Danielle Moore lived her life full of hope and believed in creating great change for a more just and environmentally sustainable planet. In her 24 years, she touched the lives of countless people across Canada and around the world. She was a courageous leader, champion for justice, and environmental activist always keen to carry the hard work of sustainability forward. She accomplished so much in this short time span; she made the most of it.

Her enthusiasm and curiosity for life was insatiable. She was a brilliant learner, a masterful artist, and a tireless community-builder – a true leader that served with humility.

After participating in Ocean Bridge, a Canadian conservation initiative, Danielle was selected by UN Association in Canada with two other volunteers to represent her country at the United Nations Environment Assembly in Nairobi, Kenya. Danielle wanted to share the knowledge that she wished to absorb at this assembly with other youth of Canada. She was a bright light full of hope and positive energy. This all came crashing down on March 10, 2019 .

This disaster has changed the lives of Danielle's family members, close acquaintances and the communities she supported. We hope a bill can be framed appropriately so a pivotal improvement can be made towards enhanced aviation safety. The flight crew and the passengers are the most central stakeholder in this discussion so we appreciate you hearing our concerns.

Danielle, like the majority of flyers, had tacit faith in aviation safety. When you strap in to your seat, you are at the mercy of the pilots and everything that went into the design, approval, manufacture and maintenance of that plane. It needs to be airworthy and the pilots fully informed and trained. What went through my daughter's mind for the last 6 minutes of her life? She had no idea that Big Money, unsafe oversight and fraternal agreements amongst the agencies essentially had wrested control of the plane. The result was a wasteland of plane shards and passenger effects; the plane literally became shrapnel as it and the contents compressed and exploded as it hit the earth at 926 Kmph.

Boeing's raison d'etre is to make profits – this Blue-chip corporation is accountable to their shareholders. After a meteoric rise in stock, Boeing's self-parasitic board of directors paid its CEO $13.1 million incentive bonus and it committed $20B US for stock buy backs just after the first crash; safety is not their main priority.

Essentially certified by Boeing, the lethal algorithm of MCAS was designed with no redundancy. It was rubber-stamped by all aviation agencies leaving the pilots to solve the unsafe emergency condition without being trained or informed of its presence. Not only is this a violation of the regulation, this is against foundational engineering principles. Boeing and FAA approved the secrecy of MCAS. The application did exactly what it was eventually validated to do.

An algorithm is a set of rules that must be followed when solving a particular problem and require true, accurate data or information, structured with logic to ensure a successful outcome. At no time are sound algorithms most critical than when an emergency on board a plane occurs, especially during takeoff or landing when the pilots are most busy. There is no room for error

when the wheels leave the tarmac. Boeing and FAA had 5 years to get it right, but they only granted the pilots 2 cycles of 14 seconds. Boeing created a lethal loop. Pilots need to be fully in control of the input and response of the plane.

There were several other algorithms broken by lack of information and misguided logic that contributed to the two crashes.

Common sense dictates that these issues alone would have caused one of the agencies to ground the plane after the first crash and force the manufacturer to make the plane airworthy. However, FAA issued an EAD for pilots to follow for a plane that was not airworthy. The FAA conducted a risk assessment to determine the likelihood of another crash. They found that over the life of the current fleet of MAX planes, 15 MAX crashes over 45 years would occur; yet they allowed a non-airworthy plane to fly. They 'ante-upped' flight ET302 but the priceless crew and passengers were forced to be part of the bargain.

Since the MCAS was certified with a 'major hazard' rating – not 'catastrophic', one would think that the FAA would have grounded the plane after the first crash [i.e. it **was** catastrophic]. It is obvious that the FAA's agenda was to favour industry – not safety. How can we trust the FAA?

Together, these factors combined to confuse the pilots. The planes' response of the stabilizers from the automated signal conflicted with the pilots' training and handling of a BOEING 737. It didn't present itself exactly as a runaway stabilizer and disagreed with the crews' training for manual takeoff.

Oxford defines "validation" as 'The action of checking or proving the validity or accuracy of something… declaring something legally or officially acceptable'. It is akin to peer review. TCCA followed FAA's lead, perhaps as authorized by the bilateral agreement with FAA, [Roadmap], which was developed to improve industry efficiency and not safety. Validation is similar to peer review. If the information given is shoddy or not presented, safety will be overlooked forcing the ill-trained ill-informed pilots to troubleshoot and take appropriate action. The Roadmap by its nature, eliminated the validation stage.

Transport Canada had questions about the secretive change to the flight control system; the FAA did not respond to the initial concern letter . After the first crash, TCCA reiterated their request about MCAS. The FAA ignored the request. The flying public deserve to know the 'why' and the 'who' about why there were no answers. I think my daughter would want to know too; she cared about people.

Using the phrase "in retrospect", perhaps could be used to describe FAA's response to the lack of attention during certification of the MAX after the first crash; It should never be used after the second crash. Not only does this ignore the existence of the first crash, it gives the agency the appearance of being a victim, when they became an abettor of Boeing and the industry. Logic would suggest that the plane should have been grounded until the miscues could be addressed. Did anyone at FAA recommend grounding the MAX after the first crash?

The FAA is led by an administrator appointed by the American government that is focused on the efficacy of industry and maximization of growth. The values of that government together with the ODA Certification Process provides the right environment for shortcuts to be taken. Because the grounding of the plane would have upset industry, minimal steps were taken; typical tombstone mentality.

Currently, no one certifying products has anything at stake; there's no accountability. There needs to be **one** professional society that regulates and licenses those who conduct any of the field work supervision and management of certification. The members should be investigated upon complaint for misconduct like the process within an engineering association. Upon **any** accident, there should be an internal review to assure public safety –the FAA does not use their authority. Perhaps the Administrator should be required to be an engineer.

Perhaps the promotion of industry should be removed from the FAA's mandate – this is another idea that makes sense – similar to what was done with the creation of NTSB in 1967. The bottom line is that there needs to be more accountability and individuals must be held responsible for their actions.

Prior to the two crashes and since the inception of ODA, there <u>have</u> <u>been</u> <u>many</u> <u>Inspector General</u> <u>reports</u> and news reports identifying serious concerns and I highlight <u>one</u>. The IGO found flaws in the FAA's system for determining which Certificate Plans FAA engineers should focus on causing "a tendency to identify projects as low risk regardless of inputs that suggested higher risk factors." This is exactly one of the errors that FAA has repeated. The system needs to revert back to DOA, prior to DER where the Authorized Representative reports to the Authority – not the manufacturer.

How confident are you that there are no other bugs or issues that are not known? This Plane is still stall-prone. What happens when MCAS is disabled due to AoA disagree and the plane is actually stalling?   Even the NG has some significant issues that the Max has acquired. If it is not independently certified or validated as a new type, then experts should validate the cert plans of the 91 other systems and equipment in a holistic way as suggested through JATR? We know of at least four additional flaws on the MAX that are grandfathered because it is an amended type certificate. Remember FAA and Boeing have already used their second chance. A third crash will create another cohort of grieving families and will cripple the aviation industry.

We also have to ensure the **B737 Max**, not just MCAS is fully certified or at least validated independently. You would not want your kids or grandkids to board a plane that already has two strikes against it; recertification doesn't need to be rushed again. The global travelling public deserve better.

Committee members, let's not forget these two crashes were preventable. We the living, need to ensure we have the appropriate regulatory measures in place to minimize the likelihood that a third B737 Max crash will not happen. By giving the Bill the maximum attention to safety, the industry is actually strengthened. Do not allow the 346 lives lost be in vain.