UNITED STATES PATENT AND TRADEMARK OFFICE
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BEFORE THE PATENT TRIAL AND APPEAL BOARD
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FORD MOTOR COMPANY,
Petitioner,

v.

PAICE LLC and THE ABELL FOUNDATION, INC.,
Patent Owner.

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Case IPR2014-01416
Patent 7,237,634 B2

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Before SALLY C. MEDLEY, KALYAN K. DESHPANDE, and
CARL M. DEFRANCO, *Administrative Patent Judges*.

DEFRANCO, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Ford Motor Company ("Ford") filed a Petition ("Pet.") for *inter partes* review of U.S. Patent No. 7,237,634 B2 ("the '634 patent"). Paper 1. The Petition challenges the patentability of claims 80, 93, 98, 99, 102, 109, 114, 127, 131, 132, 135, 139, 142, 161, 215, 228, 232, 233, and 235–237 under 35 U.S.C. §§ 102 and 103. Paice LLC and The Abell Foundation, Inc. ("Paice"), the owner of the '634 patent, filed a Preliminary Response ("Prelim. Resp."). Paper 8. After considering the Petition and Preliminary Response, we determine that Ford has demonstrated a reasonable likelihood that the challenged claims are unpatentable. 35 U.S.C. § 314. Pursuant to our authority under 37 C.F.R. § 42.4(a), we institute an *inter partes* review of challenged claims 80, 93, 98, 99, 102, 109, 114, 127, 131, 132, 135, 139, 142, 161, 215, 228, 232, 233, and 235–237.

II. BACKGROUND

A.   *The '634 Patent[1]*

The '634 patent describes a hybrid vehicle with an internal combustion engine, at least one electric motor, and a battery bank, all controlled by a microprocessor that directs torque transfer between the engine, the motor, and the drive wheels of the vehicle. Ex. 1101, 17:17–56, Fig. 4. The microprocessor compares the vehicle's torque requirements and the engine's torque output against a predefined setpoint and uses the results

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[1] The '634 patent is the subject of a co-pending case, *Paice, LLC v. Ford Motor Company*, No. 1:14-cv-492, filed Feb. 19, 2014, in the U.S. District Court for the District of Maryland. Pet. 1.

of the comparison to control the vehicle's mode of operation, e.g., straight-electric, engine-only, or hybrid. *Id*. at 40:16–49. The microprocessor utilizes a hybrid control strategy that operates the engine only in a range of high fuel efficiency, which occurs when the instantaneous torque required to drive the vehicle, or road load (RL), reaches a setpoint (SP) of approximately 30% of the engine's maximum torque output (MTO). *Id*. at 20:61–67; *see also id*. at 13:64–65 ("the engine is never operated at less than 30% of MTO, and is thus never operated inefficiently"). Operating the engine in a range above the setpoint but substantially less than the maximum torque output maximizes fuel efficiency and reduces pollutant emissions of the vehicle. *Id*. at 15:55–58.

B.   *Challenged Claims*

Of the challenged claims, claims 80, 114, 161, and 215 are independent. Claim 80 is illustrative:

> 80.   A method for controlling a hybrid vehicle, comprising:
> determining instantaneous road load (RL) required to propel the hybrid vehicle responsive to an operator command;
> monitoring the RL over time;
> operating at least one electric motor to propel the hybrid vehicle when the RL required to do so is less than a setpoint (SP);
> operating an internal combustion engine of the hybrid vehicle to propel the hybrid vehicle when the RL required to do so is between the SP and a maximum torque output (MTO) of the engine, wherein the engine is operable to efficiently produce torque above the SP, and wherein the SP is substantially less than the MTO; and

> wherein said operating the internal combustion engine to propel the hybrid vehicle is performed when: the RL>the SP for at least a predetermined time; or the RL>a second setpoint (SP2), wherein the SP2 is a larger percentage of the MTO than the SP; and
>
> operating both the at least one electric motor and the engine to propel the hybrid vehicle when the torque RL required to do so is more than the MTO.

Ex. 1101, 65:11–33.

C. *Asserted Grounds*

Ford challenges the claims of the '634 patent based on the following grounds and prior art (Pet. 4), and also proffers the declaration testimony of Dr. Gregory W. Davis (Ex. 1107) in furtherance of these grounds.

Ground	Basis	Challenged Claims
§ 102/§ 103	Severinsky[2]	161, 215, 228, 232, 233, 237
§ 103	Severinsky and Frank[3]	80, 93, 98, 99, 102, 109, 114, 127, 131, 132, 135, 139, 142
§ 103	Tabata[4]	215, 228, 233, 235, 236

III. ANALYSIS

A. *Claim Construction*

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in the context of the patent in which

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[2] U.S. Patent No. 5,343,970, iss. Sept. 6, 1994 (Ex. 1103).
[3] U.S. Patent No. 5,824,534, iss. Dec. 1, 1998 (Ex. 1104).
[4] U.S. Patent No. 5,841,201, iss. Nov. 24, 1998 (Ex. 1105).

they appear. 37 C.F.R. § 42.100(b); *accord In re Cuozzo Speed Techs.*, No. 2014-1301, 2015 WL 448667, at *6 (Fed. Cir. Feb. 4, 2015) (holding that the PTO "properly adopted" the broadest reasonable interpretation standard for IPR proceedings). Ford proposes a construction for several claim terms, including "road load," "setpoint," "low-load mode I," "highway cruising mode IV," and "acceleration mode V." Pet. 11–15. Based on our review of the record, however, no particular claim term requires an express construction for purposes of this preliminary proceeding.[5]

B.   *Asserted Grounds of Unpatentability*

      1.   Claims 161, 215, 228, 232, 233, and 237

Ford challenges independent claims 161 and 215 as either anticipated by Severinsky under 35 U.S.C. § 102 or obvious over Severinsky under 35 U.S.C. § 103. Pet. 15–39. Claims 161 and 215 recite various modes of operation including one in which "the engine is operable to efficiently produce torque *above the SP*, and wherein the SP is *substantially less than the MTO*." Ex. 1101, 73:41–67; 79:10–31 (emphases added).

Severinsky describes a hybrid vehicle that operates in a plurality of modes, including: (1) a low-speed, electric motor mode in which "inefficiency and pollution" of the engine is eliminated (e.g., city driving); (2) a high-speed, engine mode in which the engine operates "near maximum efficiency" (e.g., highway cruising); (3) a hybrid mode in which both the

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[5] A "Preliminary Proceeding," according to our rules, "begins with the filing of a petition for instituting a trial and ends with a written decision as to whether a trial will be instituted." 37 C.F.R. § 42.2.

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