

Written evidence submitted by Patrick Benham-Crosswell

SUMMARY

1. Ajax is not fit for its primary purpose as an armoured reconnaissance vehicle. Whether it is suitable for the secondary role, providing direct firepower to strike brigades is questionable.
2. If the current problems afford an opportunity to cancel the project and procure an existing vehicle (or vehicles) it should be taken.
3. Suitable alternatives include something based on the Stormer (already in service with the British Army, so logistically compelling) or the new French Jaguar (which is wheeled, and therefore a closer fit into Boxer battlegroups and brigades).
4. This failed procurement is symptomatic of an Army not understanding what it needs, does or wants. The reasons for this are complex and beyond the scope of this document, but it's premature and (probably) unjustified to lay blame at the door of the PE or GDLS.

THE AUTHOR

5. I am an ex-Army officer with extensive experience in armoured reconnaissance. Specifically:
 - a. I was a troop leader and squadron second in command of a reconnaissance regiment in Germany at the end of the Cold War.
 - b. I was the second in command of a squadron in the WHITE ERMINE exercises investigating CVR(T) replacement in 1988.
 - c. I was an expert contributor to subsequent computer simulations of reconnaissance at DERA Fort Halstead.
 - d. I was a subject matter expert for DERA Fort Halstead on a series of simulations on FCLV, FLAV, MRAV and FRES (as well as other programmes).
6. I am in touch with military affairs and write for several publications. I wrote a well-received book on the fundamentals of land warfare.
7. This submission is the personal view of a taxpayer exasperated with the continuing failure of the British Army to procure the tools it needs efficiently.

ARMOURED RECONNAISSANCE

8. None of the exercises or simulations that I was involved in over some ten years suggested that the best solution for a reconnaissance vehicle was a 40 ton tank-sized vehicle. The WHITE ERMINE exercises found elevating sensors (that is sensors capable of being raised some 8 to 15 m above a vehicle) valuable. Subsequent simulations repeatedly confirmed this. Yet Ajax has no such capability.
9. To clarify the requirement, there are two forms of armoured reconnaissance. Both were (are) performed by CVR(T).

Close Reconnaissance

10. The close reconnaissance vehicles operate at battle-group level, some 3 to 8 km in advance of combat troops within the indirect fire umbrella of their battlegroup. The battlegroup can also augment its reconnaissance with tanks and ATGW if needed.
11. The focus is the immediate battle. Secondary tasks include flank protection, marking of start lines, traffic control etc. These do not affect vehicle design.

Medium (or Formation) Reconnaissance

12. Medium reconnaissance is performed at ~Brigade / Divisional level. (Whether the British Army has or can deploy an armoured division is moot). The focus is the next day's battle – and the one after that, some 15 to 60 km ahead of friendly main forces, outside of the range of most indirect fire assets. No augmentation of strength is possible.
13. Secondary tasks are similar to close reconnaissance, albeit at larger scale over longer distances. Reliable and long range communications are vital.

Light Cavalry

14. The British Army has recently developed a light cavalry capability based on the Jackal / Cougar. How these fit into the British Army's doctrine of reconnaissance is unclear.
15. The vehicles were (procured as a UOR for Afghanistan) are extremely vulnerable. Lacking overhead protection they're vulnerable to small arms, shell fragments and NBC. They are not suited to armoured reconnaissance. (Although their successful deployments demonstrate that much of the efficacy of reconnaissance vehicles comes from their crews).
16. Light Cavalry are an anomaly caused by legacy UOR equipment and a successful campaign against amalgamations by the Celtic fringe rather than planned capability. It will not be considered further.

Stealth v Fighting for Information.

17. Reconnaissance vehicles survive by not being seen, moving stealthily from observation position to observation position. Occasionally they may engage high value opportunity targets such as headquarters and air defence. These targets are lightly armoured, and vulnerable to 25mm calibre weapons.
18. If, as sometimes happens, reconnaissance vehicles blunder into enemy tanks their best (only) option is to pop smoke and reverse out of contact as fast as possible. They will not survive a direct fire fight.
19. Some argue that reconnaissance – particularly close reconnaissance - should fight for information, that is engage enemy forces to better determine their size and locations. Extensive investigation yields the unvarying result that reconnaissance forces die when they fight for information. This is unsurprising, reconnaissance forces are, by definition, spread thinly and thus outnumbered. Engaging superior forces on ground that you have not chosen is (and always has been) suicidal. Moreover, once reconnaissance forces start fighting for survival they cease generating information.
20. Therefore there is no point in providing a reconnaissance vehicle with potent weaponry as it is unlikely to use it. Secondly it does not need much armour either; it's not going to stand and fight.

RECONNAISSANCE VEHICLE DESIGN CHARACTERISTICS

Protection

21. Given the existence of active protection systems such as the Israeli Trophy (which offers complete protection against anti-tank weaponry other than tank guns) providing a high level of protection can be achieved with less than one ton of weight.
22. Protecting a light or medium vehicle against tank APFSDS rounds is impossible. Such vehicles should avoid enemy tanks, and manoeuvre rapidly out of sight if they do.

