

6 AN INVESTIGATION INTO KEY REQUIREMENTS OF PERSONAL PROTECTIVE EQUIPMENT IN HOSTILE ENVIRONMENTS

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JCSSM
Vol.1, No.2

Page 53

Work based
projects

Abstract

This study attempts to identify the key personal protective equipment requirements of close protection operatives in hostile environments. Whilst development has decreased the use of enhanced combat body armour, lighter variants protection requirements have increased. Data was collected from a purposive sample of operatives using an online questionnaire and supported by data from informal interviews with procurement personnel in three different services. The main findings show: a wide variation in what is perceived as personal protective equipment; load carry vest with ballistic armour plates is a step forward; paraclete is preferred to older equipment despite its high cost; fishing jacket and body armour are most suitable for weapon in hostile environments; and that the perceived threat drives the operative's requirement to use personal protective equipment and to blend with the client. As this study was based on a small sample, it is recommended that a large scale study is conducted.

Introduction

The aim of this study is to establish key personal protective equipment (PPE) requirements of the close protection operative (CPO). For the purpose of the study, PPE is a term referring to items of equipment used to protect oneself in a hostile environment. General items of PPE carried on, or by the CPO also include variants of body armour (BA) and/ or load carry vest (LCV). A hostile environment (HE) is an 'operational environment in which hostile forces have control as well as the intent and capability to effectively oppose or react to the operations a unit intends to conduct.' (Milterms, 2009) Countries may be identified as a HE, based on factors that include climatic conditions, remoteness and cultural issues. In Iraq, where security is mandatory for corporate and diplomatic business, over 55 security companies currently operate and the market place or 'customer groups' as defined by Kirk (2009) is at a consistently high level.

Current literature on the subject of equipment purchase and use indicates that up to 80% of US Marines killed in Iraq from wounds to the upper body would have survived if they had better BA (Online News Hour, 2006); it also highlights a discrepancy between procured and required equipment. Furthermore, Bonsu's (2009) survey showed that 43% of police officers killed whilst wearing BA, died due to wounds to the body from the side.



Journal of Crowd
Safety and Security
Management
An online journal

This, along with studies of US soldiers and CPOs, who had purchased their own BA seeking better protection levels (Harvey, 2008), indicates the need for PPE with increased protection.

A report by the Metropolitan Police Authority (MPA) (2007) proposes that considerations for the procurement of equipment should be based on three elements: a response to the threat, using the technology available, and producing a wearable garment. However, Consterdine (1997) suggests that a practical, all purpose BA and vest does not exist. By virtue of bodily mass and vital organ coverage, the 'complete' BA would likely be restrictive and cumbersome. A report produced by Defence Update (2007) points out that excessive weight and limited mobility exacerbates weak points of personal BA suits, demanding users and developers to agree and compromise on an acceptable balance between cost, weight, mobility, and protection. Therefore, consideration of PPE for its role specific use and the profile to be adopted with a particular principal (very important person, VIP) is of paramount importance. As mentioned by Thompson (2005), particular vulnerability in transit requires a suitable risk mitigation measure commensurate to the threat. Cairns (2004) stresses that standard operating procedures (SOPs) at both local and organisational level must be adopted, adhered to, and constantly evaluated. Moreover, the use of PPE in a HE, according to Thompson (2005), calls for correct managerial decision making; the need, issue and duration (Fay, 2006) to support the requirement for a professional prospectus regarding PPE; and communication between CPO and management to successfully complete risk mitigation measures.

Study Method

Interviews were sought with a cross section of CPOs who have the relevant knowledge and expertise to gain an understanding of why certain items of PPE and in particular BA and LCV are purchased. The sample was thus purposive; first individuals known to be contactable and in pertinent employment positions were chosen and subsequently provided 'snowball' sampling (Robson, 2002) through which further CPO's were identified and contacted. In qualitative research, participants are carefully selected for inclusion, based on the possibility that each participant will expand the variability of the sample (Maykut and Morehouse, 1994). This concept ensured that quality data was obtained from professional and experienced operatives who participated in the interviews.

