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UNITED STATES COPYRIGHT OFFICE



**Long Comment Regarding a Proposed
Exemption Under 17 U.S.C. § 1201**

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ITEM A. COMMENTER INFORMATION

These comments are respectfully submitted by Public Knowledge. Public Knowledge is a nonprofit organization dedicated to representing the public interest in digital policy debates. Public Knowledge promotes freedom of expression, an open internet, and access to affordable communications tools and creative works.

Interested parties are encouraged to contact Meredith Rose (mrose@publicknowledge.org) as Public Knowledge's authorized representative in this matter. Public Knowledge's contact information is as follows:

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As a consumer advocacy organization, we have limited our comments to copyright and policy questions raised by the proposal, rather than a technical analysis of relevant TPMs, methods of circumvention, and market players.

ITEM B. PROPOSED CLASS ADDRESSED

Proposed Class 11: Computer Programs—Avionics

ITEM C. OVERVIEW

Modern aircraft are equipped with complex digital systems that operators use to monitor functions ranging from turbine health to cybersecurity. The software on these systems pulls data from various parts of the plane (access logs, security certificates, and others) and uses that to produce reports on the health and operation of the plane. As these systems have become more common, operators have faced a corresponding rise in the complexity and scope of work needed to keep their fleet secure and operating efficiently. The Federal Aviation Administration has, in

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The authority for requesting this information is 17 U.S.C. §§ 1201(a)(1) and 705. Furnishing the requested information is voluntary. The principal use of the requested information is publication on the Copyright Office Web site and use by Copyright Office staff for purposes of the rulemaking proceeding conducted under 17 U.S.C. § 1201(a)(1). NOTE: No other advisory statement will be given in connection with this submission. Please keep this statement and refer to it if we communicate with you regarding this submission.

response to this, set standards for the retention, review, and archiving of flight security logs by operators.

In the current market, the largest manufacturers of these onboard systems use TPMs and threats of legal action under §1201 to prevent operators from accessing the data and reports needed to comply with FAA regulations, as well as to prevent operators from using third-party servicers for maintenance and analysis. This allows manufacturers to create an artificial monopoly on downstream services. The proposed class would disrupt this improper monopoly by allowing operators and agents working on their behalf access to data inputs and outputs generated by avionics systems onboard the operator's aircraft.

The proposal should be granted for a number of reasons. First, Air Informatics seeks access to data inputs and outputs which are not classifiable as a "work" protected under Title 17. To the extent that accessing this uncopyrightable data requires copying or otherwise utilizing a compilation that may be subject to copyright, the fair use analysis is indistinguishable from that of the 2015 Networked Medical Devices (Patient Data) class. Proponent's access does not implicate any colorable copyright concerns, but does confer major benefits. In short, if any copyright even *exists* to be infringed upon, proponent's activity is a clear case of fair use.

Second, the relevant statutory factors weigh heavily in favor of proponents. Operators are compelled by law to collect, analyze, and archive large amounts of data compiled by avionics software. Currently, operators must pay manufacturers for the privilege of complying with the law, and are barred from engaging third party specialists to perform independent analysis, maintenance and repair, chain of custody verification, and other functions. Granting an exemption would allow for a more robust marketplace in third-party services that can provide customized analytics and services. By contrast, the high demand for digital avionics systems means that the market for such systems is unlikely to suffer any meaningful harm from an exemption. Perhaps most importantly, the manufacturers' current threat of §1201 enforcement against operators seeking to access flight data is a textbook example of anti-competitive behavior that this Office has previously acknowledged as an unjustifiable use of §1201.

Finally, the Office should defer to the broad, multi-decade expertise of the relevant specialist agency in dealing with avionics—the FAA—and the comprehensiveness of its safety and security regulations.

ITEM D. TECHNOLOGICAL PROTECTION MEASURE(S) AND METHOD(S) OF CIRCUMVENTION

As noted above, our comments are limited to legal and policy questions, and we defer to proponent Air Informatics' characterization of the relevant TPMs and circumvention methods.

