

# DOT News

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## The Lady is a Sailor

### Coast Guard Changes the Rules: Women Get Shipboard Assignments

America's colorful seafaring history will enter a new era this fall when four Coast Guard officers and 20 enlisted personnel become the first women to go to sea as regular crew members aboard an armed U.S. military vessel.

Altogether, there will be 12 women—two officers and 10 enlisted—each assigned to the 378-foot Coast Guard Cutters Morgenthau and Gallatin.

In announcing the historic change in policy at a meeting in June at DOT headquarters, Transportation Secretary Brock Adams introduced one officer and one enlisted woman from the first contingent.

They were Ensign Beverly G. Kelley of Miami and Petty Officer Third Class (Boatswain's Mate) Debra L. Wilson of San Jose, Calif. Both will report Oct. 3 for service aboard the cutter Morgenthau in San Francisco, which has as its primary mission patrol of the 200-mile fishing limit on the West Coast and in Alaskan waters.

Ensign Kelley has a mathematics degree from the University of Miami and has been serving as chief of the marine environmental protection branch at the Coast Guard's Marine Safety Office in Norfolk, Va.

Boatswain's Mate Wilson has been serving at the Coast Guard station at Fort Point in the San Francisco Bay area, where she has become expert in all phases of seamanship and often is in charge of a 44-foot motor lifeboat.

At the meeting, Secretary Adams also announced the names of the other women assigned to the Cutter Morgenthau. They are:

Ensign Debra G. Snelson, Frostburg, Md.; Yeoman Second Class Mary Cox, Riverside, Calif.; Radioman Second Class Terri L. Jones, Woodinville, Wash.; Radioman Second Class Marcia F. Levine, Toledo, O.; Storekeeper Second Class Donna L. Barger, Juneau, Alaska; Hospital Corpsman Third Class Bonnie E. Odom, Rome, Ga.; Seaman Wanda Jeffries, Baltimore, Md.; Seaman Valerie K. Lawrence, Norfolk, Va.; Seaman Apprentice Robin M. Jensen, Gaithersburg, Md.; and Seaman Apprentice Rebecca A. Post, Carmel, Calif.

The two officers assigned to the Gallatin, which is based at Governors Island, N.Y. are Ensign Terry I. Burton, Lahabra, Calif. and Ensign Susan G. Ingalls, Long Meadow, Maine.

The Coast Guard has issued a call for volunteers and the remaining enlisted women for the Gallatin will be selected during the summer.

The women will be taking part in the Coast Guard's mission that includes enforcing U.S. laws and international treaties, protection of American fishermen and U.S. fishing rights, saving lives, fighting pollution, making the waterways safe, gathering oceanographic data and maintaining military readiness to operate with the Navy in national emergencies.



Transportation Secretary Brock Adams describes technical highlights of an experimental car presented by Volkswagen to DOT for test purposes. The symbolic transfer of title took place in late June in the courtyard of DOT headquarters. Seated are: Ambassador Berndt von Staden of the German Federal Republic; Dr. Wolfgang Lincke, chief of Volkswagen's research and development program; and National Highway Traffic Safety Administrator Joan Claybrook.

## DOT to Study VW Experimental Car

DOT employees got a look into the automotive future when Transportation Secretary Brock Adams recently accepted an experimental car with approximately twice the fuel economy set for U.S. cars in the mid-1980s.

Dr. Wolfgang Lincke, chief of Volkswagen's research and development, delivered the car to Secretary Adams in late June in the courtyard of DOT headquarters.

The car is a diesel-powered Volkswagen capable of delivering approximately 60 miles per gallon in combined city/highway driving.

In the week following the June 28 acceptance of the car, Secretary Adams put the little vehicle through its paces, testing its fuel economy and road handling safety features.

Accenting the presentation of the car was Secretary Adams' dual announcements that week setting an average fuel economy standard of 27 miles per gallon for passenger cars in 1984, and mandating passive restraints for passenger cars beginning in the 1982 model year.

In accepting the car, which bears a strong resemblance to a VW Rabbit, Secretary Adams said "It shows the technology exists to go far beyond what the government has set as standards for mass-produced automobiles."

