U.S. Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave., SW.
Washington, DC 20591

Shawn Knickerbocker
[redacted]

Dear Mr. Knickerbocker:

In an e-mail dated April 27, 2006, you inquired whether a sailplane or glider not equipped with a transponder could operate at 14,500 feet MSL above Class B airspace. Further you cited Title 14, Code of Federal Regulations (14 CFR) sections 91.215(b)(3)(i) and 91.215(b)(5). Section 91.215 states in relevant part:

> (b) *All airspace.* Unless otherwise authorized or directed by ATC, no person may operate an aircraft in the airspace described in paragraphs (b)(1) through (b)(5) of this section, unless that aircraft is equipped with an operable coded radar beacon transponder having either Mode 3/A 4096 code capability, replying to Mode 3/A interrogations with the code specified by ATC, or a Mode S capability, replying to Mode 3/A interrogations with the code specified by ATC and intermode and Mode S interrogations in accordance with the applicable provisions specified in TSO C–112, and that aircraft is equipped with automatic pressure altitude reporting equipment having a Mode C capability that automatically replies to Mode C interrogations by transmitting pressure altitude information in 100-foot increments. This requirement applies—
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> (1) *All aircraft.* In Class A, Class B, and Class C airspace areas;
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> (2) *All aircraft.* In all airspace within 30 nautical miles of an airport listed in appendix D, section 1 of this part from the surface upward to 10,000 feet MSL;
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> (3) Notwithstanding paragraph (b)(2) of this section, any aircraft which was not originally certificated with an engine-driven electrical system or which has not subsequently been certified with such a system installed, balloon or glider may conduct operations in the airspace within 30 nautical miles of an airport listed in appendix D, section 1 of this part provided such operations are conducted—
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> (i) Outside any Class A, Class B, or Class C airspace area; and

> (ii) 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; and
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> (4) All aircraft in all airspace 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; and
>
> (5) All aircraft except any aircraft which was not originally certificated with an engine-driven electrical system or which has not subsequently been certified with such a system installed, balloon, or glider—
>
> (i) In all airspace of 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
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> (ii) In the airspace from the surface to 10,000 feet MSL within a 10-nautical-mile radius of any airport listed in appendix D, section 2 of this part, excluding the airspace below 1,200 feet outside of the lateral boundaries of the surface area of the airspace designated for that airport.

Section 91.215 does not prohibit gliders or sailplanes not equipped with transponders from operating above 10,000 feet MSL and thus above the ceiling of and outside Class B airspace. With few exceptions, the ceiling of all Class B airspace is at 10,000 feet MSL or below. We applied the analyses below to arrive at this conclusion.

An unequipped glider or sailplane along with any other aircraft not equipped with a transponder is prohibited from operating inside Class A, B, and C airspace by subparagraph (b)(1).

Subparagraph (b)(2) precludes all aircraft not equipped with a transponder from operating in the airspace from the surface to 10,000 feet MSL within 30 nautical miles of an airport listed in Appendix D, Section 1 of 14 CFR part 91. However, this subparagraph is silent with respect to the airspace above 10,000 feet MSL within 30 nautical miles of airports listed in Appendix D, Section 1. Thus there is no prohibition against operations by unequipped aircraft above 10,000 feet MSL and below 18,000 feet MSL under subparagraph (b)(2).

Subparagraph (b)(3) provides relief for gliders, sailplanes, and other aircraft that were neither originally certificated with nor subsequently fitted with an engine driven electrical system from the restrictions of subparagraph (b)(2) which, once again, apply only to airspace from the surface up to 10,000 feet MSL within 30 nautical miles of an Appendix D, Section 1 airport. The airspace above 10,000 feet MSL remains unaffected. The practical effect of paragraph (b)(3) with the respect to your question is that it allows non-equipped aircraft to enter the 30-nautical mile circles surrounding Appendix D, Section 1 airports between the surface and 10,000 feet MSL and to operate beneath the floors of the associated Class B airspace as they incrementally ascend from the surface in a shape commonly described as an ‘upside down wedding cake.’

In the context of your question, subparagraph (b)(4) would prohibit an unequipped glider or sailplane from operating in the 'wedge' of airspace that may exist directly above Class B or Class C airspace and below 10,000 feet MSL. If the ceiling of the Class B or Class C airspace is at 10,000 feet MSL, then subparagraph (b)(4) is rendered moot.

Finally, subparagraph (b)(5) allows a gliders, sailplanes, and other aircraft that were neither originally certificated with nor subsequently fitted with an engine driven electrical system to operate at or above 10,000 feet MSL (and below 18,000 feet MSL) in the airspace above the 48 contiguous United States and the District of Columbia whereas other unequipped aircraft may not operate in such airspace. The remaining content of subparagraph (b)(5) applies to airspace from the surface up to 10,000 feet MSL and, thus, we omit further analysis as it is outside the scope of your question.

We point out that Class B airspace is designated at the nation's most heavily trafficked airports and is typically transited by large aircraft operating at high speeds. A glider or sailplane not equipped with a transponder would be essentially invisible to ground radar and to collision avoidance systems on board most large transport aircraft. Any descent into airspace below 10,000 feet MSL would be a violation of section 91.215 and could result in an enforcement action against the pilot. Further, an operation directly above Class B airspace that results in descending below 10,000 feet MSL and into Class B airspace also may violate section 91.13 depending on the circumstances.

While there is a see-and-avoid obligation on all aircraft operation in this airspace, operation of sailplanes and non-equipped gliders should be undertaken with great care and special attention to the pattern of arrivals and departures in a given terminal area. While not prohibited, these operations are not typical of glider or sailplane activities.

We trust that this interpretation has answered your questions. This was prepared by Naveen Rao, Attorney, Office of the Chief Counsel and coordinated with the Flight Standards Service and the Air Traffic Organization.

Sincerely,

Rebecca B. MacPherson
Assistant Chief Counsel, Regulations Division