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**User Requirement**

**Flame Retardant Clothing System**

**ISSUE AND CONTROL MECHANISM**

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**General Description**

This User Requirement Document (URD) is divided into the following categories:

* Part 1 - Single Statement of Need
* Part 2 - Background
* Part 3 - Concept of Employment / Use
* Part 4 - Acquisition Strategy
* Part 5 - System Requirements

1. **Single Statement of Need**

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| 2.1 The MDP has a variety of AFO role profiles, including specialist units who use Special Munitions (SM). Other officers are required to wear Flame Retardant Suit (FRS) as a condition of the site they operate at. In both cases, the MDP must supply FRS as PPE. This must be scalable for future proofing and fit for purpose for a number of years giving value for money for the investment. |

**2.0 Background**

2.1 The MDP currently provides FRSs via ePC using a UK company which supplies several different FRS specs to the MDP user groups, however this is no longer feasible to provide the correct scale of issue within ePC limits.

2.1.1 The MDP does not currently have a contract in place to support this requirement for FRS. The use of ePC limits expenditure to £5k, which cannot support this ongoing requirement.

**3.0 Concept of Employment**

**3.1 Operational Context**

3.1.1 The MDP has Armed Policing at the core of its business outputs, to meet the requirements set by the MOD and provide an armed policing service to Defence and other customers operating at various sites across the UK.

3.1.2 MDP Armed Policing capabilities are provided in the public domain, at key sites across the UK. These establishments are located within local Police Force territorial policing areas. Formal Memorandum of Understandings (MOUs) exist between MDP and Home Office Forces which provide arrangements for mutual armed policing resources and command support.

3.1.3 The MDP currently has around 2600 to 2700 officers (levels fluctuate as MOD policing requirements change on a routine basis) the great majority of which are authorised firearms officers (AFO’s). Weapons systems used are primarily carbine with 9 mm pistol as a secondary weapon. Officers are deployed on a 24/7 basis, 365 days per year at numerous locations across England, Scotland, Wales and Northern Ireland.

3.1.4 The MDP are a fully attested police force with each officer holding the office of constable. Consequently, although falling under the MOD, MDP Officers are required to meet and maintain wider police service standards including those set by the College of Policing (CoP) and National Police Chiefs Council (NPCC).

3.1.5 The FRS will be used on Firearms Operational Deployments and training by SEG, OSU, TFU and TFU Training team. This can be worn in conjunction with any of the firearms tactical deployments in which an AFO (CT) is trained.

3.1.6 MDP AFO (CT) officers are trained to the common National Standards as defined in Appendix 3 of the Introduction to the National Police Firearms Training Curriculum (NPFTC).

3.1.7 The three broad types of Operational Firearms tactics deployed are:

* On Foot
* In Vehicles
* In Structures

3.1.8 These types of deployments involve:

3.1.9 A wide variety of environments so should be suitable to work in these, from open areas, small/large office type buildings to large industrial complexes, which may have confined spaces. As such having removable external hard-shell elbow and knee protectors are highly desirable. The suit should be capable of being cleaned using a domestic washing machine without degradation to the FR properties. It should not be too bulky to hinder awareness, tactical movement or the use of equipment such as firearms, ladders etc.

3.1.10 The FRS must be capable of being used in all weather conditions, from summer months with temperatures in the 30s to cold winter months in snow and ice. The temperature range should be between -10oC to + 40oC. Breathability is essential to reduce risks of heat exhaustion; however, it should also be suited for inclement weather without causing discomfort to the user.

3.1.11 The FRS should be a two-piece design, for both males and female body types at 95 percentile sizes. It should be capable of achieving 100% skin coverage, working with the General Service Respirator (GSR) as well as the Avon C50 and FM53 respirators currently in service, for use in Alpha RA contaminated areas. It must also work in conjunction with the current / future issued ballistic PPE and RPE.

3.1.12 The length of time officers spend will spend wearing the suit will vary. Comfort and minimum weight is important to maximise the endurance of officers when performing their duties. For this reason, both a blouson style top as well as a UBACS style shirt, featuring moisture wicking under the body amour is preferable.

3.1.13 Scalability is also important as various additional pieces of equipment can be added or changed, such as current and future PPE. The ability to attach Identification patches to the shoulder using Velcro is essential. The ability to hold Identification passes in a transparent window is desirable.

**3.2 Operational Employment**

3.2.1 The Concept of Employment (CONEMP) for this is that MDP AFOs (CT) will either routinely wear the FRS or wear the FRS for specific firearms operations and firearms training.

