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Report on the Fourth The International Law Enforcement Forum

MINIMAL

FORCE

OPTIONS

and Less-Lethal Technologies

Ottawa 2005



NIJ



2005 International Law Enforcement Forum for MINIMAL FORCE OPTIONS

Report Editor

Lieutenant Colonel Ed Hughes, U.S. Army-Retired



Our aim is to provide a sound, scientific basis for understanding the options, technologies and tactics being contemplated. In this regard, we endeavor to develop accepted standards for developing and testing such technologies, and for the training of personnel in associated employment methods.

Acknowledgements

The delegates of the 2005 International Law Enforcement Forum wish to thank Commissioner Zaccardelli of the Royal Canadian Mounted Police and all of his staff particularly, Assistant Commissioner Darrell LaFosse, Superintendent Timothy Head, Sergeant Andy Baird, Sergeant Scott Allen, Corporal Mark Lefebvre, and Constable Rhonda Blackmore for the use of their facilities and all of the coordination and support provided culminating in a very useful and productive workshop and conference. We would also like to extend our gratitude to Assistant Commissioner Bruce Rogerson for his remarks at the hosted dinner in the RCMP Headquarters Mess, where he noted that "the real less-lethal weapon is knowledge of your own community, and the ability to communicate with an individual in a manner which may make it unnecessary to rely upon the use of technology."

The Fourth International Law Enforcement Forum on Minimal Force Options was hosted by a law enforcement organization of international repute, the Royal Canadian Mounted Police. In organizing and conducting the forum the RCMP were supported by the Institute of Non-Lethal Defense Technologies (INLDT) from Pennsylvania State University with assistance from the US National Institute of Justice (NIJ). The event was held in Ottawa, Ontario, Canada on June 21 & 22, 2005. On the third day (June 23), there was an open session of ILEF to which the chief executives of leading less-lethal companies were invited. The purpose was to share the ILEF operational requirement for less-lethal technologies and to create a productive engagement leading to improved product development which best reflects the requirements of the international law enforcement community's needs. This proved to be a most meaningful session representing an ongoing interaction on a collective basis between the ILEF and those involved in the manufacture and supply of less-lethal technology.

There remains a need for effective less-lethal technologies that promote public and officer safety and are used in a way that enhances community confidence in the police. This year's Forum focused not only on technical aspects of less lethal technology, but also on issues of appropriate and responsible use of such technologies. This included the legal, medical and accountability issues related to use of effective and acceptable technologies within Law enforcement. It was evident, that there was high degree of commonality in the 'capability set' of less lethal technologies that are now being used in jurisdiction represented at ILEF, across a range of conflict situations and within different jurisdictions and policing environments. There remained however different approaches to the, selection and testing of less lethal technologies and as to policy, procedures and accountability mechanisms.

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 existing facts from scientific literature and the wisdom gained from collective professional experience.

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 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 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 2004 forum had focused on moving forward with the development of accepted international standards for development, testing and training. 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). It was important in promoting open dialogue between practitioners, interest groups and other non-government actors and providing an opportunity for a greater appreciation of the issues and concerns surrounding use of less lethal technologies. An update on the recommendations is at Appendix D.

This year it was significant that the Forum was hosted by a police organization of international repute – The Royal Canadian Mounted Police (RCMP) – which underscored the international law enforcement focus of ILEF. The 2005 Forum included a day dedicated to discussion with less-lethal manufacturers and distributors.

The first two days of ILEF concentrated on issues identified at the 2004 Forum which had been the focus of discussion throughout the year in the established Electronic Operational Requirements Group (EORG) and other groups. Key issues included identifying operational requirements and capability gaps, the development and establishment of testing and training standards for less-lethal technologies, and working to achieve those ends. There was recognition of the value of adopting an integrated approach to selection, development and use of technologies. There was also recognition that law enforcement and military involvement in critical incidents, ranging from peace keeping to humanitarian

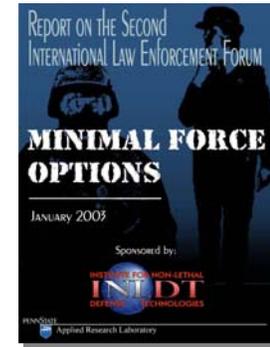


Figure 1 - 2003 ILEF Report

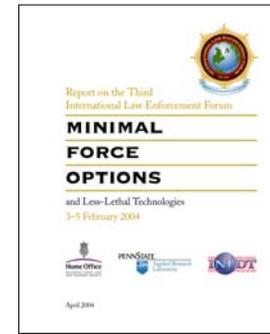


Figure 2 – 2004 ILEF Report



Figure 3 – Delegates of the 2005 International Law Enforcement Forum.

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aid, presents challenges particularly when confronted with situations necessitating the use of force. Increasingly the roles of police and military are overlapping and will require joint protocols on use of force issues. The Forum noted the importance of military-police dialogue involving less-lethal technologies and the philosophies and training which underpinned selection and use continued to take place. There was consensus that ILEF was fulfilling an important role in ensuring closer understanding of the inter-jurisdictional and departmental issues relating to the use of less-lethal technologies.

Participation in these forums, as in previous years, has been by invitation and has assembled internationally recognized subject matter experts 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. It was disappointing that this year a number of European colleagues who had attended previous ILEF's were unable to attend due to domestic commitments. Nevertheless, we were pleased to welcome a representative from Sweden. As in previous years we had delegates from military agencies who are involved with the development and use of less-lethal technologies. These included the US Joint Non-Lethal Weapons Directorate, the Canadian National Defense, the UK's Defense Scientific Technology Laboratories and the Swedish Defense Research Agency.

This report is a summary of the Forum discussions and the associated conclusions derived by the sessions. The forum makes recommendations for further work, specifically in relation to standards for development, testing and training; protocols for use of force reporting, investigation and oversight, increased information sharing, and taxonomy and terminology clarification.



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“ILEF Mission, Vision, Organization and Initiatives”

Mr. Colin Burrows QPM, ILE F Chairman, UK

Colonel Andy Mazzara, USMC (Ret), Penn State, US

“United Kingdom – AEP and UK Technology Update”

Mr. Graham Smith, Home Office Scientific Development Branch, UK

“United States – Wireless TASER and US Technology Update”

Mr. Joe Cecconi, National Institute of Justice, US

“Canada – TASER Re-examination and Canadian Technology Update”

Mr. Darren Laur, Canadian Police Research Center, Canada

“Operational Scenarios”

Lieutenant Colonel Ed Hughes (USA Ret), Penn State, US

“Operational Effectiveness”

Mr. Colin Burrows QPM, ACPO Special Advisor

“Operational Test Criteria”

Colonel Andy Mazzara, USMC (Ret), Penn State, US

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B – Focus Questions

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C – Attendees

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D – Status of Previous Recommendations

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Executive Summary

Policing and peacekeeping missions often involve resolving conflict and responding to potentially violent and dangerous situations, placing those who have a public duty to intervene in such situations at great risk. Less-lethal technologies provide officers with the capability of a differentiated use of force which minimize, but do not eliminate, the potential for resort to conventional firearms. However, for those involved in ensuring that the interveners are appropriately equipped and trained, the development, selection and equipping of officers to enable appropriate and effective interventions in a manner which commands broad community support, remains a challenge.

There continues to be considerable misunderstanding as to how less-lethal technologies actually work, their injury potential and effectiveness. Many of the significant changes in the design, and methods of use of generic classes of weapons are not well documented or understood, either within or outside of law enforcement. There is growing recognition amongst the international community that determining and articulating effectiveness and acceptability of the less-lethal technologies and weapons systems needs to be addressed in a systematic and objective manner.

ILEF 2005 addressed these fundamental issues and focused not only on the technical issues associated with Less-Lethal technologies but on issues of use and abuse of such equipment. The development of a systems approach, which links weapons characteristics to how the technology is actually used was one of the themes of the forum as was work on effectiveness criteria.

Minimal force options and less-lethal technologies expand the number of choices available to law enforcement agencies when confronting situations in which the either the resort to conventional firearms would be considered inappropriate or for which there was no other option. While there are different views regarding the role of less-lethal weapons and use of force options specifically, these differences are overshadowed by the many similarities in approaches and the common recognized need for standards in an increasingly complex and dynamic environment.

The 2005 Forum addressed many issues related to less-lethal technology research, development, testing, training standards, oversight and accountability issues. Delegates from represented countries, disciplines and police departments examined less-lethal weapons (LLW) terminology and taxonomy; standards for testing, reporting, development and assessment; risk management; training; and information sharing. There were six distinct workshop sessions in which the delegates participated:

- Development of Testing Standards;
- Accountability, Oversight, Review and Investigation;
- Medical and Psychological Effectiveness;
- Operational Policing – Strategic and Tactical Command Issues;
- Operational Policing – Tactics and Training Issues; and
- New Threats, Capability Gaps and New Technologies.



Delegates had the opportunity to attend and participate in a consultative session with manufacturers and distributors of less-lethal weapons. The event was held on June 23, 2004 and followed on directly from the main two-day ILEF event held on June 21 & 22.

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The major recommendations are:

1. **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.
2. **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.
3. **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.
4. **Less-Lethal Review and Oversight Expertise.** ILEF should develop maintainin and publish a listing of persons from its membership with acknowledged expertise in associated fields that are recognized and/or accredited by their profession.
5. **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).
6. **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.
7. **Technology Assessment Template.** ILEF should document existing less-lethal 'capability sets' which meet the published ILEF Operational requirement.
8. **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.
9. **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.
10. **Operational Requirements.** That ILEF invite response from manufacturers to the Less-Lethal Operational Requirements Document which has now been published.
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.

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Introduction

Background

The first meeting of what is now referred to as ILEF, was held at the Pennsylvania State University 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 developed meaningful contacts with US Law enforcement. In 1991, the Institute had hosted the International Commission on Policing in Northern Ireland, chaired by Mr. Chris Patten (<http://www.nio.gov.uk/fullreport.pdf>), and it was evident that the issues associated with acceptable and effective less-lethal technologies was an issue which would benefit from a meeting of subject matter experts. The first meeting served to confirm the value of international cooperation, which had a law enforcement focus, on 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, conducted in October 2002, 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, held in the UK, 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 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. There were four main objectives for the visit and the intensive series of meetings:



Figure 4 – The Patten Commission Report.



Figure 5 – 2004 ILEF Consultative Forum held at the Royal Society of Arts Conference House in London.

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Overall, the peer review process provided increased confidence that the UK development program was comprehensive and that predictors of effectiveness to new technologies which had been applied were appropriate.

- To meet with the chief executives and senior management in key US organizations who have a role to play in supporting national and international law enforcement agencies in the development of minimal force options and less-lethal technologies;
- 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 University and key American ILEF personnel;
- To take forward with Penn State and other ILEF members the remaining recommendations in the ILEF 3 report, including the finalization of the ILEF mission statement and role and progress on the vital issue of determining means of assessing the operational effectiveness of less lethal technologies used in law enforcement;
- To receive update briefings and where possible view emerging technologies.

The peer review concluded that the UK's structured approach needed to be built on internationally as should US field data. 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 that the ILEF structure had grown organically and the peer review process had demonstrated the utility of having a grouping of subject matter experts to call on. It was important that the information sharing continued. Overall, the peer review process provided increased confidence that the UK development program was comprehensive and that predictors of effectiveness to new technologies which had been applied were appropriate.

Proceedings

The 2005 International Law Enforcement Forum on Minimal Force Options, hosted by the Royal Canadian Mounted Police 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 specific objectives of the 2005 Forum were to:

- Continue international dialogue on public order and public safety;
- Validate previous work by the Forum and its Electronic Operational Requirements Group (EORG) on operational requirements;
- Examine international less-lethal technology testing standards;
- Examine protocols regarding accountability, review and investigation of use of force incidents internationally;
- Examine issues regarding the medical and psychological effectiveness of less-lethal weapons;

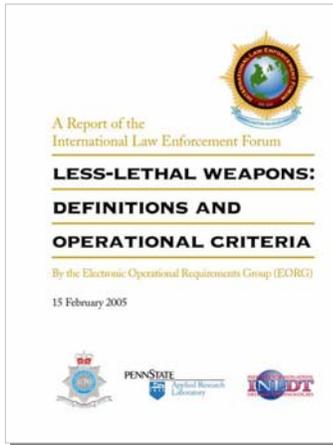


Figure 6 – ILEF Report on Operational Requirements.

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- Examine issues regarding less-lethal weapons and operational policing (strategic and tactical command, tactics, and training);
- Examine new threats, capabilities, and technologies related to less-lethal weapons and minimal force options;
- Validate previous work on the less-lethal database and provide feedback for population, distribution, and management;
- Validate previous work on the ILEF Website and provide feedback for capabilities and management;
- Recommend ways to further the understanding of conflict management, minimal force options and less-lethal weapons through common vernacular, international standards and test protocols.

Workshop Presentations

The ILEF workshop took place at the Holiday Inn Hotel & Suites in Ottawa, Ontario on June 21 and 22, 2005. The workshop began with an outline of the program provided by the ILEF Executive Administrator, Colonel Andy Mazzara, and an opening address from Assistant Commissioner Darrel LaFosse of the Royal Canadian Mounted Police (RCMP). The chair of the ILEF Advisory Board, Mr. Colin Burrows QPM, then presented an overview which set out ILEF's recently published vision and mission statements, its organization and provided details of its recent initiatives. The United Kingdom, The United States and Canada then provided the group an update on less-lethal weapon initiatives. Prior to the breakout sessions on the second day, there were presentations on recent work completed by the ILEF Electronic Operational Requirements Group (EORG) and US operational scenario development. These presentations appear in their entirety in Section 2 of this report.

Opening Address. In Assistant Commissioner Darrel LaFosse of the RCMP welcomed all of the participants and in particular those from Penn State and the US national Institute of Justice who were co-hosting the forum with the RCMP. He underscored that police agencies around the globe are experiencing many of the same problems during public disorder and everyday policing and that less-lethal technologies are part of the solution. He said that partnerships such as ILEF play an important role in finding workable solutions. He stressed that this is not only crucial for police officers, both at senior executive and the street level, but also for those that represent various scientific, medical, governmental and policy groups in their role in the development of such technologies.

