No. 18-1140

IN THE

Supreme Court of the United States

AVCO COPORATION

Petitioner,

v.

JILL SIKKELEE,

Respondent.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Third Circuit

BRIEF OF *AMICUS CURIAE* GENERAL AVIATION MANUFACTURERS ASSOCIATION IN SUPPORT OF PETITION FOR A WRIT OF CERTIORARI

Lauren Lacey Haertlein
Counsel of Record
THE GENERAL AVIATION MANUFACTURERS ASSOCIATION
Counsel for Amicus Curiae
1400 K Street NW, Suite 801
Washington, D.C. 20005
202-393-1500
lhaertlein@gama.aero

April 22, 2019

CORPORATE DISCLOSURE STATEMENT

Amicus curiae the General Aviation Manufacturers Association, Inc. (GAMA) is a not-for-profit trade association representing the interests of the general aviation industry. It has no publicly owned parent corporation, subsidiary, or affiliate, nor has it issued shares or debt securities to the public. No publicly held company owns 10% or more of any stock in GAMA.

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Page(s)

Statutes

Rules

Regulations

Other Authorities

Page(s)

INTEREST OF AMICUS CURIAE[1]

Amicus curiae GAMA is an international trade association representing over 100 of the world's leading manufacturers of general aviation aircraft, engines, avionics, and components, as well as operators of maintenance facilities, fixed base operators, aircraft fleets, and pilot and technician training facilities. General aviation encompasses all civilian flying except scheduled commercial transport and includes business travel, medical transport, aerial firefighting, law enforcement, flight training, aerial agricultural services, surveying, and search and rescue. Throughout its forty-nine year history, GAMA has been dedicated to fostering and advancing the welfare, safety, interests, and activities of the global general aviation industry.

This case presents a critical question about the federal regulatory framework governing the safety of aviation products; specifically, standards for design and manufacturing. Although the decision has significant implications for the entire aviation industry, GAMA represents the general aviation manufacturers and is uniquely positioned to discuss the impacts on this industry segment. GAMA's members make nearly all of the general aviation

[1] Per Rule 37.2, counsel of record received timely notice of intention to file this brief, and all parties have consented to its filing. In accordance with Rule 37.6, *Amicus* states that no monetary contributions were made for the preparation or submission of this brief, and this brief was not authored, in whole or in part, by counsel for a party.

aircraft flying today, ranging from two-seat, single-engine piston airplanes to multi-engine turbine helicopters. Lycoming Engines, a division of Petitioner Avco Corporation, is a GAMA member company. Many GAMA member companies hold Federal Aviation Administration (FAA) design approvals and work with the FAA and the agency's design and manufacturing regulations and policies daily.

As general aviation manufacturers, GAMA's members have a substantial interest in this case. With decades-long expertise in the design, manufacturing, and certification of aviation products, GAMA's unique perspective will be useful to the Court in understanding the FAA's complex, comprehensive regulatory scheme.

SUMMARY OF ARGUMENT

Aviation manufacturers are subject to a comprehensive federal regulatory framework. Congress specifically tasked the FAA with approving initial aviation product designs and subsequent design changes and monitoring products in service for potential safety hazards. The FAA exercises pervasive authority to establish aviation design standards and approve compliance with those standards. The FAA also retains ultimate, exclusive authority over changes to approved designs and monitors aviation products throughout their lives in service to address any safety issues. The FAA has consistently stated that this regulatory framework preempts the field of design safety standards.

The Third Circuit's result-driven ruling in this case replaced a careful analysis of the regulatory framework at issue. This decision—and the Third Circuit's 2016 *Sikkelee* opinion—critically misunderstand the regulatory framework for the safety of aviation products and conflict with Congressional intent, this Court's precedent, and the well-reasoned judgments of other Circuits. Undermining this regulatory scheme subjects manufacturers and aircraft operators to an unworkable array of conflicting requirements, and jeopardizes the safety and viability of the aviation industry.

ARGUMENT

I. Aviation manufacturers are subject to a federal regulatory framework that establishes the standards of care for the design of aviation products and parts.

A. At the direction of Congress, the FAA has promulgated a comprehensive regulatory system for approving and maintaining the safety of aviation products and parts.

