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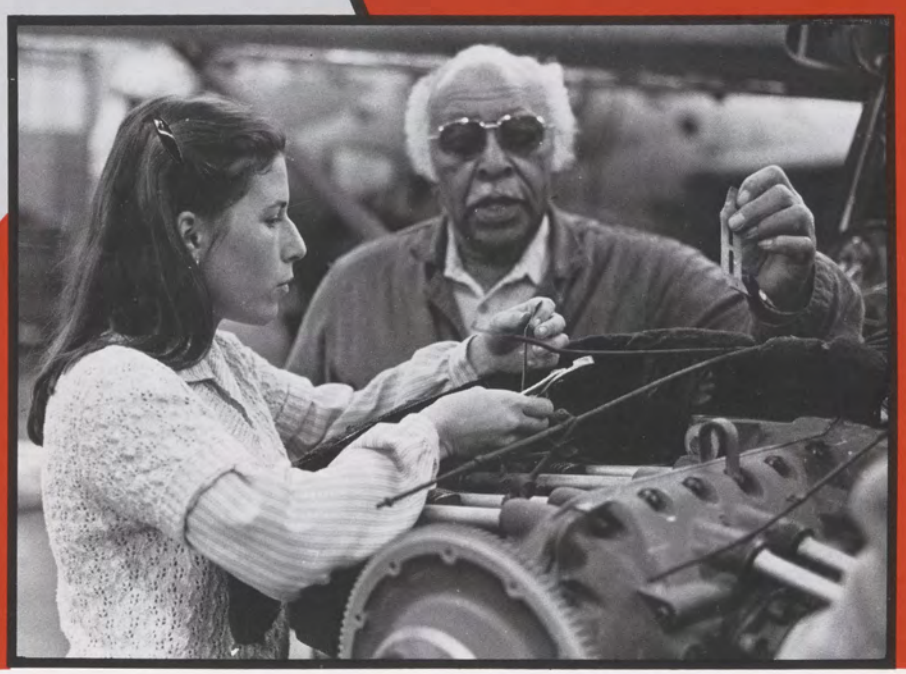

Airway Science Program: Leadership for Tomorrow

U.S. Department of Transportation
Federal Aviation Administration

By Frank Clifford
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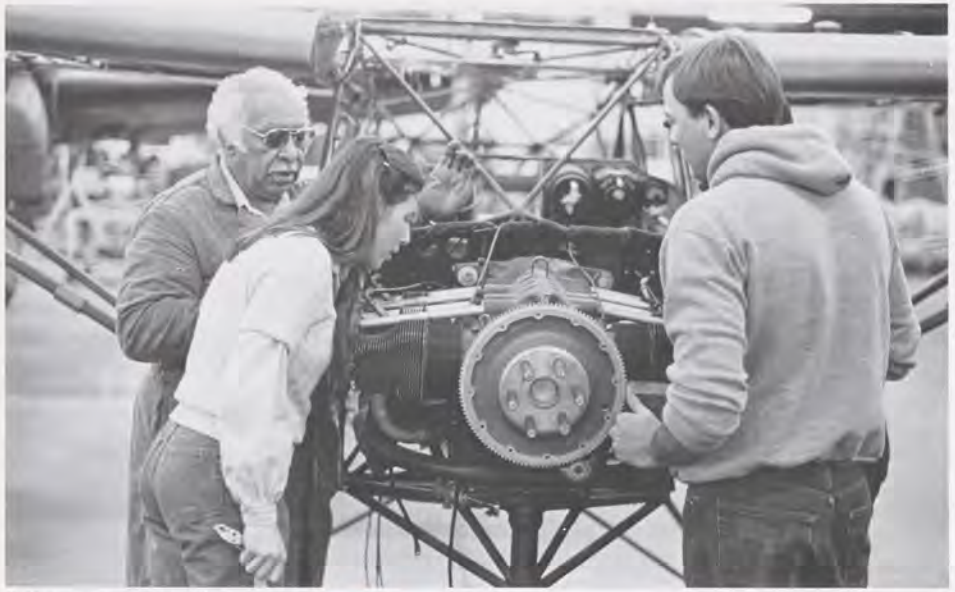
The Degree's the Thing

Airway Science Program To Help Supply Technical Leadership



A 30-year veteran of aircraft maintenance, William H. Rhodes checks students' work at the University of the District of Columbia's hangar at Washington National Airport. At present, UDC offers a two-year associate degree in aviation maintenance technology and is awaiting approval to establish a four-year bachelor's program in airway science.

