CITY OF CHICAGO
DEPARTMENT OF PURCHASES,
CONTRACTS AND SUPPLIES
ROOM 403, CITY HALL, 121 N. LA SALLE ST.

JNCP Form Rev 9/97

JUSTIFICATION FOR NON-COMPETITIVE PROCUREMENT

COMPLETE THIS SECTION IF NEW CONTRACT(S)

For contract(s) in this request, answer applicable questions in each of the 4 major subject areas below in accordance with the Instructions for Preparation of Non-Competitive Procurement Form on the reverse side.

Request that negotiations be conducted only with MED-ENG SYSTEMS (Name of Person or Firm) for the product and/or services described herein.

This is a request for: ____ (One-Time Contract per Requisition # __________, copy attached) or X Term Agreement or ____ Delegate Agency (Check one). If Delegate Agency, this request is for "blanket approval" of all contracts within the ______________________ (Program Name) (Attach List)

Pre-Assigned Specification No. __________

Pre-Assigned Contract No. __________

COMPLETE THIS SECTION IF AMENDMENT OR MODIFICATION TO CONTRACT

Describe in detail the change in terms of dollars, time period, scope of services, etc., its relationship to the original contract and the specific reasons for the change. Indicate both the original and the adjusted contract amount and/or expiration date with this change, as applicable. Attach copy of all supporting documents. Request approval for a contract amendment or modification to the following:

Contract #: __________ Company or Agency Name: __________

Specification #: __________ Contract or Program Description: __________

Mod #: __________ (Attach List, if multiple)

Originator Name	Telephone	Signature	Department	Date
MICHAEL P. PALUMBO	5-5794	[signature]	POLICE	10/13/06

Indicate SEE ATTACHED in each box below if additional space needed:

(X) PROCUREMENT HISTORY

See Attached

S. S. R. B.
DATE 10/23/06
APPROVED
CONDITIONALLY DWY
APPROVED
RETURN TO DEPT.
DISAPPROVED

(X) ESTIMATED COST

See Attached

(X) SCHEDULE REQUIREMENTS

See Attached

(X) EXCLUSIVE OR UNIQUE CAPABILITY

See Attached

* Conditional approval pending submission of revised cost estimates for expenditures over the life of the contract.

(X) OTHER

See Attached

APPROVED BY: [signature] DEPARTMENT HEAD OR DESIGNEE for [signature] — DATE 10/13/06

[signature] BOARD CHAIRPERSON — DATE 10/23/06

PROCUREMENT HISTORY (INCLUDING FUTURE PROCUREMENT OBJECTIVES)

1. **Describe the requirement and how it evolved from initial planning to its status.**

1) The Bomb Squad currently has 17 Explosives Technicians assigned to the unit. The unit is expanding this year with the addition of four Explosives Technicians. There are three response vehicles in the city and one at O'Hare Airport. There are a minimum of 2 response vehicles on the street in the city and one at O'Hare every day. Additional response vehicles are utilized for dignitary protection, special events, multiple events, training, and other contingencies. Each response vehicle needs at least one bomb suit, preferably two. The suits come in four sizes: small, medium small, medium, and large. The suits are partially composed of Kevlar which degrades with time and wear. The suits are under warranty for seven years.

2. **Is this a first time requirement or a continuation of previous procurement from the same source? If so, explain the procurement history.**

2) The Explosive Protective Suits and accessories designed by Med-Eng have been accepted and used by the Chicago Police Department's Bomb Squad for the past 9 years. All of our bomb suits have been purchased through Med-Eng.
Vendor: Med-Eng Systems Inc. 2400 St. Laurent Blvd., Ottawa ON Canada
Tel: (613) 739-9646 www.med-eng.com

3. **Explain attempts made to competitively bid the requirement. (Attach copy of notices and list of sources contacted)**

3) Allen Specialist Security Equipment, ISP Inter-American Security Products and Vanguard Response Systems Inc were contacted as possible vendors.

4. **Describe all research done to find other sources. (List other cities contacted, companies in the industry contacted, professional organizations, periodicals and other publications used).**

4) Law enforcement agencies comprising the Great Lakes Bomb Technicians Association were consulted, and concurred that because of Med-Eng Inc. leading role in research and development of advanced explosive protection systems; their Explosive

Protective Suits provide the best technology in protection. Additionally, all of the agencies had reported to use the Med-Eng bomb suit exclusively. This is the Bomb Suit in which all Explosives Technicians throughout the country have been trained in at the Hazardous Devices School operated by the FBI at Redstone Arsenal, Huntsville Alabama. All of the Chicago Police Explosives Technicians received their basic training utilizing the Med Eng bomb suits and have utilized the Med Eng bomb suits through out their entire career.

5. **Explain future procurement objectives. Is this a one-time request or will future requests be made for doing business with the same source?**

5) All future requests will be made with the same supplier. The helmets, power packs, hoses and other accessories are all compatible and interchangeable with current bomb suits.

6. **Explain whether or not future competitive bidding is possible. If not, why not?**

6) The selection of Med-Eng Inc as the preferred supplier in a **Non-Competitive Procurement** is based on their ability to deliver their product in a timely manner in addition to providing on site training and affordable repairs if needed

ESTIMATED COST " ESTIMATED COST "

1. **What is the estimated cost for this requirement (or for each contract, if multiple awards contemplated)? What is the funding source?**

Total pricing for the aforementioned items would be approximately $ 35,460.00 with the funding being generated by Buffer Zone Protection Grant (copy attached). The recommended life expectancy of the Protective Ensemble is 7 years.

2. **What is the estimated cost by fiscal year, if the job project or program covers multiple years?**

2) N/A

3. **Explain the basis for estimating the cost and what assumptions were made and/or data used (ie. Budgeted amount, previous contract price, current catalog or cost proposal from firms solicited, engineering or in-house estimate, etc).**

3) The basis of cost is a price quote which was obtained directly from Med-Eng.

4. **Explain whether the proposed Contractor or the City has a substantial dollar investment in original design, tooling or other factors which would be duplicated at City expense if another source was considered. Describe cost savings or other measurable benefits to the City which may be achieved.**

4) N/A

5. **Explain what negotiation of price has occurred or will occur. Detail why the estimated cost is deemed reasonable.**

5) Pricing is as stated on the obtained price quote. Based upon the quality of the Med-Eng equipment, in addition to the continued engineering advancements and live testing of same, the cost proposal is deemed to be reasonable

SCHEDULE REQUIREMENTS "SCHEDULE REQUIREMENTS"

1. **Explain how the schedule was developed and at what point the specific dates were known.**

1) The schedule was developed based upon the seven year life expectancy of the current bomb suits.

2. **Is lack of drawings and /or specifications a constraining factor to competitive bidding? If so, why is the proposed Contractor the only person or firm able to perform under these circumstances? Why are the drawings and specifications lacking? What is the lead time required to get drawings and specifications suitable for competition? If lack of drawings and specifications is not a constraining factor to competitive bidding, explain why only one person or firm can meet the required schedule.**

2) N/A

3. **Outline the required schedule by delivery or completion dates and explain the reasons why the schedule is critical.**

3) The life expectancy of the current inventory of bomb suits and the expansion of the unit dictates the scheduled delivery

4. **Describe in detail what impact delays for competitive bidding would have on City operations, programs, costs and budgeted funds.**

) The most recognizable and distinctive safety item worn by the Explosive Technician is the Explosive Protective Suit. Being a crucial item which is utilized while dealing with explosive devices, the Explosive Protective Suit provides a steady protective platform. In an inevitable multiple event incident, the shortage of equipment necessary to perform Render Safe Procedures due to a delay caused by a competitive bidding process, would seriously compromise the safety of the general public and that of the responding officers. Therefore, the schedule requirement is of sufficiently high priority.

EXCLUSIVE OR UNIQUE CAPABILITY "EXCLUSIVE OR UNIQUE CAPABLITY"

1. **If contemplating hiring a person or firm as a Professional Service Consultant, explain in detail what professional skills, expertise, qualifications, other factors make this person or firm exclusively or uniquely qualified for the project. Attach copy of cost proposal and scope of services.**

1) N/A

2. **Does the proposed firm have personnel considered unquestionably predominant in the particular field?**

2) Med-Eng Inc. employs personnel predominant in EOD research and development.

3. **What prior experience of a highly specialized nature does the person or firm exclusively possess that is vital to the job, project or program?**

3) Med-Eng Inc. employs former police EOD Technicians from all over Canada and the U.S.

4. **What technical facilities or test equipment does the person or firm exclusively possess of a highly specialized nature which is vital to the job?**

4) Med-Eng Inc. maintains their own testing facilities for equipment testing, as well as their own test lab

5. **What other capabilities and/or capacity does the proposed firm possess which is necessary for the specific job, project or program which make them the only source who can perform the work within the required time schedule without unreasonable costs to the City?**

5) Med-Eng Inc. has their own production facility, which is capable of producing 70 bomb suits and 45 helmets per week, depending upon material availability.

6. **If procuring products or equipment, describe the intended use and explain any exclusive or unique capabilities, features and/or functions the items have which no other brands or models, etc. possess. Is compatibility with existing equipment critical from an operational standpoint? Explain why.**

6) Med-Eng Inc. manufactures the **only** EOD suit in the world with SCBA capability, which is mandatory during any WMD chemical/nuclear/biological incident. Additionally, as illustrated in previous examples, Med-Eng Inc's unique capabilities include but are not limited to:

- Compatible items to be added to existing equipment and systems.
- Physical design characteristics to satisfy all requirements set forth by EOD federal requirements
- The requested equipment is essential in maintaining safety while performing EOD duties.

Attachments provided will map specific functional and performance strategies engineered by Med-Eng Inc and summarize their unique capabilities

7. **Is competition precluded because of the existence of patent rights, copyrights, trade secrets, technical data, or other proprietary data? Attach documentation verifying such.**

7)The EOD 9 suit and helmet is patent pending

8. **If procuring replacement parts and/or maintenance services, explain whether or not replacement parts and/or services can be obtained from any other sources? If not, is the proposed firm the only authorized or exclusive dealer/distributor and/or service center? If so, attach letter from manufacturer.**

8) N/A

MBE/WBE COMPLIANCE PLAN

1. **All submissions must contain detailed information about how the proposed firm will comply with the requirements of the City's Minority and Women Owned Business program. All submissions must include a complete C-1 and D-1 form, Which is available on the Procurement Service page on the City's intranet site.**

Non-Stated Goals is requested due to company being foreign-based. As with all previous contracts, which had full waivers, there is no realistic opportunity for MBE/WBE participation.