Aviation products are regulated "to a degree not comparable to any other" industry. GARA, HR No. 103-525(II) (1994), *as reprinted in* 1994 U.S.C.C.A.N. 1644, 1647. At the direction of Congress, the FAA has established a comprehensive framework that regulates aviation design and manufacturing from cradle to grave. FAA regulations require federal certification of designs, production

of approved designs, and individual aircraft airworthiness, as well as govern post-certification maintenance, design modifications, and continued operational safety.

The FAA's regulation of aviation product design begins at a product's inception, with a five-phase type certification process: conceptual design, requirements definition, compliance planning, implementation, and post certification. *See generally* FAA Order 8110.4C, *Type Certification* (Mar. 28, 2007)[2] (hereinafter "FAA Order 8110.4C"). Congress empowered the FAA to evaluate every aspect of a proposed product relevant to safety. *See* 49 U.S.C. § 44704(a)(1) ("On receiving an application for a type certificate, the Administrator shall investigate the application and may conduct a hearing. The Administrator shall make, or require the applicant to make, tests the Administrator considers necessary in the interest of safety."). The FAA approves the design of an aviation product and issues a type certificate if the agency determines that the product satisfies its certification basis and has no unsafe feature or characteristic. 14 C.F.R. § 21.21. "The certification basis is established by the FAA and agreed to by the applicant, based on a mutual understanding of the design features of the product to be certified." FAA Order No. 8110.4C, at 30–31. A product's certification basis designates all applicable federal regulations and any special

[2] https://www.faa.gov/documentLibrary/media/Order/FAA_Order_8110_4C_Chg_6.pdf.

conditions[3] that must be met to achieve type certification, effectively defining the FAA safety standards for the product.

The FAA's lengthy design and manufacturing regulations prescribe both specific and general substantive standards for the design, manufacture, and performance of aviation products. 14 C.F.R. Part 33 "prescribes the general design and construction requirements for reciprocating and turbine aircraft engines." *Id.* § 33.11. For example, 14 C.F.R. § 33.35(a) addresses the engine fuel system and requires that it "be designed and constructed to supply an appropriate mixture of fuel to the cylinders throughout the complete operating range of the engine under all flight and atmospheric conditions." 14 C.F.R. § 33.33 specifies that an "engine must be designed and constructed to function throughout its normal operating range of crankshaft rotational speeds and engine powers without inducing excessive stress in any of the engine parts because of vibration and without imparting excessive vibration forces to the aircraft structure." Manufacturers must demonstrate compliance with every requirement of the certification basis in accordance with the detailed certification plan approved by the FAA. *Id.* §§ 21.17; 21.20;

[3] If the FAA finds that the airworthiness regulations "do not contain adequate or appropriate safety standards for an aircraft, aircraft engine, or propeller because of a novel or unusual design feature" the agency prescribes special conditions and amendments to ensure "a level of safety equivalent to that established in the regulations." 14 C.F.R. § 21.16.

21.21. This can take thousands of man hours, averaging three to five years for an aircraft.

After a manufacturer generates, substantiates, and documents compliance data, the FAA reviews the data and makes an independent finding about whether to issue a type certificate. A type certificate includes "the type design, the operating limitations, the certificate data sheet, the applicable regulations . . . with which the FAA records compliance, and any other conditions or limitations prescribed for the product." *Id.* § 21.41. Congress has found that the FAA's "certification means that the product meets world-wide recognized standards of safety and reliability." Federal Aviation Reauthorization Act of 1996, Pub. L. No. 104-264, § 271(9), 110 Stat. 3213, 3239 (1996). Even in rejecting field preemption, the Third Circuit recognized that a type certificate "arguably reflects nationwide standards for the manufacture and design of . . . parts." *Sikkelee v. Precision Airmotive Corp.*, 822 F.3d 680, 694 (3d Cir. 2016).

In addition to setting design standards and certifying that a product meets those standards, federal regulations also require FAA certification to manufacture duplicate products of an approved design (production certificate), 14 C.F.R. pt. 21, subpt. G, and FAA certification that each individual aircraft meets its approved design and "is in a condition for safe operation" (airworthiness certificate), *id.* § 21.1(b)(1). *See also id.* pt. 21, subpt. H (describing the procedural requirements for the FAA to issue airworthiness certificates).