Assistant Commissioner LaFosse went on to say it will be impossible to find one common tool that fits all requirements. Therefore, he said, it is crucial to work together to find common parameters in the areas of testing standards, operational requirements and desired effects with supported medical data. He also said that we must remain cognizant that these products provide additional safety to both the individuals against whom the system may be used but also to the safety of police personnel.

One of the current issues that the RCMP and many other Canadian police forces are currently facing is the usage of the conducted energy weapons



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(such as TASER). The RCMP strongly endorses the positive results this technology has provided in terms of public and officer safety, yet recognizes the concerns individuals and organizations have in relation to its use. Canada's National Police Research Centre continues to extend our knowledge of these devices through its research.

Commissioner LaFosse then underscored the importance of the consultative session and the opportunity to engage with manufacturers and distributors of less-lethal technologies. He hailed it as an important step that attempts to partner with those that develop, manufacture and distribute these systems with the police around the world that rely upon them to safely minimize their response for public safety. At most conferences, the attendees are not truly participants but only observers and listeners. This type of venue allows practitioners and organizations to actually influence the outcome of future advancement of less-lethal. He then thanked participants for attending and encouraged all to take advantage of the opportunity to see the beautiful City of Ottawa and its many attractions.



ILEF Initiatives. In his capacity as chair of the ILEF Advisory board, Mr. Colin Burrows provided the delegates with an overview of the ILEF structure, emphasizing the uniqueness of ILEF's breadth and focus. He highlighted the broad professional participation, the non-commercial ethos and the opportunity to influence best practice and the development of less-lethal technologies. The open and transparent approach was an important hallmark of the work being developed as was the commitment to published reports of forum meetings which were publicly available.

As described by Mr. Burrows, the ILEF vision is to obtain a position in which the less-lethal systems and emerging technologies are developed and introduced in a way that best meet the needs of law enforcement agencies on an international basis through:

- Internationally agreed approaches to operational requirements;
- Identification of effects;
- Standards in respect of the development and testing of individual technologies; and
- Sharing information on trialing and the monitoring of outcomes.

The vision statement was deliberate in stating that this should be achieved "in line with the mandate of Articles 2 and 3 of the United Nations Basic Principles on the Use of Force and Firearms and consistent with civil and human rights standards in the local jurisdictions."



Delegates were reminded of General Provisions 2 and 3 of the *UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials* which states that:

[General Provision 2] Governments and law enforcement agencies should develop a range of means as broad as possible and equip law enforcement officials with various types of weapons and ammunition that would allow for a differentiated use of force and firearms. These should include the development of non-lethal incapacitating weapons for use in appropriate situations, with a view to increasingly restraining the application of means capable of causing death or injury to persons. For the same purpose, it should also be possible for law enforcement officials to be equipped with self-defensive equipment such as

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shields, helmets, bullet-proof vests and bullet-proof means of transportation, in order to decrease the need to use weapons of any kind.¹

and

[General Provision 3] The development and deployment of non-lethal incapacitating weapons should be carefully evaluated in order to minimize the risk of endangering uninvolved persons, and the use of such weapons should be carefully controlled.²

Notwithstanding the intent explicit in General Provision 2, there are a number of criticisms regarding the development and use of less-lethal technologies emanating from human rights groups. In particular:

- Police cannot be trusted with weapons that can be used for repression and torture and inhumane or degrading treatment;
- Police are simply adding to their wide arsenal of weapons;
- There should be a complete ban on less-lethal technologies; and
- These technologies are inherently dangerous.

Addressing these issues, the chairman contrasted the criticism that police cannot be trusted with less-lethal technologies with the requirements of the UN Declaration on use of force and firearms. The UN declaration was very clear that police ought to have an alternative to lethal force but that such systems must be independently tested, evaluated and approved and their use subject to high standards of accountability. The key issue here was for society to ensure that the testing and evaluations processes were in place and that appropriate accountability mechanisms existed to deal with any misuse that occurred.

It was also noted that the UN requirement was for Governments and law enforcement agencies to develop a range of means as broad as possible and equip law enforcement officials with various types of weapons and ammunition that would “allow for a differentiated use of force and firearms.”

Mr. Burrows also stressed that those who wish to see a complete ban on less-lethal technologies were failing to recognize the fundamental human rights and public safety imperative included in the UN mandate. The UN declaration required governments and law enforcement departments to include the development of non-lethal incapacitating weapons for use in appropriate situations, with a view to increasingly restraining the application of means capable of causing death or injury to persons.

Although the chairman acknowledged that without proper testing and guidance, there was a risk of technologies entering service or being used inappropriately, this had been recognized in the UN declaration which created a scientific, medical and operational imperative for proper testing and evaluation. This requires that the development and deployment of non-lethal incapacitating weapons be carefully evaluated in order to minimize the risk of endangering uninvolved persons. There was also a policy, training, oversight and accountability imperative that the use of such weapons be carefully controlled.

“Governments and law enforcement agencies should develop ... non-lethal incapacitating weapons for use in appropriate situations, with a view to increasingly restraining the application of means capable of causing death or injury to persons.”

Basic Principles on the Use of Force and Firearms by Law Enforcement Officials - United Nations

...those who wish to see a complete ban on less-lethal technologies were failing to recognize the fundamental human rights and public safety imperative included in the UN mandate.

¹ Basic Principles on the Use of Force and Firearms by Law Enforcement Officials, The United Nations, Adopted by the Eighth United Nations Congress on the Prevention of Crime and the Treatment of Offenders, Havana, Cuba, 27 August to 7 September 1990.

² Ibid.

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The objectives [of ILEF are] to enhance the collective ability to resolve potentially violent encounters; to increase public and officer safety; and to establish, maintain and improve public order while safeguarding civil liberties and the human rights of all.

Referring to the ILEF mission statement, the chairman stressed that ILEF had been formed to develop the capabilities of the international law enforcement community and those Involved in peace-keeping missions. The objectives were to enhance the collective ability to resolve potentially violent encounters; to increase public and officer safety; and to establish, maintain and improve public order while safeguarding civil liberties and the human rights of all.

It is therefore important that, in keeping with its mission, ILEF provide the opportunity for professional discussion by practitioners on the development of new concepts, operational analysis and operational requirements in the area of minimal force options and less-lethal technologies. Mr. Burrows emphasized the importance of ILEF providing and fostering subject matter expertise in operations and policy; technical evaluation and testing; training; human and medical effects; and domestic and international law and accountability.

To this end, Mr. Burrows pointed out that a number of thrust areas had been identified and these would continue to guide the work of the Forum:

- Operational needs/requirements definition;
- Identification of standards and test criteria;
- Effectiveness and Medical Outcomes;
- Policy analysis;
- Information clearinghouse;
- Less-lethal database support;
- Publication of guides, reports and handbooks.

Figure 7 – ILEF Website.



ILEF on the Internet. Mr. Ed Hughes from Penn State advised the meeting that an ILEF web site was now operational at <http://www.ilef.org>. The ILEF site includes a discussion Board for the law enforcement community to discuss less-lethal issues and share best practices. It contains a link to the database of technologies/usage of less lethal developed by HOSDB on behalf of the UK Steering Group, ILEF and the European Working Group on Non Lethal weapons. Matthew Symons of the HOSDB then showed delegates the database which was being launched at this conference. He reported that it was intended to run it for 6 months with access limited to Law Enforcement before opening it further to general access. The database covered use, evaluation, deployment and research of less lethal technologies. There was some discussion about how best to promote the ILEF site with the wider law enforcement community.

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).

The UK approached the assessment of less-lethal technologies by first looking through all of the technologies available and then prioritizing them into areas according to how likely they were to meet the operational requirement prepared by the Association of Chief Police Officers (ACPO). There were five priority areas: kinetic energy rounds, chemical delivery devices (long range), distraction devices, water cannon and electrical devices.



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Applied Research Laboratory
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Kinetic Energy Devices. Despite the wide range of types of impact rounds available, the HOSDB could not identify anything commercially available that matched the performance of the L21A1 baton round when used in the recommended system (the L104 launcher and L18 sights). Though it was a very accurate round, the independent medical assessment of the L21A1 identified a need to further reduce the risk of injury if a person was hit with a round in a more vulnerable area such as the head. In response to the medical assessment, the UK Steering Group initiated the development of a new projectile. The Attenuating Energy Projectile (AEP) was designed to be as effective as the L21A1 but reduce the risk of injury should there be an unintended strike to the head or other vulnerable area of the body. The new round maintains the existing levels accuracy and consistency shown by the L21A1. It came into operational use in the UK on the first day of this workshop (21 June 2005).

Chemical Delivery Devices. Similar to the impact rounds, HOSDB could not identify any commercially available rounds that were sufficiently developed to meet the ACPO operational requirement. The UK Steering Group thus initiated a program of work to develop a Discriminating Irritant Projectile (DIP). There were a number of key user requirements:

- The round needed to be accurate and discriminating;
- The system needed to achieve a 95% probability of hit when bench mounted and 85% probability of hit when man-fired at a 400mm x 600mm target at 25 meters;
- The round needed to use the same launch platform as the AEP; and
- The irritant needed to be retained until impact, then at impact, completely discharged.

To date some prototypes have been produced which will be used in scenario-based trials to better identify any issues relating to the use of the DIP and further inform how this system should be developed. Once this work is concluded, it is likely that it will be operationally piloted by a number of police forces in the UK.

During the last ILEF, PSDB indicated that some work was ongoing to enable the introduction of incapacitant sprays using PAVA, which is a synthetic form of oleoresin-capsicum (pepper) spray. In May 2002, the UK referred PAVA to the Independent Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) to comment on the safety of use of PAVA. At that time, there were a number of gaps in the data. However, following further work COT issued a favorable statement on PAVA in November 2004. HOSDB has published a report entitled *Comparison of CS and PAVA: Operational and Toxicological Aspects* and PAVA has now been cleared for use by police in the UK as an alternative to CS incapacitant sprays.

Distraction Devices. The UK has not undertaken much research into distraction devices over the last year. However, a Long Range Acoustic Device (LRAD) was obtained and the HOSDB conducted an evaluation of the device in April 2005 as a communication tool. Currently, the results are being analyzed and a report will be forthcoming in due course.

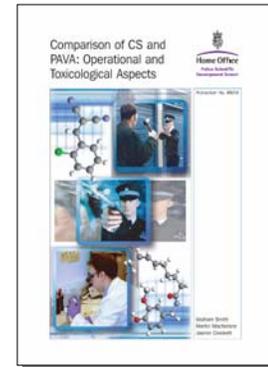


Figure 8 – HOSDB Report on PAVA.

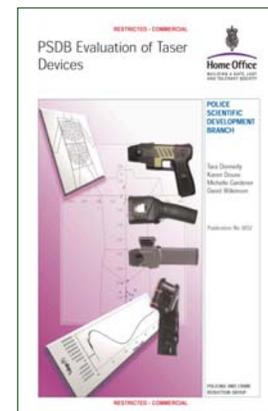


Figure 9 – HOSDB Report on TASER™ Devices.

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Electrical Devices. PSDB conducted a comprehensive evaluation of TASER devices and published their report on this in October 2002. This study included physical testing and handling trials to establish how well the devices met the ACPO Operational Requirement and an independent medical assessment of the implications of the use of the M26 TASER. The information gathered in these trials supported a pilot operational trial of the M26 TASER in 5 UK Police forces that ran for 12 months beginning in April 2003. The M26 TASER was approved for use by all forces in support to firearms operations in August 2004. Since then, the HOSDB has issued a second report on TASERs (published in March 2005) which includes further testing of the M26 and an evaluation of the X26. The report also includes a discussion of M26/X26 comparison handling trials and comparisons of both devices against the ACPO Operational Requirement. Finally, the report contains a second M26 DOMILL (Defence Scientific Advisory Council [DSAC] Sub Committee on the Medical Implications of Less-Lethal Weapons (DOMILL) statement and an X26 medical assessment. This report is available at: <http://www.hosdb.homeoffice.gov.uk>. Interestingly, in comparing the two reports, HOSDB found that though officers preferred the M26 TASER to all other electro-muscular disruption devices evaluated in 2002 (94% preferred the M26), officers preferred the X26 to the M26 model (82% versus 18%) in the 2004/5 study. Also, though the cartridges for the two devices are the same, during the HOSDB testing the bottom barb of the cartridges fired from the X26 tended to move to the left.

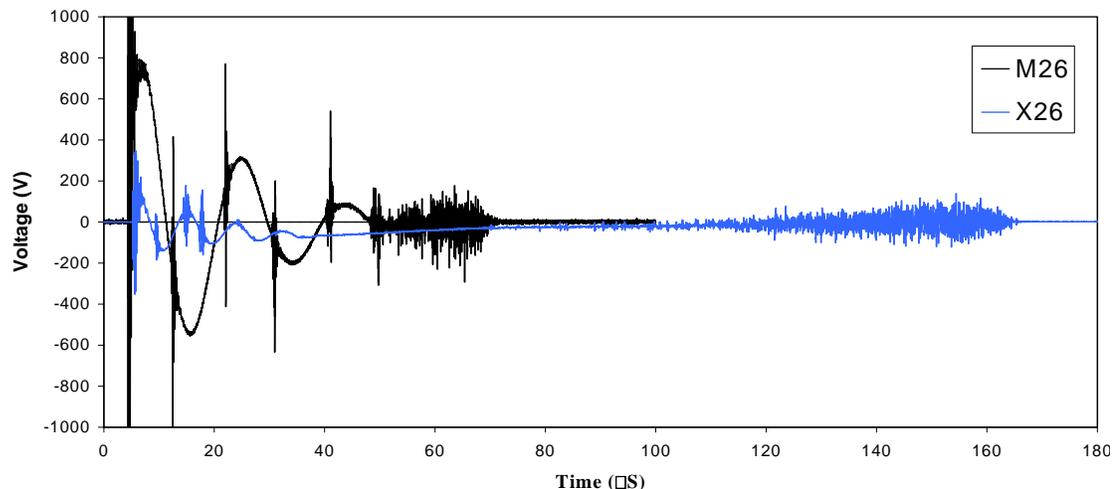


Figure 10 – M26 and X26 TASER™ Outputs with 47 Ohm Loads

The key difference between the devices was the output and the wave form the X26 operating at a lower voltage over a longer time period (see Figure 10). The report concludes that the risk of a life threatening event arising from direct interaction of the currents of the X26 TASER with the heart is less than the already low risk of such an event from the M26 Advanced TASER. This has led to the UK Home Secretary's support for using the X26 model in the UK.