He noted that the car was an experimental vehicle, short on accessory options but "loaded" with fuel-saving, life-saving and emission reduction features.

Ambassador Berndt von Staden of the German Federal Republic participated in the ceremony.

### Safety Features

The experimental VW is designed to protect its occupants in a 40 mph frontal crash. It weighs just over 2,000 pounds and is equipped with a passive safety belt system which automatically fits into place around passengers when the car doors are closed.

Powered by a 4-cylinder turbocharged diesel engine, it can accelerate from 0 to 60 mph in less than 15 seconds.

Average fuel economy, using Environmental Protection Agency testing procedures for combined city, highway travel, is expected to be about 60 miles per gallon.

The vehicle's hydrocarbon, carbon monoxide and nitrous oxide emissions are all within EPA standards.

DOT's National Highway Traffic Safety Administration will test the car to evaluate fuel consumption and emission levels.

DOT is paying \$45,000 for the test vehicle, but VW's investment in the car is in excess of \$500,000.



Ensign Beverly G. Kelley (left) based in Norfolk, Va., and BM3 Debra L. Wilson, stationed at Fort Point in the San Francisco area, are two of 24 women who will go to sea this fall as crew members aboard Coast Guard Cutters. Kelley comes from a nautical family, her father being a licensed sea captain, and her mother, a first mate. Wilson recently played a major role in the sea rescue of 44 persons, a feat which won an official commendation for her unit.



National Safety Sheriff Joe Higgins, left, recently received the "Award for Public Service" from the DOT's National Highway Traffic Safety Administration. Presenting the award is Lt. Gen. Benjamin O. Davis, Jr., USAF (Ret), Transportation Secretary Brock Adams' special assistant for support of the national 55 mph speed program. The NHTSA award citation read: "In recognition of and appreciation for his extraordinary personal contribution to the cause of highway and motor vehicle safety."

## USCG Studies New Loran-C Roles

# Ship Navigation System Finds Land Uses

By Howard C. Coan

A sophisticated Coast Guard navigation system that gives precise locations on land or at sea eventually may be as popular as the citizen band radio.

A \$2,000 receiver which is the size of a table radio is required to use the Coast Guard's Loran-C system, but the price is expected to drop to \$500 in the next year or two and may get as low as \$200 within a few years.

The use of microcomponents has helped to lower the price from \$20,000 only seven years ago and make it as easy to operate as turning on the radio. With further introduction of small circuitry, the receiver may shrink to pocket calculator size.

To find his location, an operator just looks at the two digital numbers on the receiver then finds where those numbers intersect on a map.

Ocean-going ships, barges and an increasing number of pleasure boats are using Loran-C. In the near future, Loran-C receivers may be in trucks, airplanes, private autos and other vehicles, with the Department of Transportation having strongly influenced its introduction on land.

Drivers and pilots could know their exact locations and, in case of accidents or breakdown, send out Loran-C coordinates on the CBs or radios. Hikers, especially those going into remote areas, could carry along a Loran-C receiver.

Loran is an abbreviation for long range navigation with the Loran-C an improved version of Loran-A that was used for 30 years. Since it operates on a low frequency, Loran-C signals travel well on land and they are far less susceptible to interference at night.

Loran-C signals extend out 1,500 miles and give a position accurate to better than one-quarter of a mile. When the receiver is used to guide someone to a point with known Loran-C coordinates, it can be accurate to within 50 feet.

Loran-C measures the slight differences in time needed for signals to travel from two or more Loran-C stations to the receiver. This is translated into the two numbers on the receiver that are used to plot an exact location. A Loran-C receiver also can be adjusted to give the more familiar latitude and longitude readings.

DOT in 1974 designated Loran-C as the radio navigation system for the U.S. coastal zone. The West Coast and most of the East Coast already are covered by the growing chain of Loran-C stations.

The Washington, D.C. area has received Loran-C signals since the early 1960's.

Further Loran-C expansion occurred in June on the Canadian West Coast and the Gulf of Alaska and next year the Gulf of Mexico and the northern part of the East Coast will be included in the system.

