

April Meeting

Topic: Selected readings and discussions from a veteran AME

Speaker: Sam Longo

Reporter: Greg Winson

CAHS Toronto Chapter President Dr. George Topple introduced Sam Longo. He has more than 35 years experience in the aircraft maintenance field. He holds a Canadian Aircraft Maintenance Engineers license (AME M1, M2) as well as an American A&P license (Airframe and Power Plant). During the '70's and '80's he plied his trade, maintaining aircraft for such companies as Nordair, DeHavilland Canada and Air Canada before becoming a professor in Centennial College's Aerospace Department, where in 2001 he was the recipient of the Board of Governors Award of Excellence. During his tenure at the college, in addition to his aircraft technical teaching, he spent many years as the aerospace hangar and shop coordinator. He also holds a Certificate in Adult Education from St. Francis Xavier University, and is a qualified trainer in Aviation Human Factors.



Speaker Sam Longo
Photo Credit - Neil McGavock

Currently vice-president of the Ontario AME Association, he has been an active member for more than 25 years. Longo has also acted on their behalf as a subject matter expert in developing Aviation Maintenance Technician Certification with PAMA (Professional Aviation Maintenance Association) in the United States. Since retiring from Centennial College, Longo continues to write the column AMU Chronicles for Air Maintenance Update magazine, and has been a regular columnist to Cycle Canada (Vintage column, Long Ago). His freelance works have been published by; The Toronto Star, Globe and Mail, Canadian Skies Magazine, Canadian Biker Magazine, Motorcycle Mojo Magazine, Spring Motorcycle Magazine and the Canadian Vintage Motorcycle Group (CVMG) Newsletter. In 2012 he was the recipient of the Aviall High Achievement Award for his teaching, writing and volunteer contributions to the Aviation Maintenance community. When not pursuing his aviation and writing endeavors, his down time is spent restoring and riding vintage Honda motorcycles.

Longo began his talk by explaining how he began to write the AMU Chronicles column. He envisioned the concept of the column 11 years ago. Many of the columns were stories related to his aircraft maintenance students during classroom sessions. The benefits of these stories was three-fold: they tended to keep the students' attention, as they were eager to learn what it was like to be an aircraft mechanic in the 'real world'. It also gave Longo a chance to show the more human side of himself, warts and all, while injecting some humour into the class at the same time; and the stories often ended with lessons learned about the realities of the profession, and life in general. Longo pitched the idea of the column to AMU magazine publisher Bill Carter, who felt it would be a worthwhile addition to the then-fledgling publication. Writing the column has been a great reflective experience for Longo, having spent his career fixing aircraft or teaching others to do so.

The first column Longo read, “Working nights and northern lights,” provided an overview of Longo’s first assignment in the Arctic for Nordair, working a 28-day tour in Frobisher Bay (now Iqaluit) in March 1976. His reading material of choice for the flight north was the science fiction novel *Dune*, a somewhat ironic choice given the similarities between the desert setting in the novel and the barren rock and ice landscape of the Arctic. Upon his arrival in Frobisher Bay, Longo suddenly got the joke that he was told by the Nordair stores man when receiving his Arctic gear: “You gonna love it up dare, dare is a woman behind every tree!” But there was not a tree in sight as far as the eye could see.

Longo was the junior mechanic and only apprentice at Frobisher Bay during this stretch, and was scheduled to work a 10-hour night shift for 28 days straight. He didn’t mind however, as there was little to do in the town, and the outside air temperature never rose above minus 50 for the duration of his time there. There were three aircraft stationed there, two Twin Otters and a DC3. The facility also serviced Boeing 737s and contract work such as the Flying Tigers. His first test in the north was to replace the number one engine starter motor in a DC3 freshly burned out by the hard-drinking lead mechanic Andre. He had not changed one previously and was given no help from the other mechanics. Bernie, the younger AME on site, suggested that Andre may have some special curved wrenches that would help Longo get at the difficult to reach retaining nuts. Andre, however, was not in a sharing mood, his only comment being, “I don’t lend my tools to apprentices.” Undeterred, Longo completed the swap in about three hours (an experienced mechanic can probably finish the job in half an hour.)

