

SERVICE STATION IN THE SKY

Gassing Up At The Sign Of The



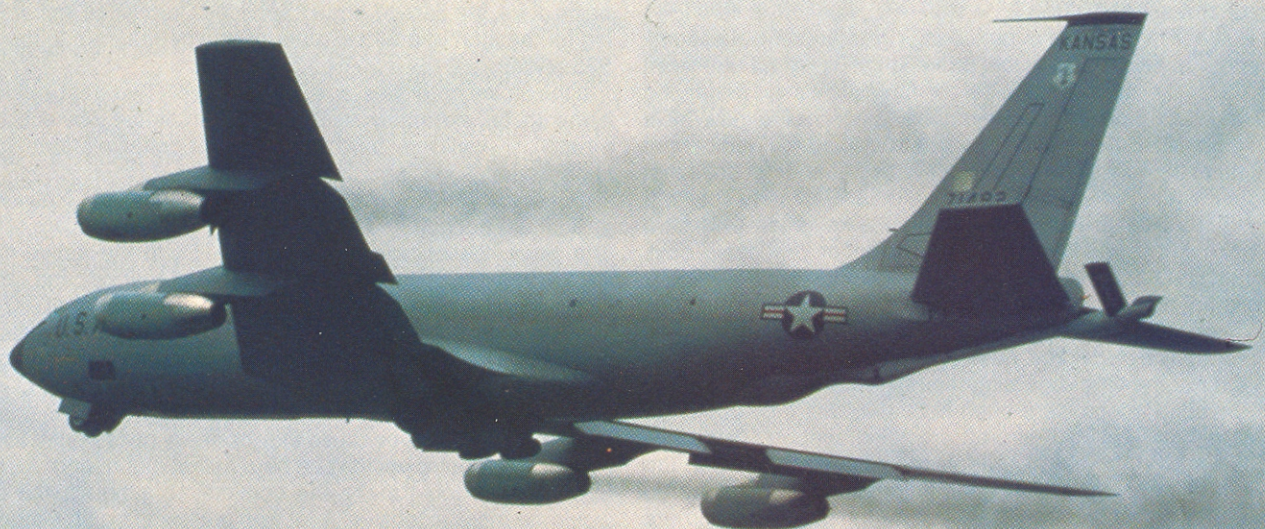
Kansas

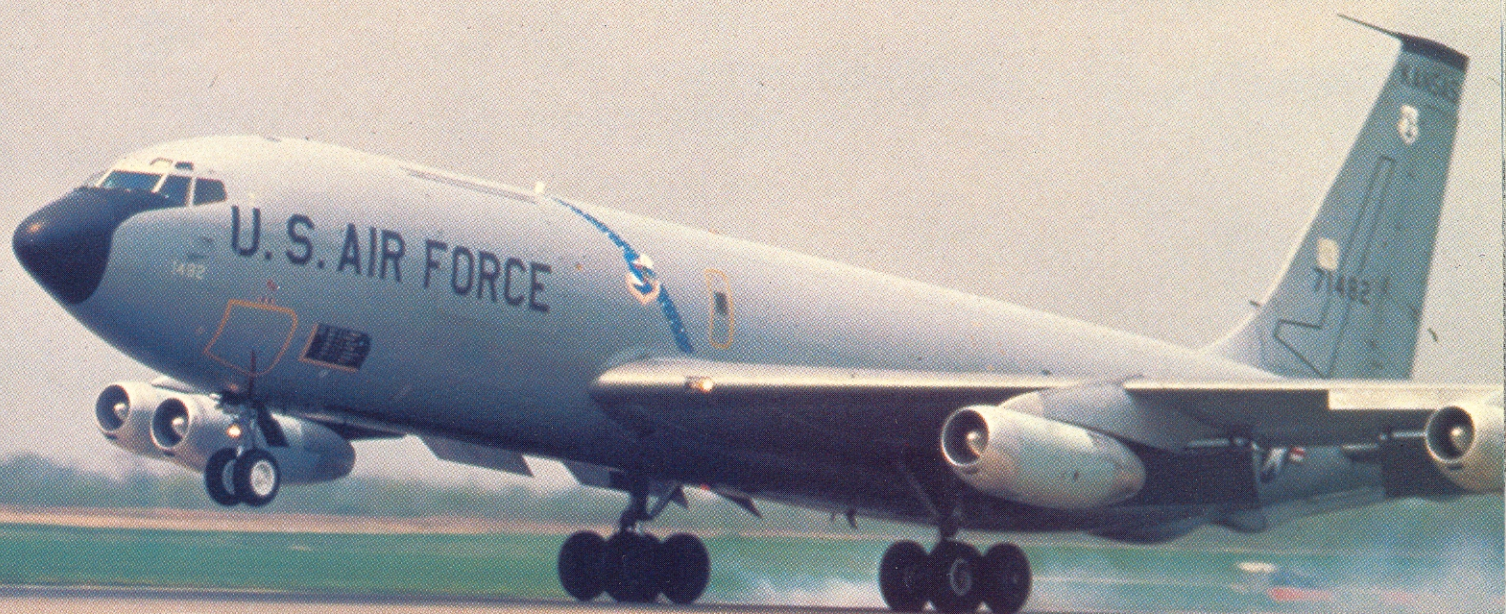
Coyotes

By Eldred P. Mason

Photos by the author

***Airpower Flies Mission With
The 190th Air Refueling Gp. From Forbes Field***





During an assignment for *Wings* (Oct, 1984), I flew a couple of missions out of Selfridge Air National Guard Base, in Michigan, with the 190th Air Refueling Group. They call themselves the *Kansas Coyotes* and I was so impressed with their expertise and professionalism that I decided to take a trip out to their home base at Forbes Field just outside of Topeka, Kansas. Forbes used to be Forbes Air Force Base but it was deactivated in 1973 and turned over to the local government for use as a civil airport. The Air National Guard, however, retained one end of the field for its use under a lease agreement.