Three informal interviews were conducted with individuals involved in the procurement of PPE. Those interviewed were from the Ministry of Defence (MoD), the United Nations (UN), and from a large multi-national private security company (PSC). The choice of interviewees ensured that information was obtained from diverse sources.



In each case, a personal approach along with an explanation of the purpose of the study, and the fact that the findings were to be made available for the participants afforded a greater trust to impart information and enlisted their support. All interviewees were selected specialists in procurement and all had progressed to CP Team Leader (TL) status and later onto procurement and managerial positions. Information sought was in the areas of personal experience as a CPO and managerial background, market research and equipment selection, financial implications and justification, and procurement deadlines and distribution of equipment.

JCSSM
Vol.1, No.2

Page 55

Work based
projects

The quantitative aspect of the study was in the form of an email questionnaire with a number of open questions, allowing more detailed responses. Thirty potential respondents were sought from a cross section of the security industry. Participants were CPOs operating in various HEs. The questionnaire was finally administered to a small sample of 20 respondents. The data obtained helped select four variants of BA and LCV for evaluation; these were: paraclete - all in one BA and LCV, BA and fishing jacket, cobra BA and LCV, and ECBA and LCV. It is arguable that selecting these four designs showed bias, however, these designs were all identified to have been used in a HE. The same questions were asked for each method of protection and carry capability, and the same score system was introduced for each of eight factors regarding each method.

Data from questionnaires was analysed first, data from the interviews was then used to enhance the reliability of the questionnaire's findings. Anonymity was observed in relation to the identity of the respondents and their exact workplace. Information of a sensitive nature in the questionnaire responses, by e-mail or in the interviews was omitted in consultation with respondents. The general principles invoked in codes of research ethics (Veal, 1997) were followed. It was ensured that no harm would befall the respondents, that they took part in the research freely and on the basis of informed consent. All interviewees were offered the opportunity to proof read the findings.

Findings

Bell (1999) suggests that identifying similarities and differences for groupings, patterns and items of particular significance are important in research. Respondent CPOs had varied levels of experience ranging from five months to over 21 years and all had been in a hostile environment. From the data gathered, height, build or fitness levels did not appear to be significantly different. However, the individual's perception of fitness was subjective and unless collectively tested no significant conclusions or comparisons can be made.



Journal of Crowd
Safety and Security
Management
An online journal

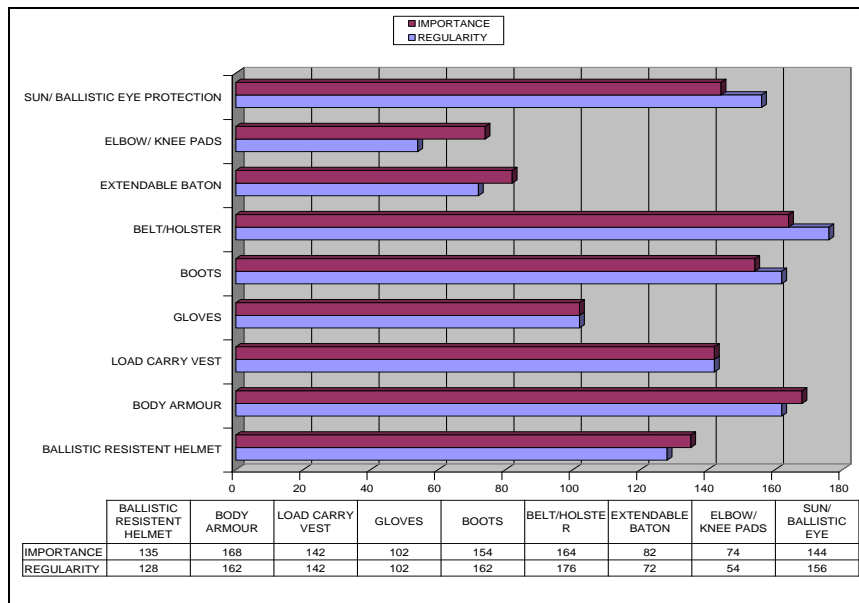
It can be assumed that to work in a HE carrying full PPE an above average level of fitness is preferable; as Consterdine (1997) suggests 'fit people are better able to deal with stressful situations.'

