

Aircraft Carriers : the coming generation

The future Royal Naval aircraft carriers *Queen Elizabeth*-class and related *French PA2 Project* are expected to displace about 65,000 tonnes (British) and 74,000 tonnes (French), while the British *Invincible*-class carrier that participated in the Falklands War was a mere 22,000 tonnes. The *Invincible*-class actually compares with Italy's new *Cavour* class (27,000 tonnes), and Spain's *Principe de Asturias* class (17,000 tonnes).

The US Navy's *Nimitz* class and *CVN-21 Gerald R. Ford* class, in contrast are gargantuan with their 90,000-105,000 tonne displacement. The *Nimitz*-class supercarriers are a class of ten nuclear-powered aircraft carriers in service with the United States Navy. With an overall length of 1,092 ft (333 m) and displacements of over 100,000 long tons, they are the largest capital ships in the world. The *Gerald R. Ford*-class aircraft carriers (or *Ford*-class) are a planned class of super-carrier for the United States Navy, intended to replace the current *Nimitz*-class carriers.

The Russian naval establishment has long agreed that their only operational carrier *Admiral Kuznetsov* was insufficient and that three or four carriers were necessary to meet the Navy's air support requirements. Russia plans to build five or six carriers of the new design for deployment in the Northern and Pacific fleets, starting around 2012–2013; the new carriers will carry new fifth-generation fighters as well as unmanned aerial vehicles and have a displacement of up to 60,000 metric tonnes.

In early January 2009, there were multiple reports of China building two conventionally powered aircraft carriers displacing 50,000–60,000 tonnes, possibly to be launched in 2015, and there have been press reports suggesting China's intention to build such aircraft carriers.

The Indian Navy's future indigenous aircraft carriers will be of 40,000 tonnes (IAC-I) growing substantially to 65,000 tonnes (IAC-II).

The Royal Navy

The new Royal Navy aircraft carriers, *HMS Queen Elizabeth* and *HMS Prince of Wales*, are expected to enter service in 2016 and 2018, two years later than originally planned. They will be able to operate up to 40 aircraft and will have a displacement of around 65,000 tonnes. Their primary complement of typically 1,200, including 600 aircrew will, support F-35B Lightning IIs, and their ship's company will number around 1450. The carrier will have a maximum speed of 25 knots. At 15 knot the range is 10,000 nautical miles and the ship carries food, fuel and stores for an endurance of seven days between replenishments. Initially to be configured for STOVL operations, the carriers are to be adaptable to STOBAR or CATOBAR configurations to allow any type of future generation of aircraft to operate from them.



HMS Queen Elizabeth.

US Navy

The current US fleet of *Nimitz*-class carriers is to be followed into service (and in some cases replaced) by the *Gerald R. Ford*-class. The first two ships, *Gerald R Ford* (CVN 78) and CVN 79, will be commissioned in 2015 and 2019 and further ships of the class will enter service at intervals of five years. A total of ten *Ford*-class carriers are planned with construction continuing to 2058. The *Gerald R Ford*-class carriers will be of about the same displacement, about 100,000 tonnes, as its predecessor the *Nimitz* Class *George HW Bush* (CVN 77) but will have about 500 to 900 fewer crew members.

The carrier will be capable of carrying up to about 90 aircraft including the F-35 joint strike fighter, F/A-18E/F Super Hornet, E-2D Advanced Hawkeye, EA-18G, MH-60R/S helicopters, UAVs and UCAVs. Compared to the *Nimitz*-class it will have increased sortie rates at 160 sorties a day (compared to 140 a day). The carrier will be armed with the Raytheon-evolved Sea Sparrow missile (ESSM) while the close-in weapon system is the rolling airframe missile (RAM) from Raytheon and Ramsys GmbH.



USS Gerald R Ford.

Italian Navy

Italy's aircraft carrier *Cavour* is designed to combine fixed wing V/STOL and helicopter air operations, command and control operations and the transport of military or civil personnel and heavy vehicles. The 134 metre, 2,800 sqm hangar space can double as a vehicle hold capable of holding up to 24 main battle tanks or many more lighter vehicles (50 Dardo IFV, 100+ Iveco LMV), and is fitted aft with access ramps rated to 70 tonnes, as well as two elevators rated up to 30 tonnes for aircraft. *Cavour* can also operate as Landing Platform Helicopter (LPH), accommodating heavy transport helicopters (EH101 ASH) and



325 marines. *Cavour* has a displacement of 27,900 tonnes but can reach more than 30,000 tonnes at full military capacity.

Indian Navy

The *Vikrant*-class aircraft carriers (formerly, the Project 71 'Air Defence Ship' (ADS)) are the first aircraft carriers of the Indian Navy to be designed and built indigenously. Construction of the 40,000 tonne, 260-metre-long *Vikrant*-



class aircraft carrier (IAC-I) began in April 2005 at the Cochin shipyard. The new carrier will cost US\$762 million and will operate up to 30 aircraft, primarily the MiG-29K, the Tejas LCA, Sea Harrier plus 10 Kamov Ka-31 or HAL Dhruv helicopters. The ship will be powered by four turbine engines and will have a range of 8,000 nautical miles (14,000 km), carrying 160 officers and 1,400 sailors. The first carrier will feature a ski-jump in STOBAR (Short Take-Off But Arrested Recovery) configuration. The naval version of HAL Tejas is intended to be ready by the time INS *Vikrant* is commissioned, scheduled for 2014.

French Navy

Porte-Avions 2 (PA2) is the new aircraft carrier to be built for the French Navy, to complement the existing *Charles de Gaulle* aircraft carrier. The French carrier would be built by an alliance



of Thales and DCN from their proposed design: a 283 m long, 75,000 tonnes variant of the CVF. It is designed to operate the Dassault Rafale, the E-2C Hawkeye and the NH-90 helicopter. It is a CATOBAR design, using catapult of the same models as those installed on the *Nimitz*-class supercarriers: C13-2 steam catapults, 90m long. The vessels are expected to be capable of carrying over 32 Rafales, three Hawkeyes and five NH-90s support/anti-submarine helicopters. The crew will be about 1650, instead of 1950 in the *Charles de Gaulle*, indicating the high level of automation integrated into the ship's systems. It is scheduled to enter service in 2015.

Russian Navy

The sole Russian aircraft carrier, *Admiral Kuznetsov*, also known as Project 1143.5 or *Orel* Class, was constructed at Nikolayev South Shipyard on the Black Sea in the Ukraine. The hull design is based on the earlier *Admiral Gorshkov*, launched in 1982, but it is larger with a full load displacement of 58,500 tonnes as compared to 40,400 tonnes of the latter.

The ship has the capacity to support 41 aircraft including 12 Sukhoi Su-33s, 5 Sukhoi Su-25UTGs plus 24 helicopters including Kamov Ka-27LD, Kamov Ka-27 PLO and Ka-27S for anti-submarine warfare, search and rescue, and light utility. The cruiser role is facilitated by the *Kuznetsov's* complement of 12 long-range surface-to-surface anti-ship (SS-N-19) cruise missiles. A batch of MiG-29Ks are to complement the earlier Su-33s on board the carrier.