As you drive up to the base the first thing you notice is the lack of buildings. There are no barracks or living quarters and the hangars

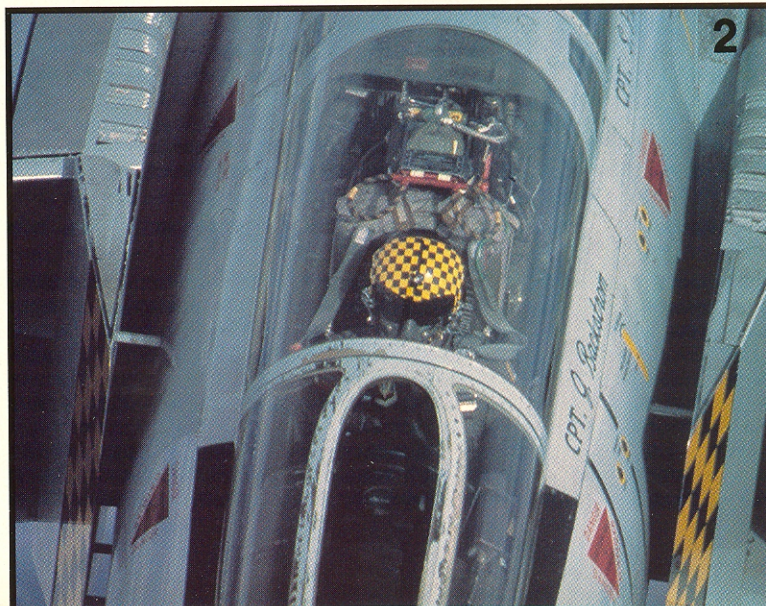
and administration buildings are strung out along the narrow area between the runway and the highway. When the part-timers come to the base to put in their time on UTA (Unit Training Assembly) weekends they are put up in motels around Topeka, which is good for business, as there are over 500 of them. This may seem like quite an expense but it is definitely less costly than constructing buildings and maintaining them when they are needed only one weekend a month. Furthermore, different motels are utilized each time the Guard comes to town, thus sharing the wealth they leave behind when their monthly exercises take place. Something else is noticeable when you drive up. All of the buildings look freshly painted and the grounds are immaculate. This is obviously a unit

