships are largely addressed in structured incident management plans and procedures in international and national jurisdictions. The UK has a structured command relationship (Gold, Silver, and Bronze) that agencies train with and use. The US National Incident Management System (NIMS) is also being used by US agencies to establish and transition structured

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command procedures. Training and communication interoperability is key to any successful incident management transition.

The group also acknowledged that there are other important considerations for successful incident command and transitioning of command. Training in simulated situations to establish and transition command provides experience for leaders and staff. Practice and training are extremely important for an efficient command transition. Standards for equipment and procedures ensure compatibility and interoperability of equipment when multiple agencies respond to an incident.

The transition, or hand-over, process will benefit from the recording of events and sharing, through briefings, video, or other documentation, with the incoming command group to insure they have all of the historical information regarding the event. The group agreed that representatives should be located in the command center to coordinate with their respective agencies, especially during a transition. This is necessary to address the different aspects of the agencies, such as types of weapons and specific policy differences, to optimize the assets of the individual agencies. The three most prevalent command, control or communications technology issues identified by the group for their jurisdictions were:

- Communications interoperability – all individuals and agencies must be able to communicate with each other when necessary.
- Accountability of personnel on scene – incident commanders must know who is on scene and where they are.
- Access to cameras or imagery at an incident – this allows commanders to continually update their knowledge of the incident, adjust threat assessments, and make adjustments to command decisions to more effectively address the incident.

The perfect or ideal mobile command post system for dealing with the vast majority of aggressive individuals, hostile crowds, or potential CT operations possess the capabilities above and have a dedicated incident dispatcher or team of dispatchers. Areas that the panel session determined to be pertinent to a successful incident command scenario included communications interoperability and distribution of information; access to information, including video imagery; standards for procedures, hardware, and software used by agencies in incidents; and training on how to use equipment and procedures at an incident.

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Recommendations

- **Video (CCTV) Mapping.** Police command knowledge of, and ultimately access to, commercial and security CCTVs in their jurisdiction can markedly improve situational awareness for critical incident management. Imaging/camera systems in particular are important as they can provide real-time information collection, analysis, and threat assessment that will enable more effective command decisions. ILEF should encourage DHS, NIJ, HOSDB and CPRC to facilitate video mapping for local jurisdictions.
- **Incident Command SOP.** Incident command procedures are more standardized in the UK than in the US/Canada. ILEF should encourage NIJ and CPRC to conduct a cooperative review of best practices and develop more standardized (and perhaps common to or consistent with UK) guidelines for equipment and procedures. These could be proliferated in the US by tying their adoption to federal funding.

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WORKSHOP SESSION 8:

Urban Crowd Control Concepts

Joshua Ederheimer, US

Thomas Graham, US

John Kenny, US.

The purpose of this Session, led by Assistant Chief Joshua Ederheimer of the DC Metro Police and Deputy Chief Thomas Graham, Commander of the NYPD Disorder Control Unit, was to address questions regarding Urban Crowd Control and associated less-lethal weapons and technologies. The session was facilitated by Dr. John Kenny of The Pennsylvania State University.

Crowd Control Tactics – Best and Worst Practices

Tear Gas. Not surprisingly, the use of tear gas was the topic of both best and worst practices. Tear gas is used by some members of the law enforcement community as a means of riot control. One of its most publicized uses was during the WTO Ministerial Conference of 1999 in Seattle to control demonstrators. As reported by one Seattle police officer, the use of tear gas does cause the demeanor of the crowd to change, and can be used as a crowd thinning tool – a means of sorting out the hard core demonstrators from onlookers. He said the use of tear gas during the WTO riots achieved the objective but there were some contamination issues.

The Royal Canadian Mounted Police and the Orlando Police Department have used tear gas to successfully control crowds. An Orlando police officer noted that, if you use tear gas you must follow it up with a police response – something beyond just holding the line.

However, some law enforcements agencies do not use tear gas because of its lack of discrimination. The Metropolitan Police Department, Washington DC and the City of New York Police Department don't use tear gas. The MPD prefers to use the MK 46 Riot Extinguisher, which sprays in a dispersed pattern, not a fog, and helps pinpoint the target accurately. It has a range of 25-30 feet and contains 12 one-second bursts.

Michigan State University has a history of student riots following major sporting effects (MSU losses in NCAA Final Four in 1999, 2003, 2005). The Michigan State University campus police do not use tear gas because of the potential for collateral damage (contaminating dormitories for example).

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However, tear gas has been used repeatedly to control off-campus MSU student riots by the East Lansing Police Department.

Police Dogs. Less-lethal weapon acceptability depends on whom they are being used against. In the past, dogs were used for crowd control. However, because of public acceptability, police dogs are used for almost exclusively defensive work. For example, in a crowd control situation dogs may be used to guard patrol cars.

Mounted Police. While some may consider mounted police to be largely ceremonial, they are very effective in crowd control situations. Mounted police are effective for crowd control because officers can see over the crowd, spot problems and move crowds. Horses are large and intimidating, and acceptable by the public whereas dogs are not.

Water Cannons. As with the use of dogs, the use of waters cannons in the United States lacks broad public approval. However, in the United Kingdom, water cannons have been used very effectively.

Crowd Control Triggers

It is commonly believed that some "spark" sets off riots. This has been called the "precipitating incident," "flashpoint," or the "trigger". However, such incidents are often attributed as the "trigger" after the fact. During any urban crowd control operation, crowd intensity varies and multiple incidents occur that seemingly could precipitate a riot. When an incident is followed by a riot, it is easy to say that it was the "spark" after the fact. The problem is that a precipitating incident is usually hypothesized after the event. It has little utility in determining a course of action for controlling crowds.

Personal experiences of the officers on the scene may be the best means of forecasting potential riots. These officers often perceive that a particular incident in a given area might result in violence, and therefore initiate emergency plans and call-ups of police reserves. They sense the ebb and flow of events in a familiar community and pick up cues. They receive intelligence, which they match to their perceptions. As a result, such officers intuitively assess a situation and it is very likely they will be correct. An example of precipitating crowd behavior given by one member of this group is that the crowd began to act with a common purpose. Another more obvious example is observing members of the crowd donning protective gear.

