

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BAYERISCHE MOTOREN WERKE AKTIENGESELLSCHAFT and
BMW OF NORTH AMERICA, LLC,
Petitioners

v.

PAICE LLC & THE ABELL FOUNDATION
Patent Owner

Case IPR2020-00994
Patent 7,104,347

**DECLARATION OF MAHDI SHAHBAKHTI PH.D.
IN SUPPORT OF THE PATENT OWNER'S RESPONSE**

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DECLARATION EXHIBITS

Exhibit Number	Exhibit Name
Ex. 2017	Curriculum Vitae of Mahdi Shahbakhti, Ph.D.
Ex. 2018	Bosch Gasoline-engine Management
Ex. 2019	Selected Pages From John Heywood, Internal Combustion Engines Fundamentals
Ex. 2020	Selected Pages From Merhdad Ehsani et al, Modern Electric, Hybrid Electric, and Fuel Cell Vehicles
Ex. 2021	Matthew Cuddy et al., Analysis of the Fuel Economy Benefit of Drivetrain Hybridization
Ex. 2022	Selected Pages From Draft Technical Assessment Report: Midterm Evaluation of Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for Model Years 2022-2025
Ex. 2023	Selected Pages From Assessment of Fuel Economy of Fuel Economy Technologies for Light Duty Vehicles
Ex. 2024	Selected Pages From Richard Stone, Introduction to Internal Combustion Engines
Ex. 2025	Heinz Heisler, Advanced Vehicle Technology, SAE
Ex. 2026	Hitoshi Inoue et al., A Performance Improvement in Idle-Speed Control System with Feedforward Compensation for the Alternator Load Current, SAE
Ex. 2027	Satoru Watanabe, Development of Model-Following Idle Speed Control System Incorporating Engine Torque Models, SAE
Ex. 2028	Guzzella et al., Introduction to Modeling Control of Internal Combustion Engine Systems

I, Mahdi Shahbakhti, hereby declare the following:

I. INTRODUCTION

1. I have been retained by counsel for Paice LLC and the Abell Foundation (collectively, “Paice” or “Patent Owner”) to investigate and analyze certain issues relating to the validity of claims of U.S. Patent No. 7,104,347 (“the ’347 patent”).

2. For purposes of this declaration, I have been asked to analyze the arguments made by Bayerische Motoren Werke Aktiengesellschaft and BMW of North America, LLC (“BMW” or “Petitioners”) related to Grounds 1b, 2b, 3a, 3b, 4b, and 4c (claim 38) in the matter of the *Inter Partes* Review of the ’347 patent, Case No. IPR2020-00994, as shown in the table below.

Grounds 1b, 2b	Severinsky/Ma	Claims 33 and 11
Grounds 3a, 3b	Severinsky/Nii	Claims 24 and 2
Ground 4b	Bumby/Ma	Claims 33 and 11
Ground 4c	Bumby/Eshani	Claim 38

In addition to the grounds and noted claims above, I have also reviewed the petition as well as the declaration of BMW’s expert, Dr. Davis (and the documents cited therein) pertaining to these grounds. I have also reviewed the Patent Trial and Appeal Board’s (“the Board”) decision to institute regarding these grounds, as well

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