

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BMW of North America, LLC and Robert Bosch LLC,

Petitioners,

v.

Foras Technologies Ltd.,

Patent Owner.

Case IPR2023-01373

Patent 7,502,958

PATENT OWNER'S SUR-REPLY

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Patent Trial and Appeal Board
U.S. Patent and Trademark Office
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TABLE OF EXHIBITS

Exhibit No.	Description
2001	First Amended Docket Control Order (Foras v. Kia - EDTX)
2002	Docket (Foras v. Kia - EDTX)
2003	Subject Matter Contentions (Foras v. Kia - EDTX)
2004	Invalidity Contentions Cover Pleading (Foras v. Kia – EDTX)
2005	Infringement Contentions Cover Pleading (Foras v. Kia – EDTX)
2006	Declaration of John Petrsoric in Support of Motion for Admission Pro Hac Vice
2007	Declaration of Nigel Jones
2008	Nigel Jones CV
2009	Deposition Transcript of Michael C. Brogioli

I. INTRODUCTION

Petitioners' Reply confirms patentability of the challenged claims. The Reply ignores the critical flaws in Petitioners' obviousness challenge identified by Patent Owner's Response and instead aims to create a distraction. Petitioners contend, unbelievably, that Patent Owner found flaws in the "Nguyen-Bigbee" combination but not the "Bigbee-Nguyen" combination. And, instead of including substantive rebuttal to the testimony of Patent Owner's expert, Petitioners attempt to discredit him by contending that he is not a person of skill in the art, which is plainly contrary to the overwhelming evidence showing otherwise.

II. PETITIONERS IGNORE PATENT OWNER'S ANALYSIS OF BIGBEE AND NGUYEN

A. Patent Owner analyzed the "combined system" of Bigbee and Nguyen presented in the Petition

Petitioners' contention on Reply that Patent Owner "reverses Petitioners' prior art combination" and attacks "Nguyen-Bigbee" instead of "Bigbee-Nguyen" is preposterous. Petitioners argue that because the POR, in some instances, referred to a "Nguyen-Bigbee combined system" instead of using the phrase "Bigbee in view of Nguyen," Patent Owner's

analysis of the that combination is flawed. Reply 6. This is plainly incorrect.

First, as the POR makes explicit, Patent Owner’s arguments are based on the “combined system” that Petitioners presented. *See, e.g.*, POR at 9 (“Petitioner argues that a POSITA would have been motivated to add certain features from Nguyen to Bigbee and create a ‘combined system.’”); *id.* (“Petitioner contends that by adding Nguyen to Bigbee, a POSITA would recognize that the combined system would be able to ‘handle both recoverable and non-recoverable lockstep errors.’”); *id.* (“Petitioner’s proposed Nguyen-Bigbee ‘combined system’ is shown through annotated figures from Bigbee that include additions from Nguyen.”); *id.* at 11-12 (presenting detailed analysis of Petitioners’ “combined system”); *see also* Pet. 27-29.

Second, although Petitioners quibble as to the semantics,¹ they present no instance where Patent Owner’s alleged “revers[al]” of Bigbee

¹ Petitioners ignore that the POR twice uses the phrase “Bigbee-Nguyen” instead of “Nguyen-Bigbee.” POR 10, 18.

and Nguyen results in any substantive misinterpretation of the Petition. For example, Patent Owner describes in detail how the “combined system” of Bigbee and Nguyen—as presented in the Petition—would operate (POR 11-13), and yet Petitioners identify no flaw in this description. If Patent Owner’s use of the phrase “Nguyen-Bigbee” truly indicated a substantive misunderstanding of Petitioners’ proposed combination, Petitioners would have been able to identify at least one aspect of Patent Owner’s analysis of the combination that was flawed because of that misunderstanding. Petitioners have not done so and cannot do so, because Patent Owner’s analysis was based on precisely the combination presented in the Petition.

B. The combined system of Bigbee and Nguyen is unable to distinguish recoverable from non-recoverable errors

1. Functionality of the Bigbee-Nguyen combination is irrefutable

The POR explained in detail how Petitioners’ “combined system” of Bigbee and Nguyen lacked the ability to distinguish recoverable lockstep errors from non-recoverable lockstep errors. POR 11-13. This result is not debatable as it is simply the logical result of implementing Nguyen’s algorithm for handling loss of lockstep after Bigbee has detected an error

within an individual processor. Nguyen is explicit that when an error is detected within an individual processor, that error is treated as recoverable. There is simply no disclosure in Nguyen of any other outcome. Nguyen only determines mismatch errors are non-recoverable when they are detected prior to detection of an individual processor error. But the starting point for the “combined system” is detection by Bigbee of an individual processor error. In response to this, Nguyen disables mismatch detection and directly activates its recovery routine for recoverable errors. POR 13; EX1006 at [0022]-[0023].

