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12

13 **IN THE UNITED STATES DISTRICT COURT**
14 **CENTRAL DISTRICT OF CALIFORNIA**

15 PAUL E. ARLTON, an individual, and
DAVID J. ARLTON, an individual,

16 Plaintiffs,

17 v.

18 AEROVIRONMENT, INC., a Delaware
19 corporation

20 Defendant.
21

Case No.: _____

COMPLAINT FOR:

DIRECT PATENT INFRINGEMENT,
WILLFUL PATENT INFRINGEMENT,
AND DECLARATORY RELIEF

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DEMAND FOR JURY TRIAL

1 Plaintiffs Paul and David Arlton, for their Complaint against Defendant
2 AeroVironment, Inc., hereby allege, through their attorneys Barnes & Thornburg LLP,
3 as follows:

4 **BACKGROUND AND THE PARTIES**

5 1. This case involves patent infringement and arises under the Patent Laws of
6 the United States, Title 35, United States Code. Thus, this Court has subject matter
7 jurisdiction under at least 28 U.S.C. § 1331 (federal question) and § 1338 (patent
8 actions), as well as 28 U.S.C. § 2201 (declaratory relief).

9 2. The Plaintiffs Paul Arlton and David Arlton (“Plaintiffs” or “the Arltons”)
10 are residents of the State of California.

11 3. Plaintiffs are the developers of technology related to rotary wing vehicles,
12 and in particular to small unmanned aerial vehicles (“UAVs”). Plaintiffs’ UAVs are
13 extraordinarily compact, lightweight, and stable, and include cyclic pitch control and a
14 separate drive motor for each of the rotary wings, and a hollow, non-rotating structural
15 backbone which functions as both a rigid airframe and a central conduit for electrical
16 wiring.

17 4. Plaintiffs are also the owners of all rights, title, and interest in United States
18 Patent No. 8,042,763B2 (“the ‘763 patent”), entitled “Rotary Wing Vehicle,” and issued
19 on October 25, 2011.

20 5. Plaintiffs’ technology, as reflected in the ‘763 patent, has been utilized in
21 the production of hundreds of UAVs, including for delivery in connection with
22 government contracts and applications for the Navy, Air Force, Army and Special
23 Operations Command.

24 6. The Arltons’ ingenuity is well known within the UAV community. They
25 were pioneers in drone technology and computerized manufacturing of miniature
26 helicopters in the late 1980’s. Their early exploits were chronicled in Tooling and
27 Production magazine (CAD/CAM Takes Models from Art to Part) and RC Modeler
28 magazine (The Little Chopper That Could) in 1994 and 1995. Their UAV technologies

1 have been described in more than 60 domestic and international patent applications and
2 issued patents since 2002, highlighted in the television production of Modern Marvels
3 Extreme Aircraft II in 2007, developed with Congressional appropriations in 2007 and
4 2008, selected for technology demonstrations by the United States Air Force in its
5 Unmanned Aircraft Systems Flight Plan in 2009, presented to the 68th American
6 Helicopter Society at its annual forum in 2012, and featured in Popular Mechanics
7 (Tomorrow's Warplane is a Mothership Packed with Expendable Drones) in 2016.

8 7. Defendant AeroVironment, Inc. ("AeroVironment") is a corporation
9 organized and existing under the laws of the State of Delaware and has its principle
10 place of business at 900 Innovators Way, Simi Valley, CA.

11 8. Upon information and belief, AeroVironment has worked with the Jet
12 Propulsion Laboratory (hereinafter "JPL") at the National Aeronautics and Space
13 Administration (hereinafter "NASA") since at least 2013 to build a UAV helicopter for
14 use on the planet Mars (hereinafter the "Mars Helicopter" or the "Accused Product").
15 The Mars Helicopter has been aptly named "Ingenuity."

16 9. JPL and NASA have now sent the Mars Helicopter to Mars with NASA's
17 Mars 2020 Perseverance Rover as a part of NASA/JPL's Mars Exploration Program.
18 The Mars Rover, with the Mars Helicopter aboard, launched on July 30, 2020 from
19 Cape Canaveral Air Force Station in Florida.

20 10. According to AeroVironment, its contributions to the Mars Helicopter
21 include design and development of the helicopter's airframe and major subsystems,
22 including its rotors, rotor blades, electric rotor hubs, and flight control mechanisms.