Regardless of how or who identifies this trigger, the level of response should be appropriate to the trigger. Acceptability of less-lethal weapons depends on appropriate and proportionate responses. The use of less-lethal devices for crowd control is situation-based, and is scaled to the situation or threat. This means that officers should initially use less-lethal measures for passive

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defense, to hold crowds at a distance. If violent behavior occurs, tactical units may increasingly resort to more active and greater levels of less-lethal force.

Ideally, this force should also appear to be "self-triggering." In other words, the individuals who are considered the opponent should appropriately appear to be initiating their own consequences.

Crowd Control Technologies

The Ideal Less-Lethal Weapon. One participant compared the use of less-lethal weapons in crowd control to the use of aerial bombing in war. As Tom Graham said, "You can't win with it alone, but you don't want to go to war without it." His point was that you need to have less lethal weapons as part of your crowd control kit, but you can't rely exclusively on that kit.

The ideal less-lethal weapon has numerous distinct biological effect (bioeffect) characteristics. First, it must have the capability to incapacitate an individual. Incapacitation is an imprecise term, but generally means that the desired effect is sufficient to temporarily stop the undesired behavior. Furthermore, and perhaps most importantly, the desired effect must be universal and is not dependent on gender, size, age or state of mind.

There must be no acute or long-term injury associated with the use of the weapon. It must be easy to use and highly discriminate – the intended target and only the intended target is affected with each use. Once the desired effect has been achieved, its effect should reverse naturally in a short period of time. The effect should not cause incapacitation or create a knockout effect and should allow the subject to stand and walk.

There should be no fear of contamination of the user or the environment, or the method for decontamination should be simple and thorough. And, finally, there should be a lack of an easy countermeasure.

There are no ideal less-lethal weapons. Each has its shortfalls.

Aggressive/Lethal Crowd Behavior

As in all crowd control situations, law enforcement response is proportional to the behavior. For example, the use of firebombs by members of a crowd may or may not pose a lethal threat to the police officers on the scene. How far can they toss the bomb? Is the officer wearing a NOMEX protective suit? In those cases where the action is clearly lethal, appropriate response includes being able to cleanly target the individual. Again, the response is situation dependent. For example, in a large preplanned event, there may be police snipers deployed.

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Future Threats

There are numerous examples of terrorist organizations targeting public transit systems. These attacks have occurred in London, Madrid, Paris, Moscow, and Tokyo. Clearly, one attraction to the terrorist has been that the blast would effect a large number of people. Transit systems assemble the target for the terrorist by congregating large numbers of people into small spaces.

This same targeting opportunity occurs whenever there is a planned gathering. The law enforcement community is well aware of this threat and includes planning for its occurrence as part of the preparation for any crowd control situation.

Demonstrator Tactics Evolve

Demonstrators continue to become more organized and more devious. For example, demonstrators have designed banners that are meant to be converted into a shield.

Creating a nasty bomb using only aluminum foil, sodium hydroxide (Drano – a common drain cleaner) and a plastic soda bottle is straightforward. The materials are common and easy to obtain. The instructions are simple and can be found on the Internet – and the damage and injury caused can be devastating.

As the demonstrators' tactics change, the law enforcement community is continually challenged to modify its tactics to appropriately respond to the evolving threat.

Recommendations

- No specific recommendations were identified.

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Appendix A – Agenda

Tuesday, 20 May 2008 (Day 1)

0800-0815	Welcome, *Colin Burrows, ILEF Chairman*
0815-0830	Introduction and Overview, *Andy Mazzara, ILEF Executive Director*
0830-0845	Special Welcome from Orlando Host: *Sheriff Kevin Beary, Orange County*
0845-0945	Keynote Address: *Dr. John Morgan, Office of Science and Technology, NIJ*
0945-1000	BREAK
1000-1100	Special Presentation: West Nickel Mines: Amish School Incident *Colonel Jeff Miller, Commissioner, Pennsylvania State Police*
1100-1230	LUNCH
1230-1430	International Presentations: ■ Canada, *Steve Palmer, CPRC* ■ United Kingdom, *Graham Smith, HOSDB* ■ United States, *Joe Cecconi, NIJ* ■ New Zealand, *John Rivers, NZP*
1430-1445	Special Research Presentation: ILEF Database Demonstration *Matthew Symons, HOSDB*
1445-1500	Introduction to Workshop Breakout Sessions, Process, & Protocols
1500-1645	Workshop Breakout Sessions 1 – Active Shooter in Schools & Institutions – *Whitson/Villa, US* 2 – Technology Gaps for Critical Incidents – *Hill/Blackburn, UK* 3 – Acoustic Devices, Applications, Reqts – *Brungart/Hendrickson, US* 4 – CED Employment & Techniques – *Myers/Hughes, US*
1645-1715	Day 1 Summary and Conclusion – *Colin Burrows*

Wednesday, 21 May 2008 (Day 2)

0845-0900	Welcome, *John Gnagey, NTOA Executive Director*
0900-0930	Special Presentation: *Chief John Timoney, Miami Police Department*
0930-1100	Plenary Session (Group Reports & Discussion)
1030-1100	BREAK
1100-1130	Special Presentation: *Chief Constable Ian Arundale, Dyfed-Powys Police*
1130-1230	Special Presentation: *Chief Superintendent Peter Todd, PSNI*
1230-1330	LUNCH

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1330-1500	Workshop Breakout Sessions 5 – Pursuit/Vehicle Stopping – *Kester/Hendrickson, US* 6 – Community Impact/Public Order – *Johnston/Lefebvre, Canada* 7 – Critical Incident Command & Control Issues – *DePersia/Hughes, US* 8 – Urban Crowd Control Concepts – *Ederheimer/Graham/Kenny, US*
1500-1515	BREAK
1515-1600	Plenary Session (Group Reports & Discussion)
1600-1645	Special Presentation: Canadian National Use of Force Program *Staff Sergeant Joel Johnston, Vancouver Police & Sergeant Bruce Stuart, RCMP*
1645-1730	Special Presentation: Preparing for the 2010 Summer Olympics *S/Sgt Chuck McDonald, RCMP*
1730-1800	OPEN TIME
1800	ILEF-NTOA Dinner

Thursday, 22 May 2008 (Day 3)

