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When the contract was signed for the two new Queen Elizabeth class aircraft carriers, the Royal Navy chained itself to a programme that will now be at the centre of its operational capabilities for at least the next 40 years.

It is without doubt that fleet born airpower is a must for today's modern militaries; airpower is vital to the success of modern combat operations. Fleet airpower is not only vital to the protection of the fleet but also crucial in conflict theatres where regional allies may not be available and where land based aircraft cannot be deployed.

But despite the need for airpower, aircraft carriers are expensive to build and even more expensive to equip and run through their lives. As such are aircraft carriers still the best way to deploy naval air assets?

The problems

Aircraft carriers pose a number of problems to today's naval forces.

· The expense of the carrier alone. The UK MoD has signed a contract that at present stands at £3.8 billion for the two new Queen Elizabeth class aircraft carriers, but in realistic terms this can only be seen as the starting price. Delays, setbacks and the track record of MOD procurements (the Type 45 destroyer programme was estimated to cost £5.5 billion but ended up being more than a billion pounds - around 20% - over budget) means the expected cost will inevitably rise.

· The cost of the ships is only a one part of the whole carrier programme. The other (and to some extent the larger) part of the programme are the fighter aircraft the new ships are to support. The current estimate is that the JSF programme will require an additional £10 billion to complete the deal; this is not a figure that is mentioned often when the new carriers are talked about, but the two costs do go hand in hand. And although the ships are on order, the aircraft are not yet and there is doubt about when F-35B will be in service.

· Once deployed, carriers are a drain on fleet resources. While carriers do fill a vital role they do so at a cost. Being mission critical ships makes them the primary target of hostile forces and so they are never sent off alone, but instead deployed with other assets for protection (their task group will include one, ideally two T-45 destroyers plus Astute submarine (s) in an outer screen..

Despite these problems, air power at sea and the ability to project air power inland is vital to military commanders. But in the digital age, where technological developments are occurring all the time, is the traditional notion of the aircraft carrier the correct choice for the Royal Navy's

future air needs?

An alterative

The concept of the Multipurpose Major Combatant Vessel (MMCV) is an idea that has been mooted since the 1990s but has not been fully developed, mainly due to the problem that a MMCV is a jack of all trade ship and therefore will not do any task as well as a class specific ship. A fully multipurpose ship would be impractical for today's naval needs, but the concept does have some merits when thought about in terms of new way to deploy airpower at sea.

Unmanned Aerial Vehicle (UAV) technology has developed rapidly over the last decade. The payload and range, as well as the array of different categories of craft, have greatly increased. As such, could a UAV fleet air arm, combined with a new concept of deploying air assets at sea, provide an alternative answer to fleet air power?

Could the combination of MMCVs and UAVs be the new age of fleet air power?

The concept

This paper proposes to replace current and ageing frigates and destroyers with a new 'Battle Carrier' class of warship. These ships would be roughly half the size again of a current destroyer and would combine all the abilities of Anti-Surface Warfare (ASuW) Anti-Submarine Warfare (ASW), Anti-Air Warfare (AAW) and Naval Gunfire Support (NGS) through a range of weapon systems, including a squadron of 12-18 assorted UAVs and a helicopter platform airborne surveillance and for the transportation a small groups of personnel (as well as other roles).

The advantages

· As UAVs don't require an onboard pilot, (and the accompanying life support necessities) they can be designed around the mission rather than the pilot. Even if a UAV was to be scaled up to current carrier borne fighters, it would still be smaller or, if sized equally, with a greater internal space for system/fuel/weapons.

· These smaller UAVs would be tube or railed launched off their 'Battle Carrier' platforms and could be designed for vertical landing, which would mean that a traditional through deck would not be required.

· With each 'Battle Carrier' having its own independent air arm these ships would be extremely flexible and highly adaptable in operations. On their own these ships would be able to perform the current role provided by surface ships in low threat environments, but with more capabilities at their disposal, while at the same time still presenting a non-threatening presence. Alternatively groups of 'Battle Carriers' could be brought together to form squadrons that would allow a central command ship to direct all air assets in high intensity conflicts.

· The dispersion of force would remove the traditional carrier as the primary target of the fleet.

If multiple ships have the ability to launch air assets, then no one ship becomes the primary target for enemy fire. It also means that if one of the ships is lost the fleet still retains air capabilities and so the mission can continue, or if mission priorities change the fleet is not welded into a single formation but a part of the fleet could be dispersed to deal with other priorities without a loss of capabilities.

· And in certain scenarios Storm Shadow armed long range Nimrod MR4A maritime reconnaissance aircraft could add a further extended set of capabilities to the overall battle group.

The drawbacks

The result of implementing this new concept could lead to a decrease in ship numbers, but an increase in presences at sea as the versatility of the ships would allow for a more flexible approach to deployment.

The spread of force would also mean more flexibility of response and more operational capability even when ships are in refit (because of the overlap of capabilities through a greater number of ships).

This notion of creating a whole new breed of warship would be initially expensive, but in the long run would have huge coast saving measures. Larger ships require more specialised support facilities (i.e. larger dockyards) whereas smaller ships could easily be accommodated within current naval yards. The cost of the whole project could be made even more attractive if the same approach was taking as is being down with leasing concept by VT of the Offshore Patrol vessels to the MOD.

Conclusion

While the current concept of the aircraft carrier may offer certain advantages, as it is a tried and tested concept, the massive cost of building new carriers when defence budgets are continually being stretched to the limits means that other alternatives need to be considered. The developments of UAVs over the last decade and their potential future capabilities means UAVs could soon become the majority rather than the minority of fleet air assets. Combined with a new concept of how to deploy air assets at sea, this could be the alterative that offers naval powers a new way to deploy airpower more efficiently, flexibly and cost effectively.