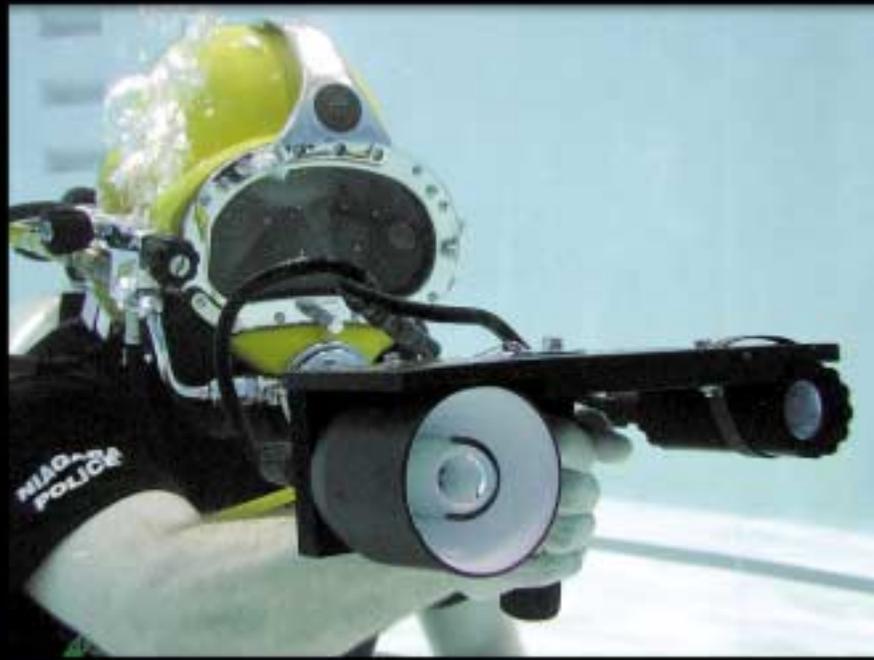




CANADIAN POLICE RESEARCH CENTRE



ANNUAL REPORT 2001-2002



CANADIAN POLICE RESEARCH CENTRE

**ANNUAL REPORT
2001 – 2002**

This Annual Report is a publication of the Canadian Police Research Centre.
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CHAIRMAN'S MESSAGE

IN

the wake of September 11th, there is widespread recognition of the need to get effective technology into the hands of Canadian public safety organizations. New demands and expectations have been placed upon police and the entire public safety sector. CPRC continues to lead the way in researching, evaluating, developing and delivering new policing tools. As Chair, I am pleased to provide you with an overview of some of the activities that CPRC has engaged in during the past year. These highlights demonstrate the timely cooperation between Canadian policing stakeholders, CPRC, and industry partners.

New ways of handling volatile crowd control situations are being explored in an initiative at Saint Paul University in Ottawa. The Crowd Control and Conflict Resolution Initiative will offer new insight into crowd dynamics and generate a framework to deal with demonstrations and events such as the G-8, G-20, and Summit of the Americas Conferences.

CPRC - in partnership with law enforcement and the private sector - is reviewing a number of biometric identity verification initiatives. This examination of tools such as facial recognition, iris scanners, and fingerprint recognition is designed to reduce individual identity theft and help protect the public from domestic and external security threats.

At the 2001 CACP Conference in Saskatoon, CPRC brought together a cross-section of police leaders to evaluate potential information technology pilot projects for PS3 - "Paradigm Shift in the 3rd Millennium". The focus was on determining and prioritizing police business needs for new information technology and distributed e-learning applications.

The City of Fredericton and CPRC are developing an 'Electronic Crime Scene Investigation' e-Learning course. The focus is on providing on-line training for developing police knowledge, skills and abilities in recognizing and collecting electronic evidence.

'Missing' - an educational computer game for children - was produced and is supported by a new interactive website www.internetsafety.com. This CD-based interactive 'game' helps children learn to protect themselves against pedophiles and Internet-based predators. Over 22,000 copies have been distributed to schools, libraries, and police organizations in seven countries.

"Security Clusters" are new forums introduced to bring together police and public safety technology-oriented concerns with potential solutions provided by Canadian industry partners. Representatives from the Department of National Defence, the RCMP, provincial and municipal police agencies, and government will be meeting across Canada with a view to satisfying identified technology needs with timely delivery of public safety technology.

In the last year there were two notable retirements from CPRC. Jamie Kerr left the RCMP and CPRC in May 2001. Barry Gaudette retired in April 2002. Their dedication, professional manner and insight will be missed. We are grateful for their contributions.

It gives me great pleasure to recognize the accomplishments of the CPRC and its collaborative vision of enhancing public safety, protecting police professionals and improving operational effectiveness. I look forward to having CPRC assist the Canadian policing community make informed technology choices in the coming year.



CHIEF VINCE BEVAN
CHAIRMAN, CACP OPERATIONAL RESEARCH COMMITTEE

INTRODUCTION TO THE CANADIAN POLICE RESEARCH CENTRE (CPRC)

MISSION

To provide leadership and focus for a national program of research, development, evaluation and commercialization in the law enforcement and public safety sectors in Canada.

GOAL

To ensure that the best equipment and information is available to the Canadian police community and to offer Canadian expertise and enterprise an opportunity in this specialized field.

The CPRC is a partnership between the Canadian Association of Chiefs of Police (CACP), the Royal Canadian Mounted Police (RCMP) and the National Research Council (NRC) Canada and is staffed by personnel from the RCMP and NRC. Its structure and terms of reference allow it to deal effectively with police equipment and information research, development and evaluation.

The objectives of the CPRC can be summarized as follows:

- to develop the best tools (equipment and information sources) for the police community;
- to strive to keep necessary technology affordable;
- to forge partnerships with Canadian industry and the national and international research community.

The CPRC strives to ensure that the interests of the Canadian police community are best served with the available resources. The ultimate objective is to ensure that CPRC expenditures result in the timely transfer of technology to the police user for greater safety, increased efficiency and effectiveness.

The CPRC has a national focus, a single coordinated effort to support research and develop technologies for Canada's law enforcement community, and it promotes interaction between the police community, government, industry, universities and other research organizations.

The CPRC ensures that research results, expertise, information and facilities are shared among all partners. Equally important, the CPRC provides "technology partner" evaluation services to Canadian police agencies, participating government agencies, security firms, and Canadian industry. This benefits Canadian industries by giving them an opportunity to test security oriented products under operational conditions. Canadian products are thereby given credibility to compete successfully in domestic and international markets.

The collaborative effort of the CACP, RCMP and NRC continues to result in the sponsorship of numerous research projects and in the development of new products and information sources for the public safety market.

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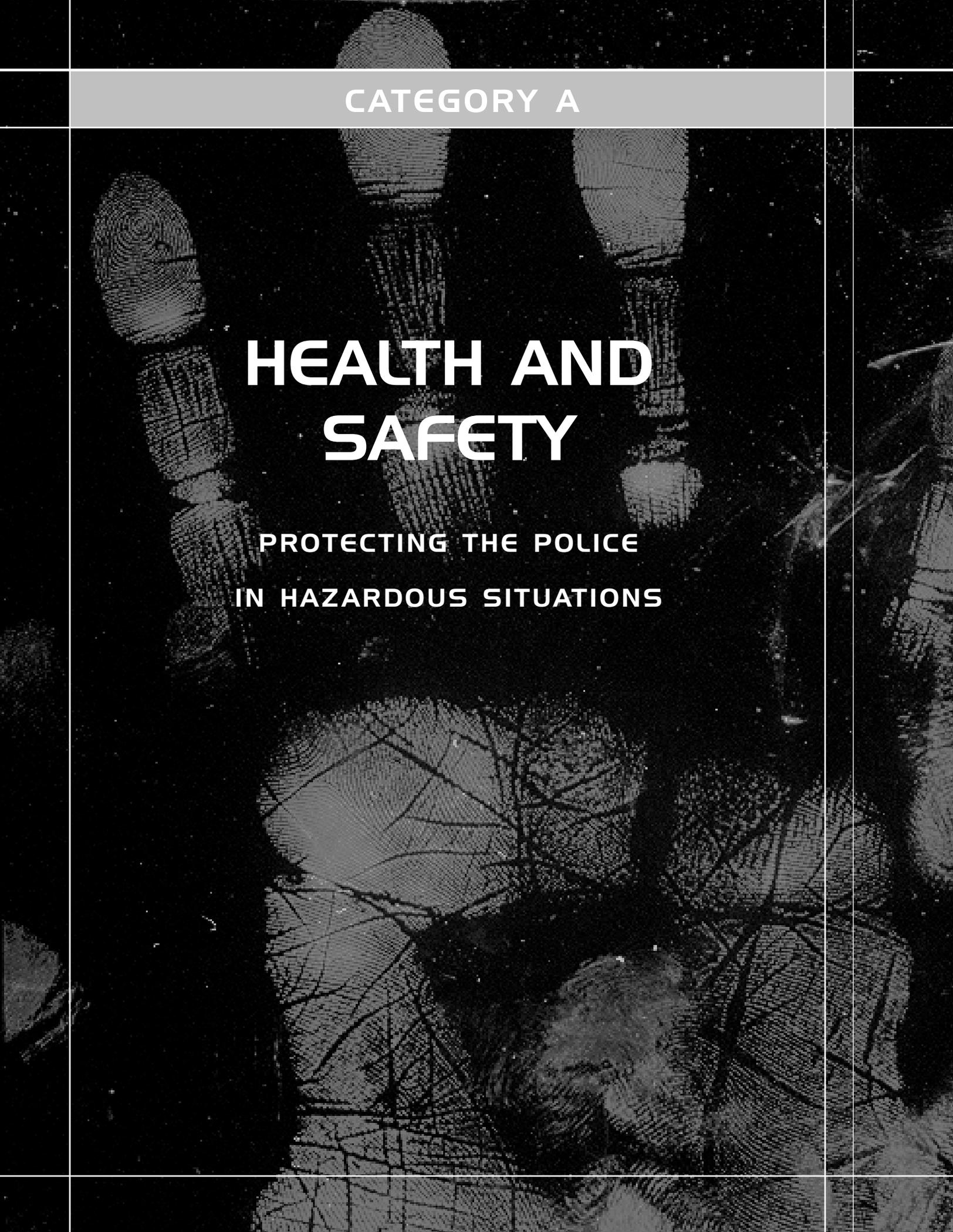
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CATEGORY A

HEALTH AND SAFETY

PROTECTING THE POLICE
IN HAZARDOUS SITUATIONS

BLAST SUPPRESSANT FOAM CONTAINMENT SYSTEM – ACTIVE

PROJECT MANAGERS:

Glenn Carroll, CPRC (613) 998-6341
John Bureaux, Canadian Bomb Data Centre
(613) 993-7880



REPORT:

TM-06-95R
“Blast Suppression Foam”
Development continues with this award-winning technology comprising foam delivery, foam formulations, and containment apparatus. Commercialization has also been completed and the

Blast Guard system as well as specific components are available to first responders through NBC Team Limited (Phone: (905) 341-9766).

