



Sikorsky
A Lockheed Martin Company
6900 Main Street Stratford, CT 06615-9129
Mailstop S212A4
Telephone +1 203•386•4000

**US Department of Transportation
Federal Aviation Administration**
1200 New Jersey Avenue
SE West Building Ground Floor
Room W12-140
Washington, DC 20590

April 15, 2021

Sikorsky Aircraft Corporation — (1) Request Exemption for the S-70i allowing restricted category training flights on two aircraft utilizing an ADS-B Out system compliant with DO-260A

Reference:

- a) 14 CFR 91.225 Amdt. 91-336; Automatic Dependent Surveillance-Broadcast (ADS-B) Out equipment and use.
- b) 14 CFR 91.227 Amdt. 91-314; Automatic Dependent Surveillance-Broadcast (ADS-B) Out equipment performance requirements.
- c) AC-20-165A Airworthiness Approval of Automatic Date: 11/07/12 AC No: 20-165A Dependent Surveillance - Broadcast (ADS-B) Initiated by: AIR-130 Out Systems
- d) RTCA DO-260A / DO-260B Minimum Operational Performance Standards for 1090 MHz Extended Squitter Automatic Dependent Surveillance - Broadcast (ADS-B) and Traffic Information Services - Broadcast (TIS-B)
- e) TM 1-S70i-280-10; S-70i Operator's Manual

Based on the continuing requirement for Sikorsky, A Lockheed Martin Company, to conduct research and development, market survey, and customer training flights, Sikorsky requests an exemption from the requirements of section 14 CFR 91.225(b) and 14 CFR 91.227(d)(18) for aircraft N8034M and N8048X. These are S-70i type aircraft and are not Type Certified. These two aircraft are operated with a special airworthiness certificate under experimental category. The requested exemption will allow Sikorsky Aircraft to operate in airspace that requires ADS-B out equipment utilizing a system which enhances the aircraft capabilities and increases situational awareness in the interest of public safety. These aircraft are utilized for the purpose of providing training to local and federal government agencies required for forestry services and wildlife preservation.

Based on recently completed ground and flight testing, the ADS-B Out system installed on aircraft N8034M and N8048X meets the airworthiness requirements and considerations for ADS-B Out installations and demonstrates compliance with the ADS-B Out requirements defined in 14 CFR 91.225 and 14 CFR 91.227 with the following exceptions from AC 20-165B.

With respect to 14 CFR 91.225(b):

- The Mode 3/A parameter in Register 6116 required by AC 20-165B is not broadcast; this is because DO-260A does not support the broadcast of this parameter.
- The Single / Dual antenna parameter is broadcast in Register 0516 in accordance with DO-260A while DO-260B requires it to be broadcast in Register 6516. It is worth noting that the S-70i ADS-B implementation utilizes a dual antenna configuration and the system does not permit the operator to select a single antenna broadcast and therefore always operates in a dual antenna configuration.

Protected Information

- SILSUPP is not broadcast for this implementation as is required by DO-260B, however position source SILSUPP would have been preset to ZERO if this message were broadcast since the ADS-B system is interfaced with a GNSS position source that is compliant to TSO-C129 compliant or equivalent.
- This implementation is based on DO-260A, and consequently transmits the ADS-B Out system version as 1.

With respect to 14 CFR 91.227(d)(18):

- The System Design Assurance (SDA) parameter is not broadcast as is required by DO-260B; this is because DO-260A does not support the broadcast of the SDA parameter. Systems analysis determined that the SDA value is 2 for the implemented ADS-B Out system as described in the ADS-B Out Analysis document, SER-70950013.

Discussion:

Sikorsky Aircraft current operates two S-70i aircraft under special airworthiness certificate registration N8034M and N8048X that supports research and development, market survey and crew training out of a Sikorsky training facility located at Witham Field (KSUA) in Stuart FL. Based on recently completed software changes to the Flight Management System (FMS) software, Sikorsky has completed ground and flight tests to enable ADS-B Out. The system utilizes the S-70i APX-117 IFF system to transmit the ADS-B messages. This system was tested by Sikorsky and was shown to meet the requirements of 14 CFR 91.225 and 14 CFR 91.227 with the exceptions listed detailed earlier. The FMS implementation for which this exemption is being requested transmits all the ADS-B data relative to the aircraft's position to FAA ATC facilities. This exemption requests the FAA approval to permit the operation of N8034M and N8048X with an ADS-B system meeting the requirements DO-260A for demonstration, pilot training and acceptance flights of the S-70.

The full Ground and Flight Test report and a Compliance matrix created by Sikorsky are available for review if desired. If the requested exemption is granted, Sikorsky Aircraft will be able to continue the required training for this critical mission and allows the installation of a system which enhances the aircrafts situational awareness and supports the FAA ADS-B initiative in the interest of public safety.

For clarification about this request, please contact the undersigned at 203-461-4068, or email at eric.k.hansen@lmco.com.

Sincerely,



Eric Hansen

Engineering and Development Manager, S-70i
Sikorsky Aircraft Corporation
6900 Main St. Stratford CT 06615