**4.0 Acquisition Strategy**

4.1 The acquisition strategy for the replacement MDP FRS will be articulated in detail in the Strategic Outline Business Case, but the procurement will be either;

1. A suitable system (Trialed and evaluated by MDP) available on an existing MOD Contract and that MDP can draw down on this contract, or,
2. A competitive tender advertised in the Defense Contracts Bulletin & the Official Journal of the European Union (OJEU).

**5.0 Constraints**

5.1 The information specified within this URD concerning the system and equipment requirements of the MDP is the best available at the time of issue. Subject to contract and without bias, this URD defines the requirements of the Ministry of Defence Police (MDP) to procure a FRS.

5.1.2 The colour of suit is to some degree a matter of choice, however it is recommended that traditional black or dark blue coloured suits are considered over a colour which is used primarily for Counter Terrorist Specialist Firearms Officers (CTSFO).

5.1.3 The FRS must be compatible with the following MDP operational and training PPE:

* Safariland\_UK Police Body Armour
* Ballistic Helmet
* Respirators
* Force-issued gloves

5.1.4 The FRS will be worn with ballistic body armour, which includes uniformed and formed armour (shaped to conform to the wearer) and hard armour plates. When in use the FRS must have clearance from the ballistic helmet, this should not hinder the officers shooting, including shooting in the prone position.

5.1.5 Items to be incorporated to the FR suit:

* Police Identification Patches (both shoulders) (Key)
* Removable hard-shell knee (Key) and elbow protection (P1).
* Reinforced ‘stress’ areas, such as seat, groin, knee and elbows (Key).
* Standard police-issue leather trouser belt. (Key)
* x2 Transparent pass holders (below the ID patches) (P1).

5.1.6 MDP Firearms Related Equipment

The FRS must be compatible with current MDP Issued firearms, less lethal weapons capabilities and associated ancillaries (slings, weapon sighting systems).

5.1.7 MDP Vehicle Fleet

The FRS must not hinder AFO (CT) deployments whilst using the current and future Armed Mobile Patrol (AMP) vehicle, nor the current and future Protected Escort Vehicle (PEV).

**5.2 Definitions**

5.2.1 User Requirements (UR) have been allocated a priority status.

5.2.2 UR priorities are defined as:

* **Mandatory.**

This is a mandatory requirement that the tender must comply with.

* **Key.**

Key Priority indicates a requirement without which the achievement of the system would not be possible. There is no latitude in complying with a “key” requirement and failure to meet such a requirement will exclude an entire tender from further evaluation.

* **Priority 1.**

Indicates a requirement which is necessary to achieve the intended functionality and/or performance. While there is some latitude in complying with a “priority 1” requirement, failure to meet a number of such requirements would normally exclude the tender from further evaluation.

* **Priority 2**.

Indicates a requirement which is not a key factor in the achievement of the intended functionality and/or performance, but which is perceived as beneficial. The provision of “priority 2” requirements is discretionary on the part of the tenderers, however, where provided they must represent value for money.

# 5.3 Key System Requirements

| ID | System Requirement | Status |
| --- | --- | --- |
| 1.1 | The FRS shall provide FR protection. |  |
| 1.2 | The FRS shall be capable of covering bare skin for use in Alpha Contaminated (RA) environments. |  |
| 1.4 | The FRS shall contain antistatic protection across all material |  |
| 2.1 | The FRS shall be capable of operating with existing firearms, PPE and RPE. |  |
| 3.1 | The FRS shall be a two-piece garment (Trouser and top). |  |
| 4.1 | The FRS shall be in a colour suited for Police Firearms Deployments (Dark Blue / Black), with removable Velcro ID patches. |  |
| 7.2 | The system shall be durable. |  |
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**5.4 MDP System Requirements Table**

