U.S. AIRCRAFT CARRIER CVN 65 ENTERPRISE

The United States Navy Aircraft Carrier CVN-65 Enterprise, also known as the "Big E", is the world's largest ship and the first nuclear powered aircraft carrier. Webster defines the word Enterprise as meaning "Undertaking, Project, A business organization, Initiative, etc.", and the CVN-65 fills all of these definitions perfectly. The carrier Enterprise is the 8th U.S. Naval vessel to carry the name, and the first one was launched in 1755 as a one-masted sailing ship that served during the American Revolution and its displacement was only about 1/1000 of the current namesake. Following the end of the second conflict, the U.S. Navy had on hand 99 aircraft carriers, with another 38 under construction, but with the completion of hostilities construction was halted and many of the others were mothballed. In 1947, only 20 carriers were in active service, including the Midway. With the advent of jet aircraft and heavier gross weights of the new planes, a large 60,000 ton class of carrier was discussed to cover these needs. Construction was begun on CVB-58 in 1949. A 65,000 ton class carrier, but was halted after only five years, because of a change in political thinking, wherein emphasis was placed upon tactical long range bombers instead. With lessons learned during the Korean conflict, 4 new carriers, of the Forrestal class, at 60,000 tons were constructed during the 1955-59 time period, and the Improved Constellation was completed in 1961. During this period, the U.S. Navy had progressed in the development and testing of a triad nuclear powerplant, suitable for surface ships, and was first used in the Cruiser Long Beach, making it the first nuclear powered surface vessel. Funding was received by the Navy for the construction of a 75,000 ton displacement nuclear powered carrier and the Newport News Shipbuilding and Dry Dock firm began construction on 4 February 1958. The CVN-65 was launched as the Enterprise on 24 September 1960 as the largest ship afloat. Its waterline is 317 meters long and has a beam of 40.5m, but even with these awesome dimensions it has the same draught as that of the Kitty Hawk class carriers. The Enterprise is powered by eight pressurized-water cooled A2W nuclear reactors and 4 geared steam turbines by Westinghouse, which produces 280,000 horsepowe. With this power the Enterprise can travel 140,000 n.m. at 36 knots or 400,000 n.m. at 20 knots. Cost of construction was $500 million dollars.

In January 1979 the Enterprise completed her 3rd refueling and overhaul, with many modifications updating the state of the art in electronics, communications and weapons. The CVN-65 carries 94 aircraft which include F-14A Tomcat, A-7E Corsair II, A-6E Intruder, KA-6D Intruder, S-3A Viking, EA-6B Prowler, E-2C Hawk Eye and SH-3H Sea King helicopters.


Sea Sparrow Launcher

The Sea Sparrow is a ship mounted missile system modified from the aircraft-launched AAM-7A/SP Sparrow III used by the USSR Navy. It was developed in the 1970s to cope with the anti-ship missiles being employed by other countries. The missile is 3.6m in length, 20cm in diameter and has a wingspan of 2.54m. It weighs 30kg of high explosives and employs a proximity fusing system. It is propelled by a solid fuel rocket and is controlled by a semi-active homing radar. It has a maximum range of approximately 25km and is extremely accurate and effective.

MK 7 Barricade Stanchion

The MK 7 barricade and stanchion is an aircraft arresting system employed on the recovery flight deck of the Enterprise to halt disabled aircraft and prevent them from damaging other aircraft, facilities or personnel. The barrier is a heavy duty net of nylon mesh, supported by two last actuating stanchions that raise the net across the landing deck. It will also stop the aircraft with little damage to the aircraft or personnel.

MK 7 Arresting Gear

This is the carrier primary system for recovery of landing aircraft. Consisting of 4 steel cables, associated pulleys, hydraulic pistons, compressed air tanks etc., the landing aircraft tail hook engages one of the cables and it is brought to a quick, but smooth halt. The aircraft kinetic energy is absorbed by the cable pulling on the attached hydraulic piston against a combination of fluid and compressed air, bringing the aircraft to a rapid stop. A 30 ton aircraft landing at a speed of 140 knots, will be stopped in a length of about 915 meters.

Ghoost Ship Master Antenna

Naked warfare in this day and age, depends a great deal upon modern electronic systems, for passive and active offense and defense. If a ship wants to attack an enemy without being detected, she can use her own radar, the radar information from another friendly ship or aircraft, she can have all this information linked with it. When the defending side detects that a radar signal is locked on to her, she may try to direct the enemy's radar or disturb its transmission by transmitting a false signal which would give a wrong indication on the screen. A more advanced system of electronic countermeasures is to "block" the enemy ship info attacking a ghost ship. The friendly ship sends out phantom signals from her own radar and it is received by the enemy and plotted in an entirely different location. When the attack begins, the enemy's missiles attack the ghost ship, rendering the real ship safe from damage.

