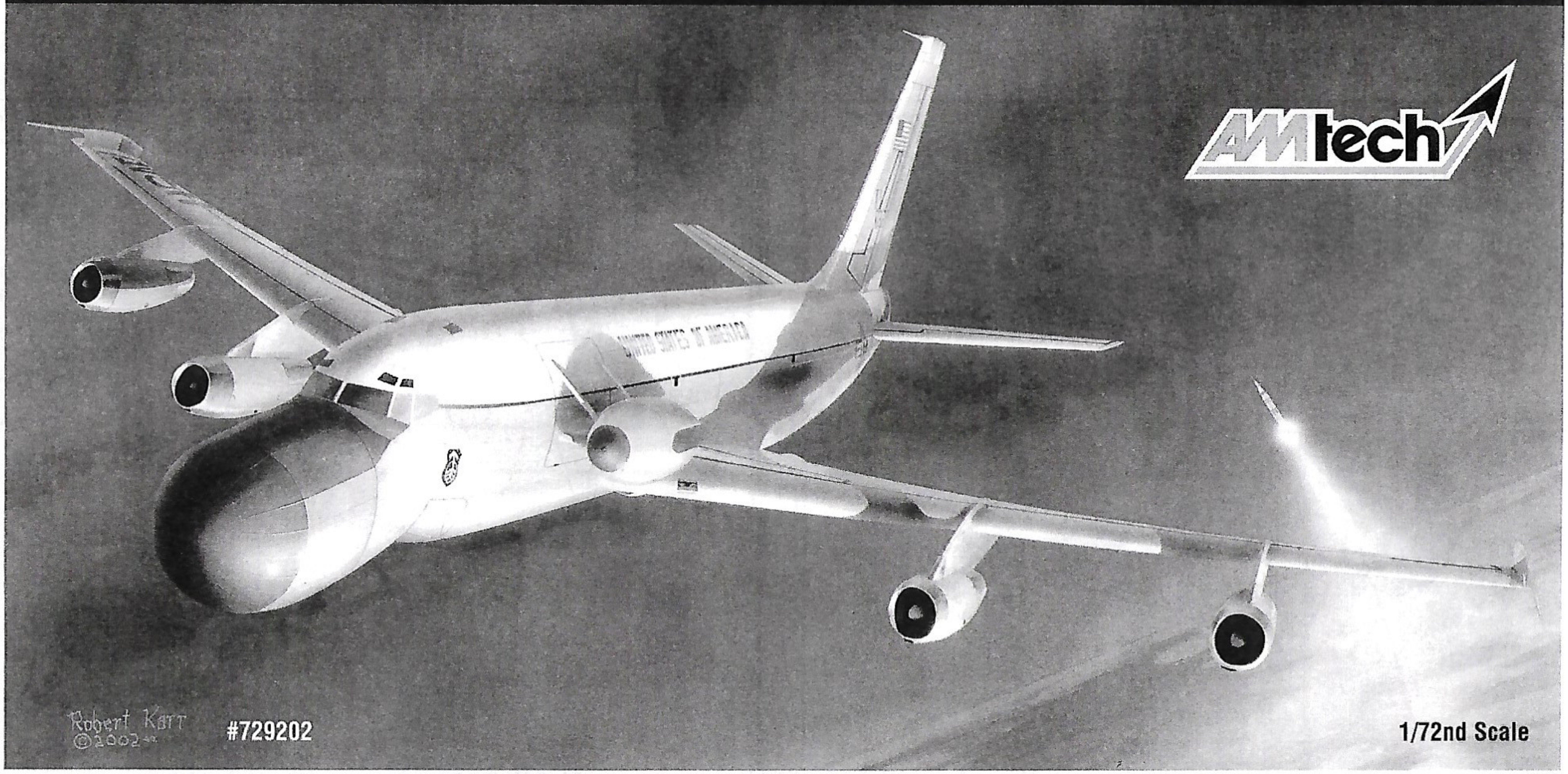
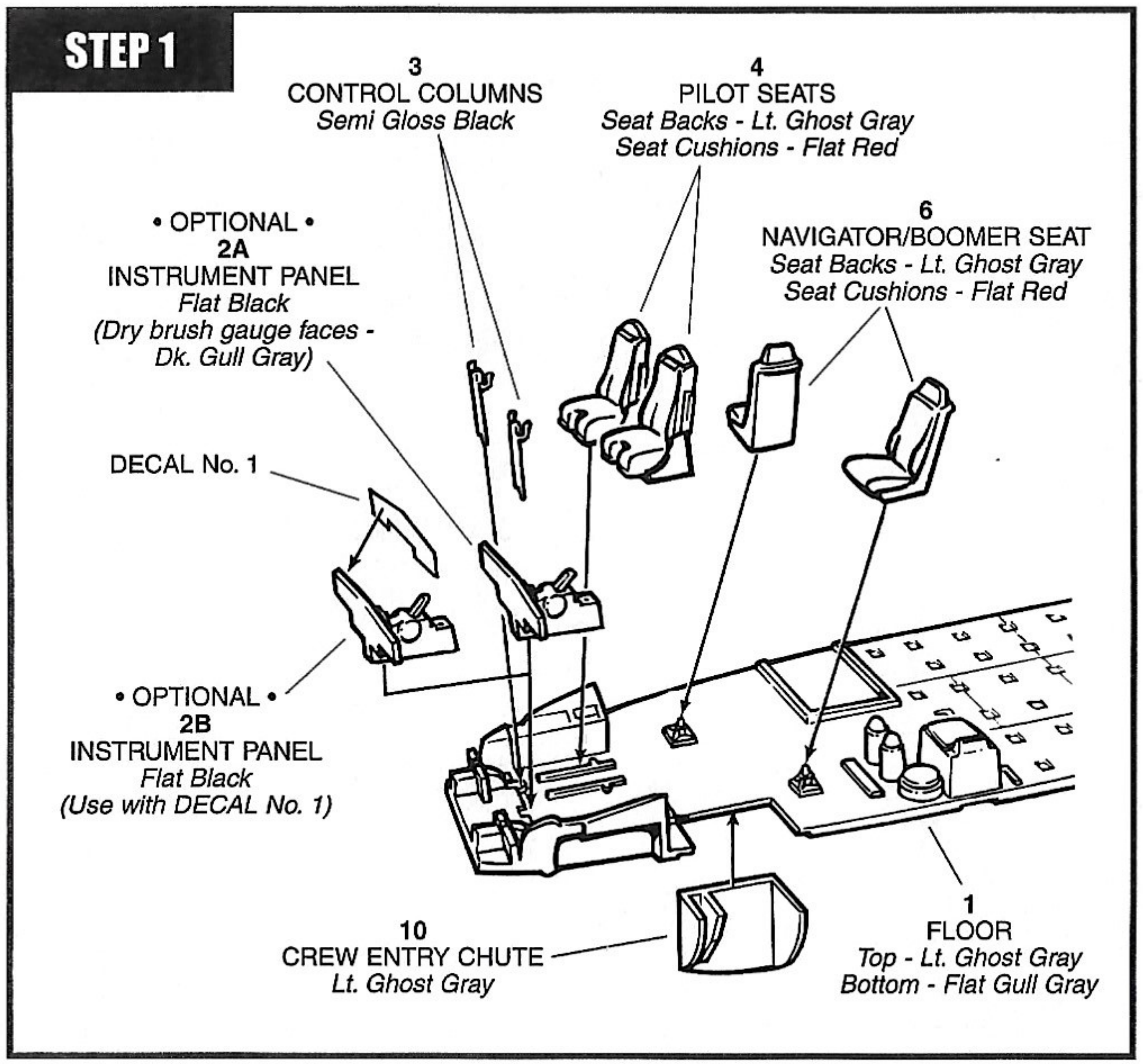
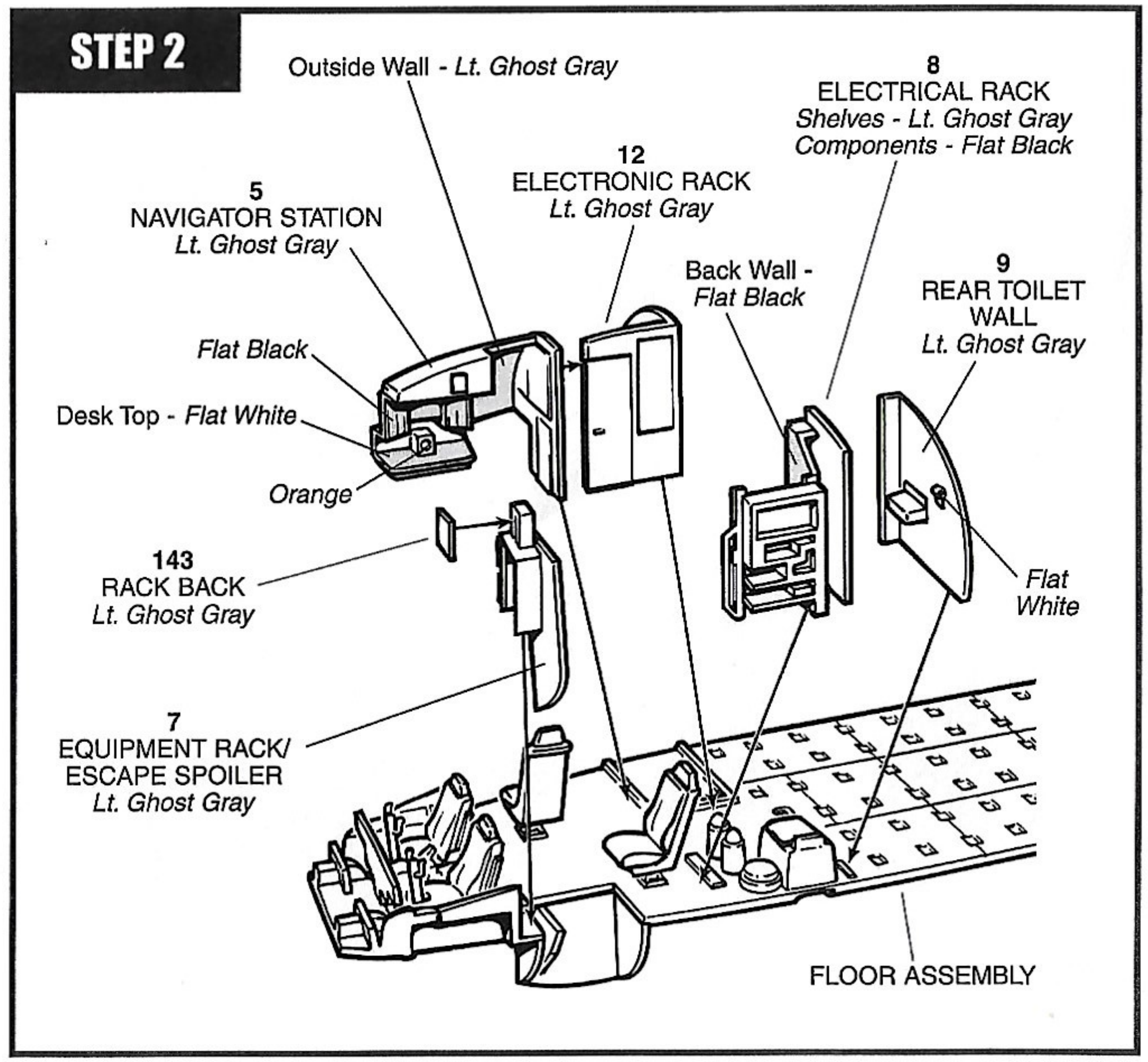
EC-135N/E ARIA/ALOTS "Snoopy"



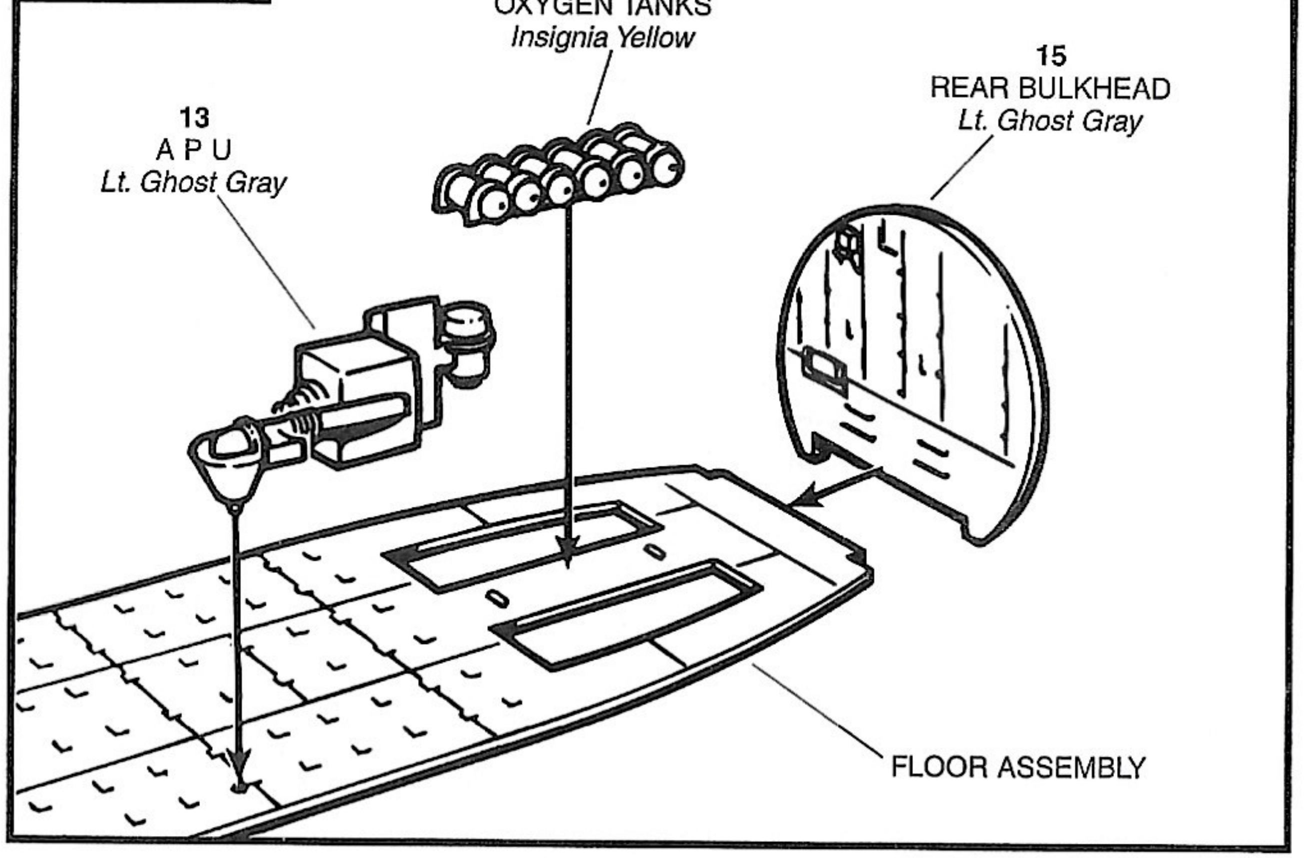
Your AMtech 1/72 scale kit of the EC-135 contains: Optional parts for either J-57 turbojet or TF-33 turbofan engines; the ALOTS/ARIA pod; Black Box resin detail parts; markings for four different aircraft versions; a detailed section on history and Mission Profiles; and illustrated instructions on how to strengthen the outer wing panels. Choose correct engine option for appropriate markings version before assembling.

Assembly sequence shows C-135.
All parts and sequence remain the same.

