

Solicitation No. - N° de l'invitation

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

W7702-175836/A

edm607

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No./N° CCC - FMS No./N° VME

W7702-175836

EDM-6-39233

ANNEX "A" - STATEMENT OF WORK
1. TITLE

COUNTER-IED EXPLOSIVE TRIAL ENGINEERING SUPPORT – TASK AUTHORIZATION CONTRACT

2. BACKGROUND

DRDC – Suffield Research Centre is conducting a multi-year project to counter the threat from Improvised Explosive Devices (IED) to enhance the survivability of Canadian Armed Forces (CAF) personnel, vehicles and equipment. In support of this R&D program, Suffield Research Centre has a requirement for a Contractor to support Suffield Research Centre in developing and executing scientific testing, in analysis and reporting of data, and in the design, modification and maintenance of experimental equipment/facilities. Suffield Research Centre requires these services on an as-and-when task authorization requested basis.

To illustrate the scope of this work, one part is described in some detail below. This discussion, centred around the homemade explosives (HME) and IED disruptors, is not meant to be complete or exhaustive, or to define the entire scope of this contract; rather, it is intended to illustrate the types of activities that might be required under a given Task Authorization Statement of Work.

2.1 Homemade Explosive Disruption Enhancement

Improvised Explosive Devices vary in design, function, and the type of components used in their construction. Energetic tools (i.e., disruptors) can be used to defeat IEDs by severing the explosive train before the detonator can initiate the main explosive load. Limitations in IED defeat (IEDD) energetic tools can result in undesirable results, such as detonation or destruction of forensic evidence. IEDs evolve to match the tools and standard operating procedures (SOPs) that are used by friendly forces (threat evolution cycle). For example, IED design can be modified to defeat IEDD tools, and the use of non-ideal explosives or homemade explosives (HME) can make the IED sensitive to energetic tools.

The Suffield Research Centre's multi-year project studying HME IED threats includes an experimental programme which will be complemented by numerical modelling and experimental support of the IED neutralization process using waterjet disruptors. The objective of this phase of the project is to conduct numerical modelling and data analysis to provide a better understanding of (i) the mechanisms of disruptor water jet formation, (ii) the interaction of the jet with the explosive and IED components, and (iii) the explosive dispersal and reactivity. The final goal is to create a tool that an EOD operator can use to select the appropriate disruptor for a given threat (i.e., the Tool-to-Threat Matrix).

3. ACRONYMS

CG	Controlled good
DRDC	Defence Research and Development Canada
EPG	Experimental Proving Ground
GFE	Government furnished equipment
GSM	Government supplied material
HME	Homemade explosives
IED	Improvised explosive device
IEDD	IED defeat
SOW	Statement of Work
TA	Technical Authority

4. Blank

Solicitation No. - N° de l'invitation

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

W7702-175836/A

edm607

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No./N° CCC - FMS No./N° VME

W7702-175836

EDM-6-39233

5. TASKS

5.1 Trial Site and Experimental Coordination

As defined in the Statement of Work for a given Task Authorization, the Contractor will provide personnel for coordinating trials and experimental activities on and off the Experimental Proving Ground (EPG). The Contractor's duties will include:

- (a) coordinating and conducting trials in support of testing on the EPG;
- (b) supporting field trials and maintaining EPG experimental test sites including the 1.8 metre blast tube and the smaller blast tubes, the Mine Effects Site, Multiburst, Flash X-Ray, the UNDEX pond, and other locations; and
- (c) communicating with all personnel involved with trials at EPG facilities, which involves providing and managing additional subcontracted technical and engineering support personnel, and coordinating with military personnel, DRDC managers, scientists, technologists, and all other field support personnel.

5.2 Maintenance and Repair of EPG Experimental Facilities

The Contractor will provide maintenance and repair of research equipment and facilities as defined in the Statement of Work for a given Task Authorization. These duties will include:

- (a) performing repairs, upgrades, and alterations of trial site equipment and facilities at EPG sites as needed to ensure proper operation; and
- (b) performing repairs, upgrades, and alterations as needed on instrumentation, control systems, and tools to ensure proper data collection at various EPG sites, including data acquisition systems, gauges, cabling, photo-instrumentation systems, and 3D printers, because high quality measurements must be achieved with minimum loss of data and reliable values.

