GEORGE H. W. BUSH (CVN 77) CHRISTENING
October 7, 2006

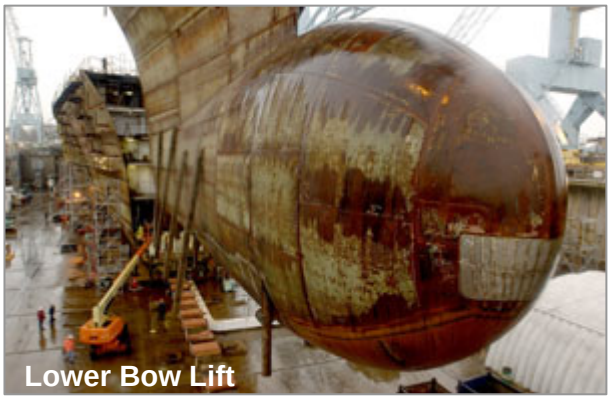
George H. W. Bush (CVN 77) Milestones

It takes millions of man-hours and nearly seven years to build a nuclear-powered aircraft carrier. There are many construction milestones that happen along the way - starting with the laying of the keel and ending with delivery to the Navy. Below are some of the milestones for the *George H. W. Bush*, the 10th and final *Nimitz*-class aircraft carrier.

- Contract awarded Jan. 26, 2001
- Seven-year construction timeframe
- CVN 77 Naming Ceremony – Dec. 9, 2002
- Keel Laying – Sept. 6, 2003
- Lower Bow Lift - March 8, 2005
- Upper Bow Lift - March 15, 2006
- Island Landing - July 8, 2006
- Christening scheduled for Oct. 7, 2006
- Launch scheduled for Oct. 8, 2006
- Delivery scheduled for late 2008

Island Lift


Upper Bow Lift


Lower Bow Lift

Modular Construction

- Aircraft carriers are built using more than 47,000 tons of structural steel and about a million pounds of aluminum
- Modular construction is used to put the pieces of the ship together much like toy building blocks
- Units of construction are welded together to form a module or “superlift” weighing up to 900 tons
- *George H. W. Bush* (CVN 77) had 161 “superlifts”
- The *George H. W. Bush* is being built using more than a billion parts from more than 2,000 suppliers in 46 states

GEORGE H. W. BUSH (CVN 77) CHRISTENING
October 7, 2006

Design Enhancements

Named after the nation's 41st president, this powerful warship of the 21st century will feature numerous improvements and modernizations.

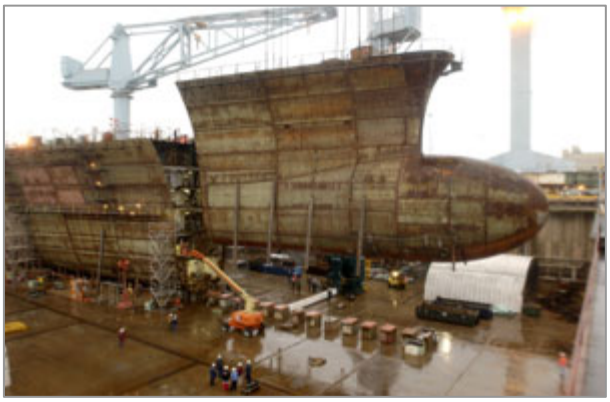
New Propellers

The *George H. W. Bush's* four propellers weigh approximately 60,000 pounds each and are a new design from previous Nimitz-class carriers. The new propellers are very similar in size, weight and material to previous ships of the class, but the blades are shaped differently to reduce wear and erosion.

The new propellers are planned for use on the future-generation carrier class, CVN 21, and they will be installed on the *USS Carl Vinson*, currently in the Newport News shipyard undergoing a refueling and complex overhaul.

Bulbous Bow

The *George H. W. Bush* is the second carrier to have a new bulbous bow design that provides more buoyancy to the forward end of the ship and improves hull efficiency.



Made up of 13 steel sections and weighing 700 tons, the lower bow was one of the heaviest super-lifts and the last major section of the ship below the waterline to be lowered into place in the dry dock.