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1. KC-135E from the 190th landing after a morning of refueling. Tanker can carry up to 31,000 gallons of fuel and can also be reconfigured to haul 80 passengers or 25 tons of cargo. In upgrading tanker fleet, Boeing refurbished former 707 commercial airliners, traded in on newer Boeing models. Unlike the original 707-120 airliners and KC-135As, which utilized 13,500 lb. thrust Pratt & Whitney turbojet engines, these 707-120Bs were powered by improved 17,000 lb. thrust P & Ws (JT3Ds), which raise cruising speed from 530 mph to 593 mph and maximum speed from 585 mph to 627 mph.

2. Boom operator's view of an F-4C Phantom during refueling. This one is from the 191st Fighter Interceptor Gp.

3. A KC-135E from the 190th taking off preparatory to positioning itself on station to refuel aircraft. All armed forces navigational charts and maps show pre-ordained refueling stations, with appropriate orbit pattern marked on them. In addition to giving the KC-135E higher performance over original KC-135A, 732 of which were purchased by the Air Force with deliveries beginning in July 1956 — the upgraded KC-135E tanker gets off the ground with a bigger load of fuel far faster than its KC-135A counterpart. Boeing is now working on a re-engining of the remaining tanker plane fleet to be fitted with a 22,000-lb. thrust CFM International two-shaft turbofan engines, but why? Cost will be four times that of Guard's re-engined KC-135Es, which already have plenty of excess thrust and requisite performance.



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that has a great deal of pride in its history and accomplishments. The 117th Air Refueling Squadron of the 190th Air Refueling Group began as the 440th Bombardment Squadron (Light) in 1942. During WW II they flew B-26s in Sicily, Africa, Italy, France and Okinawa, and received a Presidential Unit Citation for their pinpoint bombing over Casino and Naples.

After the war, the 440th returned to Philadelphia, Pa., where they were reorganized and became the 117th Bombardment Squadron (Light), part of the Pennsylvania Air National Guard. The unit remained at Philadelphia Municipal Airport until 1951 when it was federalized during the Korean War and served as a training unit at Langley Air Force Base, Va. After the Korean War the 117th was returned to the Pennsylvania Air National Guard and was redesignated the 117th Fighter Interceptor Squadron. As was the case with many of the Guard units during that period, the unit was unable to maintain required personnel strength and was deactivated in January 1957.

Shortly after being deactivated the 117th Fighter Interceptor Squadron was reformed at Hutchinson, Kansas. After a successful recruiting drive, which brought in 110 members in only 60 days, F-80 Shooting Stars arrived in May 1957. At Hutchinson the 117th shared facilities with the Navy and the base was known as Hutchinson Naval Air Station. The Navy left in 1958 and the 117th became the 117th Tactical Reconnaissance Squadron. Their new aircraft was the B-57A Canberra. Their mission was bomb damage assessment and reconnaissance, visual and photographic.

In 1962, the 190th Tactical Reconnaissance Group was formed and the 117th became one of the four squadrons in the group.

In 1967, the 190th moved to Forbes, where the group again received a new designation and a new mission. They were now changed from reconnaissance to Bombardment, Tactical, with a mission of providing night interdiction. This change also required a new aircraft, the B-57G.

In October 1973 Forbes Air Force Base was deactivated and the 190th Bombardment Tactical Group assumed responsibilities for all base functions.

They were now the 190th Defense Systems Evaluation Group and were assigned to the Aerospace Defense Command (ADC). Their B-57s were sent to Davis-Monthan Air Force Base, Arizona, for mothballing and the group received ten EB-57s from Westover Air Force Base, Ma., to support the new mission.

On April 6, 1974, the same date as the new name and mission were acquired, the 190th received its Federal Recognition Inspection and formally became an ADC Air National Guard unit.

