Generating A Carrier Strike Capability: People are Still Central

The UK Royal Navy's new Queen Elizabeth class aircraft carriers will give the Navy force projection at sea and ashore. But according to a National Audit Office report, there are limited suitably qualified and experienced personnel to operate the new carriers in time for development of the capability before 2020.

By Pete Ito and Peter Antill

Since the first operational aircraft carriers appeared during the First World War, they have become increasingly important to the major naval powers due to, firstly, their inherent ability to provide both offensive and defensive capabilities to a naval task force, and secondly, their ability to support amphibious operations and the projection of military power ashore.

Once a country achieves such a capability, it is usually reluctant to lose it, with several countries either having brought new ships into service in recent years or, in the case of the UK and the US, having ongoing carrier replacement programmes. By analysing the most recent National Audit Office (NAO) report, we will look at the UK's efforts to update its carrier strike capability with the CVF/Queen Elizabeth class programme, along with the problems and issues still encountered, especially as they relate to ensuring the right quality and quantity of personnel.

The aircraft carrier *HMS Queen Elizabeth* under construction at Rosyth Dockyard, Scotland
(Crown Copyright 2014 Photographer-Andrew Linnett)

The two aircraft carriers of the Queen Elizabeth class (*HMS Queen Elizabeth* and *HMS Prince of Wales*) are designed to replace the three Invincible class carriers, *HMS Invincible*, *HMS Illustrious* and *HMS Ark Royal*, commissioned in 1980, 1982 and 1985 respectively. These in turn had replaced *HMS Ark Royal* and *HMS Eagle*, both heavily modified Audacious-class aircraft carriers. Both ships were originally built during the Second World War as a variant of the Implacable class under the names *Irresistible* and *Audacious*. The cancellation of the CVA-01 programme in 1966 meant that these ships were the last conventional fixed-wing, catapult-equipped aircraft carriers operated by the Royal Navy, once they were themselves decommissioned in 1972 and 1979 respectively.[1]

With the end of the Cold War, the Ministry of Defence (MoD) deemed that there would soon be a requirement to replace the three Invincible class aircraft carriers, due to, firstly, the age of the ships. All three had been commissioned during the early 1980s and were starting to approach the end of their service lives, the expectation being that they would be decommissioned after 30 years of service, between 2010 and 2015. Secondly, they had been designed to conduct anti-submarine operations in the North Atlantic during a NATO-Warsaw Pact confrontation—a defensive role trying to ensure the security of the sea lanes between North America and Europe. This was a very different role to the one that was increasingly likely in the post-Cold War security environment, and their relatively small size made them unsuitable to conduct power projection and rapid operational deployments around the world.

Royal Navy Invincible class aicraft carrier *HMS Ark Royal* *(Crown Copyright)*

PRIORITISING ASSETS

The most recent of four reports[2] by the NAO, entitled *Delivering Carrier Strike*, was published in March 2017.[3] The report highlights the importance of the new carriers to both the UK's international standing and UK defence policy. Carrier Strike constitutes the initial phase of Carrier Enabled Power Projection (CEPP), consisting not only of the carriers, but F-35B Lightning II strike aircraft, helicopters (some equipped with the *Crowsnest* airborne radar system), unmanned aerial vehicles and amphibious forces.

Such an ability to project military power will allow the UK to act militarily without having to rely on foreign basing rights, with the carriers being able to undertake a variety of missions and defence tasks. On 5 September 2014, former UK Prime Minister David Cameron announced that the UK would bring both carriers into operational use.[4] This was a major reversal of the plans under the Strategic Defence and Security Review (SDSR) 2010, which planned to hold one of the carriers at extended readiness, due to the UK government's priority of tackling the budget deficit and the resulting pressure on the defence budget. With the retirement of the Sea Harriers in 2010 and both *HMS Ark Royal* and *HMS Illustrious* being decommissioned, the Royal Navy would be without a carrier strike capability for a decade, a move that was criticised by the NAO.[5]

Just as the different combat (infantry, tanks), combat support (artillery, reconnaissance) and combat service support (engineers, logistics) elements of a ground force need to work together in a 'combined-arms' operation to achieve best effect, so aircraft carriers (and the aircraft they carry) need to

KEY FACTS

£6.2bn

Approved cost of two new Queen Elizabeth class aircraft carriers

The Queen Elizabeth in Rosyth Dockyard

£5.8bn

Forecast cost of Lightning II procurement up to March 2021

Lightning II fast jet

£0.3bn

Cost of developing and buying the airborne radar system to protect the carriers (Crowsnest)