MK 7 Jet Blast Deflector

When jet aircraft first began to be used on aircraft carriers, the problem of their jet exhaust heat and blast effects caused considerable problems in the launching of the aircraft. The solution was to employ a blast deflector to turn the exhaust upward or to the side. On the Enterprise the MK 7 JBD is used on the N1C, 2 and 3 catapults and a MK 8 on the No. 4. All four deflectors retract into the flight deck, flush with the surface and are activated by hydraulic cylinders, raising them to about a 70 degree angle to the flight deck. Water cooling pipes are placed in the deflector to protect and cool the blast damage from the hot aircraft exhaust when the attack is off. The cooling water starts flowing as soon as the barrier is placed in the raised position.

Fresnell Lens Optical Landing System

On both sides of the vertical lens, ten horizontal lenses are projected, which indicate 7 red lights. This landing system is projected on the port side of the center deck. The landing area is 70cm from the lens and at an azimuth angle of 40 degrees. When the aircraft is in the proper approach position, all of the lenses have the same brightness. If the aircraft is above the glide path, the upper lenses are weaker and if left of glide path they are weaker. Thus, the pilot of the approaching aircraft understands his aircraft's position and can make flight adjustments accordingly. As different lenses have different approach speeds and landing slopes, lens and lens adjustments of the angle of the lenses can be made from the flight control center by remote control.

Fresnell Lens Optical Landing System

Landings Signal Lights

These are 12 vertically placed lights on the starboard side of the stern of the ship, and are used as approach lights for night operations, and also as stern indicator lights.

CWS-20 and CWS-21 Landing Aids

CWS-20 and CWS-21 are designed to improve the approach to the carrier deck. They are generally used in conjunction with the Fresnel Lenses. They are illuminated by a green rising light from the bow, and a white light from the stern. When the pilot sees the green light, he knows he is on course, and when the white light appears, he knows he is in the proper position to land.

Sea Sparrow Launcher

Landing Area Runway Markings

These are systematic patterns of white lines painted to the left and right of the center line to define the landing and taxi areas of the recovery deck. They also provide the pilot with a better depth of field for landing operations.

Fresnell Lens Optical Landing System

The angled deck, so conspicuous among modern aircraft carrier decks, is an angle so that recovery of aircraft, and simultaneous take-offs from the bow can be achieved without any interference. It allows continued simultaneous flight approaches to landing and go around for training purposes that has an overall effect of maintaining pilot efficiency and reduction of accidents.

Life Raft Containers

The life rafts are employed for the safety of the persons on board the ship in case of emergencies. They are automatically inflated when released from the coozon like containers. When required, the life rafts are deployed from the side of the ship, inflated with CO2, and each is large enough to carry 20 persons. Emergency lanterns, water and medical provisions plus a tent like covering for protection from the weather is carried aboard.
per minute. It has an effective range of 1,600 meters with a muzzle velocity of 1,200 m/s. The QWS Vulcan Phalanx gun system consists of a 20mm gun mounted on the gun ring and a dome-shaped cover painted white. Both search and track radars are housed in the dome, along with the weapon control system computers. They are effective in this position from a distance of 1,500 meters.

With its tremendous fire power and accurate computerized gun target guidance, the QWS system provides the ship with an effective low-altitude defense against small targets. It has been modified to arm the ship with 5" short-tube guns. The ship also has a 40mm ASROC system for surface mines.

**Elevator Sponsor**

The elevator sponsor is the second level of the aircraft carrier, attached at the same level as the hangar deck. They are used for the vertical movement of aircraft, and contain the control systems, search lights, etc. They are also used when replenishing supplies at sea, and tying up at quaysides, as they also have the necessary davits, chocks, and capstans.

**Catwalk**

This is a walking area surrounding the flight deck and is one step below the level of the flight deck. It is used as a shelter for launch and recovery crews and operations.

**Hose Reels**

Fire hose reels are located around the entire flight deck and are connected in the areas of aircraft recovery. Located on or near the catwalk, they are always near at hand for emergency purposes. Similar in appearance to those used on aircraft carriers, this system is attached to the main and secondary fuel lines, allowing the system to be equipped with a nuclear, biological, and chemical (NBC) sprinkler system for protection of the flight deck and the ship.

**Bulbous Bow**

The bulbous bow of the aircraft carrier helps to reduce the resistance of the ship, allowing it to maintain higher speeds over long periods of time. This shape is used on most modern aircraft carriers to improve their performance.