Environmental Upgrades

- New vacuum marine sanitation system that uses fresh water in lieu of sea water for lower maintenance cost
- Enhancements to material handling systems for improved safety

Paint System Improvements

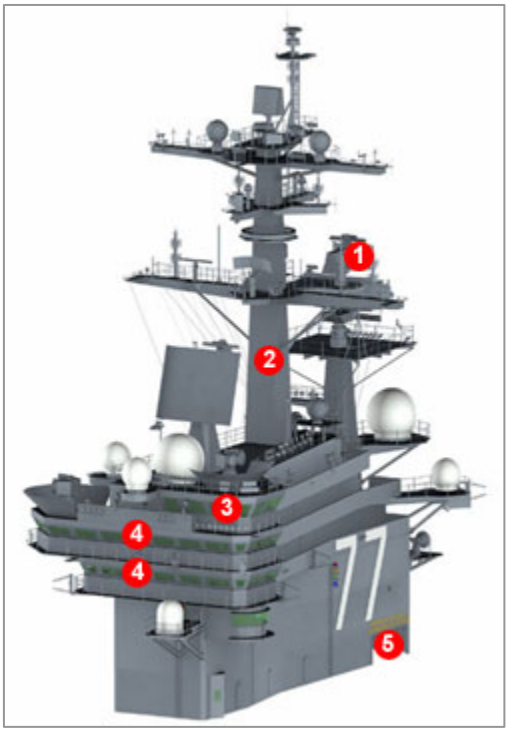
- Edge retentive coatings in seawater tanks
- Low Solar Absorptive and Anti-Stain Paint
- New Underwater Paint System

GEORGE H. W. BUSH (CVN 77) CHRISTENING
October 7, 2006

Modernized Island

CVN 77's island design includes a modified main mast, an integrated aft mast, transparent armor windows and many navigation and communication systems upgrades. The *USS Ronald Reagan* (CVN 76) was the first carrier to incorporate many of these changes.

1. **Aft Mast -** The AFT mast was relocated from the flight deck to the island to put it in closer proximity to other radar systems.
2. **Main Mast -** The main mast pole is a tapered square pole in lieu of a round mast pole. This design keeps electrical and piping systems enclosed for survivability purposes. The larger size also allowed for the following changes:
   - Waist high safety rails
   - Easy access to all areas by internal ladders
3. **Primary Flight Control -** Increased square footage and larger window in Primary Flight Control has improved visibility of the flight deck for the Air Boss and squadron representatives.
4. **Bridge -** Larger windows are included in the Navigation and Flag Officer Bridge areas for better visibility.
5. **Outboard Weapons Elevator -** An aircraft weapons elevator was relocated from the centerline of the flight deck and now extends up into the aft section of the island, allowing for more efficient movement of aircraft ordnance during flight operations.



Aircraft Launch and Recovery

- Modernized aircraft launch and recovery equipment
- New JP-5 fuel system for improved storage and handling of aircraft fuel

Technology Modernization

- Medical and dental equipment upgraded for enhance medical care
- Deck covering modernized to reduce ship weight by 100 tons
- Integrated display screens in Damage Control Central modernized to improved data integration and display
- Equipment in general shops being modernized to improve productivity

Modernization of Print and Photo Shops

- Modernizing the old chemical photo processing equipment to provide new digital processing capability
- Modernizing equipment to enhance productivity and reduce operating cost

GEORGE H. W. BUSH (CVN 77) CHRISTENING
October 7, 2006

Nimitz-Class Aircraft Carriers – General Characteristics

Capability

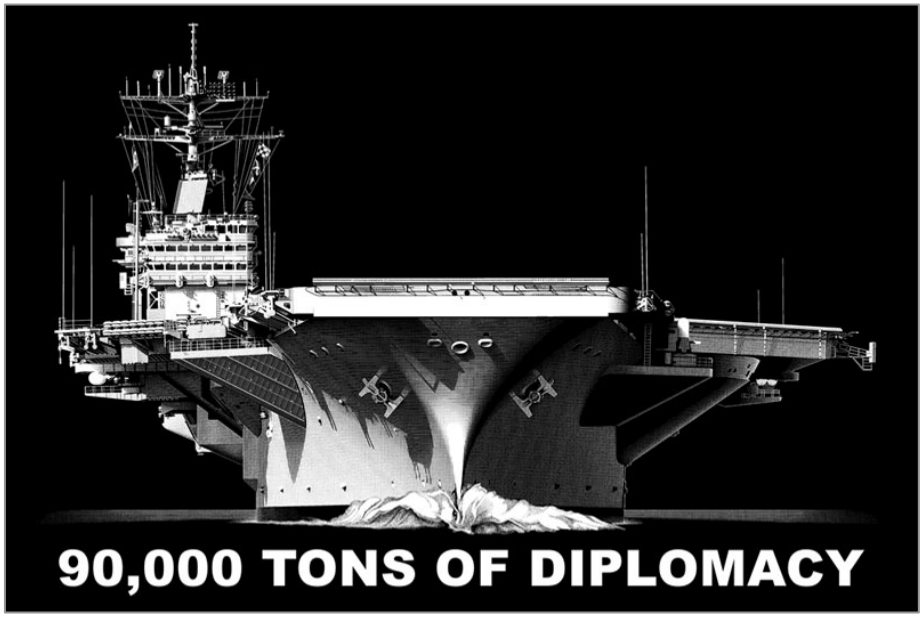
- Top speed exceeds 30 knots
- Powered by two nuclear reactors that can operate for more than 20 years without refueling
- Expected to operate as Navy warship for about 50 years
- Typical *Nimitz*-class ship carries 80-plus combat aircraft
- Three two-inch diameter arresting wires on the deck bring an airplane going 150 miles per hour to a stop in less than 400 feet

