

Summer 2008 Internships

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Andrew Mittelstadt *Mesaba Airlines Internship* *Summer 2008*

This past summer I had a Flight Operations Internship with Mesaba Airlines at their headquarters in Eagan, MN. This opportunity involved many more benefits than I originally expected. Some of the many aspects of this internship included participating in CRJ 900 ground school, traveling around the country to do fuel research studies, presenting findings to management, working in coordination with the FAA and countless others. I met many people that have an unbelievable amount of knowledge in the field of aviation including the chief pilot, the company's president and my appointed boss and mentor, Heidi DeHoogh.

Katrina Avery *Alaris Aviation* *Summer 2008*

This summer I interned with Phoenix based aircraft brokerage company, Alaris Aviation. I worked alongside Kara Swensen and Brian Mackin in pre-loved Cirrus aircraft sales. Kara, an ASU graduate, started the company when she was only 26 years old and has been running with it since. Kara took the time to not only help me grow professionally, but

personally as well. From the second we walked into the office in the morning she had me doing spec sheets on our aircraft, taking pictures, listing logbooks and sending out mailers. After work we would both wind down together by going to the gym and chat about personal things. This gave me the full view of exactly what it was like to be a female entrepreneur in such a male-dominated field and to be rocking it. She also took the time to introduce me to her clients and close friends in the aviation industry.

Brian Baumann *Northwest Airlines* *Summer 2008*

I interned with Northwest Airlines in the flight operations department on the A330 this past summer. I wouldn't have received this opportunity without my friend Nathan Schmidt, who works as an Aircrew Training Instructor (ATI) for Northwest. Nathan was my first flight instructor and is the reason I was granted this internship. Networking is a major part of aviation, and while at NWA, I worked hand and hand with the other interns as well as the A330 Chief Pilot.

The first half of my internship at NWA consisted of going through

indoctrination and the A330 ground school. The second half consisted of facilitating training materials for off site training in Manchester, England. The internship was a great opportunity for training and networking, and an in-depth look at what a flight operations department consists of at a major airline.

Michael Nelson *Aerosim Technologies* *Summer 2008*

Over the summer I had the privilege of working full time for Aerosim Technologies, Minnesota based company specializing in the creation, development and distribution of commercial, military and recreational based flight training devices. I was hired by Aerosim to create and develop lessons for their desktop training software. This take-home software teaches pilots normal operating procedures, abnormal operating procedures and emergency procedures for their specific aircraft. Working with Aerosim was a great opportunity. While many companies in the airline industry are contracting because of the tough economic times Aerosim is continuing to grow and expand.

Club Activity



DA—20 Cockpit with stick

Aviation Club

Flight Team

AHP

Women in Aviation

The **Aviation Club** has been in working closely with Women in Aviation again this year. We have combined meetings and activities to get the most participation from each club. In the beginning of the year we helped **Women in Aviation** with the Flight Team Competition, fundraising at Valleyfair and went on the MSP tower tour. The club also ordered department sweatpants and is in the process of getting this newsletter, the Localizer, back up and running. We hope to continue working with **Women in Aviation** during spring semester and take part in several more tours.

The **Flight Team** participated in last October's SAFECON, which was conducted

in Mankato this year. This was a first for many competitors. Eleven out of the 15 contestants had never competed in the event before. They performed very well against the St. Cloud, Dubuque, and UND teams with several contestants placing in the top 10.

The **Flight Team** has done fundraising by selling hot dogs at HyVee. We are going to continue practicing and we are trying to coordinate with the St. Cloud and Dubuque teams for a get together as well as a broomball game.

AHP has hosted Pat's Welcome Back party, sponsored the FAA flight safety seminar on Nov. 11 is working on getting members of **AHP** into the sim at NWA.

Women in Aviation: Members from our group assisted in hosting the Regional Flight Team competition. Our first tour as a group was up to the MSP control tower where we had about 8 people in attendance. Rick Cottrell was kind enough to give us a tour of administration, the tracon and tower. Women in Aviation also had an annual bake sale during finals week and ordered club shirts. Our big event this spring was the annual conference conducted in Atlanta, Georgia on February 25-28th. We had a good turn out with 9 students attending. Upcoming events include: Ordering of more club t-shirts, tour of MSP MAC.

Members of the Aviation Learning Community with Robert Kant who donated a hand built controlled plane for the Department of Aviation.



Technical column - Stalling at high-altitudes!

Dr. Nihad Daidzic, Ph.D., ATP, CFII

Probably every student of aviation and pilot has been indoctrinated by the FAA "knowledge" material how the AOA (Angle-of-Attack) and the indicated airspeed in knots for 1-g stall stays the same regardless of altitude. That means that our airplane will stall at, say, 50 KIAS (KCAS is somewhat higher) at 1,000 feet or 20,000 feet AGL. It does not make any difference.