Photo by Dennis Hughes

While the Federal Aviation Administration moves right along toward its planned 1998 completion of the National Airspace System (NAS), it is also pursuing a parallel program that will help provide the technical expertise to staff the system.

The program—Airway Science—is as up to date as the training environment is traditional: blackboards, term papers, final exams and ivy-covered walls. The course content, from core curriculum to electives, is perfectly in keeping with the 21st Century system and the agency it is intended to serve.

Simply stated, the Airway Science Program is intended to provide the NAS and FAA with a dependable source of people who not only are competent technically but who also have the academic foundation for leadership jobs.

"The idea is not new. It was something that had simmered for years on our back burner," says Wanda Reyna, manager of the agency's Special Emphasis Personnel Programs Staff, which has direct responsibility for the program. "But it took the air traffic controllers' strike in August 1981 to turn 'someday' into 'today'."

"Today" dawned in early January 1982, when the FAA sent a mailing to more than 400 universities inquiring into their interest in "establishing a stronger linkage between FAA career fields and the academic community." What was sought was not another trade school program—the aviation industry has an abundance of these—but a broad-based program of studies that would lead to a bachelor's degree.

The replies were prompt and encouraging. More than 150 colleges responded, and the airway science concept was on its way to reality. Administrator Helms tapped David A. Carmichael, then in Washington on an executive development program and now manager of administrative programs at the Aeronautical Center, to head a planning group. His instructions were brief and to the point: Develop a rigorous academic core curriculum that would provide the FAA and aviation community with a well-balanced combination of skilled technicians with management potential. To put it another way, we wanted people-oriented technicians.

He did not have far to go to assemble a team. He picked Donald B. Rock—then director of the Office of Personnel and Training and now special assistant to Charles E. Weithoner, Associate Administrator for Human Resources Management; Dr. James O. Boone, a psychologist from the Civil Aeromedical Institute; Judy Branting, an employee development specialist; and Michael Hill, a supervisory staffing specialist.

But this was only half of the equation. Needed also was a facile entry into the academic community. An easy choice for the task was Gary W. Kiteley, executive director of the University Aviation Association, a professional society involved in the academic world. He was joined by John D. Odegard, dean of the Center for Aerospace Sciences at the University of North Dakota. As it turned out, the University of North Dakota was the first institution to offer a degree program in airway science.

The FAA worked with the colleges and the University Aviation Association to create a bachelor's program that would be a modern and effective mixture of academic and technical studies that would satisfy all three parties.

Setting up the Airway Science Program also called for establishing a separate, non-competitive register—

Embry-Riddle Aeronautical University, Bunnell, Fla., has developed and is beginning an Airway Science Program in the spring semester of 1985.

At a Link Trainer monitoring console, Embry-Riddle instructors watch trainer cockpit panels and a dial showing course headings during IFR training. Through a communications hookup, they can act in the role of air traffic controllers.

Gerry Verner (right), assistant professor of aviation technologies at Southern Illinois University at Carbondale, and aviation student Larry Grant remove a propeller spinner prior to servicing.

SIU staff photo

Gene Ripple (left), director of the Kent State University Airport in Kent, Ohio, shows Great Lakes Region Director Paul Bohr and Keith Burt, manager of the Human Resource Division, through its facilities for the Airway Science Program.

UDC students of maintenance technology make adjustments on an aircraft engine.
Photo by Dennis Hughes

one apart from the regular civil service competitive register. In addition to being placed on the non-competitive list, airway science graduates would receive extra points on the strength of their degrees. The Office of Personnel Management (OPM), however, objected to what it considered a sidestepping maneuver to avoid long-established procedures to assure a quality, qualified career civil service.

FAA's position was that the program provided it with an opportunity to set aside some of the bureaucratic obstacles to staffing any large organization, whether government or private enterprise.

The legal mechanism for putting the proposal into effect was already in place: the Civil Service Reform Act of 1978, which authorized OPM to conduct demonstration programs that experimented with new and different personnel management concepts under controlled conditions.

The FAA's proposed demonstration project made its way with lively pro and con comment through the bureaucratic maze to win OPM approval in July 1983. Students entered the program in September and by May 1984, some 50 students had earned Bachelor of Science degrees in Airway Science. Eleven are now working for the FAA. An entirely new major had made its appearance in college catalogs.