Through this extensive, multi-step certification system, the FAA comprehensively regulates the design safety standards for aviation products. Even the Third Circuit previously held, based on the pervasiveness of FAA regulation, that "federal law establishes the applicable standards of care in the field of air safety" in *Abdullah v. American Airlines, Inc.*, 181 F.3d 363, 367 (1999)—reasoning with which other circuits have agreed. *See US Airways, Inc. v. O'Donnell*, 627 F.3d 1318, 1327 (10th Cir. 2010) (citing *Abdullah* and cases following *Abdullah*); *Montalvo v. Spirit Airlines*, 508 F.3d 464, 473 (9th Cir. 2007) ("[T]he Third Circuit became the leading circuit to recognize that federal law preempts the entire field of aviation safety. *Abdullah,* 181 F.3d at 367–68."); *Greene v. B.F. Goodrich Avionics Sys.*, 409 F.3d 784, 795 (6th Cir. 2005) ("We agree with the Third Circuit's reasoning in *Abdullah* that federal law establishes the standards of care in the field of aviation safety and thus preempts the field from state regulation."); *Witty v. Delta Airlines*, 366 F.3d 380, 385 (5th Cir. 2004) (citing *Abdullah*). Subsequently, in *Elassaad v. Independence Air, Inc.*, 613 F.3d 119, 128 (3d Cir. 2010), the Third Circuit specifically discussed the FAA's "standards for the construction and maintenance of aircraft" and "regulations detail[ing] certification and 'airworthiness' requirements for aircraft parts" in the context of the preempted field of air safety. The Third Circuit's latest opinion is impossible to square with its own opinions and the decisions of other circuit courts, let alone the Federal Aviation Act and the FAA's regulations. Given this perva-

sive regulatory framework, denying federal design safety standards their preemptive effect is simply illogical.

B. FAA regulations require any design approval holder to conform to its FAA approved design and obtain FAA approval before making any changes.

As the majority acknowledged, FAA regulations prohibit a design approval holder from unilaterally changing an FAA-approved design to comply with a state requirement *before* submitting the change to the FAA for review and approval. *Sikkelee v. Precision Airmotive Corp.*, 907 F.3d 701, 713 (3d Cir. 2018), *reh'g denied* (Dec. 11, 2018) (stating that "the Federal Aviation Act and FAA regulations require FAA approval of a type certificate and changes to it"). The comprehensive FAA regulatory framework simply does not allow an FAA design approval holder to unilaterally change an approved design—let alone change the design of another approval holder's product or part. A design approval holder cannot change its design to comply with a state requirement without FAA approval, and a design approval holder only can request to change a design that it owns. Significantly, at issue in this case are two *separate* FAA design approvals held by two *different* entities: a type certificate (issued in 1969 for Lycoming's engine) and a Parts Manufacturer Approval (PMA) (issued in 2004 for the after-market carburetor fastening mechanism).

A type certificate is an FAA design approval. 14 C.F.R. § 21.1(b)(4). A PMA is a combined FAA design and production approval permitting its holder to manufacture replacement or modification articles for type-certificated products, separate from the type certificate. *Id.* pt. 21, subpt. K.[4] Any change to an approved design—a type certificate or a PMA—requires the specific design approval holder to submit the change to the FAA for review and acceptance. *Id.* pt. 21, subpt. D; § 21.319. Any design change that has an appreciable effect on airworthiness requires an approval process similar to the initial design approval process. *Id.* §§ 21.97; 21.319.

A type certificate holder has no control over the design, manufacturing, and approval of a third-party PMA article. As the FAA has explained, a type certificate holder "has no knowledge or data about the PMA . . . parts installed in [its] product and, therefore, can only assess the airworthiness systems effects of their parts installed in the product." FAA Special Airworthiness Information Bulletin NE-08-40, *Powerplant–Original Type and Production Certificate Holder Parts and Aftermarket Modification and Replacement Parts* (Aug. 8, 2008)[5] (hereinafter "SAIB NE-08-40"). Accord-

[4] "Article" means a material, part, component, process, or appliance. 14 C.F.R. § 21.1(b)(2). "Product" means aircraft, aircraft engine, or propeller. *Id.* § 21.1(b)(6).