ITEM E. ASSERTED ADVERSE EFFECTS ON NONINFRINGING USES

1. *Data Is Not Copyrightable*

Proponent Air Informatics seeks to access data inputs and outputs generated by onboard sensors and flight computers. Neither of these categories requires copying, distributing, or otherwise modifying the copyrighted software stored in the onboard computer. Data, as a reporting of facts, is not subject to copyright protection, and is thus outside the scope of both 17 USC and the current proceeding.¹

Although “batches” or compilations of such data as output by a software program may be colorably protected,² the protection inheres only to the extent that creativity is exercised in the selection or arrangement of the compilation.³ Data outputs in this instance are formatted and compiled in accordance with an industry-wide standard, and thus such compilations do not involve any meaningful form of creativity that would qualify them for copyright protection.⁴

2. *Noninfringing Uses*

To the extent that the Office finds the data outputs protectable by copyright, the Office’s own precedent dictates a finding of fair use. The factors relevant to the Copyright Office’s analysis are largely identical to those present in 2015’s Class 27B: Networked Medical Devices – Patient Data discussion. Those points that do differ are irrelevant to the copyright analysis required under §1201 and are properly left to the assessment of other agencies.

a. Purpose and character of the use

Assuming *arguendo* that the arrangements of data in the current case meet a minimal threshold for “creativity,” the purpose and character of the use still weighs in favor of proponents. As the Register has previously found,

¹ *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 344 (1991) (“That there can be no valid copyright in facts is universally understood”).

² U.S. COPYRIGHT OFFICE, SECTION 1201 OF TITLE 17: A REPORT OF THE REGISTER OF COPYRIGHTS (2017) (hereinafter “1201 REPORT”) 379 (citing U.S. COPYRIGHT OFFICE, COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES § 503.1(BA) (3d ed. 2014) (describing “compilations of information” as falling within the “literary work” category of authorship).)

³ *Feist*, 499 U.S. at 349 (“the copyright in a factual compilation is thin”).

⁴ See, e.g., ARINC Standards – 700 Series (ARINC Industry Activities) (ongoing) available at <https://www.aviation-ia.com/product-categories/700-series> (setting industry-wide standards for data formats among various avionics systems); A4A PUBLICATIONS SUBSCRIPTIONS, Spec 42: Aviation Industry Standards for Digital Information Security (Airlines for America, 2017), available at <https://publications.airlines.org/CommerceProductDetail.aspx?Product=232>.

even if the data is output in a manner that reflects some creative selection or arrangement, it seems that the [user] would not be copying the outputs because of the value of that selection or arrangement *per se*, but simply to gain access to the raw information contained within any data structures. In other words, the purpose of the use is to obtain access to the underlying and uncopyrightable factual information contained within the data output to allow additional use and analysis.⁵

Proponents, as those in the Medical Devices exemption, seek only access to unprotectable data. The *de minimis* expressive content of the compilation is neither necessary nor even relevant to the proposed use. Given this, the “blink-and-you’ll-miss-it” scope of potential copyright implications do not outweigh the noncommercial and individualized nature of the use.⁶

b. The nature of the copyrighted work

Proponent seeks access to the data inputs and outputs from the software, and not the software itself. As the Register has previously noted, “even if data outputs are copyrightable, they are nonetheless highly factual in nature; any copyright protection extends only to the selection and arrangement of the data and not to the data itself, which is the focus of the use.”⁷

c. The amount and substantiality of the portion used in relation to the copyrighted work as a whole

Because the “work” at issue is a compilation of unprotectable data—and proponents only seek the content of the arrangement “work,” rather than the work itself—using the entire work does not create any measurable copyright concerns. As the Register has previously noted, using the entirety of a data compilation does not preclude a fair use finding where the other factors weigh in proponents’ favor.⁸

d. The effect of the use upon the potential market for or value of the copyrighted work

⁵ U.S. COPYRIGHT OFFICE, SECTION 1201 RULEMAKING: SIXTH TRIENNIAL PROCEEDING TO DETERMINE EXEMPTIONS TO THE PROHIBITION ON CIRCUMVENTION: RECOMMENDATION OF THE REGISTER OF COPYRIGHTS (2015) (hereinafter “2015 RECOMMENDATIONS”) 395 (internal citations and quotations omitted), citing *Assessment Technologies of Wisconsin, LLC v. WIREdata, Inc.*, 350 F.3d 640 (7th Cir. 2003).