After 20 years of flying variations of the B-57 and numerous changes of missions, the 190th was to make still another change. On April 1, 1978, they became the 190th Air Refueling Group with an obvious new mission of air-to-air refueling. Their new aircraft was the KC-135A Stratotanker.

New members had to be recruited to meet the new strength requirements and retraining began for aircrews, mechanics, security police, etc. During the third quarter of that same year (1978) the unit was awarded the National Guard Association's Distinguished Flying Unit Plaque, and in January 1979, was again recognized when it was selected for the Air Force Outstanding Unit Award for the period April 15, 1977, to April 14, 1978.

The 190th also won the Golden Tanker Trophy in December 1983 for its outstanding professionalism, an award based on the performance of aircrews on written and flying evaluations for their jobs during ORIs (Operational Readiness Inspections) and Com-

bat Evaluation Group visits. In short, its aircrews were picked as the best in the Reserve Forces of the Eighth Air Force.

Each year SAC holds a Bombing and Navigation Competition. On November 8, 1983, the 190th won the United States Air Force Saunders Trophy for this competition. The unit represented the Air National Guard in the event and was named the top tanker force over all of the full time active duty refueling units from the regular Air Force. This was the first time the Saunders Trophy was taken away from the regulars by a reserve unit.

On May 31, 1984, the *Kansas Coyotes* were once again recognized for their professionalism when they were awarded the Spaatz Trophy which represents the highest accolade presented to flying units of the Air National Guard. They were recently notified that they had also been awarded their second Golden Tanker Trophy, this one for 1985.

I asked Col. John Butler, the commanding officer of the 190th, if there were any problems changing over to a refueling mission and converting to the KC-135 after 20 years of flying the B-57. His answer was that with the caliber of people they had in the unit and the ones they recruited, it was just a matter of retraining everyone — the aircrews, mechanics, security police, office personnel — everyone involved.

What makes the 190th so exceptional, with an ability to win so many prestigious awards, so short a time after converting to an entirely new mission and new aircraft? Colonel Butler believes that it is due to having the very best people on strength when the changeover was announced. With such a reservoir of talent, the 190th could afford to be very selective, choosing only superior personnel for the new assignments.

Furthermore, the 190th currently operates at 101.3%, meaning it has a better than 100% retention rate, which is a unique as well as good position to be in. But perhaps the key reason for this outstanding efficiency is that Guard units can stay together longer than regular organizations. They are composed of savvy veterans, who have worked together for a long time and thus have become a very well trained team. Regular Air Force units constantly lose key people through transfers and veterans declining to re-enlist, and such units are constantly training replacements, a factor that inhibits their operational effectiveness, another reason why Guard units are often more qualified for their mission than their regular Air Force counterparts.

The 190th flies about 75% of its missions with full-time personnel. The additional 25% is made up of part-time personnel or "weekenders," but these people are highly qualified. The part-timers come from many varied walks of life. The Commanding Officer of the 117th Air Refueling Squadron, Lt. Col. William "Buck" Lyle, is a part-timer. During the week he is a District Judge for Reno County, Kansas. He travels about 160 miles one way each weekend to perform his duties and considers his time with the unit a pleasant and stimulating break from his duties as a judge.

Some of the other part-timers are airline pilots, IBM executives, nurses, firemen, and truck drivers. One man owns a farm implement dealership and drives to Forbes over 400 miles each way. Another is a weatherman and the 190th includes farmers and construction workers. This exotic mix, according to Col. Butler, is what makes it work.

The Guard has two masters, the Federal Government and the State. The peacetime commander is the Governor of the state and he delegates his authority to the Adjutant General. In wartime the Federal Government would activate or federalize a Guard unit



An unusual sight for the tanker boom operator is this T-33 piloted by Captain Al Smith. A squadron hack for the 191st Fighter Interceptor Gp., the T-33 is ubiquitous, but has no inflight refueling capability. Smith, who flies commercial airliners in civilian life, took a Detroit TV cameraman up to shoot tape of the Kansas-based KC-135E for the evening news.

and take it over, as it did in WW II, the Korean War, and the Vietnam War. Older than any regular service arm, this year is the Guard's 350th anniversary. Their history can be traced back to 1636. The Guard is longlived and useful because it is as flexible as it is professional.