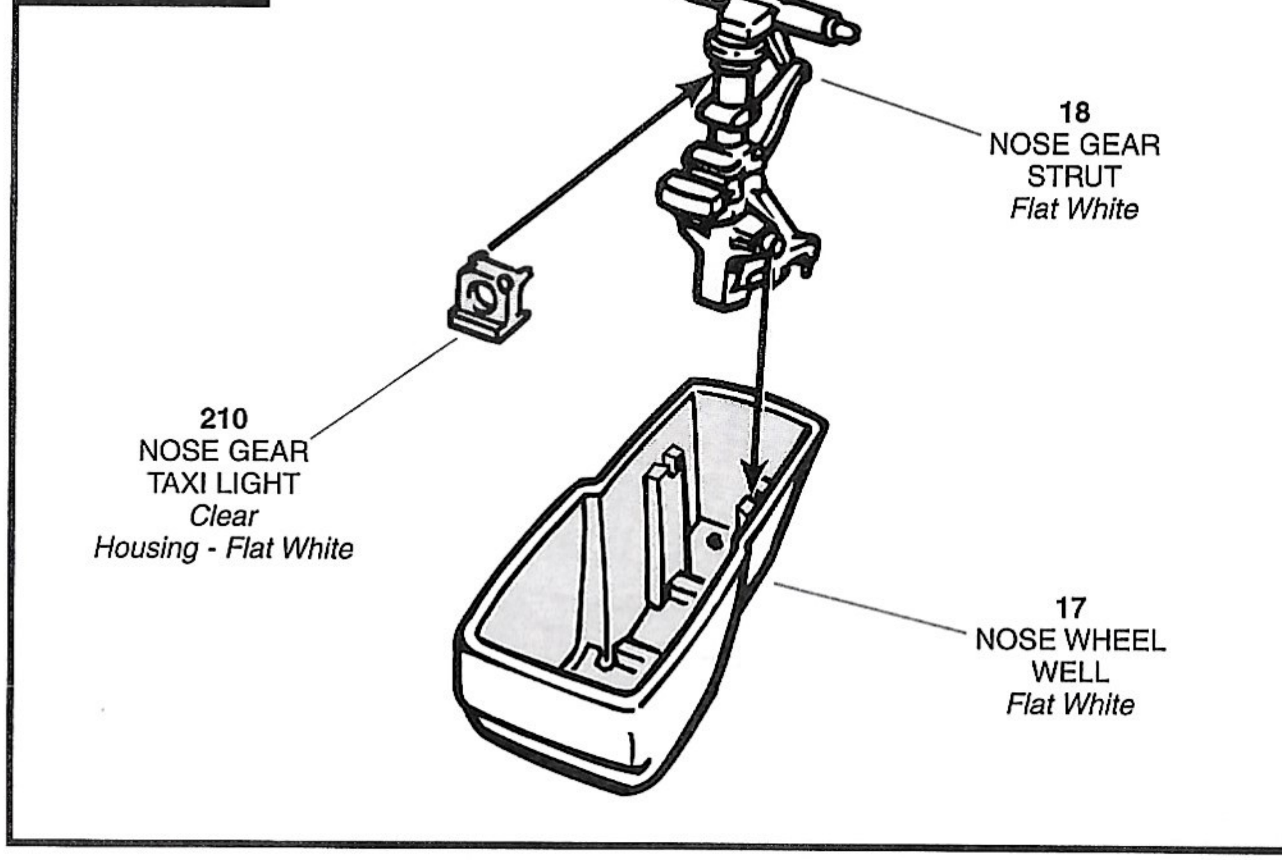




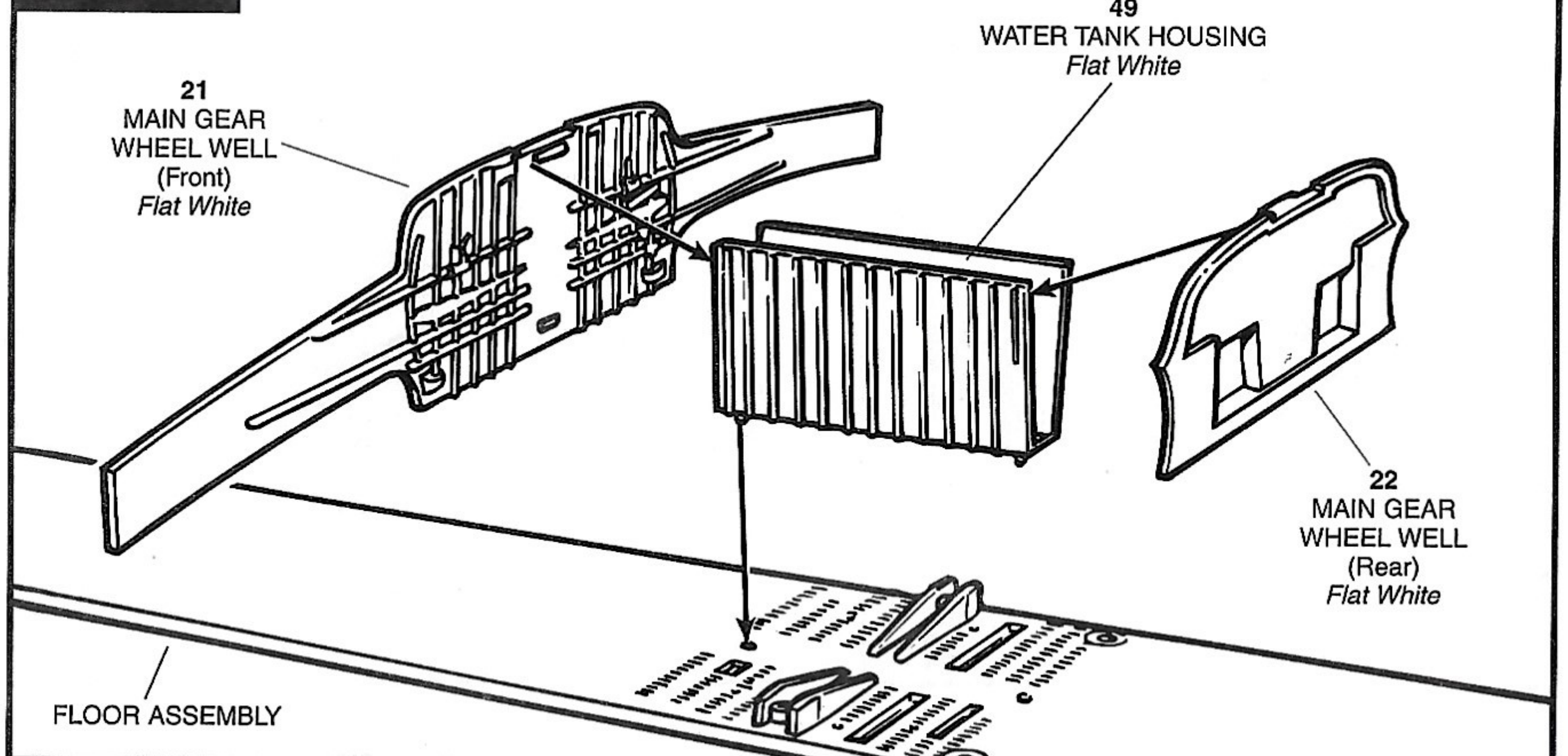
STEP 3



STEP 4

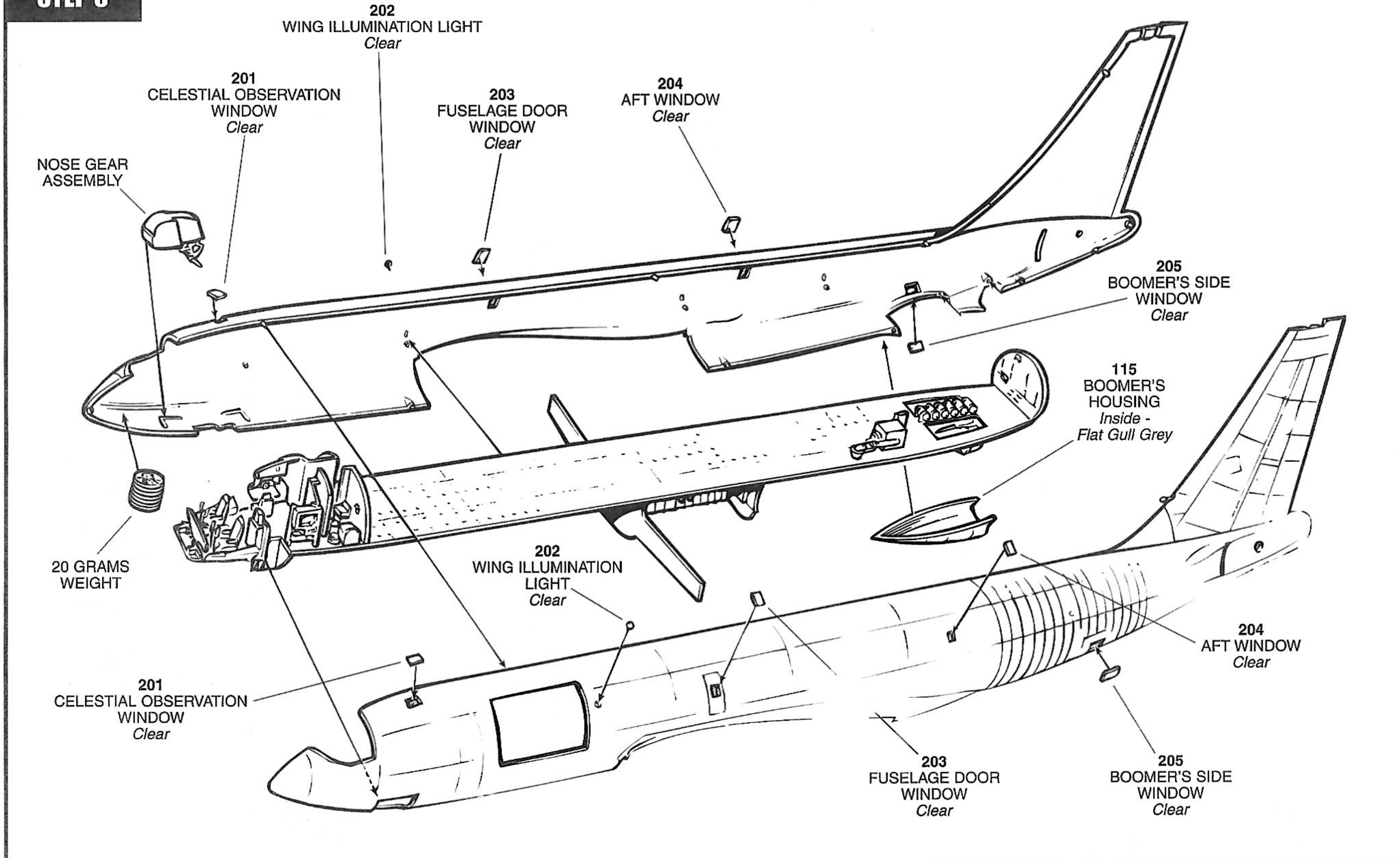


STEP 5

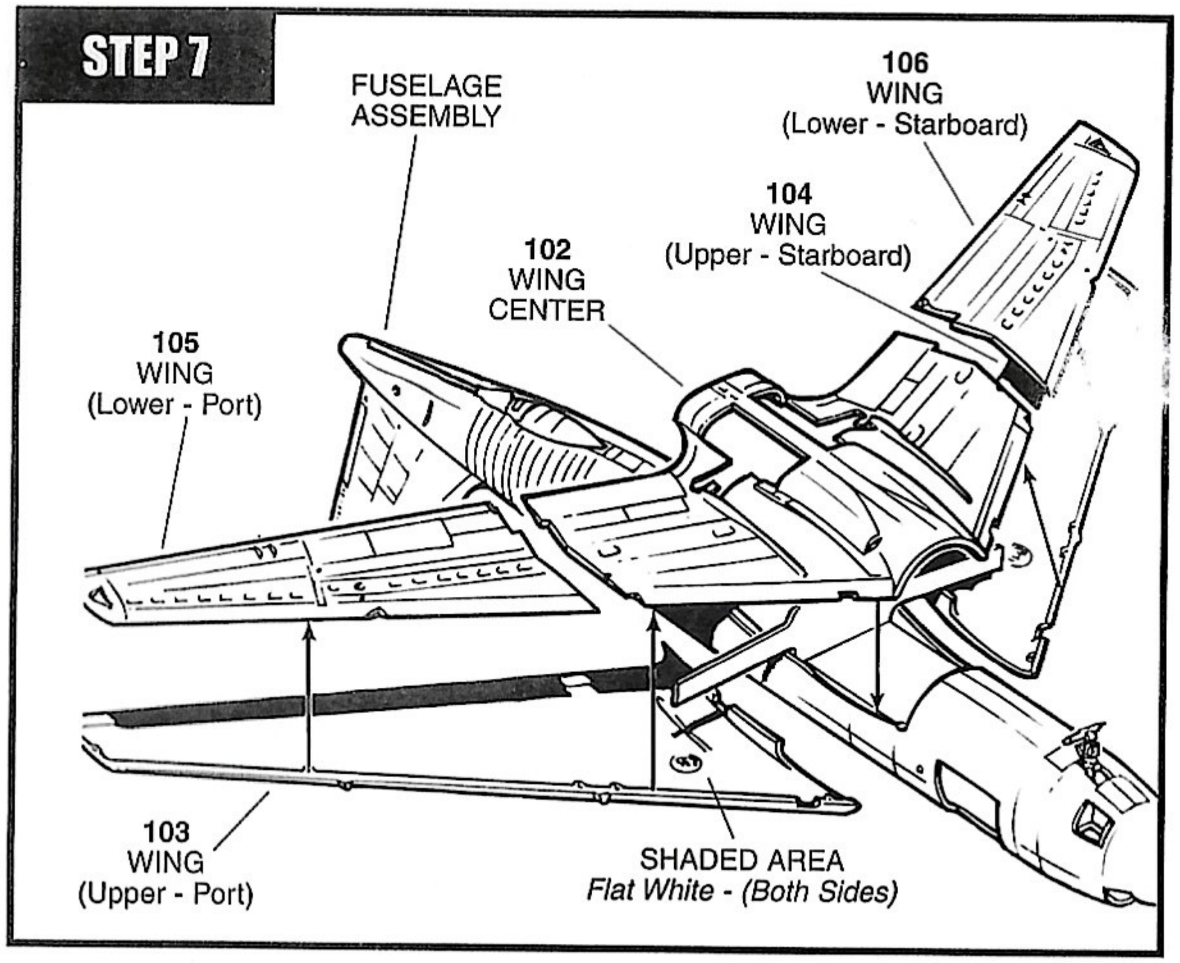


Assembly shows KC-135. Assembly the same.

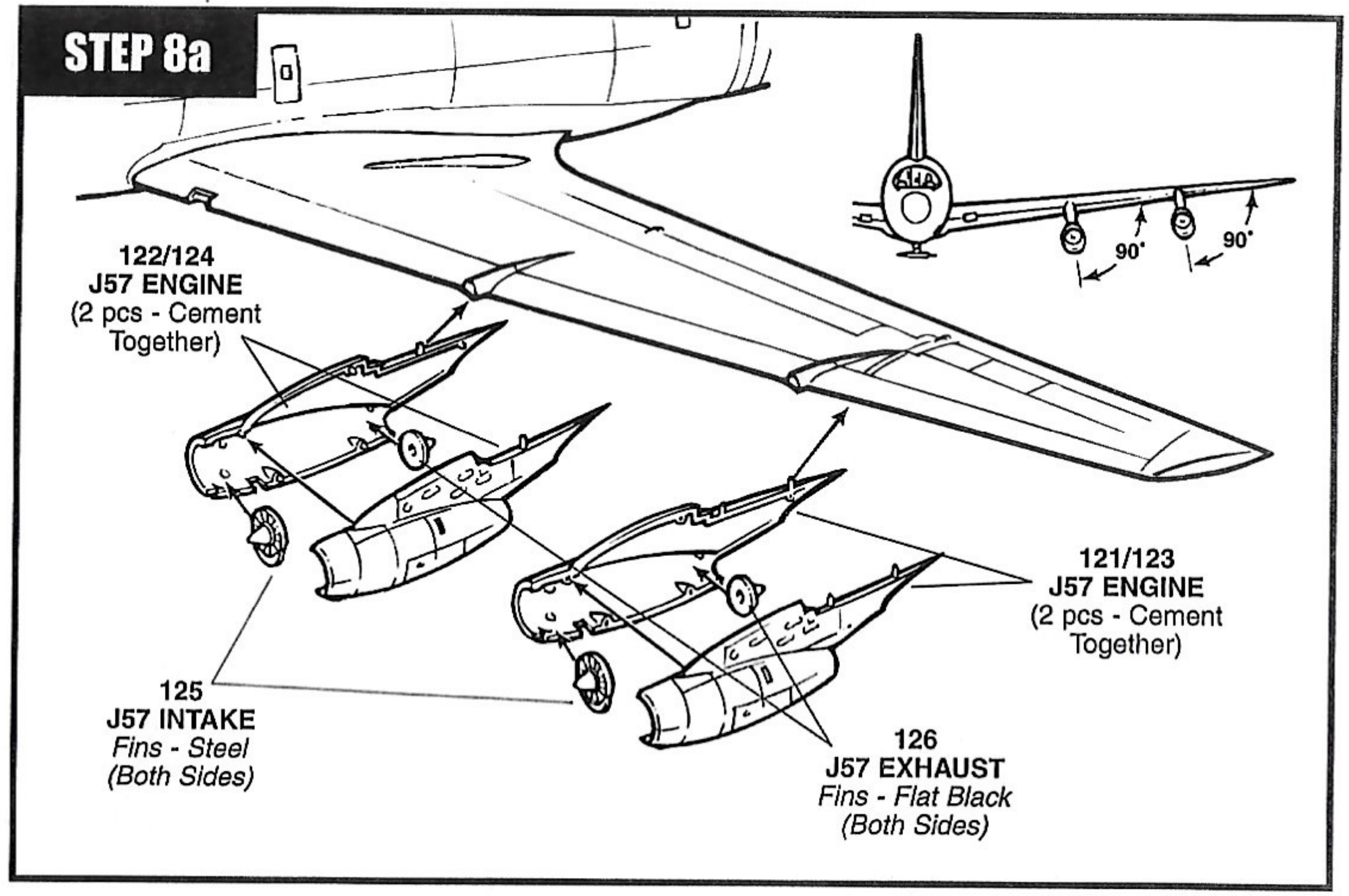
STEP 6



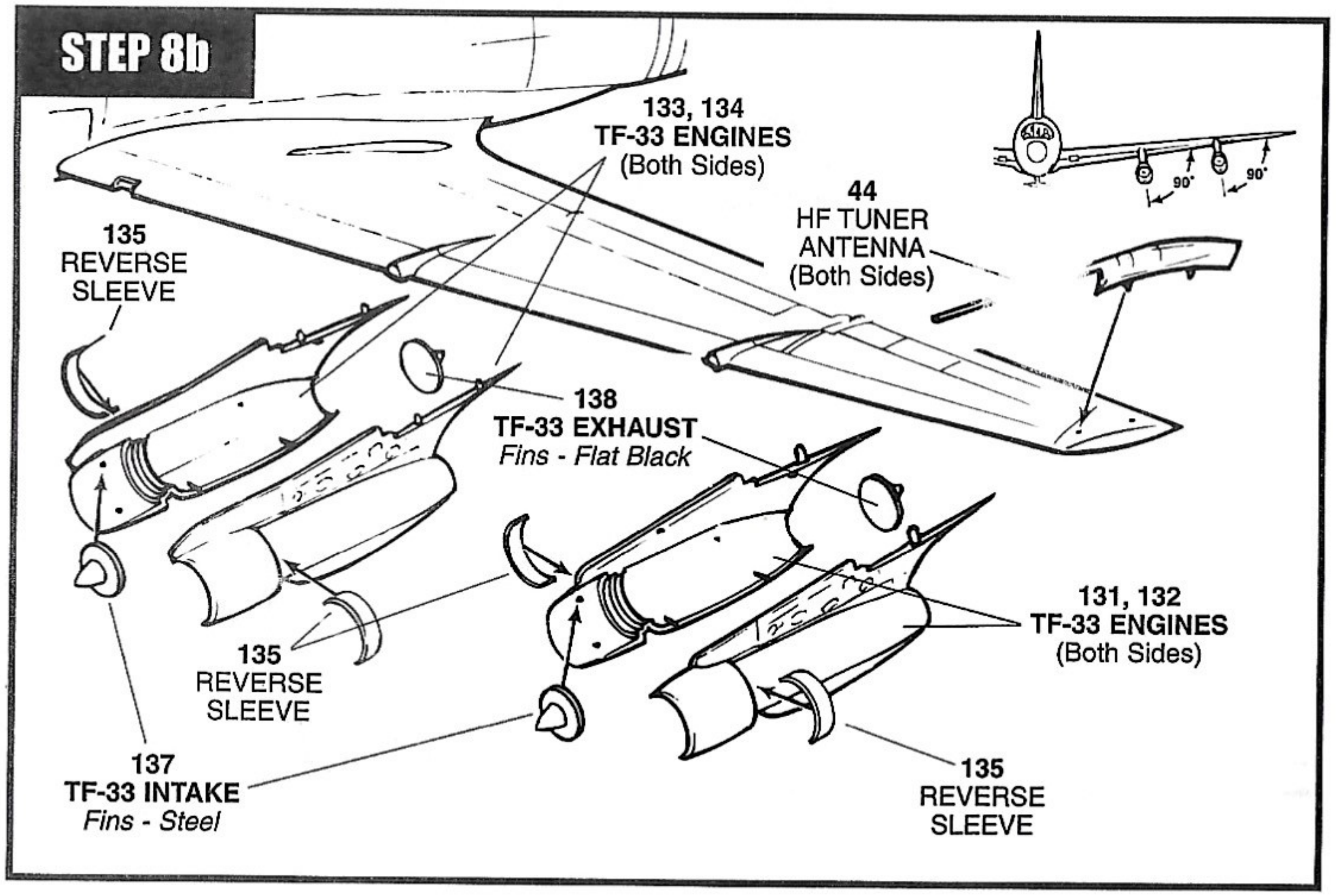
STEP 7



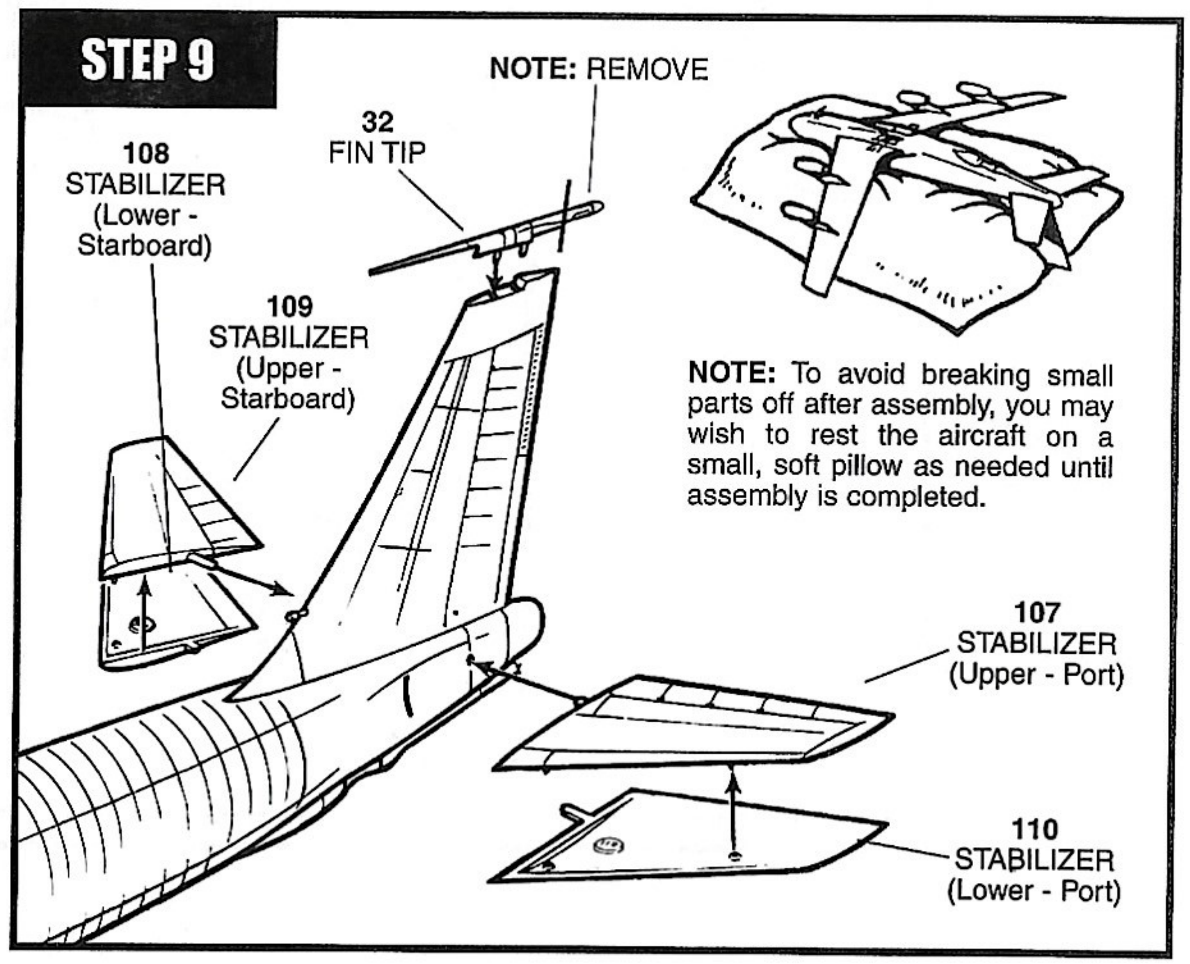
STEP 8a



STEP 8b



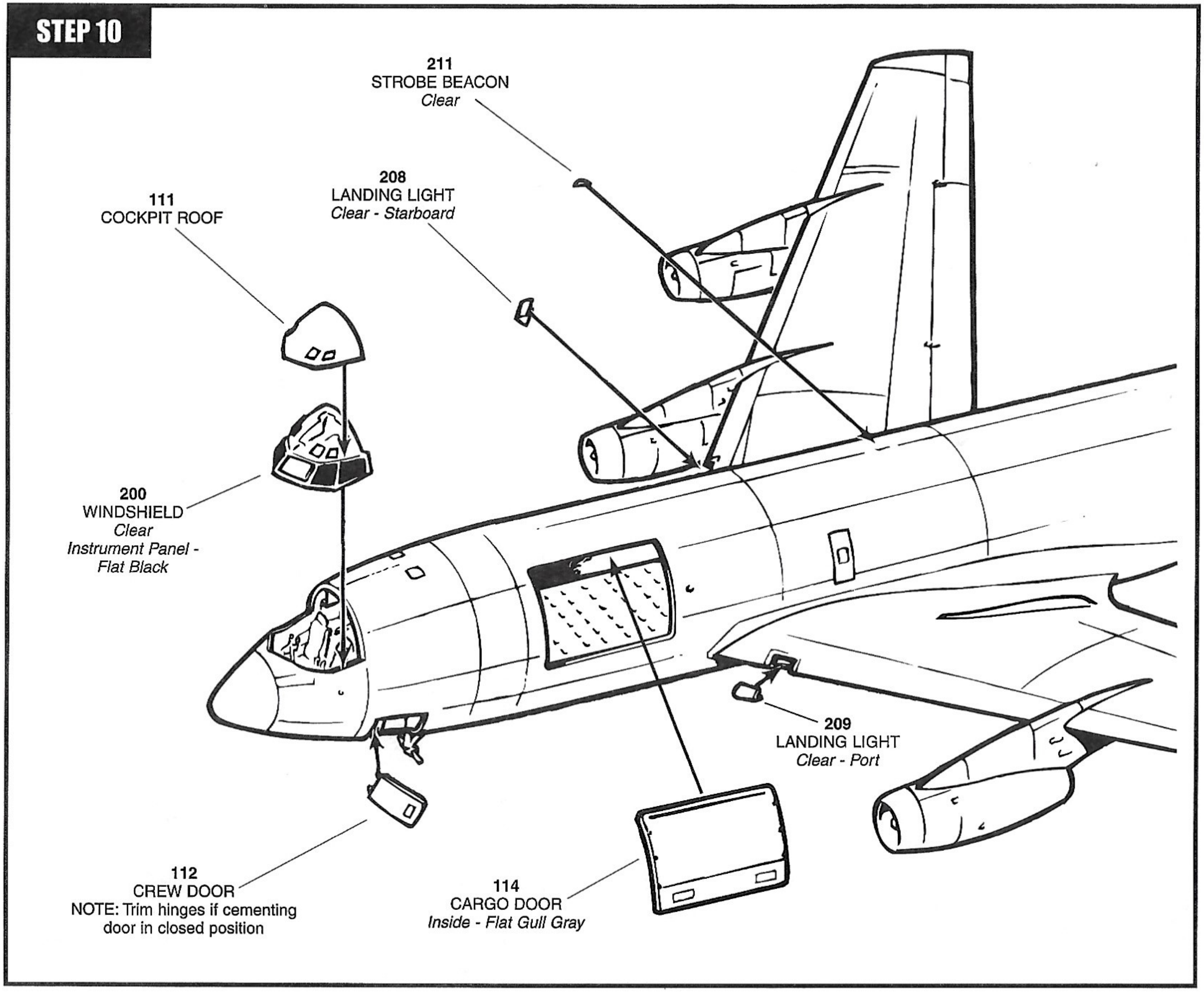
STEP 9



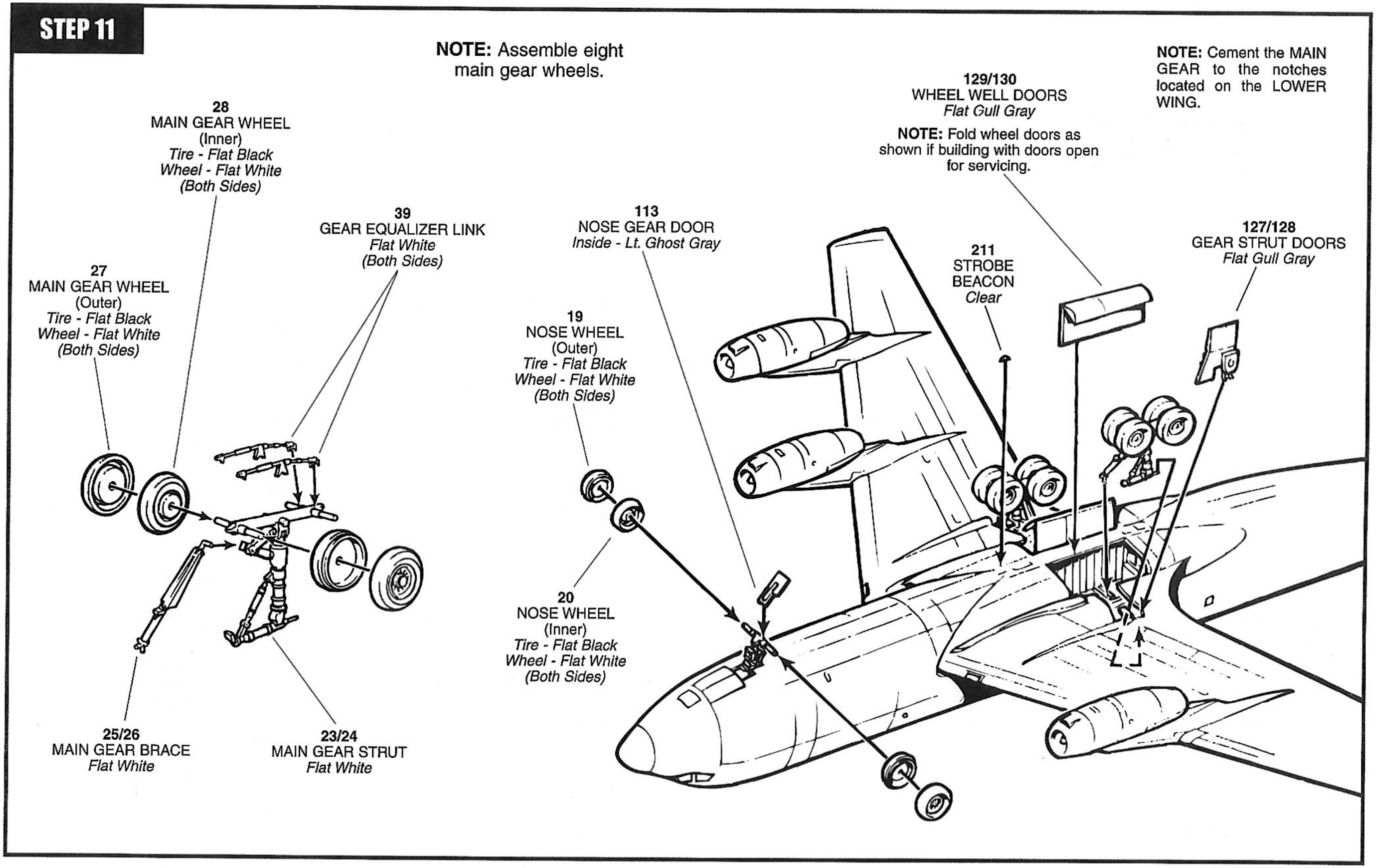
NOTE: To avoid breaking small parts off after assembly, you may wish to rest the aircraft on a small, soft pillow as needed until assembly is completed.