Merlin Mk2 helicopters (for hosting Crowsnest)

December 2020 When the Ministry of Defence expects to have an intial capability to operate the carriers, Lightning II and Crowsnest together (Carrier Strike)

April 2026 When the MoD expects to have a fully flexible carrier, allowing a range of roles (Carrier Enabled Power Projection)

Photo credit: MoD/Crown Copyright. Information taken from NAO report

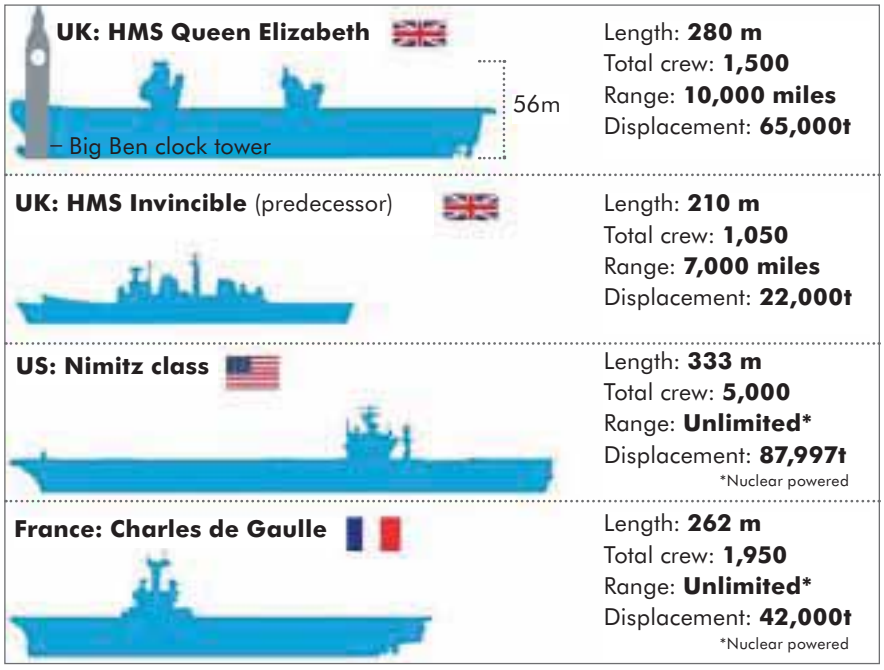
operate as part of a 'task group,' meaning that other naval assets, such as frigates, destroyers, submarines and fleet auxiliary ships, need to be deployed as well. Recent years have seen a reduction in the number of destroyers in the surface fleet (only six Type 45s were built)[6], the reduction in the number of frigates by four under SDSR 2010 (from 17 to 13 Type 23s)[7] and the nuclear hunter-killer (SSN) fleet falling to seven vessels[8] (currently four Trafalgar-class and three Astute-class).

This means that a task group will "represent around 27% of the Navy's fleet by tonnage and 20% of the personnel needed to crew the fleet, depending on how the carriers are deployed. Currently, the Navy carries out multiple operations concurrently using single ships. This means that it will need to change fundamentally how it operates and make judgements on priorities."[9] The MoD will therefore need to refine its operational plans on deploying the carriers, so that the additional naval assets are available. The MoD commissioned work to develop a draft timetable looking at 2017 to 2020 to help the frontline commands identify the equipment they would need to undertake trials and training programmes. However, "for most of the enablers (for example, battlefield helicopters and logistics), the department will need to prioritise its resources to ensure they are available. Most are currently committed to other activities, but without them, the requisite trials and training for Carrier Strike cannot take place."[10]

What complicates this is that:[11]

- Eight of the 13 frigates (the anti-submarine warfare variant) are due to go out of service from 2023 onwards. The programme to replace them (the Type 26) is running late and it is unclear as to whether they will come into service in time to replace them.
- The Type 45 destroyers have developed technical issues with the propulsion system and are undergoing a tightly scheduled major refit programme. The MoD forecasts only a few will be available to support *HMS Queen Elizabeth* on her first deployment, but even that is on the assumption there are no additional delays.
- Merlin helicopters currently provide an anti-submarine capability and are in high demand. The Carrier Task Group will need them for both anti-submarine work and to host Crowsnest for airborne radar, but they cannot do both at the same time, meaning that the task group will require a significant number of helicopters, which may not be available for the first voyage.