If the Defense Department has to cut the budget, what usually happens is the active forces will have to trim down, and when they do, they will have to give some of their missions to the Guard and Reserves, or else abandon them. Of these options, what usually occurs is that more missions are delegated to the Guard and Reserves, mainly because they have the capability of expanding and/or contracting far more quickly...the flexibility component.

The KC-135, which the 190th flies, was first delivered to the Strategic Air Command in 1957. It can fly near supersonic speeds at an altitude of 50,000 feet, where it is more fuel efficient for the receiver aircraft to take on fuel without slowing down or descending to lower altitudes where they burn more fuel.

The Guard's KC-135As were converted to 135E models when the Guard (with great opposition) purchased used 707 commercial airliners that Boeing had gotten from civilian carriers such as American Airlines and TWA. Procurement balked at the cost, but the engines on these airliners were more modern, with more thrust than standard KC-135s on Air Force inventory, and they were also equipped with thrust reversers. The used airliners were revamped, their engines refurbished and hung on the Guard airplanes by Boeing. The result was a very high performance tanker airplane, procured at very low cost, about four million dollars per plane for the engine upgrade or one million per engine. The revamped E models, in addition to better performance, also offer significantly lower air pollution, are far less noisy and much more fuel efficient. In fuel savings alone, the upgraded engines will pay for themselves within the service lifetime of the aircraft.

Major Mario Goico, one of the 190th's pilots, explained that by using less fuel on the way to and from the refueling point it leaves the tanker more fuel to transfer. He also said the thrust reversers made it possible to go into smaller fields. "I have flown in both the KC-135A and the E, and I can tell you from my own experience there is a tremendous difference in the two. On one flight out of Selfridge ANG Base in the KC-135A the runway temperature was around 100 degrees. I was sitting in the jump seat in the cockpit. We started at the south end of the runway. I could see the black marks on the runway where the planes usually touch down. We had a full load of fuel for the mission we were on, and as the airplane rolled down the runway I can remember saying to myself, 'aren't we ever going to lift off?' As we crossed over the black marks on the north end of the runway (made by aircraft when they land from that direction) we finally lifted off. It must have given the shutterbugs that are usually parked by the fence a real thrill. In a similar flight from the same runway in a KC-135E, lift off was much sooner and the angle seemed to be about 45 degrees, just like a commercial jet. You actually got pressed back against your seat, a feeling I never had in the KC-135A!"

The Guard even paved the way for the Air Force to get new engines for their old KC-135s. Theirs will have brand new CFM-56 turbofan engines, which will cost about \$26-28 million dollars per aircraft, a cost the Guard could not justify because such modification gave them more thrust than they would ever need. So why spend that much more for brand new engines when the Air Force could have gone the same route as the Guard?

The Strategic Air Command has 640 KC-135s and the Guard has about 17% of them. A portion of all the tankers are on 24-hour ground alert, 365 days a year, just like the fighters and bombers they refuel. The 190th alert KC-135 sits ready in the Kansas sun, armed security guards patrolling it. Alert crew lives in quarters nearby, ready to go on a moment's notice.

Because of the Guard's veteran professionalism and its better maintained aircraft, it can get by with less up-to-date equipment. The active Air Force can't count on that, so it must put its resources into more modern material.

Sgt. Bill Hirbour, the crew chief of aircraft number 460, was working on one of the engines of the 190th's KC-135Es. He

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explained that the Guard feels that they maintain their engines better and at less cost than the Air Force. While the Air Force does a 100-hour inspection, the Guard does a 200-hour inspection, but they do a complete inspection on every pre-flight, instead of waiting for major inspections. Thus they catch more minor write-ups and repair them before they become major and more costly. Also, more lube is kept on rollers and moving parts that way and less parts wear out between majors. He also explained that major inspections are scheduled for a drill weekend so that there is more hands-on experience for the men and women that are part-timers.