Mr. Smith finished by summarizing the work carried out under each priority area and the equipment that has been deployed or developed.

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The United States (US). The US presentation was made by Mr. Joe Cecconi who manages the Less-lethal Program at the National Institute of Justice (NIJ). The NIJ is the research and development arm of the United States Department of Justice. It has no operational mission, but focuses on two major areas of research: behavioral and the physical sciences. The NIJ supports the approximately 18,000 law enforcement agencies and 3,000 correctional institutes across the United States.



Unlike the US Department of Defense, the Department of Justice has no authority over the vast majority of these agencies, including those in the federal government. They do, however, bring information and technology closer to the practitioners through the National Law Enforcement and Corrections Technology Center (NLECTC) network of Centers. These centers are located throughout the country and backed by preeminent research facilities. The NLECTCs provides state and local agencies with science and engineering advice and support to which few agencies would otherwise have access.

Mr. Cecconi pointed out that the whole concept of less-lethal is that there is an area between killing or severely injuring someone and having a device that is ineffective. This is the desired area of "compliance" (see Figure 11). If a particular weapon is too weak, it becomes ineffective. If it carries too much energy to the suspect, it may kill or severely injure him. This is the challenge: to increase the probability of "compliance" while staying within an accept-able band between lethality and ineffectiveness.

NIJ has a number of less-lethal programs. These programs include directed energy, data collection, onsite data on less-lethal incidents, further development of the ring airfoil projectile (RAP) and work related to electro-muscular disruption devices (EMDD).

Ring Airfoil Projectile (RAP). The NIJ has been working on the RAP since 1996. It is an enhanced version of a system designed and fielded by the Department of Defense in the late 1960s and early 1970s, but never employed. The current "advanced segmented" RAP, or ASRAP, is a 2-inch rubber ring that is intended to inflict pain but no permanent injury when it strikes an individual (see Figure 12). The ring potentially could be filled with pepper powder and break open on impact. The ASRAP subsystem will be aerodynamically cleaner than its predecessors. The projectile consists of the high-density Thermoplastic Elastomer (TPE) nose with its payload compartments (7.2cc total volume) and the expanded polystyrene (EPS) foam tail.

The initial concept is for a multiple shot shoulder fired launcher with a single shot "pistol" type launcher as another option. Development of these launchers and projectiles is expected to be completed in August 2005 with independent testing conducted by Penn State's Applied Research Laboratory thereafter.

Figure 11 – Less-Lethal Desired Area of "Compliance."

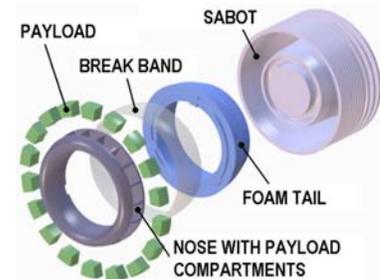
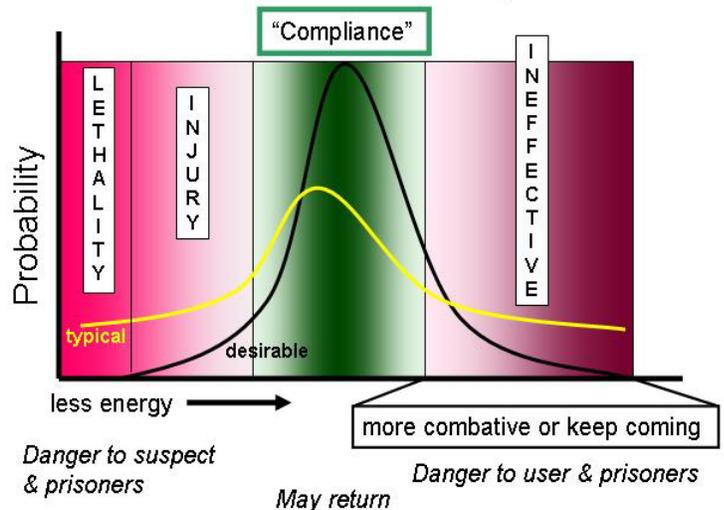


Figure 12 – Ring Airfoil Projectile (Exploded View).

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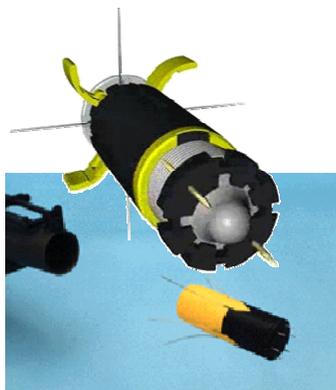


Figure 13 - The Titan Corporation's "Sticky Shocker."

Electro-Muscular Disruption (EMD) Devices. The NIJ began work on what was called the "sticky-shocker" in the 1990s. The first versions of the device (see Figure 13) were of the 37mm and 40mm size developed by The Titan Corporation's Advanced Technologies Applications Group (formerly Jaycor, Incorporated). They were designed to be compatible with existing launchers in the field. It was as much a kinetic energy device as an EMD device. NIJ was exploring improvements to this type of extended range EMD device. These improvements are currently being funded by the US Marine Corps.

The NIJ has also been examining data on outcomes that occur after someone has been subjected to a TASER™. Some of this data is from Amnesty International and includes length of time after tasing, number of deaths, and extenuating circumstances surrounding the deaths such as use of narcotics, physical condition, and mental condition. The NIJ is looking to conduct an "in-custody death" study and is planning to hold a medical conference as well.

Canada. It was reported by Mr. Darren Laur of the Canadian Police Research Center (CPRC) that the CPRC had just completed a ten-month study on conducted energy weapons. He characterized the findings as very positive. The research embraced a variety of external stakeholders including Schizophrenia Society and British Columbia Civil Liberties. This resulted in a number of these organizations endorsing, or having a positive view of, the report.

From the outset, the CPRC recognized that they needed to form a broadly based investigative team across the medical, scientific and legal communities. Members included a forensic pathologist, a forensic psychiatrist, an emergency room physician, an epidemiologist, a neurologist, an exercise physiologist and advance life-support technicians.

Mr. Laur stated that there have been 142 deaths reported as being proximal to the use of TASER™ across the whole of North America. Recognizing that proximity does not equate to causality (the "post hoc ergo, propter hoc" logical fallacy), in nine of these cases, the pathologists stated that the conducted energy weapon was a contributing factor. None of these noted the use of TASER™ as a cause of the death, but that it was one of a number of causal factors surrounding these deaths. To place this statistic in perspective, in Canada alone there were an average of between 15 and 20 sudden unexpected deaths proximal to police use of restraint each year, in incidents where a firearm or TASER™ was not used. In the United States, there were between 50 to 150.

Mr. Laur went on to say that in the 1970s, many of these deaths were attributed to neck restraint. In the 80s and 90s, they were attributed to oleoresin-capsicum (OC) pepper spray and in the new millennium they are being attributed to conducted energy weapons. Perhaps coincidentally, these "causal linkages" were alleged in the time frame where these technologies and techniques were introduced. The medical committee quickly realized that it was not necessarily the use of force option that was causing these deaths, but that it might be an underlying medical emergency called excited delirium.

Much of the medical research being conducted specific to cardiac issues internationally has found that from a cardiac standpoint, it appears that TASER™ technology (conducted energy weapons or CEWs) has a very high safety threshold, even in susceptible population groups. One of the concerns

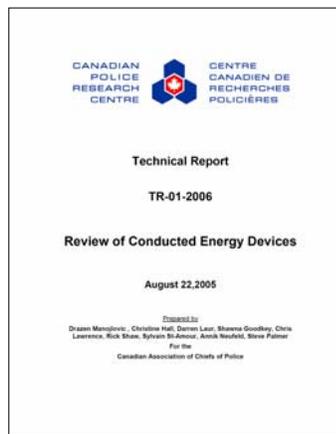


Figure 14 – CPRC Review of Conducted Energy Devices (CEDs).

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raised by human rights and civil liberties groups is that some of these individuals that are in an excited delirium state due to drugs or psychosis are more prone to death to CEWs. The CPRC committee stated that there is no doubt that the methamphetamines would make the heart more susceptible to ventricular fibrillation, but no more so than if pepper spray was being used or if the subject was merely startled by someone. There have also been questions posed about what effect these devices have on implanted pace-makers (IPCs). In Canada, there was a recorded incident of a 51 year old woman who was intoxicated, armed with a knife, and threatening suicide. The officer on the scene used an M26 TASER™ with a five-second cycle to subdue the individual. This is the first anecdotal case where data of this type was actually captured. It appeared that The TASER™ had no effect on the heart rate whatsoever. Because the officer released the trigger after five seconds, the IPC was able to discern a normal heartbeat and de-energized itself.

There has been some speculation in the media that TASER™ produced a phenomenon called delayed ventricular fibrillation, which is allegedly, why there are deaths minutes, hours or days after the application of the technology. All of the medical experts with which the CPRC consulted stated emphatically that there is no medical or scientific evidence that supports the assertion that such a phenomenon exists. The CPRC report does identify several medical "contra-indications" including respiratory impairment, metabolic acidosis, seizure activity, and scarring/soft tissue damage.

Respiratory Impairment. There is little doubt that when probes are deployed in the upper torso (either front or rear) that breathing is difficult. This is important because breathing is one of the mechanisms the body uses to bring its systems back to homeostasis.

Metabolic Acidosis. Untreated severe metabolic acidosis (i.e., pH < 7.10) may lead to potentially fatal arrhythmias and myocardial depression resulting in hypotension and congestive heart failure. The issues surrounding metabolic acidosis are being investigated by the Human Effects Center of Excellence (HECOE) of the US Air Force Research Laboratory (AFRL). These results should be published by the end of 2005. Generally, HECOE found that successive and repetitive applications of a conducted energy weapon may increase blood acidosis. The medical panel is confident that many subjects that are in a state of excited delirium due to methamphetamine use or psychosis are likely to have a pH of 6.5 to 6.9. The question of whether a TASER™ can further exacerbate this condition is still being investigated. What is known from the CPRC Panel is that the longer an officer fights with subjects in this state of excited delirium, the more likely it could lead to heart failure. Therefore, the quicker law enforcement officers can control and restrain an individual, the better.

Seizure Activity. The CPRC Medical Panel confirmed the HECOE findings that both the M26 and X26 TASER™ have electrical outputs above the seizure threshold. The panel reviewed over 5,000 use of force reports from Canada and the United States and found no incidents of seizures recorded. Nonetheless, the panel believes it to be a risk.

Scarring and Soft Tissue Damage. There is little doubt that with a cycle time of five seconds there are instances of scarring, in particular in the areas where

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the probes have made contact. There were many instances of muscle strain reported, even in officer training.

Report Summary. The CPRC report concludes with a number of observations:

- Definitive research or evidence does not exist that implicates a causal relationship between the use of Conducted Energy Devices and death;
- Existing studies indicate that the risk of cardiac harm to subjects from a Conducted Energy Devices is very low;
- Police officers need to be aware of the adverse effects of multiple, consecutive cycles;
- The application of best practices relating to the safe use of Conducted Energy Devices should lead to an increase in public confidence in electrical devices as appropriate law enforcement tools.

Operational Scenario Development. Lieutenant Colonel Ed Hughes (USA-Ret) of Penn State's Applied Research Laboratory, who led the effort funded by the US National Institute of Justice, made this presentation. This effort brought together a select group of law enforcement expert practitioners to discuss and develop operational scenarios for less-lethal devices. The intent was to develop these scenarios in a form consistent with the NATO SAS-035 Measures of Effectiveness (MoE) Framework, but focused on US law enforcement operational needs.

For each of the drafted operational scenario "situations", the panel discussed the "description" and came to agreement on the precise wording. Colonel Hughes stated that the panel consciously limited the scope of each individual scenario recognizing that during an encounter, an officer may find himself moving from one scenario to another. After reaching consensus on the scenario "description," the panel determined the corresponding necessary or "required outcomes," select applicable responses for the situation, then arrive at a specific onset time, magnitude, target recovery state, and duration of effects. Finally, for each of the scenarios, the panel considered environmental factors that would alter the context of the situation and possibly the technology, tactic, or procedure that might be used to achieve the required outcome.

After the presentation, ILEF members suggested including a graphical representation of the NATO SAS-035 Study assessment in the report and adding a "relative frequency of occurrence" for each of the subject scenarios. It was agreed, however, that the scenarios move the NATO framework forward in a law enforcement context and appear to be a useful tool for all levels of law enforcement in identifying potential gaps in tactical protocols, established policies and procedures, current individual techniques, or available technologies and those necessary to address specific operational needs.

Operational Test Criteria Matrix. This presentation was made by Colonel Andy Mazzara (USMC-Ret), Executive Administrator of ILEF and facilitator of its Electronic Operational Requirements Group (EORG). The Less-Lethal Weapons (LLW) Operational Test Criteria (OTC) Matrix is a product of an iterative review, discussion and modification process based on some early LLW standards work done by the law enforcement community in the United Kingdom. The OTC outlines 20 parameters against which new or emerging LLW technologies can be assessed by law enforcement agencies to determine

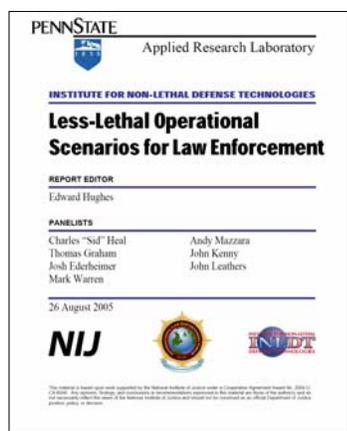


Figure 15 – Operational Scenario Development report developed by Penn State for the NIJ.

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suitability for procurement. The matrix also provides a generic listing of broad requirements for law enforcement that manufacturers can use to ensure a better commercially-available product is provided. This listing of test parameters, which can by extension serve as first-cut measures of "effectiveness," can also be applied against the developing ILEF operational scenarios to further enhance the law enforcement agency's analysis of the operational utility of one LLW in relation to another. These simple but beneficial tools allow agencies with limited acquisition budgets to make more prudent decisions with regard to the procurement of new LLW munitions and devices.