When a Loran-C station opens in International Falls, Minn., in 1980, giving exact navigational information to vessels on the Great Lakes for the first time, the system then will cover two-thirds of the U.S. land area inhabited by nine of every 10 Americans.

For more than a year, DOT has studied the land applications of Loran-C. Coast Guard Capt. William Mohin is the project officer, attached to OST's Office of Systems Development and Technology. An energetic advocate of Loran-C, he believes in a few years the receiver will be as common to American vehicles as the CB radio.

"There are overwhelming benefits for people on land," Mohin says. "They are getting side benefits from a cost committed to improving navigation for ships."

Mohin has worked on the Loran-C program for the past 10 years, including three years as manager of the Coast Guard's European Loran-C chain.

His duties include finding possible land uses for Loran-C and the benefits of building Loran-C stations in the Plains States to complete the system. He says it would cost \$23 million to finish coverage of landlocked areas by constructing stations in Montana, Colorado and Texas.

Loran-C will be used by such diverse groups as law enforcement authorities, ambulance drivers and highway department officials, Mohin believes.

During the next few years, DOT will sponsor and take active part in Loran-C demonstration projects to track vehicles, find exact locations and improve air navigation.

In August the department will fund a project to be conducted in DOT Headquarters. A vehicle equipped with Loran-C will be parked in the Nassif Building's basement and travel around the city. Tracking will be done from a TV monitor on the ninth floor.

During the summer the National Highway Traffic Safety Administration will sponsor a test of automatic tracking of ambulances, using Loran-C, in northeast Philadelphia.

The dispatcher will sit in front of a TV monitor and



watch the ambulances as they move around the city. When an emergency occurs, he will know which ambulance is closest and can direct it to the scene.

The Federal Aviation Administration has bought several Loran-C airborne navigation sets for evaluation. Loran-C would be especially useful at low altitudes and in mountainous areas by giving pilots additional navigation aid.

Starting late this year, officials of OST, the Federal Highway Administration and the National Highway Traffic Safety Administration will work with a yet-unnamed state on a three-year contract to demonstrate the transportation benefits of Loran-C.

Within one county of that state, containing a medium-sized city and rural areas, Loran-C will be used to track police cars, ambulances, and fire trucks, record accidents and make highway inventories.

In rural areas the census taker can know exactly where a house is located, instead of just recording an address.

The Interior Department can compile inventories of water and land areas from helicopters by taking a photo with Loran-C coordinates in the center, then flying around the perimeter and tracking it with Loran-C.

Mohin says, "I have dealt with all government agencies except Housing and Urban Development, and Health, Education and Welfare and many state and local governments, including Kentucky, Tennessee, New York, California and Nevada."

As a result, at least 10 states have shown an active interest and are following Loran-C developments closely.

The Tennessee Department of Transportation and the Gov-

(See LORAN-C, p. 4)

## Reconstructs Flight Path

# FAA Has New Radar Air Search Technique

A 17-year-old pilot who crashed in a remote mountain pass near Lake Tahoe, Calif., this March, owes his life to a new aircraft locating technique developed by the FAA which reconstructs a plane's flight path to pinpoint where the missing aircraft disappeared from the radar scope.

Until they were corrected, rescuers using traditional search procedures were concentrating their efforts on an area some 35 miles from where the plane actually went down. With the refined information made available by FAA's new system, the searchers zeroed in on the actual location and rescued the pilot before a heavy snowstorm moved into the area.

The new procedure is a by-product from FAA's computerized air traffic control radar system. The technique utilizes a computer program that originally was developed to detect

possible malfunctions during testing of the new computerized air traffic control system.

This system provides FAA controllers with direct radar readout of such vital flight information as aircraft identity and altitude. Two years ago, controllers and technicians at FAA's Denver Air Route Traffic Control Center theorized that it could also be used to locate downed aircraft and they worked out the procedures with the Air Force Rescue Coordination Center at Scott AFB, Ill.

The radar data on aircraft targets is recorded on tape and retrieved for analysis in the form of a computer print-out.

Since the technique was introduced in 1975, the number of aircraft located through its use has increased steadily from two that year to 14 in 1976, and to 15 through the first four months of 1977.