Shows C-135 fuselage. Assembly the same.

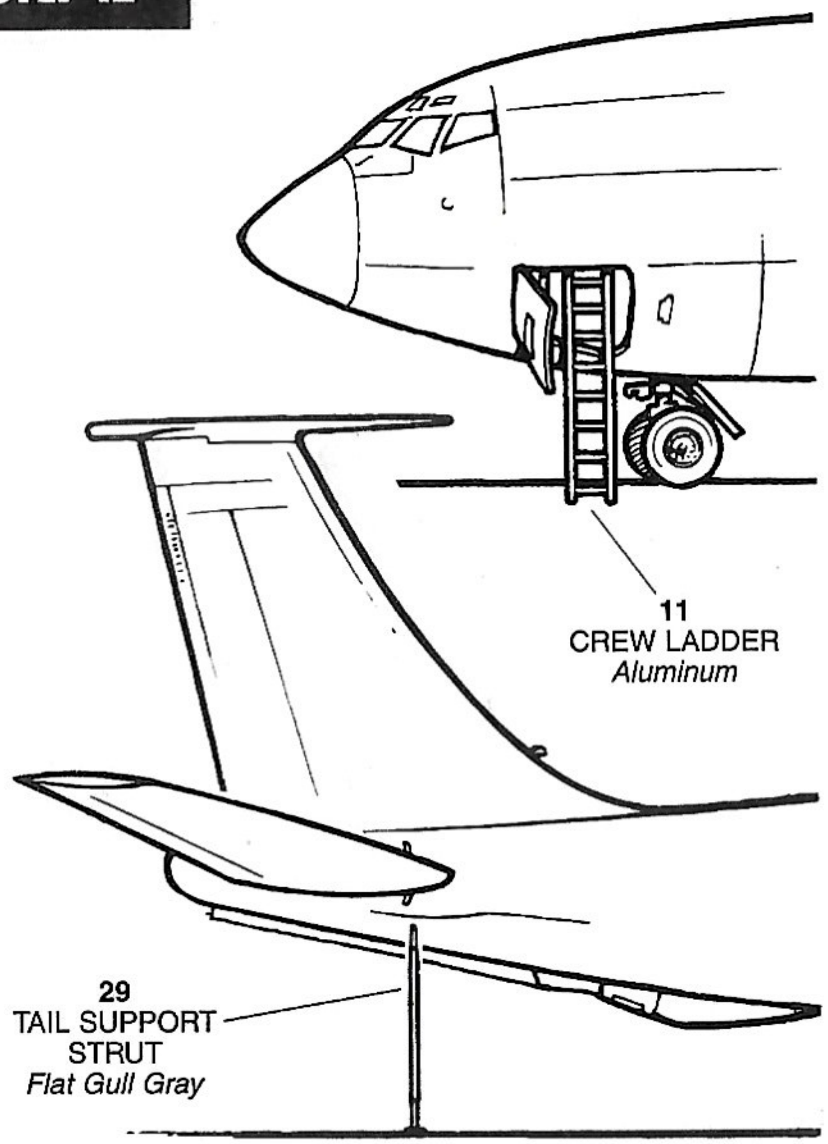
STEP 10



Shows C-135 fuselage. Assembly the same.



STEP 12



See Addendum for fuel dump and ALOTS pod assemblies.

Voir que l'Addendum pour le carburant dÈcharge et les assemblÈes de gousse de ALOTS.

Siehe Nachtrag f¸r Kraftstoff M¸llhaufen und ALOTS H¸lse Versammlungen.

Vedere l'Addendum per il carburante baccello di discarica ed ALOTS i montaggi di.

Vea que el ApÈndice para el combustible descarga y las asambleas de la vaina de ALOTS.

Zie Addendum voor brandstof stortplaats en ALOTS pod vergaderingen.

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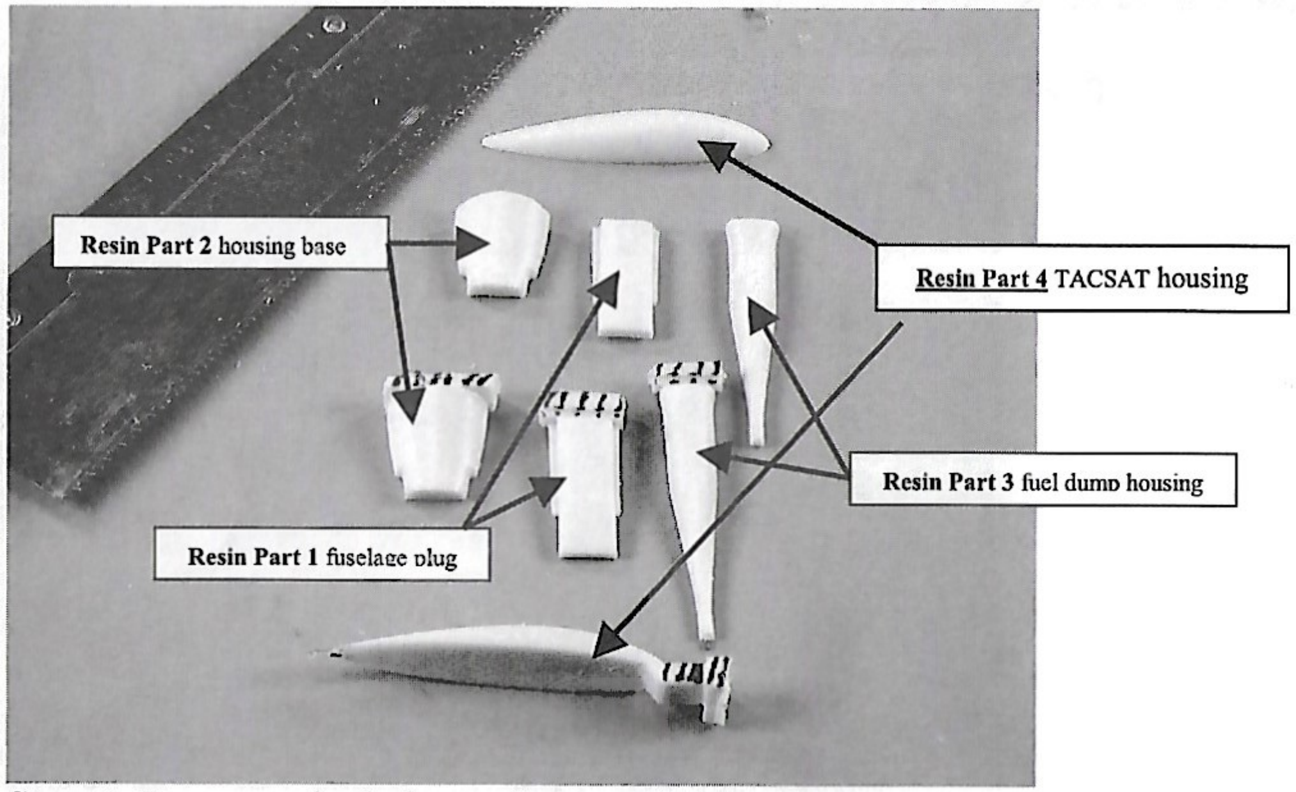
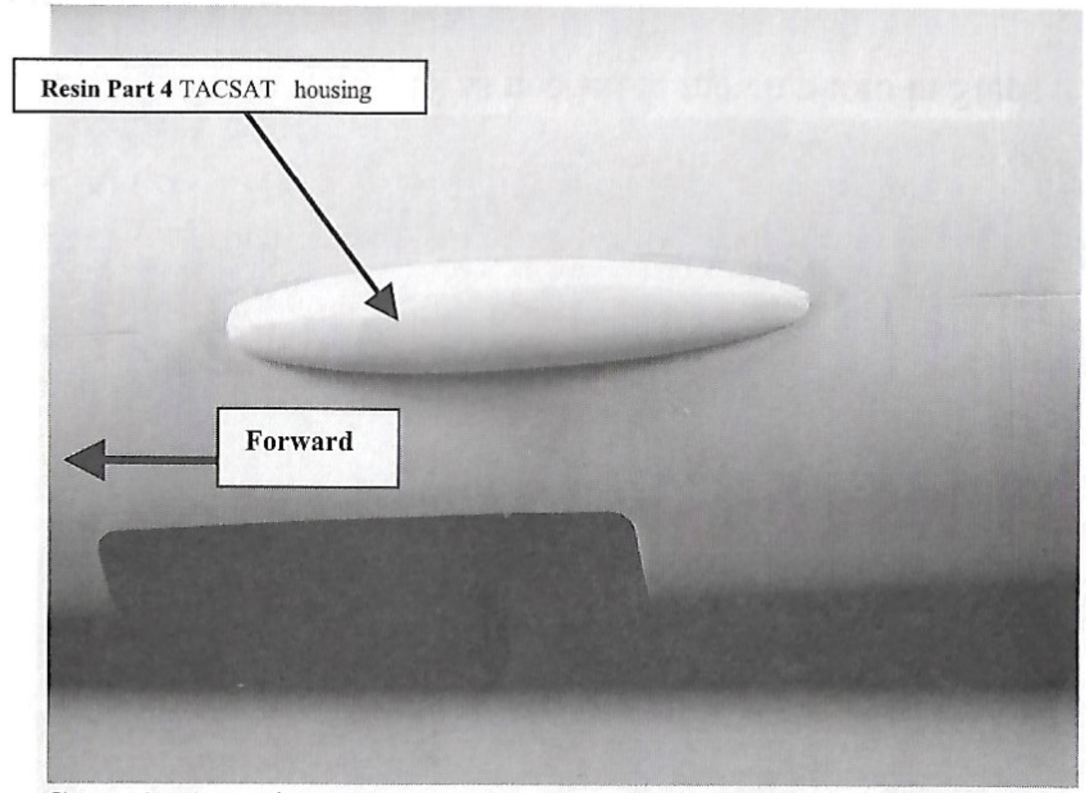
West Des Moines, Iowa 50265

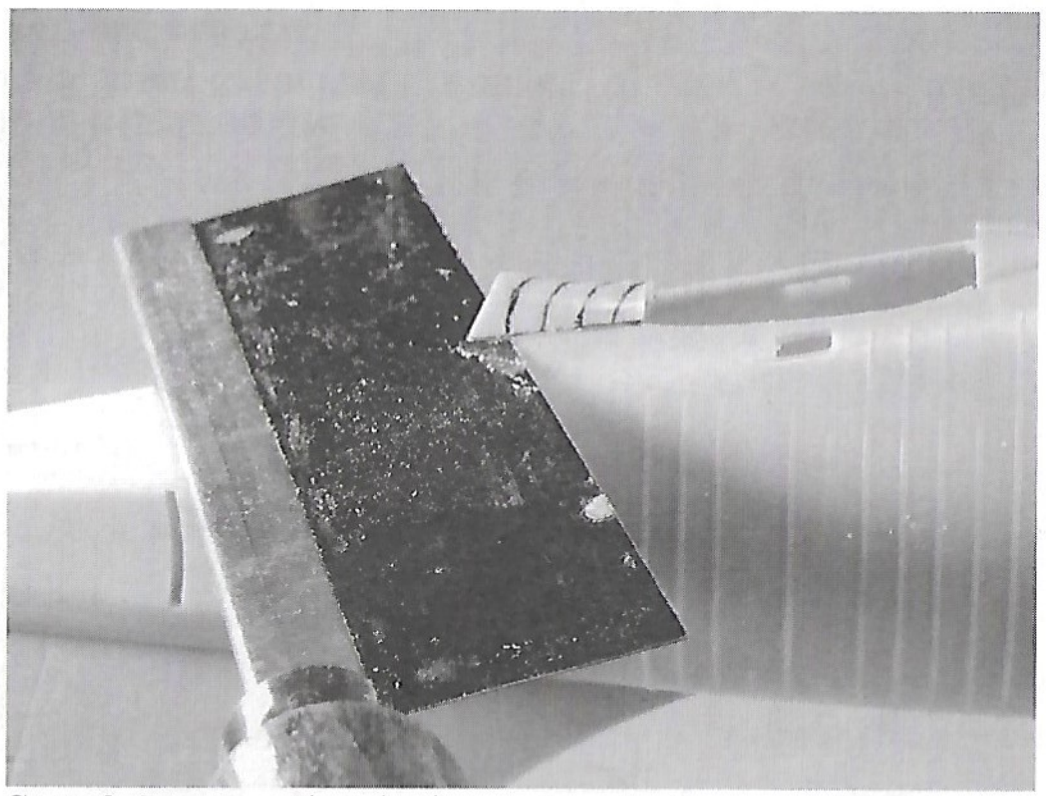
EC-135N/E TACSAT, FUEL DUMP and ALOTS POD ASSEMBLY STEPS



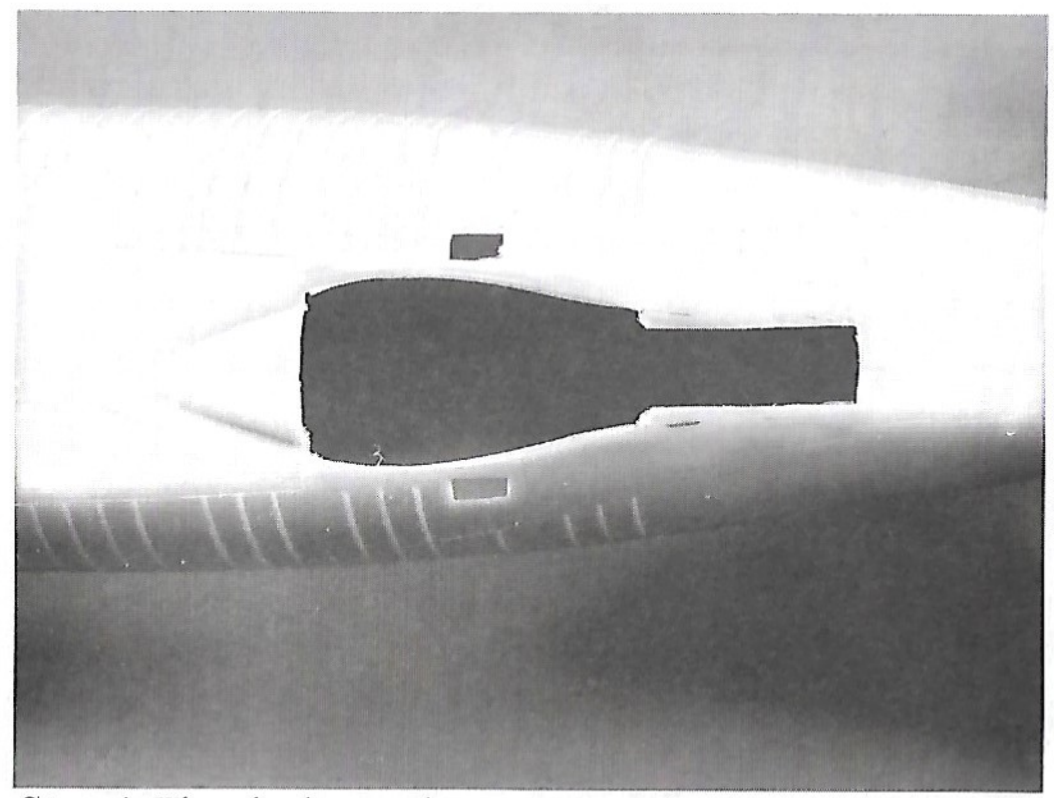
Step 1. Remove shaded area from resin parts.



Step 2. Attach TACSAT housing Part 4 to top of fuselage centered above cargo door as shown.



Step 3. Remove thatched area from bottom rear fuselage.



Step 4. Thatched area shown removed.

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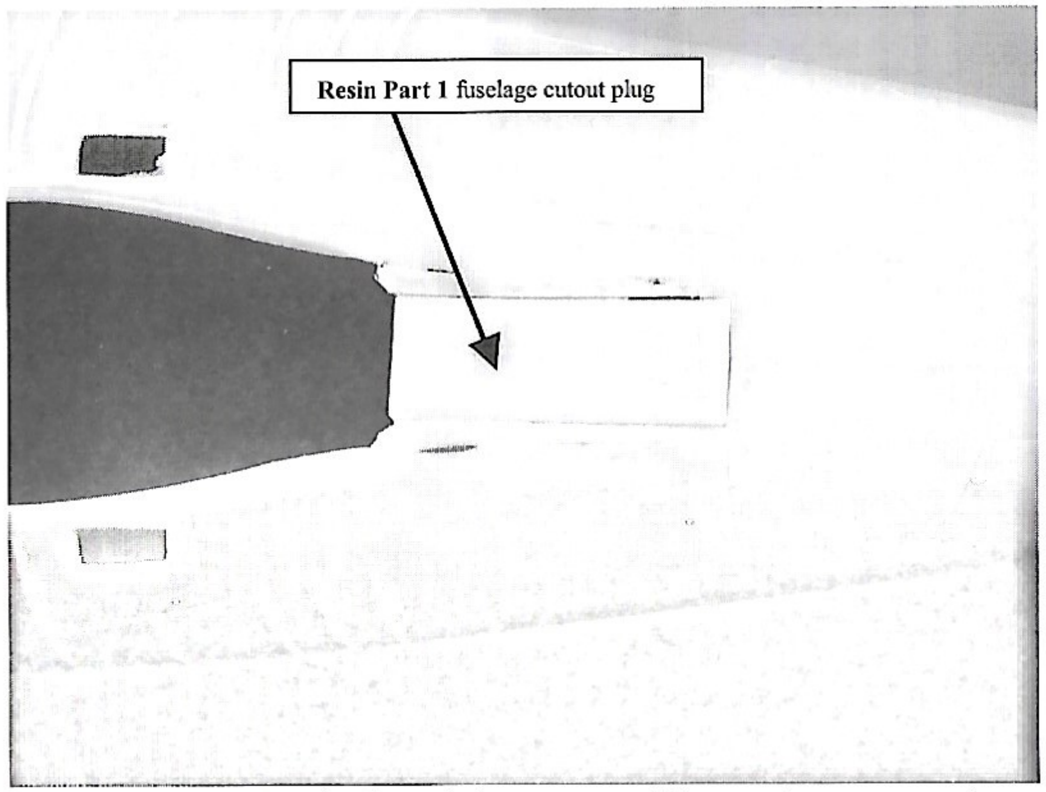
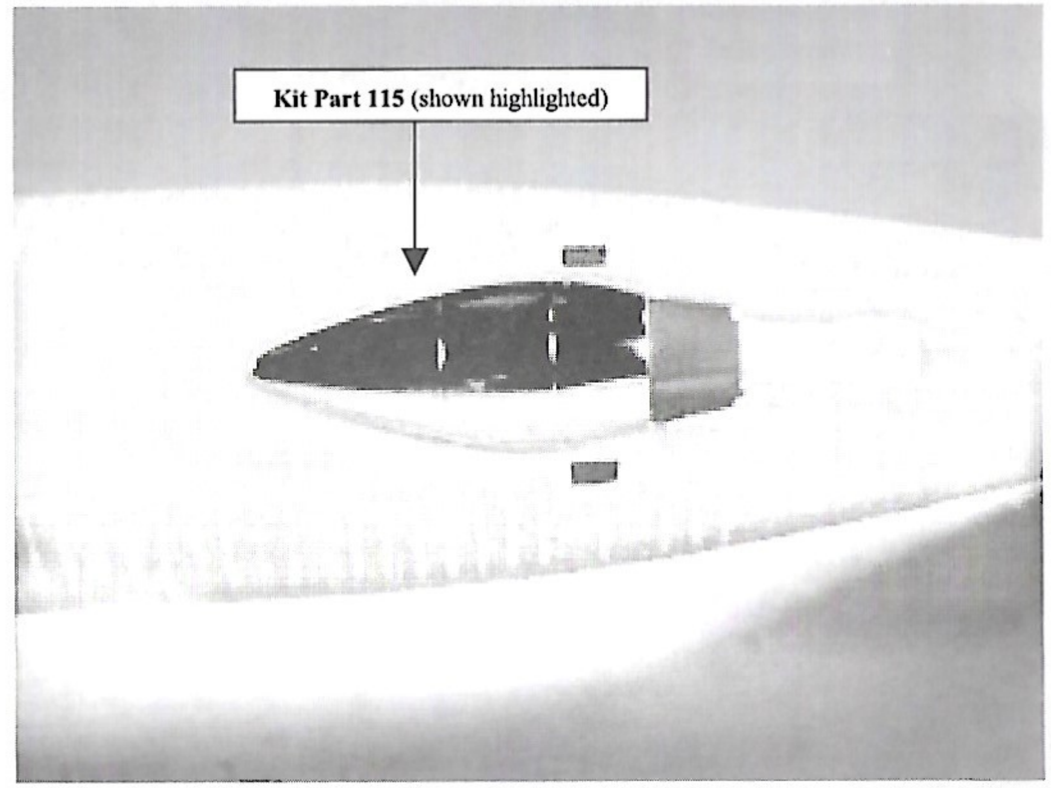
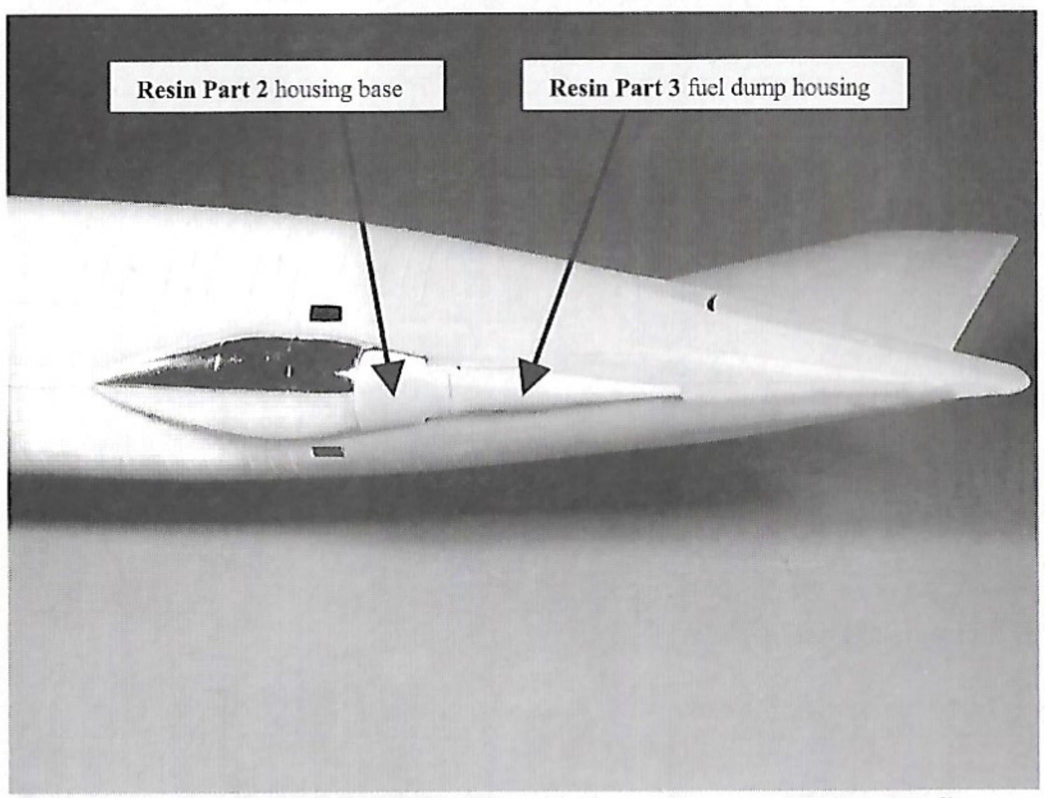
EC-135N/E TACSAT, FUEL DUMP and ALOTS POD ASSEMBLY STEPS



