IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re *inter partes* review of: U.S. Patent RE 39,618 to Levine Filed: Herewith For: Remote, Aircraft, Global, Paperless Maintenance System	Atty. Docket:

Declaration of Dr. Albert Helfrick in Support of Petition for *Inter Partes* review of U.S. Patent No. RE 39,618

I, Albert Helfrick, declare as follows:

1. I have been retained by counsel for The Boeing Company for the above-captioned Inter Partes review proceeding. I understand that this proceeding involves U.S. Patent No. RE 39,618 ("the '618 patent") entitled Remote, Aircraft, Global, Paperless Maintenance System.

2. I have reviewed and am familiar with the specification and claims of the '618 patent. A copy of the '618 patent is provided as Ex. 1001.

3. I have reviewed and am familiar with the following prior art, which I understand is used in the Petition for *Inter Partes* Review of the '618 patent:

- Increased Flight Data Parameters, 60 Fed. Reg. 13862 (Mar. 14, 1995) (to be codified at 14 C.F.R. pts. 121, 125, and 135) ("**FAA, *Increased FDR Parameters***")

- Dowling & Lancaster, Remote Maintenance Monitoring Using a Digital Data Link, Proceedings of the AIAA/IEEE 6th Digital Avionics Systems Conference (1984) ("**Dowling**")
- Aeronautical Radio, Inc., Design Guidance for Onboard Maintenance System: ARINC Characteristic 624-1 (1993) ("**ARINC 624-1**")
- Ward, Power Plant Health Monitoring—The Human Factor, Royal Aeronautical Society, Tenth Annual Symposium (1992) ("**Ward**")
- Aeronautical Radio, Inc., Flight Management Computer System: ARINC Characteristic 702-6 (1994) ("**ARINC 702-6**")
- Monroe, U.S. Patent No. 5,798,458 ("**Monroe**")
- Farmakis et al., U.S. Patent No. 5,714,948 (effectively filed July 15, 1994; issued Feb. 3, 1998) ("**Farmakis**")
- Chetail, Le CFM 56-6 Sur A320 A Air France, NATO Advisory Group for Aerospace Research and Development, June 1988 ("**Chetail**")
- Dyson, Commercial Engine Monitoring Status At GE Aircraft Engines, NATO Advisory Group for Aerospace Research and Development, June 1988 ("**Dyson**")

4. I have been asked to provide my technical review, analysis, and insight regarding the above-noted references that form the basis for the grounds of rejection set forth in the Petition.

I. Qualifications

5. I have more 40 years of experience in the field of avionics and am the author of the leading textbook in the field, Principles of Avionics, 8th Ed. 2013.

6. I have a Bachelor of Science in Physics from Upsala College, NJ, a Master of Science in Mathematics from New Jersey Institute of Technology, and a Ph.D. in Applied Science from Clayton University.

7. From 1992 to 2015, I taught at Embry-Riddle Aeronautical University, where my titles included Professor of Avionics, Professor of Electrical Engineering, Chair of the Mechanical, Civil and Engineering Sciences Department, and Chair of the Electrical and Systems Engineering Department. I recently retired and was given the title of Professor Emeritus, which is an honor reserved for a small percentage of retired faculty.

8. I have received numerous awards, including the 2013 Digital Avionics Award from the preeminent technical society for the aerospace profession, the American Institute of Aeronautics and Astronautics (AIAA).

9. My Curriculum Vitae, attached as Exhibit 1003, contains further details on my education, experience, publications, and other qualifications to render an expert opinion. My work on this declaration is being billed at a rate of $250.00 per hour, with reimbursement for actual expenses. My compensation is not contingent upon the outcome of this proceeding.

II. CLAIM CONSTRUCTION

10. I understand that, at the Patent Office, claims are to be given their broadest reasonable construction in light of the specification as would be read by a person of ordinary skill in the relevant art.

III. OBVIOUSNESS

11. It is my understanding that a claimed invention is unpatentable if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.

12. It is my understanding that the analysis of whether a patent claim is "obvious" looks at the level of skill of those of ordinary skill in the art of the invention, the content of the prior art, and the differences between the prior art and the claimed invention. I understand that a combination of references will render a patent invalid if, at the time of the claimed invention, it would have been obvious

for a person of ordinary skill in the art to combine the applied references in the manner of the invention.

13. I also understand that, when considering the obviousness of a patent claim, one should consider whether a teaching, suggestion, or motivation to combine the references existed at the time of the invention, so as to avoid hindsight recreation of the patent from the prior art. I further understand that the motivation to combine may be found explicitly or implicitly in market forces, design incentives, the interrelated teachings of multiple patents, known needs or problems in the art of the invention, and/or the background knowledge, creativity, and common sense of a person of ordinary skill.

14. In addition, it is my understanding that one must consider whether or not there is objective evidence of non-obviousness, such as long-felt need for the inventive solution, failure of others to arrive at that solution, commercial success of the patented invention, or unexpected results.

IV. Level of Ordinary Skill in the Art

15. Based on the technologies disclosed in the '618 patent, it is my opinion that one of ordinary skill in the art would have at least a B.S. degree in electrical, systems, or computer engineering, or an FAA Mechanic Certificate with an airframe rating in accordance with 14 CFR part 65.71 and 65.85. One of

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