At Short Notice: UK AFV and PPV Procurement using UORs [1]

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Introduction

During the recent conflicts in both Iraq and Afghanistan, the problems of providing protected mobility to troops on the ground, especially in view of the limited availability of Chinook helicopters, has received attention from the Media, from Coroners and in Parliament. The equipment in service at the time provided certain capabilities but were either fast and agile but lacked protection against mines and Improvised Explosive Devices (IEDs) or were much better protected, but slow and had relatively high operating costs. These included:

- 'Snatch' Land Rovers – an up-armoured version of the Land Rover Defender 110, they were widely used in Northern Ireland and on peacekeeping missions where the threat environment was considered low.[2] Their use in Iraq and Afghanistan has been criticised because despite being armoured against small arms fire, the vehicles have proven susceptible to IEDs and over thirty-seven casualties have been attributed to the vehicle's lack of protection.[3] Such was the disillusionment, that armed forces personnel started calling it the 'mobile coffin'.[4]
- Warrior – an infantry fighting vehicle (IFV) which grew out of the 1970s MCV-80 project. Some 789 vehicles were produced by GKN Defence, the Warrior entering service in 1987 with the 1st Battalion, Grenadier Guards. Comparatively well armed and armoured (having a 30mm Rarden cannon and 7.62mm chain gun), these vehicles are now over twenty years old, with increasing maintenance costs and in need of upgrading.[5]
- FV432 – replaced by the Warrior IFV, the FV432 was built by GKN Sankey up until 1971 when over 3,000 had been produced. It had a welded steel hull that provided protection against small arms fire and shell splinters and came in a number of variants, including troop carrier, ambulance and command vehicle.[6]

In addition, it was considered that tracked vehicles are viewed as more aggressive, while wheeled vehicles are less intimidating, have a greater range, higher top speed and a lower maintenance burden. The pressure was on to have something done, from the Prime Minister, through Lord Drayson, all the way down to the heads of both the Defence Procurement Agency (DPA - Sir Peter Spencer)[7] and Defence Logistics Organisation (DLO - General Sir Kevin O'Donoghue)[8].

Time is of the Essence

The MoD therefore had three options available to it to fill what it perceived to be a capability gap – go through the standard acquisition cycle, upgrade any existing capability or acquire capability using the Urgent Operational Requirement (UOR) process. Using the standard acquisition cycle was not really practical, as time and again, the MoD had been criticised for the delays (and cost overruns) caused to projects as they move through the CADMID cycle.[9] The second option has been implemented, in so far as the 'Snatch' Land Rover, Warrior IFV and FV432 have been concerned, with:

- Snatch Vixen – deployment started in 2008 with vehicles being upgraded by Ricardo Specialist Vehicles and NP Aerospace (NPA) as the original design authority, the programme being run by the Specialist & Utility Vehicles Project Team. The main improvements centre on an improved armour package, with underbody and wheel arch blast deflectors, as well as an enhanced engine and drive-train package, essential given that the vehicle now weighs in at 4.1 tonnes.[10]
- Warrior – has both the Theatre Entry Standard (Herrick) (TES(H)) and Capability Sustainment Programme (WCSP) covering both the short and long-term upgrading of the vehicle. The TES(H) so far has resulted in around seventy upgraded vehicles that had been deployed to Afghanistan by mid-2011. This upgrade features a further thirty modifications, done at the Defence Support Group (DSG) facility at Donnington, and builds upon the seventy modifications already undertaken by BAE Systems under UOR funding. It has additional armour protection (that is modular in nature), a passive noise reduction system, enhanced engine, suspension, brakes and drive train (it is now around forty tonnes in weight) and two electronic systems to detect IEDs. The £1bn WCSP programme has, subject to final contract negotiations, been awarded by the MoD to Lockheed Martin UK. The upgrade was originally to be applied to 643 vehicles and includes additional electronics and communications gear along with a new appliqué armour package, with 449 of these also receiving a remodelled turret with a CTAI 40mm Cased Telescoped Cannon. Those numbers are, however, in some doubt.[11]
- FV432 Mk. 3 Bulldog – in November 2005, the DLO awarded BAE Systems an £80m contract (with an additional £15m for support in early 2006) to upgrade 500 FV432 APCs to a standard that included an Explosive Reactive Armour (ERA) package, advanced passive armour, air conditioning, thermal blanket, protected commander's position and an IED detection system. A follow-on contract worth £70m for an additional 400 vehicles was signed in May 2007, with final deliveries taking place in early 2011.[12]

However, given both the operational and political urgency (for example, a Ministerial target was set to get Mastiff into Iraq by 31 December 2006)[13], upgrading vehicles currently in service would, while being quicker than the normal acquisition cycle, still take time and so it was decided that the requirement would have to be met by a Military-Off-The-Shelf (MOTS) purchase. After a review by a number of Subject-Matter Experts and Capability Managers of what was available, a list of ten Key User Requirements (KURs) was produced. While these have been applied to the Mastiff acquisition, the MoD has in fact bought a wide range of vehicles in significant numbers to fill the capability gap.

