CENTER FOR TRANSPORTATION STUDIES

UNIVERSITY OF MINNESOTA

AirTAP Briefings

A publication of the Airport Technical Assistance Program of the Center for Transportation Studies at the University of Minnesota

2014 Vol. 14, No. 3

Local schools help meet demand for aviation professionals

The number of flights worldwide is predicted to double to 50 million annually by 2030, according to the International Civil Aviation Organization—meaning more than double today's supply of pilots will be needed. At an AirTAP event, Metropolitan Airports Commission executive director Jeff Hamiel also noted that as the aviation industry grows more complex, it's not only pilots who will be in short supply, but also those who know how to run and manage airports and aviation departments.

Two local schools are helping to fill the critical need for skilled aviation workers: the University of North Dakota (UND) in Grand Forks and Northland Community and Technical College in Thief River Falls, Minnesota. In addition to providing solid education, both schools provide hands-on experience to help students develop practical knowledge about the aviation industry. In addition, the faculty at each school brings years of professional experience. The schools also partner with their local airports, since alliances with regional airports and carriers is a way to increase awareness and enhance facilities and student experiences.

University of North Dakota

Having started in 1968 with 2 alumni-donated planes and 12 students, UND's aviation program has grown to serve an enrollment of about 1,800 undergraduate and hundreds of graduate students. The college operates one of the largest fleets for civilian flight training in North America.

The school's extensive facilities include 18 flight simulators, a $2 million radar simulator, a helicopter simulator, and 2 air traffic control simulator training rooms that help students experience real-life situations. The school employees almost 50 full-time faculty with a wide range of professional experience and more than 230 flight instructors. It operates around 120 aircraft, with training facilities located at the Grand Forks International Airport; Crookston, Minnesota; and Mesa, Arizona.

In 1997, the school was renamed the John D. Odegard School of Aerospace Sciences after its founder and first dean. Aviation Science is now the second largest of UND's degree-granting colleges (behind Arts and Sciences). The school has five departments: aviation, space studies, computer science, atmospheric sciences, and earth system science. The Department of Aviation offers six undergraduate majors in two degree programs. The Bachelor of Business Administration degree may be earned in either Aviation Management or Airport Management and is granted by the College of Business Administration and Public Administration. A student can also earn a B.A. in aeronautics in Commercial Aviation Fixed Wing, Commercial Aviation Helicopter, Air Traffic Control, Unmanned Aircraft Systems Operations, Flight Education, or Aviation Technology Management. The school also offers two different aviation specializations in aviation safety and business aviation operations. A master's degree in aviation and a doctor in aerospace sciences are offered as post-baccalaureate degrees. Graduates typically find employment as airport managers, air traffic controllers, professional pilots, airline employees, and policymakers.

UND training aircraft at Grand Forks International Airport

According to Professor Kim Kenville, one of the program's faculty members, the majority of the school's undergraduates are in professional flight, about a quarter are studying air traffic control, and the rest are in aviation/airport management and unmanned aerial systems (UAS)—the newest major. UND Aerospace was one of the first members of the FAA's Center of Excellence in General Aviation Research, conducting research in such areas as UAS, automatic detection surveillance broadcast, remote runway lighting, and FAA/industry training standards.

You can't attend an AirTAP event without running into alumni of the University of North Dakota's aviation program. Several of AirTAP's most active airport managers graduated from the University of North Dakota (UND). Shaun Germolus, manager of Range Regional Airport, credits the option to combine UND's aerospace and business colleges for preparing him well for his career in airport management. "It was a very professional setting to learn how to fly, and the University offered many areas to develop and define an aviation career."

Bill Towle, manager at St. Cloud Regional Airport, agrees. "I was fortunate that UND offered so many different areas of study in aviation, since I ultimately changed my area of study from flying airplanes to managing airports," he says.

Aviation continued on page 2

An airport's story: Duluth International

Located about six miles from downtown Duluth, the Duluth International Airport covers over 3,000 acres and serves the Twin Ports area of Northeastern Minnesota and Superior, Wisconsin. It is the third-busiest airport in Minnesota, behind Minneapolis-St. Paul International and Rochester International.

The Duluth International Airport completed a total of 3,789 scheduled flights and carried nearly 155,000 passengers in a 12-month period ending in May 2014. The airport completed nearly 38,000 operations in a 12-month period ending August 2013, most of which were general aviation. However, three major commercial airlines serve the Duluth airport, including Delta Connection, which offers daily flights to Minneapolis and Detroit; United Express, which flies to Chicago O'Hare twice daily; and Allegiant Air, which offers weekly flights to Orlando, Florida, and Las Vegas, Nevada. The airport also offers private and charter flights through Monaco Air Duluth, the airport's fixed-base operator.

One unique aspect of the Duluth International Airport is its ability to operate in extreme weather changes. In 1991, the city of Duluth experienced a Halloween "mega-storm" and received nearly 37 inches of snow in a three-day period. However, the airport was the only one in the state to stay open and resume operations thanks to its dedicated maintenance force.

The City of Duluth purchased the original 640-acre property in 1929 for $70,000 and began construction on three runways. In 1940, Northwest Airlines began the first regularly scheduled air service to Duluth, although that service was discontinued in 1942 because of the country's increasing involvement in World War II.

In 2009, the airport broke ground to complete a new passenger terminal. State and national lawmakers granted nearly $17 million toward the project, which was completed in 2013.