0800-0815	Day 3 Welcome -Andy Mazzara
0815-0900	Military Presentation: US Military Non-Lethal Technologies *Colonel Kirk Hymes, USMC, Director, JNLWD*
0900-1000	Military Presentation: CT Response, Training & Leadership – Joint Ops *CWO Carl Dakin, UK CT Wing 22 SAS*
1000-1030	BREAK
1030-1100	Military Presentation: Canadian Army Use of Force/Less-Lethal Technologies *Major Stephane Dufour, Canadian Army*
1200-1300	LUNCH
1215-1245	Special Academic Presentation: LLW Distance Learning Course *Ted Mellors, Director, Center for Community and Public Safety, PSU*
1300-1400	Special Presentation: Counter-Terrorism and the WMD Threat *Charlie Payne, Chief, DHS Office of Bombing Prevention*
1400-1445	Special Research Presentation: Review of CED Employment in Los Angeles *Dr. Viktor Bovbjerg, University of Virginia*
1445-1500	ILEF-NTOA Workshop Closing Comments – *Colin Burrows*

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Appendix B – Focus Questions

Session 1: Active Shooter – Schools & institutions

1. With respect to an active shooter or hostage scenario at a school, what tactics, policies, training, and incident management issues need to be considered? Are there any specific examples of good practice or problematic use that we can share?

2. Discuss in the context of the West Nickel Mines Scenario (Amish School shooting), the related issues of employing LLWs against individuals in such scenarios.

   a. With reference to existing policies in different jurisdictions, identify examples of good policy initiatives or team tactics that might be encouraged as international "best practices."

   b. Identify specific examples where limitations of the technology might affect or have affected the outcome?

   c. Identify specific examples where potential for media or legal attention might impact the employment?

3. Given the currently available capability set(s), what does the group consider the appropriate capability set/kit for LLWs for anti-personnel use to be held by special weapons-type teams or response teams to school shooter/hostage events?

4. Are there outstanding medical issues in respect of effectiveness of intended less-lethal technology? What are they?

5. Are there specific operational 'triggers' or indicators for the patrol officer that would lead to the employment of certain LLWs, technologies or techniques when dealing with overly aggressive individuals within a school environment?

6. How are those decisions made, and by whom?

7. Identify any experiences in policing that would lead to suggestions for better or improved designs of LLWs or technologies?

8. How would you describe the perfect or ideal LL technology for dealing with a majority of aggressive individuals or active shooter in a school setting?

   a. What would be the best and worse technical/weapon considerations?

   b. How would you describe the ideal training with such a device or devices?

   c. What are some of the other issues surrounding the use of such weapons?

9. What are the pre-eminent technological concerns with regard to employing LLW systems or devices in response to an active school shooter or hostage event (as part of a counter-terrorism operation or in its aftermath)?

   a. What are the relevant policy issues to be considered?

   b. What other factors come into play when deciding to employ such devices?

10. Discuss the adequacy of training with respect to the employment of LLWs in this context.

11. What policy issues exist in respect of dealing with identified individuals conveying terrorist threats (significant collateral damage, innocent bystander risks) who are presenting a specific potential threat?

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12. Are there new or emerging threats to school security and/or officer safety? What are those threats?

13. Are existing technologies, tactics, and techniques adequate to address these threats? If not, where are the major gaps capabilities where less-lethal technologies might apply?

14. What issues regarding medical, psychological or technical effectiveness for current or emerging school safety/security technologies should be transmitted to manufacturers?

Session 2: Technology Gaps for Critical Incidents

1. What are the strategic, tactical and technological considerations when deploying police officers in counter-terrorism operations and critical incidents and are less-lethal options relevant in these circumstances? Identify issues that have arisen during past counter-terrorism operations with respect to LLW use and any operational experiences that are relevant to future use.

2. What are the pre-eminent technological concerns with regard to employing minimal force or LL technologies in response to a terrorist event (as part of a counter-terrorism operation or in its aftermath)?

   a. What are the relevant policy issues to be considered?

   b. What other factors come into play when deciding to employ such devices?

   c. What are specific technology issues with current or emerging devices?

3. Where a counter-terrorism policing operation is being conducted, especially in areas where there is strong community identity, and/or in a community from which the terrorist suspect may belong, what community impact issues should be considered with respect to the deployment of less-lethal weapons?

4. In the aftermath of a terrorist attack, or in a response-arrest-type operation, there may be public order tensions and the presence or emergence of hostile crowds that threaten public order, what issues with respect to LLW availability and usage arise in terms of:

   a. Aggressive individual control or isolation;

   b. Crowd containment or dispersal;

   c. Considerations for officer safety versus public safety; and,

   d. Minimizing (minimising) the potential for escalation of both the conflict and the police response?

5. Discuss the adequacy of training with respect to the employment of current LLWs in the context of critical incident intervention.

6. What policy issues exist in respect of dealing with identified individuals conveying terrorist threats (significant collateral damage, innocent bystander risks) who are presenting a specific potential threat?

7. Are there new or emerging terrorist threats to public and/or officer safety? What are those threats?

8. Are the existing technologies, tactics, and techniques adequate to address these threats? If not, where are the major gaps capabilities where less-lethal technologies might apply?

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9. What issues regarding medical, psychological and/or technical effectiveness should be transmitted to manufacturers? Should we transmit this information, and if so, how?

Session 3: Acoustic Devices, Applications, Requirements

1. What are the basic requirements for projecting acoustic/audible messages or tones out at distances in support of public order scenarios?

2. How far is good enough? How intelligible is good enough? What are some of the urban or rural environmental conditions and obstacles to be considered for employing acoustic devices?

3. With respect to crowd control or hostage scenarios, what tactics, policies, training, and incident management issues relative to acoustic devices need to be considered? Are there any specific examples of good practice or problematic use that we can share (RNC experience)?

4. Discuss the context of the NIJ-supported Operational Scenarios and the potential for employing acoustic devices against both individuals or crowds in such scenarios, if appropriate.

   a. With reference to existing policies in different jurisdictions, identify examples of good policy initiatives or team tactics that might be encouraged as international "best practices."

   b. Identify specific examples where limitations of the technology might affect the outcome?

   c. Identify specific examples where potential for media or legal attention might impact the employment?

5. How would a "combined effects" device which uses acoustic and either light or impact technology be best employed in any of the operational scenarios?

6. Given the currently available acoustic technology, what does the group consider the appropriate capability for such devices for anti-personnel use to be held by special weapons-type teams or response teams to critical incidents?

7. Are there outstanding medical issues or other considerations with respect to effectiveness of acoustic technology? What are they?