<u>In The Market</u>

The first Mine Resistant Ambush Protected (MRAP) vehicles appeared in Iraq as Explosive Ordnance Disposal (EOD) and combat engineer vehicles. The original designs were based on experience of both the South African and Rhodesian bush wars and generally feature a V-shaped or curved lower hull that deflects the blast from a land mine or IED around and away from the vehicle. They also tend to be fully enclosed, a hint as to their origin as EOD vehicles, with heavy ballistic glass fitted to windscreens and viewing ports. As the IED threat increased in both Iraq and

Afghanistan, MRAP vehicles were seen as the safest method by which armed forces personnel could move around in hostile terrain, given that the IED threat was killing hundreds of personnel each year. The early MRAP vehicles, although far better protected than Humvees or 'Snatch' Land Rovers, were not designed as troop transports and so were seen as being a bit too heavy, too tall, and too bulky for either the urban environment of Iraq or the mountainous regions of Afghanistan. New designs appeared, which took into account the tactical needs of the users and the operating conditions in-theatre. However, some criticism has been voiced as to their effect on the counter-insurgency effort, encouraging troops to ride in these vehicles rather than patrolling outside and interacting with the local population.[14] To cater for the needs of the British Army with regard to protected mobility, the MoD has bought:

Mastiff, Wolfhound and Ridgback

The MoD initially ordered 108 Force Protection Industries Incorporated (FPII) Cougar MRAP vehicles (known in British service as the Mastiff).[15] The MoD were given a deadline of twenty-three weeks to have Mastiff in-theatre and so the basic vehicles[16] were upgraded to UK specifications by Coventry-based NPA at the UK base in Akrotiri, Cyprus, where some REME and RLC personnel were given training as well. The initial batch of ten vehicles was then flown to Iraq to meet the Ministerial deadline, a classic UOR procurement where urgency generally outweighed cost or an extended assurance process.

This initially rushed procurement was followed by the purchase of additional 'upgraded' versions of Mastiff 1, as well as 174 Mastiff 2, a growing number of Mastiff 3[17] and thirty ex-USMC vehicles (which entered service in 2009) as training vehicles.[18] The total number of Mastiff vehicles will eventually reach about 470. On top of that, approximately 180 Ridgback (4x4)[19] and around 125 Wolfhound (6x6)[20] have been ordered, meaning that the entire Cougar-based fleet will rise to about 780 vehicles during 2012, making a vital contribution to protected mobility and overall force protection.

There had been doubts as to whether something quite so large and lumbering could fulfil the UOR and in the broader context, not increase pressure in the equipment programme on the FRES UV project. However, Mastiff has proven to be an operational success, but there have been other factors which have complicated things, and these have included:

- The Commercial Environment – NPA took on the task at a significant commercial risk while pending the award of an MoD contract. At that time, the Specialist & Utility Vehicles Integrated Project Team (SUV IPT) was the Design Authority but with Mastiff 2, the role passed to NPA and has since moved again to Integrated Survivability Technologies Limited (a joint venture between FPII and NPA).
- Procurement Strategy – Given the timescale, the strategy was to look for a MOTS solution, with the key issues being the choice of the base vehicle, developing enhanced protection, and systems integration. The urgency of the requirement was underlined by a number of people, including the SUV IPT Leader and Lord Drayson, who at the time was Minister for Defence Procurement.[21] The Defence Vehicle Dynamics (DVD) Trade Show was useful in viewing a number of different

contenders, with information also coming from the Defence Science and Technology Laboratory (DSTL).