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| **ID** | **Object Number** | **User Requirement** | **Measure of Effectiveness** | | | **Priority** | **Validation Method** | **Justification** | **Supplementary Information** |
| **Threshold** | **Objective** | **Status** |
| **1** |  | **Protection Against Environment** | | | | | | | |
|  | 1.1 | The FRS shall provide FR protection. | Performance Thresholds can be found in Annex A Table 1. | Same as Threshold | Candidate | Key | Review contractor technical specification | User Safety | The area of the torso covered by Body Armour in the UBACS shirt will not require FR material, in order to cater for a moisture wicking material. |
|  | 1.2 | The FRS shall be capable of covering bare skin for use in Alpha Contaminated (RA) environments. | The FRS must be capable of completely covering the entire head, body and legs of the user. The cuffs of legs and wrists must be capable of being drawn in to prevent RA contamination entry points. A zip off detachable hood with draw string or use of a flash hood with the respirator to prevent RA contamination entry points. | Should be adaptable, so user of FRS can maximise ventilation when RA protection is not required, but quickly move to full skin protection in event it is required. | Candidate | Key | Review contractor technical specification | SEG, Operational Support Unit Public Order Support Team and the Tactical Firearms Unit must be capable of discharging their AFO CT RP despite operating in a contaminated environment or structure. This is a key requirement in order for the Defence Nuclear Organisation maintain compliance with the Nuclear Regulator during independent assessed assurance exercises. | The protection afforded by the FRS applies to Alpha particulates, which are have little penetrative properties. Full skin coverage together with a full-face respirator with filter fitted, will prevent the user from Alpha contaminated dust particulates suspended in the air. |
|  | 1.3 | The FRS shall have removable hard-shell elbow and knee protectors, with internal adjustments. | Users will be required to quickly kneel and move between firing positions while mounted and dismounted from vehicles. The suit should provide protection to the knee and elbow joints, without creating a ‘snagging’ hazard. | Same as Threshold | Candidate | P1 | Review contractor technical specification | Aside from providing the user with adequate protection to allow them to remain effective in their role, the FRS can easily become damaged from premature wear to the knees and elbows from normal use. Any holes make this suit incompatible with 1.3 |  |
|  | 1.4 | The FRS shall contain antistatic protection across all materials | Users will be needed to operate in areas containing explosives without the risk of static discharge putting the users at risk.  Performance Thresholds can be found in Annex A Table 1. | Same as Threshold | Candidate | Key | Review contractor technical specification | User Safety | All elements of the FRS should be protected. |

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| **ID** | **Object Number** | **User Requirement** | | **Measure of Effectiveness** | | | | | **Priority** | | **Validation Method** | | **Justification** | **Supplementary Information** | |
| **Threshold** | | **Objective** | | **Status** |
| 2 |  | Integration of System Components | | | | | | | | | | | | | |
|  | 2.1 | The FRS shall be capable of operating with existing firearms, PPE and RPE. | FRS must be able to apply the marksmanship principles and operate issued weapons systems.  FRS shall not adversely affect the ability to adopt and transition between fire positions.  Must be able to carry out general police tasks.  FRS must be capable of working with issued gloves, boots, weapons, PPE and RPE. | | Same as Threshold | | Candidate | | | Key | | User Trial | To ensure integration between the FRS, Helmet and Body Armour / Tac Vest.  Freedom of action and movement to maintain Ops effectiveness. | |  |
| **3** |  | **Human Factors** | | | | | | | | | | | | | |
|  | 3.1 | The FRS shall be a two-piece garment (Trouser and top). | 3rd to 97th percentile male and female users including all personal equipment for variety of police roles from standard size range. Anthropometry to be taken from Human Factors Integration Technical Guide for Anthropometry People Size.  The FRS shall also be 'made to measure' to accommodate male and female Users whose anthropometric dimensions lie outside the 3rd to 97th percentile range. | | 100 percentile male and female users including all personal equipment for variety of police roles. Anthropometry to be taken from Human Factors Integration Technical Guide for Anthropometry People Size. | | Candidate | | | Key | | Review contractor technical specification and User trials. | The MDP employs differing sized personnel who must be able to safely use the provided FRS without causing restrictions while standing, kneeling and prone positions.  Two Piece Garment allows increased comfort for users and means users do not have to remove all PPE in order to take comfort breaks. | | Data taken from Anthropometry Survey of Military Personnel 2006 - 2007. |