UK AIRCRAFT CARRIERS QE CLASS COMPARISON



SHORTAGE OF SKILLED PERSONNEL

The MoD now plans for the new carriers to provide "some capacity to support battlefield helicopter operations. However, the necessary changes to the carriers to enable this are yet to be fully funded and will add further work to the CEPP schedule."[12] In addition, if both carriers are going to be operated with the UK achieving the full CEPP capability, then it ultimately comes down to having the correct quantity and quality of personnel so that both carriers can be crewed. Even though *HMS Ocean* underwent maintenance and refit work between 2012 and 2014, it is still due to be retired in 2018, to release personnel to crew the second carrier.[13]

While technology is vital, the NAO judges that "it is not possible to satisfy all demands" for the use of CEPP "with current levels of equipment, budget and personnel."[14] Specifically on personnel, the NAO notes that the MoD "… has a shortage of military personnel, running at 4% below a target strength of 145,560. To minimise the impact of these gaps on Carrier Strike, the department is prioritising the capability and carrying out targeted recruitment. However, it will rely on a few people in certain roles to build up the skills and experience needed in time."[15]

The NAO adds that particular "roles are affected, having a measurable, detrimental effect on operations and creating a risk that sufficiently qualified and experienced staff will not be in place in time for trials and development of the capability before 2020. The Navy has gaps in engineering and war-fighting roles. The RAF has gaps in engineering, intelligence and some aircrew cadres."[16]

The NAO goes on to stress that "there will be a lag between personnel being recruited and becoming sufficiently qualified and experienced for their new roles. New joiners to the Navy can take five to six years to become technicians. Training pilots to fly the Lightning II jets requires eight to nine months of specialist training, in addition to four years of general fast-jet pilot training. The SDSR 2015 decision to buy jets sooner has enabled more flying hours, supporting the planned pipeline of training to deliver the required capability. More generally, the department will rely on a few people in certain roles to build up the skills and experience needed in time to operate the Carrier Strike capability, with limited resilience if staff decide to leave the services."[17]

The NAO highlights that until the MoD has determined the maintenance and operational requirements of the new equipment "it will not know the total number of sufficiently qualified and experienced staff it needs to operate Carrier Strike."[18] However, the NAO analysis is that the MoD "faces challenges in delivering the capability with limited suitably qualified and experienced personnel to operate it."[19] Indeed, it provides the comment that there is also "a need to take strategic decisions across defence that balance the resource, personnel and equipment demands of Carrier Strike with other defence capabilities."[20] It is worth noting the NAO comment that the MoD has devised a routine operating model and determined that "it is impossible to satisfy all demands for CEPP all the time, based on the current level of equipment, budget and personnel planned."[21]

With respect to specific components of CEPP such as Crowsnest, the NAO determines that "the current schedule leaves limited time for integration training and work-up, which could mean that sufficient numbers of Crowsnest-fitted helicopters and trained crews are not ready to protect the carrier group when needed."[22] With regard to F-35B pilots, "the number of pilots will be just sufficient up to 2026, with limited resilience if staff decide to leave the RAF."[23]

The issue of sufficient numbers of skilled personnel extends to managing the commercial arrangements for

support. The NAO points out that "ensuring there is sufficient commercial capacity to do this will be challenging, as there are long-standing skills gaps in the department's contract management teams."[24] The NAO stresses that the MoD "… has assessed that its contract management teams are under-staffed and is prioritising higher-risk commercial areas. Defence Equipment and Support has long-standing skills gaps, as highlighted in our 2015 report. It has failed to recruit and retain enough skilled staff and is undergoing a new change programme to re-prioritise its commercial skills. With such complex commercial arrangements to negotiate for supporting Carrier Strike, there is a risk that not all contracts will be in place on time. A lack of commercial staff has delayed the purchase of spares for *HMS Queen Elizabeth* before its first sailing."[25]

Ultimately, the NAO in its list of recommendations, under the admonition to "build more resilience into its workforce model" notes that "in the longer term, the department needs to maintain efforts to recruit and train extra personnel."[26]