Well let's look at the stall characteristics of some high-flying jets. Learjet 55 at MTOW will stall at about 147 knots in clean configuration at 10,000 feet. At the altitude of 20,000 feet the stall will occur at 152 KIAS (Mach, $M=0.34$), at 24,000 feet it will be 160 KIAS ($M=0.39$), and at 41,000 feet about 165 KIAS or ($M=0.58$), etc. If you look at the operational characteristics of all Boeing and Airbus jets, you will find that KIAS for the 1-g stall increases by several tens of knots from S.L. to 30-40,000 feet. You also will find some information on "coffin corner" and maximum altitudes for given weight and maneuvering stall margin.

Now remember we are not talking about the accelerated stall where you can pull suddenly stick and stall (or break something) at any indicated speed provided you pull enough G's. Nor are we talking about the necessary increase of KTAS with altitude for the same KIAS due to lower air density. So where is this "strange" effect coming from?

The explanation of this phenomenon is in "compressible aerodynamics". Compressible effects were mentioned when the KEAS or equivalent airspeed in knots takes into account compressible effects in the Pitot tube and thus is smaller than KCAS. The KEAS, which is a true measure of the dynamic pressure over wing, will increase with altitude too.

As we know, the coefficient of lift is a function of AOA for a given aerofoil. But what FAA material did not explain is that the coefficient of lift also depends on Reynolds (Re) and Mach (M) numbers. The Reynolds number itself will depend on the geometry of the airplane wing,

KTAS, and the kinematic viscosity of air. Now here is the answer! Although the KTAS approximately doubles from S.L. to about 36,000 feet (for the same KIAS), the kinematic viscosity increases four times or more due to the temperature, pressure and density drop, causing, at least, halving of the Reynolds number and thus decrease of the maximum coefficient of lift and the corresponding stalling AOA. The Mach effects will also contribute to the lowering of the coefficient of lift for the same AOA at altitudes. This effect will cause the aerodynamic stall (low-speed buffet) to occur at lower AOA and higher KIAS/KEAS than at lower altitudes. High subsonic and transonic effects will cause additional reduction of the stalling AOA and the maximum coefficient of lift. When flying high to not get yourself into "coffin corner".

Fly safe!

Minnesota State Mankato Flight Training Statistics in 2008

In 2008, North Star Aviation (NSA) fleet accumulated 5,262 flight (operational) hours. That was about 850 more hours (or about 20%) than in 2007. The number of FAA ratings/certificates earned by Minnesota State Mankato flight technology students was 138 or about 30% more than in 2007.

- 49 students obtained FAA Private Pilot certificate with single-engine rating (up 20 from 2007)
- 32 students obtained FAA Private Pilot certificate with multi-engine rating (up 9 from 2007)
- 23 students obtained FAA Instrument Pilot Airplane rating (up 3 from 2007)
- 22 Students obtained FAA Commercial Pilot certificate (up 3 from 2007)
- 12 Students obtained various FAA Flight Instructor certificate and ratings (same as 2007)

In the same period, the FRASCA 242S Seminole twin-engine Flight Training Device "flew" about 500 hours.



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Program Mission:

The aviation program's mission is to prepare students for responsible positions in the air transportation industry, including airline operations and management, corporate aviation, airport management, and government operations. The goal of the program is to equip students with adequate knowledge and skills in aviation and management in order to compete in the rapidly changing and highly competitive field of aviation.

Welcome to Tom Peterson!



Tom Peterson came to Minnesota State Mankato through the US Air Force. Upon graduation from Wayzata High School, Tom attended Air Force Academy. He began pilot training at Webb AFB in Big Spring Texas and taught pilots as a T-38 instructor for 2 years.

Tom has flown RC-135's as a reconnaissance pilot and served as an instructor and evaluator on this airplane. He flew the E-4B (B-747) and also became an instructor and the chief of training. He was assigned overseas to RAF Mildenhall, U.D. as chief of RC-135 European reconnaissance. During this time he continued to fly the

KC-135R as an instructor pilot for pilot proficiency.

Tom participated as squadron operations officer in Desert Shield and Desert Storm and the aftermath of these events. He served as the deployed RC-135 squadron commander in Saudia Arabia and in squadron command and as squadron commander in the 2nd Airborne Command.

After retirement from USAF Tom worked for Airborne Express, flying DC-10 for 10 years and B-767 for three. He was hired as Assistant Professor at Minnesota State Mankato Department of Aviation in August of 2008.