- Innovative Support – Given the speed at which this procurement was undertaken, there was little time to consider innovative support arrangements, such as Contracting for Availability or Contracting for Capability, although some $4m of spares were ordered with the vehicles, based on the only usage model then available, the USMC, itself based on the understanding that UORs have a one-year life (later amended to three).
- International Context – the procurement was also influenced by the international nature of the operations in both Iraq and Afghanistan with a number of Coalition partners having deployed Cougar-based vehicles.[22] While this might have led to opportunities for shared support and learning lessons regarding interoperability, it actually led to some unhelpful competition over priorities and resources. At the time, NP Aerospace were not allowed to source alternative suppliers of spare parts and had to use US manufacturers, who themselves were required by US law to satisfy the demands of the USMC first, the MoD finding that significant quantities of spare parts originally intended for the UK were diverted.[23] While Mastiff and Ridgback were conducted as Foreign Military Sales (FMS), Wolfhound was a Direct Commercial Sale (DCS) allowing the UK to have a little more say.

In UK service, the Mastiff family of vehicles includes[24]:

- Mastiff 1 / 1.5: Contract Awarded – August 2006; Deployed – December 2006; First Operational Use – March 2007. Variants – troop carrier, battlefield ambulance.

- Mastiff 2: Entered Service – late 2008; Deployed Operationally – March 2009. Enhancements – improved lights and upgraded brakes; Variants – troop carrier, battlefield ambulance and enhanced communications vehicle.

- Mastiff 3: Entered Service – early 2011; Enhancements – increase in internal room and integrated communications equipment.

- Ridgback (4x4): Ordered – February 2008; Arrived in UK – August 2008; Deployed – May 2009; Variants – troop carrier, battlefield ambulance, command post vehicle.[25]

- Wolfhound (6x6): Ordered – April 2009; Entered Service – late-2010; Variants – logistics vehicle.

There was some initial resistance to Mastiff, which led to criticism of some of its capability shortcomings. One area of concern is safety and this is being looked at by the Protected Mobility Team (PMT) and Headquarters, Land Forces (HQLF). It is considered a priority, with current issues including the vehicle's ability to deal with water hazards (canals are common in Helmand) and crew egress in an emergency. But if allowances are made, it actually fulfils the capability requirements very well. Indeed, Mastiff has, overall, received a good press, for example – "The procurement of Mastiff has largely been a real success story for the MoD and, in particular, for

Minister of Defence Equipment and Support, Lord Drayson"[26] warranted by good performance in-theatre.[27]

Vector

The MoD ordered 180 UK-built Pinzgauer Vector alongside the Mastiffs.[28] The Vector, originally designed by Steyr-Daimler-Puch of Austria, was developed and placed in quantity production in less than nine months, being based on the Pinzgauer (6x6) chassis, with a new armoured body designed by BAE Systems. It also incorporated power-assisted steering, an anti-skid braking system, electronic traction control, run-flat tyres, an air conditioning system, the Bowman communications system and electronic counter-measures (ECM) devices. While better than the Snatch Land Rover, it has been found that the Vector does not provide the sort of protection against mines and IEDs that other vehicles do and so has been relegated to use in lower threat areas. All 180 vehicles had been delivered by the end of 2007.[29]

Foxhound

The Ocelot PPV has been in development by Force Protection Europe (FPE – a subsidiary of FPII) since early 2009 (with Ricardo Specialist Vehicles) to meet the requirements of the British Army for a light PPV with a high-degree of protection and good mobility. After undergoing trials, the Ocelot was selected as the preferred bidder in September 2010, over that of the Supacat SPV 400. In November 2010, FPE was awarded a £180m contract covering the supply of 200 Ocelot LPPV (to be known as the Foxhound in British Army service) plus an initial purchase of spare parts with deliveries to run from 2011 through to mid-2012.[30]

Panther

The BAE Systems Panther, based on the Iveco Defence Vehicles LMV (4x4), was chosen to fulfil the British Army's Future Command and Liaison Vehicle requirement, with some 400 vehicles being ordered, although due to issues arising during trials, it wasn't accepted for service until mid-2008. Of the 400, a number have been upgraded to Theatre Entry Standard (TES) with additional ECM equipment, a third roof hatch, rear view camera, additional armour and a redesigned engine air intake.[31]

Warthog

Ordered in late 2008 to replace its direct predecessor the Viking, the new vehicle includes spall liners, appliqué armour, a mine protection kit, Bowman communications equipment, devices to counter IEDs, wire cutters, grenade launchers and a Platt roof-mounted weapon system.[32]

Conclusion

With an urgent need to counter the growing threat of IEDs in both Iraq and Afghanistan, and political pressure building due to adverse press coverage and Coroner's reports, the MoD has successfully filled a specific operational requirement in a relatively short period of time, in terms of both upgrading current capability and

acquiring new capability, by utilising the UOR process. This is important, as the MoD has recently stated that there will be an increasing emphasis on buying MOTS solutions where appropriate.[33] Taking the Mastiff as an example, there have however been problems, particularly in relation to: Firstly, the lack of any real examination of the issues surrounding the generation of a TLCM plan, effectively leaving that to after the signing of the Post-Design Services contract; Secondly, maintenance and repair, which have been exacerbated by the lack of visibility of, and difficulties in, the management of spares. All this, and the lack of an overall fleet management system, means that there will be a shortage of available information when it comes around to deciding whether to take these vehicles into the MoD's core capability area, a decision that is yet to be taken[34] but could swing either way in this age of austerity.

