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FORUM

EDUCATIONAL OPPORTUNITIES IN AVIATION EDUCATION

James E. Crehan
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Editor's Note: This speech was given at the fifth annual General Aviation Forecast Conference on March 17, 1995, in Phoenix, Ariz.

This speech presents a synopsis of the ability of the University Aviation Association (UAA) to provide aviation education for students preparing for entry-level positions in the aviation industry. The aviation education environment presently provides education experiences for more than 41,000 students interested in careers in general aviation and in commercial aviation. As change occurs in the aviation industry, specifically in general aviation, we must be mindful of the affect of this change on the educational system and its ability to respond to change. The need for partnerships and cooperative efforts between government, the aviation industry, and educational institutions of higher learning is highlighted. The capabilities of the aviation education system are discussed in light of the forecast needs of the aviation industry, with the goal of maintaining the present high quality of education and the present levels of safety in the aviation industry.

INTRODUCTION

I would like to thank the Federal Aviation Administration (FAA) for the opportunity to speak to this Forecast Conference. As we attempt to evaluate the future of general aviation in the United States for the next decade, we should keep in mind that the aviation education system in force at the college and university levels is designed to operate in concert with government and industry to provide career workers who have the qualifications to lead the aviation industry. We have been exposed to data that are used to indicate that the future for general aviation is either bleak or rosy, depending on who interpreted the data and the specific agenda behind the prognostication. We hear a great deal of discussion on a revitalization of the general aviation industry. This revitalization depends on several factors over which little or no control is exercised by the users of the industry, factors such as the economy of the United States and the world, and the predicted affect of the General Aviation Revitalization Act of 1994. Reasons do exist for optimism on the ability of general aviation to react successfully to

the challenges it is facing in today's austere environment. A bright spot in the revitalization formula comes from the continuing ability of America's colleges and universities to provide highly qualified, energetic graduates of aviation programs to fill the career needs of industry and government.

I am here on behalf of the UAA, an organization representing 110 colleges and universities in the United States that offer associate and/or baccalaureate degrees in aviation-oriented programs. The UAA was founded in 1947 to represent the non-engineering element of higher education, providing degree programs in aviation education. The organization is now more than 600 strong, with members from academia, the aviation industry, and government.

EDUCATION PROGRAMS

In 1989, the UAA saw a need to standardize the level of aviation education and, as a result, founded the Council on Aviation Accreditation (CAA). The CAA accredits collegiate aviation programs that provide aviation professionals for the industry. The CAA defines

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an aviation professional as "one who employs a common body of knowledge gained by study, experience, and practice and applies it with imagination, intuition, judgment, competence, reason, ethics, integrity, and responsibility to the design, management, and operation of the safe and efficient national and international aviation and aerospace systems for the benefit of mankind." It is the lofty but desirable goal of the UAA to provide the aviation industry with graduates fitting this definition. Today, 20 academic programs are accredited by the CAA at nine U.S. institutions.

Collegiate programs are housed at baccalaureate and associate degree-granting institutions. These programs range from associate degree programs taking two to three years to complete, with 60-70 semester hours of course work, to baccalaureate degree programs taking four to five years to complete, with 120-140 semester hours of course work. The degrees cover flight, maintenance, and avionics specialities. These degrees are designed to prepare graduates for entry-level positions leading to careers in aviation. The programs are diverse, depending on the philosophies of the individual institutions offering them. One program is very comprehensive, emphasizing exclusively aeronautical offerings. The majority of programs include broadened flight curricula that far exceed FAA requirements for flight certificates and ratings. Some programs offer internships at the undergraduate and postgraduate levels to provide experiences in the aviation industry, in advanced flight environments, and in management positions. The result of such internship opportunities is a graduate with specific skills, advanced training, strong communication skills, and adaptability to the work place. Mutual cooperation between industry and institutions is required to provide quality experiences.

INSTITUTIONAL CAPABILITIES

The UAA recently conducted a Collegiate Aviation Survey of institutions of higher education to determine the number of institutions that offer programs in aviation. A preliminary survey was sent to 632 institutions, resulting in responses from 218 institutions with aviation programs. Of this number, 181 institutions offer a degree in aviation. We then followed up with a survey to 205 institutions offering aviation programs to

determine the characteristics of those institutions and the number of students in specific degree programs. The survey results indicated that of 205 institutions with aviation programs, 93 were baccalaureate degree-granting institutions and 112 were associate degree-granting institutions. Fifty-three of those institutions reporting to date have received formal recognition of their programs through the FAA's Airway Science Program.

These 205 institutions reported a total enrollment of more than 41,000 students. Of this total, more than 16,000 students were pursuing programs in flight education, more than 10,000 students were pursuing programs in maintenance education (including avionics and electronics), 5,500 students were pursuing programs in aviation management, and the rest, nearly 10,000, were pursuing programs in other aviation areas, such as air traffic control and aviation computer science. This survey indicates that a large segment of the student population in higher education is interested in aviation careers. With these numbers of students pursuing programs leading to aviation careers, it stands to reason that many of these students will seek positions in general aviation in the next decade. The positions they will seek will cover the broad spectrum of general aviation, to include pilot and management positions in fixed-base operations, pilot and management positions in corporate flight operations, airport planning, airport management, and many other positions required to operate the general aviation system successfully.

Will sufficient positions exist for these students in general aviation after completion of their programs? Despite the information we constantly see on the demise of the general aviation system, this country has developed a dependency on aviation. We are not in a position to replace general aviation as the foundation from which commercial aviation gets its employees. This symbiotic relationship between commercial and general aviation bodes well for the future of general aviation.