In October 2013, the Duluth City Council approved $3.4 million in bonds for the airport to build a three-story enclosed parking ramp. The ramp will add an additional 400 parking spots and a skyway leading to the terminal. Construction is expected to end on the project in October 2014.

Aviation continued from page 1

Warroad airport manager Bethany Sundvor says one thing she appreciated about UND is the professors' real-world experience, whether from working at an airline, an airport, or in the military. "Hearing their stories and being able to relate them to what we were learning in our textbooks really helped keep myself and other students engaged," she says. "Each and every professor has a strong passion for aviation and it was important for them to pass that along to their students."

Northland Community and Technical College

Northland Community and Technical College (NCTC) is a smaller two-year school, with just over 4,000 undergraduates. It was founded in 1949, and its aviation maintenance program followed soon after. The school offers three degrees to students interested in an aviation career through its aerospace program: Aviation Maintenance Technology (AMT), Unmanned Aerial Systems (UAS), and Imagery Analysis (IA). The IA program is currently offered tuition-free as a result of a U.S. Department of Labor grant focusing on high-growth and emerging industries. Northland's aerospace program is taught at an 86,000-square-foot high-tech facility located at the Thief River Falls Regional Airport.

Northland Aerospace's AMT program was initiated more than 50 years ago and has a reputation for producing highly skilled and employable aircraft maintenance technicians. The college touts a 100 percent placement record for its AMT graduates, who work for companies such as Delta, Continental, Cessna, and Atlantic Coast Airlines. For students graduating in the UAS or IA program, the placement rate is also high. These emerging industries are in need of skilled workers, and Northland is one of the first colleges in the nation to develop programs for these positions. Graduates typically find jobs with Northrop Grumman, General Atomics, state and federal government agencies, and many companies overseas.

"The aerospace industry is one of the few areas that have unlimited growth potential, yet is still young enough for entry-level professionals to climb very fast and truly impact the overall future of the industry," says Curtis Zoller, Associate Dean of Aerospace Programs at the college.

Northland's quality and high job placement is partially due to its strategic partnerships with industry and the local general aviation community. The school works directly with premier companies in the UAS sector that provide cutting-edge training aids and resources as well as internships and permanent job opportunities. The school also partners with the MnSCU Transportation Center of Excellence, UND Aerospace, and the Red River Valley Research Corridor to develop curriculum and keep each partner current on new technology, resources, and information.

Joe Hedrick, manager of the Thief River Falls airport, says he is thrilled to have the college as a partner. "Not only does NCTC add to the financial sustainability of the airport, it also aids in the overall visibility of the airport and northwest region of Minnesota," he says. "With the introduction of new cutting-edge courses in UAS maintenance and data/imagery analysis, NCTC has put [itself]…and by extension the Thief River Falls Regional Airport, on the map for an emerging industry sure to see enormous growth."

UAV Lab offers students hands-on experience

The Uninhabited Aerial Vehicle (UAV) Laboratory at the University of Minnesota allows students and researchers to conduct aeronautics research aimed at creating safer and more fuel-efficient commercial aircraft and UAVs.

As part of the University of Minnesota's Department of Aerospace Engineering and Mechanics, the UAV Lab officially opened in 2006. The lab includes aircraft, a ground station, a flight control system, flight software, and an aircraft simulation mechanism developed by an in-house team.

Brian Taylor, director of the UAV lab, said there are usually 15 to 20 undergraduate students and 10 graduate students working on research projects at the lab.

"[The UAV industry] is experiencing growth," he said. "We've definitely had [an increase in] students working in the lab."

Students and researchers work with local businesses, government agencies—including NASA—and others to explore potential UAV uses and opportunities.

Current research at the lab includes design and creation of aircraft wings that automatically morph to adapt to speed and altitude to increase fuel efficiency. A UAV research team is also working with the College of Food, Agricultural and Natural Resource Science to explore using UAVs for precision agriculture.

Researchers at the lab recently completed a project that used cell-phone signals to navigate aircraft in the event of GPS signal failure. Taylor said this research could help make future commercial airlines safer.

The research conducted at the UAV lab differs from other labs in the nation because those labs focus primarily on other uses for UAVs, such as monitoring roads or delivering packages.

"We're unique in the sense that we're using small aircraft that we're modifying with computers and sensors and then doing aeronautics research," Taylor said. "[This is] a low-cost way for us to do real research that can be applied to commercial aircraft."

AirTAP was developed through the joint efforts of the Minnesota Department of Transportation (MnDOT), the Minnesota Council of Airports (MCOA), and the Center for Transportation Studies (CTS).

Briefings is published quarterly in print and online. Please direct comments to:
Amy Friebe, Briefings Editor
Mindy Carlson, AirTAP Manager
Jim Grothaus, AirTAP Director

Designer: *Angela Kronebusch*
Contributing writers: *Ann Johnson, Lexi Gusso*

Center for Transportation Studies
University of Minnesota
511 Washington Avenue S.E.
Minneapolis, MN 55455
Phone: 612-626-1077
E-mail: groth020@umn.edu
Web: www.airtap.umn.edu

AirTAP Briefings

Airport Technical Assistance Program
University of Minnesota
200 Transportation and Safety Building
511 Washington Avenue S.E.
Minneapolis, MN 55455-0375

CENTER FOR TRANSPORTATION STUDIES
UNIVERSITY OF MINNESOTA

NONPROFIT ORG.
U.S. POSTAGE
PAID
TWIN CITIES MN
PERMIT NO. 90155