BLUNT TRAUMA VEST – CONCLUDED

PROJECT MANAGERS:

John Arnold, CPRC
(613) 993-3737
Alain Bujold, Mawashi
(450) 682-4441

The Montreal company, Mawashi have developed a ‘blunt trauma’ vest (the Promax) that is both ballistic resistant and/or stab resistant (the company was initially supported by an NRC’s IRAP program). The CPRC understands that the UK British Standards Institute has developed a draft ‘blunt trauma’ standard.

This past year the Mawashi equipment was scheduled for evaluation to the draft standard. On looking at this standard it was decided not to pursue the evaluation. The Canadian community is discussing the possibility of a Canadian standard.



COMPUTER TERMINALS IN POLICE CARS - CONCLUDED

PROJECT MANAGERS:

Julie Graham, CPRC (613) 990-9533
Benoit Frenette, M.Sc., OD, U. of Montreal
(514) 343-7719

REPORTS:

TR-07-2002E “Vehicular Terminals and Visual Fatigue: Patrol Officers with the Sherbrooke Regional Police (SRP)”
TR-07-2002F “Terminaux véhiculaires et fatigue visuelle : le cas des patrouilleurs du service de police de la région sherbrookoise (SPRS)”

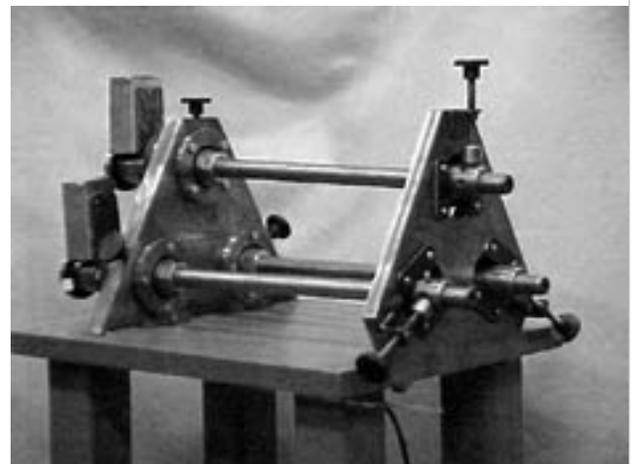
L’Association paritaire pour la santé et la sécurité du travail, secteur “Affaires municipales” (APSAM) and CPRC sponsored a study by the School of Optometry of the University of Montreal. Computer terminals have been rapidly introduced to police cars; other groups such as firefighters and ambulance drivers are being faced with similar installations. There has been some uneasiness and discomfort relative to visual constraints and postures associated with the terminals. This study examined the terminals with respect to the measure of light, image size and stability and analysed vehicles with different terminals in varying conditions such as time of day, interior lighting of the vehicle, atmospheric conditions, etc. Various recommendations were made with respect to the types of vehicular terminals and the layout of the workstations. .

DEVELOPMENT OF A CANADIAN SOFT BODY ARMOUR STANDARD AND DEVELOPMENT OF A MULTI-HIT TEST PROCEDURE – ACTIVE

PROJECT MANAGERS:

Julie Graham, CPRC (613) 990-9533
Tony Bosik, Bosik Consultants Limited (613) 998-3303

The Canadian General Standards Board (CGSB) has established a Canadian Standard for daily personal use body armour. Bosik Consultants Limited has developed an instrument to perform a reproducible multi-hit test designed to represent shots from an automatic weapon. It has been designed to fire a series of three shots which strike the target in close proximity. The rate of fire is variable; each barrel is laser aimed and the speed of each round is recorded. A database of results will be created and used to develop a test procedure relating to the standard.



DEVELOPMENT OF ENHANCED TORSO PROTECTION SYSTEMS - ACTIVE

PROJECT MANAGERS:

Julie Graham, CPRC (613) 990-9533
Dr. Michael Worswick, University of Waterloo
(519) 885-1211, Ext. 5830

University of Waterloo researchers, in association with researchers from the DRDC Valcartier and with representatives from four Ontario industries concerned with the production of personal protection systems, are involved in this project which is supported as well by Materials and Manufacturing Ontario (MMO) and CPRC.

Objectives of the project are :

1. to develop mechanical test procedures to evaluate the performance of thoracic body armours against large calibre ballistic impact
2. to develop numerical models capable of predicting the performance of such equipment and suitable for use in optimizing the design of competitive, effective equipment
3. to support the development and eventual marketing of enhanced body armour designs

ESTABLISHMENT OF STANDARDS FOR POLICE RIOT HELMETS AND FACESHIELD PROTECTION - ACTIVE

PROJECT MANAGERS:

Julie Graham, CPRC (613) 990-9533
David Shanahan, CSA International (416) 747-4264

Spear-headed by the Correctional Service Canada and with input from user agencies and industry, the Canadian Standards Association International has revised Canadian Standard CAN/CSA-Z611-M86 (July 86). It is expected that it will be published and available by the summer of 2002.

HAZARDOUS MATERIAL PORTABLE BURN SYSTEM - ACTIVE

PROJECT MANAGERS:

Glenn Carroll, CPRC (613) 998-6341
Derick Ivany, RCMP Tech. Ops. - Explosive Disposal & Training Section (EDTS) (613) 993-9869

EDTS has developed a solution in the form of a cost-effective, mobile incinerator capable of destroying ammunition, drugs, tobacco, limited pyrotechnics, and other exhibit materials in a safe, controlled, environmentally-friendly manner.

The project group (D. Ivany and a Hamilton-Wentworth RPS member) has researched the background technology, consulted with industry, and has developed partnerships with a number of other police agencies.



Other agencies have provided in-kind contributions in the form of prototype testing (RCMP 'B', 'H', and 'J' Division Explosives Disposal Units, Sûreté du Québec, and Peel RPS).

Prototyping and field trials continue.

REMOTE WIRELESS EXPLOSIVES DISRUPTOR INITIATOR - ACTIVE

PROJECT MANAGERS:

Glenn Carroll, CPRC (613) 998-6341
Sheldon Dickie, Canadian Bomb Data Centre
(613) 993-7880
Scott Sheppard, 'E' Div., RCMP, Explosives Disposal Unit
(604) 775-6184

The RCMP 'E' Division Explosive Disposal Unit have developed, in conjunction with the Canadian Bomb Data Centre (CBDC), a small light weight transmitter/receiver system that can initiate explosive charges and fire disruptors from a remote command post without the use of a ground line. Current technology requires use of such a ground line, presenting a physical safety hazard and tactical disadvantage.

Further refinements (miniaturization, ruggedization) are in progress with a private sector collaborator, Inuktun Services Inc. (250-729-8080).

TASER TECHNOLOGY - LESS LETHAL TECHNOLOGY - ACTIVE

PROJECT MANAGERS:

Julie Graham, CPRC (613) 990-9533
Darren Laur, Victoria Police Service, (250) 995-7654
Peter Sherstan, RCMP (780) 926-3013

REPORTS:

TR-01-2000 "TASER Technology Research Paper"
TR-08-2002 "The Conducted Energy Weapon Evaluation Report"



The above report outlines the six month study undertaken by the Victoria Police Service. The RCMP has recently concluded a further evaluation of this less lethal technology in several British Columbia and Alberta locations. It is expected that the final report will be available for the CPRC website in mid-2002.

TRAINING FOR CROWD MANAGEMENT AND CONFLICT RESOLUTION- ACTIVE

PROJECT MANAGERS:

Julie Graham, CPRC (613) 990-9533
Shirley Paré, (613) 747-9089

REPORT:

TR-05-2001 "Crowd Management and Conflict Resolution Pilot Workshop Evaluation"

Saint Paul University's program in conflict studies led to the establishment of the Crowd Management and Conflict Resolution initiative which supports the Canadian government's dedication to public order and peace at home and abroad.

A series of workshops and seminars generated a strategic frame of reference used in the development of a paper and a textbook which will be used for the wide-spread training for police and others responsible for security. The text will also be useful for people from the media, crowd organizers and participants, as well as political and business leaders who may find themselves the targets of crowds. It is expected that the text will be available in May 2002.

VIDEO WEAPON AIMING SYSTEM & TARGET DESIGNATOR FOR NEUTREX DISRUPTOR - CONCLUDED

PROJECT MANAGERS:

Glenn Carroll, CPRC (613) 998-6341
Gord Scott, RCMP Explosives Disposal & Technology Section (613) 993-7880

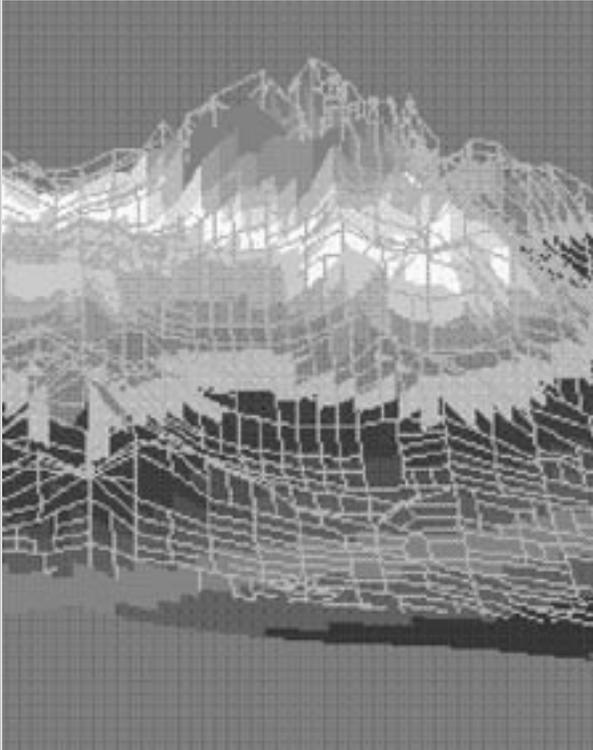
Under some lighting conditions, aiming of robot-mounted water-jet disruptors is difficult. The objective is to develop an aiming system using a high intensity laser and a switchable electronic filter placed in line with the video camera feed. When turned on, the electronic filter can filter out all visible light leaving only the image of the laser dot.

A video cross hair project funded by CPRC was recently completed which generates cross hairs on the video image. It does not use a laser in its operation. It works well but needs further refinement in order to function optimally. Part of this project is the development of an internal boresight-mounted laser to accurately determine the centre of the Neutrex barrel for crosshair alignment and overlay it with the electronic image.