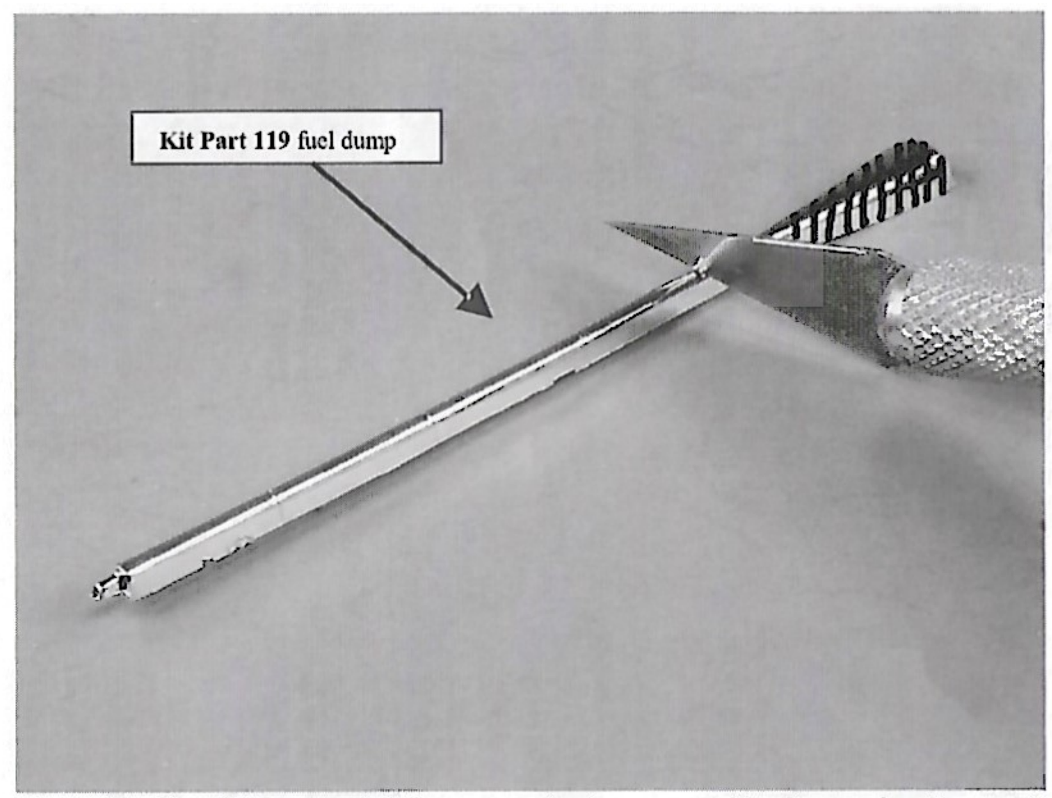
Step 5. Insert Resin Part 1 in cutout. Glue using super glue or two-part expoxy.



Step 6. Attach kit part 115. Adjust to fit with Resin Part 2.



Step 7. Attach Resin parts 2 and 3 as shown. Trim to fit as needed.



Step 8. Cut kit part 119 as needed to match photo in Steps 9.

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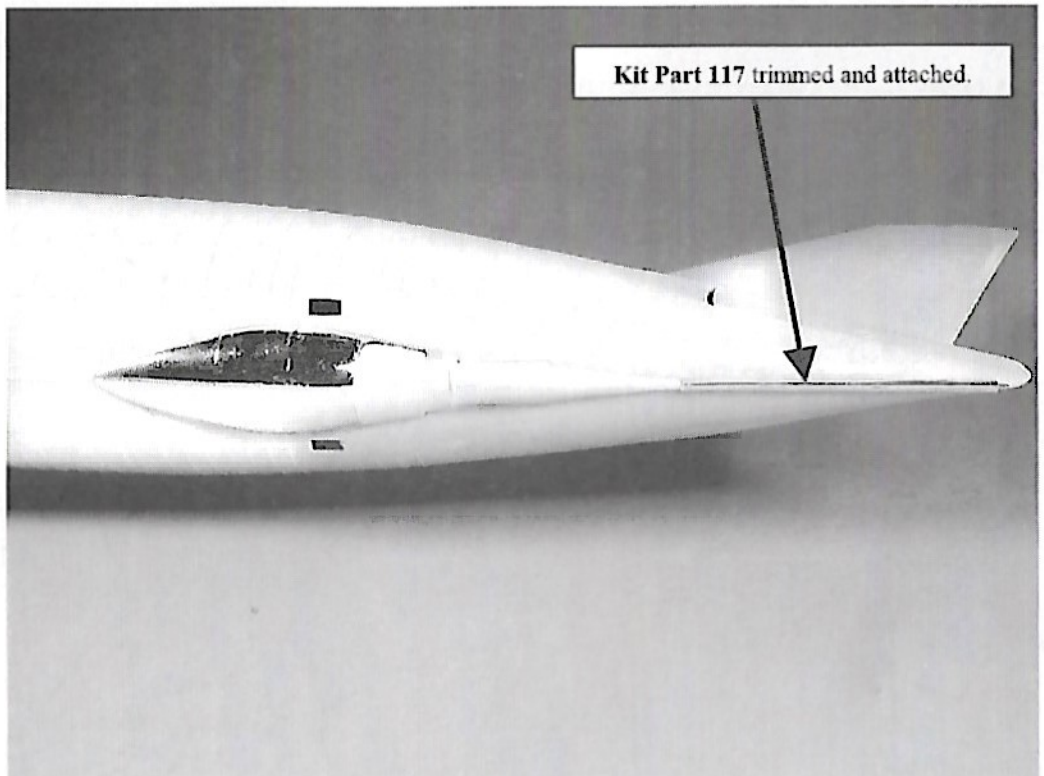
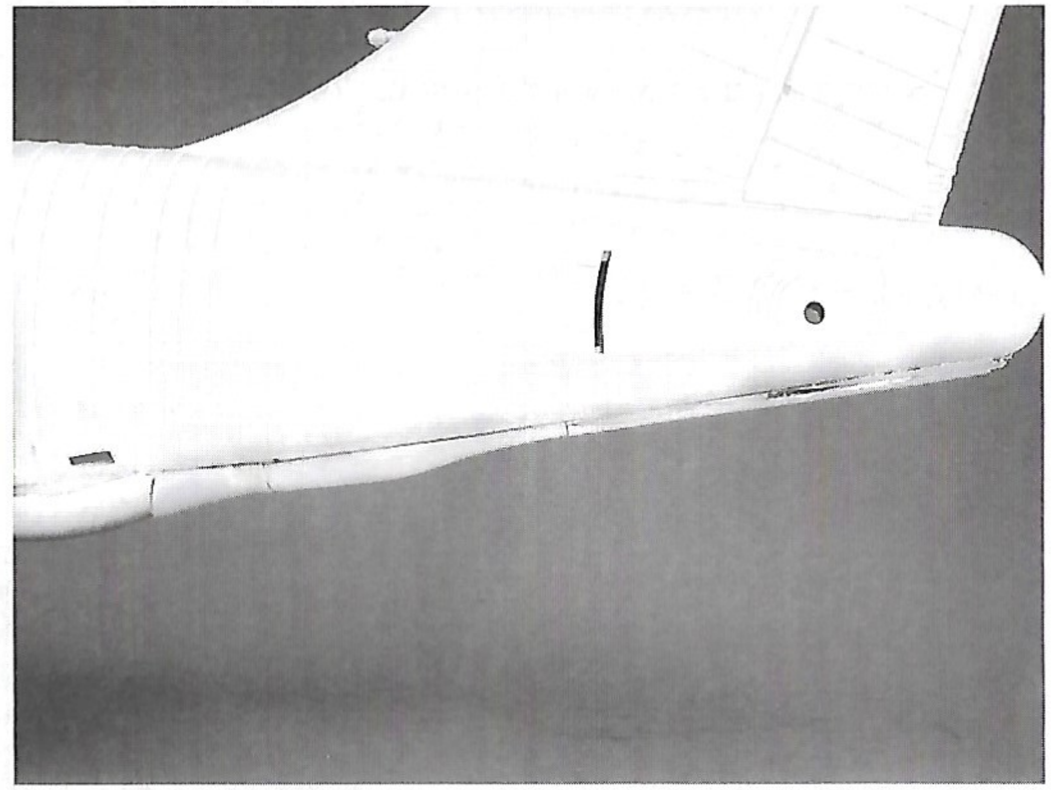
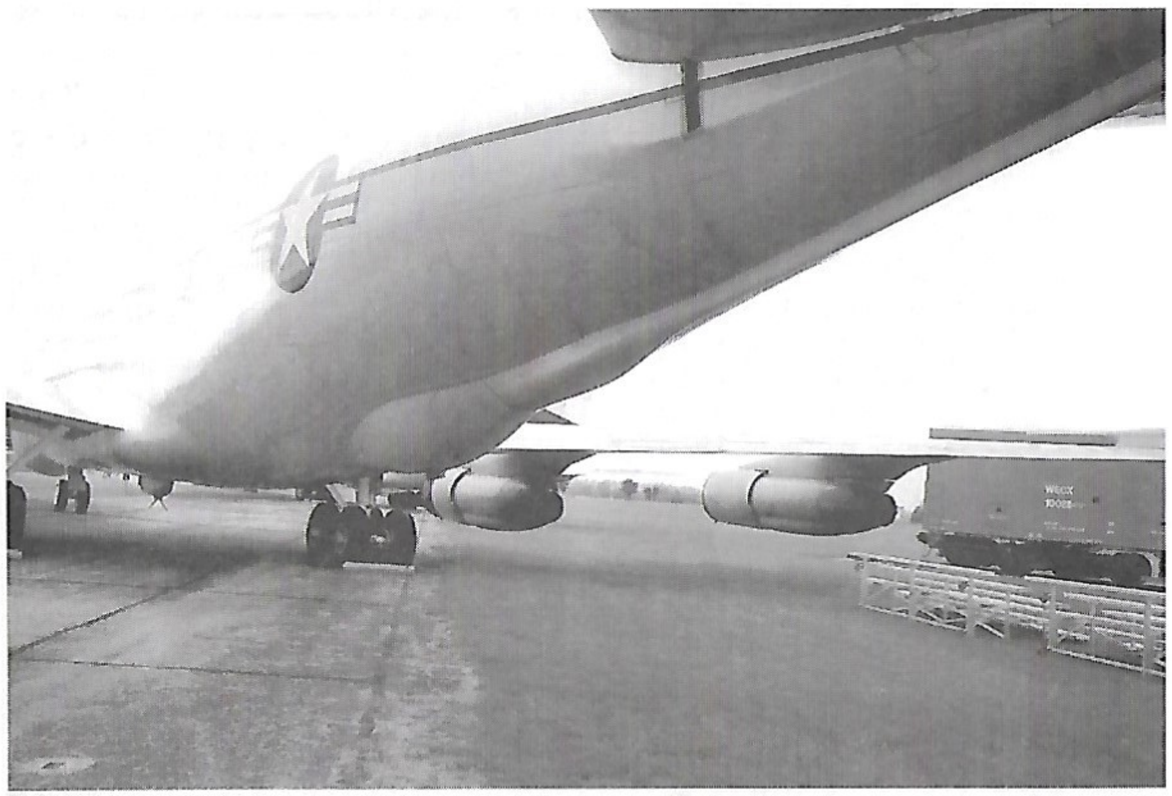
EC-135N/E TACSAT, FUEL DUMP and ALOTS POD ASSEMBLY STEPS



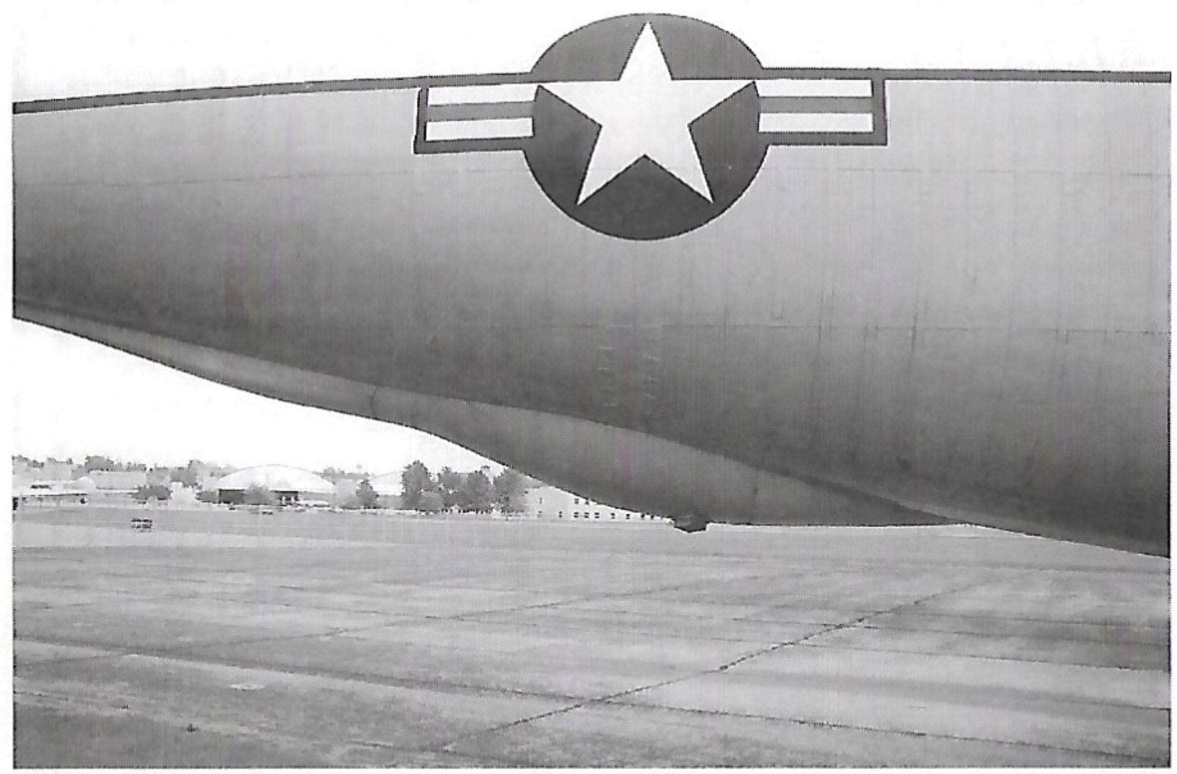
Bottom view all parts attached.



Side view all parts attached.



Left side fuel dump area, actual aircraft.



Right side fuel dump area, actual aircraft.

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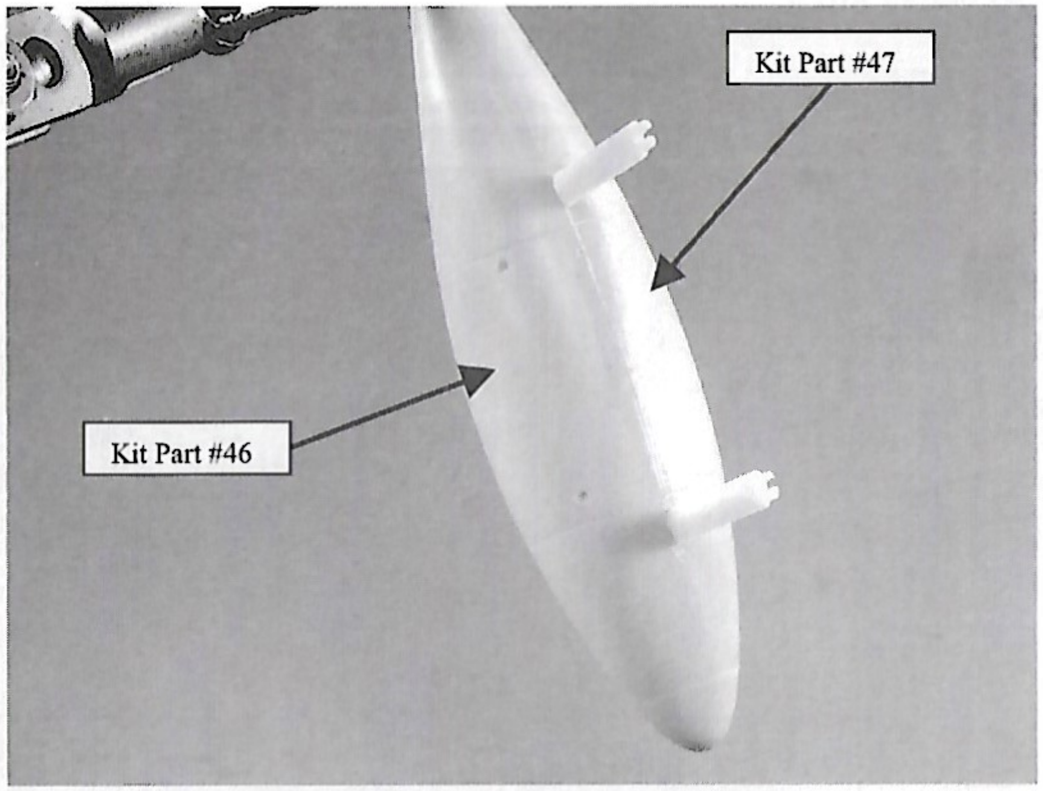
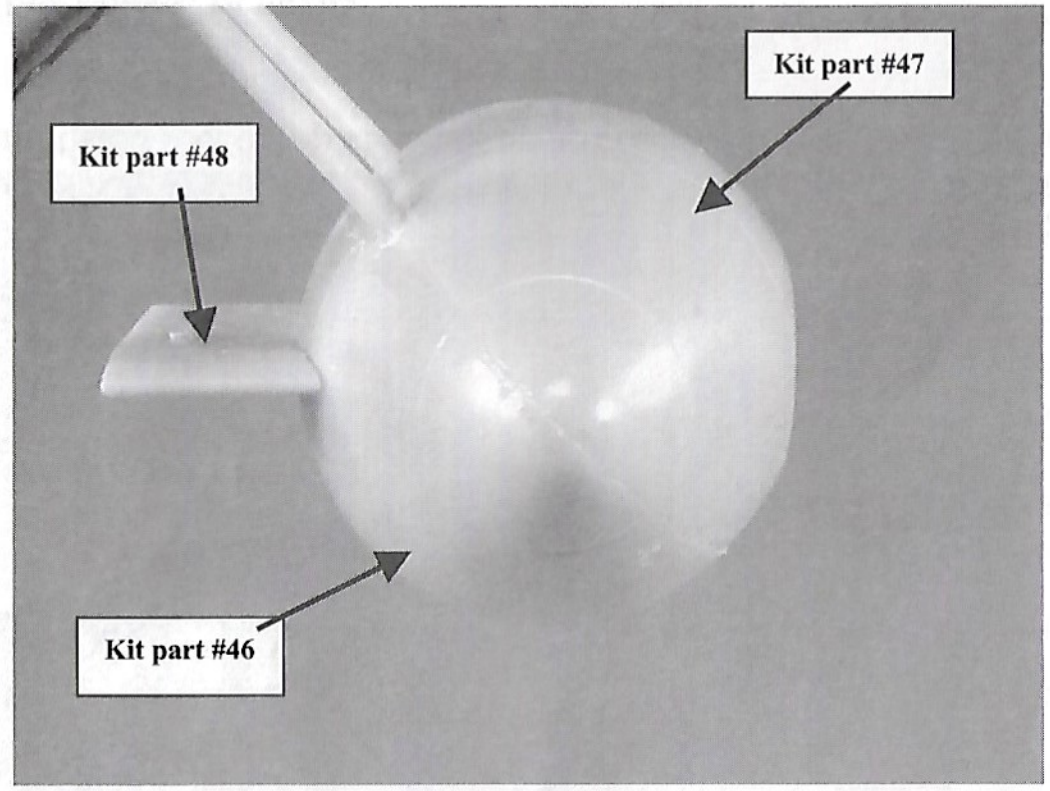
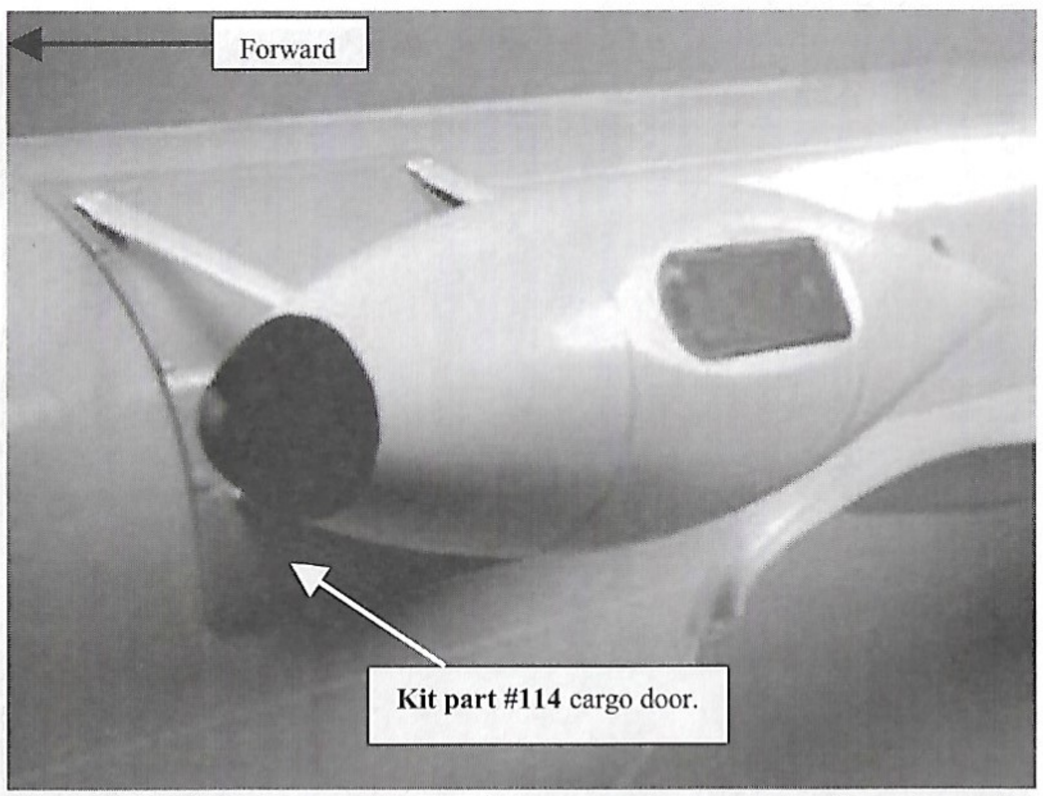
EC-135N/E TACSAT, FUEL DUMP and ALOTS POD ASSEMBLY STEPS