OTHER "OTHER"

1. **Explain other related considerations and attach all applicable supporting documents (an approved Information Technology Strategy Committee (ITSC) form, an approved Request for Individual Contract Services form, etc.)**

REVIEW AND APPROVAL "REVIEW AND APPROVAL"

This form must be signed by both the Originator of the request and approved by the Department Head or authorized designee. After review and final disposition from the Board, this form will be stamped to indicate the final disposition and signed by the Chairperson of the Board Head or authorized designee. After

DPS PROJECT CHECKLIST

For DPS Use Only	
Date Received	
Date Returned	
Date Accepted	
CA/CN's Name	

IMPORTANT: PLEASE READ AND FOLLOW THE INSTRUCTIONS FOR COMPLETING THE PROJECT CHECKLIST AND CONTACT THE APPROPRIATE UNIT MANAGER IF YOU HAVE ANY FURTHER QUESTIONS. ALL INFORMATION SHOULD BE COMPLETED, ATTACH ALL REQUIRED MATERIALS AND SUBMIT FOR HANDLING TO THE DEPARTMENT OF PROCUREMENT SERVICES, ROOM 403, CITY HALL, 121 N. LASALLE STREET, CHICAGO, ILLINOIS 60602.

GENERAL INFORMATION:

Date: 10/13/06
REQ No.: 30435

Contact Person: Michael Palumbo
Tel: 5-5794 **Fax:** 5-6841 **E-mail:** @cityofchicago.org

PO No.: (if known):

Project Manager:
Tel: **Fax:** **E-mail:** @cityofchicago.org

Modification No.: (if known):

Previous PO No.: (if known):

Project Description: MED-ENG BOMB SUITS

FUNDING:

City:	☐ Corporate	☐ Bond	☐ Enterprise	☐ Grant*	☐ Other
State:	☐ IDOT/Transit	☐ IDOT/Highway		☒ Grant*	☐ Other
Federal:	☐ FHWA	☐ FTA	☐ FAA	☐ Grant*	☐ Other

LINE	FY	FUND	DEPT	ORGN	APPR	ACTV	OBJT	PROJECT	RPTG	$ DOLLAR AMOUNT
1	005	0M01	57	0571005	0400	220400			05C506	
2	005	0M01	57	0571005	0400	220400			05C50K	

Estimated Value $ DUR

*IF GRANT FUNDED, A COPY OF THE APPROVED GRANT AND APPLICATION ARE REQUIRED and any other Terms and Conditions that may apply.

SCOPE STATEMENT:

☒ Attached is a Detailed Scope of Services and/or Specification

IMPORTANT: THIS IS A CRITICAL PORTION OF YOUR SUBMITTAL. IN ORDER FOR DPS TO ACCEPT YOUR SUBMITTALYOU MUST COMPLETE THE SPECIFIC SCOPE REQUIREMENTS AS SET FORTH IN THE SUPPLEMENTAL CHECKLIST FOR THAT UNIT.

The following is a general description of what should be included in a Scope of Services or Specification:
A clear description of all anticipated services and products, including: time frame for completion, special qualifications of prospective vendors, special requirements or needs of the project, locations, anticipated participating user departments, citation of any applicable City ordinance or state/federal regulation or statute.

TYPE OF PROCUREMENT REQUESTED (check all that apply):

NEW REQUEST
- ☒ Blanket Agreement
- ☐ Standard Agreement
- ☐ Small Orders

MOD/AMENDMENT
- ☐ Time Extension
- ☐ Vendor Limit Increase
- ☐ Scope Change/Price Increase/Additional Line Item(s)
- ☐ Other (specify):

FORMS: ☒ Requisition ☐ Special Approvals ☐ Non-Competitive Review Board (NCRB)

CONTRACT TERM: 3yR+2 **Requested Term (number of months):** 60 MONTHS

PRE BID/SUBMITTAL REQUIREMENTS:

Requesting Pre Bid/Submittal Conference? ☐ Yes ☐ No Requesting Site Visit? ☐ Yes ☐ No

CITY OF CHICAGO
PURCHASE REQUISITION

Copy (Department)

DELIVER TO:	REQUISITION: 30435
801 BOMB & ARSON SECTION 3340 W. FILLMORE Chicago, IL	PAGE: 1 DEPARTMENT: 57 - DEPARTMENT OF POLICE PREPARER: Michael P Palumbo NEEDED: APPROVED: 10/9/2006

REQUISITION DESCRIPTION
Med-Eng Bomb Suits
SPECIFICATION NUMBER: 51717

COMMODITY INFORMATION

LINE	ITEM	QUANTITY	UOM	UNIT COST	TOTAL COST
1	6802201010	3.00	Each	0.00	0.00
	BOMB PROTECTION DEVICES AND SUPPLIES - BOMB SUIT, SIZE SMALL				

SUGGESTED VENDOR: REQUESTED BY: Michael P Palumbo

DIST	BFY	FUND	COST CTR	APPR	ACCNT	ACTV	PROJECT	RPT CAT	GENRL	FUTR	Dist. Amt.
1	005	0M01	0571005	0400	220400	0000	00000000	05CS0G	00000	0000	0.00

LINE TOTAL: 0.00

LINE	ITEM	QUANTITY	UOM	UNIT COST	TOTAL COST
2	6802201012	4.00	Each	0.00	0.00
	BOMB PROTECTION DEVICES AND SUPPLIES - BOMB SUIT, SIZE MEDIUM				

SUGGESTED VENDOR: REQUESTED BY: Michael P Palumbo

DIST	BFY	FUND	COST CTR	APPR	ACCNT	ACTV	PROJECT	RPT CAT	GENRL	FUTR	Dist. Amt.
1	005	0M01	0571005	0400	220400	0000	00000000	05CS0G	00000	0000	0.00

LINE TOTAL: 0.00

LINE	ITEM	QUANTITY	UOM	UNIT COST	TOTAL COST
3	6802201014	3.00	Each	0.00	0.00
	BOMB PROTECTION DEVICES AND SUPPLIES - BOMB SUIT, SIZE MEDIUM SMALL				

SUGGESTED VENDOR: REQUESTED BY: Michael P Palumbo

DIST	BFY	FUND	COST CTR	APPR	ACCNT	ACTV	PROJECT	RPT CAT	GENRL	FUTR	Dist. Amt.
1	005	0M01	0571005	0400	220400	0000	00000000	05CS0K	00000	0000	0.00

LINE TOTAL: 0.00

LINE	ITEM	QUANTITY	UOM	UNIT COST	TOTAL COST
4	6802201016	5.00	Each	0.00	0.00
	BOMB PROTECTION DEVICES AND SUPPLIES - BOMB SUIT, SIZE LARGE				

SUGGESTED VENDOR: REQUESTED BY: Michael P Palumbo

DIST	BFY	FUND	COST CTR	APPR	ACCNT	ACTV	PROJECT	RPT CAT	GENRL	FUTR	Dist. Amt.
1	005	0M01	0571005	0400	220400	0000	00000000	05CS0K	00000	0000	0.00

LINE TOTAL: 0.00

REQUISITION TOTAL: 0.00

Where a commodity is for a particular or unique use other than standard quality, grades, color, size or other characteristics, give details of how it will be and for what purpose.
Requisitions prepared incorrectly will be returned to the using department.

SCOPE OF WORK FOR BOMB SUITS

GENERAL SCOPE OF WORK

Vendor will provide Chicago Police Department with this department's standardized and only authorized bomb suits manufacturer by Med-Eng Systems of Ontario, Canada. Vendor will deliver said bomb suits F.O.B., City of Chicago.

COMPENSATION AND INCREASE

Use standard City "Price Increase" language.

CONTRACT TERM AND EXTENSION

Three (3) year initial with two (2) one (1) year extension options.

MBE/WBE/DBE COMPLIANCE

Non-Stated Goals is requested due to company being foreign-based, so there is no realistic opportunity for MBE/WBE participation.

USER DEPARTMENT CONTACTS

Explosive Technician III
3340 W. Fillmore
Chicago, Illinois 60624
phone: 312-746-7619
fax: 312-746-7689

WARRANTY/GUARANTEE

Standard seven (7) year manufacturer warranty

DETAILED SPECIFICATION

REQUIRED ENSEMBLE

Vendor will provide Explosive Ordinance Disposal (Bomb Suit), model number EOD 9 Suit and Helmet. Color will be Olive Drab. Sizes will be Large, Medium, Medium, Small and Small. Sizes are same for both helmet and suit. Refer to Exhibit 1 and Exhibit 2 for detailed specifications.

EOD 9 Suit

Product Specification

PS0109

Revision: D

November 2004

Med-Eng™

www.med-eng.com

2400 St. Laurent Blvd.
Ottawa, ON Canada K1G 6C4
T: 1-613-739-9646
1-800-644-9078 (N. America)
F: 1-613-739-4536
eod@med-eng.com

NOTE: **The information contained in this Product Specification takes precedence over any prior document with regards to the current product description and performance.**

1.0 NAME

EOD 9 Bomb Disposal Suit

2.0 MODEL NO.

EOD 9

3.0 DESCRIPTION

3.1 Purpose

The EOD 9 Suit has been engineered to provide superior protection against the threats of an explosive blast: overpressure, fragmentation, impact and heat. The most ergonomic full coverage ensemble in the industry today, the EOD 9 Suit has achieved an unprecedented optimal balance between protection and flexibility through the meticulous distribution of protective materials over the body. A sliding groin plate easily retracts to allow for crouching, bending and climbing movements. The EOD 9 Suit has been designed to provide maximum protection, while still permitting a high degree of flexibility and comfort to facilitate the conduct of operational duties.

3.1.1 Explosive Blast Threats

Overpressure refers to the sudden and drastic rise in ambient pressure associated with the blast wave generated by the detonation of an explosive device. Excessive levels of overpressure damage the internal organs, possibly leading to permanent damage or death. The overpressure wave, when it impacts the body, can induce violent levels of acceleration. Due to the resulting impact, a range of injuries, ranging from minor to unsurvivable, can occur. Further to this initial acceleration, deceleration injuries can occur when a person impacts directly against a rigid surface or obstacle after being set in motion by the force of the blast. Fragmentation emanating from an explosive device also poses a potentially lethal threat. Injuries from fragments include cuts in soft tissues, as well as injuries to the internal organs. Finally, the heat generated by the fireball (particularly in the case of an incendiary device) that is generated upon detonation can lead to burning.

3.2 Design

The EOD 9 Suit (standard configuration) includes:

- Jacket with Universal Patchcord
- Integrated Groin Protector (IGP)
- Trousers with Back Protector
- Detachable Boot Covers
- Grounding Strap
- Carry Bag
- Steel Hanger (for drying only)
- User Manual & CD

3.2.1 Jacket & Patchcord

The jacket provides protection to the entire front and back torso. The high profile collar integrates with the helmet visor to provide continuous protection to the neck region. A blast attenuation system, incorporated into the jacket, reduces the effects of blast overpressure. The groin plate is retractable to facilitate crouching, bending and climbing movement. A patchcord is routed through the jacket to accommodate the use of an EOD or SRS helmet and a communications system (if desired). The jacket also features pockets and straps for carrying tools and radios. A pouch on the back of the jacket accommodates an optional Hydration System.

3.2.2 Integrated Groin Protector (IGP)

The IGP provides 360° blast and flame protection to the groin and buttock area without impeding comfort or leg movement. The IGP extends down to overlap with the upper-thigh area of the trousers where elastic VELCRO® straps secure the IGP against the trousers. The IGP attaches to the front and back of the trouser waistband via VELCRO® and is adjustable for waist size.

