

Jane's Defence Weekly

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Covering the distance: Long-term prospects for COD in the Royal Navy

The US Navy's decision to select a version of Bell-Boeing's V-22 Osprey tiltrotor aircraft to provide carrier onboard delivery begs the question of how this logistical role will be fulfilled aboard the UK Royal Navy's new Queen Elizabeth-class carriers. *Andrew Drwiega reports*

The UK Royal Navy (RN) is considered to be a blue-water fleet, in that it has had the commitment and capability of operating over the world's oceans, far from home ports, and for sustained periods. While it has never lost this intent, sustained defence cutbacks over the last couple of decades have eroded fleet numbers and the range of operational deployments possible.

No matter how technologically advanced the ship, it cannot be in two places at once. Since the late 1970s aircraft carrier size has diminished, along with that of its deployable combined air group. The RN's current flagship is the amphibious assault ship/helicopter carrier HMS *Ocean*, which, following the recently announced Strategic Defence and Security Review (SDSR), will be scrapped by the end of 2018.



A computer-generated image of the Royal Navy's new aircraft carrier, Queen Elizabeth, showing Merlin helicopters on the flight deck. (BAE Systems)

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Keeping skills current

The RN's maritime-based fast-jet strike capability came to an end in 2011 with the sale of 72 Harrier jump jets for GBP118 million in a 'job lot' to the United States Marine Corps (USMC). However, the RN has ensured that fixed- and rotary-wing flight-deck operational skills remain within the RN by coming to arrangements for the secondment and rotation of hundreds of personnel to other navies, specifically those of the United States and France, until the RN's carriers are ready.

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Multimission flexibility



An Army Air Corps AH-64D Longbow Apache and RAF Boeing CH-47 Chinook operating from HMS Ocean during operational sea training in 2014. Both types could also be called on to operate from Queen Elizabeth-class carriers alongside AgustaWestland AW159 Wildcat and AW101 Merlin helicopters (the latter belonging to the Royal Marine Commando helicopter force). (UK MoD)

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Aside from the main strike component Lockheed Martin F-35B Lightning II Joint Strike Fighters, likely to number around 12 aircraft during peacetime operations, the QEC carriers' aircraft complement will also include up to 14 AgustaWestland AW101 Merlin HM2 helicopters that will be used to provide the ship with enduring anti-submarine warfare (ASW) as well as airborne early warning (AEW) capabilities via the Merlin Crowsnest variant.

However, the RN is not limiting its strategy solely to a traditional carrier role; it also wants to retain the flexibility offered by operating either fastjets and/or rotary-wing aircraft to cover the gamut of

expeditionary warfare/amphibious operations (not to mention the potential for disaster relief assistance) that it may encounter.



A computer-generated image showing RAF Boeing CH-47 Chinook helicopters on the flight deck of the RN's largest-ever aircraft carrier, Queen Elizabeth, with AW101 Merlin helicopters with rotor blades folded around the ship's islands. (UK MoD)

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Carrier onboard delivery

The hanger of the QEC carrier has been designed not only for its 80 m length but its height, which at 9 m would not only allow the housing below deck of the Chinook, but also of aircraft not in the RN's current air complement, such as the V-22 Osprey tiltrotor aircraft.

Traditionally, larger aircraft carriers, especially USN carriers since the 1970s, have relied on fixed-wing aircraft for the COD role, typified by the twin-engine Grumman C-2 Greyhound. The type has assumed this central logistical mission since the first Greyhound was delivered in 1966, replacing the Grumman TF-1/C-1A Trader. Since then the Greyhound has been upgraded but essentially remains the umbilical cord that connects the ocean-roaming carrier with a land-based supply link. It performs missions ranging from the delivery of high-priority engineering and mechanical spares to conducting personnel/medical evacuation (medevac) movements and even bringing in the mail. What makes it particularly useful to a blue-water carrier is its speed and range.

