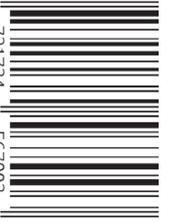


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The Headlines of Today. The Battles of Tomorrow.

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Big decks, fast jets The Empire strikes back



HMS Queen Elizabeth.

As the Royal Navy's new flagship, the aircraft carrier HMS *Queen Elizabeth* complete with her air wing of F-35B Lightning II stealth fighters deploys to the Arabian Sea as part of a joint UK-Indian task force, the world is about to find out whether Britain's immense investment in this carrier strike capability has been worth it.

Over half a century ago, aviation history was made when a Hawker Siddeley P.1167 Kestrel fighter performed the first vertical landing at sea on the Royal Navy aircraft carrier HMS *Ark Royal* in 1963. That landing, by the then revolutionary VSTOL prototype, opened up a new class of maritime air power for

smaller nations with the Harrier, which would be adopted by the RAF, FAA, US Marine Corps, Spanish, Indian, Italian and even (briefly) Thai navies. Its versatility was proven in 1982 in the Falklands War, when a handful of these subsonic fighters, equipped with AIM-9Ls took on the Argentinean air arms and

won, enabling the UK to successfully recapture the islands.

Yet interestingly, the iconic Harrier, was at the time, a consolation prize to the RN and the British defence industry, which in 1957 had seen major projects cancelled in the wake

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F-35B Lightning II.

of the infamous Sandys Review, which predicted a future of missiles. The far more ambitious, two-seat, supersonic and radar-equipped V/STOL fighter, the P.1154 was axed, along with the Royal Navy's planned CVA-01 supercarrier – a decision that still rankles today among some naval proponents.

Fifty-plus years on, however, and the wheel has come full circle with the 65,000tonne pocket supercarrier HMS *Queen Elizabeth*, the largest ship ever built for the RN, and the supersonic, radar-equipped and stealthy successor to the Harrier, the Lockheed Martin F-35B, which has now completed a flight test and development programme lasting over a decade.

It has been a long and winding road, but Great Britain is now back in the carrier strike game – and as the current crisis demonstrates – just in the nick of time.

The right variant?

Both the F-35 and CVF carrier have faced a number of hurdles and controversies. In 2010 the UK infamously decided to switch to the F-35C CV variant – with larger weapon capacity and longer range over the STOVL 'B' version. Yet this was overturned

some only two years later after Whitehall concluded that the QEC project was too far along to make switching to catapults and arrestor gear an easy (or cheap) solution. With that, the UK returned to the 'B' variant – which was also expected to arrive earlier than the F-35C. All told, the UK is aiming to procure 138 F-35s to equip its two aircraft carriers (HMS *Queen Elizabeth* and HMS *Prince of Wales*) as well as land-based squadrons. Though

the Queen Elizabeth class has been designed from the outset to be flexible with its air wing (Chinooks and Apaches can also be embarked) F-35s will give it a massive offensive punch. Though the QEC can carry up to 36 F-35s for surge operations, it will more normally deploy with just 12.

While some still argue that the F-35C and catapult-equipped QEC would make for a more potent strike carrier force, the 'B' brings its own benefits. Like the

Harrier, it can be operated from sea or land as one mixed RAF/RN force. The VTOL 'B' – thanks to its advanced flight controls also reduces one of the biggest costs to carrier aviation – pilot currency, where the high skills needed for conventional landings mean regular training and additional aircraft for 'nuggets' to learn the ropes. The ease in which land-based Harrier (and now F-35B) pilots can adapt to shipborne operations thus



CrowsNest' AEW Merlin Helicopter.

“ [...] in this era of hypersonic, long-range missiles, ultra-quiet diesel submarines and improved space-based surveillance, [is] the aircraft carrier itself [...] now obsolete? ”

reduces the overheads and cost of a small carrier air wing. As one Harrier test pilot was heard to say of carrier fast jet ops: 'Its easier to stop and land than it is to land and then stop'. Indeed, the F-35B uses advanced FBW controls developed by the UK from its VSTOL experience to 'de-skill' the vertical landings – making them unbelievably easy compared to the Harrier's notoriously challenging handling.

End of carriers?

Beyond the F-35 B/C variant furor in UK defence circles, some critics however, have raised a more fundamental point about the RN's new flagships – whether in this era of hypersonic, long-range missiles, ultra-quiet diesel submarines and improved space-based surveillance, the aircraft carrier itself is now obsolete. Too large and too tempting a target, some argue that the next peer-on-peer conflict the aircraft carrier will go the same way as the battleships Bismarck and Yamato – obsolete relics of an earlier age. The proliferation of Chinese-built supersonic sea-skimming missiles, (famously encountered by US navy warships off Yemen in 2016) which equip Pakistan's frigates and its JF-17 fighters means, like Exocet in the Falklands, anti-ship missiles are a serious threat in the current crisis that cannot be ignored. China has been studying how to kill US supercarriers now for decades as it pursues an increasingly muscular foreign policy and no doubt will be looking to this proxy war as a suitable testing ground for its tactics and weapons. HMS *Queen Elizabeth*, then will be a priority target.