23 11. Defendant AeroVironment, however, is not the developer of the primary
24 technology related to the Mars Helicopter including the helicopter's airframe and major
25 subsystems, such as its electric rotor drive systems and flight control mechanisms.
26 Indeed, it was not AeroVironment's ingenuity at all that made the Mars Helicopter
27 possible. Instead, on information and belief, AeroVironment willfully copied significant
28 portions of the Arltons' technology for the Mars Helicopter. The enabling technology

1 AeroVironment copied from the Arltons is critical to the first successful flight of an
2 aircraft on another planet – Mars. Credit and remuneration for this triumph of
3 technology rightfully belongs to the Arltons, not AeroVironment.

4 12. Plaintiffs therefore seek relief in the form of a declaratory judgment that
5 the Mars Helicopter infringes one or more claims of the Arltons’ ‘763 patent as well as
6 monetary damages for patent infringement.

7
8 **JURISDICTION AND VENUE**

9 13. This case involves patent infringement and arises under the Patent Laws of
10 the United States, Title 35, United States Code. Thus, this Court has subject matter
11 jurisdiction under at least 28 U.S.C. § 1331 (federal question) and § 1338 (patent
12 actions).

13 14. Subject matter jurisdiction also exists pursuant to 28 U.S.C. § 2201
14 (declaratory judgment).

15 15. This Court has personal jurisdiction over AeroVironment at least because
16 AeroVironment has its principal place of business in the State of California, and, upon
17 information and belief, AeroVironment has engaged in continuous and systematic
18 business activities in the State of California.

19 16. Venue in this judicial district is proper pursuant to 28 U.S.C. § 1400(b) at
20 least because, upon information and belief, the alleged acts of infringement were
21 committed in this judicial district and AeroVironment has a regular and established
22 place of business in this judicial district.

23
24 **FACTUAL BACKGROUND**

25 17. AeroVironment worked with JPL and NASA to build the Mars Helicopter,
26 Ingenuity, that recently launched to Mars along with the Mars Rover, Perseverance.

27 18. Upon information and belief, AeroVironment began working with JPL and
28 NASA on the Mars Helicopter in 2013. AeroVironment delivered rotor and landing gear

1 prototypes to JPL and NASA in May 2016. AeroVironment delivered additional
2 subsystems to JPL and NASA for the Mars Helicopter in the fall of 2017.

3 19. AeroVironment's claimed contributions to the Mars Helicopter include
4 purported design and development of the helicopter's airframe and major subsystems,
5 including its rotors, rotor blades, electric rotor hubs, and flight control mechanisms.
6 AeroVironment has also purportedly developed and built high-efficiency, lightweight
7 propulsion motors, control electronics, landing gear, load-bearing structures, and the
8 thermal enclosure for NASA/JPL's avionics, sensors, and software systems that are
9 included in the Mars Helicopter.

10 20. Upon information and belief, however, the most critical elements of this
11 technology necessary for the first flight of an aircraft on Mars, such as the helicopter's
12 airframe and major subsystems, including its rotors, electric rotor drive systems and
13 flight control mechanisms, were copied from the Arltons' patented technology.

14
15 **THE INFRINGED PATENT**

16 21. U.S. Patent No. 8,042,763 ("the '763 Patent"), entitled "ROTARY WING
17 VEHICLE," was issued by the United States Patent & Trademark Office on October 25,
18 2011, to the Arltons.

19 22. The Arltons are the owners of all rights, title, and interest in the '763
20 Patent.

21 23. The '763 Patent has not expired and is in full force and effect.

22
23 **COUNT I: DIRECT INFRINGEMENT OF THE '763 PATENT**

24 24. Each of the foregoing paragraphs is incorporated by reference herein.

25 25. AeroVironment has directly infringed and continues to directly infringe,
26 either literally or pursuant to the doctrine of equivalents one or more claims of the '763
27 Patent, including at least claim 1 of the '763 Patent, in violation of 35 U.S.C. § 271(a),
28

1 at least by making, using, offering to sell, and selling the Accused Product in the United
2 States.