There are now 24 participating colleges in the program. The largest number—11—are in the Southern Region. Next is the Great Lakes Region with four. All of the other regions have at least one, except Alaska. Awaiting approval are 14 schools, including the University of the District of Columbia in Washington, D.C.

Offshore, the Interamerican University of Puerto Rico has an approved program, and the International Institute of the Americas of the World University, also in Puerto Rico, is awaiting certification.

FAA Administrator Donald D. Engen is solidly behind the airway science concept. In an agency booklet describing the program, he says a career in aviation "demands of its workers technical excellence, the ability to think, to innovate, to communicate and to appreciate human values.

"We believe these people will most likely emanate from collegiate aviation education, particularly the Airway Science Program, with its blend of hard science, management, humanities and specialty education."

The core curriculum worked out is rigorous enough to command the respect of anyone in the academic community. Required are courses in algebra, trigonometry, calculus, physics, geography and chemistry, as well as computer science and principles of management, organizational behavior and techniques of supervision. Under general studies, students take courses in English composition, technical writing, economics, government, psychology, humanities, history and speech.

Of course, aviation itself is part of the core. Students can choose between an introduction to aeronautics or private pilot certification. Required courses include aviation legislation, flight safety, air traffic control and the National Airspace System.

In addition to the above, candidates for a bachelor's degree in airway science have five career specialization options, each with 40 hours of study: airway science management, airway computer science, aircraft systems management, airway electronic systems and aviation maintenance management. The five options not only have direct FAA application but also are the heart of the civil aviation industry.

Does a degree in airway science guarantee a job with the FAA? No such assurance is possible. However, the agency has declared a policy that is the next best thing: For the next several years, the FAA will help to support airway science education by hiring up to 500 qualified graduates each year. The entry grade is GS-7.

Southern Illinois University student Steve Hawkins checks the routing of control cables in an aircraft's tail section.
SIU staff photo

Such a set-aside does not shut the door to FAA employment of applicants lacking the airway science credentials. The demonstration program recognizes the variety of sources producing aviation expertise. Indeed, the program uses an acronym—KSAO—to describe people joining the agency with the same *knowledge, skills, abilities* and *other* characteristics as those attained by graduates of an airway science program.

Mary L. Terpening, for example, is a KSAO-qualified person hired under the Airway Science Program. She joined the FAA in May 1984 and is now an aviation safety inspector at the Miami, Fla., Flight Standards District Office. Older than the typical airway science hire, she took a degree in finance at the University of Illinois in 1963.

Since then, however, she has acquired more than 5,500 hours in a variety of aircraft, having ratings in single- and multi-engine aircraft, land and sea. She is a rated flight engineer and a ground and flight instructor. She claims to have been the first woman air transport pilot in the U.S., flying for Continental Airlines.

Raymond L. Beauchemin, hired by the FAA last September under the program, is another KSAO. He earned his degree in marine resources development from the University of Rhode Island in 1978. He is an electronics technician at the Boston Airway Facilities Sector.

A private pilot since 1971, he began to accumulate his aeronautical qualifications while serving as an internal communications technician aboard a Polaris submarine. He added civilian and military technical school training. As a change of pace from his FAA duties, Beauchemin is an airborne electronics technician in a Navy reserve squadron, ironically, flying anti-submarine patrols.

More typical of the people who have joined the FAA under the Airway Science Program is John H. Thiem, who earned his degree from the University of North Dakota in 1983. He is now an operations inspector at the Minneapolis, Minn., General Aviation District Office. Thiem is a commercial pilot with single- and multi-engine ratings and is a flight instructor in these categories.

A final example is Gerard F. Bolduc, who earned a B.S. in electrical engineering from the University of Maine in May 1984 and joined the FAA at the end of the year. Hired as an electronics technician at the Bangor, Maine, Airway Facilities Sector, Bolduc is now taking additional courses in electronics at the FAA Academy. Like Beauchemin, he is a "weekend warrior," flying in KC-135s as navigator.

Applicants to the Airway Science Program should note that "the FAA does not grant scholarships in airway science," according to Cecelia English, who has the day-to-day management responsibility for the program in the Special Emphasis Personnel Program Staff. "However, we have had discusssions with aviation professional societies on their contemplated sponsorship of scholarships."

Prominent in the talks is the National Coalition of Black FAA Employees. The Air Traffic Control Association already has a scholarship program.

And it's logical that there should be such resources, for the program itself is a resource to be mined not only by FAA and the aviation industry but also by the brightest and the best who want to move ahead. ■

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