Workshop Syndicate Sessions - Major Issues, Discussions and Recommendations

After completing an ILEF overview and briefings on the first day, the group participated in three breakout sessions. On the second day of the workshop, there were further presentations and the group participated in an additional three breakout sessions. These sessions addressed development of testing standards; accountability, oversight, review and investigation; medical and psychological effectiveness; operational policing (strategic and tactical command issues tactics as well as training issues); and new threats, capability gaps and new technologies.

Development of Testing Standards. The purpose of this session was to address questions regarding the development of testing standards and protocols for less-lethal weapons and associated technologies. There was group consensus that there should be an international approach to the development of testing standards for less-lethal technologies. The group generally agreed that the technologies should be categorized and that individual protocols should be developed for each technology. There was also agreement that there should be separate regimes required for technical testing and medical assessment. Although consultation can (and should) take place, the two regimes need to be independent, separate, and distinct efforts. On the other hand, they also need to be fully integrated and coordinated. The group also recognized that differing standards may apply in different jurisdictions. Indeed jurisdictions will may be distinguished by an infinite number of variables including its laws, environmental conditions, urbanization, population density, and average temperature to name a few. This does not, however, preclude the prospect of developing standards. Indeed, it underscores the necessity for maximizing consistency across jurisdictions. There are a number of stakeholders with regard to establishing these standards that should be consulted. The group also agreed that testing independent of manufacturer influence must be accomplished in order to establish a credible regime. This will, however, require oversight and therefore there would need to be a system established to monitor these independent facilities. How often equipment should be tested is another issue that must be addressed. Manufacturers must, it was agreed, have access to the standards, testing protocols, and associated training packages.

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Accountability, Oversight, Review and Investigation. The purpose of this session was to address questions regarding the accountability, oversight, review and investigation of incidents involving less-lethal weapons and associated technologies. The group was in agreement that there is a lack of consistency internationally in the criteria regarding the decision to investigate uses force which involved the application of less-lethal technology. It was considered that there would be benefit in having standardized guidelines for use of force reporting. Ideally designated oversight bodies should examine the entire system including the technology, its testing and selection, training, and command, as well as sighting systems, zeroing, and operational directives/guidance for use when investigating UOF incidents. Oversight and investigation would certainly be facilitated if there were standardized data categories and common requirements for the collection of use-of-force (UOF) data. There are risks associated with elicitation and use of expert opinion particularly where investigative oversight bodies over rely on it. Experts should be independent and certainly not on the payroll of manufacturers. Additionally, consideration must be given to the broad perspectives of diverse stakeholders when developing policies and procedures for accountability, oversight, review and investigation. Finally, there is a role for the international law enforcement community in respect of oversight of less-lethal development and use.

Medical and Psychological Effectiveness. The purpose of this session was to address questions regarding the medical and psychological effectiveness of less-lethal weapons and associated technologies. The panel quickly determined that they needed to develop a clearer understanding of effectiveness as opposed to tactical outcome. There is a difference, when dealing with these less-lethal systems, between “effects” and “effectiveness.” There are medical issues related to operational employment (physical effects and effectiveness) as well as medical risks to both the subject and law enforcement officer(s). There was general agreement that to date there still has not been enough research on many of the critical issues surrounding medical effects. The medical community approach to risk characterization is very well documented. However, the medical risk factors, no matter how precise they are in the laboratory, are not going to be part of a tactical decision-making process unless they are *conspicuous* in the field and/or based on precise intelligence. The user must feel confident that the system is going to function properly every time over given distances, within a declared accuracy specification and with certain effects. There was agreement that maximizing psychological deterrence of threatened use had the potential to contribute to overall weapon effectiveness. Consistency of **effectiveness** is illusive, because most do not have purely bio-medical effects, but they must be *accurate* and *consistent* in **effects** within the range they are to be used. The group identified a need to define risk groups. Each group must be defined by the less-lethal system being used. Manufacturers should be held responsible, at least in part, to collect and demonstrate data that proves the effectiveness of their weapon or technology. The law enforcement community needs to challenge manufacturers to close capability gaps. Conversely, they are obliged to provide manufacturers with operational requirements and expected “effectiveness.”

Operational Policing – Strategic and Tactical Command Issues. The purpose of this session was to address questions regarding strategic & tactical command issues of operational policing related to less-lethal weapons and associated technologies. The decision to adopt a certain technology or tactic

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is often made at operational or middle management levels within police departments. This is an international trend. For decision-makers to have a clear understanding of the technology and the appropriateness in deployment tactics, they cannot rely solely on manufacturer claims and research data. Recognizing that there are external and internal communities looking at the use of lethal and less-lethal technologies, it is important to take into account the views of a range of observers. Strategic choices need to take into account all the choices available and related information. A criteria template could be useful tool for department leadership to evaluate less-lethal technology and tactical options. In the UK, as in the US, there are currently no decision-making matrices nor any guidance or tools that assist commanders in making decisions in a consistent way. The need is not for a proscriptive formula that tells them what decision to make, but rather a framework outlining and highlighting relevant material to assist them in articulating needs, assessing the feasibility, acceptability, and risk; and making decisions. There is a need for transparency in this decision making process to demonstrate the balancing of community interests with policing needs and objectives when selecting less-lethal tactics and technology options. Open lines of communication with community partners are vital. The panel also emphasized that police officers themselves are stakeholders. There is often a gap in the training level regarding minimal force options between commanders and practitioners. Training for commanders is paramount in order that they are properly empowered to make appropriate decisions in deploying less-lethal weapons.

Operational Policing – Tactics and Training Issues. The purpose of this session was to address questions regarding tactics and training issues of operational policing related to less-lethal weapons and associated technologies. There was consensus that there is training and accreditation that should apply to the strategic and tactical commander in respect of situations where less-lethal technologies should be used. The US in particular has traditionally been challenged in this regard. The group observed that leaders need to know the technology, so they understand capabilities and limitations. The commander needs to know the accepted tactics along with the associated legal decisions. Commanders would also be well-served with judgmental or scenario based training. The group also agreed that commanders must be very familiar with their agency use of force model. In areas where the likelihood of public disorder exists, an appropriate level of public order training will occur in all levels of the department. Training is a departmental responsibility. The group discussed a number of related issues including “causing harm to prevent harm.” They concluded that while police personnel have an obligation to defend the defenseless, including mentally deranged persons, this obligation does not extend to inappropriate officer jeopardy.

New Threats, Capability Gaps and New Technologies. The purpose of this session was to address questions regarding new threats, capability gaps and new technologies related to less-lethal weapons. The panel noted that in recent years, there has been increased availability of commercial less-lethal weapons to the public. Most public use of these technologies is appropriate, but the availability to the criminal element is of concern. Police officers are encountering adversaries that are more resilient, including the mentally ill and drug influenced. The panel also noted that the infrequent incidents of misuse of less-lethal devices seem to be setting larger polices regarding their

For decision-makers to have a clear understanding of the technology and the appropriateness in deployment tactics, they cannot rely solely on manufacturer claims and research data.

Commensurate with a trend toward more carefully planned riots, there has been an accompanying trend toward more violence.

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employment. This trend threatens to tie the hands of legitimate law enforcement officers, making their jobs more difficult and placing them at greater risk. There was consensus that proper policies, education and training are keys to successful employment of less-lethal weapons. Commensurate with a trend toward more carefully planned riots, there has been an accompanying trend toward more violence. Another threat is the increase in the number and type of available systems. This makes tactical assessments more complex. Additionally, adversaries are developing and employing countermeasures more effectively. The loss of control of less-lethal weapons is also of growing concern to law enforcement. The ability of a perpetrator to turn the device on an officer might even rise to the level of lethal force in order to protect the public properly. The panel recognized that while impact munitions remain the core of the less-lethal capability of most departments, devices that use directed energy, acoustics, chemicals and electricity are showing great potential. They also observed that a capability gap exists between the military and law enforcement roles in resolving terrorism incidents such as Beslan School and Dubrovkov Theater incidents. Less-lethal options are essential, but only in that they reduce the probability that a victim will be seriously injured or killed. They are important in separating combatants from victims. The panel concluded that a strategic shift in thinking will be necessary to recognize law enforcement's role as first responders to acts of terrorism.

Less-Lethal Consultative Forum

This year ILEF delegates had the opportunity to attend and participate in a consultative forum with manufacturers and distributors of less lethal weapons. The event was held on June 23, 2004 and followed on directly from the main two day ILEF event held on 21 and 22 June. The theme of the consultative forum was **"Collaborative Strategies – Working Together."**

The forum agreed that operational needs for law enforcement are not consistently articulated in terms that allow manufacturers to develop new devices without significant investment (multiple prototyping, post deployment data). Manufacturers reported that government solicitations in the US do not normally have sufficient information in their requests for proposal (RFPs). Many are based on existing deployed systems. There was general agreement that structured and rigorous test protocols are important. Operational use feedback is important but has its limits when operators continue to "move the goalposts" or change the requirements midstream. Manufacturers would welcome a more uniform, formalized and accepted standards against which a technology would be tested. One cautionary note was that establishing a complex testing and approval structure will bring with it a high cost that may not be affordable for new technologies. There is also a need to ensure the level of quality control over time of these products. There was much discussion on training. There was consensus that though manufacturers had some responsibility for identifying technology specific training, they have often gone beyond that for which they should be accountable. The forum was in general agreement that manufacturers should limit the scope of their training responsibilities to the technical operation of the device or system. Though they might be consulted, the tactical and judgmental training should be the responsibility of the agency or department.

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This consultative event was important in promoting engagement, between practitioners, law enforcement associations, manufacturers and distributors. It provided an opportunity for a greater appreciation of the issues and concerns surrounding less-lethal technologies development, testing and training. It is hoped that, as a result of this consultation, future engagement will be better informed and will reflect a willingness to share information between all interested parties.

Summary and Conclusions

The 2005 Forum addressed many issues related to less-lethal concepts, technologies and deployment. The delegates explored operational requirements; testing standards; protocols for accountability, review and investigation; use of force reporting; medical and psychological effectiveness; operational policing (strategic and tactical command, tactics, and training); new threats, capabilities, and technologies; and the ILEF less-lethal database and website. The presentations and the Syndicate Sessions are detailed in the following text. The major recommendations are:

1. ***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.
2. ***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.
3. ***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.
4. ***Less-Lethal Review and Oversight Expertise.*** ILEF should develop maintainin and publish a listing of persons from its membership with acknowledged expertise in associated fields that are recognized and/or accredited by their profession.
5. ***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).
6. ***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.

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7. **Technology Assessment Template.** ILEF should document existing less-lethal 'capability sets' which meet the published ILEF Operational requirement.
8. **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.
9. **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.
10. **Operational Requirements.** That ILEF invite response from manufacturers to the Less-Lethal Operational Requirements Document which has now been published.
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.

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SECTION 1:

Workshop and Conference Discussions

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WORKSHOP SESSION 1:

Development of Testing Standards

CHAIR: Mr. Graham Smith

FACILITATOR: Colonel Andrew F. Mazzara

The purpose of this session, led by Mr. Graham Smith of the Home Office Scientific Development Branch (HOSDB), was to address questions regarding the development of testing standards and protocols for less-lethal weapons and associated technologies.

An International Approach

There was group consensus that there should be an international approach to the development of testing standards for less-lethal technologies. There was much discussion regarding the basis for these tests and that they must measure against a generic operational requirement. Further, the group considered that these standards should provide some latitude or range of values, should establish a minimum acceptable level of performance internationally, and should differentiate between those that are “essential” and those that might be “desirable.” There is a need to allow for some flexibility in any international standard. The broad spectrum of operational needs and operating environments internationally must allow a country to adjust the standard to their own domestic needs.

The group generally agreed that the technologies should be categorized and that individual protocols should be developed for each technology. The panel observed that there are a number of existing taxonomies that exist, but that finding or devising one that would be agreeable to everyone, might be an elusive endeavor. Similarly the group agreed that devices must be discriminating (they must affect only the person you are intending to affect), but specific standards for this might be challenging to establish across the international community.

The panel recommended that ILEF pursue the development of a classification (taxonomy) of less lethal technologies and that it undertake to develop an overarching generic document that describes the process, the operational environment and the related aspects of less-lethal technologies that are used to develop a standard at very general level.



Testing Regimes

There should be separate regimes required for technical testing and medical assessment. Although consultation can (and should) take place, the two regimes need to be independent, separate, and distinct efforts. On the other hand, they also need to be fully integrated and coordinated. The regimes must adequately assess the equipment with respect to the groups against which they will be used. There should be a point of contact internationally for the manufacturers.

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Testing Standards

Differing standards may apply in different jurisdictions. Indeed jurisdictions will may be distinguished by an infinite number of variables including its laws, environmental conditions, urbanization, population density, and average temperature to name a few.

This does not, however, preclude the prospect of developing standards. Indeed, it underscores the necessity for maximizing consistency across jurisdictions. This might be accomplished by gaining the support of associations such as the International Association of Chiefs of Police (IACP) involved early in the development of the standards, not just as an endorsing organization.

Human rights groups are beginning to change their attitudes towards less lethal technologies therefore, they should be included in appropriate phases of the development of these standards. Additionally, the public should be included during the testing to obtain opinion and feedback.

There are a number of other stakeholders with regard to establishing these standards. Each of these stakeholders should be invited to participate in standards development in some fashion. These groups include government representatives, executive and practitioner level police officers, special interest groups, manufacturers and distributors, the public-at-large, professional associations (e.g., unions, law societies, medical associations), and other standards associations. These key stakeholders should be approached by ILEF to determine if they are interested in being involved in the process. Representatives from groups should then be identified and engaged regarding the particulars standards for which they have an interest.

ILEF should own the process to develop the standards however; the standards should be published in each jurisdiction to tailor them to their organization(s). Independent testing through a reliable and reputable testing facility should be part of the process. A first step is to determine what standards need to be set and what standards are currently in use internationally. Funding for standards development would have to be secured in order to proceed under the ILEF banner.

Test Houses and Facilities

Testing independent of manufacturer influence must be accomplished in order to establish a credible regime. Government testing is generally considered "independent." Private test houses, on the other hand, would require oversight and therefore there would need to be a system established to monitor these independent facilities. Government and non-government test houses might receive ILEF-certification for LLW testing. This ILEF certification implies re-certification and monitoring which also has funding and inspection implications. While these funding issues are difficult to address at this juncture, ILEF should put effort into assessing the feasibility of ILEF accreditation for test houses.