8. How would you describe the perfect or ideal acoustic technology for dealing with a majority of aggressive individuals or hostile crowds?

   a. What would be the most important/least important technical/weapon considerations?

   b. How would you describe the ideal training with such a device or devices?

   c. What are some of the other issues surrounding the use of acoustic technologies?

9. What are the pre-eminent technological and/or policy concerns with regard to employing acoustic devices in response to a critical incident or counter-terrorism event? What other factors come into play when deciding to employ such devices?

10. What issues regarding medical, psychological or technical effectiveness for current or emerging acoustic technologies should be transmitted to manufacturers?

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Session 4: CED Employment & Techniques

1. What are the basic requirements for employing conducted energy devices (CEDs) in support of public order scenarios?

2. How far is good enough? How much power/energy/effect is good enough? What are some of the urban or rural environmental conditions and obstacles to be considered for employing CEDs?

3. With respect to crowd control or hostage scenarios, what tactics, policies, training, and incident management issues relative to CEDs need to be considered? Are there any specific examples of good practice or problematic use that we can share?

4. Discuss in the context of the NIJ-supported Operational Scenarios, the potential for employing CEDs against both individuals or crowds in such scenarios, if appropriate.

   a. With reference to existing policies in different jurisdictions, identify examples of good policy initiatives or individual officer tactics that might be encouraged as international "best practices."

   b. Identify specific examples where limitations of the technology might affect the outcome?

   c. Identify specific examples where potential for media or legal attention might impact the employment?

5. Given the currently available CED technology, what does the group consider the appropriate capability for such devices for anti-personnel use to be held by special weapons-type teams or response teams to critical incidents?

6. Are there outstanding medical issues or other considerations with respect to effectiveness of CEDs? What are they?

7. How would you describe the perfect or ideal conducted energy device for dealing with a majority of aggressive individuals or hostile crowds?

   a. What would be the most important/least important technical/weapon considerations?

   b. How would you describe the ideal training with such a device or devices? Frequency?

   c. What are some of the other issues surrounding the use of CEDs?

8. What are the pre-eminent technological and/or policy concerns with regard to employing CEDs in response to a critical incident or counter-terrorism event? What other factors come into play when deciding to employ such devices?

9. What issues regarding medical, psychological or technical effectiveness for current or emerging CED technology should be transmitted to manufacturers?

Session 5: Pursuit/Vehicle Stopping

1. To what extent is it appropriate to consider the use of vehicle stopping technologies in (a) a dense urban environment or (b) a open highway or rural road situation? What issues in relation to policy, tactics, and training would vehicle stopping or pursuit scenarios give rise to?

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2. What issues with respect to policy, tactics, training, arrest, and post-incident management, do the employment of various pursuit techniques or technologies give rise in vehicle stopping situations? Are there any specific examples of good practice or problematic use ?

3. Where the fleeing vehicle might cross jurisdictional lines or where the pursuit has potential risk to a significant number of bystanders, what tactical options/responses are available to police ? What other technological options might be relevant in such situations and what issues should be considered in their deployment?

4. Are there certain LLW options appropriate in pursuit situations, e.g. flash blinding the driver, that might be inappropriate? Others?

5. Identify any differences in the decision-making and employment options for LL and other vehicle stopping technologies between urban, rural, or highway situations?

6. In a typical pursuit scenario,

   a. What criteria should apply to the decision to employ less-lethal technology? What are other options?

   b. What data /information are required in respect of monitoring of the actual use of less-lethal technology?

   c. To what extent should post-operational review of the employment of LLWs (i.e., the technology, local procedures or techniques, training, operational directives/guidance and use) be conducted?

7. Are there specific operational 'triggers' that would lead to the decision to employ certain technologies or techniques when dealing with fleeing vehicles that may pose a threat to public safety?

   a. Identify the strategic and tactical decisions that might be made, and by whom?

   b. Discuss whether training is adequate for the patrol officers in employing various LLWs or techniques when dealing with such individuals? What else needs or could be done? What about training for commanders?

   c. Identify any policy concerns or operational experiences that have or might result in improved design for LLWs used in public order situations.

8. How would you describe the perfect or ideal vehicle stopping technology for dealing with a majority of pursuit situations?

   a. What would be the best and worse technical/weapon considerations?

   b. How would you describe the ideal training with such a device or devices?

   c. What are some of the other issues surrounding the use of such weapons?

9. Are there new or emerging threats to public and/or officer safety involved in pursuit of fleeing vehicles? What are those threats?

10. Are existing technologies, tactics, and techniques adequate to address these threats? If not, where are the major gaps capabilities where less-lethal or other technologies might apply?

11. What issues regarding medical, psychological and/or technical effectiveness should be transmitted to manufacturers?

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12. What issues regarding the employment of LL and other pursuit technologies in vehicle stopping scenarios should be transmitted to manufacturers?

Session 6: Community Impact/Public Order Considerations for CT Ops

1. In an terrorist event, describe in detail the scope and extent of community impact that should be considered in planning, execution and post-event assessment?

2. Are there other public order considerations in a terrorist event that go beyond community impact? If so, what are they and why are they important?

3. In discussing "education of the public (or community)", what exactly does that mean? What are some of the better techniques for informing or educating the affected community?

4. In terms of planning and preparation for a counter-terrorism operation or response to a critical incident, what are the general topical areas of interest or concern? How would they be segmented at the strategic, operational or tactical levels of command?

5. How significant are special interest groups within the community in terms of including consideration of them in pre-event planning and preparation? Give some examples?

6. For public order scenarios, are there special technology considerations that need to be included in planning or operations phases? What are they and why? Does it matter if less-lethal technologies or other minimal force options are available? Why?

7. Discuss the context of the relevant NIJ-supported Operational Scenarios and the potential for employing various technologies against both individuals and or crowds in such scenarios, if appropriate.

   a. With reference to existing policies in different jurisdictions, identify examples of good policy initiatives or team tactics that might be encouraged as international "best practices."

   b. Identify specific examples where limitations of the technology might affect the outcome?

   c. Identify specific examples where potential for media or legal attention might impact the employment?

8. Describe in your experience, or in your jurisdiction, what specific planning is done to offset anticipated community impact for a potential CT operation? How or why did it work well, or not so well?

9. Describe in your experience, or in your jurisdiction, what specific actions taken in the wake of a critical incident or CT ops were needed or meant to address specific community impact issues? How or why did they work well, or not so well?

