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31 March 2019

Sam Sammadar
Manager, Kelowna International Airport

Dear Sam,

Attached is a paper outlining our experience and thoughts on the shortage of pilots and aircraft technicians that Carson Air and our Company colleagues are currently experiencing.

It is intended as a high level overview and only addresses the difficulty hiring. I have also included a brief four page document called Pilot Shortage that we created internally in 2012 that remains valid today.

Drug testing will be another topic for the future.

Thank you for your help and support

Sincerely,

Tracey Thompson
VP. Carson Air Ltd.

Issue:

There is a shortage of skilled pilots and aircraft technicians in Canada that has reached a critical point; and has the potential to evolve into increased aircraft accidents and incidents as the existing workforce with less skill and experience attempts to keep up with an increasing demand worldwide. This paper specifically addresses fixed wing pilots but could be mirrored for the aircraft technician part of the industry experiencing the same challenges.

The *Boeing Commercial Airplanes Market Analysis 2010*, reviewed the long term market needs, producing the *Current Market Outlook 2010-2029*. Page twelve of the report contains a Pilot and Technician Forecast outlining the following:

*The largest growth in pilot populations will be in the Asia Pacific region, with a requirement for 180,600 pilots. Within Asia, China will experience the greatest need for pilots, with an expected requirement for 70,600 pilots. **North America will need 97,350 pilots**; Europe will need 94,800 pilots; the Middle East will need 32,700 pilots; Latin America will need 37,000 pilots and the CIS will need 11,000 pilots.*

Similar numbers are identified for Technical demand.

Carson Air Ltd. has a home base in Kelowna, BC, and has operated fixed wing aircraft for more than twenty-five years as a small and now medium sized company with over one hundred employees. The Company operates a flight school along with contracts to Federal Express for the transportation of cargo and the Province of British Columbia, Emergency Health Services, for medevac services. Carson Air does not have schedule services but provides charter services as needed. The experience of our company is consistent with other small to medium sized operators.

Currently, Carson Air is unable to hire the traditional pilot profile and is only receiving applications from pilots with less than 500 operational flight hours, or pilots working as Flight Instructors, without true operational experience. In our cargo operations, we have traditionally hired pilots with 1000 operational hours as a minimum. We know this type of flying is near the beginning of a pilot's career and they are working for Carson Air to gain additional hours and experience so they can transition to another part of the industry. The Company is happy if we can keep these pilots employed for two years before moving on. Currently we are unable to find pilots with operational experience and our current pilots are leaving for the airlines more quickly, leaving a pilot pool of inexperienced flight crew.

The aviation industry worldwide is ramping up to deal with the growth of additional regional and international routes to meet the increasing demand and remain competitive as predicted in Boeing's Current Market Outlook. Larger airlines, traditionally running up to four ground schools annually have increased their hiring to where they are running two ground schools each month, representing a 600% increase, draining experienced pilots from medium and smaller companies. This is occurring in Canada and the United States as reported through our aviation contacts.

As a specific example, in April 2017, Jazz alone opened 90 ground school seats, effectively removing 90 pilots a finite and shrinking pool in one month. Hiring from the existing smaller to medium aviation companies is draining the talent pool at a faster rate than ever experienced in the past. Companies are unable to retain seasoned pilots, leaving the inexperienced pilots to fly with minimal flying time. It is only a matter of time before the inexperience translates to increased accidents.

The 2010 Human Resource Study of the Commercial Pilot in Canada, prepared by R.A. Malatest and Associates Ltd for the Canadian Aviation Maintenance Council and funded in part by the Government of Canada's Sector Council Program summarized eleven key findings. The first seven of the findings are outlined below with recommendations on how the government could facilitate and immediate and positive change.

- 1) The current National Occupational Classification (NOC) description for pilots (2271) is insufficient and does not adequately reflect today's pilot profession.***

Recommendation: Upgrade this classification to identify fixed wing pilots with more than 2000 hours of operational flight time, who are able to meet the language proficiency and obtain a Canadian Commercial Pilot's License.

- 2) The commercial aviation sector experienced significant declines in both traffic and revenue in 2009, but is expected to rebound in 2010.***

Recommendation: Acknowledge that the aviation industry has rebounded and is impacted by world-wide shortages; with an action of permitting direct access through the immigration process and not requiring companies to perform a LMIA to prove the shortage.

