

## United States Senate

October 29, 2019

### VIA ELECTRONIC DELIVERY

The Honorable Steve Dickson  
Administrator  
Federal Aviation Administration  
U.S. Department of Transportation  
800 Independence Avenue, SW  
Washington, DC 20591

Dear Administrator Dickson:

I write to reiterate my May 21, 2019 request that the Federal Aviation Administration (FAA) publish a comprehensive advisory circular that standardizes guidance on best practices for manufacturing, operating, testing and maintaining angle of attack (AOA) sensors, particularly the AOA wind vane component, to ensure effective compliance with all applicable regulatory requirements. Problems originating with a damaged or malfunctioning AOA sensor are not limited to any single model of aircraft or manufacturer. Enhancing AOA sensors must be a priority for the entire aviation industry and regulatory system.

FAA must work with industry to improve detection of AOA malfunctions when installed and in-service. This includes when a vane breaks off, suffers a large offset in its output or freezes up. FAA should also consult with experts to examine additional AOA measurement technologies that may represent superior alternatives to the current methods of measurement. In addition, FAA should address procedures for dealing with an AOA malfunction to ensure flights can continue safely and pilot workload capacity is restored.

The FAA's October 25, 2019 order revoking the repair station certificate of Xtra Aerospace, the firm that repaired and supplied the malfunctioning AOA sensor that contributed to the crash of Lion Air, only adds to my urgency in requesting the advisory circular. It is simply alarming that FAA's investigation: "...determined that from November 2009 until May 2019, Xtra failed to complete and retain records in accordance with procedures in its repair station manual to support parts on its capability list" and "The company also did not substantiate that it had adequate facilities, tools, test equipment, technical publications, and trained and qualified employees to repair parts on its capability list."

AOA sensor malfunctions are not limited to the 737 MAX series aircraft. A recent FAA emergency airworthiness directive (AD) issued on April 18, 2019 demonstrates the dangers of malfunctioning AOA sensors. This AD was necessitated by a manufacturing flaw in the torquing of set screws that secure the potentiometer shaft to the AOA vane shaft and the failure to apply thread locker to secure the set screws. It noted that the AOA sensor flaw could result in unintended automatic flight control activations; difficulty controlling the aircraft; excessive nose-down attitude and possible impact with terrain.

Letter to Administrator Dickson

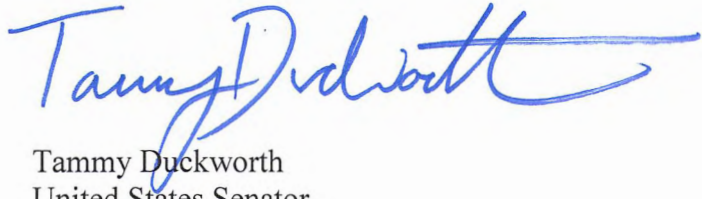
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As I noted in my May 21 letter to then-Acting Administrator Elwell, AOA vanes are on the outside of the aircraft and vulnerable to projectiles and significant wear and tear. Yet, malfunctioning AOA sensors can result in a series of cascading failures that significantly impair aviation safety. That is why I am reiterating my request for FAA to issue a clear and comprehensive advisory circular that sets forth standardized best practices for industry and flight crews in regard to manufacturing, operating, testing and maintaining AOA sensors.

Thank you in advance for your continued consideration of my urgent request. I look forward to learning about how FAA will begin developing this critical advisory circular.

Sincerely,

A handwritten signature in blue ink that reads "Tammy Duckworth". The signature is fluid and cursive, with a long horizontal stroke at the end.

Tammy Duckworth  
United States Senator