3.2.3 Trousers, Back Protector & Boot Covers

The trousers provide full coverage against fragments. They are designed to articulate according to normal operational functions and therefore do not compromise comfort and flexibility. A combination of soft and hard ballistic material layering provides reinforcement over the frontal leg region to protect against a wide range of fragmentation threats. An anthropometrically designed high-impact absorbing back protector is attached to the trousers via the suspender system. The back protector incorporates articulating hard plastic, backed by a hybrid density foam laminate that effectively reduces and evenly redistributes impact away from the spinal area to the side regions of the back. Detachable boot covers snap to the bottom of the trouser legs to provide protection to the top of the feet.

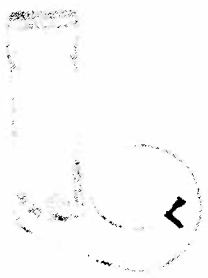
3.2.4 Carry Bag

The knapsack style carry bag is made from durable nylon fabric and features heavy duty zippers. The bag opens flat to provide a clean work surface during the dressing procedures.

4.0 OPTIONS

Hydration System:

2 L reservoir and supply tube. Reservoir fits in a pouch on the back of the suit.



5.0 PHYSICAL PROPERTIES

5.1 Sizing

The EOD 9 is available in four sizes: small, medium-small, medium and large. Each size is adjustable to properly fit all individuals within each range.

Small	Small-Medium	Medium	Large
Height	**Height**	**Height**	**Height**
157 -173 cm (5'2"– 5'8")	165 -175 cm (5'5"- 5'9")	173 -188 cm (5'8"- 6'2")	189 -198 cm (6'3"- 6'6")
Weight	**Weight**	**Weight**	**Weight**
50 - 68 kg (110 - 150 lbs)	60 -73 kg (130 -160 lbs)	68 - 100 kg (150-220 lbs)	100 -120 kg (220-265 lbs)

5.2 Colour

Standard Available Color: Olive Drab (Front Pouch and Elbows - Black)

Navy Blue and Desert Tan are subject to material availability.

5.3 Component Weights

The following table provides component weights for a size medium EOD 9 Suit:

Component	Weight (kg)	Weight (lbs)
Jacket with Chest and Groin Plates	17.5	38.5
Trousers and Back Protector	7.8	17.2
Boot Covers (detachable)	0.95	2.1
IGP	1.7	3.7
TOTAL	**28**	**61.5**

Note: Tolerance +/-5%. The actual weight of each suit may vary slightly from the nominal weight due to the cumulative effect of small differences in the overall dimensions of many layers of soft ballistic fabric that comprise the suit.

5.4 Materials

Component	Material
Outer Shell	Kevlar/Nomex Blend Fabric, Nomex Thread
Blast Plate Pouch	1000 Denier Nylon
Zippers	Brass
Attachment System	Nylon Webbing, VELCRO® Hook & Loop, Acetal
Protective Inserts – Soft Components	Layered Aramid Fiber, Contained in Water-Repellant Nylon
Protective Inserts – Rigid Components	Polycarbonate, Steel, Foam, UHMWPE (Ultra High Molecular Weight Polyethylene

6.0 PROTECTIVE PERFORMANCE CHARACTERISTICS

6.1 Fragmentation Protection

The bulk of the weight in any EOD/IEDD protection system comes from the fragmentation resistant armor. In an effort to optimize the protection whilst maintaining an acceptable weight and bulk, the fragmentation protection on the EOD 9 suit is layered. This means that the protection level is divided into priority zones. The highest priority protection zones are areas of the body where a critical or fatal injury can be suffered (brain, spinal cord, soft organs in the chest and abdominal region). Second priority zones are areas where a severe life threatening injury can be suffered (head, torso, abdomen, pelvic region, thighs down to the knees). Tertiary priority zones are areas where a serious non-immediately life threatening injury can be suffered (lower legs, arms).

Fragmentation protection has also been optimized with respect to the cost (including medical, rehabilitation and disability costs) of fragmentation injury associated with specific body zones. For this reason, protection over the knees and bony structure of the lower legs has been significantly enhanced. The protection provided by the front of the suit is significantly higher than that of the rear, as current RSP doctrine states that a bomb technician should always face an explosive device that may detonate. Notwithstanding, the EOD 9 offers 360° blast protection.

Tests have been performed using the 17 grain Chisel Nose FSP fragment simulator and using the MIL-STD-662F Test Specification.

Component	V-50 (meters/second)	V-50 (feet/second)
Jacket Body Front	600	1968
Jacket Front, Chest	V0: 1800	V0: 5904
Jacket Front, Groin	V0: 1800	V0: 5904
Jacket Body Rear	560	1837
Sleeves	560	1837
Collar Front Center	850	2788
Collar Sides	600	1968
Collar Rear	560	1837
IGP Front	600	1968
IGP Rear	250	820
Trousers Front Thighs	690	2263
Trousers Front Shins	620	2033
Trouser Knees	850	2788
Trousers Rear	250	820
Boot Cover	450	1476

V-50 testing is a statistical tool used for evaluating the penetration resistance of materials involved in ballistic armour to specific laboratory fragment simulators. The V-50 test is used extensively in ballistic material design, in tandem with product development, and may also be used as a means of quality control. Under some conditions, it may also be used to compare relative performance of fragmentation resistant materials or armour, so long as the materials are identical in basic construction, e.g., comparing aramid soft body armour. The V-50 limit cannot be used to compare dissimilar armour constructions, e.g., soft versus rigid materials. Care must be taken when interpreting V-50 ratings due to the fact that the probability of an explosive device fragment having the exact same physical properties as the simulated fragment used during testing are essentially non-existent. There are a number of different fragment simulators, both in terms of shape and size, thus it is necessary to stipulate the precise simulator that is being used to arrive at a V-50 value for objective comparisons. Although standardized test methods exist for V-50 determination, there still exist subtle variations in carrying out the actual test between different laboratories/manufacturers, which may lead to small variations in the V-50 results.

6.2 Full Scale Blast Testing

The EOD 9 suit has been extensively tested against explosive devices in order to evaluate its effectiveness in the face of a realistic threat.

To carry out this testing, anthropomorphic test devices, i.e., automotive crash test mannequins (the HYBRID II model), representative of a 50th percentile North American male subject (height: 1.75 m, 5'9", mass: 77 kg, 170 lbs), were fully dressed in protective EOD 9 ensembles and subjected to blasts from high explosives. Prior to each test, the mannequins were placed on a specially designed positioning apparatus and supported in the standing position by means of an anchored small diameter steel pipe slipped underneath each armpit. These stands allowed the mannequins to freely fall back when the force of the explosion would hit them, thus not interfering with their natural response.

The mannequins used in these tests were instrumented to measure their global acceleration and the blast overpressure at their sternum.

Four different blast test conditions were used. The first involved having the mannequins kneel to face a spherical 0.567 kg C4 charge at chest height (0.70 m) at a 0.60 m standoff (see photo 1). The second condition involved having the mannequins stand to face a spherical 3.6 kg C4 charge placed 1.0 m above the ground and 1.5 m from the mannequin (see photo 2). The last two blast conditions used larger charges of explosive – 5.1 kg and 10.0 kg C4, packed into square cylindrical shape (i.e. charge diameter equal to its length, so that the charge resembles a sphere) and located 1.0 m above ground level - while the mannequins faced the blast standing at 2.4 and 3.0 m, respectively (see photos 3 & 4). The charges were rested on a cardboard stand set onto a steel plate.

Photo 1: 0.567 kg C4, 0.6m Standoff Distance

Photo 2: 3.6 kg C4, 1.5m Standoff Distance

Photo 3: 5.1 kg C4, 2.4m standoff distance

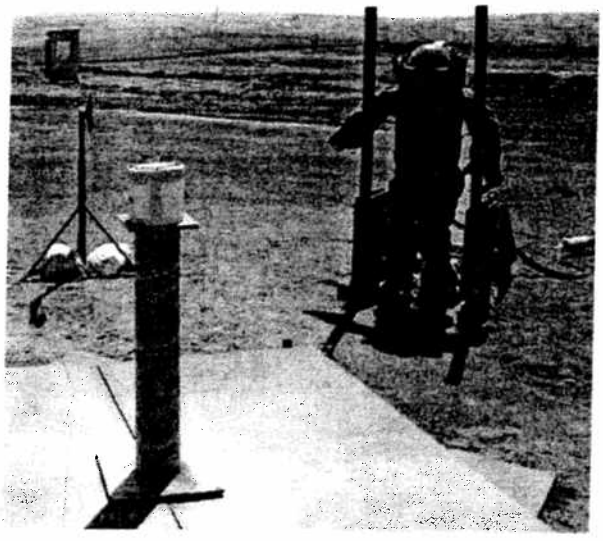


Photo 4: 10.0 kg C4, 3.0m standoff distance

The preceding four photos show the test setup used to derive these performance specifications. The anthropomorphic mannequin was dressed in the EOD 9 Helmet and Suit to face detonation of various C4 charges at a range of standoff distances.

6.2.1 Chest Overpressure

The overpressure associated with the blast wave created by an explosion, can cause considerable injury to the technician who is not wearing a suit designed to dissipate the blast. Vital organs in the chest are particularly susceptible to compressive and shear type internal injuries from the transmitted pressure wave and the loading on the chest walls.

The EOD 9 Suit has been extensively tested, under various blast conditions using instrumented anthropomorphic test devices (mannequins) in order to determine its blast overpressure attenuating capability.

Peak values of overpressure measured on the chest of mannequins during blast tests are illustrated in the following table. Moreover, the average measured percentage reduction in peak chest overpressure is also shown.

		Measured Peak Chest Overpressure (in bar)		
Charge size (kg C4)	Standoff distance (m)	Average for unprotected mannequin	Range for EOD 9 suit	Average % Reduction for EOD 9 suit
0.567	0.6	70.8	1.64 - 1.84	97%
3.6	1.5	Not tested	2.80 - 3.70	-
5.1	2.4	22.86	1.77 - 3.20	89%
10.0	3.0	31.16	2.80 - 4.31	87%

This table shows that the EOD 9 suit permits a 97% reduction (on average) in peak chest overpressure when facing small charges at close standoffs (e.g. 0.567kg C4 from a standoff of 0.6m). Such a charge causes an extremely large peak chest overpressure in unprotected cases (70.8 bar), but with the EOD 9 suit in place, the peak chest overpressure experienced is well below 2 bar.

The table above also shows that the EOD 9 suit permits an average reduction of at least 87% in peak chest overpressure when facing charges of the order of a few kilograms from standoff distances like those recommended for EOD operations (e.g. 5.1kg and 10.0kg from distances of 2.4m and 3.0m respectively).