At the present time, the procedure requires a great deal of skill and specialized training, but the FAA is developing a new computer program that will simplify the task.

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Secretary of Transportation \_\_\_\_\_ Brock Adams  
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Wilfred E. Johnson, Jr., affectionately known to pilots and controllers everywhere as "Radar Willie," was recently honored by the City of Chicago for being the only air traffic controller to have continuously controlled aircraft in and out of Chicago O'Hare International Airport for 20 years. It is estimated that Johnson has controlled over one million aircraft during his 20 years at O'Hare. Chicago Mayor Michael A. Bilandie, right, presents the city's Certificate of Merit to Johnson while Johnson's wife, Linda, shares the honor.

# "Sidewinder" Is a Home-Built Pipe Pieper Plane That Flies Two

Did you ever hear of a Smyth *Sidewinder*?

Well, it's an airplane and Wilfred R. Pieper, chief of the international secretariat in OST, is building one in his garage in Alexandria, Va.

He's been at it since April 1974 and he expects to begin test flying it at Manassas Airport early this fall.

"A Pieper-built plane is not to be confused with a Piper aircraft," quips "Pipe" Pieper, referring to one of the nation's foremost companies manufacturing general aviation planes.

The *Sidewinder* has a 24-foot wingspan, a length of 19 feet and has a dry weight of 900 pounds. It will carry two people, side-by-side, and has dual controls. Aft of the seats is a 36" x 22" well which will accommodate 90 pounds of baggage. A teardrop plexiglass slide-back canopy encloses the cockpit.

"I modified the specs by installing a 150 h.p. Lycoming engine instead of the 125 h.p. engine called for in the original plans," Pieper says. He also discarded the original fixed-pitch propeller, substituting instead a Hartzel constant speed propeller. He expects the combination to give him a cruise speed of 165 m.p.h., about 20 m.p.h. faster than the plane's designer anticipated.

The engine's oil system was also redone, changing it from a wet to a dry sump system, a modification necessary to permit the plane to be used for limited aerobatics.

Also modified is the position of the engine power quadrant—throttle, mixture and propeller controls—to the left side of the cockpit, as it is in military aircraft. The change is appropriate. It is the place where Colonel Pieper, U.S. Air Force (Ret.), a veteran of 26 years of military flying, is accustomed to reaching for his engine controls.

During his career, which began in 1942, Pieper flew in China and Burma in World War II, and in the Korean conflict. In the process he acquired more than 4,000 flying hours, most of them in jet aircraft. Starting with the P-80 *Shooting Star*, the first jet to be issued in quantity by the Air Force, Pieper has flown most of the Air Force's single-engine jet fighters.



Above: Every component of Pieper's plane has been cut, fitted and assembled by him. Below: Perforated metal plate is a speed brake, just like those on fighter planes.



The Federal Aviation Administration regulations governing construction of home-built aircraft are strict but reasonable, with the basic requirement being that at least 51 percent of the plane be fabricated and assembled by the builder. Commercially manufactured parts include propellers,



Early on, Pieper built a scale model of his plane, experimenting with various color schemes to evolve the present design.

the first being a go-cart for his son, and the others being racing cars. The line of "Pieper cars" began 17 years ago in the same garage in which the *Sidewinder* is now being built.

Pieper's son, Steve, now 29 and the president and general manager of Heishman BMW in Arlington, was his chief assistant. As the skill of Pieper & Son improved, so did the cars, from drag racers to road racers to Formula 5000 cars, sometimes called Indianapolis-type cars.

Steve's driving skill grew with the power and quality of the cars. In time he found himself in competition with the likes of Mario Andretti, Mark Donaghue, Bobby Unser and David Hobbs. Steve raced at Daytona, Sebring, Watkins Glen and the Nurburg Ring in Adenau, Germany, to name some places. Before he hung up his driving gloves, Steve participated in scores of races, on many U.S. and foreign tracks, and won more than his share of purses and trophies.

After 15 years of car building Pipe Pieper's shop was idle, but not for long. A half-formed notion that had been ignored for years began to take full shape in Pipe's mind—he would build an airplane.