CATEGORY B

OPERATIONAL EFFECTIVENESS

FIGHTING CRIME,
GATHERING INFORMATION,
INTELLIGENCE AND EVIDENCE



ARSON LINKAGE – ACTIVE

PROJECT MANAGERS:

John Arnold, CPRC (613) 993-3737
 Ron MacKay, Forensic Behaviour Analysis,
 (613) 521-0791

REPORT:

TR-06-2001 “Arson Crime Linkage Analysis System
 (ACLAS)”

The CPRC has been collaborating with Ron MacKay of Forensic Behaviour Analysis to support the research and development of a serial arson linkage software program. Recent research into the behaviours of serial arsonists indicates that the linking of their crimes can be achieved in much the same manner as VICLAS does for serial rapists and killers.

This year an ACLAS model was built on a laptop computer in order to evaluate and demonstrate the technology. Mr. MacKay will be demonstrating the model to several police and fire organizations this year applying their feedback to further develop an actual pre-production proto-type.

ATV GATED LASER IMAGING - ACTIVE

PROJECT MANAGERS:

Barry Gaudette, CPRC (613) 998-6340
 Denni Bonnier, INO (418) 657-7006
 Steve Taylor, RCMP Technical Operations
 (613) 993-8463

Current light intensification systems do not allow long range surveillance (km range), and are relatively ineffective during bad weather conditions. Thermal imaging systems are based on heat generated by targets, and



therefore do not permit identification of objects such as weapons, and identification numbers (boats, vehicles, aircraft etc.) In 1999, CPRC started working with INO, a Quebec company who had developed a product with a potential solution to this problem. However, experienced police surveillance experts indicated that two improvements would be required to make the INO product suitable for their needs: ability to work at stand-off distances up to 3 km and with observable features at 5 km; and a laser frequency of 940 nanometres in order to make the laser illumination invisible to the human eye. INO has now put forward a proposal in which they feel that they can develop a prototype that will meet the expert's requirements. A portable gated laser imaging system capable of providing identification features and characteristics of suspects under police surveillance regardless of the time of day and weather conditions would be an extremely valuable tool for police in their war against Organized Crime.

BIOMETRICS RESEARCH - ACTIVE

PROJECT MANAGERS:

Barry Gaudette, CPRC (613) 998-6340
 Heather Riou, Technical Security Branch - RCMP
 (613) 993-7407
 Jennifer Mulligan, Departmental Security Branch- RCMP
 (613) 993-3832

New advances in biometric technology have rendered previous studies in this area conducted by the RCMP Technical Security Branch outdated and obsolete. They have recently received several client requests regarding biometrics and are presented with the challenge of evaluating this maturing technology and providing timely and accurate reports that will aid in those clients' biometric choices. This project, which is considered a high priority given the renewed interest in security and biometrics from the perspective of the RCMP and other government agencies, addresses the examination, testing and evaluation of many different forms of biometrics and their relation to security processes. The objective is to determine the extent to which current biometrics products and methods are applicable to access control

and other applications for police and government use. Proposed work products are: a) a biometric device comparison report that will include guidelines for the usage of this technology; b) a formal licensing agreement for use of these biometric devices; and c) material to be used in the ITS Awareness Training Workshops.

CATEGORY 'A' RESPONSE KIT - CONCLUDED

PROJECT MANAGERS:

Glenn Carroll, CPRC (613) 998-6341
 Steve McDonagh, RCMP Explosives Disposal & Technology Section (613) 993-7880

The RCMP Explosives Disposal & Technology Section is updating its major threat EOD kit to contain newer, more effective operational tools for bomb technicians. The objective is to improve visual inspection, as well as electronic and chemical, biological, radioactive, and nuclear (CBRN) diagnosis by:

- including newer and more effective equipment,
- reducing size and weight,
- using a suitable container,
- incorporating an aide memoire procedures manual for "Render-Safe-Procedure" (RSP) for Category 'A' scenarios.

Work on this specific project has been incorporated within other CBRN initiatives.



COVERT COMPUTER LOGGING (RESTRICTED) - CONCLUDED

PROJECT MANAGER:

John Evans, CPRC (780) 421-2853

This method of conducting covert surveillance on computer usage is to undergo field testing.



"COVERUP" - CONCLUDED

PROJECT MANAGERS:

Barry Gaudette, CPRC (613) 998-6340
 Dr. Brian Yamashita and Kevin Miller, RCMP Forensic Identification Research Services (613) 998-6190

REPORT:

TR-02-2002 "Coverup - Protective Covers for Evidence"

The Coverup is an eight sided clear plastic cover, 11½" by 3¼" high which can be used by the initial officer on the scene to cover evidence (such as tire prints, footwear prints, blood, fibres, etc.) in order to prevent destruction or contamination. It can be secured in place by any of three methods: adhesive foam pads, nails placed through nail holes on its edge, or through use of four jagged slots along the edge which can be fastened to vegetation, etc.

Several of these covers were distributed across Canada and their use at crime scenes was evaluated by Forensic Identification and general duty police officers. In a separate experiment, the use of the Coverup as a portable cyanoacrylate (CA) fuming container was tested.

The Coverup was found to be a useful means of protecting evidence at crime scenes, especially in wet or windy conditions. They were found to fasten well to smooth surfaces where they provided a clean standardized cover for small areas of interest or small pieces of evidence. Users felt that they were too small to adequately cover larger evidence such as many footwear and tire track impressions.

Coverups also proved to be effective portable CA fuming containers. For small areas on objects that are not easily transported to the identification laboratory, CA can be placed in a coverup fastened to the surface, and development can be monitored through the clear plastic.



DECOMPOSITION IN THE GREAT LAKES ENVIRONMENT - ACTIVE

PROJECT MANAGERS:

Julie Graham, CPRC (613) 990-9533
 Dr. Gail Anderson, Simon Fraser University (604) 291-3589

REPORT:

TR-08-2001 "Underwater Digital Photography Equipment for Evidence Recording"

Working in co-operation with Dr. Gail Anderson of Simon Fraser University, the Niagara Regional Police Service Underwater Search and Recovery Unit (USRU) is involved in a study relating to aquatic death/crime scenes. The study involves the use of pig carcasses and is being conducted in Lake Ontario.

The purpose of the study is to determine the post mortem interval of submerged bodies by identifying:

- stages of decomposition in fresh water at various depths and water temperatures
- scavenging patterns and aquatic organism succession
- re-float patterns based on depths and water temperatures



DECOMPOSITION IN THE MARINE ENVIRONMENT - ACTIVE

PROJECT MANAGERS:

Julie Graham, CPRC, (613) 990-9533
 Dr. Gail Anderson, Simon Fraser University (604) 291-3589

Dr. Gail Anderson of Simon Fraser University, in co-operation with the Vancouver Public Aquarium, the Canadian Coast Guard, the Canadian Amphibious Search Team and the RCMP, has been studying arthropod succession on pig carcasses placed at varying depths in the ocean. The purpose of the study is to develop a system to determine time of death for bodies which have been disposed of in a maritime environment. A report is expected in the summer of 2002.



DNA IDENTIFICATION ACT RESEARCH PROJECT - ACTIVE

PROJECT MANAGERS:

Bary Gaudette, CPRC (613) 998-6340
 Dena Robinson, RCMP Technical Operations (613) 993-1228

Section 487.04 of the Criminal Code requires that persons convicted of "primary designated offences" provide samples of bodily substances from which DNA information can be extracted for inclusion in the National DNA Data Bank as per the DNA Identification Act. Primary offences are major crimes of violence such as murders and sexual assaults. However, for persons convicted of "secondary designated offences", which tend to be large volume crimes such as break and enters, robberies and arson, the Crown must be able convince a judge to

order that a bodily substance be taken for DNA analysis. As a consequence, DNA information from many persons convicted of secondary offences is not included in the National DNA Data Bank, thereby reducing its potential effectiveness.

This project examines Canadian criminal records to determine the correlation between the occurrence of primary and secondary offences. The research will attempt to determine how often a secondary offence appears on the same criminal record as a primary offence and how often it occurs prior to a primary offence. The objective is to produce a published report that the Crown can use in court arguments to persuade a judge to order that DNA samples be taken from someone convicted of a secondary offence.

ELECTRONIC CRIME SCENE INVESTIGATION - ACTIVE

PROJECT MANAGERS:

John Arnold, CPRC (613) 993-3737
Michele Cronin, Fredericton Police Force
(506) 460-2412



The CPRC in partnership with the Fredericton Police Force and the Fredericton company LearnStream Inc. are developing an 'Electronic Crime Scene Investigation' course that is to be delivered over the Internet. This project is being funded by Human

Resources and Development Canada's Office of Learning Technologies in the Workplace and the partners.

The project's goal is to develop and distribute a learning technology product on Internet crime that will quickly lead to the acquisition of new skills and knowledge by policing and other organizations. It involves the design, testing and marketing of an affordable computer based/on-line training course on computer crime awareness. The training modules to be developed will contribute to the acquisition of new skills by investigators in Canadian police agencies (including small rural and remote municipal police forces). The course is also going to be delivered to small to medium enterprises that will allow them to identify and deal with computer and Internet crime. These training modules will be accessible to all police agencies and corporations across Canada and around the world.

Some of the training modules to be developed will train "first responders" from a police force on how to act and protect the 'crime scene' when they discover instances of Internet or computer crime. Others will sensitize security officials from business to potential problems and issues and how they can themselves deal with suspect Internet computer security issues from their company's perspective. While the content will be aimed primarily at Canadian police and business, as it will be based on Canadian legislation, the project leaders are confident that much of the material will also be of interest internationally.

A team of over a dozen subject matter experts has been put together from across Canada, Hong Kong and the United Kingdom. They have evaluated and commented on the subject matter. It is anticipated that the course will be ready for beta evaluation this year.

EXTRACTION OF DNA FROM TEETH - ACTIVE

PROJECT MANAGERS:

Julie Graham, CPRC (613) 990-9533
Dr. David Sweet, Bureau of Legal Dentistry
(604) 822-8822

Dr. David Sweet, of the Bureau of Legal Dentistry, University of British Columbia, is completing a report on a study of the potential to extract forensic DNA evidence from various areas of human teeth. The project has investigated different areas of teeth (crowns and roots) and various types of teeth (incisors, molars and pre-molars) to determine whether there are significant differences in the concentration of DNA in the different regions and classes of teeth. The report will be available on the CPRC website in the summer of 2002.