6.2.2 Acceleration

When an explosive device detonates, a blast wave is produced which propagates from the device in all directions. When the blast wave collides with the bomb technician, several degrees of blast induced body accelerations are generated on various parts of the body. With the EOD 9 suit in place, the injury threshold (which corresponds to a gross chest acceleration exceeding 60g's for more than 3ms) is never exceeded, according to results from full-scale blast testing using mannequins, when facing:

- 0.567 kg C4 at a standoff distance of 0.6m in a kneeling position (charge 0.7 m above the ground)
- 5.1kg C4 at a standoff distance of 2.4m in a standing position (charge 1m above the ground), and
- 3.6kg C4 at a standoff distance of 1.5m in a standing position (charge 1m above the ground)

The EOD 9 suit provides a 65% reduction in peak gross chest acceleration (range 61 - 68%) compared to unprotected when facing 10kg C4 at a standoff distance of 3m in a standing position (charge 1m above the ground), according to results from full-scale blast testing using mannequins. In those tests, the duration for which the signal exceeds 60g's is, on average, 3.19ms when the EOD 9 is worn, compared to 4.14ms for the unprotected mannequin.

NOTE: **Chest acceleration measurements derived from Hybrid II mannequins may not reflect actual human chest accelerations as the structure of such mannequins was not designed for the purposes of blast loading.**

6.3 Deceleration

Acceleration caused by the blast wave will generally cause the bomb technician, or individual body parts, to be uncontrollably propelled from the original position. This can lead to a secondary impact (or deceleration), usually with a solid surface such as the ground or other obstacle. When motion of the body is halted as a result of collision with the ground or other obstacle, a range of deceleration type injuries can take place. The spine and spinal cord are delicate structures for which impact injuries can lead to long term disabilities, including paralysis. The EOD 9 Suit therefore incorporates a back protector to minimize the possibility of back injury. The back protector has been tested against impact loading velocities that are likely to be experienced when an individual hits the ground following an explosion. It is very important that the back protector remains over the spinal region at all times to offer maximum protection.

When positioned on a semi-cylindrical anvil and hit by an impactor of 10 kg, falling from a height of 0.86 m (impact energy approx. 80 J), the back protector limits experienced impact to 95 g's.

6.4 Heat Protection

The fire retardant outer shell protects against heat flash associated with munitions, anti-personnel mines and pyrotechnics. All components provide excellent protection against an intense thermal load. Areas of the suit which contain rigid protective inserts (chest, groin, spine, shins) provide heat insulation five to ten times greater than areas of the suit which are composed only of soft aramid material (sleeves, rear trousers, rear jacket in areas not covered by back protector).

In thermal radiation tests, representative samples from the EOD suit were exposed to the radiant heat flux for 400 s (the radiant flux attained values of 22 kW/m^2, which is a sufficient intensity to ignite paper within seconds). After this time (the "heating phase"), the heat was removed and the temperature at the rear side of the sample recorded for another 400 seconds (the "cooling phase").

In these tests, after the first 120 seconds, no recognizable temperature increase was recorded for samples that represented jacket torso, knee and front thigh laminations. Maximum increases of 10 °C (18 °F) and 35 °C (63 °F) were observed for the laminations representing the front and rear sleeves, respectively. No laminations representing the rear leg were tested.

In the fire impingement tests, a 1 cm thick layer of gasoline-based napalm (typically 100g) was placed over a 15.2 cm x 15.2 cm (6" x 6") area of the samples and remotely ignited. The temperature at the back of the sample was recorded by means of two thermocouples. 120 seconds after igniting the napalm, the maximum temperature increase was 15 °C (27 °F) behind the rear sleeve laminations. Results for all other laminations fell well below this value. The pain threshold of 40 °C (104 °F) was not exceeded before approximately 240 seconds.

Maximum heat protection is provided on the front of the suit, with decreased protection at the rear. If a technician is exposed to the effects of an incendiary device on the rear of the suit, the jacket and helmet are designed to be removable in less than 10 seconds (unassisted).

7.0 COMPATIBLE PRODUCTS

EOD 9 Helmet

Recommended for use with the EOD 9 Suit, the EOD 9 Helmet offers the highest level of protection of any bomb disposal helmet designed by MES. The EOD 9 Helmet features a platform design to accommodate visors suited to standard EOD/IEDD and CB operations.

EOD 8 Helmet

Entirely compatible with the EOD 9 Suit, the EOD 8 Helmet provides excellent protection for EOD/IEDD operations.

EOD Hand Protection System

Provide fragmentation protection for the hands.

HW 300 Communications System

Designed specifically for EOD/IEDD teams, the HW 300 is a hardwire radio system that should reduce the risk of inducing radio frequency signals into an explosive device. The system includes a combined remote control module and spool, 125 m (410') of low friction cable, command post module, tape recorder and carry bag.

BCS3 Series Body Cooling Systems

The BCS3 is a personal cooling system that helps to control the user's core body temperature to reduce the risks associated with heat stress and extend mission time. The system is available in both alkaline and rechargeable models.

Remote Handling Tools and Tool Kits

MES offers a range tools including: TM 500C Telescopic Manipulator, Hotstic Robotic Manipulator, Trooper Remote Engagement System, Search/Inspection Mirrors, Series 5000 Shields, Advantage Hook and Line Kits, Advantage Clamp Kit, HDT Tool Kit.

Chemical Protective Undergarment (CPU)

The CPU provides a level of protection against a range of potentially hazardous agents.

EOD 9 Helmet

Product Specification

PS0093
Revision: E

April 2005

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NOTE: The information contained in this Product Specification takes precedence over any prior document with regards to the current product description and performance.

1.0 PRODUCT NAME

EOD 9 Bomb Disposal Helmet

2.0 MODEL NO.

EOD 9

3.0 DESCRIPTION

3.1 Purpose

The EOD 9 Helmet has been designed to provide protection from the four threats of a blast in a user-friendly and comfortable manner, in order to reduce user fatigue, increase operating times, and further enhance user security. Backwards compatible to EOD 8, EOD 7B, and SRS 5 suits, the EOD 9 Helmet features an interchangeable visor system to accommodate both standard EOD/IEDD and missions involving improvised explosive devices (IEDDs) that may contain chemical or biological (CB) agents.

3.1.1 Explosive Blast Threats

Overpressure refers to the sudden and drastic rise in ambient pressure associated with the blast wave generated by the detonation of an explosive device. Excessive levels of overpressure damage the ears, possibly leading to permanent hearing loss. When the overpressure wave impacts the head, it can induce violent levels of acceleration. The resulting impact can cause a range of concussive injuries, ranging from minor to unsurvivable. Further to this initial acceleration, deceleration injuries can occur when a person impacts directly against a rigid surface or obstacle after being set in motion by the force of the blast. Fragmentation emanating from an explosive device must also be considered as this can form a potentially lethal threat. Injuries to the head from fragments include cuts in soft tissues, as well as injuries to the brain, brain stem, face, and eyes. Finally, the heat generated by the fireball (particularly in the case of an incendiary device) upon detonation can cause burns.

3.2 Design

The EOD 9 Helmet features an open faced, multi-purpose platform design achieved through two interchangeable protective visors that can be mounted on a common helmet shell base. The first visor is suited for standard EOD/IEDD operations, while the second visor accommodates a Breathing Apparatus (face mask or respirator) for operations where a Chemical or Biological agent is suspected.

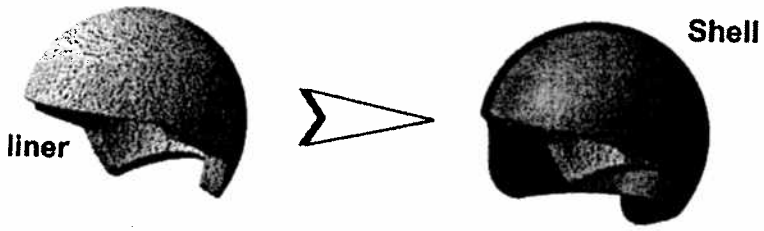
The helmet shell is composed of advanced composite materials to offer superior blast and fragmentation resistance, while providing industry leading comfort and flexibility. On board electronics permit a range of user-desirable capabilities, including an environmental awareness system (EAS) with stereoscopic separation in listening capability. A compact profile, dual fan ventilation system is anchored on the EAS module at the rear of the helmet. This system supplies fresh air to the interior of the visor via integrated internal channels. A wrist-mounted Remote Control Module allows the user to conveniently control all helmet functions and monitor battery life.

The EOD 9 Helmet Platform includes the following features :

- Extensively Adjustable Comfort Liner System
- 4 Point Retention System
- Onboard Power Supply
- Remote Control Module
- Communications System Compatibility
- EOD and Breathing Apparatus (BA) Visor Compatibility (both visors feature built-in searchlights)

3.2.1 Helmet Shell & Impact Liner

The EOD 9 Helmet shell is made from composite material designed for "multi-threat" (CBRN as well as standard EOD/IEDD) environments. The shell provides a level of fire, ultraviolet, moisture, and chemical resistance.



3.2.2 Comfort Liner System

Each EOD 9 Helmet is supplied with a set of comfort liners and fit pads allowing for extensive fit customization. Comfort liners attach easily to the impact liner, allowing for the hygienic use of one helmet by several users. Constructed from flame-resistant foam and fabric, the comfort liners and pads are hand washable.

Small (2cm Fit Pads)

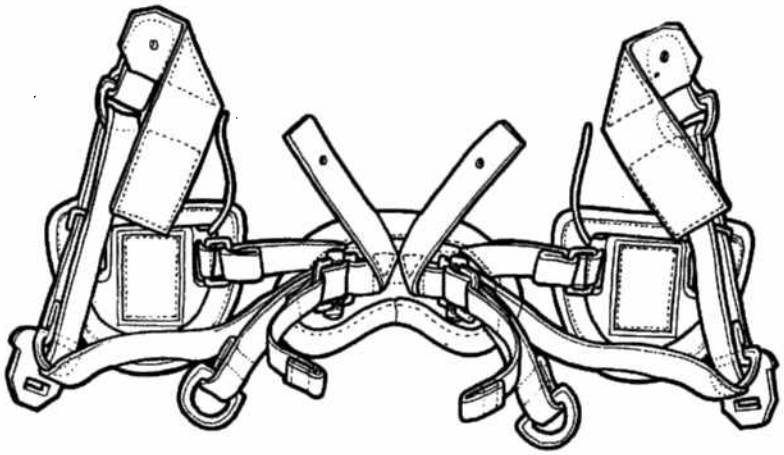
Medium (1cm Fit Pads)

Large (No Fit Pads)

Helmet ships with medium comfort liner installed.

3.2.3 Retention System

The EOD 9 Helmet retention system uses a unique integrated chin and nape strap to provide four-point comfort and stability. The retention system attaches to the helmet shell at the temples and at two points at the nape. The resulting effective weight redistribution enhances user comfort and allows for increased operating times without fatigue. From a safety and stability perspective, four-point retention prevents lateral and front-to-back rolling of the helmet on the head.