10. Are there outstanding medical, legal or policy issues with respect to the effectiveness of technologies associated with CT operations and relevant community or public order considerations? What are they?

11. Are there new or emerging threats or evolving factors related to the public or communities that we are seeing with regard to terrorism? What are those threats?

12. What regarding medical, psychological or technical effectiveness for current or emerging technologies relative to public order or community impact issues should be transmitted to manufacturers?

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Session 7: Critical Incident Command & Control Issues

1. What are the most important issues involving command and control (and communications) surrounding a response to a critical incident? Why?

2. We have seen a lot of work go into the transition of "command" protocols (who's in charge). When a critical incident occurs, how are command relationships transitioned as local, state or national agencies arrive on scene? How does it work within your jurisdiction? Does it work well, or not, and why?

3. Can you identify issues at the strategic, operational and tactical levels in command & control (C2) relative to the employment of/use of force in the context of counter-terrorism operations?

4. For a law enforcement commander on the scene of a CT operations, what are the critical elements of information necessary to properly command the operation? How is unnecessary or distracting information determined and filtered from the command decision-making process? How useful are command post exercises for large and small police organizations? Why?

5. What are the most important command and control (C2) or communications technology issues within your jurisdiction? Why?

6. In a critical incident, how important is the differentiation of lethal and less-lethal weapons and technologies? How high up the chain, or at how low a level, can decision be made to use a certain type of weapon? Give examples?

7. Discuss in the context of the NIJ-supported Operational Scenarios, the potential for employing different weapons or devices against both individuals and or crowds in such scenarios, if appropriate, and how the C2 system within your organization might be relevant:

   a. With reference to existing C2 policies in different jurisdictions, identify examples of good policy initiatives, command decisions or team tactics that might be encouraged as international "best practices."

   b. Identify specific examples where limitations of the C2 technology might affect the outcome?

   c. Identify specific examples where potential for media or legal attention might impact the employment or the command process?

8. How is command and control skills developed, taught and trained within your jurisdiction? What needs to be improved and why?

9. Given the currently available less-lethal or minimal force technology, what does the group consider the appropriate capability for such devices for anti-personnel use to be held by special weapons-type teams or response teams to critical incidents?

10. Are there outstanding medical or legal issues, or other considerations in respect of effectiveness of current or emerging C2 technology? What are they?

11. How would you describe the perfect or ideal mobile command post system for dealing with a majority of aggressive individuals, hostile crowds or potential CT operations?

12. How important are mobile communications for police officers in patrol vehicles and on foot? What are the major technical or operational issues today surrounding communications between vehicles and with foot patrol officers?

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13. What C2 issues regarding operational or technical effectiveness for current or emerging technologies should be transmitted to manufacturers?

Session 8: Urban Crowd Control Concepts

1. What are the characteristics of crowd or riots in your jurisdiction? How do they drive tactics and the employment of weapons or technologies? Are there other local factors that are important?

2. A "trigger" is considered a certain event or action on the part of an individual or several individuals in a crowd that generates a more aggressive response from law enforcement. Are there established protocols for identifying and responding to specific "triggers" in crowd situation? What are they? What are some of these triggers in your area?

3. What are some of the best and worst practices observed of tactics or technologies used in crowd control situations? Why were they the best or the worst?

4. Describe the different crowds that might be encountered in your jurisdiction? How would the response by law enforcement differ based on the type of crowd?

5. What are the biggest or most important technical or equipment issues for law enforcement today in crowd control situations? Why?

6. How would or should, law enforcement agencies respond to petrol/fire bombs employed against them in a crowd control situation? Other lethal weapons employed by people in the crowd? Less-lethal devices used by crowd members?

7. There has often been suggested a theory that crowd organizers could be or should be identified and isolated. Does that happen from your experience? Are we good at it? Why or why not?

8. What are the biggest issues today with less-lethal crowd control technologies? What is your description of the ideal less-lethal crowd control device, weapon or technology?

9. In your experience, are there effective counter-measures to minimal force options? How are they usually dealt with?

10. Are there existing local, state of national policies or other limiting factors that adversely impact law enforcement's ability to control crowds? What are they and why are they limiting?

11. Is today's crowd control training both at the individual and the organizational level adequate to dealing with today's crowd? If so, are there still improvements to be made and what are they? If not, what needs to be done with or added to the training programs to make them more effective?

12. What are the pre-eminent technological and/or policy concerns with regard to employing technology in response to critical incidents or counter-terrorism events that result in large or small size crowd control requirements?

13. Are there new or emerging threats to officer safety in dealing with crowds and riots? What are those threats?

14. What issues regarding medical, psychological or technical effectiveness for current or emerging crowd control technologies should be transmitted to manufacturers?

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Appendix C – Workshop Attendees

Chief Constable Ian Arundale	Dyfed-Powys Police **United Kingdom**
Sheriff Kevin Beary	Orange County Sheriff's Office (FL) **United States**
Mr. Matthew Begert	San Bernardino Sheriff's Office (CA) **United States**
Dr. Cynthia Bir	Wayne State University **United States**
Inspector Robert Blackburn	London Metropolitan Police **United Kingdom**
Mr. Michael Bonner	Metropolitan Police Department (DC) **United States**
Dr. Viktor Bovbjerg	University of Virginia **United States**
Superintendent David Boyd	Police Service of Northern Ireland **United Kingdom**
Dr. Timothy A Brungart	The Pennsylvania State University **United States**
Mr. Colin Burrows	Chairman, ILEF Advisory Board **United Kingdom**
Mr. Joe Cecconi	National Institute of Justice **United States**
Inspector William Chantler	London Police Service (ON) **Canada**
Ms. Traci Ciepiela	Sweetwater County Sheriff's Office (WY) **United States**
Mr. Assaf Yosef Cohen	Israel Prison Service **Israel**
Mr. Joel Criswell	Bureau of Investigation (GA) **United States**
Mr. Trent Depersia	Department of Homeland Security **United States**
Major Stephane Dufour	Canadian National Defense **Canada**
Mr. Chuck Duryea	Winston Salem Police Department (NC) **United States**
Assistant Chief Joshua Ederheimer	Metropolitan DC Police Department **United States**
Chief Inspector Mark Evan	National Police Improvement Agency **United Kingdom**
Sergeant Fred Farris	Lenexa Police Department (KS) **United States**
Mr. George Fenton	TASER© International, Inc **United States**
Mr. Michael Gillespie	Home Office **United Kingdom**
Mr. John Gnagey	National Tactical Officers Association **United States**