[5] http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgSAIB.nsf/0/af4cd7d303d7ba628625749f006afbc7/$FILE/NE-08-40.pdf.

ingly, FAA regulations establish safety obligations for PMA holders independent of type certificate holders. 14 C.F.R. §§ 21.3, 21.50; *see also* SAIB NE-08-40 ("TC/PC holders, PMA holders, and STC holders are responsible for the COS [continued operational safety] support in accordance with the applicable standards for their parts and products which they have designed and produced.").

Further, a type certificate holder cannot change —directly or indirectly—the design of third-party PMA articles approved for after-market installation on its type certificated product. 71 Fed. Reg. 33608, 33609 (June 12, 2006) ("[T]he type certificate holder is not responsible for PMA parts that are not included in the type design."). A type certificate holder only can change its own type design, subject to FAA approval. A change to original equipment, however, does not mandate a change to a PMA article approved for installation on that product. There is no requirement that a PMA article "mimic" original equipment. A PMA holder must produce articles that conform to *its* approved design. *See* 14 C.F.R. § 21.316 (stating that the PMA holder is responsible for "[e]nsur[ing] that each PMA article conforms to its approved design and is in a condition for safe operation"). Absent an FAA-issued airworthiness directive, the PMA holder controls the choice to change the design of its article, subject to FAA approval. FAA Order 8110.42D, *Part Manufacturer Approval Procedures* (Sept. 15, 2017),[6]

[6] https://www.faa.gov/documentLibrary/media/Order/FAA_Order_8110.42D_with_chg_1.pdf.

at 2-11 (hereinafter "FAA Order 8110.42D") ("PMA holders control their designs and assess the magnitude and impact of later changes."); FAA Advisory Circular 21.303-4, *Application for Parts Manufacturer Approval Via Tests and Computations or Identicality* (Mar. 21, 2014),[7] para. 23 ("PMA holders are responsible for the integrity of their designs throughout their articles' service lives.").

Accordingly, not only is it impossible for Lycoming to unilaterally change *its* design to comply with state standards, but it is also impossible for Lycoming to change—or even influence—the design of the allegedly defective PMA article. In rejecting preemption, however, the majority focuses on the fact that Lycoming previously had submitted various changes to its type certificate to the FAA, which the agency approved. *Sikkelee*, 907 F.3d at 713 ("The nature of FAA regulations and Lycoming's interactions with the FAA—including the changes it has made to its type certificate—demonstrate that Lycoming could have—indeed it had—adjusted its design."). The fact that there is a regulatory process for a design approval holder to obtain FAA authorization for a design change does not negate that FAA regulations first require agency intervention. Rather, the example underscores the inability of a design approval holder to independently make a change. By undermining the significance of the need for the FAA to approve a design change, the Third Circuit undoes the FAA's

[7] https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_21.303-4.pdf.

regulatory scheme—not to mention this Court's precedent.

C. FAA control over aviation design standards extends to monitoring and resolving safety issues with certified products and articles in service.

Congress not only tasked the FAA with regulating aviation design and manufacture, but also with overseeing approved designs while the designs are in service. The FAA has mechanisms to continually evaluate the safety of approved products and address issues. FAA regulations require design approval holders to report certain product failures, malfunctions, and defects to the FAA. 14 C.F.R. § 21.3 ("The holder of a type certificate (including amended or supplemental type certificates), a PMA, or a TSO authorization, or the licensee of a type certificate must report any failure, malfunction, or defect in any product or article manufactured by it that it determines has resulted in any of the occurrences listed in paragraph (c) of this section."). The agency uses a technical procedure, the Monitor Safety/Analyze Data process, to track and assess in-service fleet data, determine if an "unsafe condition" exists, and evaluate and select corrective action. *See generally* FAA Order 8110.107A, *Monitor Safety/Analyze Data*, (Oct. 1, 2012),[8] at 1.

[8] https://www.faa.gov/documentLibrary/media/Order/FAA_Order_8110.107A.pdf.