Longo learned from this experience that tenacity is an important trait in all good mechanics, and that a good AME will lend their tools to a colleague in need.

The next column Longo read was called “Tales of Troubleshooting”, where he detailed some “good stories about difficult fixes.” Seemingly unsolvable problems with aircraft can bring jobs to a standstill. Part of the challenge of being a mechanic is keeping a cool head when things go wrong. “No one is exempt from Murphy’s Law!” stated Longo. Longo’s first tale of troubleshooting concerned a Piper Arrow arriving at Buttonville Airport. The owner wanted to get the Piper an annual inspection and make it airworthy as cheaply as possible. Maintenance was performed on the aircraft, including a compression check, and plugs cleaned and gapped. A test run showed that the aircraft was starting and running fine but couldn’t reach full takeoff RPM. Everyone in the shop had a go at the problem without luck. As a last resort, all the parts were taken off and reinstalled. The culprit turned out to be a replacement exhaust system that was incorrectly manufactured. Excessive back pressure in the exhaust was the specific cause of the issue. No one in the shop targeted the new parts on the plane as a possible cause of problems during the troubleshooting. “Murphy strikes again!”



Sam Longo working on a light twin at Centennial College

The next tale of troubleshooting concerned a Lockheed L-1011 that arrived at Pearson Airport with a limited turnaround time. Longo was tasked with performing an IVG generator change on the number one engine. Normally this straightforward repair can be done at the gate prior to the plane's next departure. However, the next night, he experienced a mechanical déjà vu. The same plane arrived with the exact same problem. Although he informed the foreman of the previous night's work, the response he got was 'just fix it.' The next night, he changed the IVG for the third time. Intrigued by the ongoing issue, he inquired to the foreman when returning from his scheduled days off. It turned out that the regular IVG mechanic in Montreal had taken sick, and his replacement wasn't quite up to speed, turning out a batch of unserviceable IVGs. Longo had assumed the parts were serviceable, and that the wiring had been to blame for the ongoing trouble. "Murphy's Law" was working overtime!

Longo next transitioned into studying the root causes of accidents in a column titled "Every part counts." Commercial airliners are complex machines that require many systems to keep it in the air, with many redundancies to reduce the odds of an in-flight failure. Airline passengers are usually not aware of any minor failures that may occur in flight. The multiple duplication of systems makes the aircraft safe, but also increases the difficulty of troubleshooting problems. In addition to all the mechanical components, the aircraft must keep the passengers happy and comfortable. Keeping the passengers comfortable in-flight requires additional sub-systems made up of thousands of parts.

Longo was one of the mechanics required to change the lavatory pump on all DC9s, 727s and 747s in the wake of a fire on an Air Canada DC-9 flight in 1983 that killed 23 people. On June 2, 1983, Air Canada Flight 797, a DC-9-32, was at 33,000 feet en route to Toronto from Dallas, Texas when smoke



Air Canada 797 Crash at Cincinnati
Photo Credit - afkra.blogspot.com

was reported in the aft left lavatory. Cabin crew attempted to extinguish the hidden fire and the aircraft made an emergency descent and diverted to the Greater Cincinnati Airport. After a successful, but difficult landing, a fire broke out with a loss of 23 lives and the destruction of the aircraft. The American National Transportation & Safety Board (NTSB) later issued an accident report determining "that the probable causes of the accident was a fire of undetermined origin" For two weeks, the entire Air Canada maintenance staff did nothing but replace toilet pumps. It wasn't a difficult task, but it wasn't very pleasant.

This story underlines the key message that all aircraft maintenance must be performed to the highest standards, regardless of the task.