3.2.4 Ventilation System

The EOD 9 Helmet Ventilation System is low profile and relatively quiet. Intake of air is integrated on the helmet shell in a compact design with no external protrusions. Two low noise ventilation fans are mounted on rear of helmet shell with internalized ducting of the airflow. The system provides air to the inside of the helmet at a rate of 90 litres/minute in the normal mode and 110 litres/minute in Turbo mode. A replaceable heated visor demister appliqué (optional) can be mounted on inside of visor. The demister plugs into an outlet on one side of the helmet to receive power.

3.2.5 Communications

The EOD 9 features a built-in microphone and set of speakers that interface with a chosen (optional) communications system (either hardwire or wireless). The speakers also interface with the Environmental Awareness System (EAS).

System Bandpass	160 Hz to 6 kHz
Maximum Input Level	1 Volt Peak to Peak
Maximum Output Level	1 Volt Peak to Peak
Input Impedance	1 kΩ
Output Impedance	100 Ω to 10 Ω @ 150 Hz to 6 kHz

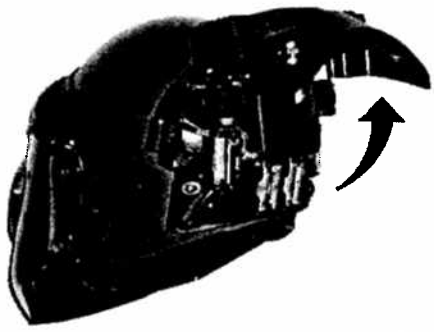
3.2.6 Environmental Awareness System (EAS)

The EOD 9 Helmet incorporates an Environmental Awareness System (EAS) that is linked to speakers inside the helmet. Through the helmet-mounted, omni-directional microphone and stereo amplification system, the EAS allows the user to hear ambient sounds and to distinguish from which direction a sound originates. The EAS is fully compatible for use with existing duplex communication systems such as the HW-300 hard wire communication system, as well as with wireless systems. A built-in Automatic Gain Control (AGC) automatically increases or decreases volume levels inside the helmet to ensure optimal comprehension and sound quality, as a function of ambient sound level. This feature does not interfere with other electronic devices. Electronics are physically protected to permit safe use in a range of environmental conditions.

3.2.7 Onboard Power Supply (OPS)

The OPS, housed in a protective enclosure to minimize exposure to the external environment, is powered by 8 AA batteries. A set of alkaline batteries will last up to 5 hours 20 minutes depending on the load applied. A set of rechargeable Nickel Metal Hydride (NiMH) batteries provides an operating time of up to 4 hours 20 minutes for the same load. The OPS can be daisy chained to an APS or IPS if additional time is required.

Note: The OPS cannot be connected to the 7B Power Supply. The helmet will not function.



3.2.8 Remote Control Module

The remote control module controls all helmet functions: ON/OFF, Ventilation, EAS and Searchlights. The remote attaches to the sleeve of the EOD suit for convenient access.

3.2.9 Visors (EOD & BA)

The Visor Base (layer which forms the overall shape of the visor) is constructed from thermoformed polycarbonate and composite materials. The Outer Visor is constructed from thermoformed clear PMMA (Poly Methyl Methacrylate) and fastened to the base. A Steel Visor Add-On (optional) fits over the EOD Visor to provide additional protection.

3.2.10 Searchlights

The Searchlights are built into the top of the visor and plug into the jack on the right side of the helmet. The angle of the lights can be manually altered. Searchlights are operated via the Remote Module.

3.2.11 Alternate Power Supply (APS)

In combination with the OPS, the APS (with alkaline batteries) will increase operation time up to 8 hours and 50 minutes, depending on which helmet functions are used.

4.0 OPTIONS

EOD Helmet without Alternate Power Supply (APS):

- EOD 9 Helmet
- EOD Visor with Wiper and Built-In Searchlights, EOD Visor Cover
- Remote Control Module
- Set of AA Alkaline Batteries (8)
- Balaclavas (3)
- Comfort Liners (3) & Set of Spare Fit Pads
- Anti-Fog/Anti-Scratch Appliqués (5)
- Soft Carry Bag
- User Manual & CD

EOD Helmet with Alternate Power Supply (APS):

- EOD 9 Helmet
- EOD Visor with Wiper and Built-In Searchlights, EOD Visor Cover
- Remote Control Module
- Alternate Power Supply (APS)
- Set of AA Alkaline Batteries (8)
- Set of C Alkaline Batteries (8)
- Universal Patchcord (UPC)
- Balaclavas (3)
- Comfort Liners (3) & Set of Spare Fit Pads
- Anti-Fog/Anti-Scratch Appliqués (1)
- EOD Visor Demister
- Soft Carry Bag
- User Manual & CD

Breathing Apparatus (BA) Package:

- BA Visor with Wiper and Built-In Searchlights, BA Visor Cover
- Throat Microphone
- Throat Strap
- Anti-Scratch/Anti-Fog BA Visor Appliqués (5)

Other Available Components:

- Hard Carry Case
- Steel Add-On for EOD Visor
- EOD Visor Demister (must be requested at time of order)
- BA Visor Demister (must be requested at time of order)
- Rechargeable AA Batteries and Charger
- Rechargeable C-Cell Batteries and Charger

5.0 PHYSICAL PROPERTIES

5.1 Sizing

The EOD 9 Helmet (one size) comfortably accommodates an extensive range of individuals (from 5th percentile female to 99th percentile male). This corresponds to hat sizes from 6⅞ to 8¼ and head circumference measurements from 19.7" (50cm) to 25.6" (65cm). These measurements are taken around the widest part of the head (just above the ears and eyebrows). Each EOD 9 Helmet is supplied with 3 comfort liners: small, medium and large. The large contains no stuffer pads; the medium contains 1 cm stuffer pads (grey); the small contains 2 cm stuffer pads (white). Stuffer pads are removable and interchangeable to allow for extensive customization of fit to individual head shape. Any combination of 1 cm and 2 cm pads can be used. It may be necessary to remove some fit pads to relieve pressure points, especially if an SCBA mask with buckles or clasps is worn.

5.2 Weight

Component	Weight (kg)	Weight (lbs)
Helmet (no visor)	3.9	8.6
EOD Visor	1.8	4.0
BA Visor	2.1	4.7
Remote Control	0.31	0.68

Note: Tolerance +/-5%. The weights provided above are nominal values. Actual values may exhibit small fluctuations due to normal material and manufacturing processes. These variations are small and do not have an adverse effect on product performance.

5.3 Materials

Component	Material
Helmet Shell	High-Performance Composite Material
Helmet Liner	Impact Attenuation Foam
Comfort Liner	Flame-laminated foam, fire-retardant fabric
Inner Visor Layer	Polycarbonate
Outer Visor Layer	PMMA (Poly Methyl Methacrylate)
Fasteners	Stainless Steel, Corrosion-Resistant Steel
EAS Housing	High-Impact Polycarbonate
Retention System	Nylon Webbing, Foam & Fabric, Stainless Steel, Corrosion-Resistant Steel, Elastomer

5.4 Color

The EOD 9 Helmet Shell standard available color is Olive Drab. Navy Blue & Desert Tan are subject to material availability. Other helmet components such as the EAS, Wiper and Retention System are predominantly black.

6.0 FEATURES/PERFORMANCE CHARACTERISTICS

6.1 Fragmentation

The fragmentation resistance of the various components of the EOD 9 Helmet, in terms of V50 levels obtained, according to the MIL-STD-662F Test Specification, using the 1.1gram 17 grain chisel nose FSP fragment simulator, meet (or exceed) the following:

	V-50 Rating	
Component	**Meters/second**	**Feet/second**
Helmet	600	1968
EOD Visor Periphery (black area)	700	2296
EOD Visor Viewing Area	780	2558
EOD Visor Viewing Area ***with*** Steel Add-On (optional)	1130	3706
BA Visor	700	2296

V-50 testing is a statistical tool used for evaluating the penetration resistance of materials involved in ballistic armour to specific laboratory fragment simulators. The V-50 test is used extensively in ballistic material design, in tandem with product development, and may also be used as a means of quality control. Under some conditions, it may also be used to compare relative performance of fragmentation resistant materials or armour, so long as the materials are identical in basic construction, e.g., comparing aramid soft body armour. The V-50 limit cannot be used to compare dissimilar armour constructions, e.g., soft versus rigid materials. Care must be taken when interpreting V-50 ratings due to the fact that the probability of an explosive device fragment having the exact same physical properties as the simulated fragment used during testing are essentially non-existent. There exist a number of different fragment simulators, both in terms of shape and size, thus it is necessary to stipulate the precise simulator that is being used to arrive at a V-50 value for objective comparisons. Although standardized test methods exist for V-50 determination, there still exist subtle variations in carrying out the actual test between different laboratories/manufacturers, which may lead to small variations in the V-50 results.

6.2 Full Scale Blast Testing

The EOD 9 Helmet has been extensively tested against explosive devices in order to evaluate its effectiveness in the face of a realistic threat.

To carry out this testing, anthropomorphic test devices, i.e., automotive crash test mannequins (the HYBRID II model), representative of a 50th percentile North American male subject (height: 1.75 m, 5'9", mass: 77 kg, 170 lbs), were fully dressed in protective EOD 9 ensembles and subjected to blasts from high explosives. Prior to each test, the mannequins were placed on a specially designed positioning apparatus and supported in the standing position by means of an anchored small diameter steel pipe slipped underneath each armpit. These stands allowed the mannequins to freely fall back when the force of the explosion would hit them, thus not interfering with their natural response.

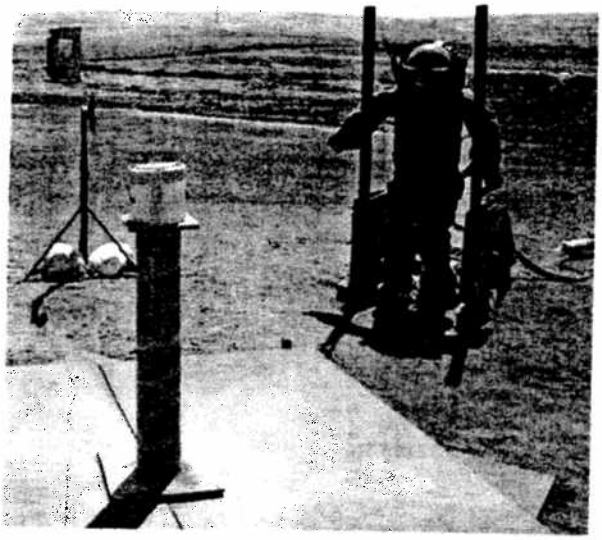
The mannequins used in these tests were instrumented to measure acceleration in the head and blast overpressure at the ear.

Four different blast test conditions were used. The first involved having the mannequins kneel to face a spherical 0.567 kg C4 charge at chest height (0.70 m) at a 0.60 m standoff (see photo below). The second condition involved having the mannequins stand to face a spherical 3.6 kg C4 charge placed 1.0 m above the ground and 1.5 m from the mannequin (see photo below). The last two blast conditions used larger charges of explosive – 5.1 kg and 10.0 kg C4, packed into square cylindrical shape (i.e. charge diameter equal to its length, so that the charge resembles a sphere) and located 1.0 m above ground level - while the mannequins faced the blast standing at 2.4 and 3.0 m, respectively (see photo below). The charges were rested on a cardboard stand set onto a steel plate.