Congress empowered the FAA to re-inspect a product at any time and amend, modify, suspend, or revoke any part of an FAA certificate if the agency determines that the action is required in the interest of air safety. 49 U.S.C. § 44709. The majority suggests that the factual record in this case "shows that the FAA wanted Lycoming" to change the design of its product. *Sikkelee*, 907 F.3d at 714. Yet the FAA had the authority—and the responsibility—to require Lycoming to do so, *if the agency determined that a design change was needed to address a safety issue*.

If the FAA determines that an unsafe condition exists, it issues an "airworthiness directive" to address it. 14 C.F.R. § 39.5 ("FAA issues an airworthiness directive addressing a product when we find that: (a) An unsafe condition exists in the product; and (b) The condition is likely to exist or develop in other products of the same type design."). Airworthiness Directives may include inspections, repairs, operating limitations, maintenance requirements, and design changes. Airworthiness Directives are legally enforceable regulations; an applicable Airworthiness Directive must be complied with for aircraft to be considered airworthy. *Id.* §§ 39.3, 39.7.

Only the FAA can issue an Airworthiness Directive. An aircraft manufacturer can issue a Service Bulletin to aircraft operators regarding safety recommendations for a product or part, but unless the FAA requires compliance with a Service Bulletin, Service Bulletins are optional. And Service Bul-

letins cannot be used to unilaterally modify an FAA-approved design. Moreover, even if an FAA Airworthiness Directive requires a design change, the design approval holder *still must submit the design change to the FAA for review and approval before making the change*, making clear that the FAA is the final arbiter of whether an aviation design meets applicable safety standards. *Id.* § 21.99 ("When an Airworthiness Directive is issued . . . the holder of the type certificate for the product concerned must . . . [i]f the FAA finds that design changes are necessary to correct the unsafe condition of the product, and upon his request, submit appropriate design changes for approval . . . .").

II. The federal regulatory system for the certification of aviation design and manufacturing requires uniformity in the interest of safety; it cannot accommodate state supplementation.

A. It is impossible for manufacturers to comply with varying, potentially conflicting, state design standards for FAA-approved designs.

The Third Circuit's flawed preemption rule effectively allows jurors with no technical expertise to determine aviation safety standards, re-regulating FAA-approved designs on a piecemeal basis, through the narrow prism of tort law. *See Riegel v. Medtronic, Inc.*, 552 U.S. 312, 328–29 (2008) ("General tort duties of care . . . 'directly regulate'

the device itself, including its design"). In doing so, the Third Circuit places the design of aviation products and parts under the control of fifty different states, and puts manufacturers in the impossible position of attempting to comply with varying state standards on top of a federal scheme that places design control singularly with the FAA.

After an aviation product or part is manufactured and sold, the manufacturer has little or no control over where the product or part flies. The inherent inter-state nature of aviation products and parts subjects them to the laws of different states. Different state design defect laws, interpreted by lay juries, will lead to varying—potentially conflicting—design directives. Yet FAA regulations do not allow for variable designs—a product or part must conform to its one FAA-approved design. There is no way for a manufacturer to simultaneously comply with two (or more) different state law design requirements and FAA rules. The federal regulatory framework does not allow for differing designs of the same approved product or part, but rather requires one, uniform, FAA-approved design, in the interest of safety.

State law duties would frustrate the FAA regulatory scheme, implemented at Congress's direction. *See, e.g.*, *Montalvo v. Spirit Airlines*, 508 F.3d 464, 473 (9th Cir. 2007) ("Congress could not reasonably have intended an [airplane] on a Providence-to-Baltimore-to-Miami run to be subject to certain requirements in, for example, Maryland, but not in Rhode Island or in Florida."); *see also City of*

Burbank v. Lockheed Air Terminal, Inc., 411 U.S. 624, 633–34 (1973) (citing *Northwest Airlines, Inc. v. Minnesota*, 322 U.S. 292, 303 (1944) (recognizing that the aviation industry is uniquely federal and transcends state boundaries). Aircraft transcend not only state boundaries, but also international boundaries. The FAA has longstanding bilateral agreements with foreign authorities that facilitate the reciprocal airworthiness certification of civil aviation products imported or exported between signatory countries, intended to ensure the highest level of international regulatory cooperation and harmonization in the interest of aviation safety and innovation. Allowing state juries to impose standards of care outside of the federal framework not only undermines safety, but also may impede the United States' compliance with international agreements.