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US Navy selects V-22 for COD

After years of listing the V-22 Osprey as a possible requirement, in January the US Department of the Navy signed a memorandum of understanding committing it to the acquisition of 44 HV-22s (the USMC and air force versions are the MV-22 and CV-22 respectively) to replace the C-2A Greyhound for the COD mission. Production will begin at the start of fiscal year 2018 (FY 2018),

although an engineering change proposal will be needed in FY 2016 through an analysis of options for the development of the three changes needed for the navy variant.

The USN's alternative to ordering the V-22 for the COD mission was a modernised version of the C-2A. The new version of the aircraft would have combined the C-2's fuselage with Advanced Hawkeye E-2D wings and engines together with new cockpit components and avionics. However, this would need a 'cat-and-trap' deck system for operation and producing this version in limited numbers without a USN contract would be expensive, particularly in terms of through-life costs.

According to US Naval Air Systems Command (NAVAIR), the baseline requirement for the navy's HV-22 Osprey in the COD role will include an extended-range fuel system, HF radio, and public address (PA) system. With traditional carriers operating at some distance from shore, the HV-22's range is currently expected to be up to 1,500 n miles from the ship, hence the need for extended range. This will be exclusive of aerial refuelling and will mean tripling the current MV-22 range of around 430 n miles. The PA system will allow the crew to communicate with passengers on these long flights. Deliveries of the COD aircraft are projected to begin in 2020.

A Congressional Armed Service Committee Report (114-102) issued on 2 May regarding defence authorisation for FY 2016 supported the navy's decision, based on the fact that "both the MV-22 and CV-22 are proven platforms for the Department of the Navy and the Department of the Air Force".

It further noted the V-22's combined benefits of speed, range, cargo capacity, and vertical agility, which it understood would "transform the way that sea-based logistics are accomplished for the COD mission" adding that "carrier strike groups will have more flexible options for resupply, while the V-22's direct delivery method will allow aviation assets currently used for vertical resupply to be used for other missions". Due to this, it saw the selection of the Osprey to be "an affordable, low-risk acquisition".

One of the key elements of the USN's requirement for the COD aircraft is its ability to transport an F-35 engine internally onto a carrier. The CH-47 Chinook is also trialling this capability; it can certainly carry the engine externally as an underslung load, but this option may not be suitable for any significant distance.



US Navy and USMC crewmen remove an engine for an F-35B Lightning II from an MV-22 Osprey tiltrotor onboard the amphibious assault ship USS Wasp. The resupply of F-35 engines to carriers at sea is one of the capabilities that the USN requires the Osprey to perform. USS Wasp was conducting initial operational testing to evaluate F-35B operational measures while at sea. (US Navy)

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The USMC has already used the MV-22 to transport Pratt & Whitney's F135 power plant for the F-35 to a ship at sea. A specially designed protective carrier developed by the engine manufacturer and RENO Machine Tool with the help of Bell-Boeing overcame the problem, with the combined total weighing nearly 4,082 kg.

Commenting on the trials in May, Lieutenant General Jon Davis, USMC Deputy Commandant for Aviation, said that "with the declaration of USMC IOC [initial operating capability] rapidly approaching, the ability to conduct underway resupply of a F135 power module is crucial to F-35 logistical sustainment". He added that "as the US Navy replaces its [COD] aircraft with the V-22, this new capability will enable them to resupply all aircraft carriers and big-deck amphibious carriers with both F-35B and F-35C power modules".

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Two MV-22B Ospreys assigned to Marine Medium Tiltrotor Squadron (VMM) 265 land on the flight deck of the aircraft carrier USS Theodore Roosevelt operating in the South China Sea on 5 November. (US Navy)

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Long-term prospects for COD in the RN

There is considerable flexibility in the prospective capability of the new QEC Air Group. However, one asset is arguably lacking: a COD platform. While this can be provided to a limited degree by utilising other capabilities, these might not provide the range or lift required, especially if F-35 support is to be as demanding as the USMC envisages and for which it is already making provision through the V-22.

So what is the prospect of the UK Ministry of Defence (MoD) selecting the V-22 Osprey? If that were to happen it could probably only be justified if it were to be a 'purple' joint asset meeting the requirements for the RN's COD platform, special forces operations, and other selected missions, with a range of equipment to support a flexible and interoperable capability.

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