How often equipment should be tested is another issue that must be addressed. One cannot necessarily assume that a particular piece of equipment meets a precise standard once it has passed an initial test. There

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should be an ongoing program to ensure the equipment continues to meet the standard year-to-year from the manufacturer. Manufacturer assurances of quality control are not sufficient. This is not a general indictment of manufacturers, but simply recognition that this testing must endure a high level of scrutiny. The testing has to be independent. The established standard should also specify the quality control that should be in place and the checks that ensure the quality control is working.

Consequently, in order for manufacturers to meet an ILEF standard, they must have access to the standards, testing protocols, and associated training packages. There must be adequate control processes in place. Changes in manufacturing processes or product materials must require a retest.

Similarly, periodic testing needs to be done to ensure the equipment is still functioning properly after deployment. The frequency of these test will be product dependent. This random testing should be accomplished in order to ensure the equipment continues to meet the established standards throughout its expected/normal lifecycle. Users (law enforcement agencies) should be responsible for their own testing and lifecycle management.

Recommendations

- **Less-Lethal Technology Taxonomy.** Create an ILEF classification (taxonomy) of less lethal technologies. Develop an overarching generic document that describes the process, the operational environment and the related aspects of less lethal technologies that are used to develop a standard at very general level. Investigate what standards are currently in use internationally and what standards need to be set.
- **Embrace Stakeholders.** Identify stakeholder organizations to include government officials, executive and practitioner level police officers, special interest groups, manufacturers, distributors, the public, professional associations (e.g., unions, law societies, medical associations), and other standards associations. Identify representatives from these groups and meet with them to determine if they are interested in being involved.
- **Testing Standards.** ILEF should take the lead in developing testing standards for less-lethal technologies. The standards should be “tailorable” to individual jurisdictions and published by the appropriate agencies within those jurisdictions.
- **Independent Test Houses.** The ILEF should assess the feasibility of ILEF accreditation for independent less-lethal technology test houses.

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WORKSHOP SESSION 2:

Accountability, Oversight, Review and Investigation

CHAIR: Mr. Josh Ederheimer

FACILITATOR: Mr. Dave Wood

The purpose of this session, led by Mr. Josh Ederheimer of the Police Executive Research Forum, was to address questions regarding the accountability, oversight, review and investigation of incidents involving less-lethal weapons and associated technologies.

Technology Development Oversight

Although law enforcement needs to set the operating standards and specifications for less-lethal weapons, there is a need for a degree of independence in the selection, testing and oversight of such systems. There continues to be concern when manufacturers are the only bodies testing less-lethal products (largely their own). Consequently, agencies are very dependent on manufacturer claims and training programs, particularly the smaller law enforcement departments of the US.

It was noted that in some jurisdictions, it is possible for different types of less-lethal technologies to enter service without any formal testing or regulation regarding storage and use. Often manufacturer guidance on issues such as minimum and maximum ranges are stated, yet the rationale for these distances are not apparent and may not be based on operational, scientific or medical factors.

The immediacy of the operational need often creates an imperative to purchase equipment. Many departments, however, do not have the budgets, expertise or other resources to conduct their own testing, nor do they have access to detailed testing or research results. This is particularly relevant for small to medium sized departments. In this regard, the workshop delegates believed that the US National Institute of Justice (NIJ) should be resourced to take a greater role in the research and selection of these technologies on behalf of law enforcement agencies in the United States. It was acknowledged that there would need to be a system of prioritizing and funding of such research and evaluations. A mechanism would need to be developed to ensure stakeholder involvement in appropriate aspects of less-lethal technology selection and development.



Review and Investigation Standards

The group was in agreement that there is a lack of consistency internationally, in the criteria regarding the decision to investigate uses of force which involved the application of less-lethal technology. It was acknowledged that the nature of the investigation and skills required would vary dependent upon the particular technology used, the operational setting and the outcome of use.

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This situation could be improved upon if there were greater uniformity in the format used, in use of force (UOF) reporting review and the expectation as to the nature and scope of investigations.

There were both legal and organizational issues about the efficacy of monitoring information on the use of force by individual officers. However, it was generally agreed that monitoring UOF of individual officers offered invaluable information, provided the appropriate protocols were in place. UOF data tracking has the potential to identify trends with respect to frequency and level of force. Additionally, it could provide baseline norms for groups of officers taking into account different policing areas and specialist disciplines. Weighed against other data (e.g., precinct, patrol, area crime rates, time of day, training and experience), identified officer or group trends could help isolate causes of the disparity (i.e., training shortfalls; equipment shortages or maintenance; policy).

There is inconsistency in the type and number of investigations which relate to incidents involving fatalities, life threatening injuries, and other use of force from agency to agency. Some investigations are conducted by the agency involved in the incident, others by investigators from a different law enforcement agency, and in some cases by organizations which are independent of the law enforcement altogether.

It was suggested that some of the inconsistency is due to differences in perspective regarding criteria for initiating a review or investigation and the level of review or investigation that might be necessary. Recognizing that there are often drivers involved in these decision processes, particularly where independent review is being commissioned, it was agreed that individual agencies should embrace the advantages of having robust, external investigation of use of force incidents.

It was also noted that investigations often validate appropriate use of force by individual officers and thus assist in "quality assurance." In addition to addressing appropriateness of officer actions, investigations may surface ambiguities in policy or procedures within a particular organization.

Publication of findings and research reports by independent investigative and review bodies enables issues of good practice or professional concern to be placed in the public domain for review. In this regard, it is important that the language used in reports is precise to the degree it would withstand professional peer group scrutiny.

Use of Force Reporting and Review Standards

Many departments have found that having an external use of force incident monitoring, or review component adds transparency and credibility. In that regard, the group considered there would be benefit in having standardized guidelines for use of force reporting and review. This might include detailed sample policies.

In addition to independent review, the group considered supervisor monitoring of all incidents important. Further, there was concurrence that there should be some type of objective monitoring, investigation, or review (e.g., police auditor, separate agency, independent organization), depending on the level of force.

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It was noted that in some police departments proactive use of force monitoring would trigger specific types of review (e.g., "X" percentage incidence of use of force greater than that used by other officers in the same policing area). Where this was noted, training issues might be identified or officer specific investigation might be undertaken.

If mandatory use of force reporting processes are not in place and data is not recorded, it is difficult to determine trends, policies or practices that require reviewing until there is a serious injury or death. It was generally agreed that effective use of force reporting and monitoring enhances the organizations ability to find and address these training, technology or policy issues and minimize the potential for otherwise avoidable serious or fatal outcomes.

Ideally, designated oversight bodies should examine the organizational policy training and weapon systems in use. This should include the technology testing and selection, training, and command. Where less-lethal options were deployed (whether used or attempted to be used) but the situation resulted in the use of lethal force, reviews and investigations should consider all issues, not merely the "failed" or "unsuccessful" option employed. This approach emphasizes more than outcome and includes options that may not have been available, but could or should have been. With this in mind, the ILEF should explore the potential for agreed international standards for UOF reporting, review and investigation and pursue the development of detailed sample policies and procedures.

There was some discussion regarding the lack of consistency in reporting UOF data from agency to agency. For example, some agencies in the US that have detailed UOF data for the last 15 years and others have absolutely none. There may be some value in promoting some minimum standards for UOF data collection through law enforcement associations. Beyond the need for transparency and oversight, there is value for departments in demonstrating the importance of these technologies in protecting the public while reducing threat to officers.

While there are a number of data elements that are clearly of value (i.e., number of deaths and injuries), there are others for which the value is less clear. The ILEF is a good vehicle for the development of such a framework for UOF data collection, since it has developing relationships with international stakeholders. This should be something the ILEF endeavors to accomplish.

Expertise

There are risks associated with eliciting and using expert opinion. This is particularly true, the group agreed, when investigative oversight bodies are over reliant upon such expert opinion. It is important that areas of expertise are well-defined and based on accreditation to the greatest extent possible. Professional standing in relation to use of force issues or technical understanding of particular weapon systems or technologies should be well established. Certainly, practitioners using the technology should be an essential part of any review. Oversight and investigative agencies should not rely on single sources. Experts should be independent and not on the payroll of manufacturers. They should be recognized and/or accredited by their profession in the field of their expertise (medical, technology, law, policing,

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etc). There are some very good models for these oversight bodies including the Ombudsman's Office in Northern Ireland and the newly created Independent Police Complaints Commission now operating in England and Wales. Consideration must also be given to the perspectives of stakeholders when developing policies and procedures for accountability, oversight, review and investigation. The ILEF should establish dialogue with stakeholders and consult with them on accountability, oversight, review and investigation in order to develop sample templates, guidelines, and a framework. These stakeholders include, but are not limited to:

- Local community organizations;
- Manufacturers;
- Officers;
- Labor Unions;
- Courts;
- Media;
- Elected officials;
- Government;
- Police Administrators;
- Human Rights related organizations (local, national, international);
- Medical profession;
- Oversight organizations (e.g., NACOLE, UK IPCC);
- Law enforcement research organizations and associations (NIJ, HOSDB, Dstl, INLDT, PERF, IACP, NOBLE, NTOA, etc)

Finally, there is a role for the international law enforcement community with respect to the oversight of less-lethal development and use. As pointed out during the Canadian presentation, often the implications of use-of-force incidents cross international boundaries. These implications may be manifested in human effects assessments, civil liberties debates, technology research or independent studies. The ILEF could serve as a facilitating structure by maintaining a body of international "experts" and playing a role in furthering international dialogue on policy and practice.

ILEF can serve to encourage the publication of *safety* critical information so that it can be available to the international law enforcement community. ILEF and its members can also serve as a peer review venue for such policy research, training curriculum and technology testing. 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). In this regard, ILEF should continue to serve law enforcement professionals, government officials, and their associations (e.g., NIJ, HO, ACPO, PERF, IACP, and NTOA) as a center of gravity regarding minimal force options.

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Recommendations

- **Use of Force Reporting, Review and Investigation Standards.** ILEF should lead an effort to develop common international standards for use of-force (UOF) reporting, review, and investigation criteria as well as associated sample policies and procedures with the view that they should be of sufficient detail to be useful without being proscriptive. In doing so, they should establish dialogue with identified stakeholders and consult with them on accountability, oversight, review and investigation.
- **Less-Lethal Review and Oversight Expertise.** ILEF should serve the international community by maintaining a record of independent "experts" in associated fields from its membership that are recognized and/or accredited by their profession.
- **Less-Lethal Information Sharing.** 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). ILEF should endeavor to create an international information exchange program, focused on minimal force options.

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WORKSHOP SESSION 3:

Medical and Psychological Effectiveness

CHAIR: Dr. Graham Cooper

CO-CHAIR: Dr. John M. Kenny

The purpose of this session, led by Dr. Graham Cooper of United Kingdom's Defense Science and Technology Laboratory, was to address questions regarding the medical and psychological effectiveness of less-lethal weapons and associated technologies.

Effectiveness

In order to discuss the medical and psychological issues surrounding less-lethal weapon effectiveness, the panel quickly determined that they needed to develop a clearer understanding of effectiveness as opposed to tactical outcome. An officer expects something to happen as part of an operation. How that is broken down into medical terms, is a challenge. A common understanding of effectiveness was important as a point of departure.

Another view of this is that there is a difference, when dealing with these systems, between "effects" and "effectiveness." Effects can be objectively described and quantified in terms of the ability of a technology to achieve a specified temperature, a sound pressure level, an imparted momentum, or an electrical impulse. Effectiveness, on the other hand, speaks to the response of the subject: whether or not the application of the technology leads to a successful conclusion (e.g., compliance) or tactical outcome. This is consistent with the terminology adopted by the NATO Study (SAS-035).

Ideally, a less-lethal technology will achieve a consistency of "effect" over a given range, time period, and across a demographically diverse group of subjects. This will permit operators to make judgments based on the operational setting with regard to appropriateness, risk, probability of success, and follow-on actions.

Medical Issues

There are medical issues related to operational employment (physical effects and effectiveness) and medical risks to both the subject and law enforcement officer(s). The workshop panel selected to focus on aspects of effectiveness and the impact of less-lethal systems on vulnerable groups such as children and subjects with clinical conditions (physical and mental).

Impact weapons (e.g., bean bags, baton rounds) have traditionally been an essential part of less-lethal options for law enforcement. They offer capabilities not present in other less-lethal technologies such as the ability to secure the stand-off distance necessary to maintain officer safety while retaining



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operational capability. They can also be used in most environments and in conjunction with other approaches to conflict management. Until such time as directed energy, electro-muscular disruption, sensory irritant sprays, and other technologies have the ability to give officers such stand-off distance, blunt impact munitions will be required. There was general agreement that there was an aspiration to move away from impact rounds, but there was nothing on the immediate horizon which suggested there was any adequate replacement system. The challenge was then to maximize effectiveness while minimizing injury potential.

There was general agreement that there remains a need for independent research and medical consensus on many of the critical issues surrounding physical effects with regard to the broad range of less-lethal technologies. For impact munitions, which still dominate the market, there is little known about the short and long term significance of multiple impacts, though in some jurisdictions this technology is frequently used in this manner.

The approach of the medical community to risk characterization is well documented. Medical risk characterization describes the probability that certain consequences are going to occur given exposure to or impact from, a particular substance or device. It would be desirable for this approach to be applied to the range of less-lethal technologies and presented to the user community (law enforcement). Users could take this information and develop risk management tools and policies in terms of when it is appropriate to use a weapon and when it is not. It was recognized that this would require the characterization of the less-lethal technology to be precisely documented and its effects on humans appropriately and adequately described. This should be in a format and language understandable to both the medical and user communities.

No matter how precisely medical risk factors may be characterized in the laboratory, however, they are not going to be part of a tactical decision-making process unless they are *conspicuous* in the field and based on precise situational intelligence. They must be readily observable and detectable by the operators at the scene. Training and increased awareness of the range of probable responses and indicators of risk, both immediate and over the initial period following use, would increase the utility of risk factors and optimize response potential.