Major Rufus Forrest, Chief of Current Operations, explained the unit's refueling and rendezvous procedures, which are precise and well thought out. There are refueling tracks set up around the country that are used by all refueling aircraft. These are areas that refueling takes place in. At one end of the track you have the ARIP (Air Refueling Initial Point). This is the point the receiver goes to. One hundred nautical miles down the track you have the ARCP (Air Refueling Control Point). This is the cornerstone of the refueling area and all traffic is based upon this point. The tanker orbits this point, arriving at the ARPC 15 minutes before ARCT (Air Refueling Control Time), the time of the actual rendezvous with the receiver. The tanker goes into a left hand orbit off the refueling track, orbiting about 12 miles from it and about 48 miles from the ARIP. The control center then clears the tanker for the ARIP. The entire 100-mile space is now opened up to rendezvous with the receiver. The receiver aircraft and the navigator on the tanker talk to each other during the course of the rendezvous so they know where each other is as they close on each other. The receiver is on one side of the track, the tanker is on the other. Both are offset, and when the tanker makes its 30 degree bank turn it rolls out about 2 to 3 miles in front of the receiver. Once joined up, they go down the cleared track together, until fuel is dispensed and the receiver departs the area.

Sometimes, depending on the number of planes to be refueled, the amount of fuel to be offloaded, and any difficulty in hooking up, it is necessary to reverse directions and go back the other way.

If the track is over an MOA (Military Operations Area) the tanker usually refuels fighters because the MOAs are designed expressly to support combat over a particular area. The fighters will do their thing, pop up to refuel on the tanker and drop back down to rejoin the fight.

Sometimes a ground controller tracking the tanker will direct the fighters to it. Sometimes there is an AWACS involved in the mission and they will direct the fighters to the tanker. When refueling fighters in these MOAs there are a lot more turns but the fighters can handle it because they are far more maneuverable than bombers and other large aircraft. Bombers can handle up to a 20° bank but fighters can go to 40° while hooked up. This is critical for

fighters because when engaging down below, they obviously do not want to go way down the track and have to come all the way back to rejoin the fight. In other variations they will come up, refuel from the tanker, not to rejoin the fight, but to get fuel to return to base.

If there was a war in Europe or the Middle East this is the type of refueling that would predominate. In this situation some of the fighters will probably stay to protect the tankers, others will go and fight. As yet there is no ECM equipment on the tankers but it seems obvious that some priority will be given to this. The enemy knows that if you can locate the tankers, and knock them out, the fighters and bombers are through. Bombers could give the tankers some partial ECM protection, but once they left on their bomb runs, the tankers would be vulnerable.

The KC-135 is a very large aircraft and is capable of carrying tremendous loads of fuel in bladders in the fuselage. Inside, it can be configured to carry troops and cargo. There are webbed seats along both sides and, up front, airline type seats can be installed. These are usually used by officers and VIPs. There is one lavatory up front (a must on long flights) and a galley with hot coffee and water. The cockpit is quite roomy with a crew of four and there is a jump seat for an observer. A stool is stowed and used by the navigator to stand on to install his sextant for his sightings. Aft, in the tail, is the "pit" or "boom pod" where the boom operator lays on a couch. He has his controls for the boom, instruments, and headphones with mike to communicate with the crew up forward or with the receiving aircraft. He has windows in front, on both sides and below him. He also has mirrors so that he can see what aircraft are alongside and above him. There is a couch on either side of him for trainees and observers. Vision is very good, especially for the boomer. The boom, once lowered, can be extended in and out and side to side. This enables the boomer to direct the nozzle into the receiver's open port and the system is flexible enough to allow an aircraft that is connected to move up and down and side to side to a certain degree with safety. If the boomer sees that the receiver may have a problem he can quickly withdraw the boom up and out of the way. The pilot of the receiver aircraft can get into a position that is somewhere near where he had to be and the boomer can direct the boom into the fuel receptacle opening in his aircraft. However, if the aircraft to be refueled is to be the Navy or Marine type of aircraft with a refueling probe, then the tanker must be fitted with a flexible hose with a basket on the end before leaving on the mission. With this system, the boomer cannot help the pilot of the receiver aircraft connect. The receiver must fly up to the basket and put the probe into it. All the boomer can do is jerk the boom up out of the way if the receiver looks like he may get too close or looks like he may suck the basket into the air scoop. I have seen both techniques and the Navy and Marine pilots seem to have a lot more difficulty during inflight refueling. In bad weather with heavy turbulence, the difficulty of the operation is multiplied appreciably.