⁶ *Id.* (“[T]o the extent that access to noncopyrightable patient data requires copying of a protected compilation of such data, the Register does not find this to override the highly personal, noncommercial and research-oriented nature of the uses at issue.”)

⁷ *Id.*

⁸ *Id.* at 301 (“even if the third factor arguably disfavors a fair use finding, the weight to be given to it under the circumstances is slight”).

The fourth factor asks that proponents examine “not only the extent of market harm caused by the particular actions of the [user], but also whether unrestricted and widespread conduct of the sort engaged in by the [proponent of fair use] . . . would result in a substantially adverse impact on the potential market.”⁹ While it is true that, in the event of an exemption, manufacturers would lose revenue as downstream markets opened up to third party services, it seems facially absurd to contend that the market for avionics devices and software would suffer much impact. Avionics systems play a critical role in modern aviation, and have achieved market penetration specifically because of their usefulness. The ability of operators to access, analyze, and contract with third parties to meet regulatory requirements regarding operations data does not imply that the market for devices and systems that *generate* that data in the first instance will somehow evaporate. Access to data does not displace the fundamental need or demand for avionics products. To paraphrase a petitioner from the last triennial, no airline operator would look at a digital access log in lieu of actually installing a cybersecurity system.¹⁰

3. *Adverse effects*

To the extent that §1201 deters customers and third parties from engaging in lawful behavior—including (but not limited to) hiring authorized parties to ensure compliance with FAA regulations—the prohibition on circumvention creates clear and cognizable damage.

4. *Statutory factors*

The first (availability for use of copyrighted works) and fourth (effect on the market for or value of copyrighted works) statutory factors weigh in favor of an exemption. Digital avionics systems provide a range of benefits to operators, and the systems have become widespread as a result. Over the decades since real-time engine monitoring systems were first introduced,¹¹ digital live diagnostics have “spread to virtually all aircraft components.”¹² Systems are so common that specialists can now attend an annual four-day conference—DASC (Digital Avionics System Conference)—dedicated to the topic.¹³ It is also worth remembering that while avionics manufacturers such as GE and Honeywell enjoy a revenue stream from selling access to the reports, data, and providing maintenance, they also develop, market, and produce the physical and digital systems that create such data in the first place. These are not specialty firms

⁹ *Id.* at 396, quoting *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 590 (1994) (internal quotations omitted).

¹⁰ 2015 MDRC Reply at 5, cited in 2015 RECOMMENDATIONS at 396.

¹¹ J. L. BIRKLER & J. R. NELSON, AIRCRAFT TURBINE ENGINE MONITORING EXPERIENCE: AN OVERVIEW AND LESSONS LEARNED FROM SELECTED CASE STUDIES (Rand, 1980), available at <https://www.rand.org/content/dam/rand/pubs/reports/2006/R2440.pdf>.

¹² Henry Canaday, *Getting Ready For Big MRO Data*, INSIDE MRO (Nov. 10, 2015), <http://aviationweek.com/connected-aerospace/getting-ready-big-mro-data>.

¹³ 36TH DIGITAL AVIONICS SYSTEMS CONFERENCE, <http://2017.dasconline.org/>.

that rely wholly on selling access to data; they are major, multi-billion dollar conglomerates who, under the current market structure, use their position as manufacturers to control multiple ancillary downstream markets.

The second and third statutory factors are not particularly relevant to the exemption at issue, as the “work” is not a traditional literary work that could be utilized to archival, preservation, or educational purposes. Factor five, however, implicates a number of issues that we will address in turn.

A. Consistent with the position taken in the Section 1201 Report, the Office should refrain from assessing the state of non-copyright regulations.

The Office concluded that, starting with the current rulemaking, “it will generally decline to consider health, safety, and environmental concerns.”¹⁴ The Office also cautioned that “other agencies should not rely on section 1201 to help enforce or cover gaps in their own health, safety, environmental, or other regulations, and reiterate[d] that the granting of an exemption provides no defense to those who use it as an excuse to violate other laws and regulations.”¹⁵ However, given the outsize nature that health and safety concerns played in the 2015 rulemaking, it is worth addressing the potential emergence of those concerns in the record at hand.