0.567 kg C4, 0.6m Standoff Distance

3.6 kg C4, 1.5m Standoff Distance

5.1 kg C4, 2.4m standoff distance



10.0 kg C4, 3.0m standoff distance

The preceding four photos show the experimental test setup used to derive these performance specifications. The anthropomorphic mannequin was dressed in the EOD 9 Helmet and Suit to face detonation of various C4 charges at a range of standoff distances.

6.2.1 Blast-Induced Head Acceleration

In the context of an explosive blast, the initial collision and subsequent interaction of a shock wave with a victim can induce violent uncontrolled motion in body parts. The head is susceptible to concussive injuries, ranging from minor to lethal, as a result of this blast-induced acceleration.

Peak values of resultant acceleration measured in the heads of the mannequins during blast tests are illustrated in the following table. Moreover, the average measured percentage reduction in head acceleration is also shown.

		Measured Resultant Peak Head Accelerations (in g's)			Average % Reduction for EOD 9 helmet	
Charge size (kg C4)	Standoff distance (m)	Average for unprotected mannequin	Range for EOD 9 helmet (EOD visor)	Range for EOD 9 helmet (BA visor)	EOD visor	BA visor
0.567	0.6	1032	92-107	90-112	90%	90%
3.6	1.5	820	126-166	144-180	82%	80%
5.1	2.4	673	80-98	80-137	86%	84%
10.0	3.0	590	118-126	Not tested	80%	-

This table shows that the EOD 9 helmet (EOD or BA visor) permits a 90% reduction (on average) in peak resultant head acceleration when facing small charges at close standoffs (e.g. 0.567kg C4 from a standoff of 0.6m). Such a charge causes an extremely large peak resultant head acceleration in unprotected cases (1032g's), but with the EOD 9 helmet in place, the peak resultant head acceleration experienced is well below 150g's.

The table above also shows that the EOD 9 helmet permits an average reduction of at least 80% in peak head acceleration when facing charges of the order of a few kilograms from standoff distances like those recommended for EOD operations (e.g. 3.6kg, 5.1kg, and 10.0kg from distances of 1.5m, 2.4m, and 3.0m respectively). Such charges cause peak head accelerations of the order of 600-800g's in unprotected cases, but with the EOD 9 helmet in place, the peak head acceleration experienced is well below 200g's.

6.2.2 Blast Overpressure at the Ear

The ear is most susceptible to blast overpressure injury, compared to other regions of the body. The threshold of eardrum perforation lies at a mere 0.35 bar. An overpressure of 1.0 bar will yield 50 % probability of eardrum perforation, while a 95 % probability of eardrum perforation is predictable for an overpressure of 2.0 bar. Potential damage to the inner ear, which will normally result in some degree of permanent and irreversible loss of hearing, may occur for peak overpressures above 1.0 bar. Although eardrum perforation, or loss of hearing, are not life-threatening injuries, they can be a life-long handicap with potentially detrimental social consequences. The following table provides a summary.

		Measured Peak Ear Overpressures (in bar)			Average % Reduction for EOD 9 helmet	
Charge size (kg C4)	Standoff distance (m)	Average for unprotected mannequin	Range for EOD 9 helmet (EOD visor)	Range for EOD 9 helmet (BA visor)	EOD visor	BA visor
0.567	0.6	21.19	0.60-1.30	0.73-0.95	96%	96%
3.6	1.5	5.99	0.78-1.27	0.80-1.02	83%	83%
5.1	2.4	5.03	0.39-0.86	0.33-0.69	88%	88%
10.0	3.0	4.98	0.61-1.00	Not tested	82%	-

This table shows that the EOD 9 helmet permits a 96% reduction (on average) in peak ear overpressure when facing small charges at close standoffs (e.g. 0.567kg C4 from a standoff of 0.6m). Such a charge causes an extremely large peak ear overpressure in unprotected cases (21.19 bar), but with the EOD 9 helmet in place, the peak ear overpressure experienced is well below 1.3 bar.

The table above also shows that the EOD 9 helmet permits an average reduction of at least 82% in peak ear overpressure when facing charges of the order of a few kilograms from standoff distances like those recommended for EOD operations (e.g. 3.6kg, 5.1kg, and 10 kg from distances of 1.5m, 2.4m, and 3m respectively). Such charges cause peak ear overpressures of the order of 5-6 bar in unprotected cases, but with the EOD 9 helmet

in place, the peak ear overpressure experienced is well below 1.3 bar.

When comparing the measured overpressure values to the injury thresholds discussed at the beginning of this section, it is apparent that there is a probability of eardrum perforation, even when donning protective equipment. It may then be prudent that the wearer of such EOD equipment, wherever practically possible, wear some sort of additional hearing protection (e.g. earplugs) to prevent blast overpressure from reaching the inner ear.

6.3 Chemical Biological Testing

Explosive dispersal testing was performed, in which a mannequin was subjected to an explosively-driven chemical agent simulant (methyl salicylate). The mannequin wore a full chemical protective undergarment (CPU), EOD suit (SRS 5), and an EOD 9 helmet with BA visor over a series of SCBA and gas mask systems. A small amount of explosive (8 inches of 100-grain PETN detonation cord, equivalent to 7.15g of TNT) was detonated inside a bottle filled with a chemical agent stimulant (250mL of liquid methyl salicylate, which simulates mustard gas, mixed with 250mL of water) located on the ground and at arm's reach from the squatting mannequin. Indicators placed at strategic locations all over the mannequin skin surface showed that no discernible amount of liquid or vapour contamination occurred.

Man-in-Simulant-Testing (MIST-vapor) was performed, in which human subjects performed several physical activities while inside a chamber full of chemical simulant vapour (methyl salicylate vapor). The human subjects were dressed in cooling undergarments, CPUs, full EOD suits (SRS 5), SCBAs, and the EOD 9 Helmet with BA visor. The physical activities (bending, lifting, climbing, walking) were intended to stretch and stress the seals of the entire personal protective equipment system, particularly any interference between the visor and the face mask of the SCBA or any movement that may cause penetration of agent to the skin. Indicators placed at strategic locations all over the subjects' skin surface showed that no discernible amount of vapour contamination occurred.

Man-in-Simulant-Testing (MIST-aerosol) testing was performed, in which human subjects performed several physical activities while inside a chamber full of spores of a biological stimulant (volatile solid particles of *bacillus Subtillus var niger*, which simulates anthrax). The human subjects were dressed in cooling undergarments, CPUs, full EOD suits (SRS 5), SCBAs, and the EOD 9 helmet with BA visor. The physical activities (bending, lifting, climbing, walking) were intended to stretch and stress the seals of the entire personal protective equipment system, particularly any interference between the visor and the face mask of the SCBA or any movement that may cause penetration of agent to the skin. Results from these tests are pending.

6.4 Retention System

6.4.1 Helmet Stability

A prototype version of the EOD 9 helmet was tested against CSA standard Z611-02, section 15.3 (helmet stability). The helmet stability test requires that the helmet not rotate more than 45 degrees relative to the headform under an applied load of 250 Newtons. Testing results indicate that the EOD 9 helmet passed this requirement, with a maximum angular rotation of 28 degrees observed.

6.4.2 Retention System Strength

A prototype version of the EOD 9 helmet was tested against British Standard PAS 017, section 12 (retention system test). The retention system test requires a mass of 10 kg, attached to the retention system of the helmet, to be dropped from a height of 300 mm. The maximum extension of the webbing, as well as the residual extension, must not exceed 32 mm and 16 mm respectively. The retention system test was carried out using a slightly modified set-up (yielding more severe impacts). The maximum extension recorded was 23.8 mm and the residual extension was 14.3 mm. The helmet therefore passed the requirements from this test.

7.0 COMPATIBLE PRODUCTS

EOD 9 Suit

Recommended for use with the EOD 9 Helmet, the EOD 9 Suit offers the highest level of protection of any bomb suit ever designed by MES. The EOD 9 suit has been engineered for an unprecedented balance of protection and flexibility.

EOD 8, SRS 5 and EOD 7B Suits

Entirely compatible with the EOD 9 Helmet, the EOD 8, SRS 5 and EOD 7B Suits provide balanced protection and flexibility.

HW 300 Communications System

Designed specifically for EOD/IEDD teams, the HW 300 is a hardwire radio system that should reduce the risk of inducing radio frequency signals into an explosive device. The system includes a combined remote control module and spool, 125 m (410') of low friction cable, command post module, tape recorder and carry bag.

BCS3 Series Body Cooling Systems

The BCS3 is a personal cooling system that helps to control the user's core body temperature to reduce the risks associated with heat stress and extend mission time. The system is available in both alkaline and rechargeable models.

Remote Handling Tools and Tool Kits

MES offers a range tools including: TM 500C Telescopic Manipulator, Hotstic Robotic Manipulator, Trooper Remote Engagement System, Search/Inspection Mirrors, Series 5000 Shields, Advantage Hook and Line Kits, Advantage Clamp Kit, HDT Tool Kit.

Chemical Protective Undergarment (CPU)

The CPU provides a level of protection against a range of potentially hazardous agents.

Med-Eng Systems Inc.
2400 St. Laurent Blvd.
Ottawa, Ontario, Canada
K1G 6C4
Tel: 613-739-9646
Fax: 613-739-4536
E-mail: info@med-eng.com
Website: www.med-eng.com

QUOTATION

QUOTE ID
Q06-1884
CUSTOMER ID

Customer:
CHICAGO POLICE DEPARTMENT
BOMB SQUAD
Michael.Palumbo@chicagopolice.org
CHICAGO, IL 60624
USA
MICHAEL PALUMBO

DATE	PAYMENT TERMS	DELIVERY	SHIPPING TERMS	CURRENCY	VALIDITY
10/13/2006	Net 30	10 wks a.r.o.	DESTINATION	US DOLLARS	12/29/2006 1

ITEM NO.	DESCRIPTION	QTY	UNIT PRICE	TOTAL PRICE

2007 Pricing will be in effect Jan 1/07

1 913-5100 EOD 9 SUIT MD OLIVE DRAB
Re-allocation of fragmentation protective materials towards a more comprehensive 360° of coverage. Re-distribution of protective materials to greatly improve operator's flexibility and permit an increased range of motion, particularly in the arms. Sliding groin plate retracts easily during kneeling and crouching stances. Redesigned Integrated Groin Protector to better accommodate a range of waist sizes.