B. Uniformity in design and manufacturing standards has proven vitally important to the safety and strength of the aviation industry.

The Third Circuit fails to comprehend the importance of the FAA's regulatory scheme to aviation safety. *Sikkelee*, 907 F.3d at 715 (expressing concern about conflict preemption as "'inconsistent with the [Federal Aviation] Act and its goal of fostering aviation safety.' Amicus Am. Ass'n for Justice Br. at 4-5"). Undermining the FAA's uniform regulatory scheme jeopardizes the safety and viability of the aviation industry. *See* H.R. Rep. No. 2360,

reprinted in 1958 U.S.C.C.A.N. 3741, 3761 ("It is essential that one agency of government, and one agency alone, be responsible for issuing safety regulations if we are to have timely and effective guidelines for safety in aviation.").

In a state law tort suit, a lay jury considers the design of a specific aircraft or part retrospectively, from the narrow factual standpoint of a specific accident. A state judgment that a design is unsafe in one respect could require a design change that adversely affects the safety of the design in other ways. In contrast, the FAA has specialized expertise in the regulation of aviation safety, as a holistic system. And the FAA's comprehensive, uniform regulation has proven highly successful: The U.S. aviation industry is the safest, largest, most diverse, and most technologically innovative in the world, with more than 220,000 active general aviation aircraft. There are more general aviation aircraft in the United States than the rest of the world combined. National Research Council, National Academies Press, *Decadal Survey of Civil Aeronautics: Foundation for the Future* (2006), at 1.

Under federal regulation, aviation has achieved a level of safety unprecedented in other modes of transportation. The general aviation accident rate has been steadily declining in recent years. 2017—the most recent year for which National Transportation Safety Board data is available—had the lowest fatal general aviation accident rate on record in the United States. Nat'l Transp. Safety Board, Aviation Statistics, *available at*

https://www.ntsb.gov/investigations/data/pages/aviation_stats.aspx.

A strong, safe aviation industry is vital to the U.S. economy and transportation infrastructure. According to an economic impact study, in 2013, general aviation supported $219 billion in total economic output, $109 billion in GDP, and 1.1 million total jobs in the U.S. PricewaterhouseCoopers, *Contribution of General Aviation to the US Economy in 2013* (2015), at 11.[9] The economic impact of general aviation includes not only manufacturing, but flight operations, maintenance, and travel expenditures. At the national level, each general aviation job supported 3.3 jobs elsewhere in the economy. *Id.* General aviation manufacturing also plays an important role in international trade. In 2013, general aviation exports reached $21 billion. *Id.* at 4. Additionally, general aviation is vital for farmers and agricultural producers, which use aircraft for surveying and monitoring crops, and applying herbicides, insecticides, or fertilizers. Approximately 127 million acres of cropland are treated annual through aerial application in the United States. National Agricultural Aviation Association, *Fact Sheet: Facts about the Aerial Application Industry* (2019).[10]

General aviation also is crucial to the transportation infrastructure. The majority of U.S. com-

---

[9] https://gama.aero/wp-content/uploads/General-Aviations-Contribution-to-the-US-Economy_Final_20150130-1.pdf.

[10] https://www.agaviation.org/industryfacts.

mercial airline flights operate out of a small number of large, city airports. Whereas commercial airlines serve around 500 airports, general aviation aircraft fly to more than 19,000 public and private landing facilities across the U.S. In remote parts of the country, general aviation provides the only means of transportation and critical access to products, supplies, emergency and health-care services, firefighting, law enforcement and first responders, and search and rescue.

CONCLUSION

The petition for a writ of certiorari should be granted.

Dated: Washington, D.C.
April 22, 2019

Respectfully submitted,

/s/ _____
Lauren Lacey Haertlein
Counsel of Record
THE GENERAL AVIATION
MANUFACTURERS ASSOCIATION
Counsel for Amicus Curiae
1400 K Street NW, Suite 801
Washington, D.C. 20005
202-393-1500
lhaertlein@gama.aero