All participants had military backgrounds, with fourteen still serving in HM Forces and six in civilian positions. Fourteen were team leaders, where additional responsibility and a 'duty of care' for the CP Team require superior knowledge of PPE. Only six of twenty operatives had been involved in procurement of PPE. Of these, four had bought equipment for personal use and five as business ventures to support operations in a HE. This ranged from individual items of PPE to multiple purchasing. One CPO had procured equipment to set up a full contract.

Analysis of the data (Fig. 1) shows that BA was considered the most important item of PPE and supports D'Annunzio's (1997) requirement for continual development of armour for all personnel. The belt and holster scored highest for regularity of use and second in importance. This method of weapon carriage provides concealment under a jacket and armed anonymity on task, which is reflected by the high scoring obtained by the fishing jacket/BA. Many respondents stated that profile of the operative is a primary consideration affecting task specific PPE and should reflect the principal's dress; overt PPE may not always be acceptable for task. Intersec (2006) notes that profile adoption and image can 'either reduce or antagonise an aggressor, enforcing the need to blend. Elbow and kneepads scored least in both 'importance' and 'regularity of use' and had the largest difference score. Cairnes (2004) suggests that standard operating procedure for a CPO when attacked are to respond with 'fast, aggressive action'. Therefore, the argument for the actual need for such items of PPE is minimal, consistent with the responses obtained, as eight out of twenty respondents had not used them. Interestingly the LCV scored evenly for both importance and regularity of use, and was the 'median' score of the nine items. Possibly, the design of PPE has moved away from separate BA and LCV on a tactical overt task towards modular all-in-one units that now dominate the market place.

Figure 1. Perceived importance and regularity of use of PPE items

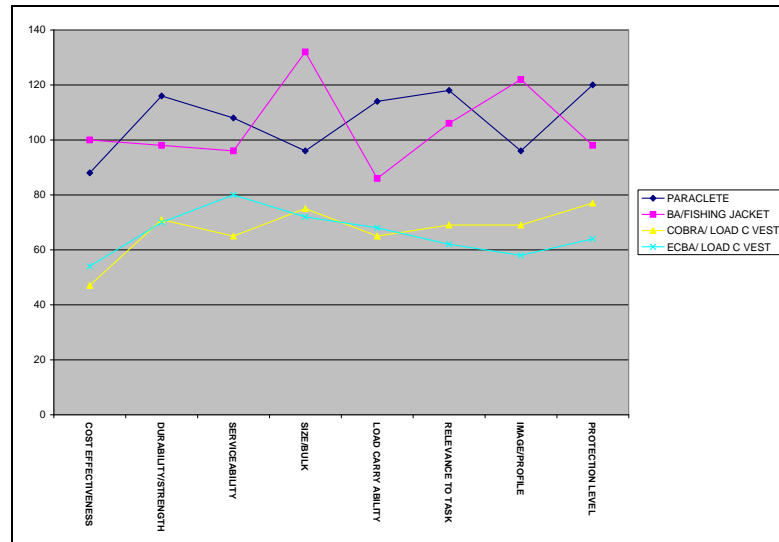




The respondents' scores of four variants of BA/LCV are shown in Figure 2. The average scores were: paraclete, 16 respondents (53.5%); fishing jacket and BA, 18 respondents (46.2%); COBRA/LCV, 12 respondents (48.9%); and ECBA/LCV, 12 respondents (44%). A maximum score (72) was received for one variant, yet one operative scored this as 37, which highlights how personal interpretation can affect results and the difficulty of discounting subjective personal perceptions. The paraclete and fishing jacket/BA were comprehensively scored above the other two variants. The fishing jacket scored highest for 'size', and supports CP SOPs' emphasis for the need for movement and mobility (Cairnes, 2004). Cost effectiveness scored least for each type of PPE and cannot be measured reliably as there was no evidence to suggest that respondents knew commercial prices of PPE. The MoD and PSC respondents reinforced that cost effectiveness would not override safety. ECBA/LCV scores were the most consistent with least overall difference between highest and lowest scores. It is possible that as the original tactical BA, it is assumed to be average in all ways.

