



March 5, 2019

Mr. Neil R. Wilson  
President and Chief Executive Officer  
Nav Canada  
77 rue Metcalfe St.  
Ottawa, ON K1P 5L6

RE: General Aviation and Business Aviation Concerns with Canadian ADS-B Out  
Performance Requirement Mandate

Dear Mr. Wilson,

On behalf of the many general aviation and business aviation companies, operators, the hundreds of thousands of pilots our organizations represent, and manufacturers, we are writing today to express our collective concerns about one requirement of Nav Canada's recommended ADS-B mandate. We believe that the proposed antenna diversity requirement will have a significant negative impact on Nav Canada's most cost-sensitive users. As the representatives and advocates of large segments of the Canadian and U.S. aviation industries, we support ADS-B and the efficiency and safety benefits it will provide when it is adopted in a manner that supports general and business aviation on IFR and VFR flights. We do not believe that our concerns, which were voiced during the consultation phase, have been fully considered.

Contrary to an assumption that was mentioned, the majority of the Canadian general aviation fleet are not equipped with TCAS II (ACAS II) systems which requires antenna diversity. While some high-performance general aviation and business aviation aircraft may voluntarily equip with TCAS II, this system is only mandated in Canada for commercial turbine-powered transport aircraft with more than 30 passenger seats or weigh more than 33,000 lbs., or for aircraft that operate in RVSM airspace. There are currently no CAR general aviation rules requiring Private

Operators (Subpart 604 of the CARs) to equip with TCAS II equipment, so a limited number of private aircraft are TCAS II equipped. Thousands of non-commercial aircraft without diversity regularly fly above 12,500 feet, which makes the assumption that TCAS II equipage is predominant on the private aircraft fleet that flies above 12,500 feet erroneous. Implementing an unwarranted diversity requirement as part of Nav Canada's ADS-B proposed mandate would have a significant adverse impact on many general aviation and business aviation aircraft owners and companies.

The cost to equip small aircraft with diversity today is significant and installations of this type of system are rare. Per the leading general aviation and business aviation ADS-B equipment manufacturer, diversity-compatible systems comprise only 1.6% of non-TCAS II-equipped aircraft sales. The cost of a diversity-compatible system is presently several thousand dollars more than a non-diversity system.

The shop time to install the second antenna is high since the headliner must be removed to gain access to install the top antenna. If the aircraft is pressurized, the installation will need additional approval for the pressure vessel penetration, which can cost thousands by itself. Additionally, Canada lacks a simplified path for installation and approval, so it is expected that a supplementary type certificate would be required for approval if there is no existing approval for installation of a diversity-compatible transponder. Given the aforementioned low number of diversity shipments, there are few existing approvals, which will add further expense and time.

Not to mention that a lot of Canadian operators were early adopters and have already equipped with ADS-B systems to meet the U.S. ADS-B mandate, which does not require diversity. Many of these ADS-B systems are not readily compatible with diversity and cannot be easily retrofitted, meaning these operators will need to almost immediately replace the ADS-B system they just installed.

As stated at the Nav Canada-hosted webex on January 11, 2019, further engineering analysis is being conducted to determine whether diversity is required at altitudes below 12,500 feet. However, we believe that Nav Canada should conduct additional, complete, and extensive analysis at all flight levels before imposing what we consider could be an unnecessary and expensive equipment requirement.

Additional discussion with industry is warranted to ensure that the Canadian ADS-B mandate is realistic. Should diversity be justified in specific airspace and levels, we believe that the mandate proposal must allow enough time for operators to be educated, solutions approved, and installations to take place; the current timeline is not realistic for a successful mandate implementation.

In conclusion, we respectfully request that Nav Canada conduct additional engineering analysis to determine if antenna diversity is required in any airspace, including Class A and Class B. Nav Canada should also acknowledge the significant increase in cost for diversity ADS-B systems amongst the non-commercial aircraft fleet in their justifications for an ADS-B mandate, and should work with the aviation industry to find suitable mitigations. It should be Nav Canada's goal to seek safe and economical solutions that support the general aviation and business aviation

communities. With many questions about the validity of a diversity mandate still unresolved, the general aviation and business aviation industries will suffer from the repercussions of a premature and unnecessary ADS-B mandate.

Sincerely,

Aircraft Electronics Association  
Aircraft Owners and Pilots Association  
Alaska Airmen Association  
Canadian Business Aviation Association  
Canadian Owners and Pilots Association

Experimental Aircraft Association  
Garmin Ltd.  
General Aviation Manufacturers Association  
National Air Transportation Association  
National Business Aviation Association

CC: Mr. Boyd Barnes, National Manager, Level of Service, Navigation & Airspace, Nav Canada  
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Mr. Pierre Ruel, Chief, Flight Standards, Transport Canada