FINGERPRINT RESEARCH - ACTIVE

PROJECT MANAGERS:

Julie Graham, CPRC (613) 990-9533
Dr. Della Wilkinson, RCMP Forensic Identification
Research Services (613) 993-3059

REPORT:

TR-05-2002 "Evidence Recovery From Chemically Hazardous Scenes" Restricted

In co-operation with the Defence Research Establishment Suffield (DRES) Dr. Wilkinson continues her research into the recovery of fingerprints from chemically contaminated crime scenes. This work has received funding from the US Department of Defence.

The project has three phases:

- a study of the effects of chemical agents on physical evidence such as fingerprints and DNA
- a study of the effects of decontamination on physical evidence
- a study of the effects of biological agents on physical evidence and development of procedures to separate the DNA of the biological agents from that of the physical evidence.



FORENSIC ENTOMOLOGY ACROSS CANADA - ACTIVE

PROJECT MANAGERS:

Julie Graham, CPRC (613) 990-9533
 Dr. Gail Anderson, Simon Fraser University (604) 291-3589

REPORTS:

Training video available. A 23 minute video, produced by the Audio-Visual Unit of "E" Division Training, deals with the collection of entomological evidence.

- TR-09-2002 "Determination of Time of Death for Humans Discovered in Saltwater Using Aquatic Organism Succession and Decomposition Rates"
- TR-04-2002 "Insect Succession on Carrion in the Edmonton, Alberta Region of Canada"
- TR-10-98 "Freshwater Invertebrate Succession and Decompositional Studies on Carrion in British Columbia"
- TR-09-97 "Aquatic Forensics - Determination of Time Since Submergence Using Aquatic Invertebrates"
- TR-02-96 "Forensic Entomology - Determining Time of Death in Buried Homicide Victims Using Insect Succession"
- TR-03-96 "Forensic Entomology - The Use of Insects in Death Investigations To Determine Elapsed Time Since Death In Interior and Northern British Columbia Regions"
- TR-05-95 "Forensic Entomology - The Use of Insects in Death Investigations to Determine Elapsed time since Death"

Dr. Anderson continues to direct studies involving insect succession on pig carcasses in Saskatchewan and Manitoba. The Alberta study is complete and information can be found on the CPRC website. The information gathered from these studies will assist in determination of time of death in homicide cases. The goal is a countrywide database covering all of the biogeoclimatic zones within Canada.

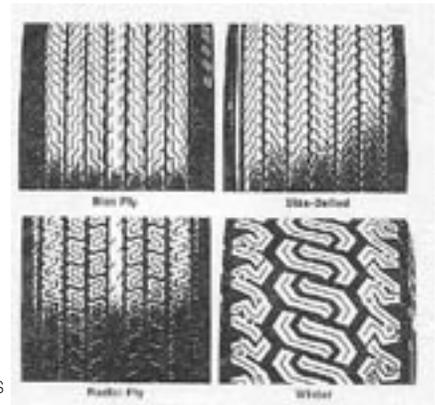


FORENSIC TIRE IMPRESSION IDENTIFICATION - CONCLUDED

PROJECT MANAGERS:

Glenn Carroll, CPRC (613) 998-6341
 Lawren Nause, RCMP 'O' Division (905) 953-7503

Research has led to publishing a text for the benefit of the law enforcement and forensic science communities world-wide entitled 'Forensic Tire Impression Identification'. To purchase this book, contact NRC Publications (613-993-2054).



INTERNATIONAL CYBERCRIME TRAINING STANDARDS AND COURSEWARE - ACTIVE

PROJECT MANAGER:

John Evans, CPRC (780) 421-2853

The CPRC has introduced the National Cybercrime Training Partnership to the Canadian law enforcement and prosecution communities. This U.S. Dept. of Justice initiative has partnered close to 200 agencies and organizations in a cooperative effort to produce computer crime investigation courseware for law enforcement officers and prosecutors. The CPRC has been a long-standing partner and has assisted several agencies and organizations in Canada to become involved.

During 2002 CPRC continues to fulfill the International Portfolio of the U.S. Department of Justice's National Cybercrime Training Partnership initiative. As police organizations have begun to mature their response to training in this area, and such groups are becoming more formalized and operationally oriented, it is hoped that this role can be migrated to another organization within the Canadian police community over the upcoming year.

INTERNET SECURITY MANUALS - ACTIVE

PROJECT MANAGERS:

John Evans, CPRC (780) 421-2853
Sunny Parmar, RCMP (250) 748-5522

REPORTS:

- TM-05-2000 "Introduction to Security: Computer, Internet, Network Security (Secman2000)"
- TR-12-2001 "Conducting Internet Operations & Investigations Manual (CIOIM2000)"
- TR-13-2001 "CIOIM Supplement 1: Child Pornography Investigations (CIOIM Supp1)"
- TR-14-2001 "CIOIM Supplement 2: Using AOL & ICQ (CIOIM Supp2)"
- TR-15-2001 "CIOIM Supplement 3: Deception Hosts (CIOIM Supp3)"
- TR-16-2001 "CIOIM Supplement 4: Digital Officer Safety (CIOIM DOS)"

The CPRC is using its facilities and contact network to assist in the distribution of a series of manuals on computer security including how to properly conduct online undercover investigations. These manuals have now been adopted by several agencies throughout North America to supplement their training programs.



OPC E-LEARNING - 'ADVANCED PATROL TRAINING' - ACTIVE

PROJECT MANAGER:

John Arnold, CPRC
(613) 993-3737

The Ontario Police College has partnered with the CPRC to investigate the potential of E-learning using one of OPC's modules in the OPC 'Advanced Patrol Training' course. This course is currently being delivered on a compact disc using a classroom teaching environment. The objective of this project is to evaluate the long distance delivery of the material over the Internet in a timely fashion.

The 'Crime Scene Protection' module will be ready for evaluation in May 2002.

PHYSICAL MATCHING FEET TO FOOTWEAR - ACTIVE

PROJECT MANAGERS:

Julie Graham, CPRC (613) 990-9533
Robert Kennedy, RCMP Forensic Identification Research Services (613) 990-9086

REPORT:

- TR-10-2001 "The Statistical Analysis of Footprint Data Report 2000-2001"

This ongoing project involves the collection and statistical analysis of footprint data. The purpose of the project is to scientifically support the theory that feet can be identified to footwear. The analysis of the data continues and a final report is expected in the coming year.

PRECISION GIS MAPPING - ERT RANGE FINDING - ACTIVE

PROJECT MANAGERS:

Barry Gaudette, CPRC (613) 998-6340
Dan Aubin, RCMP "O" Division ERT (416) 718-0852

Most map information available to police for operational use is coarse and does not contain elevation information which can be shown via 3D images. 3D images are used for assault planning by ER Teams and others in planning/predicting terrorist and criminal acts against government facilities.

Ranging information can be collected by ERT/TRU/TAC teams which are deployed in an operational or training role. This can then be deposited in a central database where the data would add precision to existing GIS mapping data. Data would be collected or renewed whenever a team is deployed on operations or training. Range finding has been developed by industry to the point where it is perfect for this use. No work has been done to integrate range finding data with GIS mapping data used by police agencies. The RCMP National Operations Centre has collected some Statistics Canada mapping information; however, no system is in place to improve the precision of the data. The objective of this project would be to test a set of range finding equipment and develop a method of integrating the higher precision data with existing GIS mapping data. The resultant high precision data would be made available to all Canadian Police agencies. High precision mapping data would have hundreds of potential police uses.

PRESSURE SENSITIVE PAINT (PSP) - ACTIVE

PROJECT MANAGERS:

Glenn R. Carroll, CPRC (613) 998-6341
Jean-Yves Vermette, RCMP Explosives Disposal & Technology Section (613) 993-7880

An enabling technology used to simplify the instrumentation necessary to measure blast effects and to verify blast modelling methods is being researched. Accurate modelling information is necessary to mitigate blast attacks directed against buildings, motorcades etc. Additionally, information gathered in a co-operative effort with the Department of National Defence can be used to provide the same service to soldiers and police officers deployed outside of Canada in peacekeeping roles.

In order for this modelling approach to be dependable, it must be verified. Verification is accomplished by conducting a sufficient number of live tests to conclude that the modeler is accurate enough for field use. Current technology demands that data is captured by placing large numbers of pressure transducers in the blast zone, connecting them to oscilloscopes (eight channels per oscilloscope) then capturing outputs from the oscilloscopes for computer for analysis. This project attempts to develop a polymer (with bonded dye) having

properties that will allow the pressures emitted from a blast to react with it in a way that indicates the precise pressure change across a surface coated with the polymer. The change, and therefore the data, is captured in one of two ways. Either the polymer property changes are retained long enough to capture via a video tape recorder or the longevity of the property changes is short and must be captured via high speed photography. The question will only be answered after a usable quantity of polymer is synthesized and tested.

PROVINCIAL APPLICANT TRACKING SYSTEM (PATS) – CONCLUDED

PROJECT MANAGER:

John Evans, CPRC (780) 421-2853

The municipal police agencies in Alberta have been involved in standardizing their hiring requirements. Part of this process required the ability to share testing and screening information on candidates in order to avoid duplication in manpower and costs.

A central database has been developed with a secure communication link between the testing centres. This will allow immediate access to a candidate's testing history and permit testing at one location to be accepted at another location.

This database is now operational and undergoing further modification.

REMOTE OPENING KIT – CONCLUDED

PROJECT MANAGERS:

Glenn Carroll, CPRC (613) 998-6341

Gord Scott, RCMP Explosives Disposal & Technology Section (613) 993-7880

Bomb disposal technicians routinely use a 'hook and line' technique to extricate suspicious packages from buildings and vehicles, particularly where a robot is not available or accessible. Various specialty 'gadgets' have been developed in the past to manoeuvre around corners through doorways, etc. but there was no set of tools that could be quickly and efficiently be attached to the wide variety of items encountered by police explosives technicians. An on-going problem has been to open doors and drawers in buildings and vehicles. When a human is most at risk is close to the device, thus the strategy used is to reduce the bomb disposal technician's time in close proximity. Currently there are kits available with a variety of specialty component parts, but none with a complete suite of clamps will attach to every known vehicle door handle and virtually any piece of office furniture or building fixture. A suite of such devices has been licensed and is being commercialized by Med-Eng Systems Inc.(613-739-9646).

REMOVABLE EQUIPMENT PACKAGE (RS3P) (RESTRICTED) – ACTIVE

PROJECT MANAGER:

Glenn Carroll, CPRC (613) 998-6341

A modular system is being developed to allow portability and rapid deployment of equipment.

SECURE COLLABORATIVE MESSAGING SYSTEM – ACTIVE

PROJECT MANAGER:

John Evans, CPRC (780) 421-2853

The CPRC has facilitated the introduction of a high security collaboration technology to an Ottawa based software company. It is expected this company will have a system operational by summer of 2002. Once this is accomplished, CPRC will be working with this company and the police community to assess its potential role in inter-agency communication.