Fits size: 5'8" to 6'2" (173 cm to 188 cm)
Weight: 150 lbs to 220 lbs (68 kg to 100kg)

Qty:1 11,566.00 $11,566.00

NSN:8470-20-001-9423

2 913-7100 EOD 9 SUIT LG OLIVE DRAB
Fits size: 6'3" to 6'6" (190 cm to 198 cm)
Weight: 220 lbs to 265 lbs (100 kg to 120kg)

Qty:1 12,178.00 $12,178.00

NSN:8470-20-002-2645

10/13/2006

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10/13/2006	Net 30	10 wks a.r.o.	DESTINATION	US DOLLARS	12/29/2006 1

ITEM NO.	DESCRIPTION	QTY	UNIT PRICE	TOTAL PRICE
3	912-0101 EOD 9 HELMET WITH APS OLIVE DRAB The EOD-9 helmet features an open faced, multi-purpose platform design achieved through two interchangeable protective visors that can be mounted on a common helmet shell base. The APS (Alternate Power Supply) operates all EOD helmet accessories including the ventilation system, communications system, environmental awareness system (EAS) and searchlight. A wrist mounted Remote Control Module allows the user to conveniently control all helmet functions. One visor is suited for EOD/IEDD operations, while the second visor accommodates a breathing apparatus (face mask or respirator). Each helmet is standard with the EOD/IEDD helmet visor the Breathing Apparatus visor is optional. NSN:8470-20-001-0194	Qty:1	6,856.00	$6,856.00
	EOD 9 BA CAPABILITIES EXPANSION KIT			
4	912-0010 VISOR BA KIT EOD 9 Breathing Apparatus Visor (face mask or respirator) for operations where a Chemical or Biological agent is suspected. NSN:8470-20-002-2183	Qty:1	1,288.00	$1,288.00

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10/13/2006	Net 30	10 wks a.r.o.	DESTINATION	US DOLLARS	12/29/2006 1

ITEM NO.	DESCRIPTION	QTY	UNIT PRICE	TOTAL PRICE
5	910-001 EOD-8 SUIT MD Includes suit jacket with improved overpressure and fragmentation protection, blast attenuation liners, chest and sliding groin plates, integrated groin protector (IGP), trousers (with built-in high absorbing back protector), pre-curved protective inserts in the thighs and lower legs, toe grounder strap, carrying bag with shoulder straps and handles. Fits size: 5'8" to 6'2" (173 cm to 188 cm) Weight: 150 lbs to 220 lbs (68 kg to 100kg) NSN:8470-21-920-2138	Qty:1	11,513.00	$11,513.00
6	910-005 EOD-8 SUIT LG Fits size: 6'3" to 6'6" (190 cm to 198 cm) Weight: 220 lbs to 265 lbs (100 kg to 120kg) NSN:8470-21-920-2137	Qty:1	12,123.00	$12,123.00

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QUOTATION

QUOTE ID
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MICHAEL PALUMBO

DATE	PAYMENT TERMS	DELIVERY	SHIPPING TERMS	CURRENCY	VALIDITY
10/13/2006	Net 30	10 wks a.r.o.	DESTINATION	US DOLLARS	12/29/2006 1

ITEM NO.	DESCRIPTION	QTY	UNIT PRICE	TOTAL PRICE
7	910-002 EOD-8 HELMET The EOD-8 helmet includes a visor with surrounding foam gasket which has full surface contact to the helmet which improves head acceleration damping effects in the event of a blast, an intelligent microprocessor driven power supply which accepts rechargeable or non-rechargeable batteries, a fully integrated environmental awareness system with an automatic gain (volume) control feature that automatically reduces noise level; helmet retension system which is used to balance the helmet's weight; increased optical viewing peripheral using a smaller sized visor	Qty:1	5,714.00	$5,714.00
	NSN:8470-21-920-2143			

Med-Eng Systems Inc. will not be bound by any additional terms and conditions, whether contained in a Purchase Order or other document, unless expressly agreed to by Med-Eng Systems Inc. in writing or within our order acknowledgement.

Delivery of product is subject to raw material availability

NOTICE OF GRANT AGREEMENT

Part I - Notice of Grant Award to the **City of Chicago, Illinois**

This Grant Agreement is made and entered by and between the Illinois Emergency Management Agency (Grantor), 110 East Adams Street, Springfield, Illinois 62701-1109, and **the City of Chicago, Illinois,** through the Office of Emergency Management and Communications (Grantee), **121 North LaSalle Street, Chicago, Illinois 60602.**

WHEREAS this Grant is to utilize funds from the Department of Homeland Security (DHS) Fiscal Year 2005 Appropriation for the **Urban Area Security Initiative (UASI)** (CFDA **#97.008)** to continue to develop and enhance the UASI program for the City of Chicago.

THEREFORE, the Grantor is hereby making available to the Grantee the amount not exceeding **$22,465,000** for the period from the **date of final execution** to **December 31, 2006.** The Grantee hereby agrees to use the funds provided under the agreement for the purposes set forth herein and agrees to comply with all terms and conditions of this agreement. This period of award may be amended if there is a delay in the release of these funds from the Federal Government.

It is agreed between the parties, that the agreement, as written, is the full and complete agreement between the parties and that there are no oral agreements or understanding between the parties other than what has been reduced to writing herein.

This Grant Agreement and Attachments constitute the entire agreement between the parties. Each budget detail worksheet submitted by the Grantee and approved by the Grantor as an authorized expenditure of this Grant shall be considered an attachment of this Grant Agreement.

Part II - Term

The term of this Grant Agreement shall be from the **date of final execution** by the Grantor through **December 31, 2006.**

110 East Adams Street • Springfield, Illinois • 62701-1109 • Telephone (217) 782-7860 • http://www.state.il.us/iema

Part III - Scope of Work

The scope of this grant includes: the enhancement of a public safety information system (Studio 1A), equipping first responder vehicles with wireless computers with voice/text/image/video data capabilities, conducting training of ODP-approved courses, conducting the required IED exercise, the continuation of an Urban Area-wide interoperable communications system to include transition City departments to common UHF frequencies, assessment of key critical infrastructure with recommendations for hardening of selected sites, equipping the City's first responders, and an allowance for management and administration of the grant. **The Grantee budget detail worksheet and narrative is provided in Attachment A.**

Part IV - Compensation Amount

The total compensation and reimbursement payable by the Grantor to the Grantee shall not exceed the sum of **$22, 465,000.**

Part V - Terms and Conditions

FISCAL FUNDING: The Grantor's obligations hereunder shall cease immediately, without penalty or further payment being required, in any year for which the General Assembly of the State of Illinois fails to make an appropriation sufficient to pay such obligation or DHS fails to provide the funds. The Grantor shall give the Grantee notice of such termination for funding as soon as practicable after Grantor becomes aware of the failure of funding. Grantee's obligation to perform shall cease upon notice by Agency of lack of appropriated funds.

METHOD OF COMPENSATION: The method of compensation shall be reimbursement in accordance with the invoice voucher procedures of the Office of the State of Illinois Comptroller. The Grantee agrees to maintain appropriate records of actual costs incurred and to submit expenditure information to the Grantor. No costs eligible under this agreement shall be incurred after December 31, 2006.

ACCOUNTING REQUIREMENTS: The Grantee shall maintain effective control and accountability over all funds, equipment, property, and other assets under the Grant Agreement as required by the Grantor. The Grantee shall keep records sufficient to permit the tracing of funds to ensure that expenditures are made in accordance with this Grant Agreement.

REPORTS: The Grantee shall submit a semi-annual programmatic activity narrative and financial report called the Bi-Annual Strategy Implementation Report (BSIR) to the Grantor every January 15 and July 15 throughout the performance period ending December 31, 2006. The financial report (BSIR) must include the amount of funding received, obligated and expended every December 31 (for the January 15 report) and June 30 (for the July 31 report). Noncompliance of the reporting requirements may be cause to terminate this Agreement.

AUDITS AND INSPECTIONS: The Grantee will, as often as deemed necessary by the Grantor, DHS or any of their duly authorized representatives, permit the Grantor, DHS or any of their duly authorized representatives to have full access to and the right to examine any pertinent books, documents, papers and records of the Grantee involving transactions related to this grant agreement for three years from the date of submission of the final expenditure report or until related audit findings have been resolved, whichever is later. The Grantee certifies that all audits submitted under the provisions of Office of Management and Budget Circulars A-128 or A-133 have been approved by the Grantor. The Grantee acknowledges that these are federal pass-through funds that must be accounted for in the jurisdiction's Single Audit under the Single Audit Act of 1996, if required.

MODIFICATION AND AMENDMENT OF THE GRANT: This grant agreement is subject to revision as follows:

A. Modifications may be required because of changes in State or Federal laws or regulations as determined by the Grantor. Any such required modification shall be incorporated into and will be part of this Agreement. The Grantor shall notify the Grantee of any pending implementation of or proposed amendment to such regulations before a modification is made to the Agreement.

B. Modifications may be made upon written agreement of both Grantor and Grantee.

TERMINATION FOR CONVENIENCE: This agreement may be terminated in whole or in part by the Grantor for its convenience, provided that, prior to termination, the Grantee is given: 1) not less than ten (10) calendar days written notice by certified mail, return receipt requested, of the Grantor's intent to terminate, and 2) an opportunity for consultation with the Grantor prior to termination. In the event of partial or complete termination of this agreement pursuant to this paragraph, an equitable adjustment of costs shall be paid to the Grantee for expenses incurred under this agreement prior to termination.

TERMINATION FOR BREACH OR OTHER CAUSE: The Grantor may terminate this agreement without penalty to the Grantor or further payment required in the event of:

A. Any breach of this agreement which, if it is susceptible of being cured, is not cured within 15 calendar days after receipt of the Grantor's notice of breach to the Grantee.

B. Material misrepresentation or falsification of any information provided by the Grantee in the course of any dealing between the parties or between the Grantee and any State Agency.

Grantee's failure to comply with any one of the terms of this Grant Agreement shall be cause for the Grantor to seek recovery of all or part of the grant proceeds.

RETENTION OF PROPERTY RECORDS: Grantee agrees to maintain records for equipment, non-expendable personal property, and real property for a period of three years from the date of the completion of the project. If any litigation, claim, or audit is started before the expiration of the three-year period, the records shall be retained until all litigation, claims, or audit findings involving the records have been resolved.

NON-DISCRIMINATION: In carrying out the program, the Grantee shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, ancestry, age, physical or mental handicap unrelated to ability, marital status, or unfavorable discharge from military service. The Grantee shall take affirmative action to ensure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, national origin, ancestry, age, physical or mental handicap unrelated to ability, marital status, or unfavorable discharge from military service. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training; including apprenticeship. The Grantee shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Government setting forth the provisions of this non-discrimination clause.

SEVERABILITY CLAUSE: If any provision under the Grant Agreement or its application to any person of circumstance is held invalid by any court of competent jurisdiction, this invalidity does not affect any other provision or its application of the Grant Agreement which can be given effect without the invalid provision or application.

DEBARMENT: The Grantee certifies neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in the agreement by any Federal Agency or department.

WORKER'S COMPENSATION INSURANCE, SOCIAL SECURITY, RETIREMENT AND HEALTH INSURANCE BENEFITS, AND TAXES: The Grantee shall provide worker's compensation insurance where the same is required, and shall accept full responsibility for the payment of unemployment insurance, premiums for worker's compensation, social security and retirement and health insurance benefits, as well as all income tax deductions and any other taxes or payroll deductions required by law for employees of the Grantee who are performing services specified by the grant agreement.