There is a complex web of procedures required for certification and testing of individual aircraft. The section of the CFR which covers aircraft certification at the *highest* level of generality occupies over 27,000 words and 72 pages of printed real estate.¹⁶ Avionics systems have existed since at least the mid-70s, and have been ubiquitous among commercial airliners for decades; the FAA has grappled with the cybersecurity concerns raised by “e-enabled” planes again¹⁷ and again¹⁸ and again.¹⁹ Granting proponents’ exemption in no way exempts any plane

¹⁴ 1201 REPORT 126.

¹⁵ 1201 REPORT 126.

¹⁶ Certification Procedures for Products and Articles, 14 CFR Part 21, available at <https://www.law.cornell.edu/cfr/text/14/part-21>.

¹⁷ See, e.g., Special Conditions: Gulfstream Aerospace LP (GALP), Model Gulfstream G280 Airplane; Isolation or Aircraft Electronic System Security Protection From Unauthorized Internal Access, 77 Fed. Reg. 38467 (Jun. 28, 2012).

¹⁸ See, e.g., Peter Skaves, FAA CSTA for Advanced Avionics, FAA Aircraft Systems Information Security Protection (ASISP) Overview, Paper #132, presentation before Integrated Communications, Navigation and Surveillance (ICNS) Conference (Apr. 21, 2015), available at <http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=7121273>.

¹⁹ See, e.g., Aviation Rulemaking Advisory Committee (ARAC) Aircraft System Information Security / Protection (ASISP) working group to the Federal Aviation Administration, Recommendations regarding ASISP rulemaking, policy, and guidance on best practices for airplanes and rotorcraft including both certification and continued airworthiness (Aug. 22, 2016) (unpublished report).

from even the *smallest* fraction of the FAA’s standing airworthiness requirements. It merely allows proponents, operators, and other non-manufacturers to comply with applicable laws without the threat of rent extraction on the part of manufacturers.

There is no need for the Office to interlope in this established regulatory scheme. To conduct a review of the FAA’s safety and cybersecurity policies through the §1201 process would require hiring of experts and months of study—something the Office is unlikely to want to undertake, particularly given its stated reluctance to serve as regulatory referee for topics “far outside the traditional scope of copyright law.”²⁰ Given this, the Office should decline any request by Opponents to deny the exemption based on speculation that the FAA’s current, multi-decade regulatory framework is somehow inadequate to its stated purposes. If discussions around product security from past proceedings are any indication, Opponents will likely invite the Office to believe that an obscure bit of copyright law is the only thing standing between innocent passengers and terrorists hacking jetliners out of the sky. The Office should be careful to resist this invitation.

B. Courts and the Office have recognized the potential for anticompetitive uses of §1201, and the Office should acknowledge that such improper use exists here.

As noted above, manufacturers’ attempt to use §1201 access control protections for anti-competitive ends fails to implicate any aspects of copyright law and is precisely the kind of behavior about which the Copyright Office has expressed concern on the record.²¹ Courts have similarly recognized the problems with using anticircumvention provisions to create a downstream monopoly on services.²² Insofar as manufacturers are improperly using the specter of the DMCA to protect non-copyrightable data and artificially limit the services available to their customers, the Office should both grant the requested exemption and formally acknowledge such behavior as an improper use of §1201.

²⁰ 1201 REPORT 42.

²¹ *Id.* (“The Copyright Office shares the concern that section 1201(a)’s protections for access controls have the potential to implicate activities far outside the traditional scope of copyright law”).

²² See *Lexmark Int’l, Inc. v. Static Control Components, Inc.*, 387 F.3d 522, 549 (6th Cir. 2004) (“Nowhere in its deliberations over the DMCA did Congress express an interest in creating liability for the circumvention of technological measures designed to prevent consumers from using consumer goods.”); *Chamberlain Group, Inc. v. Skylink Technologies, Inc.*, 381 F.3d 1178, 1201 (Fed. Cir. 2004) (Refusing to read Section 1201 to allow a manufacturer “to restrict consumers’ rights to use its products in conjunction with competing products,” which, “would allow virtually any company to attempt to leverage its sales into aftermarket monopolies”).