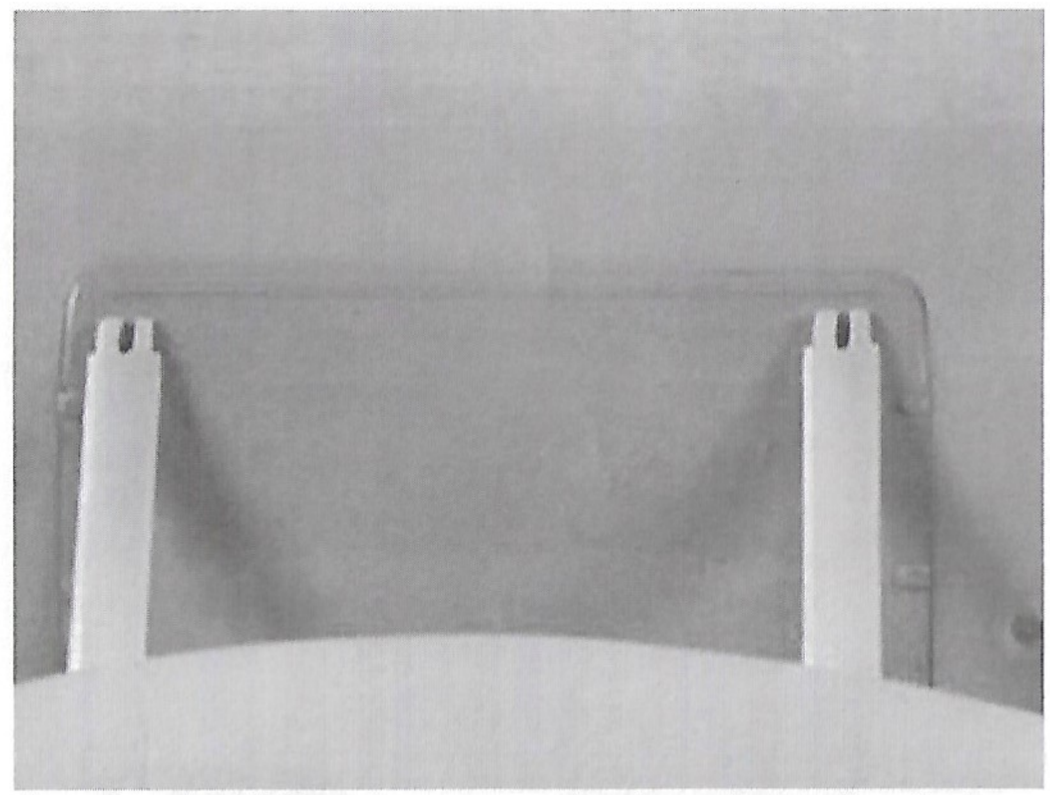
Step 1. Attach outer ALOTS pod, part #47, to inner pod, part #46.



Step 2. Attach support strut, Part #48, to mounting holes on Part #46 of ALOTS pod assembly.



Step 3. Painted ALOTS pod mounted on cargo door Part #114.



Step 3a. ALOTS pod top mounting legs shown for clarity.

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Fixing the Dreaded "KC-135 Outer Wing Droop"

When AMT/ERTL designed their KC-135 Stratotanker kit series (the EC-135 kit is a previously unreleased version of this series), they wanted to get the thinnest possible plastic parts. This was their first effort in designing and tooling a model aircraft kit from the ground up. As a result, the wing and fuselage parts are marvelously thin. It was also the largest kit ever tooled by the company in Korea that did the work, so was something of a learning curve for all parties.

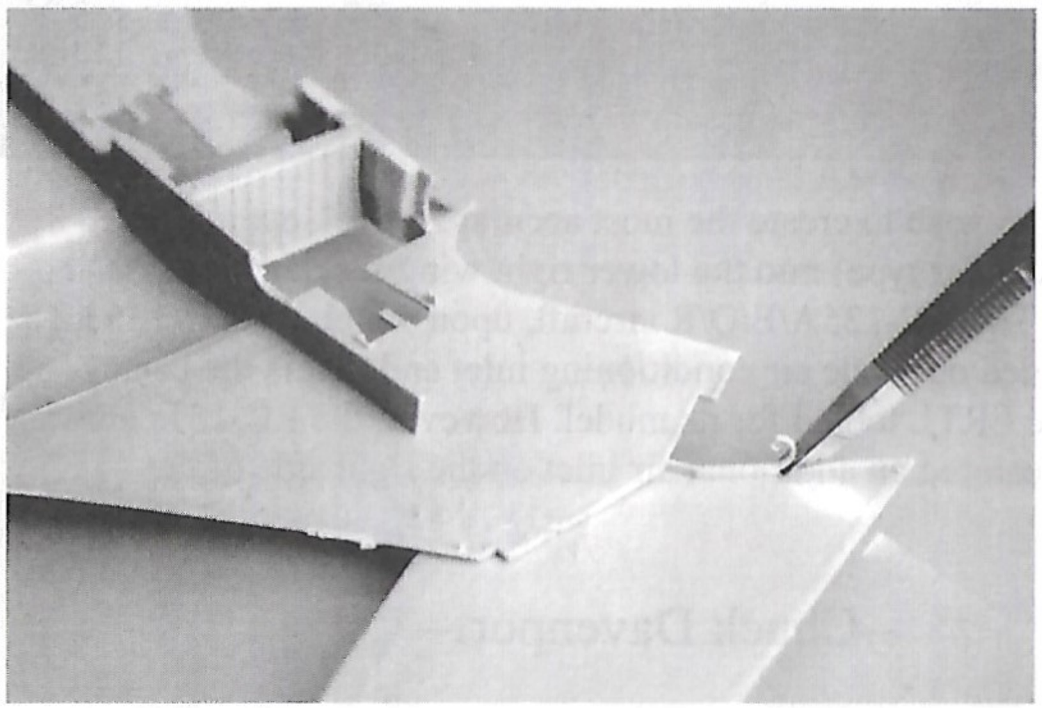
This presented a couple of potential problems. One of them is that, over time, the thickness of the plastic on the upper wing, and thus its rigidity, is not sufficient to support the weight of the lower outer wing panel and engine. As a result, over time the outer wing panel will droop, giving the aircraft an odd and inaccurate appearance. In addition, there is a potential mismatch between the levels of the lower outer wing panel and the center section.

Chuck Davenport – Major, USAF (Ret), excellent model builder, and long-time friend – has provided AMtech with the following illustrated instructions on how to fix both the droop and level problem. It is involved, but not difficult. AMtech would like to thank Chuck for his help here, and also with his contribution to the Mission Profiles.

Take it away, Chuck!

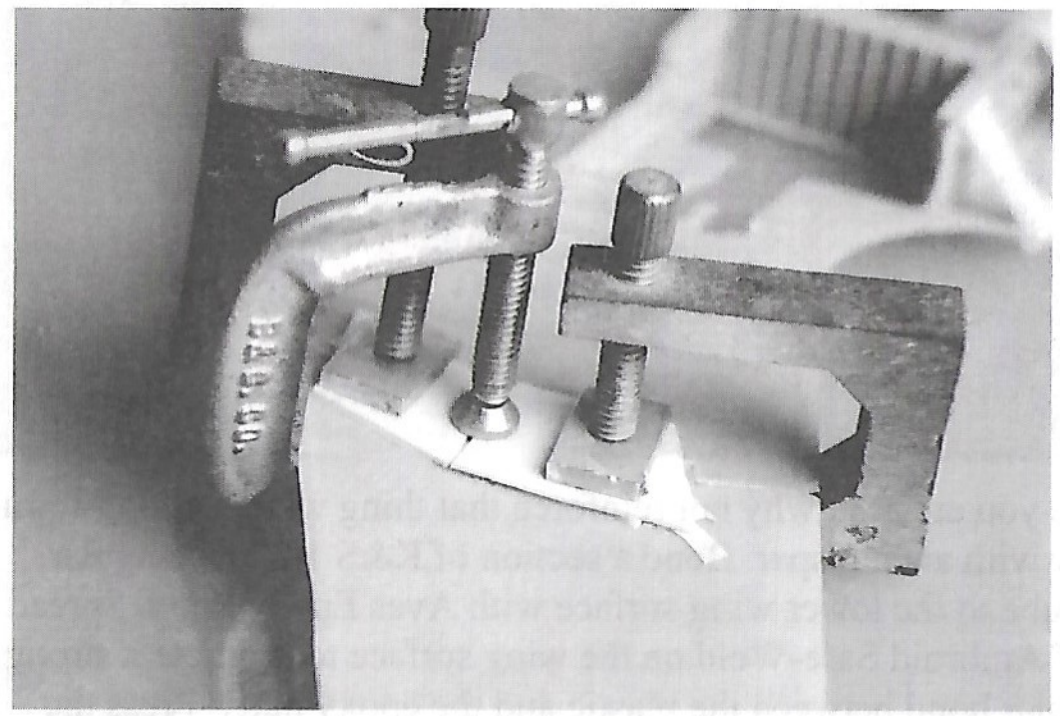
"When ERTL released the 1/72 scale KC-135 in the '90's, I wrote an article for the IPMS/USA Journal magazine detailing an alternate procedure for assembling the wings. The company did a wonderful job of tooling the model, but the wings were so beautifully thin that the lower wing joints were weak and difficult to align. In addition, the joint, if assembled according to the instructions, did not support the inboard engine pylon at the proper angle. So that you can get the most out of your EC-135 ARIA/ALOTS model, AMtech has included these notes for ensuring a strong and properly aligned lower wing joint.

Step 1



"Remove the mating ledge from all the lower wing surfaces. I am using a detail-removing tool from Micro-Mark, but a sharp hobby knife will work as well. Remove small sections at a time to prevent cutting into the external wing surface.

Step 2

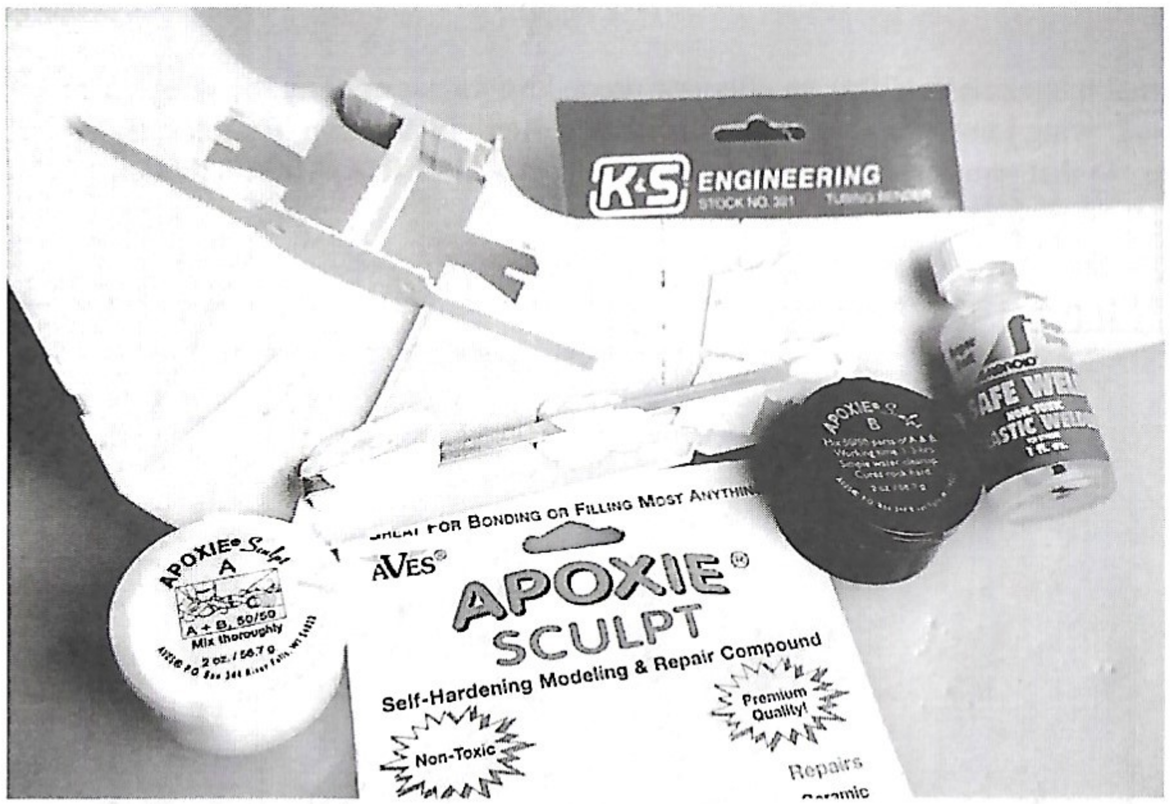


"Look at the wing parts edge-on and you will see that the thickness of the parts vary. We are going to make sure the exterior surfaces of the wing match up by building up the interior. Cut a strip of .040 plastic card approximately ½" wide to overlap the joint. Clamp it loosely in place. (I have cut two pieces in the above photo.) The lower wing

Fixing the Dreaded "KC-135 Outer Wing Droop"

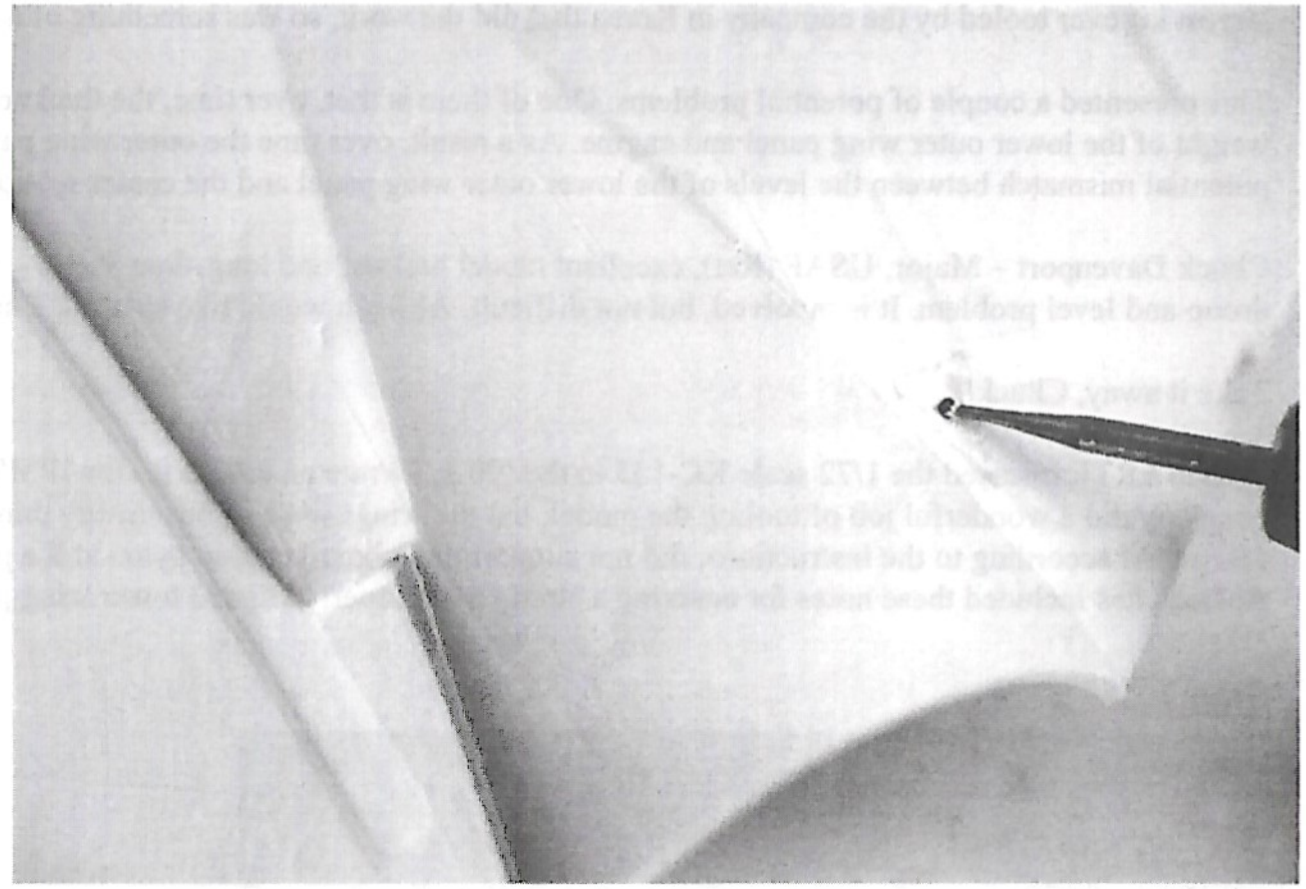
exterior surfaces will not be level with each other. Begin sliding sections of .010 plastic card under the .040 card until the two lower surfaces are level. Carefully remove the clamp, and glue the plastic card in place. I recommend Ambroid's Safe-Weld for its extended working time. After about 5 minutes, the bond will be set. Do not get too much glue into the joint to prevent damage to the exterior wing surfaces by the clamps.

Step 3



"While you are at it, why not reinforce that thing wing for long-term display with a wing spar. Bond a section of K&S 1/8" rectangular brass tube to the lower wing surface with Aves Epoxy Putty. Spread a film of Ambroid Safe-Weld on the wing surface to promote a strong molecular bond between the plastic and the epoxy putty. Press the brass into the putty, which is set back from the leading edge approximately ½". While the Aves is curing, temporarily fit the upper wing surface to properly position the brass tube. Once cured and assembled, the spar will prevent the wing from sagging over time.

Step 4



"For those who wish to create the most accurate model, cut a NACA inlet (the triangular type) into the lower right wing/fuselage joint as show above. The KC-135A/E/Q/R aircraft, upon which the EC-135 kit is based, needed only one air conditioning inlet and that is the basic fuselage style ERTL tooled for its model. However, the RC-135s and many EC's featured an additional air inlet on the right side of the aircraft."

--Chuck Davenport—

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EC-135 ARIA HISTORY, DECALS AND MARKINGS, AIRCRAFT SPECIFICATIONS AND MISSION PROFILES

AMtech wishes to express is very deep thanks to Tech. Sergeant Dave Whitcomb, USAF (Ret.) for his excellent assistance and contributions in developing this section on the history and use of the EC-135 ARIA. We also want to thank Staff Sergeant Bob Guerre, USAF (Ret.), Major Chuck Davenport, USAF (Ret.), Lt. Col. Dave Ross, USAF (Ret.), Lt. Colonel Sam Townshend, USAF (Ret.), and Bob Beach, ARIA Mission Commander, (Ret.), for their outstanding contributions in mission profiles and details.

And finally, to the men and women who have kept these birds flying, and U.S. armed service personnel everywhere, ***Thank you*** *for standing watch on the wall and making ALL this possible.*

EC-135 ARIA GENERAL HISTORY

The Boeing C-135 has probably seen more variants than any aircraft in history, with the total to date pushing nearly 100. For an aircraft that first saw active duty in 1957, the sturdy nature and effectiveness of the design still set the standard against which all other "transport" aircraft must be measured. How long the C-135 and its many variations will remain flying is hard to say. The C-135 may well become the first military aircraft to serve in active duty for one hundred years. The 135-ARIA aircraft themselves, however, have all been modified or retired from active service, having been replaced by the E-18 ARIA.

Your AMtech kit provides you with parts and markings for four different aircraft representing four different variants: The EC-135N ARIA/ALOTS; the C-135B T/ARIA; the EC-135N ARIA, and; the EC-135E ARIA.

The EC-135N/E ARIA (Apollo Range Instrumented Aircraft, and later Advanced Range Instrumented Aircraft) were modified in the mid-1960's by NASA. The aircraft were designed to deploy around the world to provide telemetry acquisition, vehicle tracking and two-way voice relay between manned Apollo missions and mission control in Houston, especially in those areas where no ground-based telemetry and tracking facilities were available. They were also used to assist in locating the Apollo command module following splashdown.

Far and away the most noteworthy feature of the ARIA aircraft was (and is) the huge, rounded nose. This nose housed what remains the world's largest airborne parabolic dish antenna, a whopping seven feet in diameter! Because of this unique feature, the ARIA aircraft have received a number of nicknames, including: "snoopy," "bulbous," "hog nose," and "The nose that goes." Its distinctive profile is recognizable at virtually any distance or angle.

The early ARIA aircraft were typically deployed over the Atlantic Ocean and Gulf of Mexico during Apollo launches, and over the Pacific Ocean for re-entry and splashdown. The eight ARIA-modified aircraft were first used together during the Apollo 6 mission in 1968. A typical mission lasted some ten hours, and was limited only by the amount of fuel on board since the aircraft were not inflight-refueling capable. Total crew could be up to 23 persons depending upon the mission length and complexity. Minimum crew included the pilot, copilot, flight engineer, navigator, airborne mission controller, and no fewer than eight technicians.

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Four ARIA aircraft were modified to carry the Northrop ALOTS (Airborne Light Optical Tracking System). This remarkable system consisted of a control system, a timing section, a manual tracking system, and a removable, externally mounted, teardrop-shaped pod mounted on the cargo door. Within this pod were cameras with resolution so precise that they could spot and track a 7-inch target at ten miles, and a 12-foot target at 200 miles. The ALOTS system was initially developed to provide high quality optical tracking of rocket and missile launches, primarily of ICBMs. Its capabilities made it a natural for use on ARIA aircraft in the Apollo program.