Psychological Issues and Effectiveness

The medical issues that involve the user and subject of less-lethal technologies are plainly important. There are also, however, psychological issues regarding use and effectiveness of the technologies of which users need to be aware. These go beyond the associated risks and expected physical effects to "effectiveness," which can be characterized as the overall human response to use of a system. The user must feel confident that the system is going to function properly every time, over given distances, within a declared accuracy specification, and with certain "effects." This is necessary to enable the officer to place himself in a position to best use the system. On the other hand, officer overconfidence in a system can also be a threat or danger. It can place him at greater risk. Similarly, where the user considers it appropriate to warn the

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subject of intended use, the rational subject should be able to comprehend the consequences of non-compliance. There was agreement that maximizing psychological deterrence of threatened use had the potential to contribute to overall weapon effectiveness.

The group recognized that less-lethal weapons will often change the dynamic of a situation, whether discharged or merely displayed. Officers must be prepared to quickly assess the situation, capitalize upon the advantage and take whatever action is necessary. This has to be a central part of training. In that regard, weapons must function consistently and reliably. Although consistency of *effectiveness* may continue to be illusive because most do not have purely bio-medical effects, these weapons must be accurate and consistent in *effects* within the range they are to be used in order to optimize the predictability of effectiveness.

Vulnerable Groups

There are issues with respect to the effect of minimal force options in general, and less-lethal weapon technologies specifically, on vulnerable groups such as children, the elderly, the injured, and those with specific medical conditions. The focus of these issues is on the threat, risk and public policy associated with use of these force options when such groups are involved.

Where persons individually or in a group present an immediate and overt threat, then in the interest of public and officer safety, the members of the session were in agreement the threat needed to be addressed. Where the person carrying out the threat was from a vulnerable group (i.e., one that may have a more adverse reaction to the less-lethal technology) then the determinant would, as in all other cases, be dependent on the circumstances and threat presented at the time.

In most jurisdictions represented, the concept of proportionality and necessity applied and this would be the determinant in considering whether the use of a particular technology was appropriate against any individual. In order for officers to determine proportionality, it was important that they have information regarding the increased risk against a particular population group.

There is a need to define vulnerable or "at risk" groups. Each group must be defined in respect of the less-lethal system being used. Information about specific individuals is valuable for both pre- and post-incident management. This presented difficulty when terms such as a 'child' or the 'elderly' are used. There are different definitions used by the legal, medical and social agencies to define the population in terms of age. These largely arbitrary distinctions do not necessarily take into account physical development or capability.

It was noted that the United Nations (UN) defines a child as a person under the age of 18. This definition, however, is not relevant medically and examples were given of the differing rates of maturity of adolescents and young adults. Children's human rights are based upon vulnerability, not age *per se*. From a public policy perspective, it was agreed that intentional use of significant force against children or young persons was to be avoided. However, the response must be proportional to the threat and it would be unacceptable to impose a blanket embargo which would restrict the appropriate use of a less-lethal

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system on a person who was presenting a violent threat simply because they were classified as being a member of a vulnerable group.

Training and guidance should require every effort to be made to ensure that children are not placed at risk by the use of less-lethal technologies. This is particularly relevant in public order situations where children or other vulnerable persons may be amongst a crowd and be in danger should technologies such as impact rounds miss their intended target (unintended consequences).

The group was reminded that General Provision 3 of the United Nations Code of Conduct for Law Enforcement Officials is specific in stating that:

The use of firearms is considered an extreme measure. Every effort should be made to exclude the use of firearms, especially against children. In general, firearms should not be used except when a suspected offender offers armed resistance or otherwise jeopardizes the lives of others and less extreme measures are not sufficient to restrain or apprehend the suspected offender. In every instance in which a firearm is discharged, a report should be made promptly to the competent authorities.³

While Article 3 refers specifically to firearms, the principle provides good general guidance in respect of use of force. However, it was noted that in some circumstances it would be the very availability of a less-lethal technology which would represent a “less extreme measure” when confronted by a youth who was presenting a significant threat.

There was agreement that information on the risks of using a particular technology on vulnerable groups should be incorporated into less-lethal related officer training. The panel also agreed that attempting to rigorously define such groups (in terms of age, height, etc.) within a policy document would be counter-productive. Policy makers, operational officers and oversight bodies should however, have information with which risk assessments could be made and the concept of informed decision-making could then guide operational use.

In prolonged operations, there is specific medical and psychological information that operational personnel should be eliciting about the subject(s) which might assist in determining risk with respect to selecting and using particular less-lethal technologies. Specific medical information regarding the subject can be extremely valuable. Some less-lethal technologies and techniques require precise “after care” action. Knowing a person belongs to a vulnerable group, and as such is more or less susceptible to its effects, can both increase operational effectiveness and reduce the risk to both subjects and officers.

Depending upon the pre-existing medical condition or medical risk group, and information available at the scene, officers will not always know if a subject falls into one of these groups. It is important that officers are aware of the normal human response to the system – both immediate and in the moments after an incident. Abnormal responses may be indicative of covert medical risks, either pre-existing medical conditions or intoxication.

³ Code of Conduct for Law Enforcement Officials, The United Nations, Adopted by General Assembly resolution 34/169 of 17 December 1979.

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Manufacturer and Operator Expectations

Law enforcement should expect manufacturers to provide similar information as the pharmaceutical industry provides to the medical community. In this way, the development of less-lethal technology is similar to the development of a new drug. The manufacturers in these cases have enormous responsibilities to demonstrate that there is a bio-mechanism of use. They test it using a variety of methods including animals and human trials. They introduce the drugs and track the usage in the community in general. The less-lethal community has nothing similar.

Manufacturers should be held responsible, at least in part, to collect and demonstrate data that proves the effectiveness of their weapon or technology. The law enforcement community in general needs to challenge manufacturers to close capability gaps. On the other hand, law enforcement community is also obliged to provide manufacturers with operational requirements and expectations of system “effectiveness.”

In this regard, ILEF should develop a framework for the development of less-lethal weapons that includes the responsibilities of the manufacturer, peer review process and government-based review organization.

Recommendations

- ILEF needs to develop definitions and terms that promote a clearer understanding of what should be considered as effects, effectiveness as opposed to tactical outcome.
- 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.

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WORKSHOP SESSION 4:

Operational Policing – Strategic & Tactical Command Issues

CHAIR: Assistant Chief Constable Ian Arundale

FACILITATOR: Superintendent Anthony Bangham

The purpose of this session, led by Assistant Chief Constable Ian Arundale of the West Mercia Constabulary representing the Association of Chief Police Officers, was to address questions regarding strategic & tactical command issues of operational policing related to less-lethal weapons and associated technologies.

Strategic Choice of Technologies

The decision in respect of tactics and equipment are often made at operational or middle management levels within police departments. Historically this has been the case in most jurisdictions and across the international policing community. Increasingly however, these choices are being viewed as "strategic choices" and considered and decided at the highest levels. The risks and consequences associated with these decisions, not the least of which are the resulting outcomes of incidents where these technologies and tactics are applied, oblige command-level consideration. Chief Officers should be responsible for determining which technologies to adopt and emplacing policy and guidance regarding how they should be used.



It is essential however, that decision-makers have the necessary information to make informed choices. Frequently, there is little experience with such technologies. Further, information on these technologies is often lacking or inaccurate. Shortcomings in the sharing of information locally as well as internationally only exacerbate the challenge. There are many research projects ongoing across the globe. These vary in content and rigor. Some projects are being conducted by manufacturers, some by independent researchers and some by individual local police departments.

Although the US Department of Defense has a very rigorous acquisition process, the workshop did not believe it was adequately integrated with law enforcement agencies at any level. The workshop noted the breadth and depth of the UK program on less-lethal technologies – the joint service approach being taken that involves ACPO, MoD, Government officials, scientists and persons with medical and operational experience. It was the multidisciplinary and coordinated Government led approach, that had enabled the development of a world-class program. It was also considered significant that the UK Government had issued through the Home Office a Code of Practice on the Police Use of Firearms and less-lethal weapons. This code established a process for the trialing and selection of equipment and placed responsibilities on Chief Officers to carry out threat and risk assessment as to operational needs and monitoring the use of firearms and less-lethal equipment.

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There was consensus that for decision-makers to have a clear understanding of the technology and the appropriateness in deployment tactics, they cannot rely solely on manufacturer claims and research data. Adoption of new technologies is often driven by practitioners and marketing initiatives. There must be independent valid research to understand what a technology is going to do, particularly with respect to the associated probable health risks.

Recognizing that there are external and internal communities looking at the use of lethal and less-lethal technologies, it is important to take into account the views of a range of observers. The public should expect and demand thoughtful and rigorous consideration in the development and application of minimal force options and less-lethal technologies. However, there are often discrepancies between public understanding of the role and characteristics of many less-lethal technologies and the research findings that lead to adoption of such technologies by police.

There was discussion as to the importance of developing a “systems approach” to weapons selection and development. This should include the launch/application platform, method of application, ammunition used, sighting system and method of intended use. It was agreed that evaluation, including risk identification and minimization, could only be undertaken if a holistic approach was applied to the system. This should also be carried forward into the training, maintenance and operational review mechanisms.

Strategic choices need to take into account all the choices available and related information. A criteria template could be useful tool for department leadership to evaluate less-lethal technology and tactical options. ILEF should take the lead in developing such a template. In this regard, consideration should be given to developing a series of recommended capability sets along the lines of the US military model.

Appropriateness, Capability and Tactical Outcome

The workshop group felt that there is an inconsistent application of a systems approach across all jurisdictions and sometimes no consideration of associated issues (training, health risks, guidance and policy) that accompanies the use of less-lethal weapon systems. These systems are not always clearly understood. Confusing matters further are discrepancies in use of terminology. There is a need for more clear definitions for describing, and criteria that should be used to determine, “appropriateness,” “capability,” and probability of “successful tactical outcome” among others.

In the UK as in the US, there are currently no decision-making matrices nor any guidance or tools that assist commanders in making decisions in a consistent way. The need is not for a proscriptive formula that tells them what decision to make, but rather a framework outlining and highlighting relevant material to assist them 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.

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Community Interests and Policing Needs

While law enforcement needs to consult with communities and take into account the concerns of interest groups and other bodies, there is ultimately a public safety requirement to ensure that police are appropriately equipped and trained to protect life and minimize the risk of fatalities in situations where there is the threat of violence. Decisions quite rightly rest with chiefs of police taking into account any statutory provisions which exist within particular jurisdictions. There is, however, a need for transparency in the decision-making process to demonstrate the balancing of community interests with policing needs and objectives when selecting less-lethal tactical and technological options. Impact assessments should also include the impact of NOT adopting a given practice or technology.

Open lines of communication with community partners are vital. This is universally applicable across all jurisdictions internationally. Historical issues, including local and regional sensitive, need to be taken into consideration (culture, politics).

It was recognised that there are both community stakeholders and internal departmental stakeholders. Police officers themselves are stakeholders in the selection process. Chief officers and local authorities have a duty to properly equip and train officers to deal with potentially violent situations. It is important that there are appropriate internal consultation processes and that rationale for decision-making is based on factual and properly researched information.

There are existing frameworks around the globe. The UK has a set practice of conducting Community Impact Assessments. The US has the Community Oriented Policing Services (COPS) program and Canada has the Major Events Liaison Team (MELT) practice for major events.

ILEF should establish an environmental assessment framework template for effective communication to assist law enforcement leadership to involve communities before a technology is introduced and after its use.

Appropriateness and Effectiveness

Having informed commanders in a position to make appropriate decisions is the vital consideration when setting strategic and tactical parameters for an operation where less-lethal technologies are to be used. The key is to ensure that these leaders are appropriately equipped to properly conduct risk assessments and have a solid appreciation for the tactics, techniques and technologies being considered.

There is often a gap in the training level regarding minimal force options between commanders and practitioners. Training for commanders is paramount in order that they are properly empowered to make appropriate decisions in deploying less-lethal weapons. These trained leaders should be integral to all high risk use-of-force deployments. Integrated training and accreditation involving both commanders and practitioners is a method for ensuring a common understanding of situational appropriateness, command authorization and strategic and operational indicators.

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Issues have been raised in respect of dealing with identified individuals operating in a crowd situation who are presenting a specific potential threat. There are also potential new threats related to terrorism and the potential for these to overflow into situations of serious public disorder, such as seen in Northern Ireland. Police commanders have to learn new considerations and use of tactics in this regard and to be cognizant of human and civil rights when facing new threats. The use of petrol bombs, explosive devices or firearms in public order disturbance alters the way police respond to such situations. Notwithstanding that in the US such situations rise to the level of lethal force, it was widely agreed that it is essential that police officers are equipped with a variety of weapons and equipment to minimize resort to lethal weapons that could place all present at much greater risk.

Recommendations

- That ILEF take the lead in developing a criteria template for police department leadership to evaluate less-lethal technology and tactical options to assist these leaders in accounting for all the choices available and related information. In this regard, consideration should be given to developing a series of recommended capability sets along the lines of the US military model.
- That ILEF lead an effort in developing 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.
- That ILEF establish an environmental assessment framework template for effective communication to assist law enforcement leadership to involve communities before a technology is introduced and after its use.

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WORKSHOP SESSION 5:

Operational Policing – Tactics and Training Issues

CHAIR: Major Steve Ijames

FACILITATOR: Mr. Greg Browning

The purpose of this session, led by Major Steve Ijames of the Springfield, Missouri Police Department, was to address questions regarding the tactics and training issues surrounding less-lethal weapons and associated technologies.

Leaders and Training

One cannot make an informed decision if one does not have the knowledge or information available with which to make that decision. There is training and accreditation that should apply to the strategic and tactical commander in respect of situations where less-lethal technologies should be used.

The US in particular has traditionally been challenged in this regard. The sheer number of agencies across the US, as well as the proliferation of the technologies, leaves most of the leadership inadequate with regard to command knowledge and experience with less-lethal weapons. Employment of these systems requires a degree of technical knowledge. Leaders need to know the technology, so they understand the capabilities and limitations. Additionally, leaders require a knowledge of the capabilities of the special weapons and tactics (or special operations) teams. The commander needs to know the accepted tactics along with the associated legal decisions. Commanders would also be well-served to have judgmental or scenario-based training. Just as important is to be aware of the constantly changing contemporary thinking inside and outside of the organization.

Commanders must be very familiar with their agency use of force model. Unfortunately, the type of training that line officers experience is not experienced at command levels and higher. There are exceptions, but most training at higher levels does not include less-lethal weapons. Educating the higher ranks is sometimes difficult, but is important. A commander needs a level of knowledge in order to understand the technology or tactic, where it fits in the agency force model, and be in a position to make informed decisions at the scene – and, perhaps more often, post-incident. In the absence of scenario based training, decision-making is often flawed.