Petitioners contend that Patent Owner’s explanation is “flawed,” “incorrect[],” and “wrongly state[d]” based on “cherry-pick[ed] snippets from the Petition,” yet Petitioners offer no substantive explanation as to how the “combined system” it proposes can operate in any other way. If Patent Owner was indeed incorrect as to the functionality of Petitioner’s “combined system,” Petitioners should have had no trouble explaining how its “combined system” functioned differently. But the Reply contains no such explanation.

2. Nguyen's disclosures support Patent Owner's analysis

Petitioners contend that Nguyen's disclosures concerning error recoverability contradicts Patent Owner's analysis of the asserted Bigbee-Nguyen combination. Reply 7-8. This is plainly incorrect. Nguyen's disclosures fully support Patent Owner's analysis. In fact, Patent Owner relies extensively on Nguyen's express disclosures as to how errors are evaluated. *See, e.g.*, POR 11-13. It is indeed Nguyen's technique of treating every internal processor error as recoverable that causes incompatibility with Bigbee. *Id.*

3. Patent Owner expressly addresses the asserted modifications to Bigbee

Petitioners also argue that Patent Owner "fails to address" modifications that would be made to Bigbee's FRC logic to implement Nguyen. Reply 8. Yet, the Reply does not identify any of these allegedly ignored "modifications" to Bigbee. The POR directly addressed the explanation in the Petition as to how Bigbee would be modified to include Nguyen to create the "combined system." POR 11-13. A bare assertion by Petitioners that Patent Owner ignores other unnamed "modifications" that would or could have been made to Bigbee is insufficient when neither

Petitioners nor their expert describes these modifications. If Petitioners had wanted to propose additional modifications to Bigbee, the Petition was the place to do so. Patent Owner would have then had an opportunity to respond.

Petitioners cite to Sections VII.A.5.a (Pet. 30-33), VII.A.5.b (Pet. 33-35), and VII.B.2 (Pet. 40-41) of the Petition and to paragraphs 80-98 of Exhibit 1002 (Dr. Brogioli's declaration), but none of these sections help their argument as to unaddressed "modifications" to Bigbee. Section VII.A.5.a of the Petition (Pet. 30-33) is directed to a POSITA's alleged motivation "to implement Nguyen's determination of whether the detected error ... is recoverable by Bigbee's firmware FRC logic to appropriately handle the detected error." This is irrelevant. Patent Owner has not argued that a POSITA would have failed to recognize potential benefits of handling recoverable and non-recoverable errors differently. Patent Owner argues that the Bigbee-Nguyen "combined system" does not achieve those benefits because it cannot make any distinction between a recoverable and non-recoverable error.

Section VII.A.5.b of the Petition (Pet. 33-35) also does not identify any modifications to Bigbee that are relevant to the capability of the

“combined system” to distinguish recoverable from non-recoverable errors. That section relates only to Petitioners’ argument that Nguyen’s algorithm for determining whether an error is recoverable or non-recoverable could be implemented in firmware. *See, e.g.*, Pet. 33-34 (“implementing logical steps in firmware was known in the art”), 34 (a POSITA “would have known how to use ACPI Source Language (ASL) to program Bigbee’s firmware code... using ordinary computer programming skill”). These arguments again miss the mark. The relevant question is not whether the logical steps disclosed in Nguyen could have been implemented using firmware instead of hardware but rather what the result of those logical steps would have been in Petitioners’ “combined system.” The result of implementing Nguyen’s steps in Bigbee’s firmware is a “combined system” unable to distinguish recoverable from non-recoverable errors.

Petitioners also cite part of the Petition’s analysis of limitations 19a and claims 4-8. Reply 8-9 (citing Pet. 40-41, 61-67), but those discussions merely describe the algorithm in Nguyen for processing errors. Patent Owner does not ignore that algorithm. In fact, Patent Owner expressly relies on Nguyen’s disclosures to demonstrate that,

when implemented in the “combined system,” Nguyen’s algorithm is unable to distinguish recoverable from non-recoverable errors. POR 11-13. Petitioners have identified no flaw in Patent Owner’s description of how the “combined system” would function.

Dr. Brogioli’s analysis of the Bigbee-Nguyen combination is also unhelpful to Petitioners’ arguments. Dr. Brogioli was questioned during deposition about how Bigbee and Nguyen would be combined, and he confirmed that in the proposed combination, Nguyen’s steps would begin after Bigbee’s step of “detect[ing] an error within a first processor core.” EX2009, 74:14-76:8; *see* POR 12. As the POR explained, supported by Mr. Jones’ testimony, this combination of Bigbee and Nguyen does not and cannot make any distinction between recoverable and non-recoverable errors.

4. Petitioners’ attempt to justify its hindsight analysis fails

Petitioners also contend that Patent Owner’s analysis of the Bigbee-Nguyen combination is too rigid, violating of *KSR* principles. Reply 9-10. Not so. It is Petitioners’ burden to demonstrate with particularity how the challenged claims are unpatentable. The Petition

did not allege that the flaws in the Bigbee-Nguyen combination could be remedied using the creativity of a POSITA, nor do Petitioners now explain how such creativity would remedy those flaws. *See Facebook, Inc. et al v. Uniloc Luxembourg SA et al*, No. IPR2017-01523, Paper 7 at 15-16 (P.T.A.B. Dec. 4, 2017) (“It is not our role to pick a theory for Petitioner... and then to apply that selected theory... to the challenged independent and dependent claims where Petitioner has failed to do so.”) (citing *Schumer v. Lab. Comput. Sys., Inc.*, 308 F.3d 1304, 1316 (Fed. Cir. 2002)); *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016). Patent Owner’s analysis of the Bigbee-Nguyen combination is consistent with, and indeed explicitly relies upon, the disclosures in each reference. *See* POR 11-13.

