ANNEX A

STATEMENT OF WORK

CONDUCTED ENERGY WEAPONS STRATEGIC INITIATIVE (CEWSI) MEDICAL EXPERT PANEL FORMATION AND LITERATURE REVIEW

1. **INTRODUCTION**

a. Objective. The objective of this Statement of Work is to describe the work that is required of an expert medical panel for the purpose of conducting an independent review of recent medical research related to the employment of Conducted Energy Weapons (CEWs). The objective is to examine the physiological impact of Conducted Energy Weapons, to identify research gaps and to recommend steps to address those gaps.

b. Background. Since the Conducted Energy Weapon was first deployed as a use of force option by Canadian law enforcement in 1998, a number of studies examining CEW usage have subsequently noted the lack of independent, peer reviewed, scientifically credible research concerning the safety of its usage. These studies include:

i. Commission for Public Complaints Against the RCMP (CPC) Final report on RCMP Use of CEW (June 18, 2008);

ii. Commission for Public Complaints Against the RCMP (CPC) Investigation Report Respecting the Death in RCMP Custody of Mr. Robert Dziekanski (December 8, 2009);

iii. Parliamentary Standing Committee on Public Safety and National Security (SECU) (June 18, 2008);

iv. Provincial reports, including most recently the British Columbia public inquiry chaired by Mr. Justice Thomas Braidwood (Braidwood inquiry) established to inquire into the death of Mr. Robert Dziekanski, and

v. An Independent review of the Adoption and use of Conducted Energy Weapons by the Royal Canadian Mounted Police (commonly referred to as the Kiedrowski report).

c. Acronyms

CEW – Conducted Energy Weapons
CEWSI – Conducted Energy Weapons Strategic Initiative
CSS – Centre for Security Science
DND – Department of National Defence
DRDC – Defence Research and Development Canada
PSST – Public Security Science and Technology
RCMP – Royal Canadian Mounted Police
PS – Public Safety

d. CEWSI Project. The Conducted Energy Weapons Strategic Initiative is being implemented as a project within the Canadian Police Research Centre (CPRC) program and will be managed by DRDC through the Centre for Security Science. The primary partner is DG Policing Policy at Public Safety Canada. The objectives of the overall project are to:

i. Develop a CEW test procedure and performance measures for current models in use in Canada as an immediate and interim measure to ensure CEWs are meeting manufacturer's technical specifications;

ii. Recommend a CEW test procedure and develop comprehensive performance measures for possible inclusion in a Canadian national guidance for CEW employment in Canada as part of an enduring capability;

iii. Convene a panel of medical experts to conduct an independent evaluation of existing research to examine the physiological impact of Conducted Energy Weapons (CEWs), to identify gaps in the research and to recommend steps to address those gaps, and

iv. Develop a Less Lethal Weapons approval process that could be applied to emerging less lethal technologies.

2. **SCOPE**

a. General. The work identified under this SOW will address only the third objective above. The other objectives will be dealt with through other mechanisms. The contractor shall convene a multi-disciplinary, expert medical panel to review existing medical research in order to examine the physiological impact of Conducted Energy Weapons, to identify research gaps and to recommend steps to address those gaps.

b. Questions to Be Addressed. The contractor shall focus the work on addressing specific areas of concern. These areas are identified in Appendix 1.

c. Tasks. To achieve this, the contractor shall perform the following tasks:

i. Task 1. Panel members to participate in a one-day workshop at DRDC Toronto or by video/teleconference where CEW experts will present a technical overview of the operation of the Conducted Energy Weapons used in Canada;

ii. Task 2 Review an initial sub-set of references provided by the Technical Authority, provide initial observations in response to the areas of concern identified in Appendix 1 and identify additional references or sources that are required to conduct a comprehensive review, and

iii. Task 3. Conduct a comprehensive review of the medical research to identify the physiological impact of CEW employment, determine research gaps and to make recommendations to address those gaps. For this task, the medical panel is not restrained to only considering those references provided by the Technical Authority.

d. Deliverables. The contractor shall provide the following deliverables:

Task	Deliverable	Date
1	Panel members to participate in a one-day workshop at DRDC Toronto	2 weeks after contract award
2	Deliver **Initial Report** identifying initial observations from preliminary review as well as areas that will be reviewed in more detail.	6 weeks after contract award
3	Deliver **Final Report** summarizing the results of the research reviewed, identifying research gaps and specific recommendations to address those gaps	6 months after contract award
All	Progress Reports – in contractor's format of choice	Monthly

3. **RESOURCES REQUIRED**

a. General. The contractor shall convene an independent expert medical panel of a composition sufficient to fully review the physiological effects of CEW employment.

b. Source of Expertise. Panel composition will be no greater than 20% non-Canadian members. The definition of Canadian is that they are living or working full-time in Canada.

c. Medical Expertise. A broad selection of medical expertise will be required to determine the physiological impact of CEWs. Expertise in the following areas will be needed to provide a complete review:

i. Cardiology (and electrophysiology)
ii. Cardio-respiratory physiology,
iii. Epidemiology,
iv. Neurology/neuroscience,
v. Endocrine physiology,
vi. Pathology,
vii. Medical statistics,
viii. Psychology/psychiatry,
ix. Emergency medicine, and
x. Biomedical Engineering.

d. Balance between Practitioner and Researcher. The proposed team shall have a balance between practitioners and researchers (including academia). No more than one third of the team shall be composed of practitioners.

