

The U.S. Navy's new \$13 billion aircraft carrier will dominate the seas!

The shipbuilders are on track to deliver Gerald R. Ford to the U.S. Navy in 2016. It's scheduled to be launched this month, and can support laser guns and dynamic armor.

A \$13 billion U.S. aircraft carrier is about to hit the open seas.

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It's the USS Gerald R. Ford (CVN-78), the most expensive and most advanced warship ever built. The ship was christened in November 2013 and is scheduled to be commissioned this month.

The Naval behemoth can house more than 4,500 people and weighs 90,000 tons. The CVN-78 is the lead ship in the Ford class of aircraft carriers, replacing some of the U.S. Navy's existing Nimitz-class carriers. At first glance, both classes have a similar-looking hull, but the Ford class introduces a series of technical innovations designed to improve carrier's operating efficiency, and reduce operating costs and crew requirements.

USS\_Gerald\_R.\_Ford\_(CVN-78)\_in\_dry\_dock\_front\_view\_2013

Instead of conventional steam catapults to launch jets, the supercarrier is outfitted with EMALS (Electromagnetic Aircraft Launch System), which is lighter and requires less space. It also needs less maintenance and manpower, and is more reliable and energy-efficient. EMALS can launch an aircraft every 45 seconds, 25% faster than its steam counterpart. Furthermore, since EMALS uses no steam, it's a suitable candidate for launching drones and other electric vehicles.

The launch system is just a small piece of the CVN-78's puzzle. The ship has a redesigned and relocated island (the part of the carrier where air-traffic control and the bridge are located), three faster and more powerful elevators (compared with four on Nimitz-class carriers), an Advanced Aircraft Recovery System (AARS) and design changes to the flight deck. Those changes are vital to increasing the number of sorties launched.

The carrier's sensory array has received an overhaul with the addition of an integrated active electronically scanned array (AESA) search-and-tracking radar system. This new system has no moving parts, so it therefore minimizes maintenance and crew requirements for operation. Further, advanced AESA radars enable the ship and aircraft to broadcast powerful signals while remaining stealthy, which greatly improves combat effectiveness.

Speaking of combat, the carrier is more than capable of holding its own. The Evolved SeaSparrow Missile (ESSM) defends against high-speed, highly maneuverable anti-ship missiles, and the weapon system of choice is the Rolling Airframe Missile (RAM). One must not forget various Gatling and heavy machine gun mounts as well as 75-plus aircraft ready to be launched at any given time.

The CVN-78 has another important advantage over its equivalent Nimitz class carrier: Its power doesn't come with the price of increased hands on board. In fact, because of the aforementioned technologies, the USS Gerald R. Ford accommodates 2,600 sailors, 600 fewer

than a Nimitz-class flat top. This alone saves the Navy more than \$4 billion in ownership costs over each ship's 50-year life, when compared with contemporary Nimitz aircraft carriers.

As expected, the CVN-78 has impressive power. The ship is powered by two Bechtel A1B nuclear reactors, each capable of producing 300 megawatts of electricity, triple that of Nimitz-class reactors. Those changes resulted in a two-thirds reduction of watchstanding requirements and a big decrease in required maintenance.

With great power comes great firepower. Only half of the power-generating capability on the CVN-78 is needed to run currently planned systems, including EMALS. The CVN-78 will thus have the power reserves that the Nimitz class lacks to sport even more futuristic armaments and systems, such as free-electron lasers and dynamic armor, at some point in the future.

The lasers can be fired at just a few dollars per shot and consume around 10 megawatts of power.

USS-Gerald-Ford-aircraft-carrier-7

As you can see, the USS Gerald R. Ford packs a serious punch — it's a massive investment in strategic dominance and innovation that, in spite of rising concerns, should provide the U.S. with the upper hand in 21st-century naval warfare.