On Saturday I was scheduled to go on a mission to refuel some Vought A-7s. The pilot, Major Mario Goico, is a Boeing engineer.

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The co-pilot, Major Jack Seltman, is Chief Engineer for Beech Aircraft. The Navigator, Major Wayne Parker, is a farmer. The boom operator, SSgt. Parker Groves, works in an ammunition plant. The boomer instructor on this flight, TSgt. Keith Fulton, is a full-timer with the 190th. All are highly qualified and experienced. Once we got to the refueling track we found that the A-7s had cancelled, but we soon had another customer. The tanker was able to locate "Looking Glass" and made arrangements to rendezvous for refueling. "Looking Glass" is the code name for SAC's airborne command post. It is an EC-135C and is aloft 24 hours a day. It flies randomly wherever it wants to go so no one knows for certain where it is, thus preventing it from being knocked out in case of hostilities when it would assume control of bombers and missiles if ground control were lost.

When being refueled, the ground controllers are not told that it is "Looking Glass" that is being refueled. Only the tanker knows the refueling point. There are three crews on board "Looking Glass," so that each can take an eight-hour shift. Flying such long hours is very tedious and boring so sometimes random, unscheduled refuelings are arranged. Today is one of them. These hookups with the tanker are for our own personal awareness and alertness training.

Before "Looking Glass" lands, another one takes off and "gets lost" so that there is always one in the air. This was a big ship, as big as our KC-135. As a matter of fact, it had a refueling boom on it. I suppose that is a disguise so it will look like a KC-135 instead of what it really is, or, it could be that it was a KC-135 originally and they just didn't take the boom off.

As it pulled up under us, the nose filled the view. It was just too big to get a good photograph of, even with a wide angle lens. It hooked up for a while, then backed off for a breather, and came in again. It did this several times, for it's difficult on both the pilot and the boom operator to transfer 20,000 lbs. of fuel on one hookup. When he was through, "Looking Glass" just dropped down and back and was gone.

On Sunday we had another mission scheduled. This time it was to refuel an AWACS (Airborne Warning and Control System) E-3A. The AWACS provides all-weather surveillance, command, control and communications needed by commanders of U.S. and NATO tactical and air defense forces. The rotating radar dome is 30 feet in diameter and six feet thick and is held 11 feet above the fuselage by two struts. It contains a new radar system that permits surveillance from the earth's surface up into the stratosphere. The radar has a range of more than 200 miles for low flying targets and even further for vehicles flying at high altitudes.

The pilot of our KC-135 today is Lt. Col. Charles Gebhardt. Col. Gebhardt is Senior Flight Test Pilot for Boeing Aircraft. He has qualified in 56 different types of aircraft and has tested such aircraft as the B-52, 747, the new KC-135R and many more. The copilot is 1st Lt. Kevin Prichard, a Boeing engineer. There are two navigators today, 1st Lt. Rick Deaton, who works for the Defense Mapping Agency, and Capt. Michael Happe, who is a corporate lawyer for Cessna Aircraft. This being a weekend, there are two evaluators on board. Capt. Happe is the navigator evaluator. The boom operator is TSgt. Ron May, a Goodyear employee. The evaluator on the boom is MSgt. Mike Pierson, a full-time Guard member of the 190th.