UNIVERSITY PARTNERSHIPS - ACTIVE

PROJECT MANAGER:

John Evans, CPRC (780) 421-2853

CPRC is working to encourage more partnerships and cooperation between the police community and university researchers. A pilot project has begun between the Edmonton Police Service and the University of Alberta and their Industrial Liaison Office to establish a closer working relationship. This has been met with enthusiasm by all participants.

Project ideas are currently being discussed utilizing the University of Alberta's Computer Science Department's knowledge in data-mining and machine-learning, and with the National Nano Technology Centre currently being constructed at the University of Alberta.

USE OF FORCE TRAINING SIMULATORS EVALUATION – ACTIVE

PROJECT MANAGER:

Glenn Carroll, CPRC (613) 998-6341



CPRC is seeking a 'champion' to lead an information gathering exercise aimed at:

- collecting and collating data and features of commercially available systems,
- studying the pedagogical basis for simulator training.

CPRC will be most appreciative of an interested party to coordinate this initiative.

**VICLAS SPECIALIST COURSE -
COMPUTER-BASED TRAINING -
CONCLUDED**

PROJECT MANAGERS:

Glenn Carroll, CPRC (613) 998-6341
Derek Ogden and Larry Wilson, RCMP Behavioural
Sciences Branch (613) 993-4398

ViCLAS (Violent Crime Linkage and Analysis System)
Section members approached CPRC seeking solutions
to their program delivery and specialist training. Currently,
the ViCLAS Specialist Course is a 3-week course deliv-
ered at the Canadian Police College (CPC). ViCLAS per-
sonnel regard this as being inordinately long and a drain
on ViCLAS Section resources. If the course could, at
least, be shortened and the course candidates receive
their initial training remotely, then the time spent at the
CPC could be significantly reduced.

This initiative has been suspended pending a further
business case analysis.



CATEGORY C

PROTECTING THE PUBLIC

TRAFFIC,
CUSTODY,
CRIME PREVENTION

CELL DESIGN - ACTIVE

PROJECT MANAGERS:

Julie Graham, CPRC (613) 990-9533
Nancy Chevrier, RCMP (613) 993-1993

REPORTS:

TR-03-2000 "Proposals for Modification and Design Changes to Jail/Holding Cells: Psychological Impact on Aggressive and Self Destructive Behaviour"
TR-06-2002 "The Perceived Characteristics of Holding Cell Environments"

The initial phase of this project was a study of the psychological impact of aggressive and self-destructive behaviour by detainees in holding cells. Recommendations from that study were incorporated in cell retrofits in selected detachments. Questionnaires were presented and a post retrofit survey was conducted. Results are currently being analysed and a final report is expected in the summer of 2002.

CHILDREN'S INTERNET MANIFESTO - ACTIVE

PROJECT MANAGER:

John Evans, CPRC (780) 421-2853

This is a project to ensure that the youth of Canada and other countries have a voice in Internet development and regulation. This project is being spearheaded by another organization and CPRC is involved in a support and advisory capacity. To date schools in Canada, England, Australia and the Phillipines are contributing.

I-RULE - INTERNET ETHICS AND SAFETY FOR K-12 - ACTIVE

PROJECT MANAGER:

John Evans, CPRC (780) 421-2853

CPRC secured I-Rule, developed by a partnership between the West Virginia High Technology Consortium, National White Collar Crime Center, and the West Virginia Department of Education. I-Rule is a teacher's resource and curriculum manual designed to instruct students on the responsible, legal, ethical and acceptable use of computers. The manual has breakdowns on appropriate modules for each grade level (K-12) and has accompanying lesson plans and presentation material.

The package has been introduced to school districts in Alberta and is under consideration for rewriting and updating with Canadian content.



"ITS ME" FACIAL RECOGNITION FOR NETWORK SECURITY - ACTIVE

PROJECT MANAGERS:

Barry Gaudette, CPRC (613) 998-6340
Sal Khan, VisionSphere Technologies Inc.
(613) 740-0245

The primary benefit of face recognition in network security authentication is to significantly reduce the threat of unauthorized network intrusion from inside as well as outside the organization. The "Its Me" solution is designed to reduce network administrator workload related to passwords and eliminate user annoyance with remembering multiple passwords for various levels of network security. The nature of the solution also improves auditing by capturing the image of both authorized users as well as that of a non-authenticated person (i.e. intrusion attempts). The mere existence of a face capture and recognition system will provide a high network intrusion deterrence factor. An evaluation of the "Its Me" technology on a small in-house network is presently underway.

Facial recognition technology also has other potential public safety benefits such as perpetrator identification, target person and missing person identification, and physical access control. Facial recognition technology can also complement video surveillance technologies in private and public places. Should the "Its Me" evaluation show that the technology has promise in one application, other projects exploring some of these other applications may be initiated. In the meantime CPRC is closely monitoring information on public safety applications of facial recognition..

**MISSING - INTERNET PREDATOR
AWARENESS GAME FOR SCHOOL
CHILDREN - ACTIVE**

PROJECT MANAGERS:

John Evans, CPRC (780) 421-2853
Drew Ann Wake, LiveWires Design Ltd., (604) 687-5046

CPRC continues to work with LiveWires (www.livewwwires.com) on the "MISSING" computer training program for children. The product itself is mature and in production, but we are still working with them on introducing it into several other countries and enhancing some of the supplement materials for instructors. Missing continues to get rave reviews from everyone who tries it, but there is still a large segment of the Canadian education establishment who are still unaware of it despite considerable media and promotion when it was released. CPRC has also used its network of contacts to introduce it into the UK, Singapore, Switzerland, and numerous US jurisdictions.

CPRC is also working with the developers of MISSING to develop additional support material for police instructors.

**SMART SIDE - STRATEGICALLY MANAGING
APPLIED ROAD-SAFETY TECHNOLOGIES -
STOP IMPAIRED DRIVING EVERYWHERE
- ACTIVE**

PROJECT MANAGER:

John Arnold, CPRC (613) 993-3737

CPRC received this project proposal from the RCMP North-West Region. The objective of this project is to stop impaired driving. This would be achieved by developing micro technologies to detect the ethanol molecule in the ambient air of the passenger compartment of motor-vehicles and, if detected, cause the vehicle to perform certain actions to avoid collisions, alert other road users and the police. Once the technical solutions are developed, the intention would be to create a motor vehicle safety standard through Transport Canada and US National Transportation Safety Board. A vehicle safety standard would require such technology be included in any new vehicle sold in North America.

This is realistic and achievable objective, given the capabilities of nano-technology. Technical feasibility is considered high. Enforcement and education coupled with engineering and the political will to create the vehicle safety standard can end impaired driving. The proposed would be a passive detection system, perhaps using nano-technology to reduce today's sophisticated and expensive instruments to the micro-chip level.

A literature review is being conducted as the first phase and is expected by late Spring 2002.

TECHNICAL REPORTS AND MEMORANDA

This section lists all the "Technical Reports" and "Technical Memoranda" that the CPRC has published since 1997. These documents can be downloaded from our web site, www.cprc.org. As well, the web site contains a complete listing of earlier Technical Reports and Memoranda, which are also available for downloading.

It should be noted that in 2000, CPRC ceased using the designation "Technical Memorandum". All documents containing scientific and technical information about CPRC projects are now termed "Technical Reports".

2002 TECHNICAL REPORTS

- TR-01-2002 "PS3 Workshop"
- TR-02-2002 "Coverup - Protective Covers for Evidence"
- TR-03-2002 "Resistance of Exterior Walls to High Velocity Projectiles"
- TR-04-2002 "Insect Succession on Carrion in the Edmonton, Alberta Region of Canada"
- TR-05-2002 "Evidence Recovery from Chemically Hazardous Scenes" - Restricted
- TR-06-2002 "The Perceived Characteristics of Holding Cell Environments"
- TR-07-2002E "Vehicular Terminals and Visual Fatigue: Patrol Officers with the Sherbrooke Regional Police (SRP)"
- TR-07-2002F "Terminaux véhiculaires et fatigue visuelle : le cas des patrouilleurs du service de police de la région sherbrookoise (SPRS)"
- TR-08-2002 "The Conducted Energy Weapon Evaluation Report"
- TR-09-2002 "Determination of Time of Death for Humans Discovered in Saltwater Using Aquatic Organism Succession and Decomposition Rates"

PREVIOUS TECHNICAL REPORTS

2001

- TR-01-2001 "The Eye in the Sky: Evaluation of Police Helicopter Patrols (The London Police Service Helicopter Research Project)"
- TR-02-2001 "Evaluation of the Test Delivery of the Investigator's Guide to Internet Relay Chat"
- TR-03-2001 "Illicit Crop Information Management Using Satellite Imagery"
- TR-04-2001 "Drug Section Safety Cabinet"
- TR-05-2001 "Crowd Management and Conflict Resolution Pilot Workshop Evaluation"
- TR-06-2001 "Arson Crime Linkage Analysis System (ACLAS)"
- TR-07-2001 "Canadian Police College Library Catalogue on the Internet"
- TR-08-2001 "Underwater Digital Photography Equipment for Evidence Recording"
- TR-09-2001 "Hangings - A Practical Study of Ligatures and Suspension Point Morphology"
- TR-10-2001 "The Statistical Analysis of Footprint Data Report 2000-2001"
- TR-11-2001 "Side Scan and ROV Based Sonar for Locating Submerged Cadavers"
- TR-12-2001 "Conducting Internet Operations & Investigations Manual (CIOIM2000)"
- TR-13-2001 "CIOIM Supplement 1: Child Pornography Investigations (CIOIM Supp1)"
- TR-14-2001 "CIOIM Supplement 2: Using AOL & ICQ (CIOIM Supp2)"
- TR-15-2001 "CIOIM Supplement 3: Deception Hosts (CIOIM Supp3)"
- TR-16-2001 "CIOIM Supplement 4: Digital Officer Safety (CIOIM DOS)"

2000

- TR-01-2000 "TASER Technology Research Paper"
- TR-02-2000 "Update on Footprint Research"
- TR-03-2000 "Proposals for Modification and Design Changes to Jail/holding Cells: Psychological Impact on Aggressive and Self Destructive Behaviour"

1999

- TR-01-99 "Low Back Pain Among RCMP Officers: An Investigation Into Vehicles, Duty Belts and Boots"
- TR-02-99 "Back Pain in a Large Canadian Police Force"