**Enclosed Box**

Also known as the hurricane bow, this development came about when considerable damage occurred during rough weather. By being in the flight deck area where the start of the flight deck and hull was open. By closing off this area and extend the deck slightly above the forward box, the result was improved performance with no damage during rough seas.

**Bridge Retriever**

On those aircraft that do not utilize a hose gear catapult launch system, a bridge of steel cables is employed. Both ends of this cable are attached to the aircraft, with the center of the cable attached to a hinge on the catapult. The shuttle attaches to the plinth of the catapult and is triggered, propels the shuttle, bridle and aircraft to launch speed. Upon reaching the end of the catapult, the cable is added to the aircraft and in former times, fell into the sea and was lost. Being that this was not economical, a system of retrieving the cable for reuse was developed. The bridle retractors are the two line equipment at the front of the launch deck. After the aircraft begins to launch, the bridle retractor automatically recovers it, wherein the crew can transport it back to the attachment area for use in subsequent launches. The F-14 Tomcat aircraft does not require the use of a bridge during launch, as it has a built-in catapault launch attachment on its nose gear.

**Navigation Bridge**

Located on the 7th floor of the island, the ship's captain and executive officer can monitor the navigation and communication systems of the ship from a high point above the waterline. This provides the captain with a clear view of the island, and surrounding areas. The Captain's office is the most secure location on the island.

**Combat Bridge**

The Combat Bridge is located directly under the flight deck. This is the center of the combat system, and all control rooms are located on this floor. It is the main control center for the island, and all operational decisions are made here. The Combat Bridge is the nerve center of the island, and all personnel work closely with the Combat Officer to ensure that the island is operating smoothly.

**Aircraft Tie-Down Points**

These aircraft are tied down to the deck, and are used to prevent them from moving during rough seas. The hangar and flight decks of the ship have tie-down points to secure the aircraft to the deck. This is important for the safety of the aircraft and the crew during rough seas and storms.
3. Bow Parts
   Rumpflanbau

   - Make 3 sets. (Use 2 sets in step 3.)
   - 5 parts machined. (For Step 3: 2 sets required.)

   - Flat White (XF-3)
   - Gun Metal (XF-10)
   - Light Gray (XF-60): 3 + Field Blue (XF-50): 1

   - Light Gray (XF-60): 3 + Field Blue (XF-50): 1

4. Assembly of Sponsons
   Zusammenbau der Rumpflanke

   - Port Sponson
   - Port Basis
   - No3 Elevator Sponson
   - No3 Rudder - Black

   - Light Gray (XF-60): 3 + Field Blue (XF-50): 1

   - Light Gray (XF-60): 3 + Field Blue (XF-50): 1

   - Elevated
   - Select either
   - Telegraph
   - Finish with Tamiya Acrylic Paints:
   - Try the new Tamiya acrylic paints.
   - Engineered by modelers for modelers' use. The final cover for the finest models. Instal on Tamiya for perfect results.
Attaching Port Sponsons
Einbau der Port Sponzen

Cleat Deck
- Zwischen-Deck

- Make 4 sets.
- 4 Stücke machen.

- No. 4 Elevator Sponsons
- No. 4 Aufzug - Teile
- Light Grey (XF-60): 3
- Field Blue (XF-50): 1

- E 35
- B 1

- Flat White (XF-1)

- B 51
- B 20
- B 21

- Attaching Hull Parts to Port Side
- Rumpsteile an linker Seite

Cleat Deck
- Insert to back,
- Zwischen-Deck
- Nach hinten einsetzen.

- E 15 (Gangway Ladder)
- Select either:
- (Gangway Stepladder)
- Elfenbein aussuchen.

- Out of unnecessary part.
- Nicht benötgiges Teil abnehmen.

- A 18
- A 10

- A 4
- B 4

- C 12
- A 2
- A 16

- Launch Badkasse
- No. 4 Elevator Sponson
- No. 4 Aufzug - Teile

- Hull Rumpf

- Port Sponson
- Port Basis
Assembly of All Flight Deck

16. Nylon Line
   Tie a nylon line and apply instant cement to knot to prevent coming loose.
   Nach zusammenknüpfen des Nylon-Knotens.

17. Attaching Side Elevator
    Select either up or down position. If you attach B6, B10, and B13 in step 12, select up position. Use B6, B10, and B13 for down position.
    So oder so einbauen, je nach Wunsch.

18. Hull Rumpf
    Attach side elevator here for up position.
    Seitenauflage hier aufhängen.

19. Non-Side Elevator
    Non-Side Seitenauflagen
    Attach side elevator here for down position.
    Seitenauflage hier anhängen.