3 26. The Mars Helicopter includes each of the elements of at least claim 1 of the
4 ‘763 patent. *See* [https://mars.nasa.gov/resources/24935/nasa-mars-helicopter-ingenuity-](https://mars.nasa.gov/resources/24935/nasa-mars-helicopter-ingenuity-animations)
5 [animations](https://mars.nasa.gov/resources/24887/mars-helicopter-ingenuity-fact-sheet/); [https://mars.nasa.gov/resources/24887/mars-helicopter-ingenuity-fact-](https://mars.nasa.gov/resources/24887/mars-helicopter-ingenuity-fact-sheet/)
6 [sheet/](https://mars.nasa.gov/resources/24887/mars-helicopter-ingenuity-fact-sheet/); B.T. Pipenberg, M. Keennon, J. Tyler, B. Hibbs, S. Langberg, J. Balaram, H. F.
7 Grip, and J. Pempejian (2019). Design and Fabrication of the Mars Helicopter Rotor,
8 Airframe, and Landing Gear Systems. *AIAA Scitech 2019 Forum*.
9 <https://doi.org/10.2514/6.2019-0620> (hereinafter “Pipenberg Article”); and Balaram, B.;
10 Canham, T.; Duncan, C.; Grip, H. F.; Johnson, W.; Maki, J.; Quon, A.; Stern, R.; Zhu, D.
11 (2018). Mars Helicopter Technology Demonstrator. *AIAA SciTech 2018 Forum*, AIAA
12 Atmospheric Flight Mechanics Conference. <https://doi.org/10.2514/6.2018-0023>
13 (hereinafter “Balaram Article”).

14 27. AeroVironment has made, used, offered to sell, and sold the Accused
15 Product in the United States.

16 28. The Accused Product is a rotary wing aircraft. *See* Pipenberg Article,
17 Abstract.

18 29. The Accused Product includes a non-rotating structural backbone. *See, e.g.,*
19 Pipenberg Article, “Rotor System Design,” page 4: “The main mast tube is a non-
20 rotating hollow composite structure....”

21 30. The Accused Product includes a first rotor system. *See* Pipenberg Article,
22 section titled “Rotor System Design,” page 4.

23 31. The Accused Product includes a first rotor system coupled to the non-
24 rotating structural backbone. *See* Pipenberg Article, section titled “Rotor System
25 Design,” page 4; *see also* Balaram Article, Figures 6 and 7.

26 32. The Accused Product includes a first rotor system including first variable
27 pitch rotor blades supported by a first rotor shaft for rotation about an axis of rotation in
28

1 a first rotor plane. *See* Pipenberg Article, section titled “Rotor System Design,” page 4;
2 *see also* Balaram Article, Figures 6 and 7.

3 33. The Accused Product includes a first rotor system including first variable
4 pitch rotor blades controlled by a first blade pitch controller. *See* Pipenberg Article,
5 section titled “Rotor System Design,” page 4 and section titled “Swashplate and Servo
6 Assemblies,” page 6; *see also* Balaram Article, Figures 6 and 7.

7 34. The Accused Product includes a first rotor system including first variable
8 pitch rotor blades controlled by a first blade pitch controller which includes cyclic pitch
9 control. *See* Pipenberg Article, page 2: “The helicopter is controlled by varying the
10 blade pitch through collective and cyclic control action on each rotor.” *See also* Balaram
11 Article, Figures 6 and 7.

12 35. The Accused Product includes a first rotor system coupled to the non-
13 rotating structural backbone including first variable pitch rotor blades supported by a
14 first rotor shaft for rotation about an axis of rotation in a first rotor plane and controlled
15 by a first blade pitch controller which includes cyclic pitch control. *See* Pipenberg
16 Article, section titled “Rotor System Design,” page 4; *see also* Balaram Article, Figures
17 6 and 7.

18 36. The Accused Product includes a second rotor system. *See* Pipenberg
19 Article, section titled “Rotor System Design,” page 4; *see also* Balaram Article, Figures
20 6 and 7.

21 37. The Accused Product includes a second rotor system coupled to the non-
22 rotating structural backbone. *See* Pipenberg Article, section titled “Rotor System
23 Design,” page 4; *see also* Balaram Article, Figures 6 and 7.

24 38. The Accused Product includes a second rotor system including second
25 variable pitch rotor blades supported by a second rotor shaft for rotation about an axis of
26 rotation in a second rotor plane. *See* Pipenberg Article, section titled “Rotor System
27 Design,” page 4; *see also* Balaram Article, Figures 6 and 7.

1 39. The Accused Product includes a second rotor system including second
2 variable pitch rotor blades controlled by a second blade pitch controller. *See* Pipenberg
3 Article, section titled “Rotor System Design,” page 4 and section titled “Swashplate and
4 Servo Assemblies,” page 6; *see also* Balaram Article, Figures 6 and 7.

5 40. The Accused Product includes a second rotor system including second
6 variable pitch rotor blades controlled by a second blade pitch controller which includes
7 cyclic pitch control. *See* Pipenberg Article page 2: “The helicopter is controlled by
8 varying the blade pitch through collective and cyclic control action on each rotor.” *See*
9 *also* Balaram Article, Figures 6 and 7.