1998

- TR-01-98E "Vision Standards in the RCMP: Are They Reasonable and Fair?"
- TR-01-98F «Normes visuelles de la GRC : Sont-elles raisonnables et équitables?»
- TR-02-98E "To Wear or Not To Wear: A Survey on Current Contact Lens Use in the Royal Canadian Mounted Police"
- TR-02-98F «Sondage sur le port des verres de contact à la Gendarmerie royale du Canada (GRC)»
- TR-03-98 "Lead Shot Penetration in 10% Ordnance Gelatin"
- TR-04-98 "Physical Ability, Fitness and Police Work"
- TR-05-98E "Violent Incidents"
- TR-05-98F «Incidents Violents»

- TR-06-98 "Ontario Provincial Police Holster Committee Report"
- TR-07-98 "Computer Assisted 2D and 3D Comparison of Bite Mark Evidence and Tooth Exemplars"
- TR-08-98 "Incidence of Human Bite Marks in a Selected Adult Population"
- TR-09-98 "Multicultural Communication Awareness for Police"
- TR-10-98 "Freshwater Invertebrate Succession and Decompositional Studies on Carrion in British Columbia"
- TR-11-98 "Penetration of Exterior House Walls by Modern Police Ammunition"

1997

- TR-01-97 "Evaluation of Gun Lubricant Operation At Low Temperatures"
- TR-02-97E "Risk to Police Officers From Biohazards Encountered in Police Work"
- TR-02-97F «Les risques biologiques du métier de policier»
- TR-03-97E "Physical Ability, Fitness and Police Work"
- TR-03-97F «Aptitudes et condition physiques des policiers»
- TR-04-97E "Occupational Medicine for Policing"
- TR-04-97F «La médecine du travail dans le domaine policier»
- TR-05-97E "Assessing Cardiac Risks in Police Officers"
- TR-05-97F «Évaluation des risques de cardiopathie chez les policiers»
- TR-06-97E "Occupational Health in Police Work: A Canadian Perspective"
- TR-06-97F «La médecine du travail en milieu policier une perspective canadienne»
- TR-07-97E "Respiratory Symptoms Among Forensic Identification Workers"
- TR-07-97F «Les symptômes respiratoires chez les techniciens de l'identité judiciaire»
- TR-08-97 "Evaluation of Water Soluble Evidence Collection Adhesive Tape"
- TR-09-97 "Aquatic Forensics - Determination of Time Since Submergence Using Aquatic Invertebrates"
- TR-10-97 "Results from the FBI Collaboration on the Detection of Fingerprints from Human Skin"
- TR-11-97 "InvestigAide B&E, A Break and Enter Expert System"
- TR-12-97 "C.L.E.I.M.S. Canadian Law Enforcement Information Management System, A Major Case Management System"
- TR-13-97 "Radar Health and Safety Study - Executive Summary of TR-14-97"
- TR-14-97 "Radar Health and Safety Study - Complete Epidemiology Report"

PREVIOUS TECHNICAL MEMORANDA

2000

- TM-01-2000 "Evaluation of the Millennium Backsaver Suspender"
- TM-02-2000 "Needs Assessment for Microwave Imaging"
- TM-03-2000 "Nylon Duty Belt Field Trials"
- TM-04-2000 "Evaluation of the ResQ Disc"
- TM-05-2000 "Introduction to Security: Computer, Internet, Network Security (Secman2000)"

1999

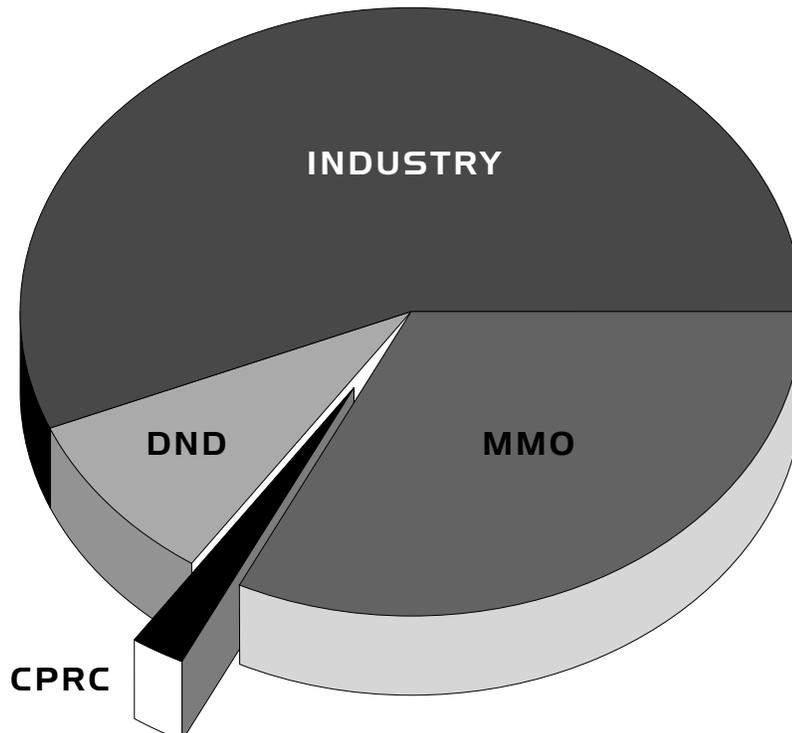
- TM-01-99 "Saving Court Time Using A Visual Presenter"
- TM-02-99E "Crime Scene Protocols for DNA Evidence"
- TM-02-99F "Protocole de recherche d'éléments de preuve génétiques sur les lieux du crime."
- TM-03-99 "Evaluation of International Colour Code System"
- TM-04-99 "Practical Applications of Digital Imaging in the Field of Forensic Firearms Identification"
- TM-05-99 "12 Gauge Bean Bag Ammunition Penetration"
- TM-06-99 "Laser Range Finders in Forensic Firearms Examination"

1998

- TM-01-98 "Comments on the Use of Capsaicin Spray"
- TM-02-98E "Common Chemical Techniques Used For Latent Fingerprint Detection"
- TM-02-98F «Techniques chimiques courantes de détection des empreintes digitales latentes»
- TM-03-98 "Improvements to Police Forage Cap Design"
- TM-04-98R "Prototype Audio/Video Transmitter/Receiver", Restricted
- TM-05-98 "Edge of Light Operational Assessment"
- TM-06-98 "Ampel Probe Evidence Collection Device"
- TM-07-98 "Emergency Equipment Mounting Bracket"
- TM-08-98 "OC Spray - A Review of its Possible Risks Including Carcinogenicity"
- TM-09-98 "Communicable Diseases Standards - Ontario Policing Standards Manual"
- TM-10-98 "Testing of Garment Components of Crowd Control Equipment in Relation to Protection Against Heat and Flame"
- TM-11-98 "Advanced Internet Investigations Course Evaluation Report"
- TM-12-98 "Testing of the Road Spike as a Tire Deflation Device"

1997

- TM-01-97 "Hot Meal™ Evaluation"
- TM-02-97 "Electronic Drug Detection Equipment "
- TM-03-97 "Nooklooker Evaluation"
- TM-04-97 "Body Cam Evaluation"
- TM-05-97 "Liquid Chalk Evaluation"
- TM-06-97 "Barefoot Comparison and Identification Research"
- TM-07-97E "Mobile Portable PC Prototype Project"
- TM-07-97F «Prototype de micro-ordinateur Mobile»
- TM-08-97 "Warthog Evaluation - Stop a High Speed Pursuit Before it Begins"
- TM-09-97 "Micro-Inspection Technology Update 1997"



DEVELOPMENT OF ENHANCED TORSO PROTECTION SYSTEMS

The Development of Enhanced Torso Protection Systems project, described elsewhere in this report, is a collaborative study spear-headed by the University of Waterloo. It is made possible by cash and in-kind contributions from industries concerned with the production of personal protective equipment (ACERAM Technologies Inc, Barrday, Biokinetics and Associates Limited, DEW Engineering and Development Ltd., and Med-Eng Systems Inc.). The project involves contributions from the Department of National Defence (DND) and researchers from DRDC Valcartier. The project is supported, as well, by Materials and Manufacturing Ontario (MMO) and the Canadian Police Research Centre (CPRC).

This project is an excellent example of the power of leverage or partnerships. No one group working alone could complete such a project but, working together, these industries and agencies are breaking new ground in this area of research.

Although CPRC's contribution of \$20,000.00 was only somewhat over 2% of the total value of the project, the involvement of CPRC was a factor in the participation of other partners. The total value of the project is \$932,100.00.

Other projects described in this publication are the result of similar collaborations.

EMERGING TECHNOLOGY SHOWCASE

The CPRC coordinated the 'emerging technology' section of BlueLine's RESPONSE 2002 police exhibition which was held at Le Parc Conference Centre, Markham, Ontario - April 22-24, 2002.

The purpose of the 'emerging technology' area is to allow new innovative technology developers the opportunity to present their ideas to the police community in a police exhibition setting. This helps the developers determine whether there is a market for their technological ideas. The no cost exhibition space allows new developers to gain valuable feedback from the police attendees.

The following companies attended the 'Emerging Technologies' area.

- Id-Mouse Inc. – Biometric fingerprint security device
Contact: Roland Walch, phone (514) 879-5656
rwalch@idmouse.com
- CAMI – Internet suspect profiling
Rene Deschenes, phone (514) 848-9945
rene@centredaffaires.qc.ca

- AcSys Biomerics Corp. – Biometric face tracking
Ashley Kelly, phone (905) 634-4111
akelly@acsysbiometricscorp.com
- IDENTIX - Secure invisible micro-taggant technology
Darel O'Shaunessey, phone (613) 584-2587
boshough@intranet.ca
- E- Witness – Wireless secure communication
Don Waugh, phone (416) 665-3566 ext 224
Waugh@e-witness.ca

If there are any police services or companies who believe they have a unique police product and wish to participate in next year's 'emerging technology' showcase, please do not hesitate to call John Arnold at (613) 993-3737.



FACIAL RECOGNITION TECHNOLOGY SHOWCASE

On February 28th, 2002, the CPRC hosted a technology showcase on facial recognition at the National Research Council in Ottawa. Approximately ninety people attended the showcase. The attendees were from the police community, industry and the government. Ottawa police Chief Vince Bevan, Chairman of the CPRC, welcomed them and suggested that they would learn about facial recognition and how it might be used in the police community.

The CPRC working in collaboration with the Ottawa company, VisionSphere Technologies (VST) is planning to launch a PS3 pilot project on facial recognition technology (FRT). This is the first PS3 project where promising technology is rolled-out to the police community providing them the opportunity, in a non-operational test bed environment, to evaluate promising technologies. The attendees were invited to become members of the pilot project called 'BlueBear'.

The FRT represents the human face into a digital "template" that is stored in a computer. The computer's rapid search capabilities can produce a "match" with varying degrees of accuracy from a facial recognition database.

