



## **NATIONAL TRANSPORTATION SAFETY BOARD**

Office of Aviation Safety  
Washington, D.C. 20594

March 2, 2021

### **Automatic Dependent Surveillance-Broadcast (ADS-B) Regulatory Requirements**

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**A. ACCIDENT**

Location: Soldotna, Alaska  
Date: July 31, 2020  
Time: 0827 Alaska Daylight Time (ADT)<sup>1</sup>  
1627 Coordinated Universal Time (UTC)  
Airplanes: DHC2; N4982U and PA-12; N2587M

**B. AVIATION ACCIDENT INVESTIGATOR**

Brice Banning  
IIC  
Senior Aviation Accident Investigator  
National Transportation Safety Board

**C. SUMMARY**

On July 31, 2020, about 0827 Alaska daylight time, a de Havilland DHC-2 (Beaver) airplane, N4982U, and a Piper PA-12 airplane, N2587M, were involved in an accident near Soldotna, Alaska. The pilots of both airplanes and the five passengers on the DHC-2 were fatally injured. The DHC-2 was operated as a Title 14 *Code of Federal Regulations (CFR)* Part 135 on-demand charter flight. The PA-12 was operated as a Title 14 *CFR* Part 91 personal flight.

**D. ADS-B REGULATORY REQUIREMENTS**

Since January 1, 2020, ADS-B Out equipment (that broadcasts the airplane’s position to ATC and other aircraft) has been required to be installed on all aircraft in the National Airspace System (NAS) operating above 10,000 ft. and within or above Class B and C airspace, with certain exceptions (see 14 *CFR* 91.225). ADS-B Out is not required in the area of the accident. There is no requirement for ADS-B In anywhere in the NAS.

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<sup>1</sup> All times in the report will be in Alaska daylight time, also known as local lime, except as noted. At the time of the accident local time was UTC -8 hours.

**E. TITLE 14 CFR 91.225**

Title 14 CFR 91.225 stated the following, in part:

*After January 1, 2020, and unless otherwise authorized by ATC, no person may operate an aircraft in Class A airspace unless the aircraft has equipment installed that—*

*(1) Meets the performance requirements in TSO-C166b, Extended Squitter Automatic Dependent Surveillance-Broadcast (ADS-B) and Traffic Information Service-Broadcast (TIS-B) Equipment Operating on the Radio Frequency of 1090 Megahertz (MHz); and*

*(2) Meets the requirements of § 91.227.*

*(b) After January 1, 2020, and unless otherwise authorized by ATC, no person may operate an aircraft below 18,000 feet MSL and in airspace described in paragraph (d) of this section unless the aircraft has equipment installed that—*

*(1) Meets the performance requirements in—*

*(i) TSO-C166b; or*

*(ii) TSO-C154c, Universal Access Transceiver (UAT) Automatic Dependent Surveillance-Broadcast (ADS-B) Equipment Operating on the Frequency of 978 MHz;*

*(2) Meets the requirements of § 91.227.*

*(c) Operators with equipment installed with an approved deviation under Sec. 21.618 of this chapter also are in compliance with this section.*

*(d) After January 1, 2020, and unless otherwise authorized by ATC, no person may operate an aircraft in the following airspace unless the aircraft has equipment installed that meets the requirements in paragraph (b) of this section:*

*(1) Class B and Class C airspace areas;*

*(2) Except as provided for in paragraph (e) of this section, within 30 nautical miles of an airport listed in appendix D, section 1 to this part from the surface upward to 10,000 feet MSL;*

*(3) Above the ceiling and within the lateral boundaries of a Class B or Class C airspace area designated for an airport upward to 10,000 feet MSL;*

*(4) Except as provided in paragraph (e) of this section, Class E airspace within the 48 contiguous states and the District of Columbia at and above 10,000 feet MSL, excluding the airspace at and below 2,500 feet above the surface; and*

*(5) Class E airspace at and above 3,000 feet MSL over the Gulf of Mexico from the coastline of the United States out to 12 nautical miles.*

*(e) The requirements of paragraph (b) of this section do not apply to any aircraft that was not originally certificated with an electrical system, or that has not subsequently been certified with such a system installed, including balloons and gliders. These aircraft may conduct operations without ADS-B Out in the airspace specified in paragraphs (d)(2) and (d)(4) of this section. Operations authorized by this section must be conducted--*

*(1) Outside any Class B or Class C airspace area; and*

*(2) Below the altitude of the ceiling of a Class B or Class C airspace area designated for an airport, or 10,000 feet MSL, whichever is lower.*

*(f) Each person operating an aircraft equipped with ADS-B Out must operate this equipment in the transmit mode at all times.*

*(g) Requests for ATC authorized deviations from the requirements of this section must be made to the ATC facility having jurisdiction over the concerned airspace within the time periods specified as follows:*

*(1) For operation of an aircraft with an inoperative ADS-B Out, to the airport of ultimate destination, including any intermediate stops, or to proceed to a place where suitable repairs can be made or both, the request may be made at any time.*

*(2) For operation of an aircraft that is not equipped with ADS-B Out, the request must be made at least 1 hour before the proposed operation.*