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Mr. Rick Guilbault	TASER© International, Inc **United States**
Deputy Chief Thomas Graham	New York City Police Department (NY) **United States**
Major Michael Hendrickson (USMCR)	The Pennsylvania State University **United States**
Superintendent Charles Hill	West Mercia Constabulary **United Kingdom**
Mr. Martin Hubbard	Ministry of Defence **United Kingdom**
LTC Edward L Hughes (USA-Ret)	The Pennsylvania State University **United States**
Mr. Thierry Jacobs	FN Herstal **Canada**
Colonel Kirk Hymes (USMC)	Joint Non-Lethal Weapons Program **United States**
Staff Sergeant Joel Johnston	Justice Institute of British Columbia (BC) **Canada**
Mr. Timothy Jones	Bureau of Alcohol, Tobacco and Firearms **United States**
Dr. John Kenny (Commander, USN Ret)	The Pennsylvania State University **United States**
Mr. Don Kester	Pima County Sheriff's Department (AZ) **United States**
Mr. Andrew Lane	Ministry of Defence United Kingdom
Colonel Lawrence Larson (USMC-Ret)	The Pennsylvania State University **United States**
Dr. John Leathers	The Pennsylvania State University **United States**
Sergeant Marc LeFebvre	Royal Canadian Mounted Police **Canada**
Lieutenant Colonel Ron Madrid (USMC-Ret)	The Pennsylvania State University **United States**
Detective Sergeant Eunan Malone	An Garda Síochána **The Republic of Ireland**
Mr. John Martin	Ministry of Defence **United Kingdom**
Colonel Andrew Mazzara (USMC-Ret)	The Pennsylvania State University **United States**
Mr. David McDaniel	Lake County Sheriff's Office (FL) **United States**
Staff Sergeant Chuck McDonald	Royal Canadian Mounted Police **Canada**
Mr. Ted Mellors	The Pennsylvania State University **United States**
Colonel Jeff Miller	Pennsylvania State Police (PA) **United States**
Dr. John Morgan	National Institute of Justice **United States**
Officer Chris Myers	Seattle Police Department (WA) **United States**

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Mr. Roger Nelson	Winston-Salem Police Department (NC) **United States**
Mr. Steve Palmer	Canadian Police Research Centre **Canada**
Mr. Christian Papaleontiou	Home Office **United Kingdom**
Mr. Charlie Payne	Department of Homeland Security **United States**
Mr. Ralph Price	Addison Police Department (TX) **United States**
Chief Inspector Richard Prior	Home Office Scientific Development Branch **United Kingdom**
Mr. Charles Reynolds	Dover Police Department (NH) **United States**
Superintendent John Rivers	New Zealand Police - Wellington **New Zealand**
Mr. Sam Rosenfeld	The Densus Group **United States**
Detective Sergeant Peter Russell	Police Service of Northern Ireland **United Kingdom**
Corporal Edwin Sanow	Benton County Sheriff's Department (IN) **United States**
Mr. Donald Sherman	Wayne State University **United States**
Mr. Kevin Shultz	Fort Lauderdale Police Department (FL) **United States**
Mr. Graham Smith	Home Office Scientific Development Branch **United Kingdom**
Mr. Rick Smith	TASER© International, Inc **United States**
Mr. Christopher Stevens	Lake County Sheriff's Office (FL) **United States**
Sergeant Bruce Stuart	Royal Canadian Mounted Police **Canada**
Mr. Matthew Symons	Home Office Scientific Development Branch **United Kingdom**
Chief John Timoney	Miami Police Department (FL) **United States**
Chief Superintendent Peter Todd	Police Service of Northern Ireland **United Kingdom**
Assistant Chief Mike Villa	Tukwila Police Department (WA) **United States**
Mr. Wilson Weaver	Winston-Salem Police Department (NC) **United States**
Mr. Don Whitson	Fort Collins Police Department (CO) **United States**
Mr. Darian Williams	Rural Law Enforcement Technology Center **United States**
Mr. Kevin Williams	TASER© International, Inc **United States**

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Appendix D – Status of Previous Workshop Recommendations

Number	**Title** Description	**Status** Remarks
2002-01	**Develop a Less-Lethal Database** Create a task force or working group to reach consensus on approaches to creating a coordinated retrospective and prospective database on operational uses.	**OPEN** HOSDB database structure complete; Looking for new host
2001-02	**Develop an Injury Database** Create a working group to develop an international approach to the recording of injury effects of less-lethal weapon usage. This would include the adoption of an agreed upon scoring system, such as that exemplified by the Abbreviated Injury Scale (AIS), to facilitate the collection of data on injuries.	**HOLD** No progress; Complex jurisdictional difference and liability issues; Reopen later.
2002-03	**Define Operational Needs** Establish a small core group that puts numbers to measurable (time, distance, and space) parameters that define operational needs.	**CLOSED** Initial effort completed. Absorbed by 2004-01.
2002-04	**Develop Standards for Testing and Training** There is a need to develop and routinely review international standards for both testing and training of less-lethal weapons. This will require resource investment from federal, state, and local law enforcement activities; law enforcement associations and organizations; less-lethal technology manufacturers and distributors, and researchers.	**CLOSED** Absorbed by 2004-04.
2002-05	**Conduct Independent Assessments** There is a continuing need for independent assessment of the tools and tactics associated with the issues of less-lethal and minimal force option concepts, technologies, and deployment. Periodic assessments conducted by non-biased experts will assist the law enforcement community in developing meaningful concepts of operations with less-lethal applications.	**CLOSED** ILEF Position Statement. No action required.