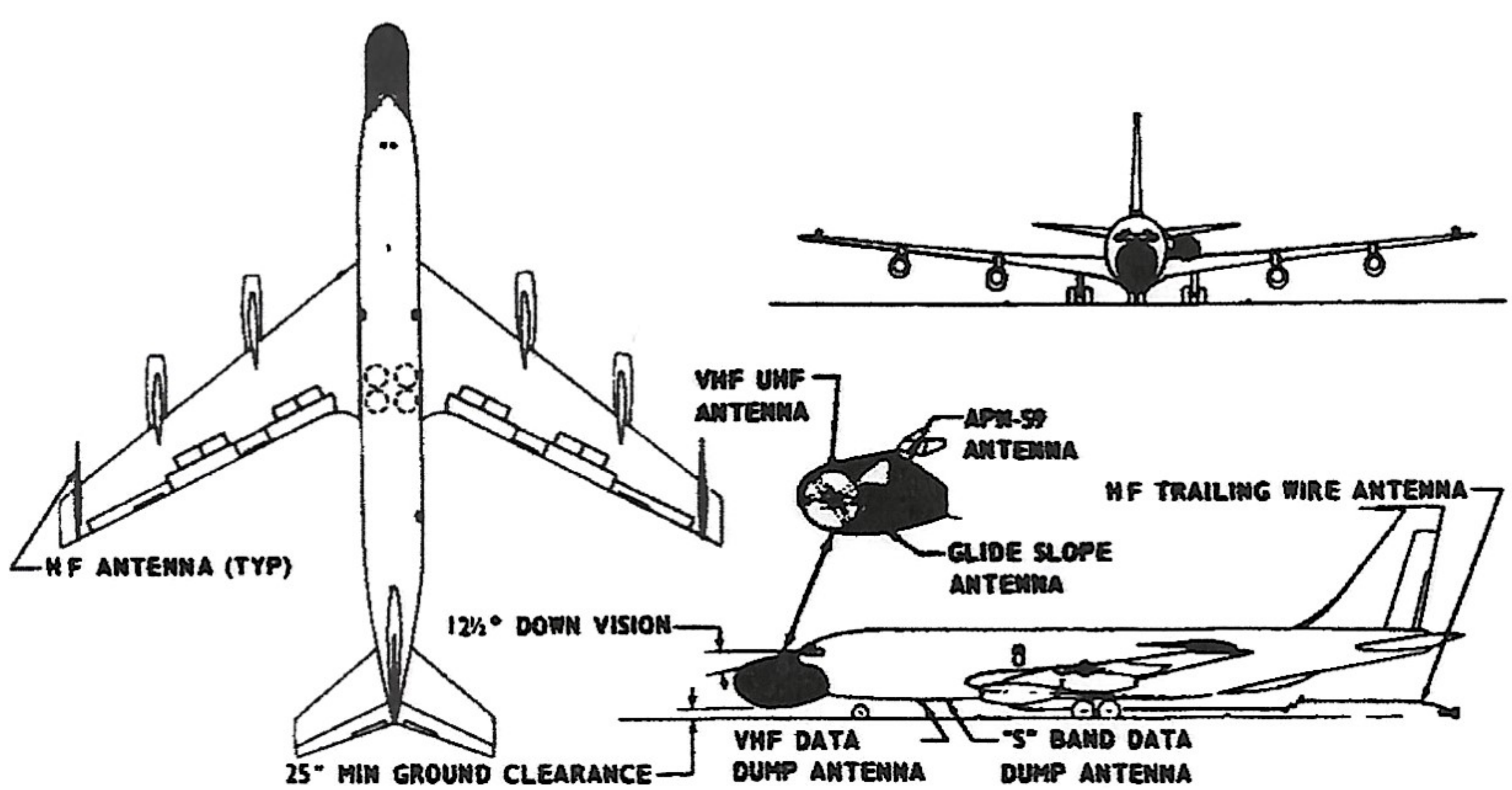
Following the final Apollo mission, the ARIA aircraft were renamed and re-assigned to a number of missions, including DoD space satellite operations, tracking and telemetry missions involving MIRV tests of the former Soviet Union (in short, spy missions), cruise missile development, support of the Space Shuttle, tests for the Pershing I and II battlefield missiles, Poseidon and Trident SLBMs, and the Peacekeeper and "Midgetman" ICBMs.

AIRCRAFT SPECIFICATIONS and AIRCRAFT CUTAWAY VIEW

(Specifications are for the EC-135E, although dimensions are accurate for all ARIA-equipped 135 variants.)

WINGSPAN:	130 ft., 10 in
FUSELAGE LENGTH:	135 ft, 9 in
MAX GROSS WEIGHT:	299,000 lbs (159,000 lbs fuel, endurance 12 hours)
MAX ALTITUDE:	41,000 ft at 197,000 lbs
MAX AIRSPEED:	335 knots indicated air speed (KIAS) at sea level .91 IM above FL 290

ARIA



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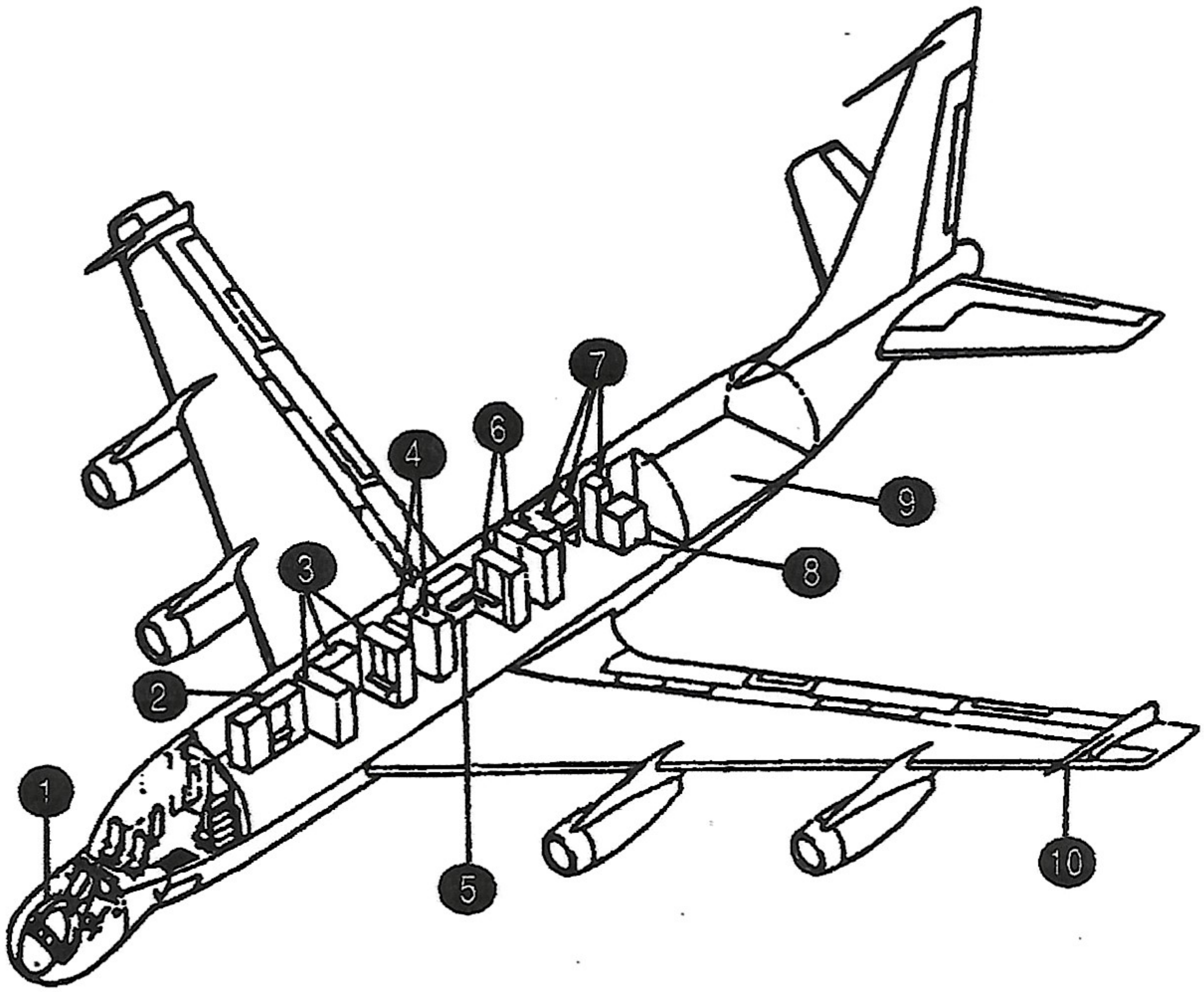


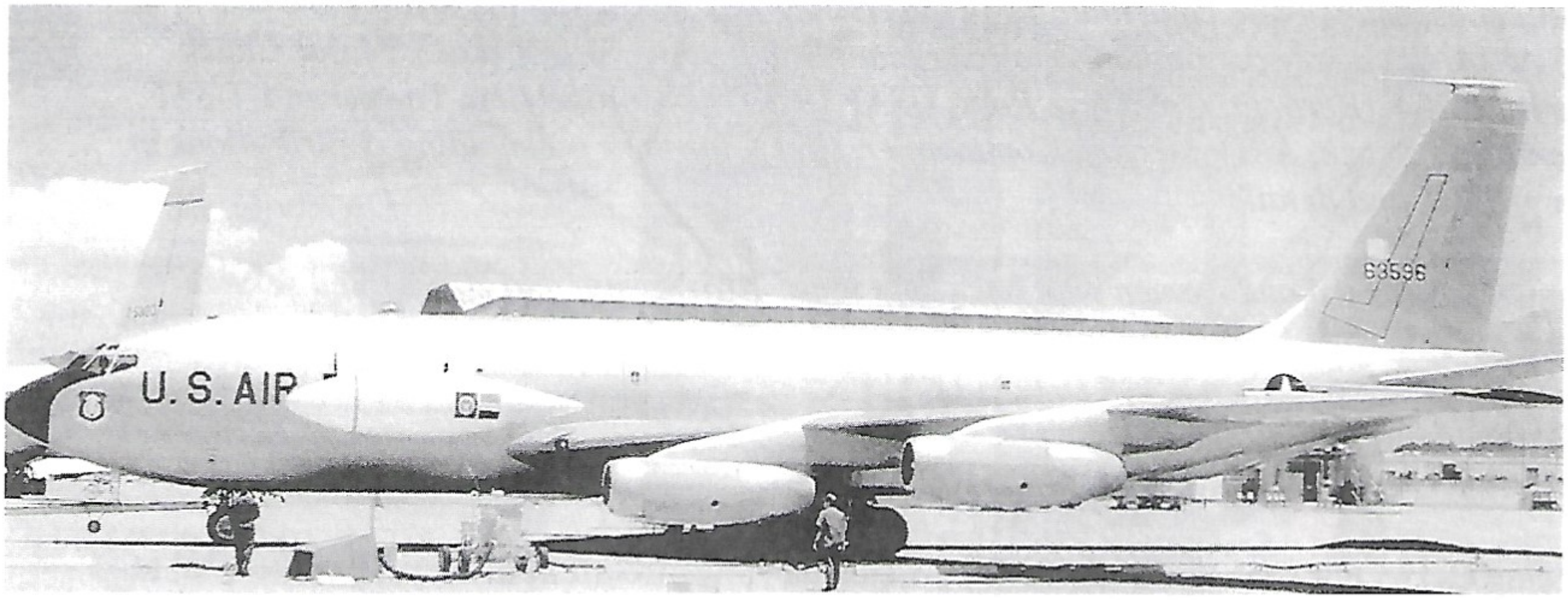
1. UHF/VHF TELEMETRY ANTENNA
2. DATA SEPARATION CONSOLE
3. TELEMETRY
4. ANTENNA AND MISSION CONTROL
5. UHF SATELLITE COMM
6. HF COMM
7. RECORD/TIMING
8. TAPE STORAGE
9. CREW REST AND STORAGE
10. WING PROBE ANTENNA

KIT AIRCRAFT MARKINGS PROFILES AND HISTORIES

Aircraft Profile #1 in your decal and markings section represents one of the ARIA/ALOTS aircraft used during the Apollo program. The kit also includes the ALOTS pod.

If you choose to make a version of the kit without the ALOTS pod, and just happen to have an AMT/ERTL kit of the KC-135 sitting around unbuilt, you can make one of the ALOTS test aircraft, NKC-135 sn56-3596. This was a J-57-powered NKC-135, painted in overall Corroguard anti-corrosion aluminum lacquer paint, with the engine center-sections painted light gray (approx. FS#36473), and front and back engine nacelles in natural metal. The aircraft had a boomer station, but a fuel dump instead of the boom. The fin tip is natural metal, and there is a "yellow-orange" ASD fin stripe that appears to be the same color as the outlines for the crew doors. There is also a red stripe around the pod itself. Unfortunately, we cannot discern the badges on the pod itself. The badge on the nose is that of the Aircraft Flight Test Center.

A photo of this aircraft is below. It is believed to have been taken at Holloman AFB.



Aircraft sn #62-4128 (Aircraft Profile #2) was a C-135B that was modified into an ARIA configuration and delivered to Air Force Space Command in the late 1960's. Designated a T/RIA (Telemetry Range Instrumented Aircraft, it differed greatly in both capability and mission from the standard ARIA aircraft. T/RIA aircraft could not carry the ALOTS pod, for instance. Their mission was to collect information in frequency ranges different from those of the ARIA aircraft. Also, T/RIA aircraft were equipped with TF-33 turbofan engines vs. J-57s. This aircraft was eventually converted into an EC-135B. The large grid on the front starboard side was to assist in the alignment of the ALOTS cameras.

Aircraft sn #60-0374 (Aircraft Profiles #3 and 4) has some historical significance. Beginning life as an EC-135N ARIA (Profile #3), it was converted into an E-model in 1982. This aircraft served a great deal in the various cruise missile test programs. In fact, if you look closely at the nose art, you will see its typical mission illustrated. #0374 served for nearly an additional 20 years, and was the last of the C-135 ARIA aircraft left operational, the others having been replaced by the substantially larger EC-18, a derivative of the Boeing 707. Upon retirement, #3074 was preserved at the USAF Museum at Wright-Patterson AFB in Dayton, OH, where it can be seen today.

MISSION PROFILES

AMtech is extremely grateful to the individuals below for sharing their experiences flying the EC-135.

Courtesy of Staff Sergeant (E5) Bob Guerre, USAF (ret.)
Your "job" on these flights? I was an Antenna Operator/Instructor/Evaluator. "Evaluator" being the highest held position. On the aircraft I operated the Antenna Control system. Or instructed a trainee who was operating the system, or evaluated an operator on a "check ride" while he operated the system.

What model EC-135 did you typically fly, and was there one bird (serial number) that you often flew? - All the 135s I flew on were E models. I flew on 374, 326, 329, and 330. You can see all these aircraft at http://www.flyaria.com.

Unit - Initially I was with ARIA in the 4950th Test Wing at Wright-Patterson AFB, Ohio. Then transferred with the whole wing to Edwards AFB, CA and became part of the 412th Test Wing.

Any typical problems with the aircraft, or things that always needed to be checked? - Typical problems with the 135 airframe? They were rather reliable. When we got the EC-18B's many folks wanted to fly on those since they were bigger, had windows and more bunks and crew rest, but they were always breaking somewhere. The 135's were the workhorse. Rarely broke hard anywhere. But when they did, it was usually an avionics component or something like that.

As far as the Prime Mission Electronic Equipment (PMEE) suite, we typically had problems with the telemetry receivers and the data processing equipment. Many times the electronic tolerances were not within specs so we had to either troubleshoot or change a component. As far as my system (the antenna system), we were a little different in that we had the antenna control system components to worry about, which were regular electronic components, but we also had the mechanical system that controlled the 7' steerable antenna in the nose. The alignment of the antenna was very precise, so we regularly had to adjust components in the nose to allow for precise control of the antenna. Also in the nose, mounted on the backside of the dish antenna, were telemetry amplifiers that regularly went bad. Also, there were rather long lengths of cable coming from the nose to the telemetry receivers and the slightest problem would cause noise in the received signal or loss of signal strength, so we had to find those problems as well.

Every ARIA mission started months in advance of the actual operation. Very detailed and thorough planning was conducted to accomplish the very simple mission: Gather Data from a Vehicle at a certain time. Of course, this meant much more to the planners than is apparent.

The suite of data collecting equipment onboard ARIA was capable of a wide range of adjustments to "fine-tune" the suite to gather the data from a particular vehicle. I.e. Atlas, Delta II, Delta III, Titan II, Titan IV, Space Shuttle Orbiter, Advanced Cruise Missile, etc. Every vehicle has it's own set of parameters that must be received, recorded, and many times re-transmitted real-time to a ground station via satellite. So, Mission Planners spent months communicating with the customer to set up a range of settings for the onboard equipment.

From where I sat, as the Antenna Operator, I was given an Operations Directive (O.D.) that listed the pertinent information to my system. In my case, I was concerned with frequencies of the signal to be tracked, the trajectory of the vehicle, times of special mission events as well as the setup of the other systems onboard for my reference. About 1 week before deployment, the crew would be briefed on the mission by the Mission Planners and/or Mission Commander, and we would spend the next 2-4 days calibrating the equipment onboard the aircraft we would be operating in support of the mission. This Pre-Mission Calibration (PMC) would start with each section individually setting his/her equipment per the OD. Then sections would work together to verify the data flow through the aircraft; from the receive antenna, through the receivers, data separation, and ultimately data re-transmission and recording.

Once we successfully completed a Data Flow of similar mission data, we are then ready to deploy for the mission. On each leg of deployment we performed the system verification again and sometimes a Data Flow with the customer's ground station to help them calibrate their equipment for the mission. Upon arriving on station (Ascension Island), we usually spent one day on the ground before the mission to allow for adequate rest for the crew and to give the maintenance crew a whole day to address any maintenance issues with the airframe.

On mission night, we brief and take off for, in most cases, about an 8 or more hour flight. While in flight, most of the time is spent performing one last verification of the equipment and a data flow with the customer, if required. Our unique missions required us to be located in remote areas of the earth to be in the right place at the right time....so we would spend the first half of the flight just getting to the Mission Support Point, or MSP. Once on station, we'd orbit until it was time for our mission run, adjust heading, speed, and altitude if necessary to be at a specific place at a specific. We then get the radio call that the vehicle has had a successful launch (at Cape Canaveral for instance) and we then know it was time to go to work for sure and would expect to start receiving data from a vehicle thousands of miles away as it breeches the horizon on it's way to orbit, or orbital insertion of a satellite. Once we achieved Acquisition Of Signal, (AOS), we quickly verified all parameters to ensure what we were receiving were what we were expecting and that there were no anomalies with the trajectory of the vehicle. All the planning was for the next 10 - 15 minutes of data gathering and recording/re-transmission of the data. Once the vehicle crossed the sky and went beyond the far horizon, Loss Of Signal (LOS) was expected and we proceeded to analyze any points of data that were of special interest to the customer and relayed information over HF radio. We'd return to base and pop a couple of cold ones for a job well done.

Courtesy of Major Chuck Davenport, USAF (ret)
"I had the pleasure of flying the EC-135N/E ARIA as a navigator in the 4950th Test Wing, Wright-Patterson AFB, OH. My logbook shows that my first mission was a trip to McConnell AFB, 20 Oct 83. My last was flown on 7 Apr 86. In between were the most memorable missions to some of the most exotic and unusual places on the planet.

"By that time, the famous Apollo mission support role was a thing of the past. Our many missions included telemetry support for the Space Shuttle, which took us over the plains of Central Africa, South Africa, the South Pole, the Pacific and Atlantic Oceans, and other interesting and exotic locations.

"We also provided telemetry support for the US Navy D10 Trident missile program. My job as navigator was to precisely position the aircraft in time and space to receive the telemetry from the ten MIRVed warheads.

"Flying headlong into the path of the reentering warheads required a great degree of precision. Too far off target and everyone lost their jobs. Too close…well, those warheads were descending on their trajectories faster than the speed of sound. But the light show was spectacular!"

Courtesy of: Lt. Col. David Ross, USAF (Ret.), Lt. Col. Sam Townshend, USAF (Ret), and Bob Beach, ARIA Mission Commander (Ret.)
A "typical" ARIA mission began months before the actual flight. All mission scheduling was coordinated through an inter-range scheduling office. Once the tasking was received, the ARIA engineering office would meet with the flight operations mission planners to prepare all of the details of the mission. This included the staging base, the required airborne track for the actual data collection, and any other mission-specific requirements. Any changes to the mission profile were coordinated between the two offices and Range Safety prior to the deployment date.

Just prior to the actual deployment, the aircraft mission systems would be calibrated using a ground-based, highly accurate simulation and alignment facility.

The vast majority of all ARIA missions were staged from overseas operating locations close to the designated data collection points. The airports supporting these missions had to be carefully selected to take into consideration adequate runway length and structure to support heavy commercial jet aircraft; the availability of the proper grade of jet fuel for the aircraft; access systems for boarding/deplaning; air-powered jet engine starting systems; aircraft towing equipment sufficient for the maximum weight of the ARIA; and adequate facilities nearby for crew rest. The aircraft would deploy to those airfields so that the crew would have at least 24 hours of rest prior to the actual mission and the maintenance personnel sufficient time to prepare for the flight. While the "basic" crew consisted of two pilots, a navigator, flight engineer, and thirteen prime mission electronic equipment (PMEE) operators and mission coordinator/commander (MC), it was customary to augment the crew with an additional pilot, navigator and flight engineer plus PMEE operators in training, and one to three maintenance specialists -- depending on the availability of aircraft support at the staging location.

On mission day, the crew "reported for duty" at least two hours before takeoff time. The pilots, navigator and MC checked the weather, filed the appropriate flight plan and held an abbreviated preflight briefing, with the emphasis on safety procedures and mission requirements. The flight engineer and PMEE crew went directly to the aircraft to start their preflight.

Depending upon the characteristics of the airfield, engines were typically started 20 minutes prior to scheduled takeoff time, which was a minimum of 2.5 hours prior to the time of the "run" for the data collection. This time was needed to properly power up the data collection equipment and ensure it was fully calibrated ready for the run.

The ARIA collected telemetry from three different types of platforms: orbital (i.e., payloads being launched from either booster rockets or the Space Shuttle), re-entry (normally ballistic missile tests) and cruise missiles. Orbital missions were usually supported from Ascension Island in the southern Atlantic, Diego Garcia in the Indian Ocean, or Hickam AFB, Hawaii. Re-entry missions staged from Guam, Hawaii, or several locations along the East Coast, the Caribbean, Wake Island, and Ascension Island. In order to support these missions, it was imperative to position the ARIA at the location (telemetry support point, TSP) and time to collect the maximum amount of telemetry data possible. To achieve this, the aircrew planned to arrive at the TSP prior to the scheduled collection time and set up an orbit. Coordinating closely with the MC, who was in constant radio contact with the test range ground personnel, the orbit was varied to allow the ARIA to arrive at the TSP at exactly the required time. At that point, the flight crew flew a pre-planned course and true airspeed as the mission crew gathered the telemetry.