23. Protection against smaller cannon is possible, although the weight increases as the calibre rises. Reconnaissance vehicles should not be in a fire fight, so the need for this protection is marginal. Level 4 protection (i.e. up to 14.5mm heavy machine guns) as fitted to Boxer is desirable.
24. Protection against buried mines is desirable, although reconnaissance forces have the freedom of movement to avoid likely mined areas. (Their role includes identifying such areas, not dying in them). Complete protection is unlikely; enhanced levels are achievable – albeit with a higher (less stealthy) vehicle.
25. The larger the vehicle the more (heavy) armour is required. A smaller vehicle can be better protected.

Firepower

26. Reconnaissance vehicles operate in pairs, one vehicle observing while the other moves. Any enemy engaging the lead vehicle will be detected by the overwatch vehicle. (Note the lead vehicle may not survive). For medium reconnaissance, operating where an enemy is not expecting contact, the threat of this scenario is lower. For close reconnaissance the threat is higher.
27. There is a range problem. Direct fire weapons, such as tanks, can only kill what they can see – that being determined (inter alia) by the terrain. Given the wide dispersal of reconnaissance assets – perhaps two vehicles per one to two km of frontage, direct fire overwatch (being able to kill the enemy engaging the lead vehicle) is often impossible.
28. A 20mm to 30mm cannon is useful for killing vehicle targets at short range (and, if tanks, from behind). Stabilisation is essential, and a dual feed desirable to enable instant switching from armour piercing to high explosive rounds. A laser designator to enable precision indirect fire or missiles fired by another vehicles is highly desirable. WHITE ERMINE and other exercises and simulations repeatedly demonstrate that reconnaissance vehicles engage ad ranges of under 1,000m.

Mobility

29. Reconnaissance vehicles survive though tactical mobility. They use routes other vehicles can't, shelter in small folds in the ground and fit between trees and buildings.
30. An armoured vehicle's tactical mobility is related by its ground pressure and power to weight ratio, both driven by weight. The primary driver of weight is protection; over specification makes vehicles heavier and larger.

Sensors

31. Reconnaissance vehicles need sensors operating in as many complementary ways as possible. Thermal and high quality optics are the minimum.
32. A surveillance radar such as MSTAR is a highly effective reconnaissance tool. Medium reconnaissance was equipped with MSTAR's predecessor but was excluded from the MSTAR programme, presumably for cos reasons. MSTAR's efficacy is proven.

AJAX AND "STRIKE"

33. Ajax is intended to form the armoured teeth of a strike brigade, using its 40mm CTA (which, as explained above) is of little use in Ajax's reconnaissance role. This requires the vehicle to engage in direct fire combat with armoured vehicles. Trophy would protect it against anti-tank missiles and rockets it will also face bullets and, depending on the enemy, tank rounds – against which there is no protection.

34. The level 4 protection, as fitted to Boxer, deals with 14.5mm at achievable weights. Unfortunately, there are a plethora of 23mm cannon and higher calibres which will overmatch Level 4. Additional armour could be fitted, perhaps temporarily, but that further increases the weight and bulk of an already heavy and large vehicle. A smaller vehicle would require less up-armouring.
35. The primary vehicle in a strike brigade is Boxer. Wheels confer advantages of road speed and sustainability. While mixed track and wheel formations have existed before (e.g. most Soviet era motor rifle regiments), many of the strategic mobility benefits of wheeled combat vehicles will be compromised if they are reliant for direct firepower on tracked units. If Ajax becomes the close reconnaissance platform of Boxer battlegroups the strategic benefit is almost obviated.

SUMMARY

36. Ajax is not fit for its primary purpose (reconnaissance) as it:
- a. Is too large to be stealthy.
 - b. Has no elevating sensor.
37. Ajax is compromised in its secondary purpose as it:
- a. Is tracked, which undermines the potential strategic mobility of a strike battlegroup or brigade.
 - b. Is probably vulnerable to any enemy with 23mm plus cannon, an anti-tank weapon or a tank.

ALTERNATIVE PLATFORMS

38. The obvious choice for the Strike Brigade role is the French Jaguar, which shares the 40mm CTA, is wheeled and is being built to a cost of €1M per vehicle.
39. For the armoured reconnaissance role the Stormer chassis would provide a sound base. It is also already in service with the British Army and, of course, manufactured in the UK. This existing Stormer 30 "light tank" is not a suitable reconnaissance vehicle, although it is not far off. Ideally it would have a lower hull front, a smaller turret and space in the back for one or two men plus an elevating mast.
40. The adverse impact on the GDLS Ajax production facility and its supply chain could be ameliorated by its manufacturing the selected alternative on license. Whether this is possible under the GDLS ownership is unknown, but the site could be sold to another company.
41. Preserving the UK's manufacturing and defence base is important, as is maintaining employment in Wales and the wider support chain. Doing so at the cost of deploying a flawed, failed vehicle ill serves the defence of the realm (often cited as the first duty of government) and the needs of the long suffering Tommy Atkins.

CONCLUSION

42. The Ajax is a flawed concept and has been from the start. The reasons for this lie deep within the British Army's approach to weapon system procurement. The process and structure are demonstrably not fit for purpose and need redesigning from first principles. This is likely to impact on the career structure of senior officers and will face institutional opposition from day one. That does not mean that it is not necessary, nor is it a justification for delay.

43. If the current production problems afford an opportunity to cease the procurement and purchase a more suitable vehicle (or vehicles) it should be seized.
44. Alternatives are available either off the shelf (e.g. Jaguar) or an evolution of an extant British Army vehicle (Stormer).

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