- 3) The industry is at risk of a shortage of fixed-wing pilots with the appropriate knowledge skills and competencies, if the industry recovers as predicted.***

Recommendation: Target training dollars to aviation companies hiring pilots with skill gaps and providing the training and experience to fill the identified gaps.

- 4) The current approach to marketing commercial pilot careers to youth is outdated.***

Recommendation: Work with Air Cadets, military, flight schools and a marketing resource to identify a new federal strategy.

- 5) The primary reasons for non-completion of training are significant financial barriers, and the expectation that salaries will be low and employment opportunities few.

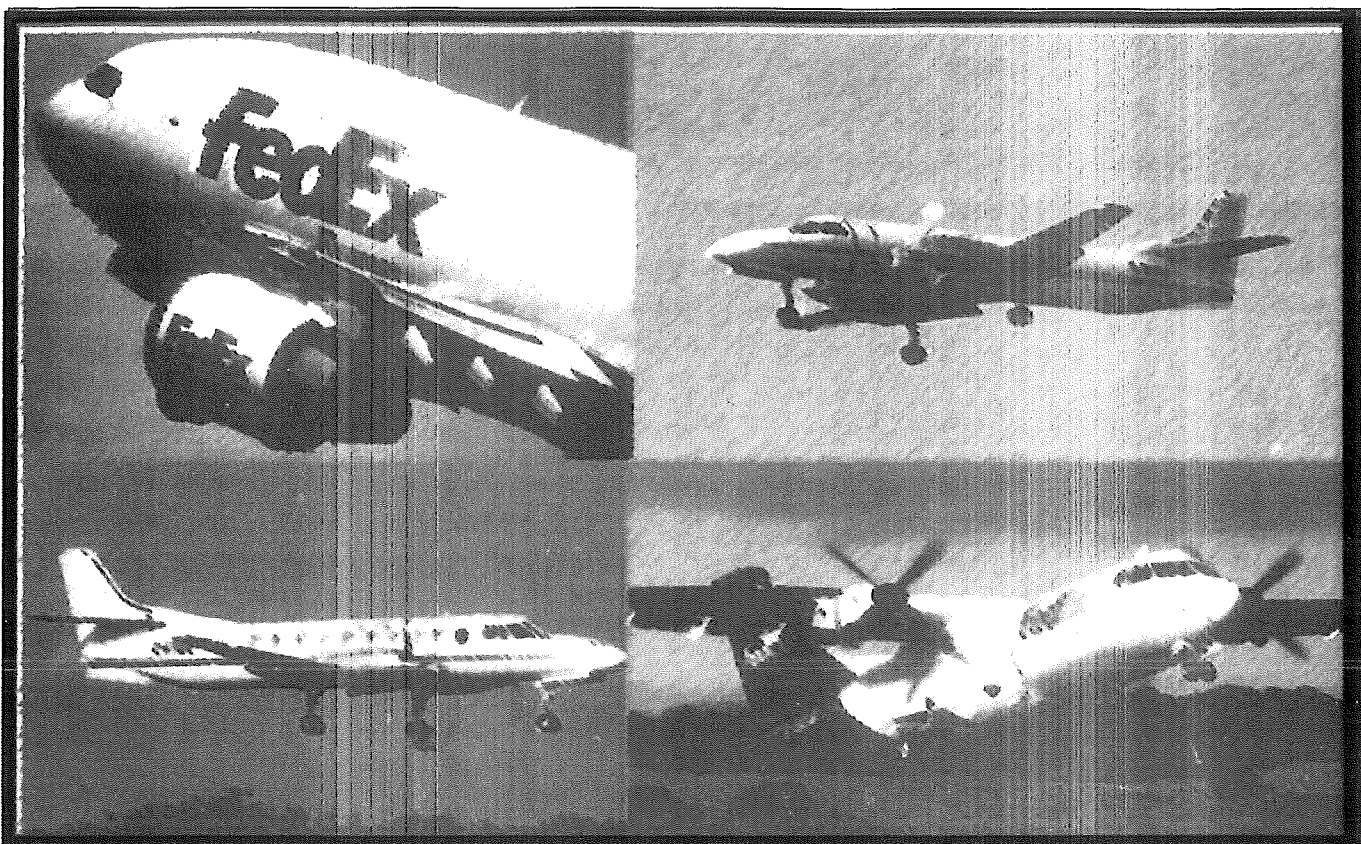
Recommendation: Review student loan funding to include a defined number of flight hours