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[1] Armoured Fighting Vehicle, Protected Patrol Vehicle and Urgent Operational Requirements.
[2] BBC News Website. (2009) 'Q&A: Snatch Land Rovers', currently located at http://news.bbc.co.uk/1/hi/uk/7703703.stm. Accessed: 13 February 2012; Wikipedia. (2012) 'Snatch Land Rover', currently located at http://en.wikipedia.org/wiki/Snatch_Land_Rover. Accessed: 13 February 2012.
[3] BBC News Website. 'Inquest into only female UK soldier's death resumes', currently located at http://news.bbc.co.uk/1/hi/uk/8542288.stm. Accessed: 13 February 2012.
[4] Sturke, J. (2008) 'Snatch Land Rovers: the mobile coffins of the British army', dated 1 November 2008, currently located at http://www.guardian.co.uk/uk/2008/nov/01/snatch-land-rovers-army. Accessed: 13 February 2012.
[5] Jane's Information Group. (2011) 'Warrior Infantry Fighting Vehicle', posted 29 November 2011 in *Jane's Armour and Artillery*, located on www.janes.com. Accessed: 14 February 2012. Foss, C. (1994) *Warrior Mechanised Combat Vehicle 1987 – 94*, Oxford: Osprey Publishing, July 1994, New Vanguard Series No. 10.
[6] Jane's Information Group. 'FV432 armoured personnel carrier', posted 29 November 2011 in *Jane's Armour and Artillery* at www.janes.com. Accessed: 15 February 2012.
[7] DPA Wall Chart, October 2006, located at http://webarchive.nationalarchives.gov.uk/+/http://www.mod.uk/NR/rdonlyres/749CE150-D35B-472F-989E-3133815F34F9/0/dpawallchart_oct06.jpg. Accessed: 18 January 2012.
[8] DLO Microsite, located at http://webarchive.nationalarchives.gov.uk/+/http://www.mod.uk:80/DefenceInternet/MicroSite/DLO. Accessed: 18 January 2012.
[9] For example, see National Audit Office. (2007) *Ministry of Defence – Major Projects Report 2007*, HC98-I, London: TSO, 26 November 2007, p. 5.
[10] Jane's Information Group. (2012) 'NP Aerospace CAV 100 armoured personnel carrier', posted 2 February 2012 in *Jane's Armour and Artillery* at www.janes.com. Accessed: 14 February 2012.
[11] Defense Industry Daily. (2011) 'WCSP: Britain's Warriors to Undergo Midlife Upgrade', currently located at http://www.defenseindustrydaily.com/WCSP-Britains-Warriors-to-Undergo-Mid-Life-Upgrade-05967/. Accessed: 13 February 2012; *Op Cit*. 'Warrior Infantry Fighting Vehicle', dated 29 November 2011.
[12] *Op Cit*. 'FV432 armoured personnel carrier', posted 29 November 2011.
[13] Author's conversations with members of the MoD's Protected Mobility Team, dated 26 January and 24 February 2010. See also 'Defence Secretary orders new vehicles for troops in Iraq and Afghanistan', located at http://webarchive.nationalarchives.gov.uk/+/http://www.mod.uk:80/DefenceInternet/DefenceNews/MilitaryOperations/DefenceSecretaryOrdersNewVehiclesForTroopsInIraqAndAfghanistan.htm. Accessed: 25 January 2012. Ministerial interest has continued throughout the vehicle's entry into service and deployment, for example, PM Gordon Brown made a statement to the House of Commons on 8 October 2007, confirming that additional Mastiff vehicles had been ordered as a priority for the forces serving in Iraq and Afghanistan. See Hansard, Commons Debates, 8 October 2007, Column 24, located at http://www.publications.parliament.uk/pa/cm200607/cmhansrd/cm071008/debtext/71008-0004.htm#column_21. Accessed: 25 January 2012.
[14] Neville, L. (2011) *Special Operations Patrol Vehicles – Afghanistan and Iraq*, Oxford: Osprey Publishing, September 2011, New Vanguard series No. 179, p. 41.
[15] Foss, C. (2006) 'UK unveils Mastiff and Vector protected vehicles', posted 20 September 2006, in *Jane's Defence Weekly*, at www.janes.com. Accessed: 14 February 2012.
[16] See http://www.forceprotection.net/products/cougar_6x6/ for specs. Accessed: 16 November 2011.
[17] See http://www.army.mod.uk/equipment/fighting-vehicles/1487.aspx for overview. Accessed: 16 November 2011.