PARTNERSHIPS

If such a future exists, education will continue to play a major role in preparing the future employees of the entire aviation industry with appropriate skills and capabilities to manage a system that is rapidly changing, due to technology and growth internationally, as well as

domestically for the United States. Education must have the ability to respond in a timely manner to changing requirements for characteristics and capabilities desired by the industry we support. This requires that education be in synchronization with all aspects of the industry, public and private. The best method for ensuring this synchronization is through the formation of partnerships between industry and education.

Some partnerships already exist, such as internship programs like the one United Airlines has with several universities for flight and support positions. We need more such partnerships, ones in which industry partners provide the needs and demands, create the opportunities for students, coordinate with education on curriculum, and provide the opportunities for placement after students graduate. Educational institutions then provide quality education and training in all aspects of aviation, actively seek input on industry needs, implement curriculum changes based on the changing needs, and work closely with industry to ensure that graduates possess the skills and knowledge to enter the industry and perform at expected levels. Such a partnership will provide the environment for meeting the needs of everyone concerned.

DEALING WITH COSTS

The increasing cost of education places stress on this situation. The aviation industry has for years had the luxury of demanding that future employees be responsible for all costs involved in preparing for entry into the industry. As these costs accelerate, industry, as the primary beneficiary of this process, must be prepared to accept some of the costs associated with expensive training. This goal can be accomplished through establishment of a system in which industry becomes involved in early selection of future employees, before completion of education. Such a system would require significant efforts by industry and education to develop satisfactory selection processes that would indicate a high degree of success in predicting the abilities of students to complete education requirements and to develop skills demanded. The use of scholarships, particularly those with promise of future employment, can enhance the ability of industry to have direct input into the preparation of its future work force. The benefits to

industry are obvious: the ability to guarantee a future work force that meets its needs; the ability for expanded long-term employment planning; the ability to tailor a training program to provide its needs while relying on educational institutions to administer the program; and the ability to incorporate a sense of loyalty in the company long before students become full-time employees. If this program is accomplished in conjunction with internship or cooperative education experiences, industry has the opportunity to evaluate specific job-related skills before hire.

EDUCATIONAL ABILITY

The ability of aviation education to provide training and education to ensure personnel to meet the needs of the aviation industry and government in the future depends on educational institutions maintaining sufficient facilities to provide quality education. In 1992, the UAA conducted a survey to determine the ability of collegiate aviation to produce certificated pilots and maintenance technicians. Of 143 institutions offering pilot education, 51% indicated issuance of 10,500 pilot certificates/ratings in 1992. These institutions indicated they could produce more than 24,000 pilot certificates/ratings in 1997. Of 24 institutions offering maintenance technician education, 79% indicated they had issued 5,800 airframe, powerplant, and avionics certificates in 1992. These institutions indicated they could produce more than 16,000 certificates in 1997. These findings indicate sufficient ability at present to meet significant future demand for certificates for pilots and maintenance technicians.

CHALLENGES

The colleges and universities represented by the UAA have the interest and potential ability to respond to future personnel needs of the aviation industry. It is incumbent on the industry, however, to define such needs in terms of entry-level qualifications and experiences. These goals must be accomplished in concert with the objectives of the institutions offering programs, and must be supported with resources at levels to meet the expectations of both industry and institutions.

Challenges await us in the form of proposed changes to management of the air traffic control system, ever diminishing budgetary support, and an aging general

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aviation fleet, among others. Entrepreneurs are trying to ease the transition from our present situation to one more appropriate for our needs. Aircraft manufacturers are producing exciting new products in the form of advanced aircraft using innovative technologies, and are announcing the resumption of former products that played vital roles in past successes. It is crucial that we do not allow budgetary concerns to needlessly drive general aviation to a point that diminishes the ability to provide demanded services. We can ill afford to price general aviation out of existence, or to place undue stress on the outstanding safety records achieved by general aviation in recent years.

The opportunity abounds for industry and government to network with the institutions represented by the UAA, to ensure the application of methodologies enhancing the value of emerging technologies. Partnerships between industry, government, and higher education will enhance greatly the ability of general aviation to meet the increasing demands of a rapidly changing environment. By developing such partnerships, we can use the available resources to challenge industry, government, and higher education institutions to be ready to react to any change in a timely manner. The aim of all involved parties is to strengthen general aviation, while ensuring that future generations of Americans can experience the freedoms associated with a general avia-

tion system that is available and affordable to citizens who want to participate in the world's premier general aviation system.

As changes occur in the general aviation system, we must be mindful that change affects different sectors of the system to differing degrees. The higher education system needs lead time to react to changes, and so it is imperative that any change takes into consideration the difficulties experienced by the educational system in reacting to rapid change. The 41,000 plus individuals who are presently pursuing career interests in aviation have a strong desire to become involved in any change, but they need sufficient notice of change to allow them to make intelligent, informed decisions based on reliable information. Demands will be placed on the general aviation system and the commercial aviation system that will require qualified personnel. The higher education system has the ability to provide highly qualified entrants into the aviation industry and is prepared to continue to provide such services to the industry in the future. The need exists for strong cooperative efforts on the part of industry and government to work with education to help ensure a viable general aviation system, and higher education is prepared to work toward this mutual goal.

Thank you for your kind attention, and for the opportunity to discuss the role of higher education in general aviation. □

James E. Crehan earned a Bachelor of Science at Louisiana State University and Masters of Arts at Central Michigan University and the Naval Postgraduate School.