The idea of a tactical command college has been discussed in the US. Curriculum has actually been developed by the NTOA. California has put forth a requirement for certain tiers of SWAT training. This is the first time there has been a well-developed process in the United States. ILEF should pursue 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.



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In areas where the likelihood of public disorder exists, an appropriate level of public order training should occur in all levels of the department. Training is a departmental responsibility. Instruction from the manufacturer cannot meet the requirements of each different agency. Manufacturers should teach technical aspects of a device and the police department should teach the tactical use of the device. Manufacturers cannot teach how to deploy the equipment tactically, though they have been often asked and encouraged to do so. Asking them to teach tactical deployment is a disservice to both the manufacturer and the officers using the equipment. Additionally, manufacturer recommendations embedded in this training can sometimes result in a negative outcome during an inquiry (“the device was used at less than the manufacturers recommended distance”).

Causing Harm to Prevent Harm

How does an officer prevent a person from inflicting harm on himself or committing suicide? Causing harm to prevent harm has become an issue for some in recent years. Certainly minimal force options are needed in order to address these situations, but the proper level of force and/or specific tool or tactic is sometimes illusive. Knowing the capabilities of the contemplated and available technologies is an important first step. For example, if we properly learn how people are killed with impact rounds, then we avoid those situations or conditions. It is important here to understand that only less-lethal technologies and minimal force options can “bridge the gap” between verbal intervention and grievous harm (talking is not working, armed response is not appropriate).

Police personnel have an obligation to defend the defenseless, including mentally deranged persons. This obligation does not, however, extend to inappropriate officer jeopardy. As opposed to public order incidents, this is the heart of the issue with regard to less-lethal technology in the United States. Only a small percentage of incidents in the US are public order related.

There is a need for balance here as well. Departments should have a variety of systems to deal with these types of incidents. However, while one tool does not fit every call, an officer needs the fewest number of tools necessary for the job – and lots of training on those tools.

Recommendation

- That ILEF pursue 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.

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WORKSHOP SESSION 6:

New Threats, Capability Gaps and New Technologies

CHAIR: Commander Charles “Sid” Heal

FACILITATOR: Sergeant Andy Baird

The purpose of this session, led by Commander Charles “Sid” Heal of the Los Angeles County Sheriff’s Department, was to address questions regarding less-lethal weapons and associated technologies in terms of new threats, capability gaps and new technologies.

Threats and Trends

There are a number of emerging threats to public and officer safety. In recent years, there has been increased availability of commercial less-lethal weapons to the public. This trend causes some concern. The restrictions on use for the public in the US do not have the same history or legal precedent as for police officers. Most public use of these technologies is appropriate, but the availability to the criminal element is of concern. One way to address this is through a formal manufacture initiated tracking process of purchased technologies.

In addition to the commercial proliferation of the technologies, police officers seem to be encountering adversaries that are more resilient, including the mentally ill and drug influenced. Not only are they more resilient, they are encountered in increasingly greater numbers. Generally, less-lethal weapons seem to be having a reduced effect against these subjects.

The infrequent incidents of misuse of less-lethals seem to be setting larger policies regarding their employment (the exception, it seems, makes the rule). This may often be an inappropriate application for a situation (i.e., control of individual suspects and mobs often require different tools). This trend threatens to tie the hands of legitimate law enforcement officers, making their jobs more difficult and placing them at greater risk. Proper policies, education and training are keys to successful employment of less-lethal weapons.

Commensurate with a trend toward more carefully planned riots, there has been an accompanying trend toward more violence. There is a need to educate the public – as well as legislators, prosecutors, and judges – on the technologies and surrounding issues. This should be done beforehand so when unpopular event occurs, there are no surprises. This also diminishes the “shock” impact sought by violent protesters and reduces the ability of fringe media to sensationalize and mischaracterize.

As the number and types of systems saturate the marketplace and the departments across the globe, tactical assessments are becoming more complex. The number of options to consider for a police force can be daunting. This increasing variety of technologies has not diminished the ability



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of adversaries to develop and effectively employ countermeasures, which is another trend of concern.

Finally, the loss of control of less-lethal weapons was viewed by the group as a growing concern to law enforcement. The ability of a perpetrator to turn the device on an officer might even rise to the level of lethal force in order to protect the public properly.

Emerging Technologies and Techniques

While impact munitions remain the core of the less-lethal capability of most departments, devices that use directed energy, acoustics, chemicals and electricity are showing great potential. These technologies, however, are unlikely to displace a reliance on impact rounds in these situations in the short term.

Regardless of its current range shortcomings, the TASER™ has proven an extremely popular law enforcement tool internationally. Tear gas and malodorants are being developed for use in mob situations. Water cannons that have been used for decades in Europe have improved dramatically and are growing in popularity around the world as a mob dispersal tool.

Although dogs fell out of favor in the 1960s, in many parts of the United States they provide some significant advantages not found in other approaches. Police dogs, as opposed to an impact projectile, can be recalled before they make contact with a subject. They also can strike a moving or defilade target as easily as a stationary one. Finally, dogs can hold targets in position to expand the “exploitation window.”

Early law enforcement intervention, consultation, guidance and direction in the development of less-lethal weapons is important. This is the best time to influence a product. The closer to a final product and a return on investment, the less likely manufacturers and developers will spend any money to change a given design. In this regard, it may be useful to formalize law enforcement recommendations for developers of less-lethal technologies in order to provide a common voice that will have more of an impact than single, fragmented influence. The ILEF may take a lead role in that process.

Serious Threats

A capability gap exists between the military and law enforcement roles in resolving terrorism situations such as Beslan School and Dubrovkov Theater incidents. These terrorist events have forced many departments and agencies to reflect on their abilities to prevent, interdict and manage the consequences of such events in their jurisdictions. There are some considerations that the workshop group developed in this regard.

First and foremost, if left to themselves, terrorists would be dealt with using lethal force. Less-lethal options are essential, but only in that they reduce the probability that a victim will be seriously injured or killed. They are important in separating combatants from victims. These situations will undoubtedly always involve innocent hostages. While calmatives seem to offer the most hope,

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there are procedural issues that need to be resolved and protocols developed for such use. Despite public controversy, domestic law enforcement can “explore” the possibilities of chemical agents like calmatives and hypnotics because they are not prohibited by treaties and conventions that restricts such research by the military.

This requires a holistic approach, wherein the role of less-lethals is part of a bigger solution (supporting role). A strategic shift in thinking will be necessary to recognize and acknowledge the role of law enforcement as first responders to acts of terrorism.

The most vulnerable time for terrorists is in the earliest stages of an assault and domestic law enforcement offers the best opportunity for exploiting this vulnerability. Having said that, the group also recognized that barring exceptionally favorable circumstances, military assistance of any kind will not take place for a period of hours. Domestic law enforcement needs to be able to complement, rather than compete with military capabilities. Rather than police duplicating military capabilities, the military could preposition critical assets too complex or expensive for a single agency so that they are ready and available for immediate deployment.

There are fundamental differences in training and perspective for handling various situations, especially those that have traditionally been the responsibility of domestic law enforcement. There is a need to develop “worst case” scenarios for both training and decision-making. Additionally, there should be a joint effort and liaison between military and law enforcement as well as local regional and federal agencies for development and employment protocols and training. Regionally, there should be joint training with military agencies likely to respond and a strategic prepositioning and sharing of assets and resources.

Recommendations

- That ILEF take a lead role in formalizing common law enforcement recommendations for developers of less-lethal technologies in order to provide a common voice that will have more of an impact than single, fragmented influence.
- That ILEF promote and encourage joint efforts and liaison between military and law enforcement as well as local regional and federal agencies for development and employment protocols and training.

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MANUFACTURER CONSULTATIVE SESSION:

Collaborative Strategies – Working Together

CHAIR: Superintendent Colin Burrows (Retired)

FACILITATOR: Colonel Andrew F. Mazzara (USMC-Retired)

The purpose of this Session, led by Colin Burrows was to address questions regarding less-lethal weapons and associated technologies in terms of new threats, capability gaps and new technologies.

Operational Needs

In welcoming the manufacturers, the Chair outlined what it was hoped would be achieved during this event. Colonel Mazzara then introduced the operational requirement developed by ILEF through its electronic working group. He went on to explain that this had been a major recommendation from the last workshop and it was hoped this would help manufacturers produce less-lethal products which better meet the needs of law enforcement. Operational needs for law enforcement are not always consistently articulated in terms that allow manufacturers to develop new devices without significant investment (multiple prototyping, post deployment data). Protocols for testing and training requirements tend to vary from agency to agency. There is significant value in “standardized” testing for both the manufacturer and law enforcement. There was much discussion of developing a “perfect” ammunition versus developing one that was “good enough.” The former has both a longer timeline and requires substantial investment. Additionally, it is nearly impossible to achieve, since “perfect” will be described in countless ways by varying police departments.

It was reported that manufacturers often find that government solicitations in the US do not have sufficient information in their requests for proposal (RFPs). Many are based on existing deployed systems.

Testing and Standards

It was agreed that structured and rigorous test protocols are important. Operational use feedback is important but has its limits if users continue to “move the goalposts” or change the requirements midstream. There requires to be a system whereby there is greater consensus on operational requirements. It was agreed that the Operational Requirement document published by ILEF was a good start point and had the potential to provide consensus if we could get major law enforcement organizations to reference and utilize it as one of their base documents. These practitioner needs should be defined clearly in terms usable to developers and manufacturers.

It was believed that manufacturers would welcome a more uniform and formalized operational requirement against which a technology will be tested.

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Requirements that are “essential” should be clearly distinguishable from those that are “desired” or “optimal.” Further, there is a need to identify specific traits for specific classes of systems.

There is a need to define independent testing (independent test houses) and the procedures, protocols and associated standards that should apply. Where new and novel technologies emerged, it would be important for the designer to have some input into explaining the technology and ensuring that testing protocols and standards were appropriate to that technology. Less-lethal technology testing standards should not necessarily focus on “effectiveness” for many of the reasons stated in earlier sessions (“effectiveness” versus “effects”). The standards have to be quantifiable and measurable in some way and should include anticipated risks.

There is a need for general standards, with broad international acceptance, for development, testing and a process for less-lethal technologies. This should be done with proper consultation of law enforcement practitioners, government agencies and industrial stakeholders. One cautionary note was that establishing a complex testing and approval structure will bring with it a high cost that may not be affordable for new technologies. This will stifle innovation and development of these new technologies.

There is also a need to ensure the level of quality control over time of these products. While the manufacturers certainly have the responsibility for process quality control, there has historically been inadequate post deployment feedback, even though manufacturers expect random sample testing on delivery.

The United Kingdom has been extremely successful at meeting the needs of its law enforcement communities. The 18,000 disparate law enforcement agencies in the United States have largely been on their own in their effort to research and procure off-the-shelf (OTS) and emerging technologies. The US needs a similar centralized research, development, testing and evaluation (RDT&E) capability as the United Kingdom for less-lethal weapons and technologies. This office conceivably would identify unique law enforcement specifications and operational needs, develop and manage programs, and fund independent research and testing in this critical need area. This might be a federal agency within the Departments of Justice or Homeland Security, or an independent research facility jointly sponsored by those government departments.

Training

There was much discussion on training. There was consensus that manufacturers had some responsibility for identifying technology specific training issues. However, they often go beyond those responsibilities and provide complete operational training packages. There are a wide variety of approaches to training, but, there was agreement that manufacturers should limit the scope of their training responsibilities to the technical operation of the device or system. Though manufacturers might be consulted, the tactical and judgmental training should be the responsibility of the agency or department (in line with its policies, guidance for use, and use of force framework). There are accountability issues that this approach diffuses. Manufacturers are experts on

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the system technology and therefore should be accountable to produce training support packages, if not conduct technical training. This technical training should include safety of use information. Use of force policies and practices on the other hand should be produced and conducted by departments and jurisdictions.

Manufacturer Engagement

It was considered important that manufacturers remained engaged with law enforcement on a number of levels. Use of force data feedback that is quantifiable and actionable is critical to manufacturers in the continued improvement of these technologies. Law enforcement agencies should be encouraged to identify critical needs to manufacturers, especially through this and other forums (NTOA, PERF). Manufacturers should remain engaged in product support activities to their law enforcement customers. Manufacturers should freely provide information on any changes in the technology (including minor modifications) so that agencies, researchers, test houses and policy-makers can address any potential change in the human/medical effects and policies for use.

Patterns of failure and other anomalies can be valuable in improving these systems or their manufacturing process. There should be some effort to look at protocols for sharing human effects and incident databases with manufacturers.

The issue of critical importance was that law enforcement collectively must determine operational needs and gaps, clearly identify operational requirements and have a means of engaging with industry in a way which best ensures that needs are met.

Recommendations

- That ILEF lead the effort to develop general standards, with broad international acceptance, for development, testing and a process for less-lethal technologies. This should be done with proper consultation of law enforcement practitioners, government agencies and industrial stakeholders.
- That ILEF explore protocols for sharing human effects and incident databases with manufacturers in order to assist in improving these systems or their manufacturing processes.