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2002-06	**Designate a National/International Less-Lethal Weapons Center for Testing and Training** Establish a Center for research, development, independent testing, and training for Less-Lethal technologies. The Center would serve as a focal point for examining technologies, tactics and public policy issues related to the deployment of less-lethal weapons.	**CLOSED** ILEF Position Statement. No action required.
2004-01	**Development of Operational Requirements** The work on developing Operational Requirements for less-lethal weapons, and consensus across the international law enforcement community, is considered a high priority. The work initiated by the Electronic Operational Requirements Group (EORG) following ILEF 2002 should continue. The group should also address issues associated with measurements of effectiveness.	**CLOSED** Ongoing. Absorbed by 2005-10.
2004-02	**Articulate Operational Requirements to Manufacturers** There is a need to create a mechanism to communicate the agreed international Operational Requirements being developed by EORG to bodies such as the International Chiefs of Police and particularly with manufacturers. One option was for ILEF to harness the support of the International Association of Chiefs of Police. It would then be able to articulate and communicate the 'model' international law enforcement operational requirements to manufacturers and suppliers and for law enforcement to begin to drive technology development in this field.	**CLOSED** Meeting held with manufacturers and EORG document presented (2002-03) at ILEF 2005 in Ottawa. Absorbed by 2005-10.
2004-03	**Terminology Standardization** That the EORG develop standard definitions for life threatening, serious injury, and other less-lethal medical terminology.	**CLOSED** Absorbed by 2005-01.
2004-04	**ILEF Standards** That the EORG (Electronic Operational Requirements Group) develop a comprehensive set of standards for review by all ILEF members, then, publish these documents for external/peer review by practitioners, industry, and professional organizations. These standards should consider including levels of incapacitation in some form and establishing or defining levels of effectiveness, recognizing that human variability will always be a challenge.	**OPEN** Initial document presented to manufacturers at ILEF 2005 in Ottawa. Published at ILEF website. New effort beginning 2008.

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2004-05	**Identify Desired Effects and Outcomes** There is a need to formulate an operational statement of desired effects/outcomes of less-lethal weapons. There should be as much clarity as possible as to what a particular device does, or does not do. There is a need to appreciate that there are different interpretations influenced often by departmental doctrine and historical issues.	**OPEN** Ongoing.
2004-06	**Describe and Provide Measures of Effectiveness** There is a need to link descriptions of effectiveness with measures of effectiveness. The group was made aware of work commenced in the UK under the auspices of the Patten/ACPO Steering Group to identify effectiveness criteria for less-lethal devices. A summary of the emerging approach is provided in the Steering Groups Phase 4 Report. The integration of these descriptions with the type of measures described by Syndicate 2 (Determining Effectiveness and Injury Potential) could enable effectiveness criteria to be better articulated and measured.	**OPEN** Ongoing. Some NIJ funded work completed by Penn State which adapts the NATO SAS-035 MOE Framework to US law enforcement. Used by NIJ Less-Lethal Technology Working Group (TWG) beginning 2008.
2004-07	**Incorporate Psychological Criteria into Operational Requirements** There is a need to identify and understand the psychological elements of aggressive behavior in conflict situations and ensure that the development of less-lethal weapons includes design factors intended to operate on both the physical and psychological level.	**CLOSED** Completed.
2004-08	**Sharing of Information & Data Exchange.** There is a need to encourage the sharing of information between military and law enforcement agencies and across international boundaries. The database should leverage the abundance of open source data that is available on the internet.	**CLOSED** Ongoing. Web site operational. Database structure complete and online. Absorbed by 2005-05.
2004-09	**Notification of Program Testing and Sharing Information on Operational Trials** It is important for the professional user community to endeavor to ensure that colleagues are aware of ongoing and future conflict management tests and experimentation. This will reduce the duplicative efforts and perhaps encourage a wider acceptance of developed solutions through open and ongoing peer review.	**OPEN** Ongoing. Methods for using ILEF website for notification are being explored. Penn State might absorb HOSDB database at ILEF website.

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2004-10	**Medical Data Access** Conduct an investigation into, and seek support for, appropriate methods to obtain accurate and comprehensive medical data related to less-lethal effects and injuries. Consider an approach that might include a "firewall" that provides researchers only anonymous identifiers. There is some precedent for this in the area of corrections (prisons).	**OPEN** Ongoing. No progress.
2004-11	**Literature Review** That members of ILEF (perhaps as a continued EORG task) conduct a literature review to compile a comprehensive international terminology list, identify new terms (e.g., pain compliance), and address/resolve discrepancies with regard to definitions so that a common vernacular for discussing less-lethal systems could be progressed.	**CLOSED** Completed. Absorbed by 2005-01.
2004-12	**Develop/Adapt Injury Model** Conduct a thorough literature review to identify potential models and their characteristics which make them appropriate for less-lethal injuries. Select a number of these and validate them with actual injury data. Over time, these models could be modified to better suit less-lethal systems.	**OPEN** No progress. Unfunded project work.
2004-13	**Conflict Management** Conflict Management should be viewed holistically rather than in a manner that isolates segments independently for examination or application. Each aspect of conflict management – be it pre-event planning, negotiation, less-lethal technologies, or lethal force – should be viewed as a component that must consider the potential contribution of the other components to best address a particular situation.	**CLOSED** ILEF Position. No action required.
2004-14	**Develop and promote ILEF.** The Forum requires some strategic planning and funding arrangements to ensure that it continues to provide a mechanism not only for sharing information but promoting concepts, requirements and best practice in relation to less-lethal options to the international law enforcement community. One of the first steps in this process is the development of a collective vision for the Forum, crafting a concise mission statement, and outlining clear and obtainable objectives. This might be accomplished within the framework of the protected side of the ILEF website as a project.	**OPEN** Ongoing. Vision, Mission, and Objectives completed. Other planning actions ongoing.

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2005-01	**Less-Lethal Technology Taxonomy.** ILEF should develop and publish a classification (taxonomy) of less-lethal technologies. This should include developing definitions and terms that promote a clearer understanding of what should be considered as effects, effectiveness and issues which effect tactical outcome. Also includes terms from 2004-03 (e.g., life-threatening, serious injury).	**OPEN** EORG began work. Only minor structural issues remain.
2005-02	**Testing Standards.** ILEF should explore the potential for publishing a common framework document addressing standards for testing less-lethal weapons. This should include a paper setting out current 'test house' arrangements and the potential for further development. In part, extends 2004-04.	**OPEN**
2005-03	**Use of Force Reporting, Review and Investigation Standards.** ILEF should identify essential criteria to be included in use-of-force (UOF) reporting and review with a view toward ultimately developing common international standards for use-of-force reporting, review and investigation. In part, extends 2004-04.	**OPEN** Also identified by NIJ TWG in 2008
2005-04	**Less-Lethal Review and Oversight Expertise.** ILEF should develop, maintain and publish a listing of persons from its membership with acknowledged expertise in associated fields that are recognized and/or accredited by their profession.	**OPEN** Working. Put at ILEF Website with appropriate permission.
2005-05	**Less-Lethal Information Sharing.** ILEF should explore protocols for sharing human effects and incident databases with manufacturers in order to assist in improving these systems or their manufacturing processes. The database created by the HOSDB for ILEF members should be promoted as an information resource. Members should encourage their agencies and governments to participate in data exchange through this and other data resources (such as NTOA).	**OPEN** Website needs overhaul; Need to transition DB to Penn State host/control; Promotion efforts strategies ongoing; Funding problematic.
2005-06	**Development Protocol.** A structured program should be developed by the ILEF Advisory Board to review with manufacturers on a collective non-commercial basis the potential for less-lethal technologies to be developed against published operational requirements.	**OPEN** No progress.