5.3 Specialized Design and Manufacture of Experimental Apparatuses, Software, and Targets

The Contractor will provide specialized design of experimental apparatuses, software, and targets. As defined in the Statement of Work for a given Task Authorization, the Contractor will design experimental apparatus for measurements of explosion dynamics and blast effects, which may involve the following:

- (a) numerical modeling to establish the design parameters;
- (b) producing technical drawings of apparatus for construction and machining;
- (c) providing technical support for assembly of apparatus and installation of instrumentation for experiments;
- (d) supporting the development of experimental software and analysis tools; and
- (e) operating 3D printer equipment.

5.4 Assistance in Performing Field Trials and Experimental Research Tasks

The Contractor will support ongoing experiments in the area of HME neutralization. These duties will include:

- (a) preparing target holders/stands/containers;
- (b) setting up and tearing down experimental apparatus;
- (c) installing and removing pressure transducers, accelerometers, cabling, and other instrumentation;
- (d) assisting with data acquisition dry runs; and
- (e) consolidating data into an electronic media format such as PDF or database.

Assistance with performing various field trials will be required in other Counter-IED research areas. As defined in the Statement of Work for a given Task Authorization, the Contractor will:

Solicitation No. - N° de l'invitation

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

W7702-175836/A

edm607

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No./N° CCC - FMS No./N° VME

W7702-175836

EDM-6-39233

-
- a) set up explosion dynamics trials at EPG sites, including preparation of apparatus and instrumentation;
 - b) assist in trial firings by working together with personnel in technical support teams, such as instrumentation, photo support, explosive technicians, and trial safety officers;
 - c) conduct data reduction and analysis, collect and organize recorded trial data, provide data reduction and analysis of underwater (UNDEX) experimental data, and perform numerical modeling of explosive phenomena as needed to support data analysis; and
 - d) finalize reduced data for inclusion in reports, presentations, and other electronic media deliverables.
 - e) off-site engineering materials testing. The contractor will collect material samples and initiate testing at accredited off-site laboratories in accordance with standards specified by the Technical Authority. The Contractor will provide analysis and/or engineering interpretation of test results as defined in the Statement of Work for the Task Authorization.

6. DELIVERABLES

6.1 Deliverables for task 5.1

The deliverables will consist of successful field trials and research activities.

6.2 Deliverables for task 5.2

The deliverables will consist of fully operational test facilities, which will include functional cabling and equipment to support the deployment of apparatuses and instrumentation.

6.3 Deliverables for task 5.3

The deliverables will consist of designs and/or functional apparatuses, software, and targets for use in field trials. This may include source files, executables, numerical simulations or drawings as necessary using MATLAB, SolidWorks, Autodesk Inventor, AutoCAD, or other format suitable to the TA.

6.4 Deliverables for task 5.4

The deliverable will consist of providing engineering and technical support for preparation of trials including preparation of the trial site, preparation of testing rigs and test articles, installation of gauges and instrumentation, assisting DRDC Suffield trials support personnel in carrying out and completing trials, and post-trial clean-up of the DRDC Suffield test facilities.

The deliverables will consist of reduced and analyzed data from trials. The data and analysis results will be delivered in an electronic format specified by the TA. If numerical modeling is required to support the data analysis or experimental design, all input and output files will be delivered in electronic format to the TA.

7. DATE OF DELIVERY

All deliverables will have specified dates within each Task Authorization Statement of Work.

Funding - Period of contract

Cash Phasing:

FY 16/17 \$100,000.00

FY 17/18 \$150,000.00

Option Period:

FY 18/19 \$125,000.00

Exercise of option period and funding will be provided via formal amendment if invoked.

Solicitation No. - N° de l'invitation

W7702-175836/A

Client Ref. No. - N° de réf. du client

W7702-175836

Amd. No. - N° de la modif.

File No. - N° du dossier

EDM-6-39233

Buyer ID - Id de l'acheteur

edm607

CCC No./N° CCC - FMS No./N° VME

Total overall potential value of contract \$375,000.00 + GST \$18,750.00 = \$393,750.00

TA-1 attached. This will be the first task issued once the contract is awarded.

8. LANGUAGE OF WORK

English only will be used for all forms of communication.

9. LOCATION OF WORK

The work must be performed at the contractor site and at DRDC:

Defence Research and Development Canada – Suffield Research Centre
Experimental Proving Ground
Ralston, AB.
Canada

10. TRAVEL

The travel requirements will be stated in each Task Authorization Statement of Work.