Set against this is that the 'end of carriers' has been predicted for a while and has yet to occur. The ocean, even with today's (almost) omniscient surveillance is still a

big place and carriers constantly move. The ambitions of China and of other countries (Japan, South Korea, India, Brazil and Russia) to acquire new carriers, whether they are nuclear-powered supercarriers or STOVL assault ships, indicates that other countries (as well as the US) do not foresee carriers to be going away just yet. Indeed, the joint Anglo-Indian task force sees the brand-new HMS *Queen Elizabeth* join forces with India's new carrier, the INS *Vikrant*, which has been rushed into service alongside the older (ex Kiev class) INS *Vikramaditya*. While the Indian Navy has recently opened up a contest for its next naval fighter after rejecting



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the naval *Tejas*, this task force will see the unlikely mix of F-35Bs and MiG-29Ks operating together. These three carriers then, operating together as a single force offers defence analysts a unique opportunity to contrast and compare the QEC/F-35 STOVL and *Vikrant*/MiG-29K STOBAR approaches to naval aviation – particularly in terms of sortie generation rates and in the roles each are assigned.

Unbalancing the Royal Navy

Yet the vast resources needed to design, build, equip, train and operate a modern carrier and its air wing raise another argument – one that the focus on these two major warships has seriously unbalanced the Royal Navy's procurement strategy – leaving it short of smaller ships, like frigates that are the 'jack of all



Yamato (top) and *Bismarck* (above) – Have aircraft carriers become obsolete as well?



Chinese missile frigate *Yuncheng* launches an anti-ship missile during a military exercise.

trades' and able to project power globally. Despite the stresses on the UK economy and the defence budget, Britain remains a maritime power, dependent on the sea for trade and food with global interests. Indeed, these global interests, far from shrinking after the draw-down of UK involvement in Afghanistan, seem to be increasing, with the high Arctic, Gulf and Middle East and support of freedom of navigation operations in Asia-Pacific, now joining other tasks for the RN such as defending the Falklands, anti-drug patrols in the Caribbean and the like. The RN, then is already stretched thin, and some ponder how many vessels will need to be assigned to protect HMS *Queen Elizabeth*, the first time she goes in harm's way – and just how many Type 45 anti-air warfare destroyers might be needed to defend the carrier from a massed missile attack. Unless part of a larger US, NATO or other coalition task force, this may result in the RN having to strip defences elsewhere around the globe to protect this high-value asset.

Network-centric limitations

Finally, another criticism levelled at the F-35B and QEC carriers is that while attention

has focussed on the giant ship itself and the high-profile F-35 programme – itself a source of controversy over the Lightning's II cost and delays, less attention has been paid to maximising how the F-35B fits into the overall UK Carrier Strike as the core of a fifth-generation network. For instance, legacy datalinks between the F-35B and carrier will not be able to share as much information as it could and the planned bandwidth allocated for the QEC (designed in the early 2000s) is already looking out of date. The organic 'Crows Nest' AEW, meanwhile is set to be based on a Merlin helicopter – a platform with reduced altitude and endurance compared to a Hawkeye E-2 AEW aircraft. Indeed, the UK is still grappling with the challenges of getting the stealthy fifth-generation F-35B to talk to fourth generation Typhoon fighters – let alone allied MiG-29Ks from the Indian Navy.

These limitations themselves may not be critical in most situations, but they do mean that the UK might be missing out on exploiting some of the F-35Bs most revolutionary capabilities – eg: its ability to Hoover up and share electronic warfare data seamlessly, or to act as a missile-cueing platform to allow ships

to fire SAMs at over-the-horizon targets at extreme range that their own sensors cannot see.

Summary

What is true, however is that the pairing of the F-35B and the QEC carriers sends a highly visible message that the UK is now firmly back in the Carrier Strike business, almost a decade after its last Harriers were retired in December 2010.

The Royal Navy's new carrier flagship, and her stealth air wing are thus set to undergo its baptism of fire as it takes

its place on the line alongside India's two carriers against Pakistan and its Chinese 'advisors'. Yet this clash of Commonwealth members also presents a stark, yet limited, test for carrier air power vs the new generation of sensors and anti-ship missiles in the 21st century. Will the RN's flagship help give India the edge in this 'come as you are' war, will it be a re-run of the Falklands ('a damned close-run thing') or even worse a humiliating defeat – accelerating the loss of prestige for post-Brexit UK?



Royal Navy Type 45 destroyer HMS *Daring*.