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SECTION 2:

Workshop Presentation Slides

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Appendices

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Appendix A – Agenda

Tuesday, 21 June 2005

- 0815-0820 Welcome & Opening Session
- 0820-0830 Overview, Administration, and Introduction of Keynote
- 0830-0900 Keynote Remarks
Assistant Commissioner Darrel LaFosse, RCMP
- 0900-1000 International Law Enforcement Forum Update
- ILEF Mission, Vision, & Organization, & Initiatives
Colin Burrows
 - ILEF Website
Ed Hughes
 - ILEF Database Development
Matthew Symons
- 1000-1015 BREAK
- 1015-1045 Brief Presentations: Less-Lethal Weapon (LLW) Initiatives
- United Kingdom – AEP and UK Technology
Graham Smith
 - United States – Wireless TASER™ and US Technology
Joe Cecconi
 - Canada – TASER™ Re-examination and Canadian Technology
Darren Laur
- 1045-1100 Introduction to Workshop Breakout Sessions
Andy Mazzara
- 1100-1200 Workshop Breakout Sessions 1, 2, & 3
- 1 – Development of Testing Standards
Graham Smith
 - 2 – Accountability, Oversight, Review and Investigation
Josh Ederheimer and Dave Wood
 - 3 – Medical and Psychological Effectiveness
Graham Cooper and John Kenny
- 1200-1300 LUNCH
- 1300-1500 Breakout Sessions 1, 2 & 3 (Continued)
- 1500-1530 BREAK (Report Preparation)
- 1530-1700 Plenary Session (Group Reports & Discussion)

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Wednesday, 22 June 2005

800-930 800-931	Presentations: <ul style="list-style-type: none">• Operational Scenarios <i>Ed Hughes</i>• Operational Effectiveness <i>Colin Burrows</i> <i>Alan Hepper</i>• Operational Test Criteria <i>Andy Mazzara</i>
0930-0945	Introduction to Workshop Breakout Sessions <i>Andy Mazzara</i>
0945-1000	MORNING BREAK
1000-1200	Breakout Sessions 4, 5 & 6 4 – Operational Policing: Strategic Tactical Command Issues <i>Ian Arundale</i> 5 – Operational Policing – Tactics & Training Issues <i>Steve James and Greg Browning</i> 6 – New Threats, Capability Gaps, & New Technologies <i>Sid Heal and Andy Baird</i>
1200-1300	LUNCH
1300-1400	Breakout Sessions 4, 5 & 6 (Continued)
1400-1430	AFTERNOON BREAK (Report Preparation)
1430-1600	Plenary Session (Group Reports & Discussion)
1700-1800	Museum Visit and Tour RCMP Museum
1930-2130	Hosted Dinner at RCMP HQ Mess

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Appendix B – Focus Questions

Session 1: Development of Testing Standards

1. Should an international approach be taken to the development of testing standards?
 - a. If an International approach is to be taken, what and whose requirements and specifications should they be based upon?
 - b. What aspects of performance should they cover?
2. Is a separate regime required for technical testing and medical assessment?
3. Differing standards may apply in different jurisdictions. How do we maximize consistency across jurisdictions?
 - a. How will we report findings and deal with issues such as commercial in confidence?
 - b. Who should publish/own the standards?
 - c. Are there standards that need to be set for which we currently do not test?
4. What issues exist in respect of who will test against the standards? If test facilities/houses will conduct testing, who will monitor these facilities? What funding issues/arrangements should be considered and how does this relate to future ILEF work?
5. How often will equipment be tested (i.e., do we assume that the equipment is OK once it's passed an initial test or should there be an ongoing program to ensure the equipment continues to meet the standard year-to-year)?
6. Who are the key stakeholders and “power brokers” with regard to establishing standards?

Session 2: Accountability, Oversight, Review and Investigation

1. What level of oversight is thought necessary in the selection and use of less-lethal technologies by law enforcement?
 - a. What criteria should apply to the decision to investigate uses of less-lethal technology?
 - b. What data /information are required in respect of monitoring of the actual use of less-lethal technology?
 - c. To what extent should review include the whole system (i.e., the technology, sighting systems, zeroing, training, operational directives/guidance and use)?
2. Where fatalities or serious and life threatening injuries occur following the use of less-lethal technologies, to what extent should the technology, its testing and selection, the training, command, and use be part of the investigation?

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3. What expertise is required in respect of these issues, where can it be found, and what are the risks associated with expert opinion?
4. Has the International Law Enforcement Community a role in respect of oversight of less-lethal development and use? If so, how should it be exercised and what structures should be brought forward to assist?
5. What common standards should be applied to the investigation of fatalities involving law enforcement when less-lethal technologies have been deployed and/or used?
6. Where less-lethal options were deployed used or attempted to be used, but the situation resulted in the use of lethal force, to what extent should the investigation focus on the “failed” option?
7. Who are the stakeholders in respect of law enforcement use of less-lethal force?
8. What structures should be used to ensure that safety critical information is passed to the international law enforcement community? In what ways could this be peer reviewed?

In addition to the focus questions in this appendix, each workshop group was asked to identify those issues within their area that should be transmitted to manufacturers.

Session 3: Medical and Psychological Effectiveness

1. What are the medical issues in respect of effectiveness of intended less-lethal technology?
2. What are the psychological issues in respect of system effectiveness both for user and subject/target and what issues should be included within design criteria?
3. To what extent is information required in respect of effect on vulnerable groups such as children and elderly, the injured, etc?
 - a. The UN defines a child as a person under 18. What are the medical, and human (children) rights issues associated with the use of LL systems against children?
 - b. What are the operational and post-use medical care and accountability consequences in respect of vulnerable groups?
4. For these specific less-lethal systems, what criteria would assist in determine risk for different categories of less-lethal technologies?
5. In respect of consequence of use, what are the operational and post-use medical care and accountability issues?
6. How are high (medical) risk groups identified and defined?
 - a. Do these groups differ depending upon the Less Lethal systems?

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b. How can users and medical staffs employ known information on specific individuals (e.g., a subject with known heart problem) or surmised information on general groups (“x” percent of subjects will be intoxicated with drugs/alcohol) in the selection of technologies to be used and the post use management of the subject?

7. In prolonged operations, is there specific medical/ psychological information operational personnel should be eliciting about the subject which might assist in determining risk in respect of selecting and using particular less-lethal technologies?

Session 4: Operational Policing – Strategic and Tactical Command Issues

1. What are the issues in respect of "strategic choice" of technologies and tactics which ought to be developed for command level approval (i.e., risk, consequences, and outcomes)?

2. If a systems approach is applied (i.e., equipment, training guidance on use, etc.), what criteria should be used to determine "appropriateness," "capability," and probability of "successful" tactical outcome?

3. To what extent should/do community impact issues determine selection/choice of less-lethal tactical options? What frameworks exist for determining and documenting this?

4. What issues should be considered when setting strategic and tactical parameters for an operation where less-lethal technologies are to be used?

5. What issues exist in respect of dealing with identified individuals operating in a crowd situation who are presenting a specific potential threat?

6. *What issues regarding medical and psychological effectiveness should be transmitted to manufacturers?*

Session 5: Operational Policing – Tactics & Training Issues

1. What training and accreditation should apply to the strategic and tactical commander in respect of situations where less-lethal technologies should be used?

2. To what extent should training be Scenario based involving decision-making in the selection and use of technologies in varying situations?

a. In respect of training of firearms teams /SWAT teams, what issues does this raise regarding who may be involved in public order situations?

b. Overall command competencies?

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- c. Philosophy/ Doctrine as between Firearms Units and Public Order teams and patrol officers?
3. What role(s) is there for less-lethal technologies in dealing with those threatening suicide or acts of self-harm. What specific issues should be considered in these situations?
4. *What issues regarding police operational tactics & training should be transmitted to manufacturers?*

Session 6: New Threats, Capability Gaps, & New Technologies

1. Are there new or emerging threats to public and/or officer safety? What are those threats?
2. At ranges of between 7- 40 meters, what less-lethal technologies do we have for dealing with violent individuals in a discriminating way? Is there any existing or emerging technology which is likely to replace current reliance on impact rounds in these situations?
3. 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?
4. What less lethal capability should law enforcement have to deal with serious situations (e.g., terrorist threat). For example, the Russian siege situation – should law enforcement have the capability to resolve this type of incident? Why? Why not?
5. Should Police capability in respect of less-lethal tactical use match that of military special forces? If so,
 - a. What are the capability gaps?
 - b. How should these be documented and form part of a Risk assessment?
 - c. What are the implications of a capability gap?
6. *What issues regarding new threats, capability gaps, and new technologies should be transmitted to manufacturers?*

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Appendix C – Workshop Attendees

Sergeant Scott Allen	Royal Canadian Mounted Police – Canada
Assistant Chief Constable Ian Arundale	Constabulary Headquarters, West Mercia ACPO Lead on Police Use of Firearms) - UK
Mr. Colin Ashe	Northern Ireland Office (Steering Group) - UK
Sergeant Andy Baird	Royal Canadian Mounted Police – Canada
Superintendent Anthony Bangham	West Mercia Constabulary (ACPO Secretariat Police Use of Firearms) – UK
Mr. Mark Beaven	Calgary Police Service - Canada
Deputy Commissioner Roy Berlinquette, Ret.	Royal Canadian Mounted Police - Canada
Patrol Sergeant Ron Bilton	Winnipeg Police Service - Canada
Inspector Robert Blackburn	Metropolitan Police Service-UK
Constable Rhonda Blackmore	Royal Canadian Mounted Police - Canada
Ms. Amanda Brooks	INLDT, Penn State Applied Research Laboratory -US
Constable Casey Brouwer	York Regional Police - Canada
Staff Sergeant Mark Brown	York Regional Police - Canada
Inspector Greg Browning	Royal Canadian Mounted Police - Canada
Mr. Colin Burrows QPM	ACPO Special Advisor – UK Chair of ILEF Advisory Board
Deputy Project Director Phillip Bury	Canadian National Defense - Canada

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Workshop Attendees (continued)

Staff Sergeant Peter Button	Toronto Police Service - Canada
Mr. Joe Byrne	Northern Ireland Policing Board - UK
Chief Superintendent Ian Cameron	Police Service of Northern Ireland-UK
Mr. Joe Cecconi	National Institute of Justice (NIJ) - US
Constable Adam Cheadle	Winnipeg Police Service - Canada
Dr. Graham Cooper OBE	Dstl Biomedical Sciences - UK
Mr. Josh Edenheimer	The Police Executive Research Forum (PERF) –US
Mr. John Giblin	Police Federation England and Wales – UK
Mr. John Gnagey	National Tactical Officers Association (NTOA) - US
Superintendent Tim Head	Royal Canadian Mounted Police – Canada
Commander Sid Heal	Los Angeles County Sheriff’s Department-US
Sergeant Lindsay Herndon	Halifax Police Force - Canada
Staff Sergeant Ray Hogan	Edmonton Police Service – Canada
Lieutenant Colonel Ed Hughes (USA-Retired)	INLDT, Penn State Applied Research Laboratory-US
Major Steve Ijames	Springfield, Missouri Police Department-US
Dr. John Kenny	INLDT, Penn State Applied Research Laboratory-US
Assistant Commissioner Darrell LaFosse	Royal Canadian Mounted Police - Canada
A/Inspector Darren Laur	Victoria City Police and Canadian Police Research Center - Canada
Dr. John Leathers	INLDT, Penn State Applied Research Laboratory-US
Corporal Marc Lefebvre	Royal Canadian Mounted Police - Canada

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Workshop Attendees (continued)

Mr. Patrick Lynch	Castle Buildings - UK
Superintendent John MacDonald	Her Majesty's Inspectorate of Constabulary -UK
Superintendent Neville Matthews	New Zealand Police-New Zealand
Colonel Andy Mazzara (USMC-Retired)	INLDT, Penn State Applied Research Laboratory-US
Executive Director Steve Palmer	National Police Research Center - Canada
Chief Inspector Richard Prior	Home Office Scientific Development Branch - UK
Mr. Charlie Reynolds	Patten Commission Oversight Team - US
Superintendent Wes Ryan	Toronto Police Service - Canada
Assistant Commissioner Bruce Rogerson	Royal Canadian Mounted Police - Canada
L'agent Luc Sabourin	Sûreté Du Québec - Canada
Ms. Sinead Simpson	Northern Ireland Policing Board - UK
Lieutenant Colonel Ray Smith, USA	Joint Non-Lethal Weapons Directorate - US
Mr. Graham Smith	Home Office Scientific Development Branch - UK
Constable Dean Steinberg	Halifax Police Force - Canada
Mr. Ulf Sundberg	Swedish Defense Research Agency - Sweden
Mr. Matthew Symons	Home Office Scientific Development Branch - UK
Instructeur Chef Richard Thouin	Tactical Unit/Training Unit Montreal Police Service
Chief Constable Catherine Webster	Public Order & Crime Issues Unit, Home Office-UK
Sergeant Don Whitson	Fort Collins Police Services - US
Mr. David Wood	Police Ombudsman for Northern Ireland -UK

Note:

ACPO – Association of Chief Police Officers
 CBE – Commander of the Order of the British Empire
 Dstl – Defence Science and Technology Laboratory
 HOSDB – Home Office Scientific Development Branch
 INDLT – Institute for Non-Lethal Defense Technologies
 JNLWD – Joint Non-Lethal Weapons Directorate
 NIJ – National Institute of Justice
 NTOA – National Tactical Officer Association
 OBE – Officer of the British Empire
 QPM – Queen's Police Medal
 RCMP – Royal Canadian Mounted Police
 UK – United Kingdom
 US – United States

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Appendix D – Status of Previous Workshop Recommendations

Number	Title Description	Status
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.	Completed.
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.	No progress.
2002-03	Define Operational Needs Establish a small core group that puts numbers to measurable (time, distance, and space) parameters that define operational needs.	Initial effort completed. Absorbed into ILEF Recommendation 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.	Ongoing. Absorbed into ILEF Recommendation 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.	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.	ILEF Position Statement. No action required.
2004-01	Development of Agreed 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.	Ongoing. Effort continued at ILEF 2005 in Ottawa.
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.	Meeting held with manufacturers and EORG document presented (2002-03) at ILEF 2005 in Ottawa.
2004-03	Terminology Standardization That the EORG develop standard definitions for life threatening, serious injury, and other less-lethal medical terminology.	Absorbed by ILEF Recommendation 2004-01 in conjunction with 2004-11.
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.	Under review. Initial document presented to manufacturers at ILEF 2005 in Ottawa.

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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.	Ongoing. To be addressed in conjunction with ILEF Recommendation 2004-01.
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.	Ongoing. Some NIJ funded work completed by Penn State to adapt the NATO SAS-035 MOE Framework to US law enforcement.
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.	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.	Ongoing. Web site operational. Database structure complete and online. Discussing possible transition to Penn State host/control. Promotion effort ongoing to encourage use and populate DB.
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.	Ongoing. Methods for using ILEF website for notification are being explored.

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2004-10	Medical Data Access	Ongoing
	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).	
2004-11	Literature Review	Completed.
	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.	Absorbed into ILEF Recommendation 2004-01 and 04.
2004-12	Develop/Adapt Injury Model	Ongoing
	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.	
2004-13	Conflict Management	ILEF Position.
	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.	No action required.
2004-14	Develop and promote ILEF.	Ongoing.
	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.	Vision, Mission, and Objectives completed. Other planning actions ongoing.