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|  |  |  | **Threshold** | **Objective** | | **Status** |  |  |  |  |
|  | 3.3 | The FRS shall provide and UBACS style moisture wicking shirt options. | The FRS should be available with x2 Options for the top, to allow for user comfort depending on role and climate. | | The temperature variations of 50°C are experienced in the UK between summer and winter. The user having the option between a UBACS shirt with moisture wicking and a blouson jacket will cater for the variations. | Candidate | P1 | Review contractor technical specification and User trials. | To users remain correctly equipped while minimising the effects of Heat Illness and Cold Injury. | JSP 539 Heat Illness and Cold Injury, Prevention and Management. |
| **4** |  | **Physical Characteristics** | | | | | | | | |
|  | 4.1 | The FRS shall be in a colour suited for Police Firearms Deployments (Dark Blue / Black), with removable Velcro ID patches. |  | To ensure the users of the FRS are clearly identifiable as Police Officers. | | Candidate | Key | Review contractor technical specification and user trials. | APP AP provides a direction on how armed Police Officers should be clearly identifiable.  Police Officers must be clearly identifiable to the public for accountability.  If armed police officers are not clearly identifiable, it leaves a vulnerability for subjects to exploit a defence of ‘self-defence’. | R vs Bentley 1850. |
|  | **5** | **Usability** | | | | | | | | |
|  | 5.1 | The system shall not be prone to snagging. | Less prone to snagging when donning, doffing or using elements of the FRS.  All loose straps shall have a securing mechanism to prevent snagging. | Same as Threshold | | Candidate | P1 | User Trial | Less prone to snagging when donning or using elements the FRS. All loose webbing straps shall have a securing mechanism to prevent snagging. |  |
|  | 5.2 | The FRS will have a transparent passholder (credit card size). | So that an identity pass can be seen through a transparent window while securely held in place. | To allow user to clearly display pass while without having to use hands to show. | | Candidate | P1 | Review contractor technical specification and user trials. | Users should not be wearing a lanyard which does not have FR properties around their neck to hold a pre-requisite pass. Also frees up AFO’s hands to ensure they retain possession of weapons etc. |  |

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|  |  |  | **Threshold** | **Objective** | **Status** | |  |  |  |  |
|  | 5.3 | The system shall not adversely affect the ability to perform kinematic actions when undertaking tactical manoeuvres and general tasks. | The ability to undertake the following actions:  • Crawl  • Walk  • Run  • Jump | Same as Threshold. | | Candidate | P2 | user trials | To preserve individual effectiveness.  Stability of the system does not restrict movement. |  |
|  | 5.4 | The system shall not adversely affect the ability to negotiate obstacles when undertaking tactical manoeuvres. | Individuals movement isn't unduly restricted that it limits their ability to conduct general police tasks.  General Police tasks require the negotiation of obstacles such as but not limited to:  • Ladder  • Steps  • Walls  • Buildings (windows)  • Ditches  • Woods  • Thick undergrowth | Same as Threshold. | | Candidate | P2 | user trials | To preserve individual effectiveness.  Stability of the system does not restrict movement. |  |
|  | 5.5 | The system shall not adversely affect the ability to move in confined spaces when undertaking tactical manoeuvres. | To preserve individual effectiveness.  Stability of the system does not restrict movement. | Same as Threshold. | | Candidate | P2 | user trials | To preserve individual effectiveness.  Stability of the system does not restrict movement. |  |

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|  |  |  | **Threshold** | **Objective** | **Status** |  |  |  |  |
|  | 5.5 | The FRS trouser should have cargo pockets on the front of the thigh, to allow for access while travelling in vehicles or wearing thigh holster.  The FRS trouser should have side pockets on hips.  The FRS tops (UBACS and Blouson) should have pockets on arms. | Trouser thigh pockets to accommodate an A5 sized pad or Police Notebook.  Trouser hip pockets deep enough to avoid loose items falling out when user is seated.  Arm pockets on tops (UBACS and Blouson) large enough to accommodate warrant card. | Same as Threshold. | Candidate | P2 | Review contractor technical specification and user trials | Traditional side cargo pockets on trousers are inaccessible for AFOs due to pistol holster and respirator carriage.  When vehicle mounted, front thigh pockets are easier to access than traditional side pockets. |  |
|  | 5.6 | The FRS pockets and trouser fly should come with a storm flap with zip fastenings. | Robust zip fasteners. | To secure pockets a fixings using a simple and quiet zip fastener. | Candidate | P2 | Review contractor technical specification and user trials | The use of Velcro produces excess noise in tactical situations where silence must be maintained. |  |
|  | 5.7 | The FRS will have reinforced ‘stress’ areas (groin, seat, knee and elbow) | The FRS must be reinforced in areas which will experience the stresses of activities performed iaw the user role profile. | To prevent premature wear and damage caused by use of the FRS. | Candidate | P1 | Review contractor technical specification and user trials | Garments currently in service are subject to common failures in the ‘stress’ areas of the garments during dynamic physical activities. |  |