For an orbital mission, telemetry data was gathered from the vehicle over its travel of approximately 2000 miles. From the time the vehicle lifted off from the launch platform its telemetry was tracked by land-based stations. As the vehicle continued downrange over water, gaining speed and altitude, it eventually passed beyond the horizon and out of contact with the ground-based stations that had tracked it. The ARIA picked up the vehicle's telemetry as it emerged over the near horizon, prior to the ground-based station's loss-of-signal. The ARIA flew perpendicular to the ground track of the spacecraft for approximately 15 minutes, receiving, relaying and recording its signal until it disappeared over the opposite horizon with sufficient altitude and speed to place it into orbit.

During re-entry missions, the position of the aircraft was critical due to the antenna tracking and steering limitations, and the close proximity of the aircraft to the impact point. Data acquisition was normally executed during the final three minutes of the re-entry vehicle's flight, and required antenna tracking from the edge of space to impact. To avoid multipath reception of the data transmitting frequencies, caused by signals reflected from the ocean's surface, it was necessary for the ARIA to fly at low altitudes, usually 15,000 – 20,000 feet during the actual support phase. After the ARIA returned to its home base, the data that was recorded onboard was processed and distributed for analysis.

A typical cruise missile mission was somewhat different than orbital or ballistic missile tracking because the missile flew well below the altitudes required for standard ground-based radar and telemetry coverage. The mission involved continuous automatic tracking (occasionally assuming the role of command and control) for more than five hours, tracking a vehicle that flew below the aircraft, and relaying real-time data to ground stations, while maintaining voice communications between mission (fighter chase aircraft) and mission control through remote ground stations. The ARIA would typically support these missions from Edwards AFB or Pt. Mugu Naval Air Station, CA. In the case of an air-launched cruise missile (ALCM), the B-52 launch aircraft would be airborne one hour prior to the ARIA takeoff. The ARIA would normally take off approximately four hours prior to the missile's release time from the B-52 ("T minus 0") and fly a two-hour calibration leg to ensure that the data collection equipment was properly powered up and configured for the mission. The ARIA would then fly to the mission support area, position itself about 25 miles behind the B-52 and begin acquiring telemetry from the cruise missile at approximately missile launch minus 90 minutes. The two aircraft would make a "dry pass" through the support area while range safety officials checked the security of the restricted airspace for unauthorized aircraft in order to avoid potential midair collisions. At the launch point, Mission Control would use the ARIA telemetry data to evaluate the missile's status. After the launch, the ARIA would continue to receive and relay data from the missile, and UHF voice communications from the chase planes to mission control at the test range until the termination of the mission. The ARIA usually flew at 25,000 feet and 25 NM from the cruise missile and chase planes. The flight crew and the MC worked closely together to ensure that the ARIA maintained the optimum position for telemetry reception, within the operating parameters of the aircraft and the receiving antenna. During special situations, the ARIA supplied the remote command and control and flight termination signal to the missile.

The contributions of the Air Force's ARIA fleet made possible the development of systems like Apollo, the Space Shuttle, Magellan, Tomahawk, Cruise Missile, Trident, Pershing and Peacekeeper programs. This contributed significantly to ending the Cold War, ushering in the decade of peace and prosperity that characterized the last decade of the 20th Century.

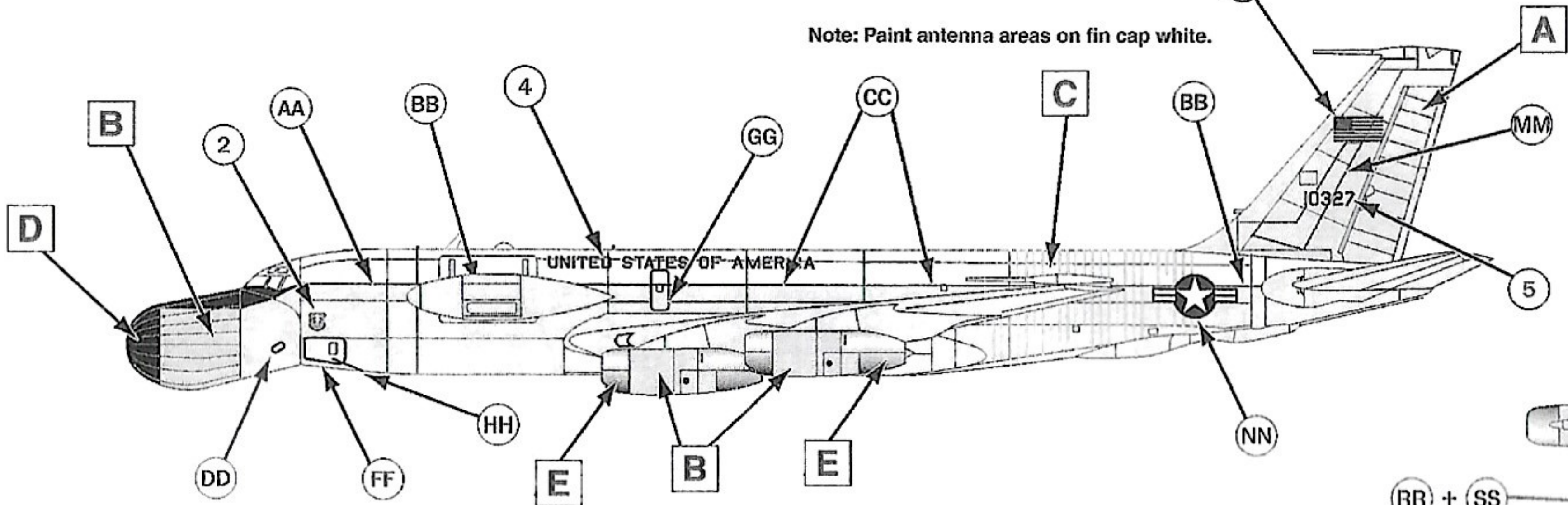
1

EC-135N ARIA/ALOTS
4556th Test Group, AF Eastern Test Range
Patrick AFB, Florida 1970

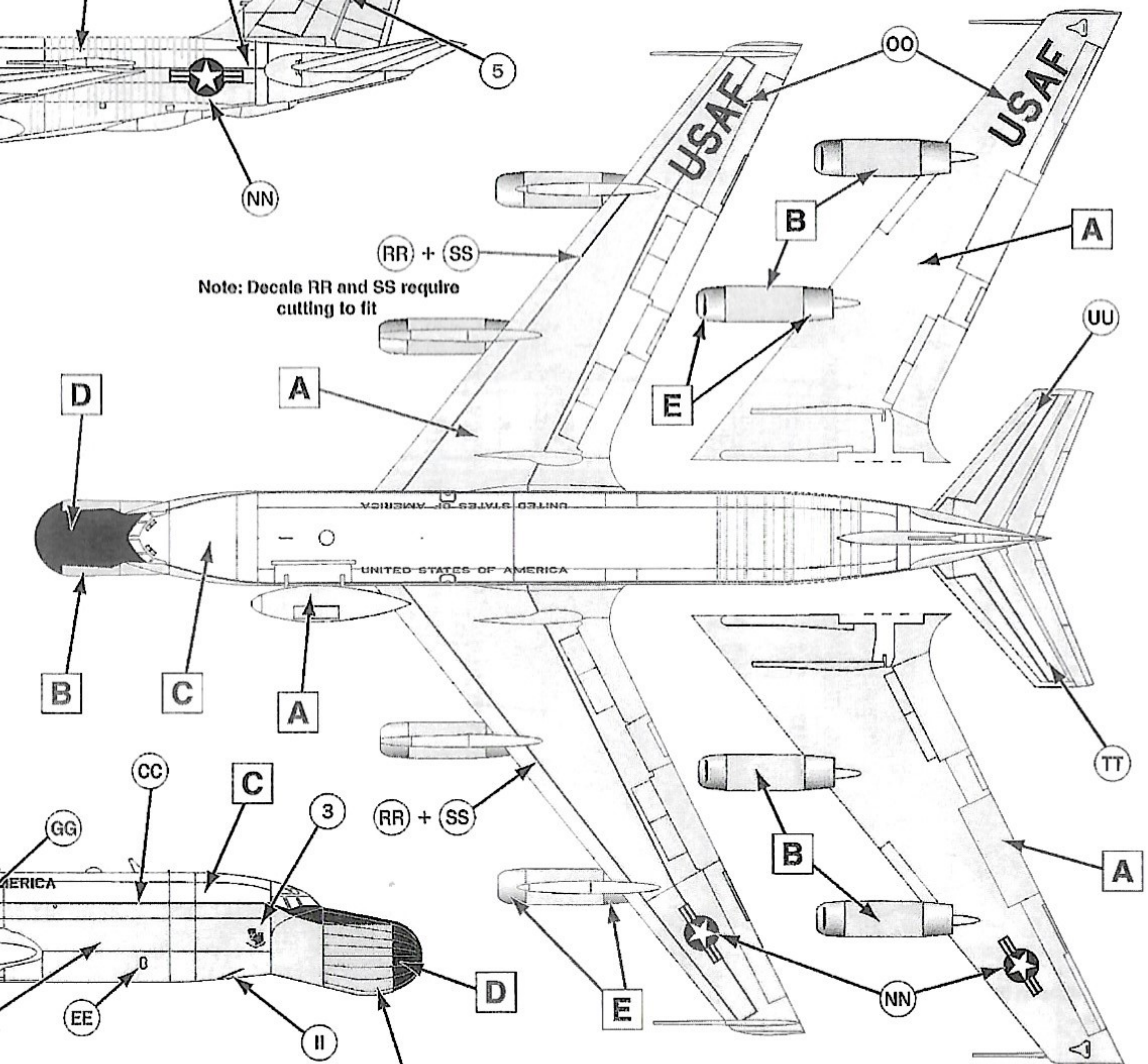
AMtech™

728701

Note: Paint antenna areas on fin cap white.



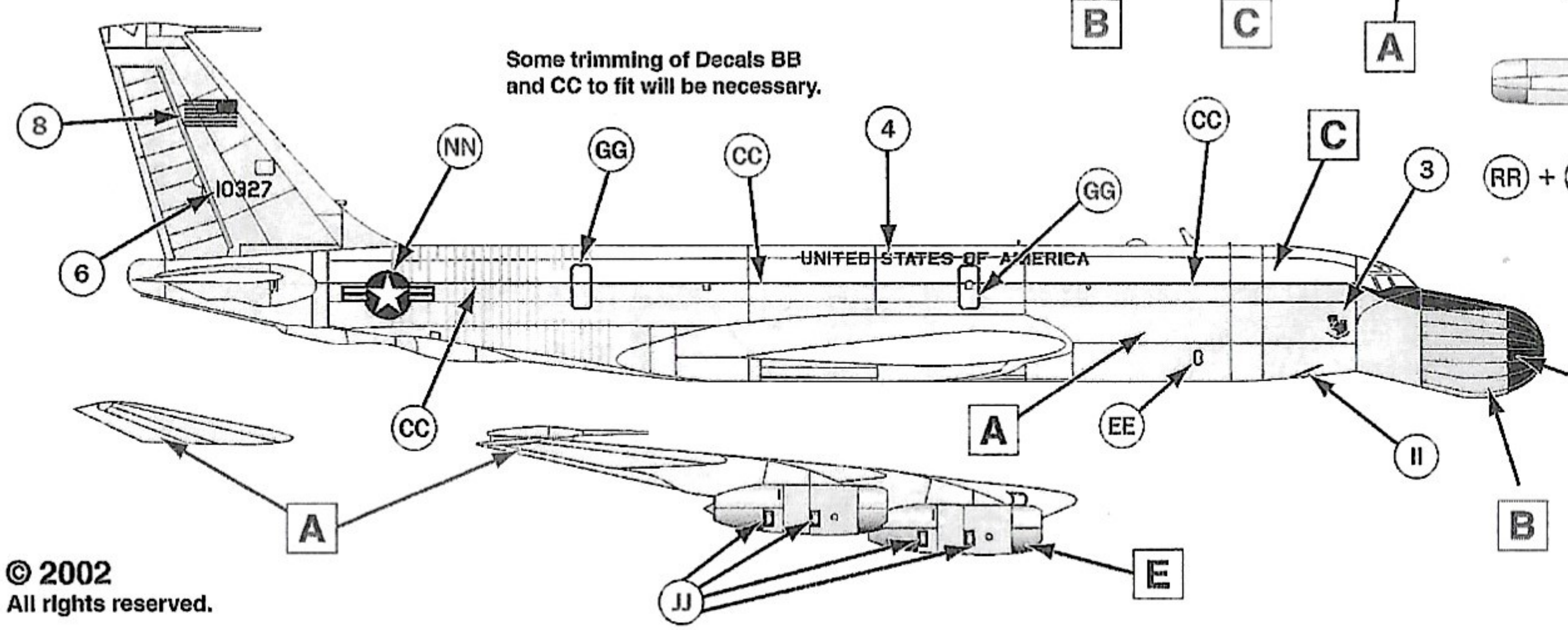
Left Wing Undersurfaces



Right Wing Undersurfaces

A		Aluminum Paint
B		FS16473 Aircraft Gray
C		FS17875 Gloss White
D		FS37038 Flat Black
E		Polished Metal

Some trimming of Decals BB and CC to fit will be necessary.

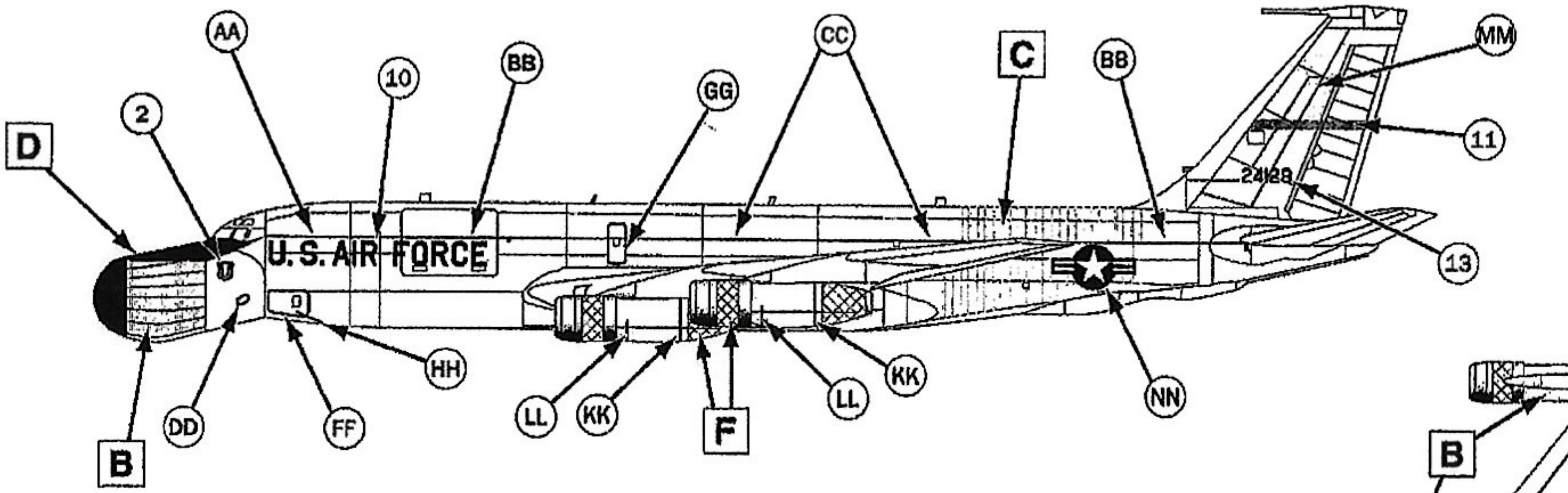


2

C-135B T/RIA
4950th Test Wing, Aeronautical Systems Division
Wright-Patterson AFB, Ohio 1971

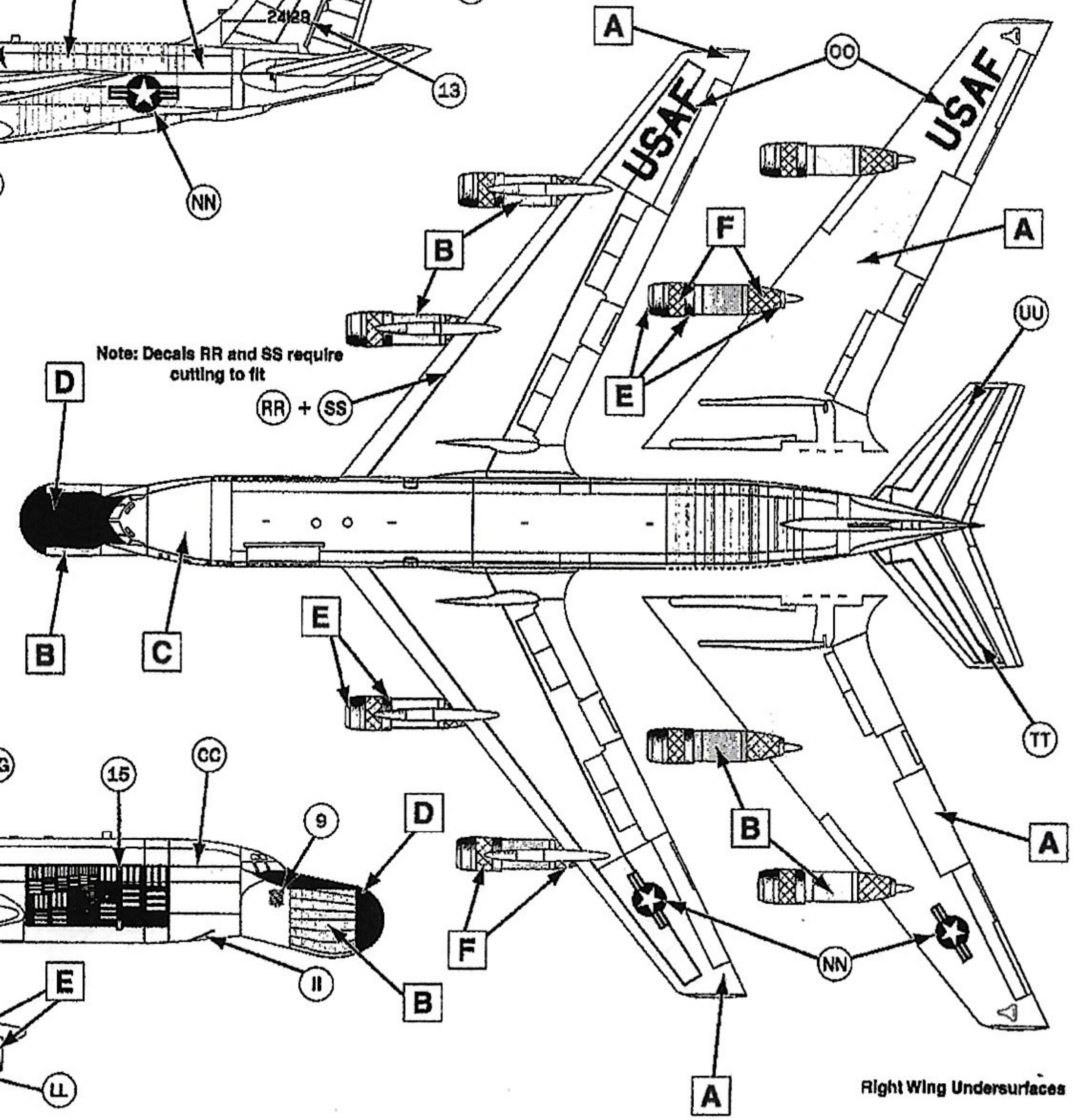
AMtech
728701

Note: Paint antenna areas on fin cap white.



Left Wing Undersurfaces

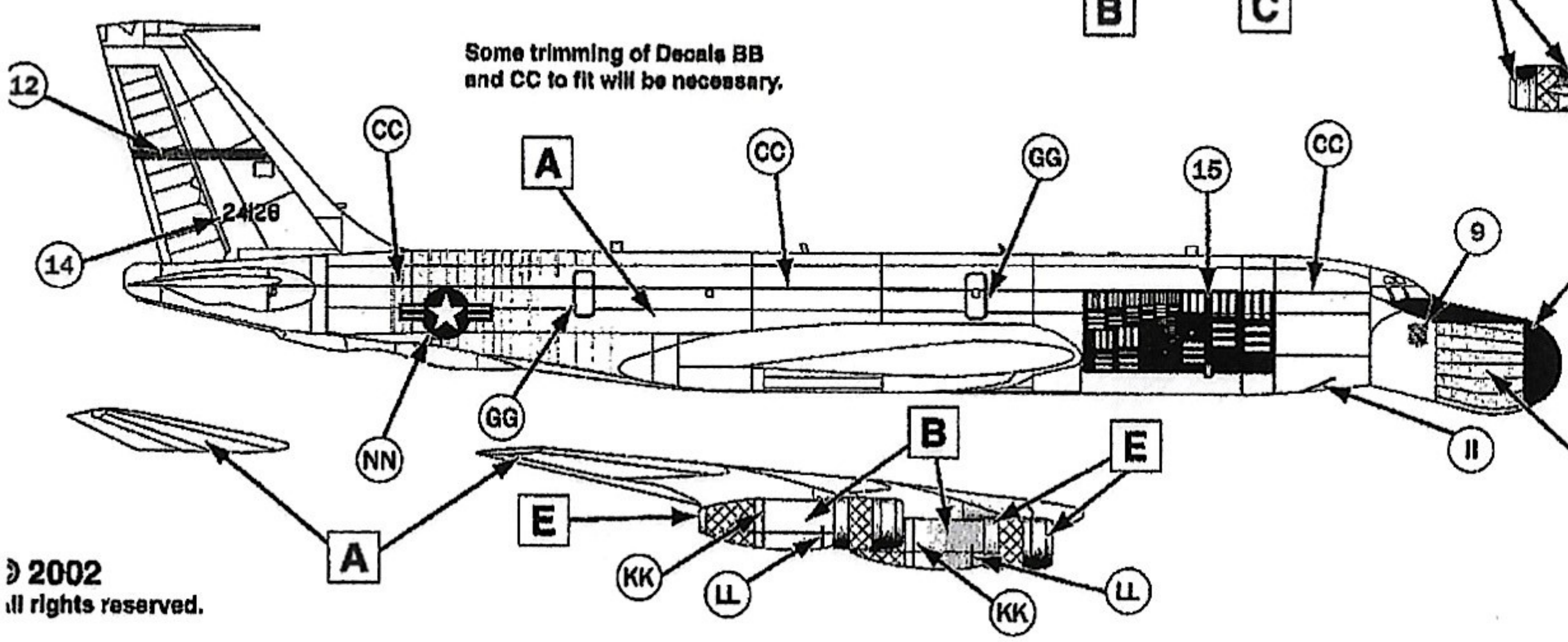
Note: Decals RR and SS require cutting to fit



Right Wing Undersurfaces

A		Aluminum Paint
B		FS16473 Aircraft Gray
C		FS17875 Gloss White
D		FS37038 Flat Black
E		Polished Metal
F		Natural Metal

Some trimming of Decals BB and CC to fit will be necessary.