10 41. The Accused Product includes a second rotor plane being positioned to lie
11 in axially spaced apart relation to a first rotor plane along an axis of rotation. *See*
12 Pipenberg Article, Figure 3; *see also* Balaram Article, Figures 6 and 7.

13 42. The Accused Product includes a second rotor system coupled to the non-
14 rotating structural backbone including second variable pitch rotor blades supported by a
15 second rotor shaft for rotation about the axis of rotation in a second rotor plane and
16 controlled by a second blade pitch controller which includes cyclic pitch control, the
17 second rotor plane being positioned to lie in axially spaced apart relation to the first
18 rotor plane along the axis of rotation. *See* Pipenberg Article, Figure 3; *see also* Balaram
19 Article, Figures 6 and 7.

20 43. The Accused Product includes a first blade pitch controller coupled to a
21 non-rotating structural backbone so that neither a first rotor shaft nor a second rotor
22 shaft of the Accused Product extends through the first blade pitch controller. *See*
23 Pipenberg Article, Figure 3; *see also* Balaram Article, Figures 6 and 7.

24
25 **COUNT II: WILLFUL INFRINGEMENT OF THE ‘763 PATENT**

26 44. Each of the foregoing paragraphs is incorporated by reference herein.

27 45. AeroVironment’s infringement has been willful, thereby justifying
28 enhanced damages pursuant to 35 U.S.C. § 284.

1 46. Upon information and belief, AeroVironment, with its long-time focus on
2 small unmanned aerial vehicles, is familiar with the Arltons' technology, the '763
3 patent, and Arltons' efforts to obtain government contracts focused on UAV technology.
4 In brief, the Arltons are fierce competitors to AeroVironment.

5 47. Upon information and belief, and through discovery in this matter, the
6 Arltons expect to discover additional information demonstrating both knowledge of the
7 '763 patent and copying of the technology as disclosed and claimed therein.

8 48. Upon information and belief, AeroVironment's infringement of the '763
9 Patent has been and continues to be willful.

10
11 **COUNT III: DECLARATORY JUDGMENT ACTION**

12 49. Each of the foregoing paragraphs is incorporated by reference herein.

13 50. Section 2201 of Chapter 28 of the United States Code permits a declaration
14 of the rights and other legal relations of any interested party seeking such declaration, in
15 the case of an actual controversy between the parties.

16 51. Here, there exists a case or controversy with regard to Defendant's
17 infringement of the '763 patent.

18 52. Defendant's manufacture, use, offer for sale, and selling of the Mars
19 Helicopter infringes at least claim 1 of the '763 patent.

20 53. Therefore, Arltons are entitled to a declaration stating that the Mars
21 Helicopter made by AeroVironment is a product that incorporates and infringes upon the
22 Arltons' patented technology, namely, by practicing one or more claims of the '763
23 patent. Arltons likewise seek a declaration that such infringement has been willful.

24
25 **PRAYER FOR RELIEF**

26 Wherefore, the Arltons demand judgment in their favor and against
27 AeroVironment as follows:

1 1. A judgment under 35 U.S.C. § 271(a) that AeroVironment has directly
2 infringed the ‘763 Patent;

3 2. An order under 35 U.S.C. § 283 preliminarily and permanently enjoining
4 AeroVironment and its officers, agents, subsidiaries, successors, employees,
5 representatives, and assigns from further infringement of the ‘763 Patent;

6 3. An award of damages under 35 U.S.C. § 284 adequate to compensate the
7 Arltons for AeroVironment’s infringement of the ‘763 Patent and an accounting to
8 determine the proper amount of such damages;

9 4. An award under 35 U.S.C. § 284 of costs and prejudgment and post
10 judgment interest on the compensatory damages to be awarded to the Arltons, along
11 with treble damages as a result of Defendant’s willful infringement;

12 5. An award under 35 U.S.C. § 285 of the Arltons attorney’s fees incurred in
13 this action; and

14 6. Pursuant to 28 U.S.C. § 2201, a declaration that the Mars Helicopter
15 infringes one or more claims of the ‘763 patent, and that such infringement is willful;
16 and

17 7. Such further relief as this Court deems just and proper.

18
19 **DEMAND FOR JURY TRIAL**

20 Plaintiffs Paul E. Arlton and David J. Arlton demand a trial by jury on all matters
21 herein so triable.

22 Dated: August 17, 2020

BARNES & THORNBURG LLP

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24
25 By: /s/ Seth A. Gold

Seth A. Gold
Roya Rahmanpour

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27 Attorneys for Plaintiffs Paul E.
Arlton and David J. Arlton