11. MEETINGS

The Contractor will attend weekly meetings in person, as well as phone or email communications, in order to keep the TA informed of progress.

12. GOVERNMENT SUPPLIED MATERIAL (GSM)

If required, the GSM will be stated in each Task Authorization Statement of Work.

13. GOVERNMENT FURNISHED EQUIPMENT (GFE)

As defined in specific Task Authorization Statements of Work, the Contractor will receive access to the DRDC Suffield test facilities and their operational equipment, potentially including the site computing system and the transducer calibration test lab, including documentation. If required, the GFE will be stated in each Task Authorization Statement of Work.

Other than that identified in the Task Authorization Statement of Work, the Contractor must provide any necessary computer, internet, email, and/or cellular phone which may be necessary. Contractor access to government computers, internet connections, and telephone networks is not guaranteed.

For the purposes of this contract, the Contractor will have access to DRDC Suffield facilities during normal operating hours (0700-1700hr Mon-Thurs and 0800-1500hrs Fri). Access during silent hours will be arranged with the TA when needed.

14. SPECIAL CONSIDERATIONS

The contractor is responsible to ensure all employees, subcontractors and their employees are certified in WHMIS.

The work involves access to Controlled Goods (CGs), therefore, the Contractor must comply with the Controlled Goods requirements in the Contract. In addition to being involved in explosive trials, both land-based and underwater, the Contractor will be providing design, engineering, construction, installation, maintenance and general technical support relating to vehicles, unmanned ground and air vehicles, and counter-IED systems, and installation support for various vehicle and Counter-IED systems. These systems and activities are captured throughout section 2, and in section 6-11 of the Guide to Canada's Export Controls, and in the Schedule to the Defence Production Act.

Solicitation No. - N° de l'invitation

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

W7702-175836/A

edm607

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No./N° CCC - FMS No./N° VME

W7702-175836

EDM-6-39233

15. SECURITY

Security clearance requirements up to the level of secret will be indicated on each individual task.

16. CONTROLLED GOODS

This requisition involves CGs. In addition to being involved in explosive trials, both land-based and underwater, the Contractor will be providing design, engineering, construction, installation, maintenance and general technical support relating to vehicles, unmanned ground and air vehicles, and counter-IED systems and installation support for various vehicle and Counter-IED systems. These systems and activities are captured throughout section 2, and in section 6-11 of the Guide to Canada's Export Controls, and in the Schedule to the Defence Production Act.

17. DRDC-SUFFIELD GENERAL CONTRACT SAFETY & SECURITY REQUIREMENTS

17.1 General Experimental Proving Grounds (EPG) Safety and Access Information

In accordance with DRDC Suffield regulations, all Contractor employees and subcontractors participating in Experimental Proving Ground (EPG) activities that are not escorted by DRDC Suffield personnel or the DRDC-authorized Contract principal will attend a general EPG safety briefing lasting approximately one (1) hour at the Field Operations Section (FOS). This briefing will take place annually for long standing Contracts and new or additional Contractor employees or subcontractors will be required to take the briefing before beginning work.

An access permit is required for non-DND vehicles travelling on the EPG. In addition, a two-way radio, compatible with the DRDC Suffield communication system, will be supplied for safety reasons. Other forms/briefings related to safety and security may be required.

17.2 Work Specific Safety Briefing

Contractors employees or subcontractors supporting DRDC Suffield personnel on specific Field Trial Plans (FTP's), Standing Operating Procedures (SOP's), Study Approval Form (SAF), or other procedure will attend work-specific briefings by the DRDC Technical Authority (TA) lasting approximately one (1) hour relating to health, safety, environmental and emergency response procedures. Documentation including FTP's, SOP's, SAF or other procedures, safety standards and EPG regulations will be cited or made available to the Contractor employees or subcontractors on a loan basis for reference, as applicable.

17.3. Observance of On-Site Safety, Health and Environmental Standards on Protection of Property

The Contractor, their employees and subcontractors must comply with all DND/DRDC Suffield regulations in force at the worksite, including the observance of all safety, health and environmental standards and those in place to preserve and protect DND property from loss or damage from all causes including fire.

17.4. Compliance

The Contractor is responsible to ensure that all employees and subcontractors that will be working on the site are fully briefed and have completed and signed the Safety Checklist prior to the start of any portion of the on site work. A copy of the signed checklist must be provided by the Contractor to the DRDC Suffield Technical Authority.