- 6) *A number of operators continue to report skill gaps in key technical and non-technical areas.*

Recommendation: Use the identified areas of; Meteorology, Safety Management System (SMS), Crew Resource Management (CRM), Threat and Error Management, and Flight Management Systems (FMS) as a basis for curriculum enhancement. Enhanced curriculum should be developed with realistic operational scenarios and the use of technology and simulations where feasible to build the skills needed in the operating environment.

A rapid response from the federal government is required to ensure the aviation industry in Canada continues to be viable for the small and medium sized companies. Transport Canada recognizes the need for fixed-wing pilots and has the ability to recognize and convert any ICAO (International Civil Aviation Organization) commercial pilot's license from another country to a Canadian Pilot License. The parallel immigration process needs to be addressed.

Aviation is highly regulated and the people within the industry need to keep their focus on the safety of their operations. Small and medium sized companies do not have the time nor the expertise to work through the immigration maze to facilitate the vacancies created in aviation, specifically pilots and aircraft technicians. Leadership is required to streamline the immigration process within the aviation industry, providing the small to medium sized employers a simplified road map with short timelines to facilitate the working visas and immigration of experienced pilots and aircraft technicians from outside of Canada to fill the sizable gaps in our industry.



PILOT SHORTAGE

DEMAND FOR EXPERIENCE PILOTS TO EXCEED SUPPLY

Chris Queen, Carson Air 2012

Each year until 2029, an average of 23,300 new pilots will be needed worldwide. Most of the openings are required to meet a growing air travel market but another reason is a rash of upcoming, necessary retirements. Regardless of the reasons, the aviation industry and regulators must devise innovative methods to increase student pilot enrollment and source experienced pilots to bridge the current supply/demand gap.

PILOT SHORTAGE

DEMAND FOR EXPERIENCE PILOTS TO EXCEED SUPPLY

THE SHORTAGE OF PILOTS - A REALITY

The shortage of pilots is hampering the burgeoning civil aviation industry in Canada just like it is globally.

As in other parts of the world, there are already insufficient aviation personnel in the region to support airline fleet modernization and a surge in air services and travel demand.

The latest study by the International Civil Aviation Authority (ICAO) envisages 207,600 new pilots by 2018 and 352,900 by 2026

Shortage in aviation personnel is not limited to North America. In Asia-Pacific, the greatest need for new aviation personnel is in China, which will require 72,700 additional cockpit staff and 108,300 technicians between 2011 and 2030.

Southeast Asia ranks second in the region with an additional demand for 47,100 pilots and 60,600 technicians over the period.

The demand projection is based on Boeing's forecast that there will be 33,500 new aircraft, valued at about US\$4 trillion, added to the skies over the next two decades.

Canada has an international reputation for training highly skilled professional pilots. Due to this reputation and the significant number of Flight Training Units in Canada, many foreign student pilots train here.

Approximately one third of all Canadian Commercial Pilots licenses go to foreign students who have no intention of working in North America.

Strengthening economies and a growing demand on air travel services has created a significant gap in the supply/demand for aviation personnel.

OVER ONE
THIRD OF
COMMERCIAL
PILOT LICENSES
WENT TO
FOREIGN
STUDENTS

According to
Transport Canada, in
2008 over 1100
commercial Pilots

were issued.

However, out of these
commercial licenses

only 67% went to

Canadians, the rest

were awarded to

foreign students who

do not intend to work

in Canada.

THE DEMAND-AIRLINE GROWTH COUPLED WITH RETIREMENTS

The Asian-Pacific and Arabian Gulf countries are leading the way with unprecedented growth in air travel. These regions will experience a continued expansion of air travel at a rate of 6.5% per year¹. To put this into perspective, China alone will triple its current fleet of aircraft to over 46,000 by the year 2028².