VST was selected for this pilot project because it has developed an advanced, fully-integrated FRT system. Their inexpensive camera is software controlled dramatically improving the accuracy, reliability and scalability of the technology in operational conditions. Their unique software automatically converts existing mugshot pictures to a facial recognition bio-metric. This enables the police investigator the ability to carry out FRT searches using a captured suspect mugshot as well as, police artist composite sketch.

The pilot will also evaluate images extracted from video surveillance tapes, news video, passports, photographs and negatives to determine the degree of accuracy with this innovative FRT.

The major goal of project 'BlueBear' is to demonstrate the many benefits of this technology to clearly see if it is a worthwhile investigative tool in the police environment.

Phase I – FRT Stand Alone Evaluation [four months]

VST will provide a minimum of ten (10) FRT systems, at no cost, for the duration of the project. All the necessary hardware and software will be included for network-based suspect identification, using face recognition technology

The FRT system is portable. No special lighting is required. Enrolments normally take place within one minute; searches take place within seconds.



VST will provide training and technical support. Software will be provided to convert existing digital mug shot databases to FR. Participants will be asked to provide a written evaluation.

Phase II – Sharing Information Using FRT over a Secure Network [three months]

Police services will be provided access to a secure network linking them to the other pilot members databases.

The success of the pilot project will depend upon all police services adhering to a strict set of protocols. Each police service will co-operate, report and seek assistance for the duration of the project. Each department's database will remain under their ownership. The project will use a secure network to communicate and share information in a timely and cost-effective manner using facial biometrics. Police services, linked to BlueBear, will be able to quickly search mug shot records of all participating police departments, verifying identities, locating duplicates or multiple suspect identities.

As a result of the showcase, a number of police organizations have indicated their willingness to participate in this project. CPRC will be contacting them shortly to confirm their participation.

ASSISTANCE TO THE PRIVATE SECTOR

In addition to the companies involved in our projects and technology showcases, CPRC offers assistance to enterprises in the public safety field. Such assistance includes provision of information, consultation, brokerage, and general networking. The following is a listing of companies we have worked with in the past year. For more information on any of these companies or our services, please contact us at cprc@cprc.org.

- Academic Press - Publishing, London UK
- Advanced Systems Technology Canada – E-Learning, Miramichi NB
- Allwend Consultants – IT consultants, Ottawa ON
- Anjura Technology Corporation - Business processes, Ottawa ON
- Arnold Engineering – Riot Equipment – Northhampton, UK
- Biokinetics & Associates Ltd., Ottawa ON
- Business Watch – Pawn Shop System, Regina SK
- CAI Inc. - Software, Ottawa ON
- Caris Universal Systems – Geographical Information Systems, Fredericton NB
- Davtair Industries - Metal fabrication, Ottawa ON
- Disclosure Technologies – Digital CD security, Ottawa ON
- DiTek Software – Accident reconstruction, Markham ON
- D.M. Toddington and Associates – E-Learning, Vancouver BC
- DMC Dynamaps – Police geographical Information, Victoria BC
- ECRI - Geographical Profiling, Vancouver BC
- EDS – System Integrator, Ottawa ON
- EOD Performance - Bomb Disposal Equipment, Ottawa ON
- EWA – Intelligence systems, Virginia USA
- Highpoint Security – Special 'I' equipment, Morrisburg ON
- Imagis Technologies – Mugbook systems, Vancouver BC
- Innuktun Services – Robotics, Nanaimo BC
- INO – Vision systems, Quebec City QC
- Integrated Telecommunications Systems – Special 'I', Vancouver BC
- InTime Solutions – Scheduling systems, Burnaby BC
- InvestigAide Software – Expert systems, Ottawa ON
- IRISystems - Thermal imaging, Burnaby BC
- King Carter Inc. – Inventor, moulding expert, Kingston ON
- Learn Stream – E-Learning, Fredericton NB

- Lifelong.com - E-Learning, Ottawa ON
- Life-Safer, Inc. - Rescue device, San Diego CA
- Lojack Canada - Vehicle recovery, Toronto ON
- March Networks - Video systems, Kanata ON
- Med-Eng Systems Inc. – Bomb and riot suits, Ottawa ON
- NetNanny Software – Internet protection, Bellevue, Washington
- Noricum Trade and Investments Ltd. - Venture capital, Cyprus
- Phoenix Bio-Tech Corp. - Filtration/fume hoods, Toronto ON
- PredictiveIT – Application Service Provider, Ottawa ON
- Premier GPS – GPS systems, Calgary AB
- Reflex Technologies – Digital video, Belleville ON
- Safe-Loop.com – Email security, Ottawa ON
- StorageQuest – Digital storage systems, Ottawa ON
- SUN Microsystems – Computer systems, Ottawa ON
- The Halifax Group - Information Technology, Ottawa ON
- Ucora – Information systems, Vancouver BC
- Versaterm – Police information systems, Ottawa ON
- Whatman-Fitzco - Filtration, UK
- 4th Watch Systems – Information Technology, Toronto ON

NATIONAL RESEARCH COUNCIL'S INDUSTRIAL RESEARCH ASSISTANCE PROGRAM

IRAP Helping the Police by Supporting Industry

The police community does not frequently network with Canadian innovation community. One major objective of CPRC is to provide the opportunity for these two diverse communities to interact.

NRC's Industrial Research Assistance Program (IRAP) is a major Canadian player in the innovation community. IRAP provides Canadian industry with technical advice, linking companies with appropriate technologies and assisting industrial research, development and adaptation. IRAP's 270 Industrial Technology Advisors (ITAs) deliver this highly successful innovation program to Canada's small to medium-sized enterprises, thereby sharing risk in new product development. IRAP's 2001-02 contributory budget was approximately \$130 million.

IRAP works with CPRC's technical/operational experts to assist in evaluating potential IRAP projects in the police and security area. CPRC solicits operational feedback from police agencies as to whether the IRAP client's proposal addresses a true police need and whether it can save time and/or money.

Through the "Technology Partner Associate"(TPA) process, CPRC and IRAP together match their client needs (for the CPRC, the client is the police; for IRAP, the client is Canadian industry). The TPA process encourages the local ITA to deal directly with their local police community. Thus local police needs and local industry products can be dealt with on a decentralized basis.

This coming year the CPRC and it's partner the National Research Council are looking at setting up a 'Public Safety' sector group comprised of IRAP industrial advisors and CPRC technology partner associates. Together this national sector group will function as a regional mechanism that will bring public safety technology issues to the national table.

CPRC encourages the Canadian police community to contact us whenever they become aware of a potential police product, which may qualify for IRAP support. If you need assistance in identifying your local NRC-IRAP ITA, do not hesitate to contact the CPRC or call the National Research Council in you local phone book.

TECHNOLOGY PARTNER PROGRAM

The CPRC receives many requests from industry concerning new and proposed products or new technological ideas that might benefit the police community. As well, there are many technological ideas and requests arising from the police community. New products or ideas must be operationally evaluated by the police community, i.e., does it serve a police need, make the job easier, more effective or more cost efficient. On receipt, the CPRC sends the proposal to a Technology Partner Associate (TPA) in a police agency, who in turn circulates the idea within their department to get an operational opinion. This opinion is returned to the CPRC which then decides on the course of action.

In the case of a new prototype product, which might be the product of research or an idea from industry, the CPRC will want an operational opinion on its effectiveness. Most often these new ideas are in the form of a single prototype. The CPRC canvasses the TPAs to solicit evaluators who are interested in testing a prototype. If the CPRC is able to get a number of departments

to evaluate the product, they have a corresponding number of pre-production prototypes made and sent for evaluation under criteria that are set by the CPRC and industry. A report, addressing each of the criteria, is written by the department and submitted to the CPRC. This enables industry to provide a better final product. The evaluation of a new product is an interactive process which, in the end, provides a new and better device to the police community.

The Technology Partner Program also provides a mechanism for dissemination of some police technical information (reports, brochures, videos, etc.) received by CPRC.

The NRC/IRAP is of prime importance in the "technology partner" implementation. IRAP participation is encouraged in all regions of Canada by having the regional IRAP Industrial Technology Advisor (ITA) interact with the local police department. As noted earlier in this report, the IRAP ITAs are responding positively to the CPRC TPA network.

TECHNOLOGY PARTNER ASSOCIATES

POLICE SERVICE

Abbotsford
 Barrie
 Belleville
 Brandon
 Brockville
 Calgary
 Camrose
 Canadian Pacific Railway
 Delta
 Durham Regional
 Edmonton
 Fredericton
 Halifax Regional
 Halton Regional
 Hamilton
 Hull
 Kingston
 Lévis
 London
 Medicine Hat
 Miramichi
 National Defence - DND
 Defence R&D Canada - Valcartier
 New Westminster

 Niagara Regional
 Ontario Provincial Police
 Ottawa Police Service
 Peel Regional
 RCMP "D" - Winnipeg
 RCMP "E" - Vancouver
 RCMP "H" - Halifax
 RCMP "J" - Fredericton
 RCMP "K" - Edmonton
 Regina
 Revenue Canada
 Royal Newfoundland Constabulary
 S.P.C.U.M.
 Saint John
 Samia
 Saskatoon
 Sault Ste Marie
 Solicitor General
 Public Safety and Security
 Greater Sudbury
 Summerside
 Sureté du Québec
 Taber
 Thunderbay
 Toronto
 Vancouver
 Victoria
 Waterloo Regional
 Windsor
 Winnipeg
 York Regional

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 Ms. Barb Howse
 S/Sgt. Tony MacKinnon
 Chief F. Richard Bruce
 Chief Barry King
 Ms. Diana Bloom
 Insp. Damian Herle
 Insp. Bruce Berringer
 Sgt. Tom Davidson
 Supt. Greg Mills
 Ms. Carol Wagar
 Mrs. Michele Cronin
 S/Sgt. Daniel Young
 Mr. Keith Moore
 Sgt. Alison Hood
 Mme Sylvie Deschamps
 D/Chief Robert Napier
 Deny Blouin
 Sgt. Scott Blandford
 Insp. Gord Earl
 Sgt. Robert Bruce
 MWO Pete MacFarlane
 Mr. Phil Twardawa
 Chief Constable
 Lorne Zapotichny
 Det Constable Craig Moore
 C/Supt. John Carson
 Sgt. Gerry Doucette
 Insp. Len Favreau
 S/Sgt. Kevin Miller
 Insp. Jim Begley
 Cpl. Al Harding
 Sgt. Bernie Arbour
 Mr. Wing Mah
 Mr. Ron Davis
 Pierre Pilon
 Sgt. Robert Escott
 Alain Tonthat
 A/Deputy Chief Brian Fillmore
 Sgt. Frank Rodin
 Deputy Chief Dan Wiks
 Insp. Art Pluss
 J.P. Labonte
 Noreen Alleyne
 Ms. Liz Mazza
 Ian N. Drummond
 D/DG Normand Proulx
 Terry Dreddy
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 (506) 623-2124
 (613) 945-7279
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 (705) 759-7350
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 (705) 675-9171x2630
 (902) 432-1201
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PS3

(As mentioned last year, the public safety test bed initiative is now referred to as PS3.)