3

EC-135N ARIA
4950th Test Wing, Aeronautical Systems Division
Wright-Patterson AFB, Ohio 1977

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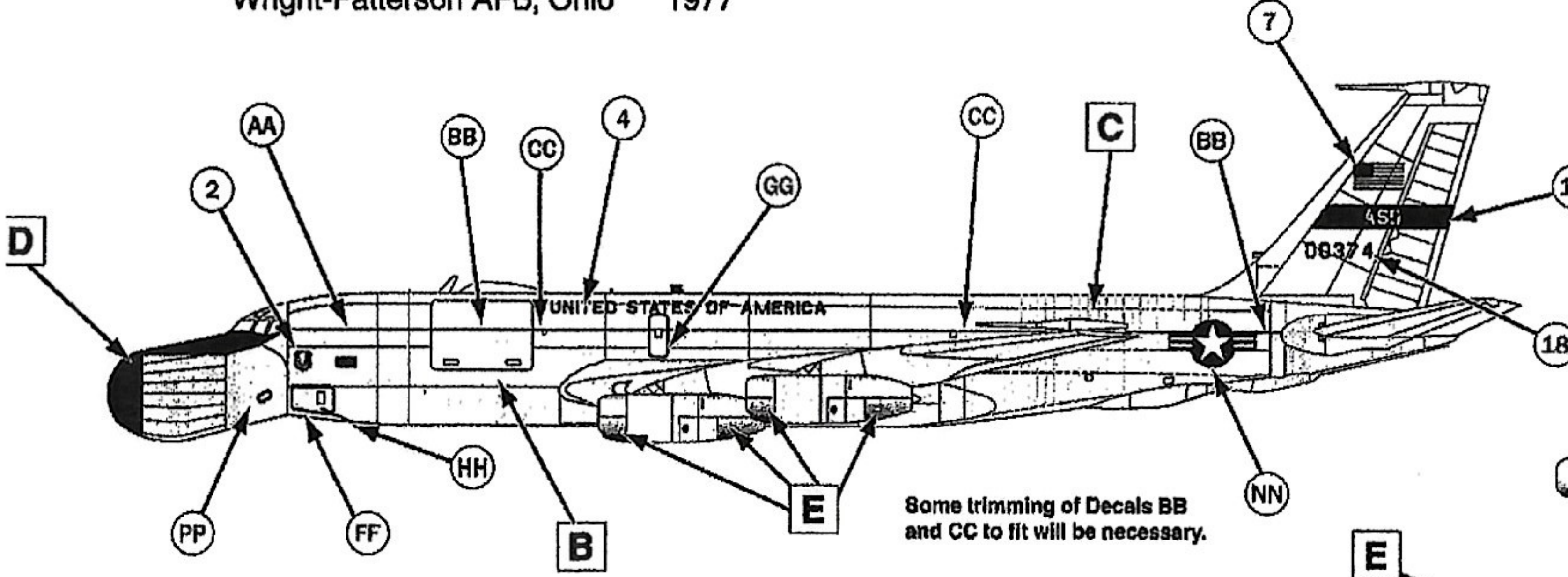
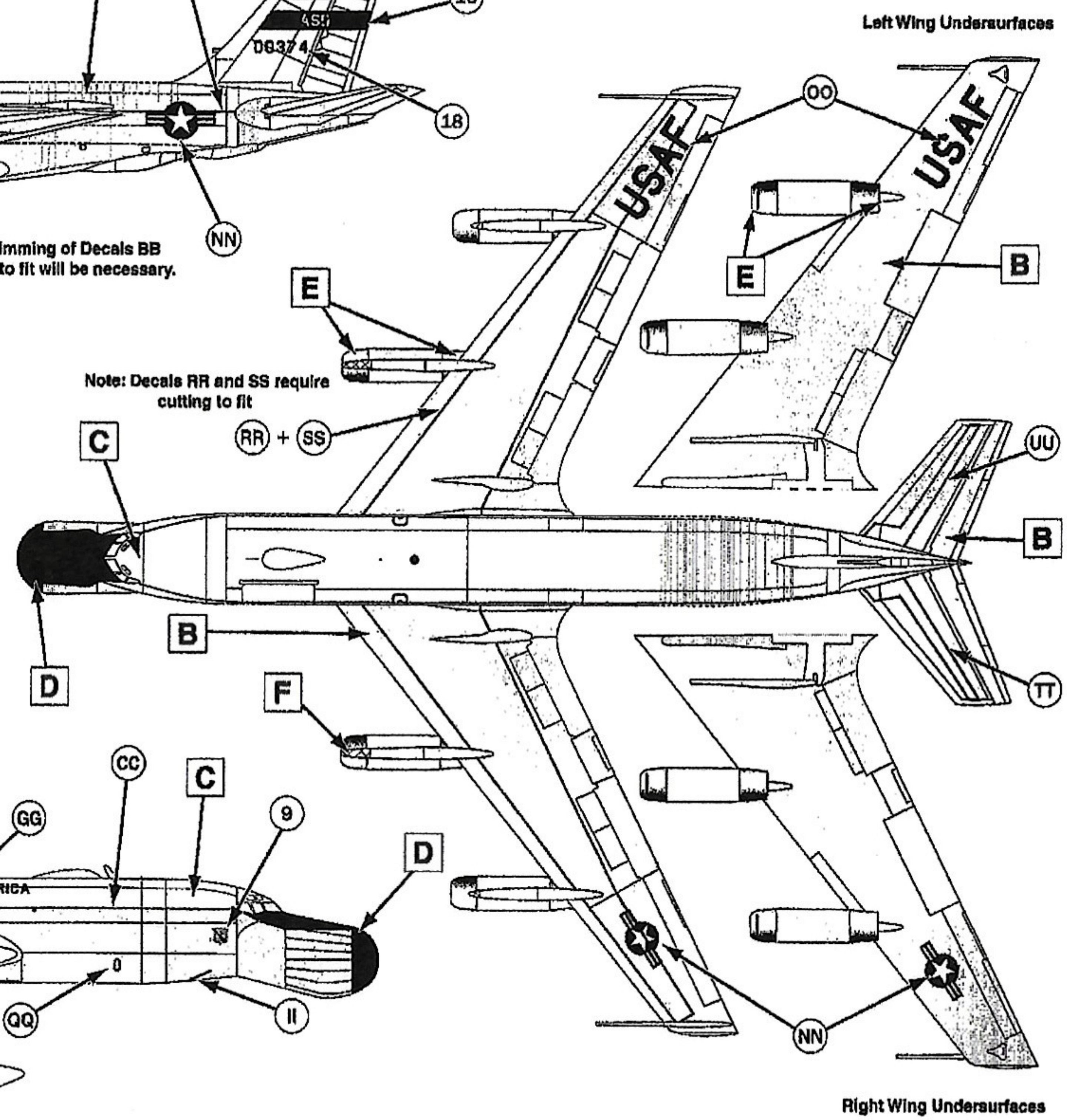
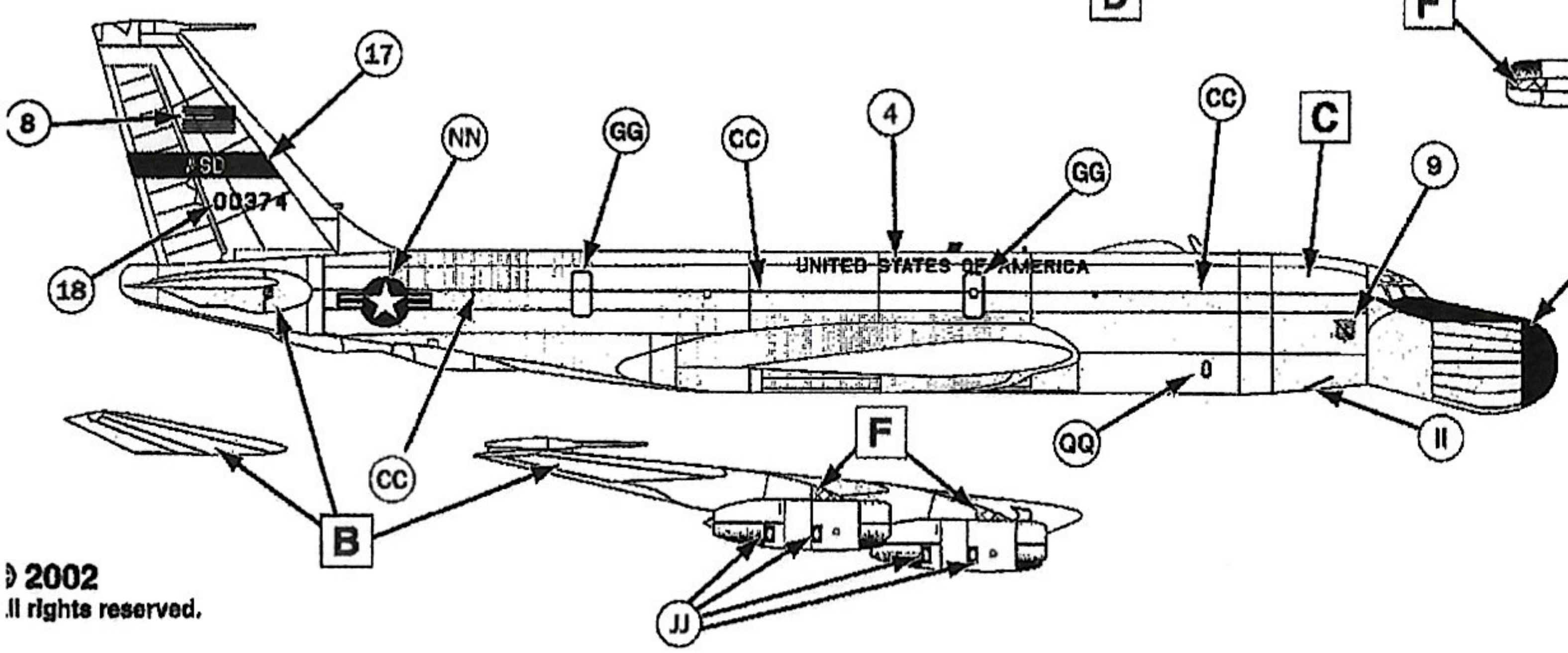


A		Aluminum Paint
B		FS16473 Aircraft Gray
C		FS17875 Gloss White
D		FS37038 Flat Black
E		Polished Metal
F		Natural Metal





4

EC-135E ARIA
4950th Test Wing, Aeronautical Systems Division
Wright-Patterson AFB, Ohio 1991

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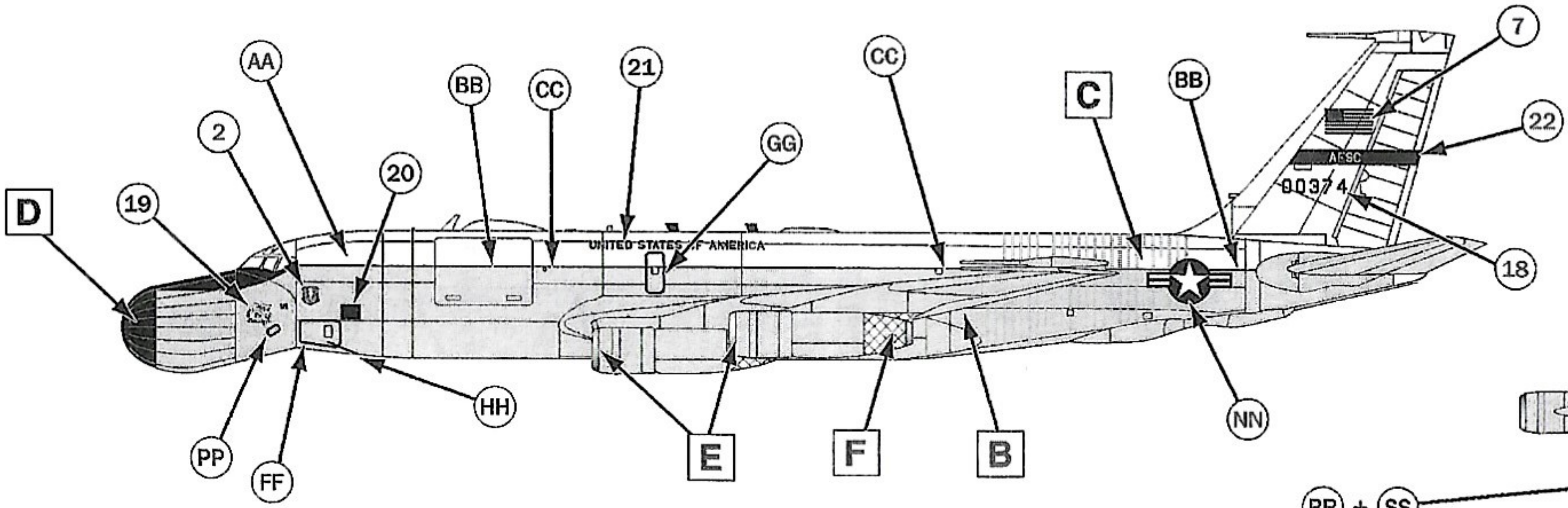
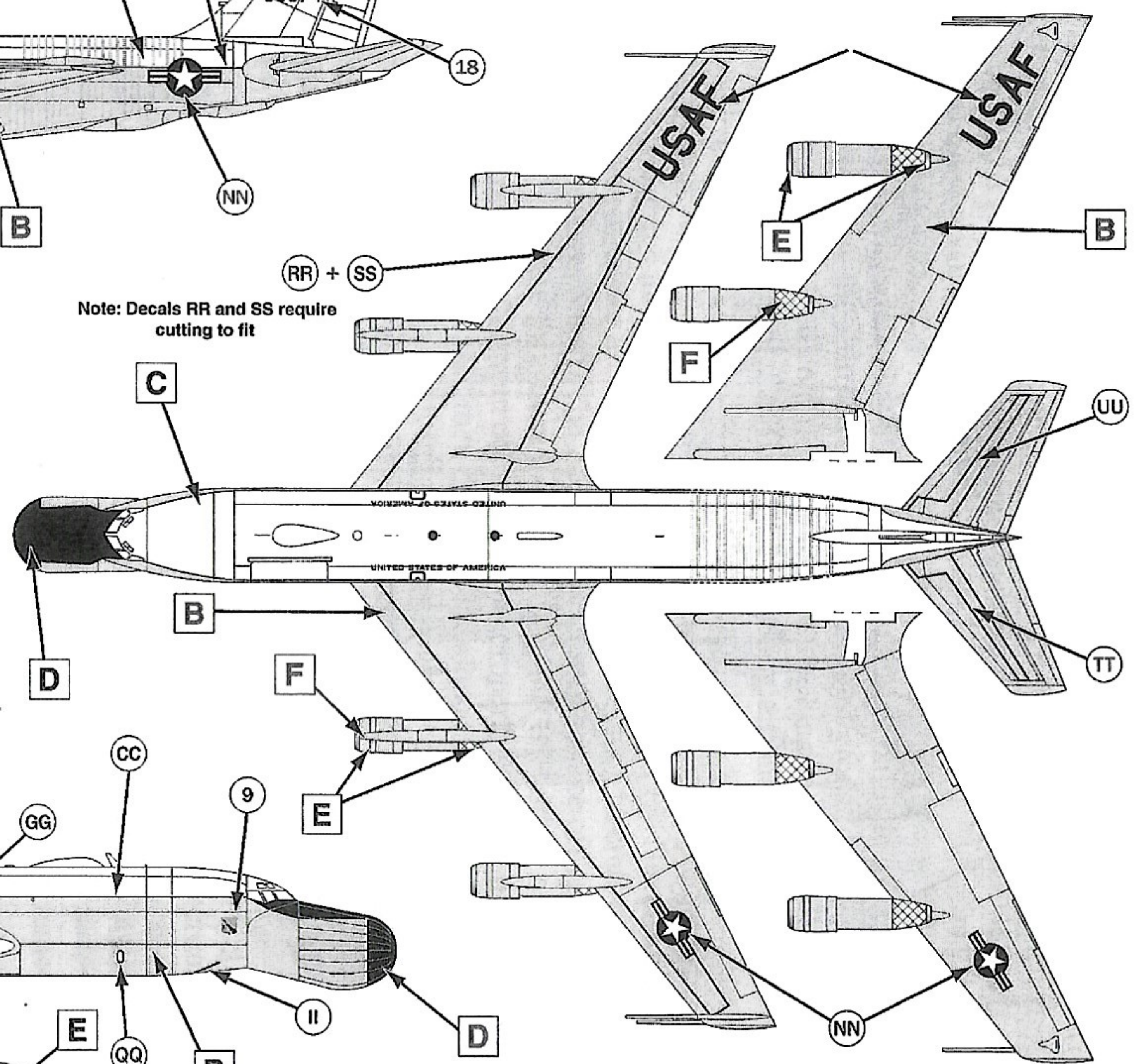
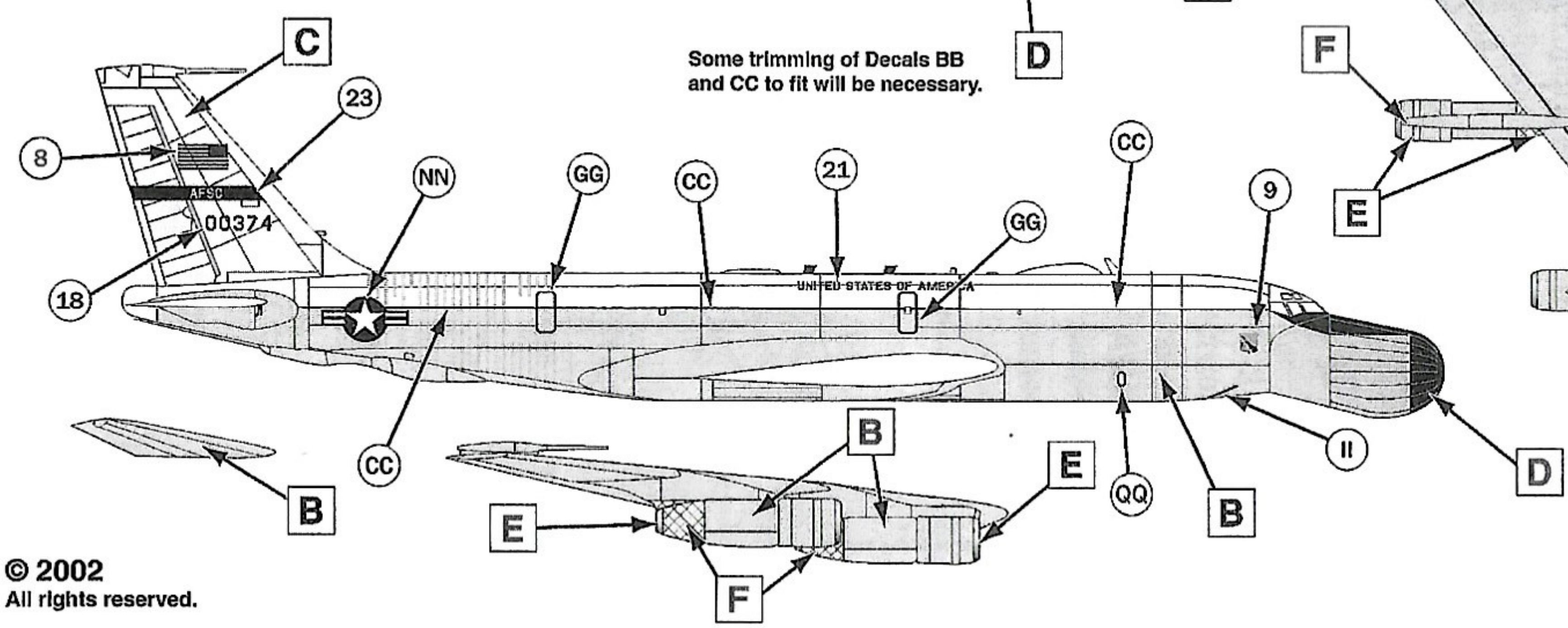
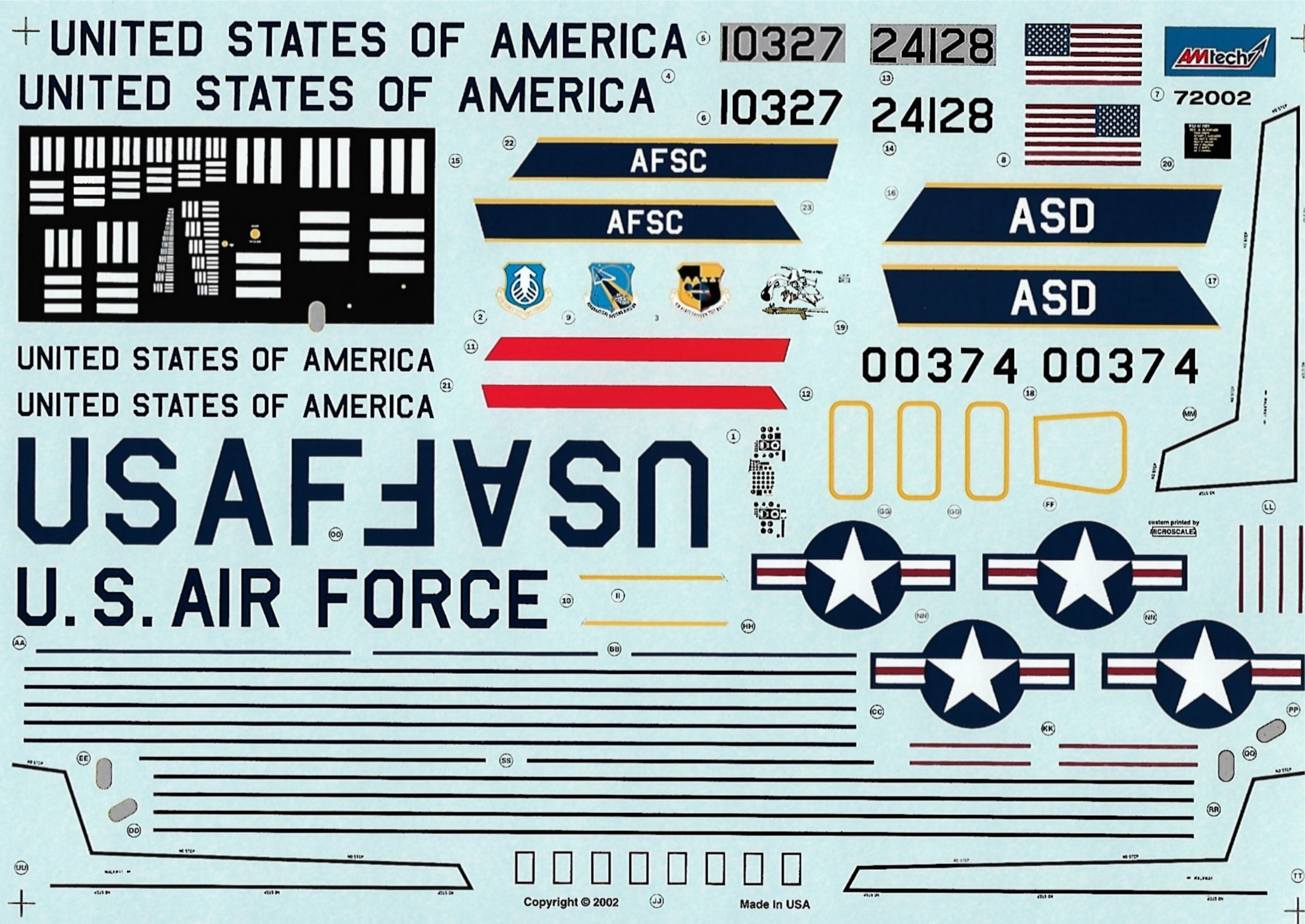


- **A** Aluminum Paint
- **B** FS16473 Aircraft Gray
- **C** FS17875 Gloss White
- **D** FS37038 Flat Black
- **E** Polished Metal
- **F** Natural Metal



Some trimming of Decals BB and CC to fit will be necessary.

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