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|  |  |  | **Threshold** | **Objective** | **Status** | |  |  |  |  |
| **6** |  | **Comfort** | | | | | | | | |
|  | 6.1 | The FRS should be capable of being worn for long periods of time, from the start of a firearms deployment to post incident. | The FRS will be able to be worn for excess of 12hrs to support the Police Tactical deployments. | Same as Threshold | | Candidate | P1 | Review contractor technical specification and user trials | If the FRS is uncomfortable, it will increase the fatigue risk posed to the user. | The FRS shall minimise physical discomfort, due to friction, heat retention and pressure at localised points on the body. |
| **7** |  | **Environmental** | | | | | | | | |
|  | 7.1 | The system performance shall withstand degradation from exposure to in-service substances. | Does not suffer degradation after being splashed by substance such as:  - Petrol  - Oil (OMD 80)  - Diesel  Reflecting normal (non-specialist) duties.  Does not suffer degradation after exposure to substances such as:  - Insect repellent  - Sunscreen  - Candle wax  - Weapon oil | Same as Threshold | | Candidate | P1 | Review contractor technical specification and user trials | In general use the system will be exposed accidentally or deliberately to the listed contaminants.  Integrity is vital to avoid the need for large quantities of spare equipment leading to excessive logistic burden. |  |

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|  |  |  | **Threshold** | **Objective** | **Status** | |  |  |  |  |
|  | 7.2 | The system shall operate under climatic conditions defined in DEFSTAN 00-35 | Hot Dry A1-3  Humid B1-3  Cold C0-2  Marine M1-2  Europe, The Gulf, The Near East, South Asia, North Africa, Sub-Saharan Africa. | Same as Threshold | | Candidate | P1 | Review contractor technical specification and user trials | To ensure the system can be operated in the same climatic environment that the user is expected to operate. |  |
|  | 7.2 | The system shall be durable. | To achieve the required longevity of the system the material component parts shall have the durability to withstand the varying conditions exposed during operations  Abrasion, Tear and Tensile for Main Material:  [BS EN 12947-2]  [BS EN ISO 4674-1]  [BS EN ISO 1421]  Tensile Strength of Webbing  [BS EN ISO 13934-1]  Buckle Robustness  [BS 5131-5.11] A3 conditions, C2 conditions, Ambient conditions.  It is expected that all elements of the system come with a manufacturer’s warranty of a minimum of 3 years  From Date of Manufacture. | Same as Threshold | | Candidate | Key | Review contractor technical specification and user trials | To maximise system availability. |  |

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|  |  |  | **Threshold** | **Objective** | **Status** | |  |  |  |  |
| **8** |  | **Supply** | | | | | | | | |
|  | 8.1 | The system shall be delivered to User units within 12-14 weeks of order. | There is no storage at a central location so the System will need to be delivered to individual user units. | Same as Threshold | | Candidate | Key | Review contractor technical specification and user trials |  | Full list of delivery addresses can be found at Annex B. |

# Annex A. Physical Performance of Woven Fabric

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| METHOD OF TEST | | | | | | | | | |
| BS EN  12127 | BS EN ISO  12947-2 | BS EN ISO  5077 | BS ISO  17493 | BS EN ISO  14419 | BS EN ISO  4920 | BS EN ISO  13934-1 | | BS EN ISO  13937-1 | |
| Mass | Abrasion  Resistance | Dimensional  Stability to  Laundry(1) | Dimensional  Stability to  Heat (2) | Oil  Repellency | Water  Repellency | Tensile  Strength | | Tear  Strength | |
| g/m² | After 50,000  cycles using  12kPa load | % | % | rating | rating | N | | N | |
| +/-100 | min | max | max | min | min | min | | min | |
| 200 | No Breakage | 3 | 5 | After Wash (1) | After Wash (1) | Warp | Weft | Warp | Weft |
| 4 | 4 | 750 | 650 | 35 | 35 |

1. After 5 wash and dry cycles to BS EN ISO 6330 washing procedure 6N and Drying process F (higher temperature)

2. After 5 minutes at 180oC

# Annex A. Physical Performance of Woven Fabric Continued.

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| METHOD OF TEST | | |
| Heat and Flame Protection | BS EN 1149-5  Electrostatic properties | |
| **NO Melt NO Drip** | Charge Decay | Surface  resistance |
| BS EN 1149-3  Method 2 | BS EN 1149-1 |
| T50 = < 4s  OR  S > 0.2 | **≤2.5 x 10-9Ω** |

1. After 5 wash and dry cycles to BS EN ISO 6330 washing procedure 6N and Drying process F (higher temperature)

Station List for Delivery

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| **Primary Delivery Locations:** |
| AWE SEG | Aldermaston, Reading, RG7 4PR |
| AWE TFU | Aldermaston, Reading, RG7 4PR | |
| OSU | RAF Wyton, Huntingdon PE28 2EA |
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