e. Regional Representation. The results of this work must meet the needs of a diverse stakeholder group across the country therefore the expert medical panel shall include representation from three of the following four Canadian regions. For each region, the panel shall include representation from at least two provinces/territories:

   i Western (B.C., Alberta, Saskatchewan, Manitoba)
   ii. Central (Ontario, Quebec)
   iii. Maritimes (New Brunswick, PEI, Newfoundland/Labrador, Nova Scotia)
   iv. Northern (Yukon, NWT, Nunavut)

   In addition, at least one member of the panel shall be recruited from either the U.S. or U.K in order to provide an international perspective to the panel.

f. Independence. Independence of the panel is critical for the results to be accepted by the various stakeholder communities. All members of the expert medical panel will be required to submit a statement of disclosure indicating that they meet the terms of independence for this study. Research independence will be defined as follows:

   i. No panel member shall have ever had any financial interest (including as a shareholder) in any manufacturer of conducted energy weapons,
   ii. No panel member shall have received funding (including for research or as previous employment) from a CEW manufacturer,
   iii. No panel member shall have received funding (including for research or as previous employment) from any Canadian or foreign police service,
   iv. No panel member shall have previously published a pro or con professional opinion related to the safety of conducted energy weapons.

g. Research Assistants. The contractor is required to provide research assistance to the medical panel in locating and obtaining any additional references requested.

4. CONDUCT OF WORK

a. Location of Work. This work will be conducted at the contractor's location.
b. Language of Work. Contractor resources must be fluent in English as the vast majority of research in this field is in English. At least one of the resources must be fluent in French to allow the review/summary of research that is only available in French. The deliverables for this contract shall be provided in English.
c. Equipment and Software. There is no need for the purchase of special equipment or software to satisfy the requirements of this SOW. The contractor is expected to provide his/her own computer/laptop and word processing software.
d. Format of Deliverables. The Contractor is required to provide the Initial Report and the Final Report produced in MS Word (version 2003 or 2007). The report may be produced in either English or French.

e. Documents to be Provided to the Contractor. A number of literature reviews have been conducted previously. The reference documents identified in the following reports will be provided to the contractor for the preliminary review:
   i. Carleton University Literature Review
   ii. Saskatchewan Literature review
   iii Braidwood Inquiry Report

f. Purchase of Additional References. In the circumstances where requested references must be purchased, the contractor is to obtain the approval of the Technical Authority prior to purchase. In the case where the Technical Authority already has access to such references, the Technical Authority will make them available to the Contractor. If the Technical Authority does not already have access, then the Technical Authority will discuss with the Contractor prior to granting approval to the Contractor to purchase. All purchased references will remain the property of the Crown.

g. Progress Reports. The contractor is required to provide a monthly report in a contractor format to include: work completed over previous period, work planned for the next period and any issues encountered

h.. Security. The resulting report will be unclassified and only unclassified material will be consulted for the purposes of this contract.

i. Report Formats. The contractor will be required to deliver the Initial Report and Final Report in the format of a DRDC Contractor Report. This format will be provided to the contractor.

j. Medical Panel Support Team. The Technical Authority will provide the following technical resource to support the expert medical panel:

   Electrical Engineer. An electrical engineer with detailed knowledge on the functioning of the current models of CEW will be available for the panel to consult.

Appendix 1 – Questions for Expert Medical Panel

The contractor will be asked to focus the work of the expert medical panel on the following questions:

1. What are critical medical risks (e.g., ventricular fibrillation, atrial, ventricular arrhythmias, respiratory arrest, hypoxia, etc.) of using CEW's on individuals who may have pre-exiting cardio respiratory disease(s) including coronary artery disease, congestive heart failure, pneumonia, asthma, obstructive airway disorders, cardiac electro-conductive disorders, and the risks associated with these ?

2. Are there, and if so, what are other unknown health conditions that may constitute a medical risk for CEW use?

3. What are critical medical risks of using CEW's on individuals receiving medications for diseases, including cardiovascular, metabolic, neurological disorders, as well as psychological disorders?

4. What are critical medical risks of using CEW's during pregnancy?

5. What are critical risks of CEW use to specific organ systems, including muscles, skin, kidneys (including secondary disorders such as rhabdomyolysis), pulmonary, neurological, lymphatic system and/or nodes?

6. What are the critical medical risks of CEW's use on individuals with history of mental illness, developmental disorders, organically-derived psychotic disorders, or individuals receiving psychotropic medications;

7. What are the medical risks of using CEW's in adolescence?

8. How are 'high-risk" and/or special populations (e.g., adolescents, pregnant women, diabetics, those physically challenged) recognized and defined and who may be at risk during CEW use?

9. Should a comprehensive medical literature review include literature from biophysical (computer-based) modeling, human analogues and animal (primate and swine models) studies?

10. How will the literature review be compared and contrasted to the Canadian Task Force of Preventive Health Care rankings?

11. What are defined as the normal electrophysiological tolerances to electrical shock, and how do they compare and contrast to those delivered by CEW's including main phase and net charge, and pulse rate from CEW's?

12. What is the state-of-the-art in unexplained immediate and latent (including post-incarceration) death during non-CEW use criminal arrests, and CEW-use arrests; describe the pathophysiology and epidemiology. Can these be related to CEW use?

13. Describe in depth, the pathophysiological and psychological literature associated with "excited delirium", and describe risks, medical physiology and neuropsychological mechanisms, risks, symptoms and all available treatments

14. What are the long-term consequences of CEW use in normal humans?

15. Describe treatment protocols for acute consequences of CEW use in normal humans

16. What are possible long-term or potential long-term sequelae of CEW's