THE US NAVY

To underline the NAO's emphasis on the importance of having enough suitably qualified personnel in order to generate capability, it is worth noting that a recent US Government Accountability Office (GAO) report on the US Navy's force structure, with a specific focus on the Navy's attempt at "optimal manning" to reduce crew sizes during the period 2003–2012, did exactly the same.[27] The GAO notes that unless "it identifies the personnel needs and costs associated with a larger fleet size, the Navy runs the risk of buying ships that it cannot fully man, potentially repeating the mistakes associated with the optimal manning period and resulting in degraded surface fleet readiness and increased maintenance costs."[28] The report finds that the "Navy will likely face manning challenges, especially given its current difficulty in filling authorised positions, as it seeks to increase the size of its fleet as much as 30% over its current size."[29]

The GAO stresses that even "with the reduced personnel authorised since optimal manning, the Navy has had difficulty filling authorised personnel slots," adding that the "commands responsible for manning, equipping, and training the surface fleet have cited the lack of personnel available to be distributed to ships as their primary challenge."[30] Indeed, the GAO comments that officials "said that it is not uncommon for billets to remain unfilled for six months or more and that shore commands are more likely to experience such 'gapped billets' for even longer periods."[31]

Referencing other studies, the GAO cites a 2014 Naval Audit Service report on critical gapped billets, which found that "unless the Navy increases enlisted personnel, recurring gaps will not be corrected."[32] In addition, the GAO highlights a Congressional Research Service estimate that about "15,000 additional sailors and aviation personnel might be needed to man the 47 additional ships above the previous 308-ship plan."[33]

Finally, it is important to refer to a widely-held assumption that more cutting-edge technology means fewer people are needed. The GAO refutes that idea, noting that "the Navy developed estimates of manpower requirements and crew size targets for its new ships based on assumptions that technologies would enable smaller crews. However, crew sizes on most new

HMS Queen Elizabeth under construction *(Crown Copyright 2014- Photographer-Andrew Linnett)*

ILLUSTRATIVE CARRIER TASK GROUP

The Ministry of Defence will deploy the carrier alongside other ships and military equipment, collectively referred to as a Carrier Task Group

Attack submarine

Merlin helicopters (for anti-submarine protection)

Supply ships (solid support/tankers)

Maritime intra-theatre lift solution (not yet identified)

Queen Elizabeth Class aircraft carrier

Lightning II jets (with or without US jets)

Crowsnest (Merlin Mk2 helicopters)

Type 45 destroyers

Wildcat helicopters

Type 23 frigates

Notes

1. The make-up of this group is likely to vary with time and depending on why the group is being deployed.
2. Maritime intra-theatre lift is the ability to move people and goods within the task group. The MoD is deciding how it will meet this requirement.

Source: National Audit Office analysis of departmental data

ship classes have grown over time as anticipated workload reductions from new technologies have not materialised and the Navy gains more experience operating the new ships."[34]

The GAO cites the example of the Littoral Combat Ship programme, which was originally designed and built to accommodate a total crew size of 75, but has since been redesigned to accommodate 98 sailors, a 31% increase.[35]

The NAO and GAO reports highlight a critical point: While naval forces everywhere will be looking to use the best possible technology, it remains essential to focus on properly manning the equipment. Defence acquisition planning should ensure that the best laid plans for the best naval forces are guaranteed to have the required quantity and quality of skilled personnel to go to sea. ■

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Peter Antill rejoined Cranfield University in June 2009 to undertake research. This has included various books, journal articles, case studies, conference papers, monographs and chapters in edited publications as well as updating teaching material used by the Centre for Defence Acquisition. Peter graduated from Staffordshire University in 1993 with a BA (Hons) International Relations and followed that with an MSc Strategic Studies from Aberystwyth in 1995 and a PGCE (Post-Compulsory Education) from Oxford Brookes in 2005.

FOOTNOTES

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6 Pike, J. (2011) 'Daring-Class Type 45 – Program' webpage, on the *globalsecurity.org* website, located at http://www.globalsecurity.org/military///world/europe/type45-program.htm, as of 23 May 2017.
7 *Op Cit*. HM Government, 2010, p. 22.
8 The last Swiftsure-class submarine, *HMS Sceptre*, was retired in December 2010 and the Astute-class submarines are only due to replace the Trafalgar-class on a one-for-one basis.
9 *Op Cit*. National Audit Office, 2017, p. 16.
10 *Ibid*. p. 19.
11 *Ibid*.
12 *Ibid*. p. 18.
13 *Ibid*.
14 *Ibid*. p. 10.
15 *Ibid*.
16 *Ibid*. p. 27.
17 *Ibid*.
18 *Ibid*.
19 *Ibid*. p. 18.
20 *Ibid*.
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25 *Ibid*. p. 42.
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30 *Ibid*.
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