C. There are no benefits to the Bigbee-Nguyen combination

As explained in the POR, Petitioners’ theory as to why a POSITA would have combined Bigbee and Nguyen is unsupported by the evidence, which conclusively demonstrates that the combination would not achieve any of the alleged benefits asserted by Petitioners. POR 14. On Reply, Petitioners attempt to add a new theory of obviousness, i.e., that the

proposed combination is a “straightforward application of known techniques applied according to their predictable uses to achieve predictable results.” Reply 14. Petitioners never presented this theory in the Petition, and it should be disregarded as beyond the proper scope of a reply. In addition, it is unsupported. Petitioners provide no explanation of what techniques are being applied, what their predictable uses are, or why the results would be predictable. *Id.*

III. NIGEL JONES IS MORE THAN QUALIFIED AS A PERSON OF ORDINARY SKILL IN THE ART

On Reply, Petitioners argue that the testimony of Patent Owner’s expert, Mr. Nigel Jones, should be given no weight because Mr. Jones does not have even ordinary skill in the art. Reply 2-5. This argument is unsupported. As reflected in his declaration (EX2007) and his CV, Mr. Jones has a degree in Electrical and Mechanical Engineering, decades of relevant industry experience, and has been called on to testify as a technical expert in dozens of district court cases relating to computer architecture, computer hardware, computer software, and computer firmware.

First, Petitioners contend that a degree in Electrical and Mechanical Engineering is not relevant because Mr. Jones' declaration does not provide a list of courses taken to earn that degree. Reply 3. Petitioners ignore that many institutions around the world—including institutions where its own expert, Dr. Brogioli, earned his degrees (EX1002 ¶5)—combine electrical engineering and computer engineering into a single degree (e.g., “Electrical and Computer Engineering”). And Petitioners, who did not seek to depose Mr. Jones to inquire about his qualifications, do not identify any statements made by Mr. Jones in his declaration that reflect an inadequate understanding of the technology involved in the '958 patent or any of the prior art.

Second, Petitioners contend that Mr. Jones' prior work experience does not qualify him as ordinarily skilled in the art because Petitioners were unable to find the words “computer architecture design” on Mr. Jones' CV. Yet, Petitioners ignore that Mr. Jones worked extensively on “system architecture, hardware design and layout, embedded firmware,” and “device drivers for complex integrated circuits” (*see, e.g.*, EX2008 at 1); has been widely published in the areas of embedded programming techniques (*see, e.g., id. at 3*); and has written guidelines for the Motor

Industry Software Reliability Association (MISRA) for safety critical computer systems (*see, e.g., id.*). This experience more than qualifies Mr. Jones as having ordinary skill in the art. Mr. Jones' qualifications are confirmed by the dozens of district courts that have considered his expert testimony as to the design of computer hardware, software, and firmware. *See, e.g., Point 4 Data Corp. v. Tri-State Surgical Supply & Equip., Ltd.*, No. 11CV726CBARLM, 2019 WL 13277401, at *6 (E.D.N.Y. Mar. 27, 2019) (noting Mr. Jones' testimony as to the design of a hardware dongle); *Dish Network L.L.C. v. Whitcomb*, No. 11-CV-0333 W RBB, 2011 WL 1559825, at *3 (S.D. Cal. Apr. 25, 2011) (noting the Mr. Jones has "over 25 years of experience designing and analyzing sophisticated electronic systems"); *Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung E.V. v. Sirius Xm Radio Inc.*, No. CV 17-184-JFB-SRF, 2017 WL 4564742, at *2 (D. Del. Oct. 13, 2017) (relying on Mr. Jones' testimony as to "source code" "VHDL" and their relationship to the "design... [of] integrated circuits or chips"); *Burnett v. Ford Motor Co.*, No. 3:13-CV-14207, 2015 WL 3704599, at *2 (S.D.W. Va. June 12, 2015) (noting that Mr. Jones has "designed both hardware and

firmware” and has performed “reverse engineering of hardware and software, as well as code review”).

Date: November 6, 2024

Respectfully submitted,

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CERTIFICATION REGARDING WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Patent Owner certifies that there are no more than 2,161 words in the paper excluding the portions exempted under 37 C.F.R. § 42.24(a)(1).

Dated: November 6, 2024

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CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e))

The undersigned hereby certifies that the above document was served on November 6, 2024, by filing this document through the Patent Trial and Appeal Case Tracking System as well as delivering a copy via electronic mail upon the following attorneys of record for the Petitioner:

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