Globally, there is a significant demand for experienced pilots and by the year 2018 there will be 207,600 pilot vacancies to fill. This number increases to 352,900 by the year 2026.

Canada is not immune from these increases in travel demand. Most Canadian airlines are expanding with new aircraft orders exceeding 200 aircraft in 2012. This will represent an increase in the demand for experienced pilots by 2.3% per year. When added to a predicted retirement rate of almost 15%, the number of Canadian Commercial pilots needed will be slightly over 1070³ by 2014.

THE SUPPLY-CAN THE FLIGHTS SCHOOLS PROVIDE ENOUGH GRADUATES

In 2009, according to Transport Canada, there are slightly over 25,000 people with a Canadian Commercial Pilots License. Also, Canadian Flight Training Units have the capacity to generate an additional 1000 or more commercial pilot each year. In addition to the Flight Training Units, the Canadian Military, historically a source of experienced pilots wishing to enter civilian service, train hundreds of new pilots every year.

Based on these figures and the demand of new pilots in Canada, the gap between Demand and supply does not seem large but it is worth taking a closer look.

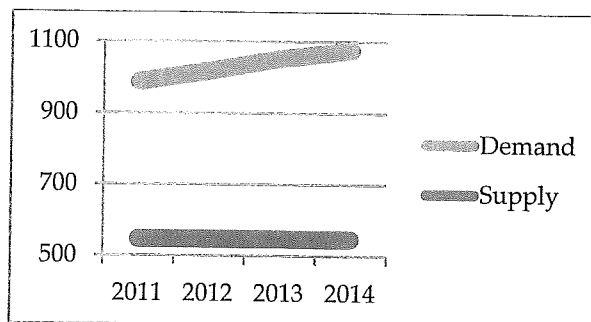
Due to the enormous global demand of pilots, many countries that do not have the adequate resources or flight schools look elsewhere to send their students. Canada has long enjoyed a reputation of training well qualified aviation personnel and because of this foreign students now make of a large portion of Canadian commercial pilot graduates.

It is estimated that, of the approximately 1000 new Canadian Commercial Pilot License issued each year that only 69% went to Canadians. Of this 69%, only 70% are expected to become Commercial Pilots after all training is complete. Also, due to government cutbacks and a general decline in enrollment, the Canadian Military is no longer as much as a fruitful source of Pilots as in the past.

The final result an estimated supply of just over 550 commercial Pilots each year from 2011 to 2014⁴.

¹² Reported by Boeing Aircraft Company *Pilot Shortage Looming 2011* ³⁴ Canadian Aviation Maintenance Council 2010 4

THE DEMAND /SUPPLY GAP- TRACKING OUR ABILITY TO FILL THE GAPS



This Demand/Supply gap chart above is based on the following assumptions;

- The number of new commercial Pilots available is constant
- The percentage of pilots leaving the industry is assumed to be the same as 2010.
- The expected growth for Canadian airlines is a high growth model based on current aircraft orders and anticipated deliveries.

THE FUTURE- IMMIGRATE PILOTS TO BRIDGE THE DEMAND/SUPPLY GAP

Immigrant workers are relied upon in all industries within Canada. In fact, across all occupations listed by Statistics Canada, immigrant workers make up approximately 21% of the total workforce.

The Aviation industry has yet to utilize this source of professionals to its potential. Only 14% of the current aviation workforce are foreign professionals and even less are employed as pilots. By contrast, countries in the Asian-Pacific or Arabian region have an immigrant workforce exceeding 77%⁵.

Human Resources and Skills Development Canada's (HRDC) definition of the pilot's profession is insufficient⁶. Because of this Provincial Government departments have not properly determined realistic future Job prospects in this field.

Updating the National Occupational Standards (NOC) for the Pilot profession with the required technical and non-technical tasks of the pilot will help potential employers and employees better understand the skills needed as a commercial Pilot and place a spotlight on the need to fill the Demand/Supply gap.

With an up to date description of the profession employers in Canada, where there is a skills shortage and high demand, can succeed in convincing the Canadian Government to award the Commercial Pilot Profession as a FAST TRACK HIGH DEMAND OCCUPATION thus allowing access to a untapped pool of skilled Commercial Pilots.

⁵ Department of immigration, UAE 2010⁶ (NOC2271)