"The idea had been in my mind for about 20 years," Pieper says. "When I left the Air Force I knew I wanted to continue flying but I realized that I couldn't afford the kind of plane I wanted."

What he wanted was a compact, high-performance craft with limited aerobatic capability.

The search narrowed to three and the Smith *Sidewinder* was chosen. The initial outlay of \$125 for plans and technical data was only the beginning of the cash outlay. Pieper estimates that he has already spent about \$4,000 on the plane—but he eventually will have an aircraft worth \$15,000, plus the satisfaction of having made it himself.

His wife of 34 years, Lois, is a woman of infinite patience, he says. Not only has she put up with a machinery filled basement and a garage preempted by cars and now a plane, she is also the hostess of the *Sidewinder's* wings which have occupied her glassed-in porch for the past 12 months.

She has also participated in the projects, making the upholstery for the cars and the plane. A woman of considerable accomplishment in her own right, she is supervisor of the home economics department at Mt. Vernon High School.



Above: Hanging the engine is a major milestone for amateur aircraft builders. Engine and propeller are second-hand. Left: The instrument panel will be unusually complete, containing some instruments usually found only in planes intended for all weather flight.

lers, engines, wheels, brake assemblies, instruments, communications equipment, etc.

Pipe Pieper is well within the rules. His airplane started out as steel tubing and steel rod stock, sheet and extruded aluminum, wire, cloth for upholstery and miscellaneous bits and pieces.

The steel airframe is welded with professional skill and the sheet metal skin fits with flawless precision, joined to the substructure with flush riveting smooth to the touch.

The metal working skills displayed by Pieper's handiwork came the hard way, the product of having built eight "cars",

## Speed Limit is Major Factor In Highway Death Toll Decline

The figures are in and there is no question about it—the national 55 mph speed limit established in 1973 has resulted in a substantial reduction of the fatality rate on the nation's highways.

The full story is told in "Safety Aspects of the National 55 mph Speed Limit," a study commissioned by the Federal Highway Administration and carried out by Pennsylvania State University.

The study reflects nationwide data on the various highway systems and a representative sample of 17 states during 1974.

The report indicated that fatality rates under the 55 mph speed limit decreased most on highways where speed limits changed the most, particularly the interstate highway system.

However, injury rates are not generally below expected rates based on past trends, except that the interstate highway system did show a large decrease.

Other matters analyzed in the report included pedestrian fatalities, time of day and day of week for fatal accidents, type of vehicle in fatal accidents, and the relationship between economic indicators and traffic safety.

## USCG's Flying Electronic Eye Discover Seagoing Polluters

The Coast Guard now has in operation a sophisticated sensor system that detects illegal discharge of oil in nearly all types of weather, day or night.

Installed aboard a Coast Guard C-130, the Airborne Oil Surveillance System (AOSS) combines four sensors to spot pollution violators and provide evidence toward their prosecution.

The sensors include a side-looking radar and a passive microwave imager to locate and map oil spills within a 25-mile swath along the aircraft's path.

A computer controlled console aboard the aircraft integrates

the sensors with position reference system. This arrangement permits the equipment operator to view and interpret the sensor data as it is received and to make immediate enforcement decisions when a violation is detected.

The AOSS is particularly effective in detecting a major source of ship-generated pollution, that is, indiscriminate bilge and ballast pumping and tank washing operations.

The AOSS will also be used to assist the Coast Guard in other missions including fisheries surveillance, search and rescue and ice patrol operations.



Robert F. Bundy, an electronics engineer at FAA's National Aviation Facilities Experimental Center (NAFEC), N.J., is one of 24 inventors in the nation honored in Philadelphia for contributing to the nation's technology since 1856. Bundy was cited for developing an X-ray scanning system used to examine airline luggage. He did this while working at DOT's Transportation Systems Center, Cambridge, Mass. He came to NAFEC last August.

### LORAN-C—*from page 2*

ernor's Highway Safety Office have purchased 13 Loran-C receivers for installation in the police cars of two counties and in highway department vehicles used to take inventory. Two Tennessee counties will start rendezvous experiments this

summer between police cars and helicopters equipped with Loran-C, a technique used successfully during the Vietnam War.