Size

- Towers 20 stories above the waterline with a 4.5-acre flight deck
- 1,092 feet long: nearly as long as the Empire State Building is tall
- Four bronze propellers, each 21 feet across and weighing more than 30 tons
- Steering accomplished by two rudders, each 29 feet by 22 feet and weighing 50 tons
- Four high speed aircraft elevators, each more than 4,000 square feet, bring planes to the flight deck from the hangar below

Capacity

- Home to about 6,000 Navy personnel
- Enough food and supplies to operate for 90 days: 18,150 meals served daily
- Distillation plants providing 400,000 gallons of fresh water from sea water daily, enough for 2,000 homes
- Nearly 30,000 light fixtures and 1,600 miles of cable and wiring
- 1,400 telephones, 14,000 pillowcases and 28,000 sheets



GEORGE H. W. BUSH (CVN 77) CHRISTENING
October 7, 2006

The Christening Tradition

Few modern rites have a 4,000-year old tradition. Yet the ritual of ship christenings reaches that far back in recorded history. The practice of using wine (or champagne, the elite of wines) as the time-tested toast to new ships can be traced almost as far back as history.

Ship christenings in the days of the Vikings were marked by the spilling of blood, human sacrifices and incantations by high priests to appease the gods. The Greeks and Romans later used water as a token of purification in blessings of the ship and her crew, officers, passengers and cargo.

During the Middle Ages, religious shrines were placed about the ship. Many historians agree that a libation of wine – offered as the vessel hit the water – became a substitute for the earlier blood sacrifice.

Christening ceremonies during the Tudor era took place after the ship was in the water. Announced by a fanfare of trumpets, a king's lieutenant would appear and be seated in an ornate chair on the ship's poop deck. He was presented with a goblet made of precious metal and filled with red wine. After a ceremonial sip of the wine, he would politely whisper the ship's name, wishing her good luck on her voyages.

Then, spilling a bit of the wine on the deck, he would draw the four points of the compass before drinking to the king's good health. As a finale, the lieutenant would toss the goblet over the side and leave the ship. Many of the spectators went over the side along with the goblet, hoping to salvage the golden "standing cup."

Enterprising shipbuilders, whose responsibility it was to supply the goblet, decided to salvage the cup themselves. They accomplished this by arranging a net around the ship, to the indignation of the general public. Public sentiment was so strongly aroused that the king ordered the practice stopped. When the shipbuilders protested, Charles II ordered that the Crown provide the cup, which was then presented to the master of the shipyard.

In the interest of further economy, the use of a cup was discontinued in 1690, with a bottle being substituted as the container. When champagne became widely known, it was used in place of wine since the more costly champagne was held in higher esteem.

The ceremony of christening a British ship was invariably performed by a male member of the Royal Family or by a dockyard commissioner until 1811 when King George IV introduced the first lady sponsor. One lady's aim was so bad that she hit a spectator who was injured and sued for damages. The Admiralty then directed that in the future the bottle would be secured to the stem of the ship by a lanyard. This is the method still used today.

For more than a century, the tradition throughout the world has been that women christen ships. The custom has been broken only twice here at Northrop Grumman Newport News, when a young boy christened a tug in 1909 and a 15-year old boy christened a cargo ship in 1916.

A great deal of attention is focused on the bottle of American-made sparkling wine used in the christening. At Newport News the bottle is enclosed in a slotted aluminum casing – made in the shipyard – and then covered with a crocheted cotton sleeve. The coverings prevent fragments of the glass bottle from flying out and possibly injuring the sponsor or spectators.

The wine is kept in an insulated bag – at room temperature – to ensure good fizz and splash when the bottle is broken during the christening. If the weather is cold an electric heater is provided to keep the bag warm. And a spare bottle is within easy reach as a backup to the original, just in case.

Champagne or wine has not always been used at Newport News to christen ships. Ten ships have been baptized with non-alcoholic liquids – from grape juice to waters from the seven seas. In the 1930's, Prohibition dictated the use of non-alcoholic beverages for many christenings. On other occasions the ship's sponsor or owner substituted a liquid they thought was more in keeping with the name of the vessel or its namesake.