Figure 2. Respondents' scores of four variants of BA/LCV





All respondents were satisfied with their current protection and load carry capability; additionally interviewees placed emphasis on continued development and research areas. The MoD procurement respondent had a more defined budget and added that as PPE develops, the unit seeks to firstly trial and test PPE prior to placing orders. Respondents also suggested the following enhancements and modifications: the need for lighter ballistic plates, a reduction in overall bulk, durability problems (zips and velcro fastenings that diminished quickly in harsh and extreme climatic environments), and further ability to alternate pouches attached to a load carry capability. They stated that terrain, climate and design had led to downfalls in durability of PPE. PSC and UN respondents added that this led to serviceability or replacement issues in isolated environments, where only local purchase may be possible. This was a lesser problem for the military mainly due to the availability of logistical support in a HE to replenish CP teams. The paraclete system integrates the holster onto the chest area of the vest, which respondents preferred due to its versatility and as it offers no obstruction to access the weapon and to overall freedom of movement. Interestingly, the respondents were divided equally over the position of the holster, whether overt or covert; they felt the position purely depended on the nature of the task.



Different types of PPE are available for use and as stressed by interviewees, security employers will supply one type for all. It could be argued that this practice has a detrimental effect on performance, as ill fitting or non-task specific PPE may have to be used by virtue of company supply, leading to continuing personal procurement (Harvey, 2008).

Procurement is normally subject to financial constraints, requiring presenting a stringent business case, however, once 'on the ground' some team leaders could request and be given an open cheque, if safety and operational imperatives demanded. All interviewees believed that any PPE sourced needs to be proven and, therefore, should adhere to strict ballistic protection ratings. The number of respondents who personally procured PPE confirms paraclete as the choice brand. This appears to contradict Fay (2006) who claims that cost measures for replacement and serviceability could pose a threat to CPO safety, as paraclete is the most expensive of those assessed.

JCSSM
Vol.1, No.2

Page 59

Work based
projects

Conclusion

PPE differs immensely but all items should fulfill the same roles and a CPO needs to believe that PPE is of sufficient standard for the environment, durable, and serviceable. The LCV with ballistic armour plates is considered a step forward and the findings show that, despite its high cost, CPOs prefer paraclete to older equipment. It provides modularity, large stowage capacity, and a quick release function. However, the fishing jacket and BA is still the proven and most suitable for weapon and BA concealment in a HE. Profile and image naturally reflect the perceived threat, and drive the operative's requirement to use PPE in general and to blend with the principal. The issue raised against PPE on the whole is mainly concerned with its bulk and weight. Although it is encouraging that the key items of PPE in use appear to be adequate for task, monitoring of new commercially available equipment should continue and may provide stimulus for additional comparison of BA/LCV to find the perfect and complete system. This study is exploratory as its findings were obtained from a small sample; a larger scale study should be undertaken, tailored to particular localities or countries. Using probability sampling techniques, a cluster sample of CPOs in an area may identify suitable PPE for specific and different environments and roles. A need for gender specific studies in a HE should also be undertaken as all respondents in this study were males. A female prospectus regarding weight, fitness level, cultural background, and perceived threat in a certain HE may provide results for further PPE procurement and design. Communication is key between the CPO and the security manager or procurer, as well as, between the security manager and manufacturer. In a HE, this is crucial in order that appropriate equipment is supplied for specific tasks. Increased research and direct consultation between manufacturers, suppliers and CP companies to look into current durability and serviceability issues should enhance the design and concept of future body armour.



Journal of Crowd
Safety and Security
Management
An online journal

References

JCSSM
Vol.1, No.2

Page60

Work based
projects

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JCSSM
Vol.1, No.2

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Page 61

Work based
projects

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