PS3 will be a research and development (R&D) cooperative - developing, testing and providing new public safety information technologies, services and products. These public safety information technology (IT) solutions, together with long distance training, will be delivered over a secure application service provider for the benefit of all law enforcement.

PS3's three core businesses will be:

- a non-operational secure virtual private network providing the eventual end-users of a technology the opportunity to participate in IT R&D
- the delivery of newly developed IT tools via the Internet resulting in low cost, low maintenance products for police participants
- the delivery of long distance training/ E-Learning for police via the Internet.

PS3 will allow small to medium-sized police departments, often called the "Technology Have Not" departments, the opportunity to participate in the Internet revolution that is sweeping the world. The concept is to develop IT tools that will enable front line police officers to do their work more efficiently and effectively. Development of these tools will involve a non-traditional reverse engineering approach whereby the grassroots police officer can provide input.

The following activity took place this past year:

- In April 2000, potential funding sources were considered through the Federal government's NRC Atlantic Initiatives program. Unfortunately this did not work out.
- In November 2000, the PS3 business case was drafted. It was recognized that getting regional support to a national project will require a regional PS3 presence.
- In December 2000, NRC was approached by a New Brunswick group led by the Fredericton police and the University of New Brunswick to host a regional PS3 site in Fredericton. This opportunity is actively being pursued.
- In April 2001, the Canadian Association of Chiefs of Police Board of Directors agreed to setup the PS3 organization under the CACP Research Foundation, a not-for-profit organization.

For the year 2001, two steering committees, E-Learning and Technology, are being established. These committees will be seeking input from the community. Four potential pilot areas for PS3 regional test beds in Canada have been identified – New Brunswick, Eastern Ontario, Alberta and British Columbia. It is anticipated that the PS3 office will be in operation by October 2001.

For further information on the PS3 initiative contact - John Arnold at (613) 993-3737 or by e-mail at John.Arnold@nrc.ca.

INTERACTION WITH OTHERS

The CPRC's mandate of developing police equipment for the Canadian police community naturally interests many organizations. The following lists some of the many agencies and the interactions that took place during the year:

BRITISH STANDARDS INSTITUTION (BSI) TECHNICAL SUB-COMMITTEE PH/3/12: "PROTECTIVE CLOTHING AND EQUIPMENT FOR USE IN VIOLENT SITUATIONS"

PH/3/12 was formed to assist the United Kingdom Police Service to comply with certain aspects of new, national health and safety legislation. PH/3/12's task is to prepare British Standards covering the personal protective equipment used by the police service. The scope of the work program covers personal defence shields, gloves, footwear, limb protectors, torso protectors and clothing (e.g.: flame-resistant riot coveralls). In 2000, CPRC along with police research organizations in the USA and Australia, was asked to join this committee whose membership includes the Association of Chief Police Officers of England and Wales (ACPO) and other British police organizations as well as PSDB, the Ministry of Defence (MoD), Department of Health (DoH), representatives of nine trade associations, three test houses, and other co-opted experts, academics, and medical advisers.

CRIMINAL INTELLIGENCE SERVICE OF ALBERTA (CISA), CRIMINAL INTELLIGENCE SERVICE OF CANADA (CISC), AND CRIMINAL INTELLIGENCE SERVICE OF ONTARIO (CISO)

The CPRC regularly attends CISA, CISC, and CISO technical seminars which address current police technology and equipment issues.

FEDERAL PARTNERS IN TECHNOLOGY TRANSFER (FPTT)

The Federal Partners in Technology initiative brings together the various federal science-based departments and agencies involved in technology transfer. In 2000, the RCMP joined this organization which provides excellent networking and learning opportunities. The CPRC is now able to participate fully in this organization as we shared a membership with the RCMP Intellectual Property Office.

FRENZY - FORENSIC SCIENCES AND CRIME SCENE TECHNOLOGY CONFERENCE AND EXPOSITION

CPRC attends the annual FRENZY conference and exposition in Washington DC. In 2001 the Manager of CPRC gave a presentation on CPRC's international and forensic science based projects.

INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE (IACP)

CPRC exhibited at the 2001 IACP Law Enforcement Education and Technology Exposition in Toronto. In addition to highlighting all CPRC products and services, we featured two of these - the Internet Security Manuals and Missing, an interactive educational software game. We also assisted three Canadian companies with emerging technologies - AutoVu Technologies (mobile license plate reading), P-CEL (automobile theft reduction and high speed chase elimination system), and VisionSphere (facial recognition), and enabled them to exhibit in close proximity to the CPRC booth.

NATIONAL CYBERCRIME TRAINING PARTNERSHIP (NCTP)

John Evans of CPRC continues to chair the international portfolio of the U.S. Department of Justice sponsored National Cybercrime Training Partnership (NCTP), a group tasked with addressing the development and standardization of computer crime training programs for police and prosecutors in the USA. Cybercrime investigations have begun to mature, and police organizations' response to training in this area is becoming more formalized and operationally oriented. Accordingly, it is hoped that CPRC's role in NCTP can be migrated to another organization within the Canadian Police Community over the upcoming year.

ONTARIO ASSOCIATION OF LAW ENFORCEMENT PLANNERS (OALEP)

As an associate member, CPRC representatives attend these meetings, contributing experience and expertise in the applications of technology. This organization is an excellent forum for the discussion of new ideas of current police interest.

UNITED KINGDOM HOME OFFICE POLICE SCIENTIFIC DEVELOPMENT BRANCH (PSDB)

A Memorandum of Understanding (MOU) is in place between PSDB and CPRC to establish a program of coordination and collaboration for the research, development, evaluation and operational use of law enforcement technologies and to enhance the already existing co-operation between the two agencies.

UNITED STATES DEPARTMENT OF JUSTICE NATIONAL INSTITUTE OF JUSTICE

CPRC has negotiated a Memorandum of Understanding (MOU) with the National Institute of Justice (NIJ) to establish a program of coordination and collaboration for the research, development, evaluation and operational use of law enforcement technologies and to enhance the already existing co-operation between the two agencies. In addition to a pre-existing cooperative research

and development agreement (CRADA) for the RCMP Laboratory's Forensic Automotive Paint Database, this MOU has led to joint projects with respect to the Firearms Reference Table (a software database) and a multi-hit test standard for soft body armour. As well, on-going cooperation exists on a wide range of topics including less-than-lethal technologies, high speed pursuit interdiction, personal protective equipment, contra-band detection etc.

US/CANADA BILATERAL COUNTER-TERRORISM RESEARCH AND DEVELOPMENT MEMORANDUM OF

Understanding
 CPRC's participation in this group provides a means of exchanging information and initiating joint projects with American colleagues. The manager of CPRC is the Canadian chair of two of this group's committees (Forensic and Investigative Techniques Committee and the Transition Advisory Panel).

UNIVERSITY OF ALBERTA

CPRC has been working with the University of Alberta and their Industrial Liaison Office to establish a closer working relationship between leading edge university R&D and the police community. This initiative holds much promise and has been met with enthusiasm by all participants. Of particular note is the University of Alberta's Computer Science department's world class status in data-mining and machine-learning. Also, the National Nanotechnology Centre is currently being constructed at the U of A. Nanotechnology is likely to create some of the most revolutionary products since the microchip, and will have tremendous and wide ranging impact over the next two decades. We plan to have the police community involved and taking advantage of it right from the start.

CPRC'S ROLE IN TECHNOLOGY TRANSFER



Some of our most innovative solutions come from our own employees. Police personnel faced with not having the proper tools for their jobs will often design and build a prototype themselves. Do you have a piece of equipment or software developed by yourself or unit? Does your daily work involve research and development? The creation of a new invention or the development of a new technology is an example of an IP asset.

Intellectual property can fall into several broad categories. Some are defined by statute and are referred to as 'hard' rights. These include those assets which can be protected by patent, trademark, copyright, industrial design, integrated circuit topography, and plant breeder rights. Others, referred to as 'soft' rights include trade secrets, know-how, and show-how. These really are assets and not only have value commercially but can assist you and your colleagues to do your jobs safely and effectively.

Collaboration with the private-sector is often the next step in order to design and build a prototype for field trial. Following such a successful trial the collaborator may wish to license the technology and take it to market.

The Canadian Police Research Centre can assist you in the technology transfer process and can provide general information regarding the management of IP assets.

A VIDEO-CASSETTE ENTITLED "INTELLECTUAL PROPERTY - PROTECTING YOUR TECHNOLOGY", IS AVAILABLE FROM THE CPRC UPON REQUEST BY FAX AT (613) 952-0156 OR EMAIL: cprc@nrc.ca.

SUBMITTING R & D PROPOSALS

At the centre of this annual report you will find a proposal form which is to be completed as fully as possible. A copy of the form will suffice for our purposes. An Executive Officer must sign the form (Chief of Police, Commanding Officer or equivalent).

The focus of the CPRC is research, development or evaluation of police equipment.

GUIDELINES FOR ACCEPTANCE AND ESTABLISHING PRIORITIES

“Can It Make A Difference”

RISK FACTOR	Frequency of potential use or occurrence
OPERATIONAL IMPACT	How widespread is the need in the community
DOLLAR IMPLICATIONS	Resource saving potential/dollar cost
PROGRESS/INNOVATION	Operational effectiveness and innovation
ATTAINABILITY	Technical risks and costs - adapt or create
PARTNERSHIPS	Potential for risk and cost sharing, degree of commercial viability

A project must fit one of the three categories to be included and the priority that will be assigned to it will be based on a review of the above factors. The results of the review based on the factors will be retained on the project file for reference.

CATEGORY A	Health and safety - protecting the Police in hazardous situations
CATEGORY B	Operational effectiveness - fighting crime, gathering information, intelligence and evidence
CATEGORY C	Protecting the public - traffic, custody, crime prevention,

As an illustration, a category B project that will save significant resources, be applicable throughout the community and is pretty sure of success may well be given the same or higher priority than a project that may protect a police officer in a hazardous situation that occurs very infrequently. Similarly protecting the public with a device that controls high speed chases simply and safely may well come first overall. The goal will be to effectively and as objectively as possible reflect the priorities of the overall police community and their clients.