When you have people like this flying the missions it's no wonder that the 190th has won so many awards. The refueling of the AWACS was right on schedule. As it was the day before, this aircraft was too big to get a full shot of. I asked the boomer to request the AWACS pilot to fly off of our wingtip for a bit so I could get a good photograph of him but the pilot declined saying it was forbidden for safety reasons, but I did manage to get some good shots showing the huge radome as he came up on the boom. This track was over Nebraska and the patterns of the farmland below were beautiful. The circular irrigation farms were quite prominent among the square ones. After the E-3 got his full load of fuel he drifted down and back out of sight. The whole operation is quite spectacular to watch, especially when such a large aircraft is the

receiver. When you fly in a commercial airliner, you just don't get that close to another aircraft.

We didn't head straight back to base. This was also a navigation training flight so we headed southwest through part of Colorado and New Mexico and then back to Forbes.

When there is a mission for aircraft to be deployed overseas to Europe or the Middle East, etc., tankers always go along. The "Kansas Coyotes" are often called upon for such trips. They stay with the receiver aircraft all the way so that they can refuel as often as necessary, until they reach their destination. These trips take them away from their families and homes for several weeks at a time.

Other missions might be scheduled where a group of fighters are involved in a combat exercise. Tankers are also needed to refuel them. Without the tankers there would be no way to run these kinds of missions successfully. One such mission the 190th has been deployed on for several years running is called Sentry Wolverine (nicknamed "Wolverine Flag"), held at Selfridge ANG Base in Michigan. Sentry Wolverine is a large scale mock war game that tests the skills of fighter pilots from all over the country. More than 80 aircraft (and one U.S. Navy destroyer) representing the Air National Guard, Air Force Reserve, U.S. Air Force, U.S. Navy, U.S. Marines and the Canadian Air Force converge on Selfridge for this four-day drill. Twenty-two states are represented. The exercise is hosted by the 127 Tactical Fighter Wing and the 191 Fighter Interceptor Group. Lt. Col. "Wally" Wick, Commander of the 107th Tactical Fighter Squadron, directs the exercise.

Overseeing all missions flown over Michigan's lower peninsula is the AWACS E-3A and the Navy's E-2 Hawkeye. One of the functions of the AWACS is to expedite the tanker/fighter rendezvous. American and Canadian airspace reserved for military operations (MOA), primarily over Lake Huron, is used. Aircrews impersonate friendly and hostile forces and missions include air-to-air combat, air-to-ground and air-to-sea strikes. Electronic warfare equipment is used to deceive ground and airborne radar. More than 300 flights are scheduled and aircraft take off every 15 minutes. Bombing practice takes place at Grayling's bombing range, and to make it even more realistic, a "downed" pilot is rescued from the northern Michigan woods. This is definitely a very large exercise. In fact, it is the largest component forces exercise for a single base in the United States. Without tanker planes it couldn't take place.

The tankers flew two missions a day, one in the morning and one in the afternoon. Each flight was about three hours long. There was another KC-135 and a KC-10 from other units involved in the exercise and the AWACS directed the fighters to them because they were in a better position to handle the refueling of the fighters for the area than we were. The afternoon flight was much better though. During that flight and another we transferred fuel to F-4s, F-15s, F-16s, A-10s, A-7s and a C-141. We even had a T-33 from the 191st come up. No, he didn't want fuel. He had a TV cameraman from one of the local television stations in the back seat shooting pictures of us. Our orbit was partly over Lake Huron and over land which took us directly over Wurtsmith Air Force Base. The B-52s with their KC-135s could be seen parked in their revetments below. There is no activity from this base on weekends so we were no safety threat to them.

It was a real pleasure lying in the pit alongside the boomer, TSgt. Keith Fulton, watching him work. He's a real pro at getting the fighter in the right position and then deftly putting the boom into the receptacle. Keith loves his job. In fact, he gave up his civilian job to go with the 190th full time.

The ruddervators of the boom have the group's nickname, "Kansas Coyotes," painted on them, so the receiver knows that they have connected with the best tanker unit in the United States. The pilots I talked to told me that they were relieved to see that name facing them when they came up on the tanker, because they knew they would be able to get the fuel they needed and get it safely. And that evaluation is worth all the plaques and trophies the "Coyotes" win with such amazing regularity.