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2005-07	**Technology Assessment Template.** ILEF should document existing less-lethal 'capability sets' which meet the published ILEF Operational requirement.	**CLOSED** Deleted.
2005-08	**Decision Framework.** ILEF should develop a framework outlining and highlighting relevant material to assist leaders in articulating needs, assessing the feasibility, acceptability, and risk and making decisions. The RCMP Incident Management Information Model (IMIM) in Canada is a good start point to begin to achieve a common "use of force" language.	**OPEN** No progress.
2005-09	**Training Guidelines.** That ILEF explore the development and publication of a set of guidelines that describe training requirements for those who are in command of situations where less-lethal technologies may be used with an emphasis on situational or scenario-based training. That ILEF promote and encourage joint efforts and liaison between military and law enforcement as well as local, regional and national agencies toward the development and employment of protocols and training.	**OPEN** No progress.
2005-10	**Operational Requirements.** That ILEF invite response from manufacturers to the Less-Lethal Operational Requirements Document, which has now been published. This also advances recommendations on operational needs clarification (2002-03) and developing/articulating operational requirements (2004-01/02).	**OPEN** Ongoing.
2005-11	**Technology Development Framework.** ILEF should lead an effort to develop a general framework for the development of less-lethal weapons that includes the responsibilities of the user, the developer, the manufacturer, a peer review process and government-based oversight organization.	**OPEN** No progress.
2006-01	**Testing Repeatability.** ILEF should encourage manufacturers to consider "repeatability" as an important aspect of test design for their systems. Testing should be readily verifiable by independent researchers replicating manufacturer testing.	**OPEN** Add to testing standards (2005-02)

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2006-02	**Policy Consulting.** ILEF should encourage manufacturers to consider consulting upper level law enforcement early in development in order that the potential impacts on policy, public acceptance and incident management can be effectively addressed.	**OPEN** Begin with email to manufacturers from ILEF Board; Need routine follow-up/contact.
2006-03	**Operational Requirement – Individuals.** ILEF should communicate to manufacturers the operational requirement for systems that will immediately incapacitate or gain compliance of individual terrorists and other aggressive individuals. Some of the ideal system requirements would include the ability to engage subjects distance (>25m) with precision, no injury to the suspect, no lasting contamination, no long-term effects, no cross-contamination, reusable and easily re-loadable, weather resistant and small enough to be easily carried.	**OPEN** Begin with email to manufacturers from ILEF Board; Need routine follow-up/contact.
2006-04	**Operational Requirement – Crowds.** ILEF should encourage and support research into technologies and methods to identify and selectively target anarchists in crowds and others that mean to create havoc and incite riot. The system itself would require an ability to safely and effectively strike subjects at ranges that exceed "missile" throwing range.	**OPEN** Begin with email to manufacturers from ILEF Board; Need routine follow-up/contact.
2006-05	**Chemical Irritant Projectile Research.** ILEF should encourage and support research on chemical irritant projectiles focused on examining policy issues and strategic considerations as well as exploring and documenting best practices, techniques, and training procedures. Technical research might center on creating more synergistic effects by leveraging the benefits of chemical irritants and the projectile delivery means, while mitigating the drawbacks of each.	**OPEN** ILEF request to US DoJ and US DoD is pending.
2006-06	**Conducted Energy Device (CED) Research.** ILEF should encourage and support continued research in the area of CED biological effects to bring clarity to the issues surrounding "associated deaths" and more fully understand CED effects and how they might interact with some pre-existing biological conditions. This research should have the objective of contributing to the eventual development and acceptance of medical standards internationally.	**OPEN** Exclusive research under way and ongoing: Includes US for DOJ and DOD (Penn State & Wake Forest); Canadian studies ongoing; UK studies largely complete.

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2006-07	**Instantaneous Incapacitation.** ILEF should encourage and support efforts to develop an effective and reliable way of instantly incapacitating large numbers of people (with instant decontamination, neutralization, and/or mitigation of the means).	**OPEN** US Military active denial technology; US DOJ calmative technology concept development.
2006-08	**Standards.** ILEF should continue its efforts in taxonomy and testing standards to include defining less-lethal system "reliability" and moving the independent testing and evaluating "test house" concept forward internationally.	**OPEN** See 2005-01
2006-09	**Discarded Technologies.** ILEF should lead an effort to re-examine previously discarded less-lethal technologies and approaches and assess their potential for use in counter-terrorism missions and support operations.	**OPEN** EORG will consider as topic in 2009
2006-10	**Calmatives and Immobilizing Technologies.** ILEF should encourage and support efforts to more fully develop discriminating and non-discriminating immobilization weapons (including but not limited to calmatives) in order to effectively address the issue of law enforcement establishing control over hostage-takers and other explosive-laden terrorists to preclude significant loss of life (bystanders, hostages, law enforcement), recognizing the potential social acceptability issues. This should include, but not be limited to policy examination and technology research and development regarding calmative (anesthetic/ tranquilizer) system(s) that could be safely deployed in a number of operational settings.	**OPEN** NIJ conducting research to formalize conceptual prototypes based on operational scenarios.
2006-11	**Suicide Bombers.** ILEF should encourage and support efforts to more fully develop methods and technologies to stop a suicide bomber without detonating the bomb (to include neutralizing explosives at range).	**OPEN** Numerous IED defeat projects under way at US and UK government research facilities.
2006-12	**Distraction Devices.** ILEF should encourage and support efforts to enhance devices causing temporary/flash blindness in order to expand the exploitation window these distraction devices create.	**OPEN** Improved flash bang project started at Quantico.

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