Longo then went on to the increasingly complex task of inspection with the column “Reflections on Inspection.” One night, an Air Jamaica flight was brought in for a routine inspection. He was alerted to look closely at engine number 2, which had an ongoing vibration issue. During the course of the inspection, he discovered that the retaining nuts on the CSD had been hand-tightened but not torqued – the mechanic likely was distracted from completing the task. In another scenario, a member of the deicing crew spotted a potentially disastrous issue. During the inspection, a 13 inch crack was discovered in the horizontal stabilizer elevator by a technician in a cherry picker, something that would never be seen during a ground inspection.

In a routine flight, the rear pressure bulkhead door in a DC-9 suddenly failed and the aircraft lost pressure at altitude. A rapid decompression then sucked out the rear door and a food trolley in rapid succession. A flight attendant was saved by two quick-thinking passengers. The plane landed without incident. Afterwards, the maintenance records for the plane were closely examined, including the x-ray inspections. The inspector of the x-rays failed to notice hairline cracks around the door. Later inspections revealed three other planes had similar cracks.

The key takeaways are to use your hands as well as your eyes during an inspection, to be ever vigilant for potential problems, and any inspection is only as good as the person performing the inspection.

The life of an aircraft mechanic can sometimes put you in close proximity to the rich and famous, which Longo discussed in his column ‘Close to Famous.’ The 747 hangar at Pearson Airport was known as the VIP terminal. When the red carpet was rolled out, he knew that something was up. There were varying degrees of fanfare, depending on the dignitary. A visit by a member of the Royal family was generally a subdued event. However, Longo described the arrival of President Ronald Regan as surreal. A C5 Galaxy armed with secret service agents and two bulletproof limousines arrived followed up by every nook and cranny of the hangar being scoured in advance of Air Force One’s arrival. “You would swear World War III was about to start,” Longo mused.

During the 1980 Federal Election, the hangar was used for the planes of both the Pierre Trudeau and Joe Clark campaigns. At one point, Longo was responsible for the inspection of Trudeau’s DC9. “I must have done a good job, he got reelected,” said Longo. Although it was great to get a glimpse of the Pope or the President of Mexico, the real excitement took place in the CP Air hangar across the tarmac. It was usually empty and always available for lease – the perfect venue for any famous rock group. The Rolling Stones used the hangar for a month to prepare for their Steel Wheels tour in 1989. Pink Floyd also booked the hangar for six weeks. Sometimes the hangar doors would be left open, allowing ground crews to see the band’s unique mix of laser beams and giant floating pigs, along with hearing their music. Eventually, the distraction started to interfere with ramp operations, so the doors were closed and all loitering prohibited. “There’s nothing like working on a DC9 and being serenaded by Pink Floyd live all night,” Longo mused.

In his final reading, Longo told the story of the time a USAF Thunderbird landed at Pearson with its gear up in the week leading up to the CNE Air Show. The plane was a special two-seater model designed to take members of the media up for joy rides. A contributing factor may have been that the media passenger was a very attractive female reporter! The plane was towed to the then-unused DC8 hangars. Longo had a chance to view the damaged aircraft. It looked as though the aircraft “had been carefully placed against the world’s largest grinding wheel.” There were rumours that the US Air Force intended to fly the damaged plane back to its home base, but Transport Canada refused to allow it to fly in Canadian airspace. Eventually a maintenance crew arrived, removed the wings, and then loaded the crippled plane onto a C5 Galaxy.

Chapter President George Toppie thanked our speaker for a most interesting talk. Volunteer Bob Winson presented Sam with a gift on behalf of the Chapter executive and members.

For those of you who would like to read more of Sam’s AMU Chronicles, the following websites may be of interest...

- <http://www.samlongo.com>
- www.amumagazine.com
- <https://www.amazon.ca/dp/0228850940>



Sam Longo in a Beech 18 at Centennial College