The U.S. Department of Agriculture and the U.S. Forest Service have purchased Loran-C receivers to evaluate its po-

## Hubbard, Munroe Named to Key NAFEC Jobs

Robert M. Hubbard has been appointed chief of the instruments and flight test branch at FAA's National Aviation Facilities Experimental Center (NAFEC), and Frank D. Munroe has been named the Center's executive officer.

NAFEC, located just outside Atlantic City, N.J., is the largest research and development facility in DOT.

Munroe becomes the third highest official at NAFEC and will be responsible for supervising seven of the installation's 14 divisions: personnel, accounting, budget, logistics, auditing, management systems and security.

Munroe came to the test center in August, 1975, from the executive staff of FAA's office of systems engineering and management in Washington. He had been executive officer of FAA's systems research and development service.

Munroe's current tour at the center is his second. He was

NAFEC's personnel officer from 1958-1962. Subsequently, he was named chief of the personnel and training division of FAA's Southwest Regional Office, Fort Worth, Texas.

Hubbard is in charge of test programs for investigating hazards and achieving maximum safety in aircraft design and operations.

He worked for the past seven years at the Transportation Systems Center (TSC), Cambridge, Mass., where he was in charge of developing computer systems used in controlling ground transportation. Earlier, he had been chief of the pilot data project office and worked on FAA projects involving cockpit-related instrumentation.

Hubbard is a former Air Force pilot and at one time was stationed at Hanscomb AFB, Mass., working on engineering projects. He received his B.S. in mathematics from the University of Kansas and B.S. in aeronautical engineering from the University of Colorado.



Robert M. Hubbard



Frank D. Munroe

## Guillen is New FRA Regional Executive

Trinidad Guillen has been appointed regional administrator of the Federal Railroad Administration's Southern and Southwest Regions. He will supervise railroad operations in New Mexico, Oklahoma, Arkansas, Louisiana and Texas, from headquarters in Fort Worth.

As regional administrator, Guillen represents the rail agency in dealing with the public; the railroad industry; federal, state and local governments; and other special interest groups.

Guillen comes to the federal service after 25 years of successively more responsible positions in the railroad industry. His most recent assignment for the Southern Pacific Transportation Co. was assistant to the vice-

president. In that capacity he administered a multi-million dollar budget and supervised more than 3,000 employees.

His railroad career began in 1951, when he started as a carman for the Southern Pacific. He moved to the Atchison, Topeka and Santa Fe Railroad in 1960 as a car inspector. After five years, he returned to the Southern Pacific and was promoted to district supervisor and, later, manager.

As an Association of American Railroads supervisor for the Southern Pacific in 1970, he spent the year touring the major railroad facilities of the U.S., Canada and Mexico discussing railroad freight car safety issues. His fluent Spanish has



Trinidad Guillen

been a major asset in the liaison with Mexican railroad officials.

Guillen, 44, was born in El Paso and served in the Air Force. In 1965, he received a B.S. in economics and business administration from the University of Texas at El Paso.

## Winston-Salem Tower Chief is a Woman

Being a woman didn't interfere with moving upward in her career, says Mary Ellen Kraus, who recently took over as chief of the air traffic control tower at Winston-Salem, N.C. airport.

"It took some time to gain the respect of my fellow controllers, but once I proved myself a good controller, I had their support and I was part of the team," she says.

Ms. Kraus joined the FAA

in 1971, after several years as a Navy air traffic controller at the Jacksonville Naval Air Station. Her first FAA job was as a VFR controller in the Gainesville, Fla., tower.

From there she transferred to Orlando's Herndon Airport and subsequently to Jacksonville International Airport where she was a radar controller.

In all, the FAA employs 1,186 women air traffic controllers.



continuous Loran-C tracking. Money and fuel could be saved and productivity increased.

Highly-valued or dangerous cargoes and even trains can be tracked. A train dispatcher can do a more efficient job if he knows exactly where the trains are at all times.

Mohin adds, "Loran-C has the potential to change a great many things in the United States. It's like a TV signal in the air and it can't be overloaded."

If Loran-C ever does achieve CB radio-type popularity, remember DOT started it all.