[18] Email dated 12 January 2012, from Tim Foreman, DE&S Public Relations Office.
[19] Ripley, T. (2010) 'British Army faces heavy cull of armoured vehicles' posted 23 December 2010 in *Jane's Defence Weekly* at www.janes.com. Accessed: 12 January 2012.
[20] Foss, C. (2010) 'DVD: UK orders further vehicles for Afghanistan' posted 25 June 2010 in *Jane's Defence Weekly* at www.janes.com. Accessed: 12 January 2012. The initial order was for ninety-seven but this was augmented by an additional order for twenty-eight placed in June 2010.
[21] Drayson, Lord. (2006) 'Speech to the Future Carrier Conclave', Royal United Services Institute, 18 September 2006, located at http://webarchive.nationalarchives.gov.uk/+/http://www.mod.uk/DefenceInternet/AboutDefence/People/Speeches/MinDP/SpeechToTheFutureCarrierconclave18September2006.htm. Accessed: 25 January 2012.
[22] Such as Iraq, Canada, Croatia, Georgia, Hungary, Italy and Poland. See Wikipedia. (2011) 'Cougar (vehicle)' webpage, located at http://en.wikipedia.org/wiki/Cougar_(vehicle). Accessed: 15 November 2011.
[23] National Audit Office. (2009) *Support to High Intensity Operations*, HC508, 14 May 2009, London: TSO, p. 13.
[24] See Conners, S. (2009) 'Mastiff 2 and Ridgeback reach Afghanistan' posted 12 June 2009 in *Jane's Defence Weekly* at www.janes.com. Accessed: 12 January 2012; Foss, C. 'Change of the Guards: European Land Systems Part 2 – the UK' posted 22 June 2009 in *Jane's Defence Weekly* at www.janes.com. Accessed: 12 January 2012.
[25] Army Technology Website. (2011) ' Cougar Ridgback, United Kingdom' Webpage, located at http://www.army-technology.com/projects/cougar_ridgback/. Accessed: 18 January 2012.
[26] D'Arcy, M. (2008) 'Mastiff the Protector' in *Defence Management Journal*, Issue 40 (February), at http://www.defencemanagement.com/article.asp?id=329&content_name=Land%20Vehicles&article=9186. Accessed: 15 November 2011.
[27] See for example http://www.forceprotection.net/products/cougar_4x4/; Feickert, A. (2011) *Mine-Resistant Ambush-Protected Vehicles: Background and Issues for Congress*, dated 18 January 2011, Report No. RS22707, available at http://www.fas.org/sgp/crs/weapons/RS22707.pdf, p. 2. Accessed: 15 February 2012.
[28] *Op Cit*. 'UK unveils Mastiff and Vector protected vehicles', posted 20 September 2006.
[29] Jane's Information Group. 'Vector Protected Patrol Vehicle', posted 2 February 2012, in *Jane's Armour and Artillery*, available at www.janes.com. Accessed: 14 February 2012.
[30] Jane's Information Group. (2012) 'Ocelot Light Protected (Foxhound) Patrol Vehicle', dated 2 February 2012, in Jane's Armour and Artillery at www.janes.com. Accessed: 14 February 2012.
[31] Jane's Information Group. (2011) 'British Army Armour Upgrades for Iraq and Afghanistan', posted 22 July 2011 in Jane's Armour and Artillery, at www.janes.com. Accessed: 15 February 2012; Jane's Information Group. (2011) 'IVECO M65E19WM Light Multirole Vehicle (LMV)', posted 6 January 2011in *Jane's Military Vehicles and Logistics*, at www.janes.com. Accessed: 15 February 2012.
[32] *Op Cit*. 'British Army Armour Upgrades for Iraq and Afghanistan', posted 22 July 2011.
[33] Ministry of Defence. (2012) *National Security Through Technology: Technology, Equipment and Support for UK Defence and Security*, CM8278, February 2012, London: TSO, pp. 20 – 21.
[34] See for example http://www.forceprotection.net/news/news.html?id=355.



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