WAIVERS: No waiver of any condition of this grant agreement may be effective unless in writing from the Director of the Grantor.

BOYCOTT: The Grantee certifies that neither it nor any substantially-owned affiliated company is participating or shall participate in an international boycott in violation of the provisions of the U.S. Export Administration Act of 1979 or the regulations of the U.S. Department of Commerce promulgated under that Act.

WORK PRODUCT: All intellectual property and all documents, including reports and all other work products, produced by the Grantee under this grant agreement shall become and remain the exclusive property of the Grantor, and shall not be copyrighted, patented, or trademark registered by the Grantee except as authorized by the Grantor in a separate agreement. The Grantee acknowledges the Office of State and Local Government Coordination and Preparedness (SLGCP), United States Department of Homeland Security reserves a royalty-free, non exclusive, and irrevocable license to reproduce, publish, or otherwise use, and authorize for use, for any purpose the Grantor deems relevant: (1) the copyright in any work developed under an award or subaward; and (2) any rights of copyright to which a recipient or subrecipient purchases ownership with Federal support. The Grantee shall include in all publications created through this grant agreement shall prominently contain the following statement: "This document was prepared under a grant from the Office of State and Local government Coordination and Preparedness (SLGCP), United States Department of Homeland Security. Points of view or opinions expressed in this document are those of the authors and do not necessarily represent the official position or policies of SLGCP or the U.S. Department of Homeland Security."

MAINTENANCE AND REVIEW OF EQUIPMENT: The Grantor reserves the right to reallocate all equipment procured by the Grantee under this grant agreement if the property is not properly maintained by the Grantee according to the manufacture's guidelines and Grantor's requirements. All equipment procured by the Grantee through this grant agreement shall be made available for review by the Grantor upon request.

LIABILITY: The Grantor assumes no liability for actions of the grantee under this agreement, including, but not limited to, the negligent acts and omissions of grantee's agents, employees, and subcontractors in their performance of the grantee's duties as described under this agreement. In addition, the Grantor makes no representations, or warrantees, expressed or implied, as to fitness for use, condition of, or suitability of said equipment purchased pursuant to this grant, except as those representations are made by the manufacture of said equipment. As to nature and condition of said equipment, in the use of said equipment, the Grantee agrees to hold the Grantor harmless for any defects or misapplications. To the extent allowed by law, the grantee agrees to hold harmless the Grantor against any and all liability, loss, damage, cost or expenses, including attorney's fees, arising from the intentional torts, negligence, or breach of the agreement by the grantee, with the exception of acts of performed in conformance with an explicit, written directive of the Grantor.

Part VI - Assurances

The Grantee assures that no official or employee of the Grantee who is authorized in the Grantee's official capacity to negotiate, make, accept, or approve, or to take part in such decisions regarding a contract for acquisition/development of property in connection with this agreement, shall have any financial or other personal interest in any such contract for the acquisition/development.

The Grantee will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.

The Grantee will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

The Grantee will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."

The Grantee will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

Part VII - Certification

The Grantee certifies that it has not been convicted of bribery or attempting to bribe an officer or employee of the State of Illinois, nor has any official, agent, or employee of the Grantee committed bribery or attempted bribery on behalf of the Grantee and pursuant to the direction or authorization of a responsible official of the Grantee.

The Grantee hereby certifies that it has not been barred from bidding on, or receiving State or local government contracts as a result of illegal bid rigging or bid rotating as defined in the Criminal Code of 1961 (720 ILCS 5/33E-3 and 33E-4).

The Grantee certifies that it will comply with all applicable State and Federal laws and regulations.

The Grantee certifies that it will return to the State all State or Federal grant funds that are not expended or are accidentally over-advanced. The State may recapture those funds not expended or accidentally over-advanced in accordance with State and Federal laws and regulations. The Grantee further certifies that its failure to comply with any one of the terms of this Grant Agreement shall be cause for the Grantor to seek recovery of all or part of the grant proceeds.

The Grantee certifies that it will establish safeguards to prohibit employees, contractors, and subcontractors from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

Under penalties of perjury, I certify that 36-6005820 is my correct Federal Taxpayer Identification Number and that IRS Instructions have been provided for proper completion of this certification. I am doing business as a (please check one):

___ Individual
___ Sole Proprietorship
___ Partnership
___ Corporation
___ Not-for-profit Corporation
___ Medical and Health Care
___Services Provider Corporation
___ Real Estate Agent
_X_ Governmental Entity
___ Tax Exempt Organization
(IRC 501(a) only)
___Trust or Estate

Part VIII - Drug Free Certification

This certification is required by the Drug Free Workplace Act (30 ILCS 580). The Drug Free Workplace Act, effective January 1, 1992, requires that no Grantor or contractor shall receive a grant or be considered for the purposes of being awarded a contract for the procurement of any property or services from the State unless that Grantor or contractor has certified to the State that the Grantor or contractor will provide a drug free workplace. False certification or violation of the certification may result in sanctions including, but not limited to, suspension of contract or grant payments, termination of the contractor or grant and debarment of contracting or grant opportunities with the State for at least one (1) year but not more than five (5) years.

For the purpose of this certification, "Grantor" or "contractor" means a corporation, partnership, or other entity with twenty-five (25) or more employees at the time of issuing the grant, or a department, division, or other unit thereof, directly responsible for the specific performance under a contract or grant of $5,000 or more from the State.

The contractor/Grantor certifies and agrees that it will provide a drug free workplace by:

(a) Publishing a statement:

(1) Notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance, including cannabis, is prohibited in the Grantor's or contractor's workplace.

(2) Specifying the actions that will be taken against employees for violations of such

prohibition.

(3) Notifying the employee that, as a condition of employment on such contract or grant, the employee will:

(A) abide by the terms of the statement; and

(B) Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five (5) days after such conviction.

(b) Establishing a drug free awareness program to inform employees about:

(1) the dangers of drug abuse in the workplace;

(2) the Grantor's or contractor's policy of maintaining a drug free workplace;

(3) any available drug counseling, rehabilitation, and employee assistance programs; and

(4) the penalties that may be imposed upon an employee for drug violations

(c) Providing a copy of the statement required by subparagraph (a) to each employee engaged in the contract or grant and to post the statement in a prominent place in the workplace.

(d) Notifying the contracting or granting Agency within ten (10) days after receiving notice under part (B) of paragraph (3) of subsection (a) above from an employee or otherwise receiving actual notice of such conviction.

(e) Imposing a sanction on, or requiring the satisfactory participation in a drug abuse assistance or rehabilitation program by, any employee who is so convicted, as required by section 5 of the Drug Free Workplace Act.

(f) Assisting employees in selecting a course of action in the event drug counseling, treatment, and rehabilitation is required and indicating that a trained referral team is in place.

(g) Making a good faith effort to continue to maintain a drug free workplace through implementation of the Drug Free Workplace Act.

IN WITNESS WHEREOF, the parties hereto have caused this contract to be executed by their duly authorized representatives.

Grantor: **IL Emergency Management Agency**

By: _____
William C. Burke, Director

DATE: 10/3/05

By: _____
Kevin McClain, Chief Legal Counsel

DATE: 9/29/05

Grantee: **City of Chicago**

By: _____
Andrew Valasquez III, Executive Director

DATE: 9/21/05

By: _____
Dennis C. Miner, Chief Finance

DATE: 9/29/05

Med-Eng

September 12, 2006

SOLE SOURCE VENDOR STATEMENT

This letter is to certify that Med-Eng Systems Inc. is the manufacturer and sole supplier for our EOD/IEDD Protective Equipment in North America. This equipment includes the EOD-9 Bomb Suit and Helmet and the EOD 9 BA (breathing apparatus) Visor.

In September 2004 Med-Eng Systems Inc. introduced the EOD-9 ensemble. The EOD 9 ensemble provides the next generation of modular protection and operational flexibility for EOD and CBRNE missions. The EOD-9 helmet features interchangeable visors, standard and BA (Breathing Apparatus). The optional BA visor accommodates various respirators and has a remote control module that mounts on the right or left arm.

2004	EOD-9 Suit/Helmet
2000	EOD-8 Helmet
1999	EOD-8 Suit
1997	SRS-5 Suit/Helmet with Standard Visor and BA Visor
1995	EOD-7B Suit/Helmet
Pre-1995	EOD-6 Helmet

OTHER ACCESSORIES:

All Med-Eng suits are compatible with Body Cooling Systems, such as the BCS3A and BCS-4. It is recommended that the CPU (chemical protective undergarment) be worn, as stipulated by a response unit's own operating procedures, with the EOD 9 and SRS 5 protective ensembles. Additionally, Med-Eng offers a Hard Wire communication system for EOD/IEDD Explosive Protection Systems. The HW-300 communication system should reduce the risks of inducing radio frequency (FR) signals into an improvised explosive device (IED).

REMOTE HANDLING TOOLS:

Remote handling equipment and tools that complement robotic vehicles or that may be used independently in a stand-alone configuration are available from Med-Eng Systems allowing the user to maintain minimum safety distances from a suspected device.

Remote handling tools such as the General Service (GS) Hook & Line Kits, Booby Trap Kit, Clamp Kit and HDT kit have aided in minimizing human exposure to an explosive device. The GS 2 Hook and Line Kit features new or redesigned components designed to increase functionality and operational efficiency.

Med-Eng Systems offers a limited two (2) year manufacturer's warranty on its products. All service repairs are performed at our facility in Ottawa, Ontario, Canada by authorized Med-Eng technicians.

Lucy Bruni

Sales Coordinator-USA

Med-Eng Systems Inc.
2400 St. Laurent Blvd., Ottawa, ON Canada K1G 6C4
Tel: 1 (613) 288-5454 Toll Free (US and Canada): 1 (800) 644-9078 Fax: 1 (613) 739-4536 www.med-eng.com

Richard M. Daley
Mayor

Department of Police • City of Chicago
3510 S. Michigan Avenue • Chicago, Illinois 60653

Philip J. Cline
Superintendent of Police

October 13, 2006

Barbara A. Lumpkin
Chief Procurement Officer
Department of Procurement Services
City Hall Room 403

ATTN: **CHRISTINE SMITH**

SUBJECT: **OCTOBER 19, 2006 SOLE SOURCE AGENDA**
MED-ENG BOMB SUITS

Attached please find one Justification for Non-Competitive Procurement for Med-Eng Systems. Please schedule this for the next Sole Source meeting to be held on October 19, 2006. s The attachments consist of:

1) One Justification for Non-Competitive Procurement.

2) One DPS Project Checklist.

3) One copy of Purchase Requisition Number 30435

4) One Scope of Work and Detailed Specification.

5) One quote from the vendor.

6) One letter from the vendor stating they are the sole provider of this requirement.

7) One copy of the grant which is funding this requirement.

Sincerely,

Michael P. Palumbo
Contract Administrator
Police Department