20. Non-Side Elevator
    Non-Side Seitenauflagen
    Attach side elevator here for down position.
    Seitenauflage hier anhängen.

21. German Grey (K63)
    German Grey (K63)

22. C36 C35 C34

23. All Flight Deck
    Hinteres Flugdeck

24. Fix with cellophane tape until cement has set.
    Mit Tesa zum Trocknen festhalten.
Attach E27, 29, 39 and 40 at the angle shown below.


Attaching Bow Antennas to Port Side
Abgeklappte Antennen auf der linken Seite

Attaching Bow Antennas to Starboard Side
Abgeklappte Antennen auf der rechten Seite
Assembly of Display Stand
Zusammenbau des Schiffständers

- Name Plate: Nameplate
- Make 2 sets:
  - #2 Set machen
  - Flat Black (XF-9)

Display Stand
Schiffständer

- Paint letters in hull color or gold leaf (X12):
  - Flat Black (XF-9), Flat Black (XF-5)

Remove projections:
Diese Position nur auf E40. Hier abschneiden.
The diagram includes model details that should be added after the model is assembled. The diagram shows the position and orientation of various components. The model should be assembled referring to the diagram and labeled dimensions.
Painting of the Enterprise and Aircrafts

CVN-68 is painted overall a light grey. Hull below waterline is dark red and the water line stripe is black. The walking area of the bridge structure is a little darker grey than the hull and the flight deck is an even darker shade of grey. Tie down fittings on deck are a flat white. Other painted deck markings are in white, dashed yellow, red, white or yellow/white center line. Refer to illustration below and the detail painting called out during construction, which should be done at that time. The U.S. Navy and Marine aircraft are painted a low visibility 3 tone grey scheme adopted in 1980. Unit insignias and aircraft numbers are painted in a small size and in one color. Refer to illustrations at right for camouflage and to page 22 for detail painting of aircraft.


Adding realism by painting:
The many subtle details of this model can be enhanced by going over certain areas with a thin wash of black. This will make the details stand out much more realistically, such as the radar screens, elevator struts, safety nets around the flight deck and the life rafts and small boats.

Refer to part figures on page 28 about painting and marking of flight deck. Bemalung und Markierung des Flugdecks siehe Abbildungen auf Seite 28.

Light Grey (WF63) 3
+ Flat White (WF62) 1

Flat Black (WF69)
+ Flat White (WF68) 1

Flat Red (WF67) 2
+ Flat Brown (WF67) 1

German Grey (WF65)

Deck Grey (WF66)

Flat White (WF62)
On the decal sheet with the kit, are the international signal flags, used for communication between ships. There are 26 alphabetical flags and 10 numeral pennants. These are commonly used to relay information from one ship to another to denote position, course, speed, etc. There are many flag combinations, to signal for help, casualties or ship damage. A triple letter signal, for example, would denote some type of medical information or request. These flags would be used in combination for this purpose. Using the numeral pennants in combination would be to relate course, speed and other navigational information. As these international flags and pennants are utilized by all maritime countries, even at sea, it is also appropriate to have them displayed on this model.

**About International Signal Flags:**

Auf den Aufklebemitten im Kit sind auch die internationalen Signal-Flaggen, die der Verständigung zwischen Schiffen dienen. Es gibt 26 alphabetische und 10 numerische Wimpel. Diese werden zur Verständigung von Schiff zu Schiff verwendet, um Position, Kurs, Geschwindigkeit etc. zu übermitteln. Es gibt natürlich viele Kombinationsmöglichkeiten den Signalen um Hilfe. Schäden usw.

**Decal Application:**

1. Remove all dust, dirt and adhesive smear with a wet cloth before applying any decals. 2. The decal to be applied should be removed from the decal sheet. Cut off transparent film along color lines. 3. Dip the decal in tepid water for about 10 seconds and then remove it onto a clean cloth. 4. Be careful of over immersion to avoid loss of color. 5. Hold the backing sheet edges and side edge of the decal onto the model. 6. Wet the decal with a little water on your finger so that it can be moved more easily into position. 7. Press the decal down gently with a clean soft cloth to remove air bubbles and until all excess water has been fully absorbed. When a decal has to be applied to a surface which is uneven or curved, press the decal down with a hot towel so that the decal will fit the contours perfectly. 8. Cut off the excess transparent portion around each decal. The decal must then not be touched until dry.

**Using Example of Numeral Pennants:**

 generally pennant is used with double-letter signals.

Reference: International Code of Signals

Signal flags are shown with red decal numbers and alphabet in decal sheet.